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DRAFT SECTION 24G  
REPORT FOR THE  
CLEARING OF  
VEGETATION ON  
PORTION 217 (A PTN OF  
PTN 87) OF THE FARM  
CRAGGA KAMMA NO. 23

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Prepared for

MR. ALLAN RICHARD HARTSLIEF

JUNE 2026



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Walmer

Port Elizabeth

Directors:

Dr Darren Boucher

Prof Johan Van Tol

Prof George Van Zijl

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This report has been prepared exclusively for **Mr. Allan Richard Hartsliet** and for submission to the Competent Authority. It may not be used for any other purpose without written consent.

**APPLICATION FORM FOR THE REGULARISATION OF UNLAWFUL COMMENCEMENT OR CONTINUATION OF A LISTED ACTIVITY OR WASTE MANAGEMENT ACTIVITY IN TERMS OF SECTION 24G OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998), AS AMENDED**

OB Number  
ED Number  
File Reference Number:  
NEAS Reference Number:  
Date Received:

(For official use only)

**PROJECT TITLE**

Vegetation Clearance of more than 1Ha on Portion 217 (a Ptn of Ptn 87) of the Farm Cragga Kamma No. 23, Port Elizabeth

**Kindly note that:**

1. This application form must be completed for all applications in terms of S24G of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.
2. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the application form have been published or produced by the relevant competent authority.
3. This application form is structured as follows:

**PART 1**

Section A: Application Information  
Section B: Activity Information  
Section C: Proposed Public Participation Process  
Section D: Appendices

**PART 2**

Section A: Directive  
Section B: Deferral  
Section C: Quantum of the fine

**PART 3**

Section A: Declaration by applicant.  
Section B: Declaration by EAP

4. An independent EAP must be appointed to complete Part 2 Section C.1 of the application form on behalf of the applicant. The applicant or the appointed EAP must complete Part 1 and the remainder of Part 2. Both the EAP and Applicant must complete and sign the applicable declarations in Part 3.

5. The required information must be typed within the spaces provided. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. The space provided extends as each space is filled with typing. A legible font type and size must be used when completing the form. The font size should not be smaller than 10pt (e.g. Arial 10).
6. The use of "*not applicable*" in the application form must be done with circumspection.
7. No faxed or e-mailed applications will be accepted unless agreed to with the Department where circumstances prevent the submission of physical documents. This application form must be submitted by hand or mailed to the relevant competent authority.
8. Unless protected by law, all information contained in and attached to this application form may become public information on receipt by the competent authority. Upon request, any interested and affected party must be provided with the information contained in and attached to this application form.
9. This application form constitutes the initiation of the S24G application process.

Kindly note further that:

10. Section 24G of the NEMA, without affecting any criminal liability of a person who has acted in contravention of the above, makes provision for that person to submit an application to the relevant MEC/Minister, which, if successful, will enable that person lawfully to continue with the listed activity and/or legalise an otherwise unlawful structure.
11. Before the Minister/MEC may take a decision in respect of the application, the applicant is required to pay an appropriate administrative fine, determined by the competent authority, which fine may not exceed five million Rand (R 5 000 000.00) per listed activity unlawfully commenced or per application where the activities are interrelated.
12. It is the responsibility of the applicant to familiarise himself/herself/itself with all the possible consequences associated with the submission of this application including, but not limited to, the following:
  - This application (including a positive decision in respect hereof) in no way affects any criminal liability that the applicant may have incurred in respect of the activities which were commenced, undertaken and/or conducted unlawfully as listed in paragraph 1 above, and in respect of which this application relates.
  - The processing of this application may be deferred pending the outcome of criminal proceedings, should criminal proceedings be instituted against the applicant in respect of the abovementioned activities; or where criminal proceedings are pending against the applicant in respect of a similar contravention of section 24F of NEMA or section 20(b) of NEM:WA.
  - Before the competent authority may take a decision on the application, an administrative fine determined by the competent authority must be paid, in full, by the applicant.
  - That neither the submission of this application, nor the payment of the administrative fine implies that authorisation will be issued for the continuation of an activity/activities that commenced, undertaken and/or conducted unlawfully. This decision will depend on the merits of the application itself.
13. Activities which result in detrimental impacts to the environment are considered in a serious light by the competent authority and accordingly applicants must understand that by lodging an application for the continuation of an activity/ activities that commenced/ was undertaken or conducted unlawfully does not necessarily imply that the activity will be authorised. In terms of the NEMA the Minister/MEC may either refuse to issue an environmental authorisation/waste management licence; conditionally authorise the activity or direct you, the applicant, to provide further information or take further steps prior to making a decision.



## DEPARTMENTAL DETAILS

Applications must be submitted to the Department of Economic Development Environmental Affairs and Tourism Regional Office in the applicable district where the activity, the subject of the application took place. The addresses for the Regional Offices are:

| <b>Region</b>         | <b>Postal</b>                                                                                                                                                              | <b>Physical</b>                                                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Alfred Nzo</b>     | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>Alfred Nzo Region<br>P/Bag X3513<br>Kokstad<br>4700     | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>206 Magistrates Street<br>Old College of Education<br>Maluti                          |
| <b>Amathole</b>       | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>Amathole Region<br>P/Bag X9060<br>East London<br>5200   | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>Alderwood House<br>Palm Square Business Park<br>Bonza Bay Road<br>Beacon Bay<br>5241  |
| <b>Chris Hani</b>     | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>Chris Hani Region<br>P/Bag X9636<br>Queenstown<br>5320  | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>Komani Office Park<br>Block E<br>Komani Hospital<br>Queenstown<br>5320                |
| <b>Joe Gqabi</b>      | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>Joe Gqabi Region<br>P/Bag X1016<br>Aliwal North<br>9750 | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>Old Library Building<br>27 Queens Terrace<br>Aliwal North<br>9751                     |
| <b>OR Tambo</b>       | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>OR Tambo Region<br>P/Bag X5029<br>Mthatha<br>5099       | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>5 Floor<br>Botha Sigcau Building<br>Corner Owen and Leeds Street<br>Mthatha<br>5099   |
| <b>Sarah Baartman</b> | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>Sarah Baartman<br>P/Bag X5001<br>Greenachers<br>6057    | Regional Manager: Environmental Affairs<br>Department of Economic Development Environmental Affairs and Tourism<br>Corner Athol Fugard Terrace and Castle Hill Lane<br>Central<br>Port Elizabeth<br>6001 |

## PART 1 – SECTION A: APPLICATION INFORMATION

## 1. PROJECT DESCRIPTION

Please provide a detailed description of the project / activities undertaken

**Project Description:**

As can be seen in Figure 1 that the property had no infrastructure on and was mainly used for grazing. Mr. Allan Harslief bought Portion 217 (a Ptn of Ptn 87) of the Farm Cragga Kamma No. 23, Port Elizabeth in 2023 and started to develop the site to establish a residential house and infrastructure that will support commercial farming on this 29.9535 Ha property.

The infrastructure was constructed over a period of 2 years and includes an access road from the Lakeside Road, residential house, shed, garden, reservoir (184m<sup>3</sup>), fencing, livestock pen, compost site, aquaponics facility with associated fish farm, offices, warehouse and workers quarters (Figure 2). Between 3-4ha was ultimately disturbed to establish this farm, resulting in about 13% of the natural vegetation being impacted.



2022



2023



2024



2025

Figure 1: Historic overview of the site since 2022.



Figure 2: Infrastructure constructed on site falls outside of the seepage and temporal seepage zone (red polygon).

The development of the site does not require a rezoning application as the site is used for farming. The site is also wedged between two wetland areas (seepage areas) and the wetland was delineated by Dr. Brian Colloty to establish if the infrastructure fell within the wetland or within the 32m area.

**Error! Reference source not found.** indicate that the development falls outside of the 32m area, however it does fall within the 500m regulated area in terms of the National Water Act (Act 36 of 1998) and would trigger Section 21 (c) and (i) and a Water Use License Application (WULA) would be required and must be approved by the Department of Water and Sanitation.





Figure 3: 32m buffer zone around the wetland.

Prior to Mr. Hartsliel buying the property, the previous landowner applied for a residential 3 development including a landing strip and botanical surveys were conducted in 2014. Therefore, there exists previous data on the vegetation that was cleared. Dr Paul-Pierre Steyn conducted the study and updated his report for Mr. Hartsliel.

In 2014, Dr. Steyn indicated that the site was dominated by grass (*Stenotaphrum secundatum*), transversed by various animal footpaths. Aerial imagery revealed old linear north-south oriented plough-furrow features that are a testament to the previous disturbances to the site during historical agricultural activity. The site was used for small scale livestock agriculture (predominantly cattle grazing).



Figure 4: Vegetation types identified on the proposed site. No intact natural vegetation was recorded in the study area in 2014 (Dr. Steyn, 2014)

Exotic pine and gum trees were planted as either windbreaks or boundary demarcation by previous landowners and currently those trees still frame the property. According to the systematic biodiversity plans for the area, the site should host Collen Glen Grassy Fynbos that is considered Critically Endangered. However, Dr. Steyn found the following during his 2014 survey:

The site was visually dominated by grass (*Stenotaphrum secundatum*), and bracken fern (*Pteridium aquilinum*), with occasional patches of indigenous shrubs (*Erica glandulosa*, *Leucodendron salignum*, *Leucospermum cuneiforme*, *Muraltia scoparia*, and *Morella serrata*). Patches of bracken fern that occur sporadically at the site may be an indication of past fires at the site.



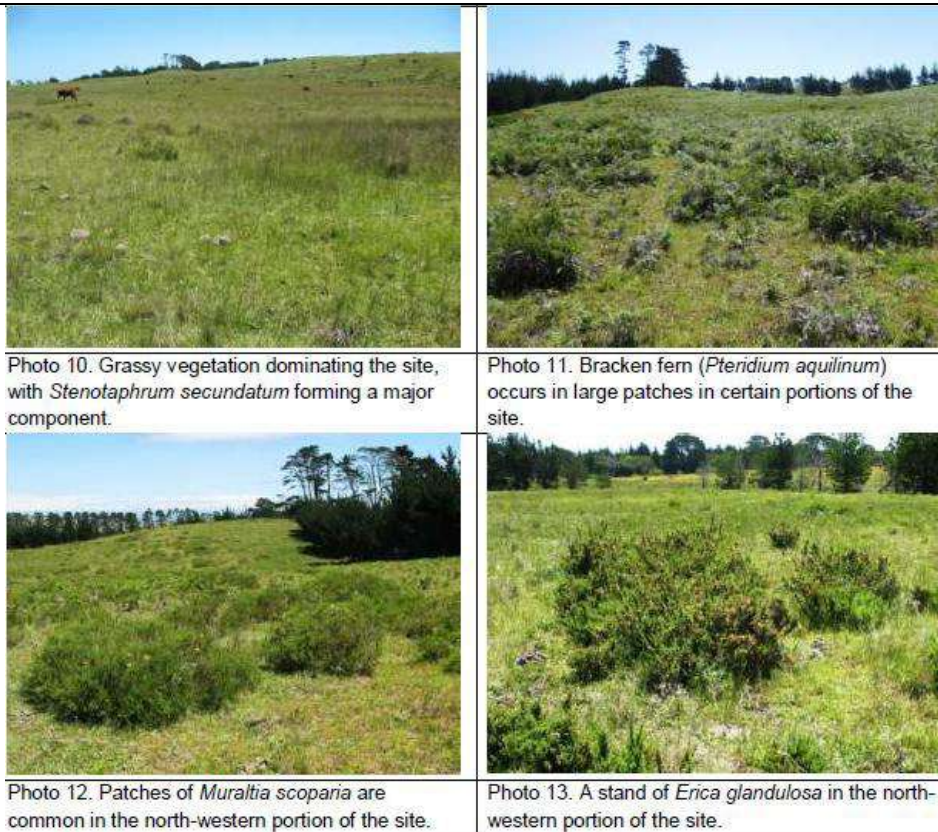


Figure 5: Historic vegetation as per Dr. Steyn Vegetation Assessment for the proposed previous development.

Mr. Hartsief purchased the property after it had already been extensively transformed by historical agricultural activities, including grazing and cultivation. At the time of purchase, the site no longer supported intact fynbos vegetation and was characterised by grass-dominated pasture vegetation with scattered indigenous remnants see Figure 6.

Historical aerial imagery and specialist investigations confirm that the transformation of the site pre-dated the current owner and that the vegetation present bore little resemblance to the original vegetation type mapped for the area.

Although bracken fern (*Pteridium aquilinum*) was present in parts of the property, its occurrence is widespread throughout South Africa, including the Eastern Cape, particularly in previously disturbed areas. The presence of bracken fern is indicative of historical disturbance and altered ecological conditions rather than an intact fynbos ecosystem. Consequently, the vegetation present on the property prior to the unauthorised development was assessed by the specialist as being of low conservation value and low botanical sensitivity.

It is often treated as an indigenous invasive or weedy native. In other words, native, but able to behave invasively (form dense stands and suppress other vegetation) in the right conditions, which is usually disturbance-drive, as was the case on this property.



Figure 6: Bracken fern (*Pteridium aquilinum*) dominating the farm. Pictures taken by Mr. Hartsief at the start of eradicating the fern.

In South Africa, the NEMBA listed invasive species regime is primarily aimed at alien invasive species, bracken fern is generally dealt with as a management issue rather than a 'listed alien invasive' compliance issue.

Bracken fern is hard to 'once-off clear' because of its underground rhizomes and best results are usually integrated (mechanical and chemical) and continues follow-up. Mr. Hartsliet undertook an aggressive management of the bracken fern on his property and over the past year has made positive progress.

The bracken fern occurred at an average height of approximately 1 m across most of the property and was initially cut to ground level using a brush cutter. Once regrowth occurred, a chemical herbicide product known as Forester®, which is registered in South Africa and used for the control of bracken fern, was applied. The herbicide typically takes approximately 2–3 months to result in dieback of the fern, after which the affected areas are cut again. The product is selective in nature and does not affect grasses or other non-target plant species, as it specifically targets bracken fern. Application is undertaken using a boom sprayer mounted on a tractor, with the herbicide mixed with a small amount of oil to improve adhesion to the tough, waxy fronds of the fern.

This treatment is repeated annually in areas where bracken re-establishes, and full control or eradication may take between five and six years of consistent follow-up management.



*Figure 7: Before and after picture of the same area showing invasive bracken fern on the left and grass component established once removed and treated (photo on the right).*



*Figure 8: Bracken fern dying after being treated with chemical herbicide.*



*Figure 9: Grass component establishing as bracken fern is removed.*



In terms of the development close to the wetland system and potential impacts regarding the aquaponics and fish farm, it is deemed important to discuss this as part of the project:

The aquaponics component operates as a closed-loop system that integrates aquaculture and hydroponics, whereby fish production and plant cultivation occur in a symbiotic, recirculating system within a controlled environment. Water is continuously recycled within the system, with nutrients derived from fish waste supporting plant growth, thereby minimizing water consumption and eliminating the need for synthetic fertilizers, herbicides or pesticides. The system includes a combination of media beds, deep water culture beds, Dutch grow buckets, growing towers and wicking beds housed within greenhouse-type structures and shade-netted tunnels. Aquaculture infrastructure includes fish tanks, sumps, biofiltration units, pumps and associated pipework required to maintain water circulation, oxygenation and nutrient cycling. The system is designed to operate as a low-waste, water-efficient agricultural activity, with solid organic material removed and managed on-site through a small composting operation for reuse within the farming component. No direct discharge of effluent from the aquaponics system to the surrounding environment occurs, as water is retained within the closed-loop process

The agricultural component focuses on the production of chemical-free fresh produce, including leafy greens, herbs, vegetables and flowers, grown under control conditions to maximize yield within a relatively small footprint. Produce is intended for local markets, including retailers.



Figure 10: Fish farm using Tilapia as the fish species.

Tilapia is a hardy, warm-water freshwater fish widely used in aquaculture and aquaponics systems due to its rapid growth, tolerance of variable water quality and suitability for recirculating systems.

From an environmental management perspective, tilapia is considered a non-indigenous species in South Africa. As a result, its cultivation requires careful containment to prevent escape into natural watercourses, where it could pose a risk to indigenous aquatic biodiversity. This closed-loop, tank-based system with no discharge to surface water significantly reduce this risk.

In addition, since this system is fully contained and water is reused, impacts on surface water and groundwater resources are typically low, subject to appropriate management and maintenance.



Figure 11: Recycled water in storage dam. All runoff from the facility is also captured and used in the system. No stormwater or nutrient rich water enters the natural environment outside of the facility.





Figure 12: A variety of salad and herb crops and flowers grown within a greenhouse through an aquaponics system.



Figure 13: Fresh produce stored in the cooling facility ready for market delivery.

No food processing activities take place on the site. Fresh produce is harvested and sold in bulk and is temporarily stored in crates within a cool room prior to direct collection by wholesale collection vehicles. No packaging, processing or value-adding activities occur on the property, and accordingly very limited packaging-related waste streams such as plastics. However other packaging-related waste such as polystyrene or similar materials are not generated on site. Organic plant material, including root matter from harvested crops, is either managed within the on-site worm farm or disposed of at the farm composting area for reuse within the agricultural operation.

Thus, the construction of the access road, farmhouse, shed, livestock pen, aquaponics, fish farming facilities and associated infrastructure, that followed after the purchase of the property did commence without the required environmental authorization, resulting in the clearance of more than 1 ha of vegetation. This procedural non-compliance is acknowledged.

Notwithstanding this, the landowner has demonstrated a proactive and responsible approach to land management. Through sustained and targeted control of bracken fern and active rehabilitation measures, the ecological condition of the property has improved, particularly in terms of the re-establishment of a grassy component. Areas disturbed outside of the permanent development footprint have been successfully rehabilitated and are currently in a better ecological condition than at the time of acquisition.

The development footprint has been largely confined to residential, aquaculture and associated agricultural infrastructure, while surrounding areas have been actively managed to prevent further degradation. The fish farm and aquaponics components operate as contained, closed-loop systems that minimize water use and waste generation, further reducing environmental risk. This reflects

an ongoing commitment to environmental stewardship and responsible land management, notwithstanding the initial lack of authorisation. The current application therefore seeks to regularise the development and ensure full compliance going forward.

The retrospective environmental impact assessment can be viewed in Annexure M1 of this document.

## 2. APPLICANT PROFILE INDEX

Cross out the appropriate box "X".

|     |                                                                                                                                                  |     |    |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| 2.1 | The applicant is an individual                                                                                                                   | YES |    |
| 2.2 | The applicant is a company                                                                                                                       |     | NO |
| 2.3 | The applicant is a government department, state-owned enterprise or municipality                                                                 |     | NO |
| 2.4 | Other (specify) Trust                                                                                                                            |     | NO |
| 2.5 | There is more than one individual / company responsible for the unlawful commencement of listed activities / listed waste management activities. |     | NO |

|                                                        |                                 |   |   |   |   |   |              |   |              |   |   |   |   |
|--------------------------------------------------------|---------------------------------|---|---|---|---|---|--------------|---|--------------|---|---|---|---|
| Name of Project applicant:                             | Mr. Allan Richard Hartsliel     |   |   |   |   |   |              |   |              |   |   |   |   |
| RSA Identity number:                                   | 7                               | 8 | 1 | 2 | 1 | 9 | 5            | 0 | 9            | 8 | 0 | 8 | 3 |
| Contact person:                                        | Mr. Allan Hartsliel             |   |   |   |   |   |              |   |              |   |   |   |   |
| Position in company                                    |                                 |   |   |   |   |   |              |   |              |   |   |   |   |
| Registered Name of Company/ Closed Corporation / Trust |                                 |   |   |   |   |   |              |   |              |   |   |   |   |
| Trading name (if any):                                 |                                 |   |   |   |   |   |              |   |              |   |   |   |   |
| Registration number                                    |                                 |   |   |   |   |   |              |   |              |   |   |   |   |
| Postal address:                                        | Ptn 217 of Farm 23 Kragga Kamma |   |   |   |   |   |              |   |              |   |   |   |   |
|                                                        | Lakeside Road                   |   |   |   |   |   | Postal code: |   | 6000         |   |   |   |   |
| Telephone:                                             |                                 |   |   |   |   |   | Cell:        |   | 082 905 4734 |   |   |   |   |
| E-mail:                                                | allan@machold.co.za             |   |   |   |   |   | Fax:         |   |              |   |   |   |   |

**Please Note:** In instances where there is more than one individual / company responsible for the unlawful commencement of listed activities / waste management activities, please attach a list of with all contact details as Annexure A.

|                                              |                                                                                |  |  |  |  |  |              |  |              |  |  |  |  |
|----------------------------------------------|--------------------------------------------------------------------------------|--|--|--|--|--|--------------|--|--------------|--|--|--|--|
| Environmental Assessment Practitioner (EAP): | Digital Soils Africa (Pty) Ltd                                                 |  |  |  |  |  |              |  |              |  |  |  |  |
| Contact person:                              | Natalie Sharp                                                                  |  |  |  |  |  |              |  |              |  |  |  |  |
| Postal address:                              | 45 Church Street                                                               |  |  |  |  |  |              |  |              |  |  |  |  |
|                                              | Walmer                                                                         |  |  |  |  |  | Postal code: |  | 6070         |  |  |  |  |
| Telephone:                                   | 067 622 5687                                                                   |  |  |  |  |  | Cell:        |  | 082 414 0472 |  |  |  |  |
| E-mail:                                      | natalie@dsafrica.co.za                                                         |  |  |  |  |  | Fax:         |  | ( )          |  |  |  |  |
| EAP Qualifications                           | B.Sc; B.Sc (Hons); Masters in Environmental Management (see Section 3: Part B) |  |  |  |  |  |              |  |              |  |  |  |  |
| EAP Registrations/Associations               | Pri.Sci.Nat (Reg no. 123443)<br>Reg. EAP (EAPASA)<br>Member of IAIAA (7237)    |  |  |  |  |  |              |  |              |  |  |  |  |

|                       |                                 |  |  |  |  |  |              |  |              |  |  |  |  |
|-----------------------|---------------------------------|--|--|--|--|--|--------------|--|--------------|--|--|--|--|
| Name of Landowner(s): | Danburite cc                    |  |  |  |  |  |              |  |              |  |  |  |  |
| Contact person(s):    | Mr. Allan Hartsliel             |  |  |  |  |  |              |  |              |  |  |  |  |
| Postal address:       | Ptn 217 of Farm 23 Kragga Kamma |  |  |  |  |  |              |  |              |  |  |  |  |
|                       | Lakeside Road                   |  |  |  |  |  | Postal code: |  | 6000         |  |  |  |  |
| Telephone:            |                                 |  |  |  |  |  | Cell:        |  | 082 905 4734 |  |  |  |  |
| E-mail:               | allan@machold.co.za             |  |  |  |  |  | Fax:         |  |              |  |  |  |  |

**Please Note:** In instances where there is more than one landowner, please attach a list of landowners with their contact details as Annexure B.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                              |              |        |                |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------|----------------|------------|
| Owners consent:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Letters of consent from all landowners where the transgressor/s is not the landowner, or a detailed explanation by the applicant explaining why such letters of consent are not furnished must be attached to the application form as Annexure C. n/a</b> |              |        |                |            |
| Municipality in whose area of jurisdiction the activity falls:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Nelson Mandela Bay Municipality                                                                                                                                                                                                                              |              |        |                |            |
| Contact person:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mr. Sizwe Mvunelawa (secretary Nozuko Ralarala)                                                                                                                                                                                                              |              |        |                |            |
| Postal address:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | P O Box 116                                                                                                                                                                                                                                                  |              |        |                |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Central                                                                                                                                                                                                                                                      | Postal code: |        | 6000           |            |
| Telephone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (041) 506 1394                                                                                                                                                                                                                                               | Cell:        |        |                |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | (041) 505 4578                                                                                                                                                                                                                                               | Fax:         |        | ( )            |            |
| E-mail:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | nralarala@mandelametro.gov.za                                                                                                                                                                                                                                |              |        |                |            |
| <b>Please Note:</b> In instances where there is more than one Municipality involved, please attach a list of Municipalities with their contact details as Annexure D                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                              |              |        |                |            |
| Property location:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The site is situated on Portion 217 (a Ptn of Ptn 87) of the Farm Cragga Kamma No. 23 within the Nelson Madela Bay Municipality. The farm is 29.9535Ha in total of which 3-4Ha have been disturbed.                                                          |              |        |                |            |
| Farm/Erf name & number (incl. portion):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Portion 217 (a Ptn of Ptn 87) Farm Cragga Kamma No. 23                                                                                                                                                                                                       |              |        |                |            |
| SG21 Digit code:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | C059 0000 00000 023 00217                                                                                                                                                                                                                                    |              |        |                |            |
| Co-ordinates:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Latitude (S):                                                                                                                                                                                                                                                |              |        | Longitude (E): |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 33°                                                                                                                                                                                                                                                          | 57'          | 53.43" | 25°            | 24' 48.96" |
| <b>Please Note:</b><br>Where there is more than one property involved (e.g. linear activities), attach a list of property descriptions as Annexure E.<br><br>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 must be in degrees, minutes and seconds. The minutes must be given to at least three decimals to ensure adequate accuracy. The EAP is required to contact the relevant competent authority with regards to the projection that must be used. |                                                                                                                                                                                                                                                              |              |        |                |            |
| Street address:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | No street address / Portion 217 (a Ptn of Ptn 87) Farm Cragga Kamma No. 23                                                                                                                                                                                   |              |        |                |            |
| Magisterial District or Town:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Nelson Mandela Bay Municipality                                                                                                                                                                                                                              |              |        |                |            |
| <b>Please Note:</b> In instances where there is more than one town or district involved, please attach a list of towns or districts as well as complete physical address information for the entire area as Annexure F.                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                              |              |        |                |            |
| Closest City/Town:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Gqeberha                                                                                                                                                                                                                                                     |              |        | Distance       | 10Km       |
| Zoning of Property:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Agriculture                                                                                                                                                                                                                                                  |              |        |                |            |
| <b>Please Note:</b> In instances where there is more than one zoning, please attach a map clearly indicating the zoning of the different portions as Annexure G.                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                              |              |        |                |            |
| Was a rezoning application required?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                              |              |        |                | NO         |
| Was a consent use application required?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                              |              |        |                | NO         |
| <b>Please Note:</b> Where planning approvals have been granted please attach the relevant approvals as Annexure H.                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                              |              |        |                |            |



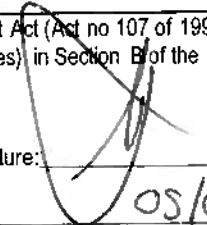
### 3. APPLICATION HISTORY

(Cross out the appropriate box "X" and provide a description where required).

|                                                                                                                                                                                                              |                                     |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----|
| Has any national, provincial or local authority considered any development / waste management applications on the property previously?                                                                       | <input checked="" type="checkbox"/> | No |
| If so, please give a brief description of the type and/or nature of the application/s: (In instances where there were more than one application, please provide a complete list below of these applications) |                                     |    |
| N/A                                                                                                                                                                                                          |                                     |    |
| Which authority considered the application(s):                                                                                                                                                               |                                     |    |
| N/A                                                                                                                                                                                                          |                                     |    |
| Has any one of the previous application/s on the property been approved or rejected? If so provide a list of the successful and unsuccessful application/s and the reasons for decision/s.                   | <input checked="" type="checkbox"/> | No |
| N/A                                                                                                                                                                                                          |                                     |    |
| Provide detail on the period of validity of decision(s) and expiry dates of the above applications / licences etc.                                                                                           |                                     |    |
| N/A                                                                                                                                                                                                          |                                     |    |

I hereby apply in terms of Section 24G of the National Environmental Management Act (Act no 107 of 1998 as amended) for the regularisation of the unlawful commencement or continuation of the listed activity(ies) in Section B of the application form:

Applicant (Full names) Allan Richard Hartsief

Signature: 

Place: Gqeberha

Date: 05/06/26

EAP (Full names) Natalie Sharp

Signature: 

Place: Gqeberha

Date: 06/06/2026

### PART 1 - SECTION B: ACTIVITY INFORMATION

#### 1. ACTIVITIES APPLIED FOR:

Applicants and EAPS are strongly advised to discuss the merits of a combined application (if deemed applicable) with the relevant competent authority prior to the completion of this application form and submission thereof.

The relevant competent authority will use its discretion in deciding to allow the submission of a single application for more than one NEMA section 24F(1) and / or NEMA section 20(b) contravention on one site.

All potential listed activities / waste management activities associated with the site must be indicated below. Only those activities for which the applicant applies will be considered.

The onus is on the applicant to ensure that all the applicable listed activities are included in the application.

**Listed activities applied for. Identify the relevant listed activities applied for below:**

| <b>ECA EIA Contraventions : Between 08 September 1997 end of day 09 May 2002</b>                                                                                              |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Activities unlawfully commenced with on or after 08 September 1997 and before end 09 May 2002: EIA Regulations promulgated in terms of the ECA, Act No 73 of 1989, as amended |                          |
| Listed Activity(ies)                                                                                                                                                          | Details of Activity(ies) |
|                                                                                                                                                                               |                          |
|                                                                                                                                                                               |                          |
|                                                                                                                                                                               |                          |
|                                                                                                                                                                               |                          |

| <b>ECA EIA Contraventions : Between 10 May 2002 and before end of day 02 July 2006</b>                                                                                   |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Activities unlawfully commenced with on or after 10 May 2002 and before end 02 July 2006: EIA Regulations promulgated in terms of the ECA, Act No 73 of 1989, as amended |                          |
| Listed Activity(ies)                                                                                                                                                     | Details of Activity(ies) |
|                                                                                                                                                                          |                          |
|                                                                                                                                                                          |                          |
|                                                                                                                                                                          |                          |
|                                                                                                                                                                          |                          |
|                                                                                                                                                                          |                          |

| <b>NEMA EIA Contraventions : Between 03 July 2006 and before end of day 01 August 2010</b>                                                                                                          |                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Activities unlawfully commenced with in terms of the EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998, as amended on or after 03 July 2006 and before end of day 01 August 2010 |                                                     |
| Government Notice No. R386 Activity No(s):                                                                                                                                                          | Details of Activity(ies) requiring Basic Assessment |
|                                                                                                                                                                                                     |                                                     |
|                                                                                                                                                                                                     |                                                     |
|                                                                                                                                                                                                     |                                                     |
|                                                                                                                                                                                                     |                                                     |

| <b>NEMA EIA Contraventions : On or after 02 August 2010 until 7 December 2014</b>                                                                                                      |                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Activities unlawfully commenced with in terms of the EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998, as amended on or after 02 August 2010 until 7 December 2014 |                                                             |
| Government Notice No. R544 Activity No(s):                                                                                                                                             | Details of Activity(ies) requiring Basic Assessment         |
|                                                                                                                                                                                        |                                                             |
|                                                                                                                                                                                        |                                                             |
| Government Notice No. R545 Activity No(s):                                                                                                                                             | Details of Activity(ies) requiring a Scoping Report and EIA |

|                                            |                                          |
|--------------------------------------------|------------------------------------------|
|                                            |                                          |
| Government Notice No. R546 Activity No(s): | Details of Activity(ies) requiring S&EIR |
|                                            |                                          |

| NEMA EIA Contraventions : On or after 8 December 2014 up to 6 April 2017                                                                                                          |                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Activities unlawfully commenced with in terms of the EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998, as amended on or after 8 December 2014 to 7 April 2017 |                                                                                                                                                                                                                                                                                                      |
| Government Notice No. R983 Activity No(s):                                                                                                                                        | Details of Activity(ies) requiring Basic Assessment                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                      |
| Government Notice No. R984 Activity No(s):                                                                                                                                        | Details of Activity(ies) requiring a Scoping Report                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                      |
| Government Notice No. R985 Activity No(s):                                                                                                                                        | Details of Activity(ies) requiring Environmental Impact Assessment Report                                                                                                                                                                                                                            |
|                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                      |
| NEMA EIA Contraventions : On or after 7 April 2017                                                                                                                                |                                                                                                                                                                                                                                                                                                      |
| Activities unlawfully commenced with in terms of the EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998, as amended on or after 7 April 2017                    |                                                                                                                                                                                                                                                                                                      |
| Government Notice No. R327 Activity No(s):                                                                                                                                        | Details of Activity(ies) requiring Basic Assessment                                                                                                                                                                                                                                                  |
| <b>27</b>                                                                                                                                                                         | <b>Clearing of vegetation of 1Ha but less than 20Ha of indigenous vegetation.</b>                                                                                                                                                                                                                    |
|                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                      |
| Government Notice No. R325 Activity No(s):                                                                                                                                        | Details of Activity(ies) requiring a Scoping Report                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                      |
| Government Notice No. R324 Activity No(s):                                                                                                                                        | Details of Activity(ies) requiring Environmental Impact Assessment Report                                                                                                                                                                                                                            |
| <b>4 (a)(i)(gg)</b>                                                                                                                                                               | <b>Development of a road wider than 4 meters with a reserve less than 13.5meters outside of urban areas within the Eastern Cape within 10km from national parks or world heritage sites or 5km from any other protected area identified of NEMPAA or from the core areas of a biosphere reserve.</b> |
|                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                      |

| Waste Management Activities Contraventions: On or after 3 July 2007 up to end of day 28 November 2013                                              |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Activities unlawfully commenced with in terms of GNR 718 of 3 July 2009 published under the National Environmental Management Waste Act 59 of 2008 |                          |
| Listed Activity(ies)                                                                                                                               | Details of Activity(ies) |
|                                                                                                                                                    |                          |

| Waste Management Activities Contraventions : On or after 29 November 2013                                                                               |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Activities unlawfully commenced with in terms of GNR 921 of 29 November 2013 published under the National Environmental Management Waste Act 59 of 2008 |                          |
| Listed Activity(ies)                                                                                                                                    | Details of Activity(ies) |
|                                                                                                                                                         |                          |
|                                                                                                                                                         |                          |

## 2. ACTIVITY DESCRIPTION

(Cross out the appropriate box “☒ ” and provide a description where required).

|                                                                                    |     |  |
|------------------------------------------------------------------------------------|-----|--|
| (a) Is/was the project a new development or an upgrade of an existing development. | New |  |
|------------------------------------------------------------------------------------|-----|--|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>(b) Clearly describe the activity and associated infrastructure commenced with, indicating what has been completed, what still has to be completed and applicable commencement dates.</p> <p>Portion 217 (a Portion of Portion 87) of the Farm Cragga Kamma No. 23, Port Elizabeth, measuring approximately 29.9535 ha, was acquired by Mr Allan Hartsliel in 2023. At the time of acquisition, the property was largely undeveloped, contained no permanent infrastructure, and was historically utilised for livestock grazing. Historical aerial imagery and specialist investigations confirm that the site had already been extensively transformed by past agricultural activities, including grazing and cultivation, long before the property was acquired. Although the site falls within an area mapped as Critically Endangered Algoa Sandstone Fynbos, the property no longer supported intact fynbos vegetation and was instead characterised by grass-dominated pasture vegetation with scattered indigenous remnants. The vegetation present on the site was assessed by the specialist as being of low conservation value and low botanical sensitivity.</p> <p>Following acquisition in 2023, development commenced without prior environmental authorisation to establish a residential dwelling and infrastructure to support a commercial farming operation. Construction and site establishment occurred incrementally over an approximately two-year period (2023–2025).</p> <p>The following infrastructure and activities have been completed to date:</p> <ul style="list-style-type: none"> <li>• Construction of an access road linking the property to Lakeside Road;</li> <li>• Construction of a residential dwelling and associated garden area;</li> <li>• Erection of a farm shed, offices, warehouse and worker accommodation;</li> <li>• Installation of perimeter fencing and internal fencing;</li> <li>• Construction of a livestock pen;</li> <li>• Establishment of a composting area;</li> <li>• Construction of a water reservoir with an storage capacity of 184 m<sup>3</sup>;</li> <li>• Establishment of a commercial aquaponics facility, including greenhouses and shade-netted structures;</li> <li>• Establishment of a fish farming component utilising tilapia within a closed-loop, tank-based aquaculture system; and</li> <li>• Installation of associated internal farm infrastructure required for agricultural operations.</li> </ul> <p>The aquaponics and fish farming components are fully operational and function as a contained, closed-loop system integrating aquaculture and hydroponics. Water is continuously recycled within the system, with nutrients derived from fish waste supporting plant production. No discharge of effluent occurs to the surrounding environment, and all runoff from the facility is captured and reused within the system.</p> <p>The agricultural activity focuses on the production of chemical-free fresh produce, including leafy greens, herbs, vegetables and flowers. Produce is harvested and sold in bulk, temporarily stored in crates within an on-site cool room, and collected directly by wholesale collection vehicles. No food processing, packaging or value-adding activities occur on the site, and no packaging-related waste streams</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



are generated. Organic plant material is managed on site through composting and the worm farm. The rest of the farm is used by cattle for grazing.

Approximately 3–4 ha of the property has been disturbed to accommodate the above infrastructure and activities, representing approximately 13% of the total property extent. All permanent infrastructure has been located outside of delineated wetland areas and the 32 m buffer, although the site falls within the 500 m regulated area in terms of the National Water Act, triggering the need for authorisation under Section 21(c) and (i).

In addition to the above, ongoing activities include the continued operation and maintenance of the aquaponics and fish farming systems, routine farming activities, and the continued management and control of bracken fern across the remainder of the property. Active rehabilitation of areas disturbed outside the permanent development footprint has been undertaken and is mostly completed, but will continue as part of ongoing land management.

No additional major construction activities are currently planned. Outstanding regulatory processes include the regularisation of the unauthorised commencement of activities through this Section 24G application and the initiation of the required Water Use Licence Application with the Department of Water and Sanitation.

(c) Provide details of all components of the activity and attach diagrams (e.g. architectural drawings or perspectives, engineering drawings, process flow charts etc.).

|           |     |  |
|-----------|-----|--|
| Buildings | YES |  |
|-----------|-----|--|

Provide brief description:

Please see Annexure J for the Site Layout Plan (A101a) and Aquaponics facility Plan (A100, A101 & A102) for design specifics.

In summary:

The development includes:

- Grow houses for crop production
- An aquaponics system with fish tanks and sump infrastructure
- A packhouse and office building
- Residential house and shed
- Associated internal access roads, parking, fencing, bulk services, water supply, wastewater treatment (which is a septic tank and French drain), and stormwater management infrastructure

The layout, building footprints, and services are shown on the Proposed Site Layout Plan(A101a) and associated architectural, structural, and engineering drawings (A100, A101 & A102).

In terms of the site layout, the development footprint is located on a levelled agricultural platform set back from property boundaries and Lakeside Road and not within 32m of the wetland.

**Built Infrastructure Components:**

Grow Houses consist of:

- A series of steel-framed grow tunnels arranged in parallel rows.
- Covered with agricultural cladding suitable for controlled crop production.
- Grow tunnels are supported by concrete slabs and plinths designed by the engineer.
- Internal layouts show planting beds, walkways, and drainage channels.

Structural details include:

- Concrete slabs (10 MPa) with reinforcing mesh
- Compacted ground fill and concrete footings

- Steel superstructure with roof trusses

The grow houses have been divided into two phases. Phase 1 is completed and buildings are fully operational. However, Phase 2 are not operational. Foundations have been laid; the area has been prepared and is fenced in with the Phase 1 buildings. Thus the commencement of Phase 2 will not disturb any additional areas.



Figure 14: Phase 1 of grow houses and fish tank house completed and operational.



Figure 15: Phase 2 of grow houses and fish tank house half completed and not yet operational.

#### Aquaponics Facility (Fish House):

- Integrated with the grow houses to form a closed-loop aquaponics system.
- Includes:
  - Fish tank areas
  - Sump areas
  - Associated plumbing trenches and drainage
- Sumps are recessed into concrete slabs with shaped bases to accommodate tank geometry.

#### Packhouse:

- A dedicated packhouse building used for:
  - Produce handling
  - Sorting
  - Packing and temporary storage
- Total floor area approximately 293 m<sup>2</sup> (ground and first storey combined).
- Designed to support agricultural operations associated with the grow houses.

#### Office Building:

- A small office building located adjacent to the packhouse.
- Used for:
  - Administrative functions

- Farm management and record-keeping

#### Wastewater Management

- A new septic tank with French drain is operational to service the packhouse and office.
- Septic system design includes:
  - Inlet and outlet pipes
  - Cast-iron manhole covers
  - Reinforced concrete cover slabs
- An existing septic tank associated with the dwelling remains in use.

#### Stormwater and drainage

- Stormwater is managed through:
  - Internal drainage channels within grow houses
- The development platform is shaped to avoid uncontrolled runoff.
- Plumbing trenches and steel grates are shown in the grow house sections.

#### Fencing and security

- The site is enclosed with:
  - 2300 mm high mesh fencing
  - 21-strand electric fencing in places
- Sliding access gate is provided at the main entrance.

#### Visual Aids / Perspectives (A102)

- 3D perspective drawings illustrate:
  - Overall scale and massing of grow houses
  - Relationship between fish houses and grow tunnels
  - Visual integration of buildings on site

#### Residential and Associated Agricultural Infrastructure

In addition to the grow houses, aquaponics facility, packhouse and office building, the development includes a residential farmhouse and associated agricultural support infrastructure, as shown on the Site Layout Plan (Annexure J, Drawing A101a) and described in the Project Description.

##### **Residential Farmhouse:**

- A single residential dwelling constructed to accommodate the landowner.
- Associated with a garden area and paved driveway.
- Serviced by a septic tank and French drain system (separate from the new septic system serving the packhouse and office).
- Located outside the 32 m wetland buffer.

##### **Shed / Agricultural Store:**

- An existing agricultural shed used for:
  - Equipment storage
  - Farm tools
  - Maintenance activities

- Constructed as a lightweight agricultural structure consistent with farming use.

**Livestock Infrastructure:**

- Livestock pen and small-scale animal housing infrastructure.
- Existing chicken coop.
- Compost site associated with organic waste reuse.
- These components support mixed agricultural activities on the farm.

**Reservoir and Water Infrastructure:**

- A reservoir with a storage capacity of approximately 184 m<sup>3</sup>, used for agricultural water storage.
- Borehole abstraction infrastructure.
- Water supply connections to tanks serving the aquaponics and grow house components.
- Rainwater harvesting tanks integrated into the system.

**Workers' Quarters:**

- Accommodation infrastructure for farm workers as indicated in the Project Description.
- Located within the broader developed agricultural platform.

In summary:

- Residential farmhouse and associated garden and services
- Agricultural shed and livestock infrastructure
- Grow houses (Phase 1 operational; Phase 2 partially constructed)
- Aquaponics and fish farming infrastructure
- Packhouse and office buildings
- Workers' quarters
- Access roads and parking areas
- Borehole and reservoir water infrastructure
- Wastewater treatment systems (existing and new septic tanks with French drains)
- Stormwater management measures
- Perimeter fencing and security infrastructure

All components are reflected in the Site Layout Plan and associated architectural and engineering drawings in Annexure J.

Infrastructure (e.g. roads, power and water supply/ storage)

YES

Provide brief description:

The site can be accessed from Lakeside Road that borders the site to the east.

The access road is a singular track, gravel road that is about 800m in length and has a circular track near the residential house.





Figure 16: Access road is gravel, access from the Lakeside Road.

#### Access, Parking & Circulation:

- An access road from Lakeside Road (D1907) provides entry to the property.
- Internal gravel roads provide circulation between the residential area, aquaponics facility, grow houses, packhouse and livestock areas.
- Paved driveway areas and interlocking paving are provided near the packhouse and office.
- Parking is provided adjacent to the packhouse (including one disabled bay), with all vehicles required to enter and exit in a forward direction.



Figure 17: Photos of the access road



Figure 18: Photos of the paved area around the facility.

#### Water Supply Infrastructure

- Water is supplied via an on-site borehole.
- A reservoir with a storage capacity of approximately 184 m<sup>3</sup> is provided for agricultural storage.
- Additional water storage tanks (rainwater harvesting and supply tanks) are installed to support the aquaponics and grow house systems.
- The aquaponics facility operates as a closed-loop recirculating system, minimizing water consumption and preventing discharge to the surrounding environment.
- Water is distributed to:
  - Grow houses
  - Aquaponics system
  - Packhouse and office

#### Additional Storage

- Multiple water storage tanks provided, including:
  - 2 × 1000 L rainwater tanks
  - 4 × 1000 L tanks linked to main water supply and rainwater harvesting
- Pressure-reducing valves, stop cocks, and fire hydrant included.

#### Wastewater Infrastructure

- The residential dwelling is serviced by a septic tank and French drain system.
- Another septic tank and French drain system services the packhouse and office building.
- No industrial effluent is discharged; wastewater is treated on-site via subsurface disposal.

#### Stormwater Management

- The development platform is shaped and levelled to control runoff.
- Internal drainage channels are incorporated within the grow houses.
- Runoff from the aquaponics and greenhouse areas are captured and reused within the system.
- No stormwater is discharged directly into the adjacent wetland areas.

#### Power Supply

- The facility is connected to electrical supply infrastructure to support pumps, cooling facilities, lighting and operational equipment associated with the aquaponics, packhouse and office components.
- Electrical installations are confined to the developed platform area.

Processing activities (e.g. manufacturing, storage, distribution)

YES

Provide brief description:

The activity does not involve industrial manufacturing or food processing. Agricultural production takes place within the grow houses and aquaponics facility, where crops (leafy greens, herbs, vegetables and flowers) are cultivated using a closed-loop aquaponics system integrating fish production (tilapia) and hydroponic plant growth

Harvested produce is transported to the on-site packhouse where it is sorted, handled and temporarily stored. No value-adding, processing, cooking or packaging activities occur on site. Produce is placed in crates and stored within a cool room prior to direct collection by wholesale or retail buyers

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| <p>The aquaculture component operates as a contained recirculating system, with fish reared in tanks and water continuously recycled. Solid organic waste generated from the system is managed on site through composting or a worm farm for reuse within the agricultural operation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |    |
| <p>Accordingly, processing activities are limited to agricultural production, sorting and short-term cold storage prior to off-site distribution.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |    |
| <p>Storage facilities for raw materials and products (e.g. volume and substances to be stored)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |    |
| Provide brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | YES |    |
| <p>Water required for the operation is stored in an on-site reservoir with a capacity of approximately 184 m<sup>3</sup>, multiple 1 000 L storage tanks (main supply and rainwater harvesting), and within the aquaponics fish tanks and sump infrastructure forming part of the closed-loop system.</p> <p>The aquaponics system operates without synthetic fertilisers, herbicides or pesticides, and therefore no hazardous agricultural chemicals are stored on site.</p> <p>Operational inputs are limited to small-scale storage of consumables such as fish feed for the aquaculture component. Harvested produce is temporarily stored in crates within a cool room prior to direct collection by wholesale buyers, with no long-term bulk storage or value-adding activities occurring on site.</p> <p>Organic plant material and aquaculture solids are managed through on-site composting or a worm farm for reuse within the agricultural operation.</p>                                                        |     |    |
| <p>Storage and treatment facilities for solid waste and effluent generated by the project</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |    |
| Provide brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     | No |
| <p>Construction waste that was generated during the construction of the farmstead and aquaponics facility was removed and the site is clean and neat.</p> <p>In terms of operational waste, the solid waste generated by the project is limited to organic plant material (e.g. root matter and crop residues) and small quantities of general domestic waste that is removed by Green Cycle who collect and recycle all the waste.</p> <p>Organic waste and aquaponics solids are treated on site through composting and/or a worm farm for reuse within the agricultural operation.</p> <p>No food processing or packaging activities occur on site, and therefore waste streams are minimal.</p> <p>Domestic wastewater from the packhouse and office is treated via a septic tank and French drain system, while the existing dwelling is serviced by a separate septic system.</p> <p>The aquaponics system operates as a contained closed-loop system with no discharge of effluent to the surrounding environment</p> |     |    |
| <p>Other activities (e.g. water abstraction activities, crop planting activities)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |    |
| Provide brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | YES |    |
| <p>All those already discussed above, but in terms of water abstraction, include on-site water abstraction from a borehole to supply the reservoir (±184 m<sup>3</sup> capacity). A water use license will be applied for.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |    |

### 3. ACTIVITY NEED AND DESIRABILITY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Describe the need and desirability of the activity:</p> <p>This application is submitted in terms of Section 24G of the National Environmental Management Act (Act 107 of 1998) to rectify unauthorised vegetation clearance and associated works undertaken for the establishment of a residential dwelling, access infrastructure and a small-scale aquaponics facility on Portion 8 of Erf 3, Cragga Kamma.</p> <p>The purpose of this application is to regularise the development, assess the environmental impacts retrospectively, and ensure that appropriate mitigation and management measures are formally implemented to align the activity with the principles of sustainable development as set out in Section 2 of NEMA.</p> <p><u>Environmental Context</u></p> <p>Aquatic Environment: The 2025 Wetland / Aquatic Assessment confirmed the presence of seepage wetlands within and adjacent to the broader property. The site falls within Aquatic Ecological Support Areas (Type 1 and 2) in the Eastern Cape Biodiversity Conservation Plan, which resulted in a "Very High" sensitivity rating in the DFFE Screening Tool.</p> <p>However, the specialist assessment further confirmed that:</p> <ul style="list-style-type: none"> <li>The site is not located within a Strategic Water Source Area;</li> </ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- It is not associated with any mainstem rivers or Fish Support Areas;
- The National Wetland Inventory depression identified on desktop level was confirmed to be an artificial farm dam;
- No listed or protected aquatic plant species were observed within the adjacent seepage systems.

The aquaponics system is designed as a closed-loop recirculating system with no discharge of effluent to the receiving environment. With the implementation of recommended buffer zones, runoff management and alien invasive control, the aquatic specialist concluded that impacts can be mitigated to acceptable levels.

Terrestrial Vegetation: The 2014 Vegetation Assessment undertaken on the same property (although for another project, was updated) confirmed that the site had been historically transformed through agricultural activities, including grazing and past cultivation. The findings of the 2026 vegetation assessment are broadly consistent with those of the 2014 assessment undertaken by the same specialist. Both studies conclude that the site had been substantially transformed by historical agricultural activities prior to the developments assessed, and that the dominant vegetation comprises low-sensitivity pasture grassland with limited remnants of indigenous flora. Neither assessment identified intact natural fynbos vegetation, significant plant species of conservation concern, Critical Biodiversity Areas, or ecological features that would render the site unsuitable for development.

The principal difference between the studies relates to the treatment of the central wetland feature, with the 2026 assessment placing greater emphasis on its ecological functioning and recommending the retention of a 30 m buffer around the wetland. Overall, the 2026 assessment confirms the low botanical sensitivity and transformed nature of the site identified in the 2014 study.

The 2026 assessment concluded that:

- The site was historically transformed long before the recent unlawful development occurred.
- The site is not covered by intact Algoa Sandstone Fynbos, despite the regional vegetation maps indicating that this vegetation type should naturally occur there.
- The vegetation present is grass-dominated pasture vegetation resulting from historical agricultural transformation.
- The site has a low botanical sensitivity and does not support significant natural habitat.
- No NEM:BA Threatened or Protected plant species were recorded.
- No protected trees were recorded.
- The development footprint resulted primarily in the loss of transformed pasture vegetation, not intact natural fynbos habitat.

The terrestrial footprint of the development therefore occurs within an already altered and historically disturbed agricultural landscape.

Thus, the proposed development comprises an integrated small-scale agricultural production facility, including greenhouse cultivation and aquaponics (tilapia production), together with associated residential and support infrastructure.

The need for the development is supported by:

- Promotion of local, water-efficient food production through a closed-loop aquaponics system;
- Reduction in reliance on synthetic fertilisers and pesticides;
- Contribution to local food security within the Nelson Mandela Bay region;
- Diversification of agricultural land use within an already transformed rural landscape.

The project represents a capital investment of approximately R12 million, with meaningful socio-economic benefits including:

- 15 skilled and 35 unskilled jobs during construction;
- 12 skilled and 15 unskilled jobs during operation;
- Approximately R12 million in employment-related expenditure over the first 10 years;
- Approximately 90% of employment value accruing to previously disadvantaged individuals.

The development therefore contributes positively to local economic development, employment creation, and skills transfer within the municipality.

From an environmental perspective, the desirability of the development must be assessed in light of both the historical transformation of the site and the sensitivity of the aquatic environment.

While seepage wetlands occur within the broader property, the specialist assessment confirms that impacts are localised and manageable with appropriate mitigation. The development footprint is confined to a defined agricultural platform and does not affect any mainstream river systems or nationally prioritised freshwater ecosystems.

Importantly:

- The terrestrial environment has already been substantially transformed through historical agriculture;
- The activity does not introduce industrial-scale processing;
- The aquaponics system is contained and does not discharge wastewater;
- Alien invasive species management is already being undertaken on site.

Regularisation through Section 24G will ensure that:

- Formal wetland buffers are implemented and maintained;
- Stormwater and runoff are appropriately managed;
- Ongoing environmental monitoring and rehabilitation measures are enforced;
- The activity operates within a legally compliant environmental framework.

In this regard, the desirability of the development is strengthened by the opportunity to formalise environmental management measures that may not otherwise have been legally secured.

### Conclusion

The proposed development occurs within a historically transformed agricultural landscape with limited remaining terrestrial conservation value. Although seepage wetlands are present within the broader property, the aquatic specialist assessment confirms that impacts can be mitigated and managed, and that no nationally significant aquatic systems are directly affected.

The project contributes meaningfully to local socio-economic development, employment creation and sustainable food production, while operating through a contained, water-efficient agricultural system.

Subject to the implementation of the recommended mitigation measures and compliance with applicable water use authorisations, the development is considered both needed and desirable within the context of Section 24G regularisation and the principles of sustainable development contained in NEMA.

Indicate the benefits that the activity has/had for society in general and also indicate what benefits the activity has/had for the local communities where it is located:

The activity provides both broader societal benefits and direct local community benefits through sustainable agricultural production, employment creation and local economic stimulation.

At a societal level, the development contributes to improved food security through the production of fresh, locally grown vegetables, herbs and tilapia using a water-efficient, closed-loop aquaponics system. The system minimises water consumption and eliminates the use of synthetic fertilisers and pesticides, thereby promoting environmentally responsible agricultural practices. By supplying produce to local markets, the development reduces reliance on long-distance transport of fresh produce, thereby supporting more resilient and localised food supply chains.

From a socio-economic perspective, the project represents a capital investment of approximately R12 million and has generated employment during both the construction and operational phases. During construction, approximately 15 skilled and 35 unskilled employment opportunities were created. During the operational phase, the facility supports approximately 12 skilled and 15 unskilled positions. Over the first ten years of operation, employment-related expenditure is estimated at approximately R12 million, with



approximately 90% of this value accruing to previously disadvantaged individuals. This contributes meaningfully to income generation, poverty alleviation and skills development within the local area.

At a local community level, the activity stimulates secondary economic benefits through procurement of local goods and services, including construction services, maintenance, agricultural inputs and transport. The project also supports skills transfer in aquaponics, greenhouse production and farm management, which may enhance long-term agricultural capacity within the region.

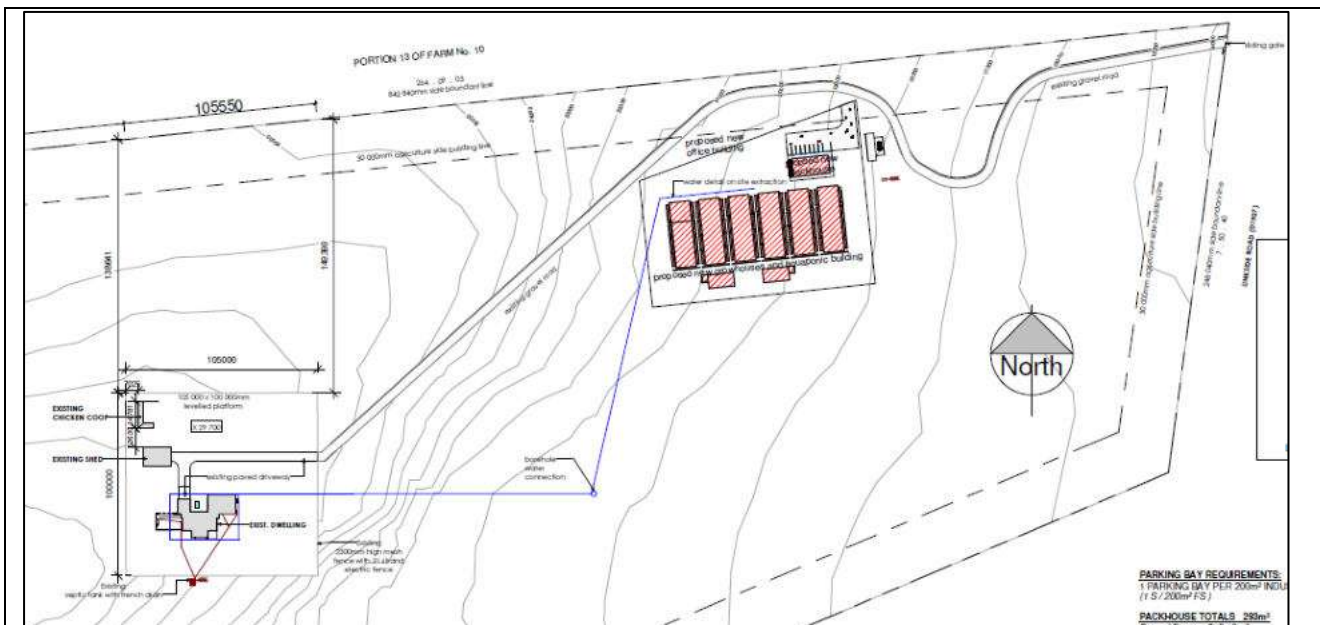
Overall, the activity contributes positively to local economic development, sustainable agriculture and inclusive employment creation within the Nelson Mandela Bay Municipality.

#### 4. PHYSICAL SIZE OF THE ACTIVITY

|                                                                                                                      |                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Indicate the physical spatial size of the activity as well as associated infrastructure (footprints):                | <b>Infrastructure platform (primary footprint):</b> ±1.05 ha (10 500 m <sup>2</sup> )                               |
| Indicate the area that has been transformed / cleared to allow for the activity as well as associated infrastructure | 3-4Ha                                                                                                               |
| Total area (sum of the footprint area and transformed area)                                                          | <b>Total disturbed footprint (including roads and ancillary works):</b> ±3 – 4 ha (30 000 – 40 000 m <sup>2</sup> ) |

#### 5. SITE ACCESS

|                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Was there an existing access road?                                                                                                                                                                                                                                                                                                                                                                                | <b>NO</b> |
| If no, what was the distance over which the new access road was built?                                                                                                                                                                                                                                                                                                                                            | ±800m     |
| Describe the type of access road constructed: [indicate the position of the access road on the site plan]                                                                                                                                                                                                                                                                                                         |           |
| Access to the property is obtained directly from Lakeside Road via a newly constructed farm access road. The access road is a gravel-surfaced agricultural road (see Figure 16 & Figure 17), constructed at ground level with compacted fill and without formal kerbing or paved surfacing. The road provides vehicular access from the public road to the internal farmstead platform and production facilities. |           |
| Internally, circulation roads are also gravel-based, linking the access entrance to the residential dwelling, packhouse, grow houses and aquaponics facility. A short section of paved driveway exists adjacent to the dwelling, while parking areas near the packhouse are surfaced with interlocking paving (see Figure 18).                                                                                    |           |
| The access road is rural in character, designed for light to medium agricultural vehicles and service vehicles, and does not constitute a formal municipal-standard roadway.                                                                                                                                                                                                                                      |           |



|                                                                                                                                        |                                                   |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                        |                                                   | assessment framework, and list compliance and enforcement regulations.                                                                                                                                                                                                                                                        |                                                                                                                                                             |
| The National Forest Act No. 84 of 1998 (NFA) & List of Protected Tree Species under the National Forest Act, 1998 (Act No. 84 of 1998) | Department of Environment, Forestry and Fisheries | Provides for the protection of certain listed tree species.                                                                                                                                                                                                                                                                   | The terrestrial assessment did not indicate the presence of any protected trees.                                                                            |
| Nelson Mandela Bay Metropolitan Spatial Development Framework                                                                          | NMBM                                              | The Nelson Mandela Bay SPD gives effect to the vision, goals and objectives of the municipal Integrated Development Plan.                                                                                                                                                                                                     | To be done, if required                                                                                                                                     |
| The Eastern Cape Biodiversity Conservation Plan (ECBCP)                                                                                | DEA & DEDEAT Eastern Cape                         | The Bioregional Plan provides the spatial plan that shows terrestrial and aquatic features in the Eastern Cape that are critical for conserving biodiversity and maintaining ecosystem functioning.                                                                                                                           | The proposed development is not located within a CBA of the NMBM's Bioregional Plan or the Aquatic CBA Eastern Cape Biodiversity Conservation Plan (ECBCP). |
| Eastern Cape the Provincial Nature Conservation Ordinance of 1974 (PNCO)                                                               | DEA & DEDEAT Eastern Cape                         | The Provincial Nature Conservation Ordinance (PNCO) protects the endangered and protected flora outside of protected areas. Species classified as Schedule 3 are endangered species. Species classified as Schedule 4 are protected species. A permit is required for the removal or destruction of species on the PNCO list. | A Terrestrial Specialist was appointed to conduct the site inspection and identify species of special concern and protection.                               |
|                                                                                                                                        |                                                   |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                             |

| POLICY/ GUIDELINES                                                                                                         | ADMINISTERING AUTHORITY |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Draft National Guideline for Consideration of Climate Change Implications in Applications for Environmental Authorisations | DEA                     |
|                                                                                                                            |                         |
|                                                                                                                            |                         |
|                                                                                                                            |                         |

#### 8. WASTE QUANTITIES (WHERE THE ACTIVITY IS A LISTED WASTE MANAGEMENT ACTIVITY)

Indicate or specify types of waste and list the estimated quantities (expected to be) managed daily (should you need more columns, you are advised to add more)

| Hazardous waste | Non-hazardous waste                      | Total waste handled (tonnes per day) |
|-----------------|------------------------------------------|--------------------------------------|
| n/a             | Agricultural waste (plant & root matter) | ±20-50kg per day                     |
|                 | Domestic Waste                           | ±10-20 kg per month                  |
|                 | Waste Water effluent                     | <1m <sup>3</sup> per day             |

Source of information supplied in the table above Mark with an "X"

Determined from volumes  
Determined with weighbridge/scale  
Estimated

|                 |
|-----------------|
| See above table |
| n/a             |
| See above table |

#### Recovery, Reuse, Recycling, treatment and disposal quantities:

Indicate the applicable waste types and quantities expected to be disposed of and salvaged annually:

| TYPES OF WASTE       | MAIN SOURCE (NAME OF COMPANY) | QUANTITIES             |                           | ON-SITE RECOVERY REUSE RECYCLING TREATMENT OR DISPOSAL                                                | OFFSITE RECOVERY REUSE RECYCLING TREATMENT OR DISPOSAL | OFFSITE DISPOSAL |
|----------------------|-------------------------------|------------------------|---------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------|------------------|
|                      |                               | TONS/MONTH             | M <sup>3</sup> /MONTH     | method & location                                                                                     | method location and contractor details                 |                  |
| Vegetation / Compost | Aquaponics facility           | 0.3-1.5 tons / month   | n/a                       | Used for compost on farm                                                                              | n/a                                                    | n/a              |
| Domestic Waste       | Residence & offices           | 0.01-0.02 tons / month | n/a                       | Glass, plastic, paper & general waste is separated and collected by Green Cycle who recycle the waste | Green Cycle recycles the waste                         | n/a              |
| Waste Water effluent | Residence & offices           | n/a                    | <30m <sup>3</sup> per day | Effluent is processed in the septic tank and French drain. Grey water is used for garden use          | On site                                                | On site          |

#### 9. GENERAL (WHERE THE ACTIVITY IS A LISTED WASTE MANAGEMENT ACTIVITY)

April to October (winter/spring) predominantly westerly/north-westerly

October to April (summer/autumn) predominantly south-westerly and easterly

|                  |     |
|------------------|-----|
| November – April | n/a |
| May - October    | n/a |

The size of population to be served by the facility

N/A

|                 | Mark with "X" | Comment |
|-----------------|---------------|---------|
| 0-499           |               |         |
| 500-9,999       |               |         |
| 10,000-199,999  |               |         |
| 200,000 upwards |               |         |

**PART 1 - SECTION C: PROPOSED PUBLIC PARTICIPATION****1. PUBLIC PARTICIPATION PROCESS**

The person conducting the public participation process must fulfil the requirements outlined in Chapter 6 of the 2014 NEMA EIA Regulations as amended in April 2017 and must take into account any applicable guidelines published in terms of Section 24J of NEMA, as well as any other guidance provided by the Department.

Please highlight the appropriate box below to indicate the public participation process that has been or is proposed to be undertaken, including exemptions that have been/will be applied for: (Note that in the event that exemptions are to be applied for, please note that the Exemption Regulations are to be complied with and the Department is to be consulted in order to determine the process and order of events).

|                                                                                                                                                                                                                                                                                                                    |            |                  |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------|------------|
| <b>1. In terms of regulation 41 of the EIA Regulations, 2014 -</b>                                                                                                                                                                                                                                                 |            |                  |            |
| <b>(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of -</b>                                                                                                                                                                   |            |                  |            |
| <b>(i) the site where the activity to which the application relates is or is to be undertaken; and</b>                                                                                                                                                                                                             | <b>YES</b> | <b>EXEMPTION</b> |            |
| <b>(ii) any alternative site – there is no alternative site</b>                                                                                                                                                                                                                                                    | <b>YES</b> | <b>EXEMPTION</b> |            |
| <b>(b) giving written notice, in any manner provided for in section 47D of the NEMA, to –</b>                                                                                                                                                                                                                      |            |                  |            |
| <b>(i) the occupiers of the site and, if the applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;</b> | <b>YES</b> | <b>EXEMPTION</b> | <b>N/A</b> |
| <b>(ii) owners, persons in control of, 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;</b>                                                                                                              | <b>YES</b> | <b>EXEMPTION</b> |            |
| <b>(iii) 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;</b>                                                                                                                                   | <b>YES</b> | <b>EXEMPTION</b> |            |
| <b>(iv) the municipality (Local and District Municipality) which has jurisdiction in the area;</b>                                                                                                                                                                                                                 | <b>YES</b> | <b>EXEMPTION</b> |            |
| <b>(v) any organ of state having jurisdiction in respect of any aspect of the activity; and</b>                                                                                                                                                                                                                    | <b>YES</b> | <b>EXEMPTION</b> |            |
| <b>(vi) any other party as required by the Department;</b>                                                                                                                                                                                                                                                         | <b>YES</b> | <b>EXEMPTION</b> | <b>N/A</b> |
| <b>(c) placing an advertisement in -</b>                                                                                                                                                                                                                                                                           |            |                  |            |
| <b>(i) one local newspaper; or</b>                                                                                                                                                                                                                                                                                 | <b>YES</b> | <b>EXEMPTION</b> |            |
| <b>(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;</b>                                                                                                                                | <b>YES</b> | <b>EXEMPTION</b> | <b>N/A</b> |



|                                                                                                                                                                                                                                                         |     |           |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------|-----|
| (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 district municipality in which it is or will be undertaken | YES | EXEMPTION | N/A |
| (e) using reasonable alternative methods, as agreed to by the Department, in those instances where a person is desirous of but unable to participate in the process due to—<br><br>(i) illiteracy; (ii) disability; or (iii) any other disadvantage.    | YES | EXEMPTION | N/A |
| If you have indicated that “EXEMPTION” applies to any of the above, then a separate Application for Exemption must be submitted.                                                                                                                        |     |           |     |
| 2. The NEM: AQA and NEM:WA requires that a notice must be placed in at least two newspapers. N/A                                                                                                                                                        |     |           |     |
| If applicable, have/will an advertisement be placed in at least two newspapers?                                                                                                                                                                         | YES | NO        |     |
| If “NO”, then an application for exemption from the requirement must be applied for.                                                                                                                                                                    |     |           |     |

**Note:** It is no longer possible to obtain permission to deviate from the requirements to give notice to potential interested and affected parties. Unless exemption has been granted from a particular requirement, the requirement must be met. If an application for exemption is refused, the requirement in question must be met.

## **2. PUBLIC PARTICIPATION UNDERTAKEN PRIOR TO THE SUBMISSION OF THIS APPLICATION**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Where public participation in terms of Regulations 40(3) and 41 was undertaken prior to submission of this application, please provide a summary of the steps followed to date.</b></p> <ul style="list-style-type: none"> <li>• A 30-day Public Participation Process for notifying the general public with an advertisement in the local newspaper (the Herald) and a notice board that was erected at the site on 9 June 2026. The time to register as an I&amp;AP is between 9 June 2026 – 10 July 2026 (considering Regulations 3(2) NEMA 2014 as amended 2017). The Public Participation Process consisted of: <ul style="list-style-type: none"> <li>○ One notice board, placed at the boundary of the site, at a location that is conspicuous to and accessible by the public at the boundary of the site 9 June 2026. This provides time for potential I&amp;AP's to register and details to access a draft document from Digital Soils Africa's website for comment, should they wish to comment.</li> <li>○ An advertisement in the Herald was placed on 9 June 2026 to provide potential I&amp;AP's to register/comment. This provides time for potential I&amp;AP's to register and details to access a draft document for comment, should they wish to comment.</li> </ul> </li> <li>• A written notice (which consisted of a Background Information Document and cover letter) was sent via email to the municipal councillor of Ward 40 (which is the ward in which the site is situated) of the Nelson Mandela Bay Metro Municipality, and the organs of the state that have jurisdiction in respect of any activity and the neighbours to the site on 9 June 2026. A 30-day comment period has been provided and will end on 10 July 2026.</li> </ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Cover letter and BID**

9 June 2026

Dear Interested and Affected Party

**SECTION 24G APPLICATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998, FOR UNLAWFUL COMMENCEMENT OF VEGETATION CLEARANCE ON PORTION 217 (A PTN OF PTN 87) OF THE FARM CRAGGA KAMMA NO. 23. APPLICANT: MR. HARTSLIEF**

Mr. Allan Richard Hartsliet appointed Digital Soils Africa (Pty) Ltd (DSA) to conduct the necessary environmental impact assessment and public participation for the above-mentioned project.

In terms of Section 41 of NEMA Regulations, you have been identified as an Interested and Affected Party and are invited to participate in public participation. All written comments will be responded to and forwarded to the relevant departments, in the form of a Public Participation Report.

The purpose of this letter and attached document is therefore to:

- Inform you of the locality of the proposed environmental authorization application.
- Allow you the opportunity to raise concerns or comments in respect of the proposed project detailed in the attached Background Information Document.

**Public Participation Process**

Attached, please find the Background Information Document (BID). The purpose of the BID is to provide you with *basic* information regarding the proposed project and provide the opportunity to register as interested and affected parties and grant you the opportunity to raise any comments you might have on the proposed project.

If you would like to participate in the process, please register as an interested and affected party (I&AP), in writing. Comments/registration must be received **on or before 10 July 2026** no later than 5pm. If no comments are received from you, it will then be regarded that you do not have any comments.

**Way Forward**

- The Draft Section 24G document will be subjected to review by all registered I&AP's and relative governmental departments, following the time frames as stipulated in Section 3 (1) & (8) of the NEMA regulations (30 days).
- The document will be made available on the DSA website, [www.dsafrica.co.za](http://www.dsafrica.co.za). Please follow the link to Environmental, Documents, and choose the Hartsliet link.
- All information received will form part of the public record and may be made available to the public. By submitting comments, you consent to the inclusion of your personal information in public participation

records, in accordance with POPIA. Correspondence throughout the remainder of the environmental process, including notification of the Section 24G Report will be distributed to registered I&APs only.

- All comments received and responses written during the 30 days will be captured in the Public Participation Report and submitted to the Department of Economic Development and Environmental Affairs (DEDEAT).
- All required documents will be submitted to the relevant department for decision making.
- If the applications are found acceptable, the relevant department will either issue or reject the Environmental Authorisation.
- As an I&AP's, you will be notified of the final decision of the relevant departments.

Yours sincerely



**Natalie Sharp**

Pri.Sci.Nat (Reg nr. 123443)

Reg. EAP (EAPASA) (2020/230)

Member of IAIAAs (7237)



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BACKGROUND INFORMATION  
DOCUMENT REGARDING A  
SECTION 24G APPLICATION FOR  
THE UNLAWFUL  
COMMENCEMENT OF  
VEGETATION CLEARANCE,  
RESIDENTIAL DEVELOPMENT  
AND AGRICULTURAL  
INFRASTRUCTURE ON PORTION  
217 (A PORTION OF PORTION  
87) OF FARM CRAGGA KAMMA  
NO. 23

---

ALLAN RICHARD HARTSLIEF

9 JUNE 2026



**DSA**  
Digital Soils Africa



+27 82 414 0472



[www.dsafrica.co.za](http://www.dsafrica.co.za)



[natalie@dsafrica.co.za](mailto:natalie@dsafrica.co.za)



Walmer

Port Elizabeth

Directors:

Dr Darren Bouwer

Prof Johan Van Tol

Prof George Van Zijl

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## PURPOSE OF THIS DOCUMENT

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The purpose of this document is to provide all I&AP's with information about the intent of Mr. Allan Richard Hartsliet to apply for a Section 24G for the development of a residential house and a commercial aquaponics facility. The farm is 29.9535Ha in total of which 3-4Ha have been disturbed.

As an identified I&AP, you are invited to register and comment on any aspect related to the proposed development between 9 June 2026 – 10 July 2026 no later than 5pm.

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## BRIEF PROJECT DESCRIPTION

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The site is situated on Portion 217 (a Ptn of Ptn 87) of the Farm Cragga Kamma No. 23 within the Nelson Mandela Bay Municipality (33° 57' 53.43" S; 25° 24' 48.96" E – centre point).



**Figure 1:** Site location - The site is indicated as the red polygon.

Digital Soils Africa (Pty) LTD (DSA) was tasked by Mr. Hartsliet to conduct environmental investigations and complete the Section 24G application for developing of his farm.

The development consists of a residential dwelling, access road, reservoir, livestock handling facilities, composting area, fencing, agricultural support infrastructure and a commercial aquaponics facility. The development was undertaken between 2023 and 2025 and resulted in the disturbance of approximately 3–5 hectares of land on the 29.95 hectare property. The purpose of the Section 24G



application is to assess the environmental impacts associated with the unauthorised commencement of these activities and to seek retrospective environmental authorisation from the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT).

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## POTENTIAL ENVIRONMENTAL ISSUES

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The Section 24G process includes an assessment of the environmental impacts associated with the unauthorised vegetation clearance and development that has already taken place on the property. Specialist studies were undertaken to evaluate the potential effects of the development on biodiversity, wetlands, heritage resources and palaeontological resources.

The key environmental issues identified and assessed include:

- Loss of approximately 3–5 hectares of indigenous vegetation associated with the establishment of a residential dwelling, aquaponics facility, access roads and supporting agricultural infrastructure;
- Potential impacts on the ecological functioning of nearby seepage wetlands and associated aquatic habitat;
- Potential impacts on biodiversity, including habitat loss and fragmentation within an area historically associated with Critically Endangered Algoa Sandstone Fynbos (formerly mapped as Colleen Glen Grassy Fynbos);
- Risks associated with invasive alien plant species and the need for ongoing vegetation management and rehabilitation;
- Potential impacts on archaeological, heritage and palaeontological resources; and
- Potential cumulative impacts associated with the transformation of natural vegetation within the surrounding landscape.

Specialist investigations concluded that the development is located outside the delineated wetland boundaries and associated 32 metre regulated area, no significant archaeological or heritage resources were identified on the site, and no significant palaeontological impacts are anticipated. Mitigation measures have been recommended to manage invasive vegetation, protect wetland areas and maintain the remaining natural habitat on the property.

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## PUBLIC PARTICIPATION

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In terms of the NEMA, public participation forms an integral part of the environmental assessment process. The public participation process provides people who may be affected by the proposed development with an opportunity to provide comments and raise issues of concern about the project or make suggestions that may result in enhanced benefits for the project.

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Comments and issues raised during the public participation process will be captured, evaluated, and included in a Public Participation Report. These issues will be addressed and included in the final Section 24G document, which will be submitted to the Department of Economic Development and Environmental Affairs (DEDEAT).

To register and/or submit a comment as an Interested and Affected Party, please respond in writing to the following email: [natalie@dsafrica.co.za](mailto:natalie@dsafrica.co.za) on or before **10 July by 5pm**.

Alternatively, a copy of the Draft Section 24G document is also available on the DSA website at [www.dsafrica.co.za](http://www.dsafrica.co.za) for a full assessment of impacts. Please follow the link to Environmental, and Documents, and choose the Hartsliet link.

If you have any other questions or inquiries, please do not hesitate to contact the office at 067 622 5687. If no comments are received from you, it will then be regarded that you do not have any comments.

3. LIST OF THE STATE DEPARTMENTS CONSULTED/TO BE CONSULTED

| Provide a list of all the State departments that will be/have been consulted, including the name and contact details of the relevant official.                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Nelson Mandela Bay Metro Municipality<br/> NMBM: Executive Director Public Health<br/> P O Box 116<br/> Central<br/> 6000<br/> Att: Mr. Sizwe Mvunelawa (secretary is Nozuko Ralarala)<br/> 041 506 1394 / 041 505 4578<br/> Email: nralarala@mandelametro.gov.za</p>           |
| <p>NMBM: Public Health Sub-Directorate: Environmental Management<br/> Att: Mrs. Jill Miller<br/> jmiller@mandelametro.gov.za<br/> P O Box 116<br/> Central<br/> 6000<br/> 041 506 1332</p>                                                                                         |
| <p>Ward 40 Councillor<br/> Cllr. Jason Grobbelaar<br/> jasongrob@gmail.com<br/> 084 338 8902</p>                                                                                                                                                                                   |
| <p>Sarah Baartman District Municipality<br/> Contact Division: Infrastructure and Planning<br/> Tel: 041 508 7099 / 041 508 7111<br/> Email: cmabindla@sbdm.co.za<br/> Address: P O Box 318<br/> 32 Govern Mbeki Avenue (Standard Bank Building)<br/> Port Elizabeth<br/> 6000</p> |
| <p>DWS (Environmental assessment)<br/> Private Bag X6041; Port Elizabeth; 6000<br/> Ntombiyamayirha Mpumela and Sonke Ngxeba<br/> MpumelaN@dws.gov.za or NgxebaS@dws.gov.za</p>                                                                                                    |
| <p>Land Claims Commission<br/> Mr Zama Memela (Chief Director: Eastern Cape)<br/> 043 743 3687<br/> Zama.memela@dalrrd.gov.za</p>                                                                                                                                                  |
| <p>Department of Economic Development, Environmental Affairs and Tourism<br/> Private Bag X 5001<br/> Greenacres<br/> 6057<br/> Andries Struwig and Vuyo Maqutu<br/> 041 508 5840<br/> Dayalan.govender@dedea.gov.za &amp; Vuyo.Maqutu@dedea.gov.za</p>                            |
| <p>Department of Environment, Forestry and Fisheries (DEFF)<br/> 54 Paterson Road<br/> North End<br/> 6000<br/> 063 450 4427<br/> Mr. Zinzile Mtotywa<br/> zmtotywa@dffe.gov.za</p>                                                                                                |
| <p>Department of Agriculture, Land Reform and Rural Development<br/> 9 Arundel Crescent,</p>                                                                                                                                                                                       |

|                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Stirling,<br/>East London<br/>5200<br/>G. P. Dumse<br/>Email: GcinileD@dalrrd.gov.za</p>                                                                                                                                                                                                                                                      |
| <p>Eastern Cape Parks and Tourism<br/>P O Box 11235<br/>Southernwood<br/>East London<br/>5213<br/>Mrs. Londeka Jilimane (Environmental Planner)<br/>Londeka.jilimane@ecpta.co.za<br/>043 705 4400</p>                                                                                                                                            |
| <p>Eastern Cape Provincial Heritage Resources Authority<br/>Private Bag X0020<br/>Qonce<br/>5600<br/>Ms. Ayanda Mncwabe-Mama<br/>Ayanda.mncwaba-mama@ecsrac.gov.za</p>                                                                                                                                                                           |
| <p>Department of the Eastern Cape Transport<br/>Petros Mbira<br/>Petros.mbira@ectransport.gov.za<br/>064 890 3018</p>                                                                                                                                                                                                                            |
| <p>Civil Aviation<br/>011 545 1000<br/>environment@caa.co.za</p>                                                                                                                                                                                                                                                                                 |
| <p>Port Elizabeht office:<br/>Lt. Col S. Maritz<br/>RWU EC<br/>S_ikking@yahoo.com</p> <p>Defense Force<br/>National Office<br/>info@dod.mil.za</p> <p>Lt. Col. Zondi<br/>kebasenosi@yahoo.com<br/>Military Integrated Environmental Management<br/>Department of Defense<br/>Private Bag X319<br/>Pretoria<br/>012 402 2824<br/>065 304 7985</p> |

**Note: A State department consulted in terms of Section 24O(2) of NEMA and Regulations 3(4) and 43(2) must within 30 days from the date of the Department's request for comment, submit such comment in writing to the Department. The applicant/EAP is therefore required to inform this Department in writing when the Basic Assessment Report / Scoping Report / Environmental Impact Assessment Report or any other information / report as directed by the Department is submitted to the relevant State Departments. Upon receipt of this confirmation, this Department will in accordance with Section 24O (2) & (3) of the NEMA (as amended), inform the relevant State Departments of the commencement date of the 30 day commenting period.**

## **PART 1 – SECTION D: ANNEXURES TO PART 1**

The following annexures must be attached where appropriate:

| <b>Appendix</b>                                                                                                                                                                                                                                                        | <b>Cross out (“<input checked="" type="checkbox"/>”) the box if Annexures attached</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Annexure A: list of individuals or companies where there is more than one transgressor.                                                                                                                                                                                | n/a                                                                                    |
| Annexure B: List of landowners in the event that there is more than one landowner.                                                                                                                                                                                     | n/a                                                                                    |
| Annexure C: Landowners’ consent where the transgressor is not the landowner.                                                                                                                                                                                           | n/a                                                                                    |
| Annexure D: List of municipalities where the activities span more than one municipality                                                                                                                                                                                | <b>Only the NMBM is applicable</b>                                                     |
| Annexure E: List of properties where there are more than one property involved.                                                                                                                                                                                        | <b>Only one property is applicable</b>                                                 |
| Annexure F: List of magisterial districts or towns if more than one is affected.                                                                                                                                                                                       | <b>Only the NMBM is applicable</b>                                                     |
| Annexure G: Map depicting the zonings of various portions in the event where there is more than one zoning.                                                                                                                                                            | <b>The whole property is zoned as Agriculture</b>                                      |
| Annexure H: List of all planning approvals where such have been granted                                                                                                                                                                                                | n/a                                                                                    |
| Annexure I Location map                                                                                                                                                                                                                                                | <b>X</b>                                                                               |
| Annexure J: Site plan(s)                                                                                                                                                                                                                                               | <b>X</b>                                                                               |
| Annexure K: Photographs                                                                                                                                                                                                                                                | <b>X</b>                                                                               |
| Annexure L: Permit(s) / license(s) from any other organ of state including service letters from the municipality                                                                                                                                                       | n/a                                                                                    |
| Annexure M: Any Other (describe)<br>M1: Environmental Impact Assessment<br>M2: Operational Environmental Management Plan<br>M3: Wetland Assessment – Dr. Brian Colloty<br>M4: Terrestrial Assessment – Dr. Paul-Pierre Steyn<br>M5: Heritage and Palaeontology Reports | <b>X</b>                                                                               |

## **PART 2**

### **PART 2 – SECTION A: DIRECTIVE**

Section 24G(1) of the National Environmental Management Act, 1998 (Act 107 of 1998) (“NEMA”) provides that on application by a person who has commenced with a listed or specified activity without an environmental authorisation in contravention of section 24F(1); or a person who has commenced, undertaken or conducted a waste management activity without a waste management licence in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (“NEM:WA”) the Minister, Minister responsible for mineral resources or MEC concerned (or the official to which this power has been delegated), as the case may be, may direct the applicant to-

|     |                                                                                                                                                                                                                                                                                                                                          |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| i   | immediately cease the activity pending a decision on the application submitted in terms of this subsection                                                                                                                                                                                                                               |
| ii  | investigate, evaluate and assess the impact of the activity on the environment                                                                                                                                                                                                                                                           |
| iii | remedy any adverse effects of the activity on the environment                                                                                                                                                                                                                                                                            |
| iv  | cease, modify or control any act, activity, process or omission causing pollution or environmental degradation                                                                                                                                                                                                                           |
| v   | contain or prevent the movement of pollution or degradation of the environment                                                                                                                                                                                                                                                           |
| vi  | eliminate any source of pollution or degradation                                                                                                                                                                                                                                                                                         |
| vii | compile a report containing-                                                                                                                                                                                                                                                                                                             |
| aa  | a description of the need and desirability of the activity                                                                                                                                                                                                                                                                               |
| bb  | an assessment of the nature, extent, duration and significance of the consequences for or impacts on the environment of the activity, including the cumulative effects and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity |

|      |    |                                                                                                                                                                                                                                           |
|------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | cc | a description of mitigation measures undertaken or to be undertaken in respect of the consequences for or impacts on the environment of the activity                                                                                      |
|      | dd | a description of the public participation process followed during the course of compiling the report, including all comments received from interested and affected parties and an indication of how the issues raised have been addressed |
|      | ee | an environmental management programme                                                                                                                                                                                                     |
| viii |    | provide such other information or undertake such further studies as the Minister, Minister responsible for mineral resources or MEC, as the case may be, may deem necessary.                                                              |

You are hereby provided with an opportunity to make representations on any or all of the abovementioned instructions, including where you are of the opinion that any of these instructions are not relevant for the purposes of your application, setting out the reasons for your assertion. Kindly note further that, after taking your representations into account, a final directive may be issued.

The Applicant acknowledges that the development commenced without prior environmental authorisation and has accordingly submitted this Section 24G application to regularise the activity.

The Applicant hereby makes representations on the possible directives contemplated in Section 24G(1) of NEMA as follows:

**(i) Immediate cessation of the activity**

**Representation:**

The activity is already fully constructed and largely operational. The aquaponics facility operates as a contained closed-loop system with no effluent discharge, and the infrastructure footprint is confined to an already disturbed agricultural platform outside the 32 m wetland buffer.

**Immediate cessation would:**

- Result in job losses (±27 operational positions)
- Cause loss of perishable agricultural produce
- Undermine the socio-economic benefits already established
- Not materially reduce environmental risk, as impacts are already contained

Given that:

- No ongoing clearing is taking place,
- No expansion beyond the disturbed footprint is occurring, and
- Mitigation measures are already implemented,

It is submitted that an immediate cessation directive would not be environmentally justified nor proportionate.

**(ii) Investigate, evaluate and assess impacts**

**Representation:**

A full retrospective environmental assessment has already been undertaken (Annexure M1), including:

- Wetland delineation and aquatic assessment
- Updated vegetation assessment
- Biodiversity screening tool analysis
- Socio-economic assessment
- Impact identification and mitigation measure.

Therefore, this instruction has already been complied with through submission of the 24G application documentation.

**(iv) Cease, modify or control pollution or degradation**

**Representation:**

There is:

- No discharge of effluent into wetlands
- No industrial processing



- No hazardous waste generation
- No stormwater discharge into aquatic systems
- The development is agricultural in nature and currently controlled and contained.

Accordingly, this instruction is considered already satisfied through existing infrastructure design and operational controls.

**(v) Contain or prevent movement of pollution**

**Representation:**

Containment measures already implemented:

- Closed-loop aquaponics
- Runoff capture and reuse
- Septic systems for domestic wastewater
- No nutrient discharge to wetlands
- Defined development platform
- Stormwater management shaping.

No additional containment infrastructure is presently required.

**(vi) Eliminate source of pollution**

There is no identifiable pollution source associated with the development.

- No chemical fertilisers
- No pesticide storage
- No industrial effluent
- Organic waste composted on site
- Tilapia contained within tanks

Therefore, this instruction is not applicable in the current circumstances.

**(vii) Compile report including (aa–ee)**

This has already been complied with through submission of:

- Need and Desirability section
- Full impact assessment
- Mitigation measures
- Public participation process documentation
- Environmental Management Programme (EMPr)

These are incorporated within the submitted 24G documentation.

**(viii) Further information or studies**

The Applicant undertakes to provide any additional reasonable specialist input that the Department may require.

However, based on:

- Historic transformation of the site
- Absence of intact natural vegetation
- Infrastructure located outside wetland buffer
- Contained aquaculture system
- Limited footprint ( $\pm 1.05$  ha permanent footprint)
- Total disturbance limited to  $\pm 3-4$  ha on a 29.95 ha property

It is submitted that sufficient information has already been provided to enable a decision.

## **PART 2 - SECTION B: DEFERRAL**

Section 24G(7) of the NEMA provides that if at any stage after the submission of an application it comes to the attention of the Minister, the Minister responsible for mineral resources or the MEC, that the applicant is under criminal investigation for the contravention of, or failure to comply with, section 24F(1) of the NEMA or section 20(b) of the NEM:WA, the Minister, Minister responsible for mineral resources or MEC may defer a decision to issue an environmental authorisation until such time as the investigation is concluded and-

- (a) the National Prosecuting Authority has decided not to institute prosecution in respect of such contravention or failure;
- (b) the applicant concerned is acquitted or found not guilty after prosecution in respect of which such contravention or failure has been instituted; or
- (c) the applicant concerned has been convicted by a court of law of an offence in respect of such contravention or failure and the applicant has in respect of the conviction exhausted all the recognised legal proceedings pertaining to appeal or review.

Kindly answer the following questions:

|                                                                                                                                                                                                                                     |  |    |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|--|
| Are you, the applicant, being investigated for the contravention of section 24F(1) of the NEMA in respect of a matter that <u>is not subject to this application</u> and in any province in the Republic?                           |  | NO |  |
| If yes provide details of the offence being investigated and authority conducting the investigation.<br>If uncertain provide details of the activity or activities in relation to which you suspect you may be under investigation. |  |    |  |
|                                                                                                                                                                                                                                     |  |    |  |
| Are you, the applicant, being investigated for the contravention of section 20(b) of the NEMWA in respect of a matter that is <u>not subject to this application</u> and in any province in the Republic?                           |  | NO |  |
| If yes provide details of the offence being investigated and authority conducting the investigation.<br>If uncertain provide details of the activity or activities in relation to which you suspect you may be under investigation. |  |    |  |
|                                                                                                                                                                                                                                     |  |    |  |
| Are you, the applicant, being investigated for an offence in terms of section 24F(1) of the NEMA or section 20(b) of the NEMWA <u>in terms of which this application directly relates?</u>                                          |  | NO |  |
| If yes provide details of the offence being investigated and authority conducting the investigation.<br>If uncertain provide details of the activity or activities in relation to which you suspect you may be under investigation. |  |    |  |

If you have answered yes to any of the above questions, you are hereby provided with an opportunity to make representations as to why the Minister, Minister responsible for mineral resources or MEC, as the case may be, should not defer the application as he or she is entitled to do under section 24G(7).

## **PART 2 - SECTION C: QUANTUM OF THE SECTION 24G FINE**

**(Note that the information contained in this section can be preliminary information that is to be updated once the necessary assessments as directed by the Department has been completed)**

Section 24G(4) of the NEMA makes it mandatory for an applicant to pay an administrative fine as determined by the competent authority before the Minister, Minister responsible for mineral resource or MEC may take a decision on whether or not to grant *ex post facto* environmental authorisation or a waste management licence as the case may be. The quantum of this fine may not exceed R5 million.

Having regard to the factors listed below, you are hereby afforded with an opportunity to make representations in respect of the quantum of the fine and as to why the competent authority should not issue a maximum fine of R5 million.

Please note that Part 1 of this section must be completed by an independent environmental assessment practitioner after conducting the necessary specialist studies.

Please also include in your representations whether or not the activities applied for in this application (if more than 1) are in your view interrelated and provide reasons therefor.

**PART 2 – SECTION C.1: THE IMPACTS OR POTENTIAL IMPACTS OF THE ACTIVITY/ACTIVITIES**

| Index | Socio Economic Impact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Place an “x” in the appropriate box |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
|       | Description of variable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                     |
|       | The activity is not giving, has not given and will not give rise to any negative socio-economic impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | X                                   |
|       | The activity is giving, has given, or could give rise to negative socio-economic impacts, but highly localised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |
|       | The activity is giving, has given, or could give rise to significant negative socio-economic and regionalized impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |
|       | The activity is resulting, has resulted or could result in wide-scale socio-economic impacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     |
|       | <p>Motivation:</p> <p>The development replaced a historically transformed grazing property with a small-scale agricultural and aquaponics facility that generates meaningful socio-economic benefits, including permanent and temporary employment, skills transfer, and local economic stimulation.</p> <p>The aquatic assessment confirms no impact on mainstem rivers or nationally significant freshwater ecosystems, and the vegetation assessment confirms the site was already historically transformed with no intact natural vegetation remaining</p> <p>There is:</p> <ul style="list-style-type: none"> <li>• No displacement of communities</li> <li>• No loss of agricultural production capacity</li> <li>• No impact on municipal services</li> <li>• No restriction of public access</li> <li>• No degradation of ecosystem services at a scale that would affect surrounding land users</li> </ul> <p>On the contrary, the activity has:</p> <ul style="list-style-type: none"> <li>• Created employment opportunities where none previously existed</li> <li>• Diversified agricultural production</li> <li>• Increased local economic participation</li> <li>• Contributed to food security through water-efficient production</li> </ul> <p>Any landscape change is confined to private agricultural land and does not translate into measurable negative socio-economic consequences.</p> |                                     |

| Index | Biodiversity Impact                                                                                                                                                            | Place an “x” in the appropriate box |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
|       | Description of variable                                                                                                                                                        |                                     |
|       | The activity is not giving, has not given and will not give rise to any impacts on biodiversity                                                                                | X                                   |
|       | The activity is not giving, has not given and could give rise to localised biodiversity impacts                                                                                |                                     |
|       | The activity is not giving, has not given and could give rise to significant biodiversity impacts                                                                              |                                     |
|       | The activity is, has or is likely to permanently / irreversibly transform/ destroy a recognised biodiversity 'hot-spot' or threaten the existence of a species or sub-species. |                                     |
|       | <p>Motivation:</p>                                                                                                                                                             |                                     |

The development has occurred within a historically transformed agricultural landscape. The vegetation assessment confirmed with reasonable certainty that the site was not covered by Critically Endangered Algoa Sandstone Fynbos prior to development.

The wetland study confirmed that while seepage wetlands occur within the broader property, the development footprint is located outside the delineated wetland boundaries and the 32 m regulated area. Furthermore, the site is not part of a Strategic Water Source Area, not linked to any mainstream rivers, and does not form part of a Fish Support Area. No listed or protected aquatic plant species were observed.

The development footprint is limited to approximately 3–4 ha of a 29.95 ha property (approximately 13% of the site), and permanent infrastructure is confined to ±1.05 ha. Surrounding areas remain undeveloped and are actively managed, including alien invasive control and rehabilitation measures.

However, despite the already transformed baseline condition, the clearing of indigenous vegetation (even if degraded), soil disturbance, infrastructure establishment, and potential alteration of runoff patterns inherently constitute biodiversity impacts at a local scale. These impacts include:

- Loss of secondary grass-dominated habitat
- Minor habitat fragmentation within the property
- Localised disturbance to terrestrial fauna
- Potential edge effects near seepage wetlands (managed through buffers and stormwater controls)

These impacts are confined to the immediate development footprint and do not extend to regional ecological systems.

The activity:

- Does not occur within a recognised biodiversity hotspot of intact habitat;
- Does not threaten the existence of any species or sub-species;
- Does not impact nationally prioritised freshwater ecosystems;
- Does not permanently destroy intact critical habitat.

With mitigation measures (wetland buffers, stormwater management, invasive control, contained aquaponics system, and EMP implementation), impacts remain localised and manageable.

| Index                                                                                                                                                                                                                                                                                                                           | Sense of Place Impact and / or Heritage Impact                                                                                                                       | Place an "x" in the appropriate box |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
|                                                                                                                                                                                                                                                                                                                                 | Description of variable                                                                                                                                              |                                     |
|                                                                                                                                                                                                                                                                                                                                 | The activity is in keeping with the surrounding environment and / or does not negatively impact on the affected area's sense of place and /or heritage               | X                                   |
|                                                                                                                                                                                                                                                                                                                                 | The activity is not in keeping with the surrounding environment and will have a localised impact on the affected area's sense of place and/or heritage               |                                     |
|                                                                                                                                                                                                                                                                                                                                 | The activity is not in keeping with the surrounding environment and will have a significant impact on the affected area's sense of place and/ or heritage            |                                     |
|                                                                                                                                                                                                                                                                                                                                 | The activity is completely out of keeping with the surrounding environment and will have a significant impact on the affected area's sense of place and/ or heritage |                                     |
| Motivation:                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                      |                                     |
| <p>The site is located within a rural-agricultural landscape that has been historically modified through grazing and associated farming practices. The vegetation assessment confirmed the absence of intact natural vegetation, and the aquatic assessment confirmed no impacts on recognised freshwater priority systems.</p> |                                                                                                                                                                      |                                     |

The heritage assessment further confirms that:

- No archaeological, palaeontological, burial, or built heritage resources occur within the development footprint.
- The site does not form part of a recognised cultural landscape.
- The heritage sensitivity of the footprint is low.
- Standard chance-find protocols are sufficient mitigation.

The development consists of a modest rural dwelling and small-scale aquaponics facility on a ±29.95 ha agricultural holding, with a permanent footprint of ±1.05 ha. This scale and land use remain consistent with surrounding smallholdings and agricultural properties.

There is therefore:

- No alteration of a heritage landscape.
- No destruction of heritage fabric.
- No intrusion into culturally significant viewsheds.
- No degradation of the area's established rural sense of place.

The development is agricultural in character and visually consistent with the broader farming context.

| Index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Pollution Impact                                                                         | Place an "x" in the appropriate box |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------|
| Description of variable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                          |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The activity is not giving, has not given and will not give rise to any pollution        |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The activity is giving, has given or could give rise to pollution with low impacts.      | X                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The activity is giving, has given or could give rise to pollution with moderate impacts. |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The activity is giving, has given or could give rise to pollution with high impacts.     |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The activity is giving, has given or could give rise to pollution with major impacts.    |                                     |
| <p>Motivation:</p> <p><b><u>Construction Phase</u></b></p> <p>During construction, temporary risks would have included:</p> <ul style="list-style-type: none"> <li>• Dust generation from earthworks and gravel road construction</li> <li>• Minor hydrocarbon leaks from machinery</li> <li>• General construction waste</li> </ul> <p>These impacts were short-term and are typical of small-scale rural developments. Construction waste was removed and the site is currently clean and operational.</p> <p><b><u>Operational Phase</u></b></p> <p>(a) Wastewater</p> <ul style="list-style-type: none"> <li>• Domestic wastewater from the dwelling and packhouse is treated via septic tanks and French drains.</li> <li>• No direct discharge to wetlands or watercourses occurs.</li> <li>• The aquatic assessment confirms no connection to mainstem rivers.</li> <li>• The aquaponics system operates as a closed-loop recirculating system with no effluent discharge.</li> </ul> |                                                                                          |                                     |

There remains a theoretical risk of nutrient enrichment should systems fail; however, with proper maintenance, this risk remains low.

(b) Stormwater

- The development platform is shaped to control runoff.
- Runoff from the aquaponics and greenhouse areas are captured and reused.
- Infrastructure is located outside the 32 m wetland buffer.

Potential impacts on seepage wetlands would only arise if stormwater systems were poorly maintained. With the EMP in place, risk is low.

(c) Solid Waste

- Organic waste is composted or managed via a worm farm.
- No industrial or hazardous waste streams are generated.
- No chemical fertilisers, pesticides or agrochemicals are stored on site.

Waste volumes are minimal and typical of small-scale agricultural operations.

(d) Air Emissions

- No point-source emissions.
- No combustion-based industrial processes.
- Only minor dust from gravel access roads.

**PART 2 – SECTION C.2.: COMPLIANCE HISTORY AND KNOWLEDGE OF THE APPLICANT**

| Index                                                                            | Previous administrative action (i.e. administrative enforcement notices) issued to the applicant in respect of a contravention of section 24F(1) of the National Environmental Management Act and/or section 20(b) of the National Environmental Management Waste Act | Place an “x” in the appropriate box |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Description of variable                                                          |                                                                                                                                                                                                                                                                       |                                     |
|                                                                                  | Administrative action was previously taken against the applicant in respect of the abovementioned provisions.                                                                                                                                                         |                                     |
|                                                                                  | No previous administrative action was taken against the applicant but previous administrative action was taken against a firm(s) on whose board one or more of the applicant’s directors sit or sat at the relevant time when the administrative action was taken.    |                                     |
|                                                                                  | Administrative action was <b>not</b> previously taken against the applicant in respect of the abovementioned provisions.                                                                                                                                              | <b>X</b>                            |
| Explanation of all previous administrative action taken in respect of the above: |                                                                                                                                                                                                                                                                       |                                     |

| Index                   | Previous Convictions in terms of section 24F(1) of the National Environmental Management Act and/or section 20(b) of the National Environmental Management Waste Act | Place an “x” in the appropriate box |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Description of variable |                                                                                                                                                                      |                                     |
|                         | The applicant was previously convicted in terms of either or both of the abovementioned provisions.                                                                  |                                     |



|                                                                                                                                                                                                                                                                                          |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| No previous convictions have been secured against the applicant but a conviction has been secured against a firm(s) on whose board one or more of the applicant's directors sit or sat; or a conviction was secured against a director of the applicant in his or her personal capacity. |          |
| The applicant has not previously been convicted in terms of either or both of the abovementioned provisions.                                                                                                                                                                             | <b>X</b> |
| Explanation of all previous convictions in respect of the above:                                                                                                                                                                                                                         |          |

| Index                                                                                  | Number of section 24G applications previously submitted by the applicant                                                                                                                                              | Place an “x”<br>in the<br>appropriate<br>box |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Description of variable                                                                |                                                                                                                                                                                                                       |                                              |
|                                                                                        | Previous applications in terms of section 24G of NEMA were submitted by the applicant.                                                                                                                                | n/a                                          |
|                                                                                        | No previous applications have been submitted by the applicant but a previous application(s) have been submitted by a firm(s) on whose board one or more of the applicant's directors sit or sat at the relevant time. | n/a                                          |
|                                                                                        | No previous applications have been submitted by the applicant but the applicant sat on the board of a firm that previously submitted an application.                                                                  | n/a                                          |
| Explanation in respect of all previous applications submitted in terms of section 24G: |                                                                                                                                                                                                                       |                                              |

## PART 2 – SECTION C.3: APPLICANT'S PERSONAL CIRCUMSTANCES

| Index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Applicant's legal persona          | Place an "x" in the appropriate box |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------|
| Description of variable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | The applicant is a natural person. | X                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | The applicant is a firm.           |                                     |
| Motivation:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                    |                                     |
| <p>The Applicant respectfully clarifies that although the property is registered in the name of Danburite CC for agricultural holding and VAT purposes, the decision to commence and undertake the development was taken and directed personally by Mr Allan Hartsliet, who resides on the property and exercises full control over its use and management.</p> <p>Danburite CC functions primarily as a landholding entity for agricultural administration and does not operate independently of Mr Hartsliet's personal direction, as he is the sole director. Similarly, ARH Agri operates as the aquaponics trading entity, with Mr Hartsliet as the sole director and controlling decision-maker.</p> <p>The commencement of the listed activities was not the result of a corporate resolution or autonomous juristic decision, but rather arose from Mr Hartsliet's personal decision-making as the directing mind behind the farming operations conducted on the property.</p> <p>In this regard, the Section 24G application has been submitted in the name of Mr Hartsliet as the person who caused and controlled the commencement of the activity, notwithstanding the administrative landholding structure. This clarification is provided to ensure that the correct responsible person is reflected for purposes of Section 24F and Section 24G of NEMA.</p> |                                    |                                     |

| <b>Index</b> | <b>Any other relevant information that the applicant would like to be considered.</b>                                                                                          |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <p>Motivate and explain fully:</p> <p>The Applicant respectfully requests that the following contextual factors be taken into account in the Department's decision-making:</p> |

### **Nature of the Contravention**

- The non-compliance relates to the procedural failure to obtain Environmental Authorisation prior to commencement, not to reckless or environmentally destructive conduct.
- The development occurred on a property already historically transformed through agricultural use.
- No intact natural vegetation of high conservation value was removed.
- Infrastructure was deliberately located outside the 32 m wetland buffer.
- No mainstream river systems or nationally prioritised freshwater ecosystems were impacted.

### **Environmental Stewardship Demonstrated**

- Active bracken fern control and rehabilitation measures implemented.
- Alien invasive species management ongoing.
- Closed-loop aquaponics system eliminates nutrient discharge.
- No synthetic fertilisers or pesticides used.
- Stormwater capture and reuse measures implemented.
- Infrastructure footprint confined to  $\pm 1.05$  ha within a  $\pm 29.95$  ha property.

The ecological condition of portions of the site has improved since acquisition.

### **Socio-Economic Contribution**

- Meaningful employment created where previously only low-intensity grazing occurred.
- Skills transfer in aquaponics and sustainable agriculture.
- Contribution to local food security.
- Approximately R12 million capital investment.
- Majority of employment benefits accrued to previously disadvantaged individuals.

The development provides public interest benefit.

### **Water Resource Considerations**

- Wetland delineation undertaken.
- No infrastructure within wetland boundaries.
- Section 21(c) & (i) WULA process to be initiated.
- No effluent discharge into aquatic systems.

### **Commitment Going Forward**

The Applicant commits to:

- Implementation of the EMPr.
- Maintenance of wetland buffers.
- Continued invasive species control.
- Compliance with all water use authorisations.
- No further expansion without required approvals.

The Applicant respectfully submits that the environmental harm associated with the activity is limited and localised, and that all identified impacts are mitigable and manageable through the measures already implemented and those contained in the EMPr. No irreversible ecological or heritage damage has occurred, and the activity remains consistent with sustainable agricultural land use within an already transformed rural landscape. The public interest benefits of the development, including employment creation and sustainable food production, outweigh the limited environmental footprint of the project. Furthermore, the Applicant has no

repeat contraventions, no prior enforcement history, no recorded pollution events, and the activity has not resulted in any cumulative or regional environmental degradation.

The Department is therefore requested to consider these factors in exercising its discretion under Section 24G, including in the determination of any administrative fine and conditions of authorisation.

NOTE: An explanation as to why the applicant did not obtain an environmental authorisation and/or waste management license must be attached to this application.

**PART 3 - DECLARATIONS**

**PART 3 - SECTION A: DECLARATION OF THE APPLICANT**

1. The Applicant

I, Allan Richard Hartsmit do hereby make oath and say that I –

- Am the applicant in this application / duly authorised by the applicant to complete and submit this application.
- The information contained in Part 1 and Part 2 of this application form (including annexures thereto) is within my own personal knowledge and is true.
- Appointed the environmental assessment practitioner as indicated under A1 above to act as the independent environmental assessment practitioner for this application.
- Undertake to provide the environmental assessment practitioner and the competent authority with access to all information at my disposal that is relevant to the application.
- Am responsible for complying with the directive or conditions of any environmental authorisation issued by the competent authority.
- Understand that I will be required to pay an administration fine in terms of S24G(4) of the Act and that a decision in this regard will only be forthcoming after payment of such a fine and deferral (where applicable); and
- Hereby indemnify, the government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which the applicant or environmental assessment practitioner is responsible in terms of the Act.

Signature of the applicant:

Name of company:

05/05/26

Date:

[Signature]

**Nikki Huntley CFP®**

**Alexander Forbes Financial Services (Pty) Ltd**

**FPI Membership No 103740**

Signature of the Commissioner of Oaths:

**256 Cape Road, Newton Park, Port Elizabeth, 6045**  
**Commissioner of Oaths Ex Officio**

5/6/2026

Date:

Commissioner of Oaths

Date: 5/6/26

Signature: [Signature]

Designation:

**CERTIFIED A TRUE COPY OF THE ORIGINAL**

Official stamp (below):

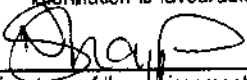
NOTE: Unless protected by law, all information contained in and attached to this application form may become public information on receipt by the competent authority. Upon request, any interested and affected party must be provided with the information contained in and attached to this application form.

**PART 3 – SECTION B: DECLARATION OF THE EAP**

2. The Independent Environmental Assessment Practitioner

I, Natalie Sharp do hereby make oath and say that I –

- a. act as the independent environmental assessment practitioner in this application;
- b. do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the S24G of the National Environmental Management Act, read together with the relevant Environmental Impact Assessment Regulations;
- c. do not have, and will not have, a vested interest in the proposed activity proceeding;
- d. have no, and will not engage in, conflicting interests in the undertaking of the activity;
- e. undertake to disclose to the competent authority any material information that has, or may have, the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the S24G of the National Environmental Management Act, read together with the Environmental Impact Assessment Regulations, 2006;
- f. will ensure that all documents contain all relevant facts in respect of the application and that all documentation is timeously distributed or made available to interested and affected parties. I will ensure that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced for this application;
- g. will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- h. will keep a register of all interested and affected parties that participated in a public participation process; and
- i. will provide the competent authority with access to all information at my disposal regarding the application, whether or not such information is favourable to the applicant.

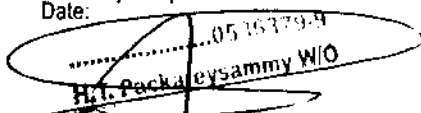
  
Signature of the environmental assessment practitioner:

Digital Soils Africa (Pty) Ltd

Name of company:

5/6/2026

Date:

  
H.T. Pockley/sammy W/O

Signature of the Commissioner of Oaths:

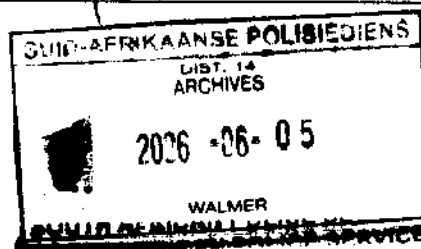
2026/06/05

Date:

WALMER STPS W/O

Designation:

Official stamp (below)



**ANNEXURE A: LIST OF INDIVIDUALS OR COMPANIES WHERE THERE IS MORE THAN ONE TRANSGRESSOR:**

N/A

**ANNEXURE B: LIST OF LANDOWNERS IN THE EVENT THAT THERE IS MORE THAN ONE LANDOWNER**

N/A as the Applicant is sole director of the company that owns the land.

**List of SGID of the properties under application:**

C059 0000 00000023 00217



**ANNEXURE C: LANDOWNERS' CONSENT WHERE THE TRANSGRESSOR IS NOT THE LANDOWNER**

n/a – The applicant is the landowner

**ANNEXURE D: LIST OF MUNICIPALITIES WHERE THE ACTIVITIES SPAN MORE THAN ONE MUNICIPALITY**

Only the Nelson Mandela Bay Metro Municipality is applicable.

**ANNEXURE E: LIST OF PROPERTIES WHERE THERE IS MORE THAN ONE PROPERTY INVOLVED.**

Only Portion 217 (A Portion of Portion 87) of the Farm Cragga Kamma No. 23, Port Elizabeth is involved.

See attached **Title Deed and SG diagram.**



## **EC FARMING SOLUTIONS**

**RESOLUTION PASSED AT A MEETING OF MEMBERS OF DANBURITE CC REG NO:2008/036638/23  
HELD at PORT ELIZABETH on December 12, 2025**

NOW THEREFORE the Member of the Close Corporation resolves as follows:

1. That consent is given to appoint Allan Richard Hartsliet (ID7812195098083) is authorized to sign the environmental authorization application forms on behalf of the company.
2. That the Member signed this resolution as proof of his consent.

SIGNED at PORT ELIZABETH on 12<sup>th</sup> December 25

---

Allan Richard Harstliet

**Danburite cc T/A ec farming**

Portion 217 of Farm 23, Kragga Kamma, Lakeside Road, Port Elizabeth  
Tel: 082 905 4734 | Email: [ecfarmingsolutions@gmail.com](mailto:ecfarmingsolutions@gmail.com)  
VAT No. 4900245137 | Reg No. 2008/036638/23

DANBURITE CC  
44 MANGOLD STREET  
NEWTON PARK  
6055

Our ref  
DJ PARKER/sw/MAT43708

Your ref  
Mr Allan Hartsliet

Date  
26 May 2023

Dear Sir

**TRANSFER PORTION 217 (A PORTION OF PORTION 87) OF THE FARM CRAGGA KAMMA NUMBER 23  
WINGS PARK PORT ELIZABETH (PTY) LTD / DANBURITE CC**

We enclose herewith the following documents :

1. Deed of Transfer Number T6216/2023

Kindly acknowledge receipt.

Yours faithfully  
**RUSHMERE NOACH INC**

  
DJ PARKER

Notaries | Conveyancers | Administrators of Deceased & Insolvent Estates

Rushmere Noach Inc Reg No 2002/015382/21

Directors: DJ Parker B Juris LLB (Managing) | SK Gough BA LLB  
J Theron B Comm LLB FAarb | CD Arnold B Comm LLB | L Koorsse LLB  
RJ Montgomery B Comm LLB | N Deschamps LLB  
SL Lubbe-Roberts B Comm LLB | R Velkers LLB  
Associate: R Tsatsimpe LLB  
Professional Assistant: M Masipa LLB  
Financial Manager: AJ Williams CA(SA)

T (041) 399 6700 | International Code: + 2741  
F (041) 374 3110  
E [general@rushmere.co.za](mailto:general@rushmere.co.za) | W [www.rushmere.co.za](http://www.rushmere.co.za)

5 Ascot Office Park, Conyngham Road, Greenacres, 6045  
P O Box 100, Gqeberha, 6000, South Africa  
Docex 6, Gqeberha

**140**  
STBB ATTORNEYS  
043 721 1234

RUSHMERE NOACH ATTORNEYS  
5 Ascot Office Park  
Conyngham Street  
Greenacres

6045

| Fee Endorsement         |                         | Office Fee                                |
|-------------------------|-------------------------|-------------------------------------------|
|                         | Amount                  |                                           |
| Purchase Price/Value    | R 3,450,000-00          | R 2014-00                                 |
| Mortgage Capital Amt.   | R .....                 | R .....                                   |
| ALL OTHER REGISTRATIONS |                         | R .....                                   |
| Reason For Exemption    | Category Exemption..... | Exempt i.t.o<br>Sec/Reg<br>Act/Proc ..... |

Prepared by me

CONVEYANCER  
ZANDILE ORALETTE NONKASANA  
LPCM Number 96726

T 6216 / 2023

## DEED OF TRANSFER

BE IT HEREBY MADE KNOWN THAT

ESETHU VUYISIWE ZIBI

LPCM Number 102415

appeared before me, REGISTRAR OF DEEDS at KING WILLIAM'S TOWN, the said  
appearer being duly authorised thereto by a Power of Attorney granted to him/her by

**WINGS PARK PORT ELIZABETH PROPRIETARY LIMITED**

Registration number 2013/019354/07

which said Power of Attorney was signed at PORT ELIZABETH on 8 March 2023



And the appearer declared that his/her said principal had, on 25 February 2023, truly and legally sold by Private Treaty, and that he/she, the said Appearer, in his/her capacity aforesaid, did, by virtue of these presents, cede and transfer to and on behalf of:

**DANBURITE CC**  
**Registration Number 2008/036638/23**

or its Successors in Title or assigns, in full and free property

PORTION 217 (A PORTION OF PORTION 87) OF THE FARM CRAGGA  
KAMMA NUMBER 23  
DIVISION OF PORT ELIZABETH  
PROVINCE OF THE EASTERN CAPE

IN EXTENT 29,9535 (TWENTY NINE COMMA NINE FIVE THREE FIVE)  
Hectares

FIRST TRANSFERRED and still held under Deed of Transfer Number  
T8616/2014CTN with Diagram S.G. Number 1138/2013 relating thereto.

A. SUBJECT to the conditions referred to in Certificate of Amended Title  
Number T7636/1932CTN dated 19 December 1932 save in so far these  
may have since lapsed or been cancelled.

B. SUBJECT to the Expropriation referred to in the Endorsement dated 27<sup>th</sup>  
October 1976 on Deed of Transfer Number T1711/1971CTN reading:

"Endossement Kragtens Artikel 31 (6) van Wet Nr. 47 van 1937 (soos  
gewysig)

In gedeelte van die eiendom hierin vermeld groot  $\pm 0,2325$  HA-veld is  
onteien deur die Afdelingsraad van Port Elizabeth kragtens Art. 130 van  
Ord. 15 van 1951 Vide onteieningskennisgewing Nr. N/4/9 d.d. 7.10.76  
geliasseer as onteienings caveat EX 1462/76 planne in tweevoud  
geliasseer hiermee."

N



WHEREFORE the said Appearer, renouncing all rights and title which the said

**WINGS PARK PORT ELIZABETH PROPRIETARY LIMITED**  
**Registration number 2013/019354/07**

heretofore had to the premises, did in consequence also acknowledge it to be entirely dispossessed of, and disentitled to the same, and that by virtue of these presents, the said

**DANBURITE CC**  
**Registration Number 2008/036638/23**

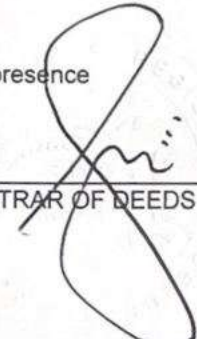
or its Successors in Title or assigns, now is and henceforth shall be entitled thereto, conformably to local custom, the State, however reserving its rights, and finally acknowledging the purchase price to be the sum of R3 450 000,00 (THREE MILLION FOUR HUNDRED AND FIFTY THOUSAND RAND) .

IN WITNESS WHEREOF, I the said Registrar, together with the Appearer, have subscribed to these presents, and have caused the Seal of Office to be affixed thereto.

THUS DONE and EXECUTED at the Office of the REGISTRAR OF DEEDS at KING WILLIAM'S TOWN on 18 APR 2023

  
\_\_\_\_\_  
q.q.

In my presence

  
\_\_\_\_\_  
REGISTRAR OF DEEDS

N

| SIDES<br>metres         |        | ANGLES OF<br>DIRECTION |            | CO-ORDINATES<br>Y System: WG 25 X |            | S.G. No.                                                                                                                              |           |
|-------------------------|--------|------------------------|------------|-----------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------|
|                         |        |                        |            | Constants                         | 0,00       | +3700 000,00                                                                                                                          | 1138/2013 |
| A B                     | 842,84 | 264.09.03              | A          | -37 893,87                        | +59 728,71 | Approved<br><br>for Surveyor-General<br>2013-12-18 |           |
| B C                     | 248,04 | 7.50.40                | B          | -38 732,32                        | +59 642,81 |                                                                                                                                       |           |
| C D                     | 861,03 | 67.08.23               | C          | -38 698,46                        | +59 888,54 |                                                                                                                                       |           |
| D E                     | 494,46 | 178.42.10              | D          | -37 905,05                        | +60 223,04 |                                                                                                                                       |           |
| TRIGONOMETRICAL BEACONS |        |                        |            |                                   |            |                                                                                                                                       |           |
| KRAGGA KAMA             |        | △ 163                  | -36 405,15 |                                   | +60 489,93 |                                                                                                                                       |           |
| GREEN BUSHES            |        | △ 12                   | -40 499,85 |                                   | +60 063,06 |                                                                                                                                       |           |

## BEACON DESCRIPTIONS

A,B ....Peg in concrete block

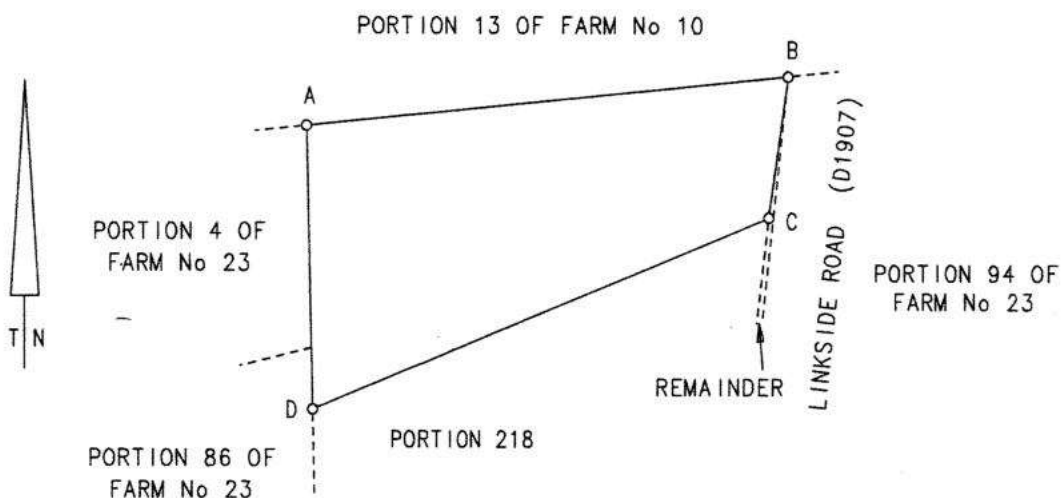
C,D ....20mm iron pipe

THIS PORTION IS SUBJECT TO  
CONDITIONS REFERRED TO IN  
SECTION 11(6) OF ACT No. 21/1940

APPROVED IN TERMS OF SECTION  
OF ACT No. 3/2003

EXEMPT FROM PROVISIONS OF  
CHAPTER III OF  
ORDINANCE No. 15/1985  
GONA FIDE AG-RICULTURALE

APPROVED IN TERMS OF SECTION 4  
OF ACT No. 70/1970  
REF 34148  
DATE 2001-05-10



SCALE 1:12500

The figure A B C D

represents

29,9535 hectares

of land being

Portion 217 (a portion of Portion 87)  
of the farm Cragga Kamma No. 23

Situate in the Nelson Mandela Bay Metropolitan Municipality.

Administrative District of Port Elizabeth.

Province of Eastern Cape.

Surveyed in JUNE 1998 – NOVEMBER 2013, by me,

JOHAN MEIRING (PLS 0393)  
Professional Land Surveyor

This diagram is annexed to

No. T8616/2014

d.d.

i.f.o.

Registrar of deeds

The original diagram is

No. 3605/1952

Transfer

Grant 1971- -1710

C.C.T.

File Port. E 23

S.R. No. 483/2013

T.P.

Comp. (6096); (6098)

LPI C0590000

**ANNEXURE F: LIST OF MAGISTERIAL DISTRICTS OR TOWNS IF MORE THAN ONE IS AFFECTED.**

Only the Nelson Mandela Bay Metropolitan is applicable.

**ANNEXURE G: MAP DEPICTING THE ZONINGS OF VARIOUS PORTIONS IN THE EVENT WHERE THERE IS MORE THAN ONE ZONING**

The land is zoned Agriculture



**ANNEXURE H: LIST OF ALL THE PLANNING APPROVALS WHERE SUCH HAVE BEEN GRANTED**

**Nelson Mandela Bay Metropolitan Municipality  
(Port Elizabeth)**

**City Engineers Department  
Building Inspectorate**

**Meeting Date:** 14-Jul-2023

**Page 18**

**Building Plan Approved**

|                             |                                |                    |               |
|-----------------------------|--------------------------------|--------------------|---------------|
| <b>Plan Number:</b>         | 358380 ( Amended )             | <b>Erf Number:</b> | 217           |
| <b>Owner Name:</b>          | AR HARTSLIEF FOR DANBURITE CC  | <b>Value:</b>      | R2,206,022.40 |
| <b>Applicant Name:</b>      | AR HARTSLIEF FOR DANBURITE CC  | <b>Area:</b>       | 576.40m2      |
| <b>Address:</b>             | PTN 217 (OF PTN 87) 23 LAKE SD | <b>Units:</b>      |               |
| <b>Allotment Area:</b>      | FARMS P.E.                     | <b>Bathrooms:</b>  | 4             |
| <b>Description of Work:</b> | PROPOSED NEW DWELLING          | <b>Garages:</b>    | 2             |
| <b>Building Type:</b>       | BDE                            | <b>Telephone:</b>  | (041)506-2328 |
| <b>Building Inspector:</b>  | BENNIE SCHMIDT                 | <b>Fee:</b>        | R 8742.00     |
| <b>Receipt Number:</b>      | V2238                          | <b>SACAP Reg:</b>  | ST1879        |
| <b>Designer Name:</b>       | CHRIS MILNE ARCHITECTURE       |                    |               |

**Comments:**

|      |                                                                              |
|------|------------------------------------------------------------------------------|
| D02  | DRAINAGE PLAN APPROVED                                                       |
| SANS | S/T ALL TIMBER USED IN THE ERECTION OF A BUILDING BE TREATED AGAINST TERMITE |
| SAN2 | AND WOOD BORER ATTACK & FUNGAL DECAY IN ACCORDANCE WITH SANS 10005           |

**PLEASE NOTE:**

1. *Foundation, drainage and final inspections are compulsory.*
2. *The onus is on the owner or builder to contact the Area Building Inspector for foundation and final inspections.*
3. *Illegal dumping is punishable by a fine of R500-00. Please ensure that all your waste material is disposed of at any approved waste site.*



# NELSON MANDELA BAY METROPOLITAN MUNICIPALITY



## Office of the Business Unit Manager: Housing and Land

9, Port Elizabeth, 6000

(041)994-1122

Fax: (041)994-1109

e-mail: jagerber@mandelametro.gov.za

To **AR HARTSLIEF FOR DANBURITE CC**  
**PTN 217 (OF PTN 87) 23 LAKE SD**  
**FARMS P.E.**

**BENNIE SCHMIDT**

DEALS WITH THIS MATTER

Date: 14-Jul-2023

Dear Sir,

### NOTICE OF APPROVAL: BUILDING PLAN NO. 358380: PROPOSED NEW DWELLING: PTN 217 (OF PTN 87) 23 LAKE SD

The attached building plan has been approved subject to the following conditions:

1. All work must be carried out in accordance with the provisions of the National Building Regulations and Building Standards Act 103 of 1977, all Municipal standard building, drainage and water regulations, as amended and retained.
2. An approved copy of the building plan must be available on site at all times.
3. **The Owner/Contractor must contact the Building Inspectorate telephonically for foundation and final inspections (Regulation A22). For all other queries and inspections, contact the relevant Division as indicated on the enclosed list of contact people.**
4. The buildings may not be used for any purpose other than that shown on this approved plan.
5. Approval with regard to this plan shall lapse after the expiry of 12 months as from the date on which it was granted unless the erection of the building in question is commenced or proceeded with within the said period or unless this local authority extended the said period at the request in writing of the applicant concerned.
6. On completion of the work, the Engineer must, where applicable, submit a certificate to the effect that the work has been done in accordance with his design, before a Certificate of Occupancy will be issued.
7. Sanitary accomodation, in accordance with Municipal Regulations, must be provided for personnel working on the site, before the building operations commence.
8. Depth of sewerage connections, where applicable, must be determined before any work is commenced with.
9. Pool fencing and gates giving access to such pools, where applicable, must be erected in accordance with S A B S 1390 of 1983.
10. **No building material/rubble may be stored on the municipal verge and all building rubble must be removed from your site immediately after completion of building operations. Building rubble may be dumped at official Municipal dumping sites only.**
11. Attaced hereto also are the following forms~
  - (i) Application for Certificate of Occupancy.
  - (ii) Unsigned Certificate of Occupancy.
  - (iii) List of contact persons for inspection requests and enquiries.detailing requirements which must be complied with during and on completion of the construction.
12. Back of pavement levels to be taken as on a grade of 1 to 40 up from top of kerb. Where kerb and channel do not exist, back of pavement levels must be obtained from the Infrastructure and Engineering Business Unit.
13. It must not be assumed that the approval of this plan implies that the Council will grant any necessary certificate which may be required for the purpose of carrying out any trade or occupation of the said pemises.
14. Where it is necessary to erect a hoarding, covered walkway or fence in accordance with



National Building Regulation F1 and make an encroachment on a public street, an application on the prescribed form shall be made to the Business Unit Manager - Housing and Land.

15. An acceptable loading certificate must be submitted after erection of Gangnailed/Engineered roof trusses.
16. The person responsible for the installation of any electrical work in the building, must, where applicable, attach a copy of the certificate of compliance to the Application for a Certificate of Occupancy (see 11(i) above).

Your attention is drawn to 11(i) and it must be stressed that it is essential that this form be completed in its entirety and thereafter returned to this office **immediately on completion of the building work.** In terms of **Section 14(4) of the National Building Regulations and Building Standards Act (Act 103 of 1977)** anyone who occupies, or uses, or permits the occupation or use of a building without the written consent of the Local Authority shall be guilty of an offence.

Any enquiries regarding the foregoing may be directed to the Building Control Section of this Municipality.

Yours faithfully,

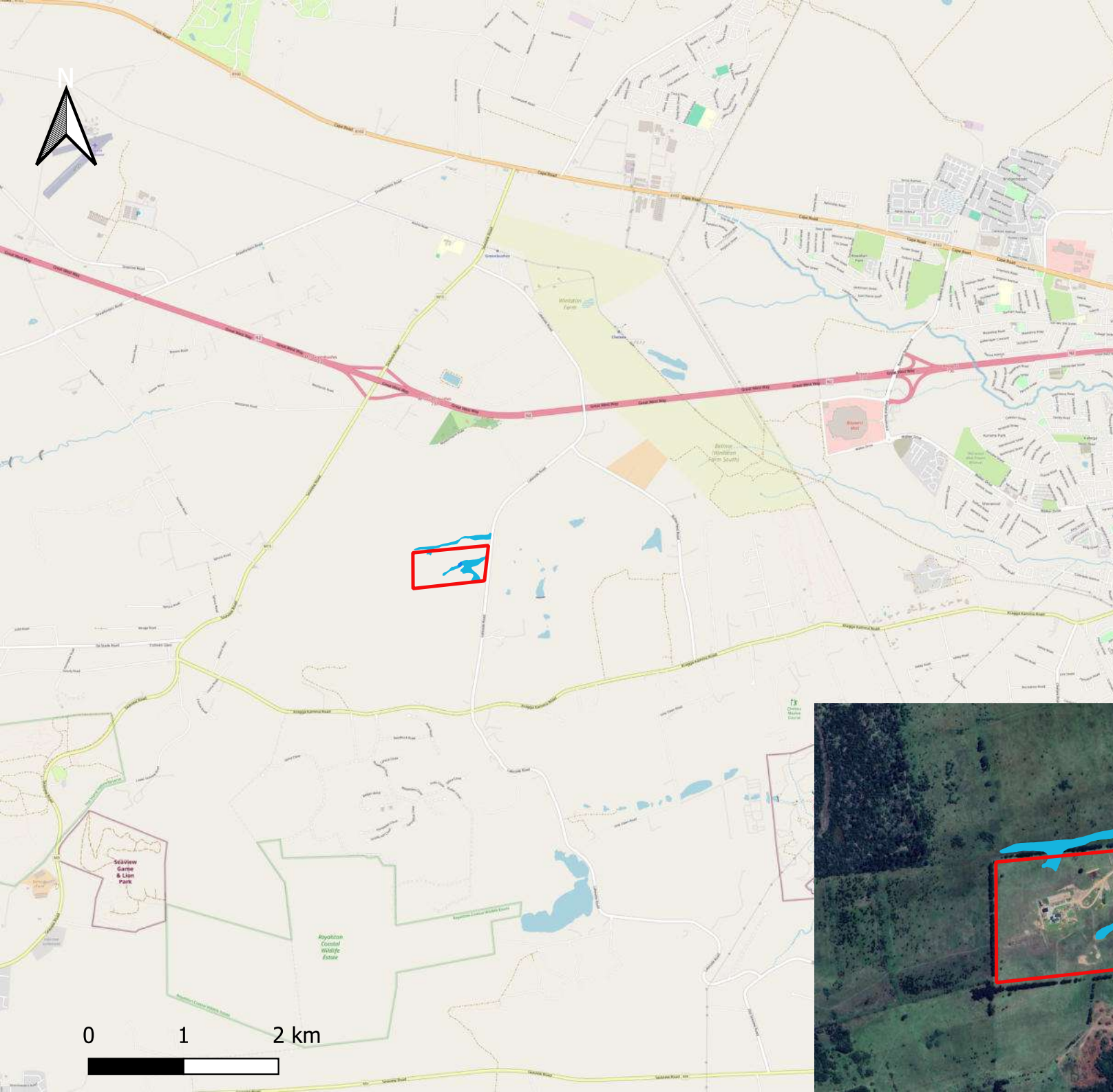
**BUSINESS UNIT MANAGER  
HOUSING and LAND**

**ANNEXURE I: LOCATION MAP**

# Locality Map

## Legend

-  Hartsliet site
-  Dam
-  Seepage area



**ANNEXURE J: SITE PLAN AND BUILDING ILLUSTRATION**





Designer

# Chris Milne Architecture

B.Build (Arch) NMMU  
SACAP No ST 1879  
SIAAT No 31317

P/Bag X 3, Suite 63  
St Francois Bay, 6312

Cell: 082 857 7395  
[chrismilnearchitecture@gmail.com](mailto:chrismilnearchitecture@gmail.com)

 **PROFESSIONAL SENIOR ARCHITECTURAL  
TECHNOLOGIST**

**CHRIS CHRISTOFFEL MILNE**



Designer signature \_\_\_\_\_  
Professional Indemnity: 7000/147080

## Notes

Owner signature

[illegible]

PROPOSED SITE LAYOUT PLAN  
FOR ARH AGRICULTURAL PORTION  
217 (A PORTION OF PORTION  
87) OF THE FARM CRAGGA  
KAMMA NUMBER 23, LAKESIDE  
ROAD, PORT ELIZABETH REP:  
ALLAN 082 905 4734  
allan@arhagri.co.za

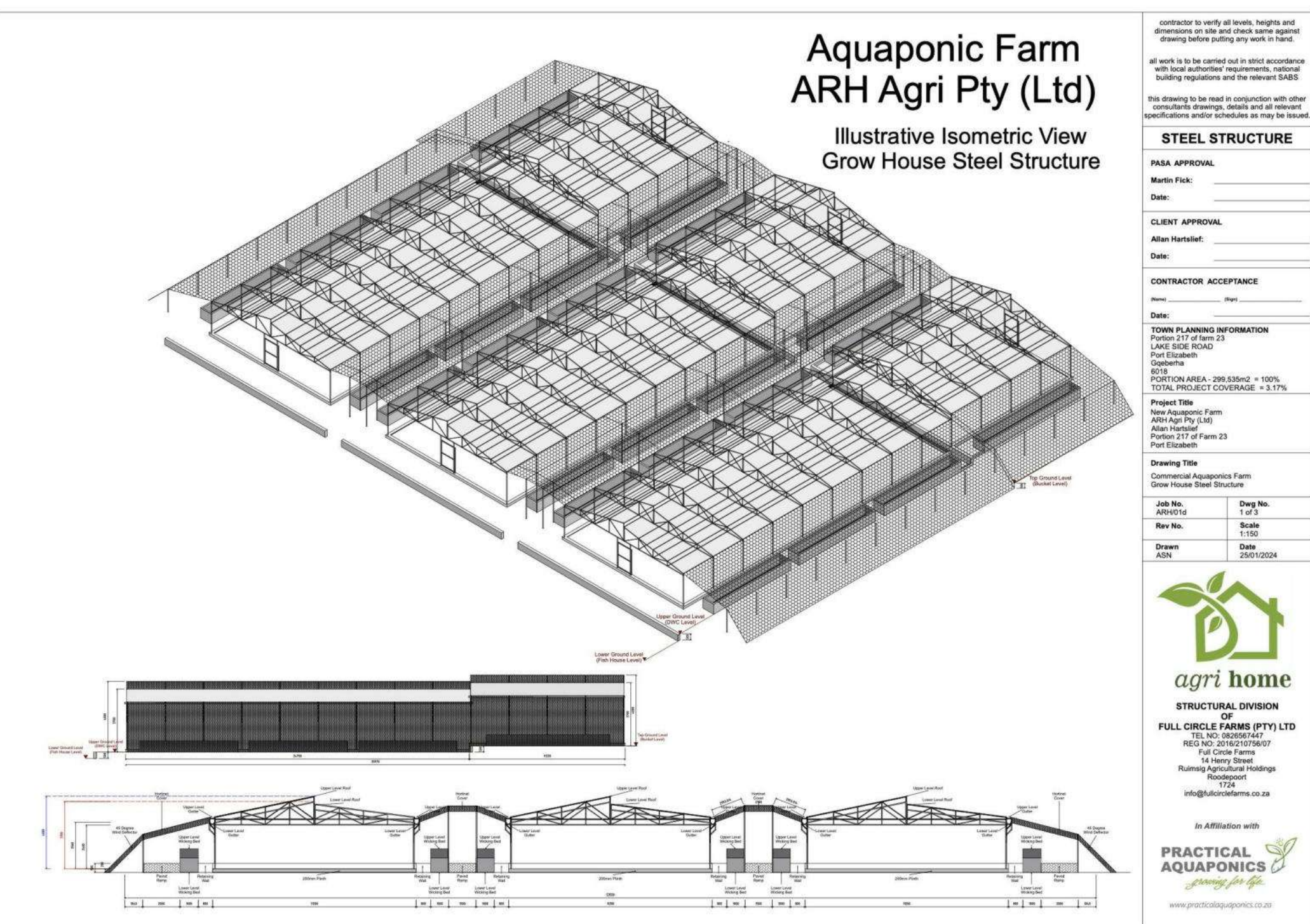
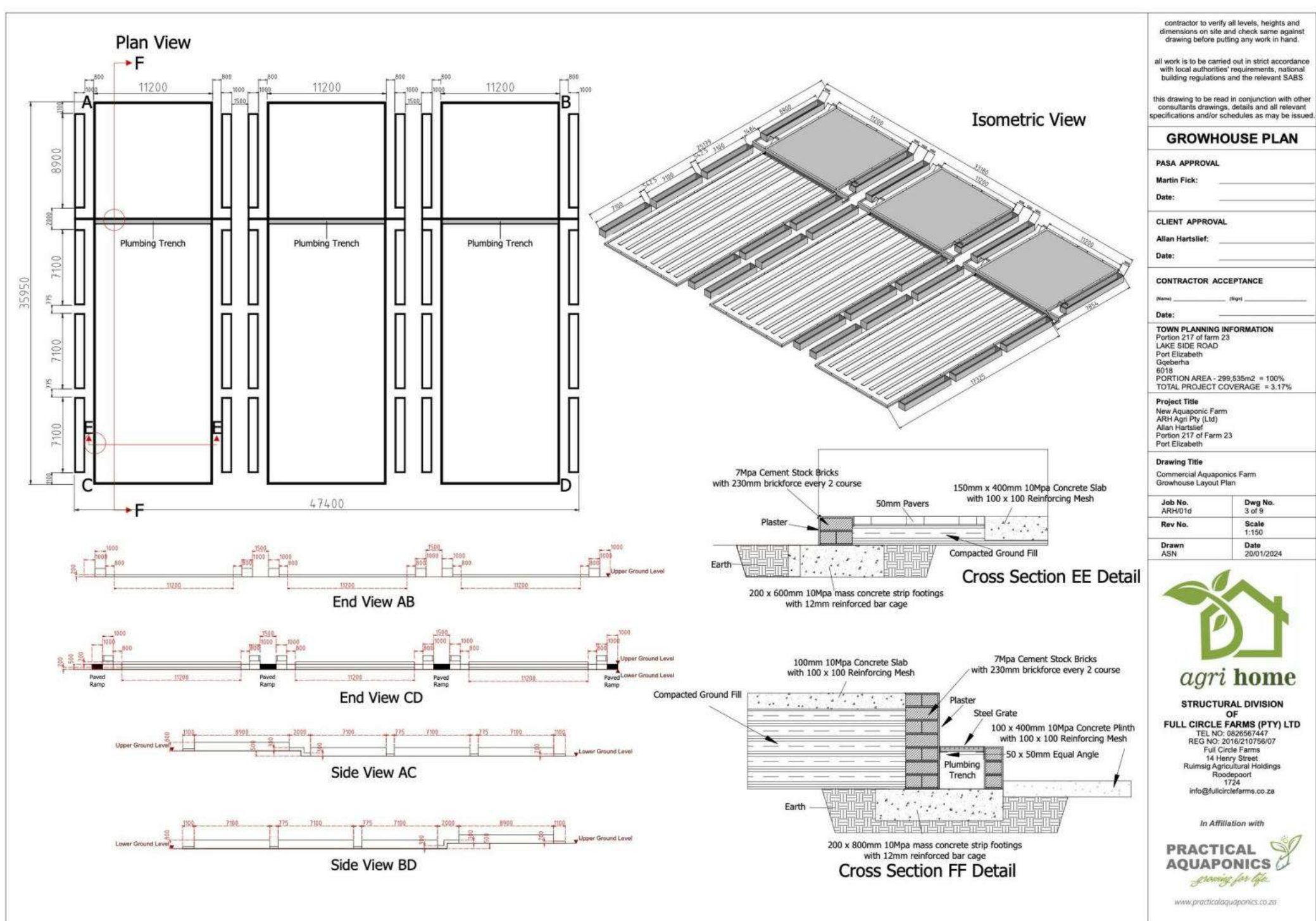
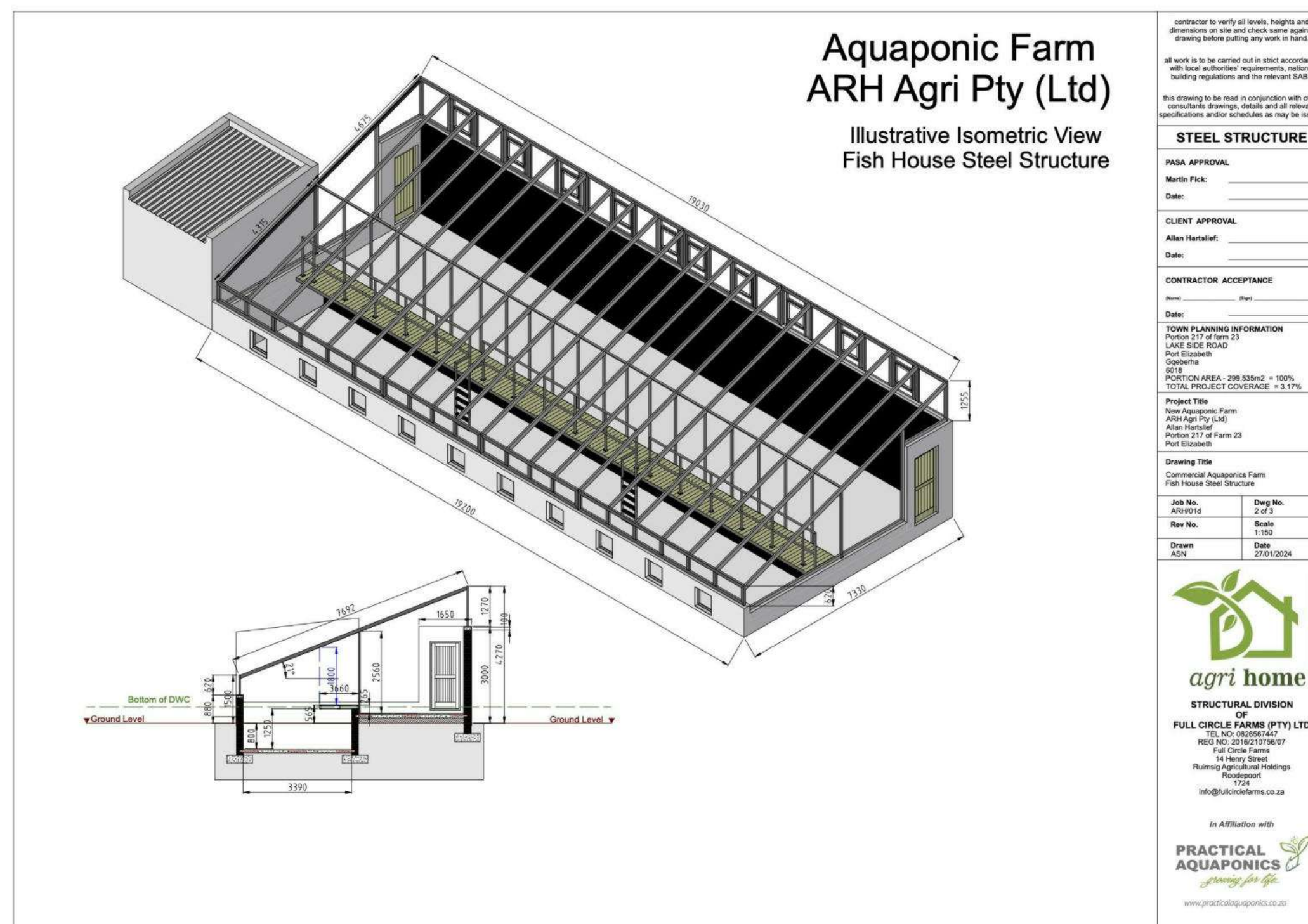
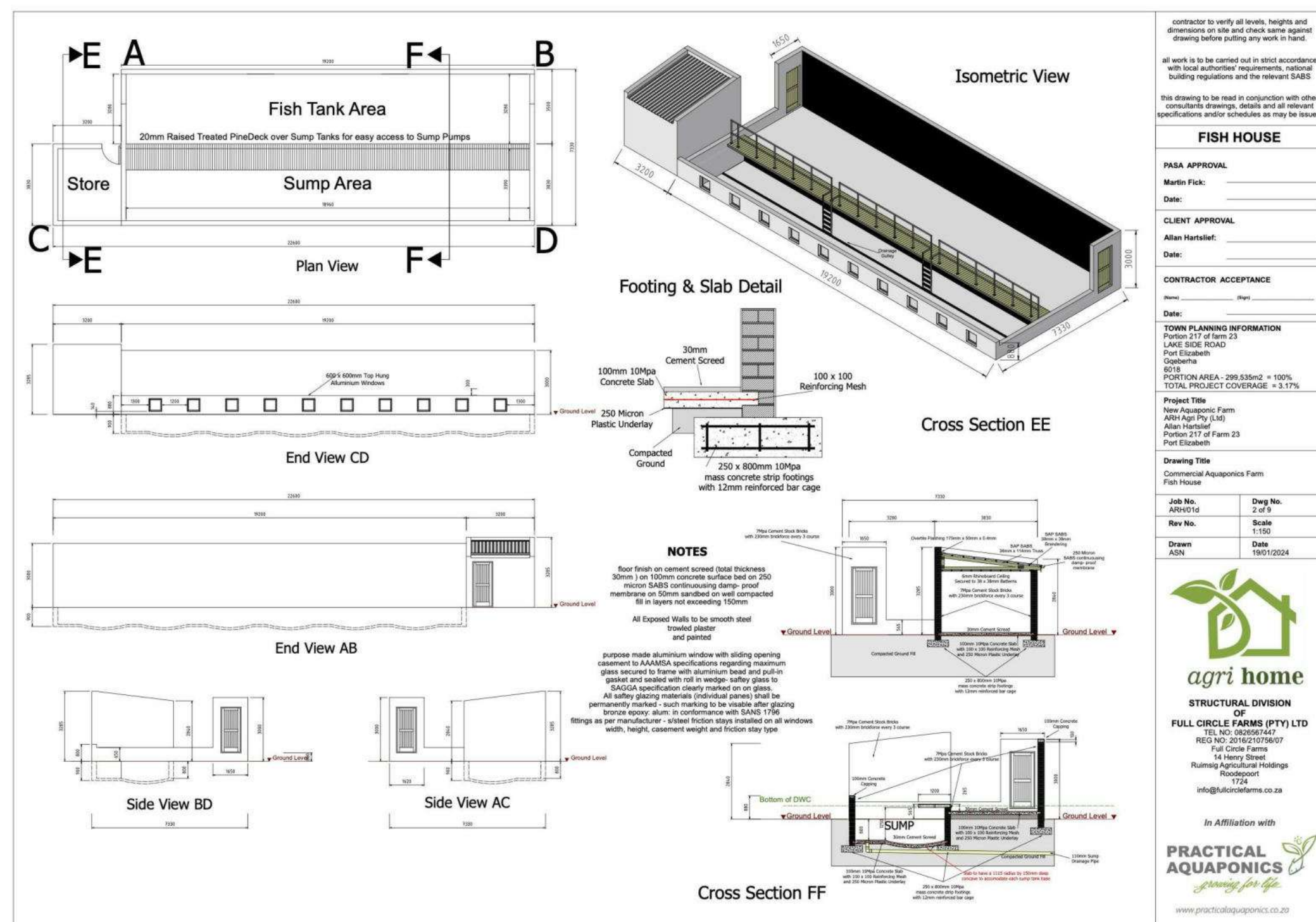
|                |               |
|----------------|---------------|
| Project number | AHSDP-2024    |
| Date           | 29 August2024 |
| Drawn by       | FR            |
| Checked by     | JCM           |

|       |              |
|-------|--------------|
| A101a |              |
| Scale | As indicated |









Designer

# Chris Milne Architecture

B.Build (Arch) NMMU  
SACAP No ST 1879  
SIAAT No 31317

P/Bag X 3, Suite 63  
St Francois Bay, 6312

Cell: 082 857 7395  
[chrismilnearchitecture@gmail.com](mailto:chrismilnearchitecture@gmail.com)

 **PROFESSIONAL SENIOR ARCHITECTURAL  
TECHNOLOGIST**

**CHRIS CHRISTOFFEL MILNE**



Designer signature

Professional Indemnity: 7000/147080

## Notes

[illegible]

Owner signature

[illegible]

## Engineers Drawings

PROPOSED NEW PACKHOUSE,  
OFFICE BLDG & GROW HOUSES  
FOR ARH AGRI ON PORTION  
217 (A PORTION OF PORTION  
87) OF THE FARM CRAGGA  
KAMMA NUMBER 23, LAKESIDE  
ROAD, PORT ELIZABETH REP:  
ALLAN 082 905 4734  
allan@arhagri.co.za

|                |           |
|----------------|-----------|
| Project number | AHGH-2024 |
|----------------|-----------|

Date 14 August 2024

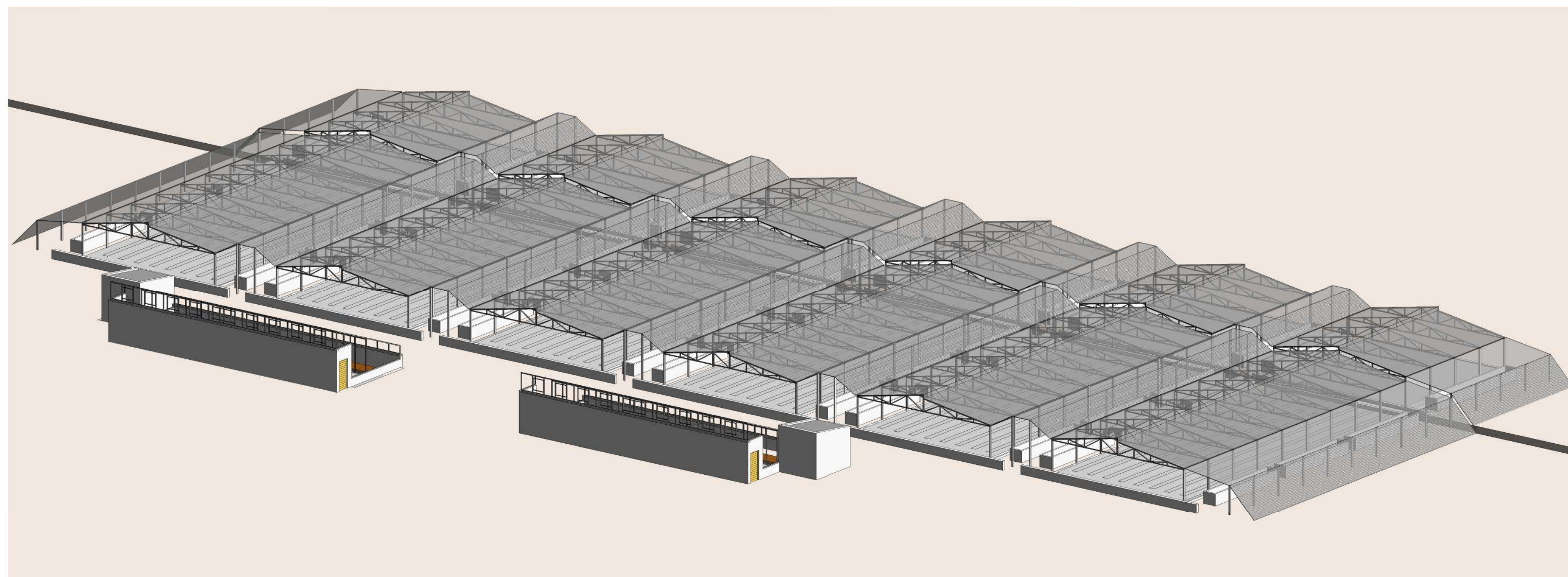
Drawn by FR

Checked by JCM

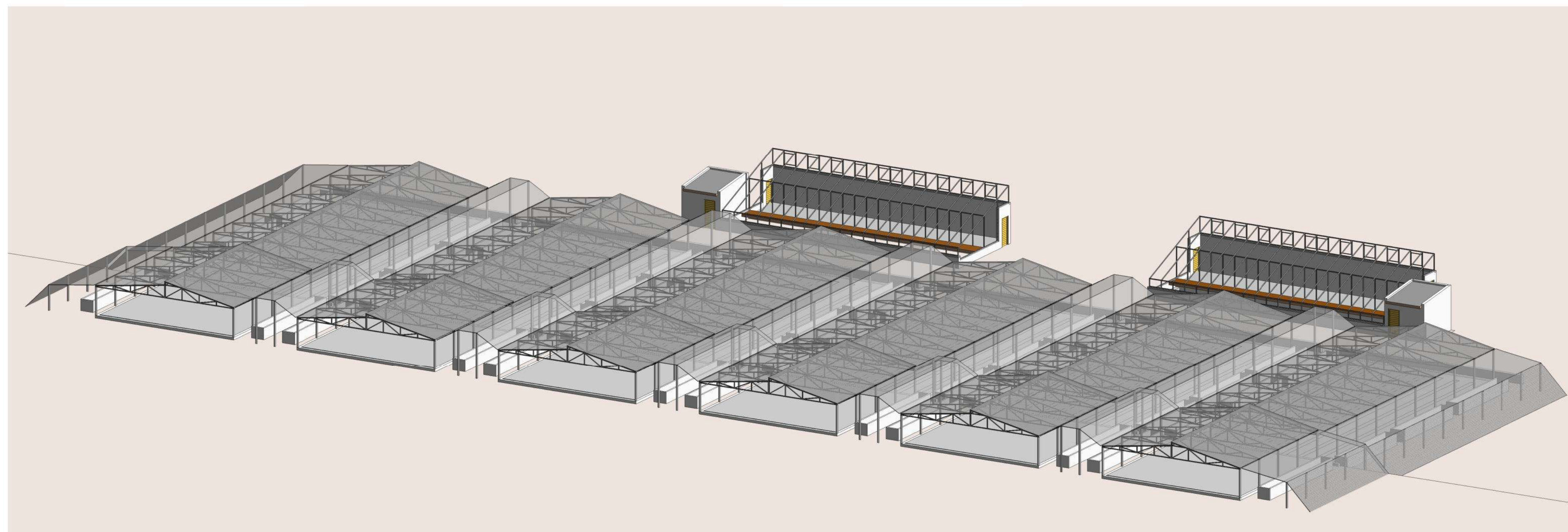
A101

Scale 1 : 150





## 1 3D Grow Houses 1



## 2 3D Grow Houses 2

**LOCAL DISTRICT MUNICIPALITY APPROVAL**

[illegible]

Designer  
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Designer signature

Professional Indemnity: 7000/147080

## Notes

Owner signature

[illegible]

3D's

PROPOSED NEW PACKHOUSE,  
OFFICE BLDG & GROW HOUSES  
FOR ARH AGRI ON PORTION  
217 (A PORTION OF PORTION  
87) OF THE FARM CRAGGA  
KAMMA NUMBER 23, LAKESIDE  
ROAD, PORT ELIZABETH REP:  
ALLAN 082 905 4734  
allan@arhagri.co.za

|                |           |
|----------------|-----------|
| Project number | AHGH-2024 |
|----------------|-----------|

|      |                |
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| Date | 14 August 2024 |
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| Checked by | Checker |
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A102

Scale



**ANNEXURE K: PHOTOGRAPHS**



*Figure 20: Areas being rehabilitated that were disturbed outside of the permanent development footprint.*



*Figure 21: Areas cleared from bracken fern where grass is establishing.*



*Figure 22: Photos indicating the construction of the aquaponics and fish farming facility.*



Figure 23: Fish farming and aquaponics infrastructure in progress.



Figure 24: Worker quarters



Figure 25: Compost site for personal farm use



Figure 26: Residential house in 2024 (left photo) and 2025 (right photo)



Figure 27: Chicken coup and livestock pen





Figure 28: Nursery (not commercial, for landowners' own use).



Figure 29: Reservoir, area around the dam is completely rehabilitated, as well as the area around the aquaponics facility.



Figure 30: Aquaponics and fish farm facility



Figure 31: Wetland area south of the fish farm and aquaponics facility.



*Figure 32: Springboks on site*



**ANNEXURE L: PERMITS / LICENSES FROM ANY OTHER ORGAN OF STATE INCLUDING SERVICE LETTERS FROM THE MUNICIPALITY**

None at this stage.

**ANNEXURE M: ANY OTHER:****M1: Environmental Impact Assessment in retrospect**

Impacts have been assessed according to the criteria listed below:

| Criteria       | Description                                                                                                                                                                                                               |                                                                                                                         |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Spatial Extent | Whether the impact will occur on a scale limited to the immediate site of the proposed activity, local area and immediate communities and settlements, sub-regional (municipal), regional (provincial), or national scale | None/Insignificant (N)<br>Site Specific (SS)<br>Local (Loc)<br>Sub-Regional (SR)<br>Regional (R)                        |
| Duration       | Whether the period of the impact will be short term (0-5 years), medium term (5-15 years), long term (> 15 years) or permanent where natural processes or mitigation processes cannot eliminate the impacts.              | None (N)<br>Short Term (ST)<br>Medium Term (MT)<br>Long Term (LT)<br>Permanent (P)                                      |
| Intensity      | Whether the size of the impact is low, medium, high, or negligible.                                                                                                                                                       | None (N)<br>Very Low (VL)<br>Low (L)<br>Low-Medium (LM)<br>Medium (M)<br>Medium-High (MH)<br>High (H)<br>Very High (VH) |
| Probability    | The probability of the impact occurring as either unlikely, probable, likely or definite.                                                                                                                                 | None (N)<br>Unlikely (Un)<br>Probable (Pr)<br>Likely (Lik)<br>Definite (Def)                                            |
| Significance   | The total level of impact.                                                                                                                                                                                                | Insignificant<br>Very Low<br>Low<br>Low-Moderate<br>Moderate<br>Moderate-High<br>High<br>Very High                      |

*These criteria are evaluated in terms of*

- *Significance (Insignificant-low-moderate-high)*
- *Status (positive-negative-neutral)*
- *Confidence (based on academic information, specialist knowledge, site evaluations, applicants approach)*

**Cumulative Impact:** None, Very Low, Low, Low-Medium, Medium, Medium-High, High, Very High

Once the impacts are identified and predicted, the identification and consideration of mitigation measures by implementing the use of a 'mitigation hierarchy', which is a framework for managing the risks and potential negative impacts of development projects when considering the potential environmental, socio-economic, and heritage impacts, is implemented. Preventative measures are considered first and remediation measures are considered last. Offsets are a last resort consideration for possible remediation measures.

After concluding the possible mitigation measures, the significance of the impact on a local, regional or global level is evaluated. The evaluation of the significance of impacts distinguishes between the impact rating before mitigation (significance before) is implemented/considered and the significance rating after (significance after) the recommended mitigation measures are considered.

The significance of the impact on the parameters of the affected environment is rated as:

Low Significance

The project will not cause any major adverse or beneficial changes to the biophysical, social, or economic environment. Impacts experienced will abate almost immediately after cessation

of activities and the biophysical, social or economic system should recover and return more or less to the natural state. No expensive mitigating measures will be needed to address any of these impacts. Ecological functions will continue undisturbed and no complaints from Interested and Affected Parties (I&APs) are anticipated. No rare and endangered species or sensitive areas exist in the area.

#### Moderate Significance

The project will induce moderate short to medium term changes to the biophysical, social, or economic environment. The impact would be induced outside the development area and also possibly on a sub-regional level. Over the medium term the impacts could fade away but the implementation of mitigation measures is normally required to eliminate these impacts. The impacts would be experienced for some time after cessation of activities but would not affect the biophysical, social, or economic environment severely. With mitigation, the biophysical, social, or economic system should recover but the return to the natural state would be very slow and in some instances may not be achieved. I&APs might express some concerns and complaints may be received on an *ad hoc* basis. Rare and endangered species or sensitive areas may exist in the area and could be marginally affected.

#### High Significance

The project will induce extensive long-term changes to the biophysical, social, or economic environment. The impact would be induced outside the development area and also possibly on a regional to national level. The possibility of secondary impacts arising from the project is high. Over the long term the impacts could fade away but the implementation of expensive mitigation measures is normally required to eliminate or mitigate these impacts. These impacts would be experienced after cessation of activities and could affect the biophysical, social, or economic environment severely. With mitigation, the biophysical, social, or economic system could recover but the return to the natural state would normally not be achieved. Ecological functions will be permanently disturbed and major complaints from Interested and Affected Parties (I&APs) could be expected. Rare and endangered species or sensitive areas existing in the area might be critically affected.

### **Potential loss of biodiversity due to vegetation clearing**

#### Impacts on the Vegetation Clearance

In terms of the ecological sensitivity of this project, the locality of the proposed site is located within the Algoa Sandstone Fynbos ecosystem. (Figure 33).

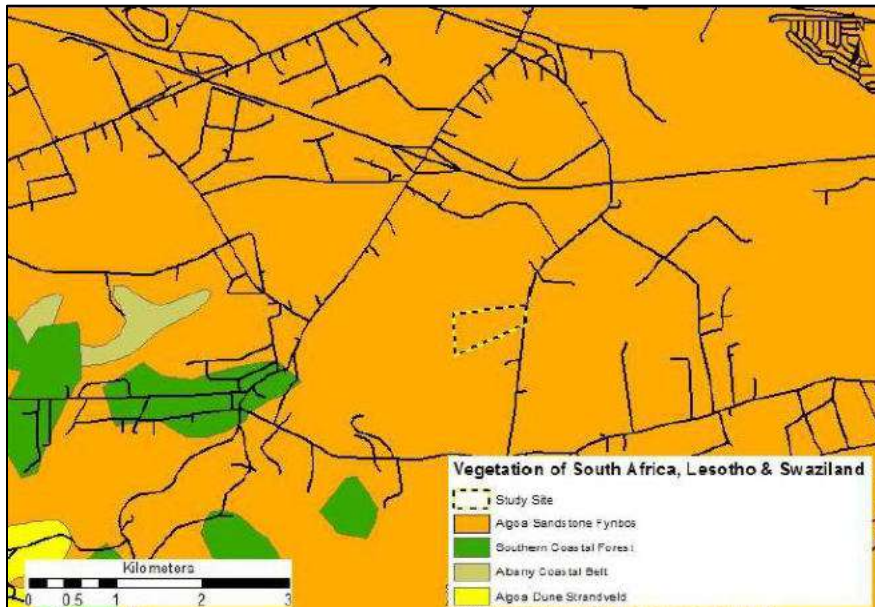


Figure 33: Vegetation types based on the Vegetation of South Africa, Lesotho & Swaziland



Figure 34: Vegetation types mapped in the region in terms of the National vegetation Map (VegMap)(2024). The site is the yellow polygon within the Algoa Sandstone Fynbos.

In terms of the receiving environment, the site falls within an area mapped as Critically Endangered Algoa Sandstone Fynbos (formerly mapped as Colleen Glen Grassy Fynbos in earlier biodiversity planning products). However, both historical aerial imagery and specialist field assessments confirm that the site had been extensively transformed by historical agricultural activities long before the unauthorised development commenced. As a result, the property no longer supported intact fynbos vegetation and was instead characterised by grass-dominated pasture vegetation with scattered indigenous remnants. The specialist concluded that the site was not covered by intact Algoa Sandstone Fynbos prior to development and that the vegetation present was of low botanical sensitivity and conservation value.

At the purchase of the property by the Applicant, the site was visually dominated by grass (*Stenotaphrum secundatum*), and bracken fern (*Pteridium aquilinum*), with occasional patches of indigenous shrubs (*Erica glandulosa*, *Leucodendron salignum*, *Leucospermum cuneiforme*, *Muraltia scoparia*, and *Morella serrata*).

The site was developed between 2023-2025 disturbing between 4-5Ha of transformed vegetation while aggressively managing the bracken fern and over the past year has made positive progress with some fynbos species reestablishing.



Figure 35: Terrestrial Critical Biodiversity area according to the Nelson Mandela Bay Municipality CBA map (2009)

The site does not fall within a terrestrial biodiversity area (see Figure 35) according to the Nelson Mandela Bay Municipality CBA map (2009) and onsite assessment confirms that the site does not represent CBA status. In terms of the aquatic biodiversity area (see Figure 36) the site mainly falls within an ecological support area (ESA) 2 with an ESA 1 in the center of the site, which is where the man made dam is situated.



Onsite assessment, however, revealed that the site does host a wetland and therefore a wetland study was completed and according to the wetland report, no listed or protected aquatic plant species were observed within the adjacent aquatic features (seepage areas and channels).

With regard instream habitat and aquatic biodiversity, the study area, this was limited to a low number of obligate aquatic species such as:

- *Kyllinga alba*
- *Cyperus congestus*
- *Cyperus difformis*
- *Cyperus uitenhagensis*
- *Bulbostylis spp*
- *Fimbristylis gracilis*

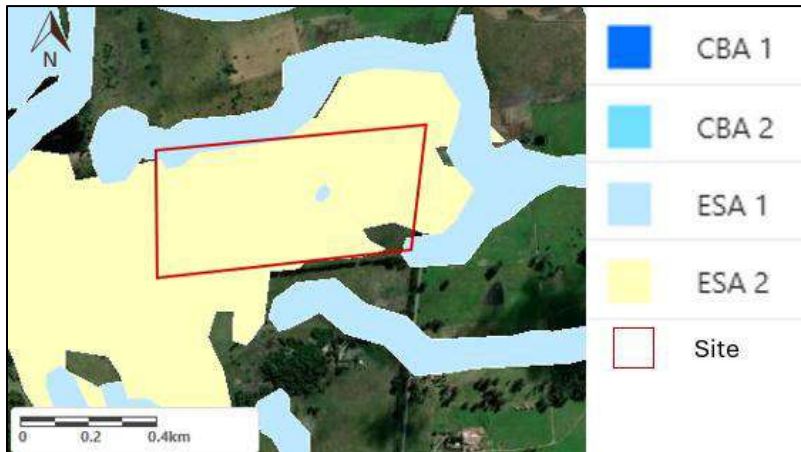


Figure 36: Aquatic Biodiversity Map according to the Eastern Cape Biodiversity Conservation Plan (2019).

The impact on surface water will be discussed later.

In terms of the clearing of vegetation, the development resulted in clearing 4-5 Ha of vegetation that was identified as transformed during the construction phase. All the infrastructure has been built and the project is in operational phase.

Due to aggressive management, the Bracken fern has been reduced significantly on the rest of the farm that is not under permanent infrastructure.

The impact significance to biodiversity is 'Low-Medium' with or without mitigation. However, if the conservation objectives were achieved through the aggressive management of invasive plant species and the residual negative impacts would be mitigated and the impact is reduced to "Low" with mitigation.

#### Indirect & Cumulative Impact on Floral Species of Conservation Concern

In terms of cumulative impacts, the primary impact relates to the loss of vegetation cover associated with the development footprint. Although the property is situated within an area mapped as Critically Endangered Algoa Sandstone Fynbos, specialist investigations undertaken in 2014 and again in 2026 confirmed that the site had been extensively transformed by historical agricultural activities long before the unauthorised development commenced. The site was dominated by grass-dominated pasture vegetation and did not support intact Algoa Sandstone Fynbos or any significant populations of plant species of conservation concern.

The development resulted in the transformation of approximately 5 ha (approximately 16%) of the 31 ha property. However, the vegetation removed was assessed as being of low conservation value and low botanical sensitivity. The remaining approximately 26 ha of the property remains undeveloped and continues to support the existing pasture vegetation, including the central wetland feature which has been identified as the most ecologically important feature on the site. Through the implementation of alien invasive species control measures, wetland protection and the maintenance of a vegetated buffer around the wetland, the long-term ecological condition of the remaining portions of the property can be maintained and potentially improved.

Table 1: Impact on flora

|                                                                | OPERATIONAL<br>(no mitigation)                                                                                                                                                                                  | OPERATIONAL<br>(with mitigation & maintaining<br>conservation trust) |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Extent</b>                                                  | Site Specific                                                                                                                                                                                                   | Site Specific                                                        |
| <b>Duration</b>                                                | Permanent                                                                                                                                                                                                       | Permanent                                                            |
| <b>Intensity</b>                                               | Low-Medium                                                                                                                                                                                                      | Low                                                                  |
| <b>Probability</b>                                             | Definite                                                                                                                                                                                                        | Definite                                                             |
| <b>Cumulative<br/>Impact</b>                                   | Low                                                                                                                                                                                                             | Low                                                                  |
| <b>Status</b>                                                  | Negative                                                                                                                                                                                                        | Negative                                                             |
| <b>Confidence</b>                                              | High                                                                                                                                                                                                            | High                                                                 |
| <b>Significance</b>                                            | <b>Low-Medium</b>                                                                                                                                                                                               | <b>Low</b>                                                           |
| <b>The extent to<br/>which<br/>impacts can<br/>be reversed</b> | Where possible endemic plant species should be the preferred choice for garden plants. Bracken fern must continue to be removed. The wetland area must continue to be avoided and the buffer of 32m maintained. |                                                                      |

#### **Potential impact on surface water**

##### Impacts on the wetland

The aquaponics component of the development operates as a closed-loop recirculating system that integrates aquaculture and hydroponic plant cultivation within a controlled environment. Water is continuously reused within the system, with nutrients derived from fish waste supporting plant growth. As the system functions as a contained recirculating unit, no routine wastewater discharge from the aquaponics facility to the surrounding environment is anticipated. Consequently, potential impacts on the aquatic environment are primarily associated with indirect risks such as stormwater runoff, accidental spills or poor operational management rather than direct effluent discharge. The Wetland / Aquatic Assessment therefore focused on potential indirect impacts on the adjacent seepage wetlands and associated buffer areas, including possible changes in runoff patterns, sedimentation and water quality.

According to the Wetland / Aquatic Assessment undertaken by EnviroSci (Pty) Ltd (Dr. Colloty), two seepage wetlands were identified within the study area. These wetlands occur within the broader ecological support area identified in the Eastern Cape Biodiversity Conservation Plan and form part of the upper catchment of the Bakens River system. The wetlands are classified as seepage systems that drain in an easterly direction and are primarily maintained through groundwater inputs and subsurface flows following the natural interdunal topography of the area.

The wetland was delineated and it was found that the site is wedged between two wetland areas (seepage areas) and the infrastructure fell within the wetland or within the 32m area (see Figure 2, Figure 3 and Figure 37) indicate that the development falls outside of the 32m area.

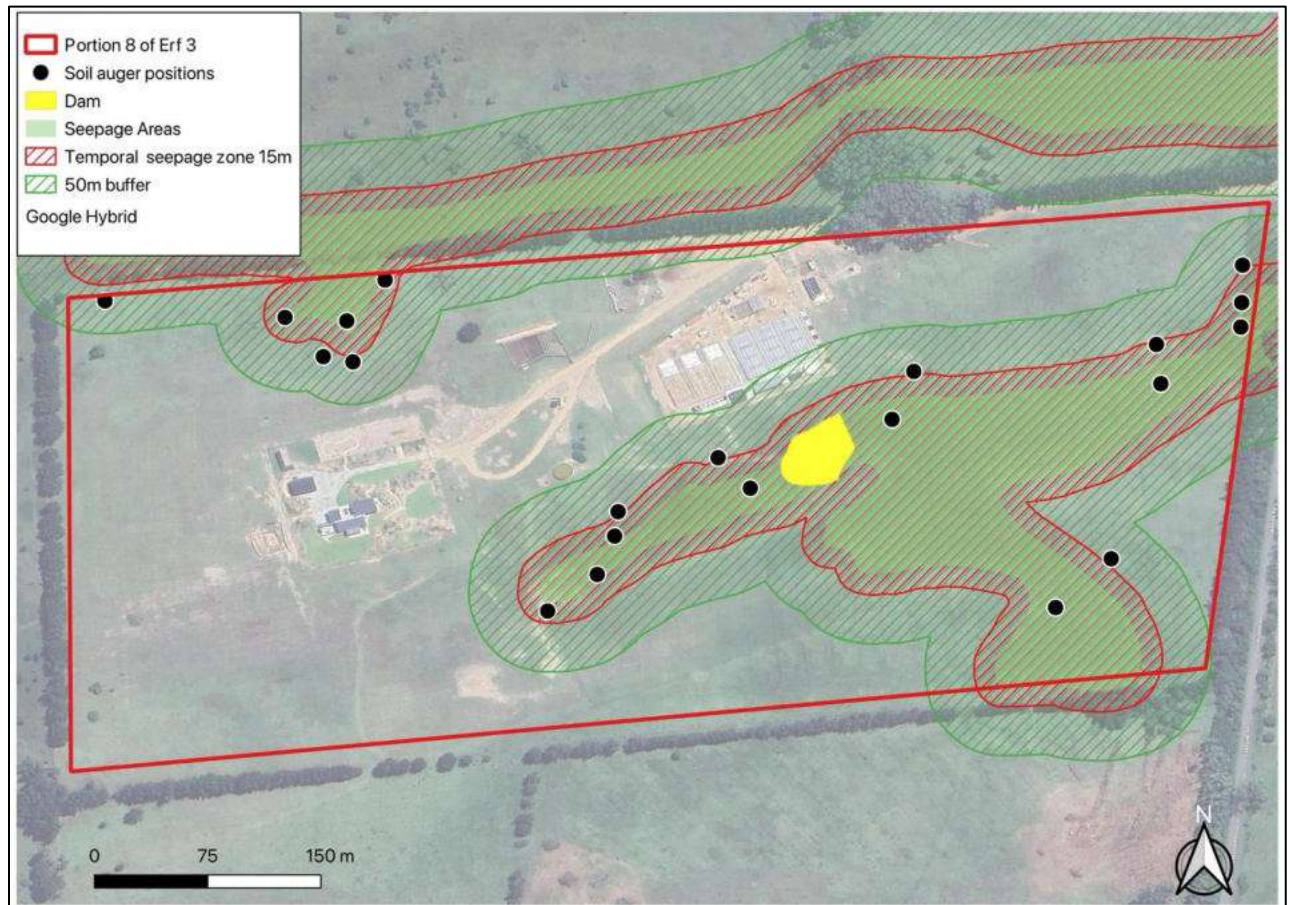


Figure 37: The aquatic features present within the study area, where = Wetland 1 is the northern seepage area and Wetland 2 = the southern seepage area (Colloty, 2025).

The ecological integrity of the wetlands was assessed using the Present Ecological State (PES) methodology. Wetland 1, located in the north-western portion of the site, was classified as a seepage wetland with a Present Ecological State of Category C, indicating a moderately modified system where some change in natural habitat and biota has occurred, but where the basic ecological functioning of the wetland remains largely intact. This wetland was assigned a high ecological importance and sensitivity rating with an overall high sensitivity and a recommended buffer of 50 m.

Wetland 2, located in the central portion of the site below the small dam, was classified as a seepage wetland with a Present Ecological State of Category C/D, indicating a moderately to largely modified system. The wetland has been influenced by historical land use activities, particularly grazing, which has affected vegetation structure and composition. This wetland was assigned a moderate ecological importance and sensitivity rating with an overall moderate sensitivity and a recommended buffer of 50 m.

The specialist confirmed that the development footprint avoided the delineated seepage wetlands and no infrastructure occurs within the wetland systems themselves or within the 32m buffer area. Portions of the development does occur within the 50 m buffer; however, the specialist confirmed that the wetlands remain intact and functional and that the identified impacts are indirect and can be adequately managed through appropriate stormwater management and operational controls.

Therefore, the 50m buffer is not regarded as a “no-go” zone that was impacted, but is regarded as an ecological management buffer zone. As a result, the potential impacts associated with the development are primarily indirect in nature and relate to possible changes in runoff patterns, sedimentation, water quality and disturbance to the surrounding aquatic environment.

With the implementation of appropriate mitigation measures, including the maintenance of the delineated wetland buffers and the development and implementation of a stormwater management plan, the specialist concluded that the residual impacts on the aquatic environment are expected to remain low. The seepage wetlands will continue to function as natural attenuation and filtration systems, contributing to seasonal flow regulation, water quality enhancement and the provision of habitat for wetland-associated species.

Since no clearing of any aquatic habitat occurred during the construction of the aquaponic facility and farm stead, the impact on the loss of intact wetland habitat is low with mitigation.

Table 2: Loss of intact wetland / Water courses

|                                                                | OPERATIONAL<br>(no mitigation)                                                                                                                                                                                                                                                                                                                                                           | OPERATIONAL<br>(with mitigation & maintaining<br>conservation trust) |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Extent</b>                                                  | Site Specific                                                                                                                                                                                                                                                                                                                                                                            | Site Specific                                                        |
| <b>Duration</b>                                                | Long Term                                                                                                                                                                                                                                                                                                                                                                                | Long Term                                                            |
| <b>Intensity</b>                                               | Low                                                                                                                                                                                                                                                                                                                                                                                      | Low                                                                  |
| <b>Probability</b>                                             | Probable                                                                                                                                                                                                                                                                                                                                                                                 | Probable                                                             |
| <b>Cumulative<br/>Impact</b>                                   | Low                                                                                                                                                                                                                                                                                                                                                                                      | Low                                                                  |
| <b>Status</b>                                                  | Negative                                                                                                                                                                                                                                                                                                                                                                                 | Negative                                                             |
| <b>Confidence</b>                                              | High                                                                                                                                                                                                                                                                                                                                                                                     | High                                                                 |
| <b>Significance</b>                                            | <b>Low</b>                                                                                                                                                                                                                                                                                                                                                                               | <b>Low</b>                                                           |
| <b>The extent to<br/>which<br/>impacts can<br/>be reversed</b> | The development footprint has avoided all identified aquatic features, and no clearing of wetland habitat has taken place. The seepage wetlands must continue to be avoided and the delineated buffer areas must be maintained. A stormwater management plan must be implemented to ensure that surface water flows do not increase incision or erosion within downstream seepage areas. |                                                                      |

Based on the information collected during the wetland assessment the proposed development activities, could have resulted in habitat fragmentation, reduction in ecosystem corridors in aquatic environment. However it is unlikely, based on the current / constructed development footprint. The impact on the disturbance of fauna and aquatic habitat fragmentation is moderate without mitigation but reduced to low with mitigation.

Table 3: Disturbance of fauna and habitat fragmentation (aquatic), especially areas linked to Ecological Support Areas

|                                                                | OPERATIONAL<br>(no mitigation)                                                                                                                                                                                                                                                                                                         | OPERATIONAL<br>(with mitigation & maintaining<br>conservation trust) |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Extent</b>                                                  | Site Specific                                                                                                                                                                                                                                                                                                                          | Site Specific                                                        |
| <b>Duration</b>                                                | Long Term                                                                                                                                                                                                                                                                                                                              | Long Term                                                            |
| <b>Intensity</b>                                               | Medium                                                                                                                                                                                                                                                                                                                                 | Low                                                                  |
| <b>Probability</b>                                             | Definite                                                                                                                                                                                                                                                                                                                               | Probable                                                             |
| <b>Cumulative<br/>Impact</b>                                   | Medium                                                                                                                                                                                                                                                                                                                                 | Low                                                                  |
| <b>Status</b>                                                  | Negative                                                                                                                                                                                                                                                                                                                               | Negative                                                             |
| <b>Confidence</b>                                              | High                                                                                                                                                                                                                                                                                                                                   | High                                                                 |
| <b>Significance</b>                                            | <b>Moderate</b>                                                                                                                                                                                                                                                                                                                        | <b>Low</b>                                                           |
| <b>The extent to<br/>which<br/>impacts can<br/>be reversed</b> | The development footprint avoided the seepage wetlands and associated ecological corridors. Maintaining the wetland buffers and preventing further encroachment into these areas will reduce fragmentation impacts. Appropriate stormwater management must ensure that hydrological connectivity between seepage areas is not altered. |                                                                      |

As the development has resulted in hard engineered surfaces, this poses the potential for increase runoff volumes, concentrated in areas. Increase runoff volumes, especially with high velocities, not only increases the potential for erosion, but also changes the regional hydrology, i.e. flows are redirected, but the cognizance of proper stormwater managed, as well as rain capture systems for water use must be implemented. The impact on the runoff patterns and hydrology is moderate without mitigation, but reduced to low with mitigation.



Table 4: Impact on runoff patterns and hydrology

|                                                                | OPERATIONAL<br>(no mitigation)                                                                                                                                                                                                                                                                                                         | OPERATIONAL<br>(with mitigation & maintaining<br>conservation trust) |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Extent</b>                                                  | Site Specific                                                                                                                                                                                                                                                                                                                          | Site Specific                                                        |
| <b>Duration</b>                                                | Long Term                                                                                                                                                                                                                                                                                                                              | Long Term                                                            |
| <b>Intensity</b>                                               | Medium                                                                                                                                                                                                                                                                                                                                 | Low                                                                  |
| <b>Probability</b>                                             | Definite                                                                                                                                                                                                                                                                                                                               | Probable                                                             |
| <b>Cumulative<br/>Impact</b>                                   | Medium                                                                                                                                                                                                                                                                                                                                 | Low                                                                  |
| <b>Status</b>                                                  | Negative                                                                                                                                                                                                                                                                                                                               | Negative                                                             |
| <b>Confidence</b>                                              | High                                                                                                                                                                                                                                                                                                                                   | High                                                                 |
| <b>Significance</b>                                            | <b>Moderate</b>                                                                                                                                                                                                                                                                                                                        | <b>Low</b>                                                           |
| <b>The extent to<br/>which<br/>impacts can<br/>be reversed</b> | The development footprint avoided the seepage wetlands and associated ecological corridors. Maintaining the wetland buffers and preventing further encroachment into these areas will reduce fragmentation impacts. Appropriate stormwater management must ensure that hydrological connectivity between seepage areas is not altered. |                                                                      |

This impact on water quality is mostly related to the construction related impacts and to a limited degree the operational phase but also pertains to any future expansion plans to the site. The impact is low with mitigation but can increase to moderate without mitigation.

Table 5: Risks on the aquatic environment due to water quality impacts

|                                                                | OPERATIONAL<br>(no mitigation)                                                                                                                                                                                                                                                                                                                                                                                 | OPERATIONAL<br>(with mitigation & maintaining<br>conservation trust) |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Extent</b>                                                  | Site Specific                                                                                                                                                                                                                                                                                                                                                                                                  | Site Specific                                                        |
| <b>Duration</b>                                                | Long Term                                                                                                                                                                                                                                                                                                                                                                                                      | Long Term                                                            |
| <b>Intensity</b>                                               | Medium                                                                                                                                                                                                                                                                                                                                                                                                         | Low                                                                  |
| <b>Probability</b>                                             | Definite                                                                                                                                                                                                                                                                                                                                                                                                       | Probable                                                             |
| <b>Cumulative<br/>Impact</b>                                   | Medium                                                                                                                                                                                                                                                                                                                                                                                                         | Low                                                                  |
| <b>Status</b>                                                  | Negative                                                                                                                                                                                                                                                                                                                                                                                                       | Negative                                                             |
| <b>Confidence</b>                                              | High                                                                                                                                                                                                                                                                                                                                                                                                           | High                                                                 |
| <b>Significance</b>                                            | <b>Moderate</b>                                                                                                                                                                                                                                                                                                                                                                                                | <b>Low</b>                                                           |
| <b>The extent to<br/>which<br/>impacts can<br/>be reversed</b> | Potential water quality impacts are mainly associated with construction and operational activities such as spills, chemicals and waste. Appropriate management measures must be implemented including spill prevention, proper storage of chemicals, provision of spill kits and adequate soil and liquid waste management. These measures will reduce the risk of contaminants entering the seepage wetlands. |                                                                      |

Several alien plants species already occur with the site. The applicant has commenced with invasive plant species control, but this would need to be ongoing practice. In terms of the impact on the potential spread of alien species, the impact is

Table 6: Potential spread of alien species

|  | OPERATIONAL<br>(no mitigation) | OPERATIONAL<br>(with mitigation & maintaining<br>conservation trust) |
|--|--------------------------------|----------------------------------------------------------------------|
|--|--------------------------------|----------------------------------------------------------------------|

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Extent</b>                                      | Site Specific                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Site Specific |
| <b>Duration</b>                                    | Long Term                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Long Term     |
| <b>Intensity</b>                                   | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Low           |
| <b>Probability</b>                                 | Definite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Probable      |
| <b>Cumulative Impact</b>                           | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Low           |
| <b>Status</b>                                      | Negative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Negative      |
| <b>Confidence</b>                                  | High                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | High          |
| <b>Significance</b>                                | <b>Moderate</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Low</b>    |
| <b>The extent to which impacts can be reversed</b> | Several alien plant species were observed on the site and within the surrounding areas. These species are currently being actively managed by the landowner. Continued monitoring and eradication of alien invasive species must be maintained to prevent further spread into adjacent seepage wetlands and surrounding natural areas. Regular removal of alien plants and ongoing site management will reduce the likelihood of further establishment and minimize long-term ecological impacts on the aquatic environment. |               |

Overall, the development has avoided the identified aquatic features and, provided that recommended mitigation measures are implemented and the wetland buffers are maintained, the long-term impact on the wetland systems within the study area is considered to be low.

**M2: Operational Environmental Management Plan**

**FOR THE UNAUTHORIZED CLEARING OF VEGETATION ON PORTION 217 (A PTN OF PTN 87) OF THE FARM CRAGGA  
KAMMA NO. 23**

Prepared for Allan Hartsief

## **BACKGROUND**

Digital Soils Africa (Pty) Ltd (DSA) was tasked by Mr. Hartsliet, hereinafter referred to as *the Applicant*, to conduct environmental investigations and complete the Section 24G Application Report for the unauthorised clearing of vegetation for the establishment of farm infrastructure on Portion 217 (a Ptn of Ptn 87) of the Farm Cragga Kamma No. 23. The development involved an access road from the Lakeside Road, residential house, shed, garden, reservoir (184m<sup>3</sup>), fencing, livestock pen, compost site, aquaponics facility with associated fish farm, offices, warehouse and workers quarters. Between 3-4ha was ultimately disturbed to establish this farm, resulting in about 13% of the natural vegetation being impacted.

## **DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER**

**Environmental Assessment Practitioner (EAP):** Natalia Sharp

**Postal address:** 45 Church Street, Walmer, 6070

**Cell Phone:** 082 414 0472

**Email:** [natalie@dsafrica.co.za](mailto:natalie@dsafrica.co.za)

**EAP qualifications:** B.Sc (Botany and Zoology) (UFS); B.Sc. (Hons) Limnology (UFS); Masters in Environmental Management: Evaluation of Phytoplankton as an indicator in a biomonitoring program, with special reference to the Modder River.

**EAP Registrations/Associations:** SACNASP (123443), EAPASA (2020/230), and a member of IAIAsa (7237).  
Natalie Sharp is the project manager and senior Environmental Assessment Practitioner leading this project and is registered as an Environmental Assessment Practitioner (EAP) with the Certification Board for Environmental Assessment Practitioners of South Africa (EAPSA) (Registration Number: 2020/230) and as a Professional Natural Scientist (Pri.Sci.Nat) with the South African Council for Natural Scientific Professions (SACNASP) (Registration Number: 123443). Natalie Sharp has worked in the environmental industry for over twenty years.

## **SUMMARY OF THE CV NATALIA SHARP**

### **Personal Details**

Date of birth: 12 August 1979  
Nationality: South African  
Identity number: 790812 000 7080  
Gender: Female  
Languages: English / Afrikaans

### **Qualifications:**

BSc (2000) UFS – Zoology and Botany  
BSc Honors (2001) UFS - Limnology  
Masters in Environmental Management (2003) UFS - Evaluation of  
Phytoplankton as an indicator in a biomonitoring program, with special reference  
to the Modder River.

### **Experience** (Seventeen years' experience in environmental law and environmental management)

During the 2 years associated with the Centre for Environmental Management  
intense training was provided for equipping Natalia Sharp with adequate  
knowledge in terms of biomonitoring water systems and scientific report writing  
for research done by her through the Centre. Various scientific contributions  
were made during these few years which included formal reports to Bloem  
Water and seminars providing management principles for polluted water bodies,  
thus providing her with additional regulatory and environmental skills.



During the 5 years associated with the DME, now changed to the Department of Mineral Resources (DMR), vast knowledge was gained in terms mine environmental management, the development, rehabilitation and closure of mining and prospecting areas. Environmental Management Programmes, Environmental Performance Assessment Reports, and Closure Reports were scrutinized continually. Therefore, adequate expertise was gained to assist the applicants with relevant environmental and mining advice and providing her with adequate knowledge to evaluate environmental impacts relating to mining. During the 11 years associated with SES (Stellenryck Environmental Solutions), Natalia Sharp has obtained immense understanding in completing environmental impact assessments, not only associated with mining projects, but also for a wide variety of different developing projects such as Light Industrial developments, Road upgrade projects, bush clearing for agricultural developments, and applications for exemptions, and so forth. She has excellent experience in writing environmental reports, which ranges from Scoping Reports, Environmental Management Plans, Environmental Awareness Plans, Mining Work Programs, Closure Plans, Risk Assessments, Performance Evaluations on projects, and Plan of Study reports. She has also been involved in performing biomonitoring on river systems associated with some of the projects, completing it by obtaining all the data and writing the Biomonitoring Report for the relevant Department. This is mainly attributed to her Limnology background and she is competently able to add value to this field in her current position.

During the past 3 years of association with Digital Soils Africa (DSA) as an independent environmental consulting firm that are also soil specialists focussing on all soil solutions in the agricultural and environmental fields, Natalie Sharp has gained more exposure to projects involved with the Department of Agriculture and the Department of Water and Sanitation. This included applications for the cultivation of virgin soil and obtaining knowledge of the administrative processes in applying for these permits, assisting farmers with identifying suitable soils for cultivation and applying to the DWS for water use rights for irrigation.

Natalie Sharp has also gained experience in GIS mapping with the free software QGIS because of working at DSA.

In terms of management skills, DSA appointed Natalie Sharp as the lead project manager on all environmental-related projects: she managed the environmental authorisation projects and specialist team associated with such applications, including Section 24G applications, applications for protected plant species with the Department of Forestry, Water Use License Applications, Cultivation for virgin soil applications, SAHRIS applications, Civil Aviation approvals and correspondence with the Department of Defence.

As the lead project manager, she has gained experience in proposals and cost analysis for projects and has established a network of professional connections in the Eastern Cape region and Northern Cape region.

Centre for Environmental Management University of the Free State: Lab Assistant [2001 – 2003]

Mine Environmental Management [2003-2005] at the Department of Mineral Resources: Environmental Officer

Mine Environmental Management [2005-2008] at the Department of Mineral Resources: Senior Environmental Officer

Stellenryck Environmental Solutions: Senior Environmental Practitioner [2008-2019]

Digital Soils Africa Pty Ltd: Senior Environmental Practitioner [2020-currently]

## Previous Employment

Digital Soils Africa Pty Ltd (DSA) is an independent environmental consulting firm that is also soil specialists, focussing on all soil solutions in the agricultural and environmental fields. The specialists are SACNASP registered and recognized leaders in their fields of study.

The soil specialist services provided include soil surveys, soil erosion mitigation, fertilization management, soil and land capability studies, and wetland delineation amongst others, while the fields of specialization are hydropedology and digital soil mapping. Together the directors have 25 years of experience.

**Prof. Johan van Tol** is currently the national leading researcher on hydropedology. He is a Y1 NRF rated researcher, who boasts 34 peer reviewed scientific publications and has put his research to work in more than 30 consultancy reports. He is also a SACNASP registered scientist.

**Dr. George van Zijl** is Africa's foremost Digital Soil Mapper. For his PhD he developed a DSM protocol for use in southern Africa, and has subsequently improved the methodology to include machine learning such as shown in the mapping of Ntabelanga catchment and City of Joburg Hydropedological mapping. He has served on the scientific committee for international DSM conferences. George has conducted more than 60 consultancy projects and is a SACNASP registered scientist.

**Dr. Darren Bouwer** boasts 12 years of experience as a soil scientist. His PhD incorporated chemical measurements into hydropedological assessments, which improves flow path determination. He has also completed a post-doctorate at Ghent University, Belgium, where he specifically worked on hydropedological modelling. Darren is a SACNASP registered scientist and has completed more than 45 consultancy reports.

### **PURPOSE OF THE DOCUMENT**

Since construction has been completed, this document serves as a programme to manage the environmental impacts during the operational phase of the development. This document will provide mitigation measures to prevent, reduce, avoid, or rehabilitate and mitigation measures must be implemented. The objective will be to limit the negative impacts and increase positive impacts.

The Environmental Management Plan (EMP) will also:

- Provide applicable legislative framework;
- Provide management objectives and actions to achieve such objectives;
- List roles and responsibilities;
- Provide record-keeping methods, auditing or review, and report writing;

### **DESCRIPTION OF THE PROPOSED LISTED ACTIVITIES**

| <b>Act. No.</b>                     | <b>Listings</b>                                                                                                                                           | <b>Describe the portion of the proposed project to which the applicable listed activity relates.</b>           | <b>Coordinates of listed activities (centre point coordinates of the listed activity location)</b> |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| GNR 327<br>Activity 27              | Clearing of vegetation of 1Ha but less than 20Ha of indigenous vegetation.                                                                                | About 4-5 Ha have been cleared to establish a farm house, an aquaponic facility and associated infrastructure. | 33° 57' 53.08" S<br>25° 24' 52.68" E                                                               |
| GNR 324<br>Activity 4<br>(a)(i)(gg) | Development of a road wider than 4m with a reserve less than 13.5m outside of urban areas within the Eastern Cape within 10km from national parks or wold | An access road from the Lake Farm Road                                                                         | 33° 57' 52.48" S<br>25° 24' 49.65" E                                                               |

|  |                                                                                                                         |  |  |
|--|-------------------------------------------------------------------------------------------------------------------------|--|--|
|  | heritage sites or 5km from any other protected area identified of NEMPAA or from the core areas of a biosphere reserve. |  |  |
|--|-------------------------------------------------------------------------------------------------------------------------|--|--|

## **LEGISLATIVE REVIEW**

### **ENVIRONMENTAL ASSESSMENTS UNDERTAKEN FOR THE DEVELOPMENT**

In terms of the National Environmental Management Act 107 of 1998 ("NEMA"), environmental authorization must be obtained before any person can conduct activities that cause damage to the environment. The intention of environmental legislation is to regulate the interaction of human life with the natural environment. The purpose of environmental legislation is to protect and preserve the environment for current and future generations. The following Acts and Regulations apply to the proposed project:

#### **4. LEGISLATION**

1. Section 24 of the **Constitution of the Republic of South Africa Act (No 108 of 1996)** states that everyone has the right:
  - (ii) to an environment that is not harmful to their health or well-being;
  - (iii) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development.
2. The **National Environmental Management Act (Act No 107 of 1998)**. NEMA is based on the concept of sustainable development and the objective is to provide for cooperative environmental governance, by providing the legal framework for environmental planning and development.

NEMA has basic principles that state:

- That all the principles throughout the Republic apply to the actions of all organs of state that may significantly affect the environment;
- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
- Development must be socially, environmentally and economically sustainable.
- Sustainable development requires consideration of all relevant factors.
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.
- There should be equal access to environmental resources, benefits and services to meet basic human needs and the Government should promote public participation when making decisions about the environment;
- Decisions must be taken openly and transparently and there must be access to information;
- Communities must be given environmental education;

- Workers have the right to refuse to do work that is harmful to their health or the environment;
- The role of youth and women in environmental management must be recognized;
- The person or company who pollutes the environment must pay to clean it up;
- The environment is held in trust by the state for the benefit of all South Africans; and
- The utmost caution should be taken when permission for new developments is granted.

Therefore, a Section 24G application was submitted in accordance with Section 24 of NEMA.

3. The **Environmental Impact Assessment Regulations: 324, 325, 326 & 327 of 7 April 2017**. The purpose of these Regulations is to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing, and consideration of, and decision on, applications for environmental authorizations for the commencements of listed activities, subjected to environmental impact assessment, to avoid or mitigate detrimental impacts on the environment, and to optimize positive environmental impacts, and for matters pertaining thereto.

#### **Duty of Care**

Chapter 7 of the NEMA prescribed a general 'duty of care' and the requirement to remediate environmental damage. Section 28(1) of NEMA states:

Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or insofar as such harm to the environment is authorized by law or cannot reasonably be avoided or stopped, to minimize and rectify such pollution or degradation of the environment.

The Duty of Care can, inter alia, be enforced through directives issued by the competent authority.

In terms of 2014 NEMA EIA Regulations, as amended, the activities listed in the above Table are triggered by this proposed development, thereby requiring an EA from the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT).

Therefore, listed activities were identified and an application was submitted for authorising the listed activities.

4. The **National Water Act (No. 36 of 1998)**. The major objectives of the National Water Act are to:

- Aid in providing basic human needs;
- Meet the growing demand for water sustainably;
- Ensure equal access to water and use of water resources
- Protect the quality of water of natural resources;
- Foster social and economic development; and
- Conserve aquatic and related ecosystems.

The development triggers water uses in terms of Section 21 of the NWA, thus an application must be submitted.

5. The **National Environmental Management: Biodiversity Act:**

The act provides the framework for: i) the management and conservation of biological diversity within the Republic and the components of such biological diversity; ii) the use of indigenous biological resources in a sustainable manner; and iii) the fair and equitable sharing among stakeholders of benefits arising from bioprospecting involving indigenous biological resources.

The act also provides for co-operative governance in biodiversity management and by establishing a South African National Biodiversity Institute, the objectives of the Act can be achieved.

Three Regulations are applicable: 1) Threatened and Endangered Ecosystems, 2) ToPs (2008) (Threatened or Protected species), and 3) AIS (Alien and Invasive Species).

No protected plant or animal species were identified at the site.

6. The **National Environmental Management Air Quality Act 2004 (NEMAQA)** intends:

- To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development.
- To provide for national norms and standards regulating air quality monitoring, management and control by all sphere of government.
- For specific air quality measures.
- For matters incidental thereto.

The proposed development does not trigger an application in terms of the NEMAQA. However, the National Dust Control Regulation under GN-R827 of 1 November 2013 specifies dust-fall rates for residential and non-residential areas. Preventive measures must be employed to minimise dust fall during residential establishment/ preparation.

7. The **National Environmental Management: Protected Areas Act:**

The Protected Areas Act provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. It provides for the establishment of a national register of all national, provincial and local protected areas and the management of those areas. The Act also provides for the governance and functions of South African National Parks and matters in connection therewith. The site is located within 5km away from any protected areas, thus GNR 324 (Listing Notice 3) is applicable.

8. **National Environmental Management Waste Act, 2008 (act 59 of 2008):**

The purpose of the Act is to regulate waste management to protect the health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for:

- Securing ecologically sustainable developments;
- Provide for institutional arrangements and planning matters;
- National norms and standards for regulating the management of waste by all spheres of government;
- To provide for specific waste management measures;
- To provide for the licensing and control of waste management activities;
- To provide for the remediation of contaminated land;
- To provide for the national waste information system;
- To provide for compliance and enforcement.

The development would not require a Waste License for the generation, storage, treatment, recycling or disposal of general- or hazardous waste, as this is a residential development of which sewage will be pumped into the NMBM infrastructure.

9. The **National Road Traffic Act, 1996 (Act 93 of 1996):**



The Act sets out the rules pertaining to who can drive a vehicle, the qualifications one has to have before one can be licensed to drive a vehicle, how one may operate a vehicle on the various types of roads and what happens in the case of a person operating a vehicle in a reckless or negligent manner or failing to comply with the rules of the road.

The developer will ensure that subcontractors are sensitized to the matter and provide the necessary transport training. The principles will apply to all road users to not conduct reckless driving and speeding, which must be done in collaboration with the Traffic Department of the Nelson Mandela Bay Municipality. Since no municipal roads are involved in this project, no application to the SANRAL is required.

#### 10. The **Alien and Invasive Species Regulations, 1 August 2014:**

The Regulations categorise the listed invasive species, list restrictive activities about the release and spread of invasive species, provide a national framework to monitor, control and eradicate invasive species, regulate permits, provide risk assessment framework, and list compliance and enforcement regulations.

The development has not resulted in the introduction of alien and invasive plant species on the property. It is however under control management to remove the invasive vegetation.

#### 11. **Bio-regional Plans:**

In terms of the provincial and local protected areas, the proposed development is situated not within an area that has been identified as a Critical Biodiversity Area according to the desktop study and the terrestrial and aquatic specialists confirmed this status.

The Nelson Mandela Bay BGIS, and the Eastern Cape Biodiversity Conservation Plan (ECBCP) aims to integrate the natural environment into land-use decisions at the municipal level to facilitate and achieve sustainable development.

However, one must consider site-specific parameters and the surrounding land use and conservation value to determine the biodiversity importance of a site, and not just rely on desktop studies. Therefore, a terrestrial assessment was conducted by Dr. Steyn, the appointed specialist and a wetland/aquatic assessment was conducted by Dr. Colloty.

#### 12. The **National Forests Act No. 84 of 1998 (NFA) & List of Protected Tree Species under the National Forest Act, 1998 (Act No. 84 of 1998).**

The purpose of this Act is to promote the sustainable management and development of forests for the benefit of all. The Act also provides special measures for the protection of certain forests and trees and promotes the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes.

According to the Act, a natural forest is defined as a group of indigenous trees whose crowns are largely contiguous or which have been declared by the Minister to be a natural forest under section 7(2). No person may cut, disturb, damage or destroy any indigenous tree in a natural forest; or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any tree, or any forest product derived from a tree within a natural forest.

The principles of the Act indicate that:

- a) Natural forests must not be destroyed save in exceptional circumstances where, in the opinion of the Minister, proposed new land use is preferable in terms of its economic, social or environmental benefits;

- b) A minimum area of each woodland type should be conserved; and
- c) Forests must be developed and managed so as to-
  - (i) conserve biological diversity, ecosystems and habitats;
  - (ii) sustain the potential yield of their economic, social and environmental benefits;
  - (iii) promote the fair distribution of their economic, social, health and environmental benefits;
  - (iv) promote their health and vitality;
  - (v) conserve natural resources, especially soil and water;
  - (vi) conserve heritage resources and promote aesthetic, cultural and spiritual values; and
  - (vii) advance persons or categories of persons disadvantaged by unfair discrimination. Page 15 of 82 (4) The Minister must determine the minimum area of each woodland type to be conserved in terms of subsection (3)(b) based on scientific advice.

The site does not host any protected species.

### 13. **Eastern Cape the Provincial Nature Conservation Ordinance of 1974 (PNCO)**

The Provincial Nature Conservation Ordinance (PNCO) protects the endangered and protected flora outside of protected areas. Species classified as Schedule 3 are endangered species. Species classified as Schedule 4 are protected species. A permit is required for the removal or destruction of species on the PNCO list.

### 14. **The National Heritage Resources Act (No 25 of 1999):**

The basic objectives of the National Heritage Resources Act are to set norms and maintain essential national standards and general principles for the governing and management of heritage resources in the Republic and to protect heritage resources of national significance.

The South African Heritage Resources Agency (SAHRA) has been established to coordinate and promote the management of heritage resources at the national level.

According to Section 38 of the National Heritage Resources Act, (no. 25 of 1999) the development falls within the threshold (development of a site exceeding 5000m<sup>2</sup>) of notifying/applying to the responsible heritage resources authority, thus the an application to ECPHRA was be made.

A Phase I AIA and Phase I PIA were completed and an application was submitted for ECPRHA to assess the application.

### 15. **Occupational Health and Safety Act (No 85 of 1993):**

The act provides for the health and safety of persons at work and the health and safety of persons in connection with the use of machinery, the protection of persons other than persons at work, against hazards to health and safety arising out of or in connection with the activities of persons at work. The EMPs should provide measures to ensure that the objectives of the Act are met on this site.

Construction employers and employees will have to adhere to the Health & Safety rules to ensure a safe working environment. The construction employers must provide a 'Builders Code of Conduct' if required by the DEDEAT.

#### 16. **Spatial Planning and Land Use Management Act (No. 16 of 2013):**

The Act provides a framework for spatial planning and land use management in South Africa. It further provides the framework to:

- Specify the relationship between spatial planning and the land use management system and other kinds of planning;
- Provide for inclusive, developmental, equitable and efficient spatial planning in the different spheres of government;
- Provide a framework for the monitoring, coordination and review of the spatial planning and land use management system;
- Provide a framework for policies, principles, norms and standards for spatial development planning and land use management;
- Address past spatial and regulatory imbalances;
- Promote greater consistency and uniformity in the application procedures and decision-making by authorities responsible for land use decisions and development applications;
- Provide for the establishment, functions and operations of Municipal Planning Tribunals;
- Provide for the facilitation and enforcement of land use and development measures;

No rezoning is required for this development.

#### 17. The **World Heritage Convention Act, 1999** intends to provide for:

- The incorporation of the World Heritage Convention into South African law.
- The enforcement and implementation of the World Heritage Convention in South Africa.
- The recognition and establishment of World Heritage Sites.
- The establishment of Authorities and the granting of additional powers to existing organs of state.
- The powers and duties of such Authorities, especially those safeguarding the integrity of World Heritage Sites.
- Where appropriate, the establishment of Boards and Executive Staff Components of the Authorities.
- Integrated management plans over World Heritage Sites.
- Land matter in relation to World Heritage Sites.
- Financial, auditing and reporting controls over the Authorities.
- To provide for incidental matters.

The site is not located in any area identified in terms of an International Convention.

#### 18. And **UNESCO Man & Biosphere Programme**

The UNESCO Man & Biosphere Programme is an Intergovernmental Scientific Programme that aims to establish a scientific basis for the improvement of relationships between people and their environments. Its World Network of Biosphere Reserves currently counts 669 sites in 120 countries all over the world, including 16 transboundary sites. The site located within any Biosphere Reserve.

#### 19. **Nelson Mandela Bay Municipality Integrated Development Plan:**

The Draft Integrated Development Plan (2022/2023 – 2026/27) is a planning process from the NMBM, which combines legislative requirements, stakeholder needs, political priorities, intergovernmental alignment, budget parameters, institutional capacity, strategic management and implementation.

The focus of this year's IDP review has therefore been on aligning municipal programmes, projects, strategies and budgets with:

- (a) community needs and priorities
- (b) updated statistical information
- (c) expanding and improving the situational analysis
- (d) more outcomes orientated targets, to make them realistic and measurable
- (e) the revised Spatial Development Framework and related sector plans;
- (f) Outcome 9 outputs
- (g) integrated and sustainable human settlements, as envisaged in Outcome 8
- (h) more integrated funding streams
- (i) the prioritisation of job creation and poverty eradication

The accommodation development is in line with IDP objectives for urban development.

## **20. The Integrated Environmental Policy for the Nelson Mandela Bay Municipality:**

The Integrated Environmental Policy (IEP) outlines the vision, priorities and commitments of the Nelson Mandela Bay Municipality (NMBM), in respect of the management of the environment in the area of its jurisdiction. The IEP ensures that biodiversity within NMB is conserved in a sustainable manner for present and future generations. The property is private and is in line with the provisions of the NMBMM LUS Regulations.

## **21. The National Biodiversity Offset Guideline**

Biodiversity offsetting consists of actions that are taken to comply with biodiversity offset outcomes required in conditions in EAs, Biodiversity Offset Implementation Agreements and environmental management programmes (EMPrs).

The following site characteristics increases the likelihood that biodiversity offsetting as per the NEMA National Biodiversity Offset Guideline (GN R 3569) legislated on the 23rd of June 2023 will be required:

- The site is in critically endangered Algoa Sandstone Fynbos as per SANBI.
- A site visit confirmed that no natural vegetation remains on site.
- Two protected plant species were observed.
- Avoid developing in the sensitive riverine corridor in the south. Regardless of the degraded vegetation compositions the riverine zone still functions as an ecological corridor and must not be impacted. The wetland area identified in the Terrestrial Report is recommended as a 'no-go' area.

The Biodiversity Offset Guideline is an implementation guideline contemplated in section 24J of the National Environmental Management Act, 1998 (NEMA). Guidelines published in terms of that section give guidance on, *inter alia*, the implementation, administration, and institutional arrangements of the Environmental Impact Assessment Regulations, 2014 (EIA Regulations) or subsequent regulations regarding the environmental impact assessment process.

Based on the findings in the Terrestrial Report, no biodiversity offsetting is required.

## 22. DEA (2010) IEM Guideline 7 Public Participation:

The EIA Regulations stipulate that “Public Participation” must be incorporated in the EIA process. The Guideline aims to ensure that a fair Public Participation Process is followed.  
A Public Participation Process according to the Guideline was conducted.

### **METHOD STATEMENT & ACTIVITY SPECIFIC MANAGEMENT PLAN**

The Method Statements set out the materials, labour, and method that the contractor proposes using to carry out an activity, identified by the Environmental Officer and/or Project Manager. The Method Statements contain sufficient detail such that the Environmental Officer and Project Manager can assess whether the Contractor's proposal is following the requirements of the Environmental Management Plan. The contractor must sign each Method Statement along with the Environmental Officer and Project Manager to formalize the approved Method Statement. Method Statements and/or Management Plans must be submitted by the Contractor to the Project Manager and Environmental Officer for approval before the commencement of the activity.

The Method Statements for this project, as a minimum, must include:

- Soil Management and Erosion;
- Stormwater control;
- Flora & Fauna Management;
- Fires
- Waste

Method Statements must address the following aspects:

- What – a brief description of the work to be undertaken;
- How – a detailed description of the process of work, methods and materials;
- Where – a description of the location of the work (if applicable); and
- When – the sequencing of actions with commencement and completion date estimates.

The Applicant must monitor the implementation of the Method Statements and activity-specific management plans during the operation phase of the project.

### **Planning and Design Phase Management**

Planning and design of the site were done by the Applicant, Architects and builders. This phase has been completed.

### **Construction Phase Management**

The construction phase has been completed.

### **Operation Phase Management**

The overall goal for the operational phase is to manage the activities associated with the operation and maintenance of the site in such a way that:

- The development maintains its positive socio-economic impact;
- Management of the 4-5 Ha area and ensure it is kept in good condition;
- Manage stormwater
- Manage invasive plant infestation
- Maintenance and repair of the site by the Applicant
- The activity complies with all relevant legislation, permits, and authorizations.



Also from a development point of view, the overall goal would be to:

- Maintain infrastructure required for the development and maintain infrastructure.
- Conduct routine maintenance inspections and repairs where required;
- Control waste.

### **ORGANIZATIONAL REQUIREMENTS**

The Applicant should be familiar with the requirements of the EMP and should execute all maintenance activities in an environmentally responsible manner.

This overview offers a perspective on the proposed organization of the EMP and the recommended responsibilities of key members of the project team. The ultimate responsibility and public accountability for the EMP and general environmental management reside with the Applicant.

The workers will be responsible for implementing the instructions from the site manager, and it is recommended that the site manager appoint a responsible worker to report back on a daily/weekly/monthly basis, ensuring compliance with the conditions of the EMP. If needed, provide a basic level of environmental training to the responsible worker/s.

If needed, an independent and external Environmental Control Officer (ECO) can be appointed by the Applicant to assist and advise on the implementation of the EMP and to conduct environmental audits no less than once every five (5) years unless otherwise instructed by the DEDEAT.

## **5. ROLES AND RESPONSIBILITIES**

### **Authorities**

The issuing of the necessary permits and authorizations is the responsibility of the authorities, in this case, DEDEAT. The authorities will also ensure that the Applicant complies with the conditions of the Environmental Authorisation and other permits/licenses/approvals.

As well as issuing the necessary permits/licensing from:

- ECPHRA for clearing land more than 5000m<sup>2</sup> for development.
- Department of Water and Sanitation for a Water Use License as per Section 21 (c)&(i) of the NWA.

Authorities are entitled to perform site inspections to ensure compliance with the conditions and in the case of non-compliance, the authorities may provide instructions to ensure an action plan with corrective measures is carried out or to cease the project, especially in the case of long-term non-compliance.

### **Applicant**

The Applicant has the responsibility for environmental management during the operational phase.

The EMP becomes legally binding to the Applicant. The activities are regarded as permanent therefore there is no provision made for decommissioning activities.

In summary, the Applicant is responsible for:

- Reviewing the conditions of the Environmental Authorisation and environmental monitoring programme in the EMP or as recommended by the ECO;
- Ensuring that the required environmental audits are undertaken on a timely basis and that the results of the audits are communicated to all personnel that are responsible;
- Implementing an environmental monitoring programme approved by the authorities and providing such results to the authorities;
- Conducting regular site inspections and monitoring to ensure compliance with the EMP;
- Advising on actions to be taken in the event of incidents or public complaints;
- Keeping a complaint register on-site/on the property.

### **Responsible Contractor**

It is the responsibility of the Contractor to ensure that there is compliance with the environmental specifications contained in the EMP and EA. This implies that the Contractor must familiarise themselves with the documentation and understand the restrictions and conditions. If any infringements are noted, the ECO, Site Manager, and Applicant must be notified before further action is taken.

The Contractor will also be responsible for the workforce on-site and could appoint a suitable site manager who must report to the Contractor.

### **Sub-Contractors**

Sub-contractors must operate under the supervision of the Contractor and are liable for issues associated with their actions.

### **Environmental Control Officer or Site Manager**

An Environmental Control Officer (ECO) or Site Manager can be appointed by the Applicant to advise and assist where necessary and to monitor the implementation of the EMP, as an external function. The ECO or SM must have previous experience in environmental management and compliance monitoring.

The ECO or SM should conduct an independent evaluation of compliance with the EMP, but is not responsible for enforcing the conditions of the EMP.

Specific responsibilities include:

- Undertake environmental site audits as determined by the responsible authority;
- Recommend environmentally appropriate solutions to environmental problems;
- Recommend additional environmental management measures, if applicable;
- To assist in environmental training for the staff;
- Help raise awareness for environmentally sensitive issues and help foster an appropriate environmental attitude towards the environment;
- Respond to non-compliance and provide corrective actions and procedures;
- Assist the Applicant if liaising with authorities is required.

### **MITIGATION MEASURES & MONITORING**

The following maintenance and mitigation measures are recommended for implementation by the Applicant for the duration of the operational phase.

## GENERAL ADMINISTRATIVE RESPONSIBILITIES FOR OPERATIONAL PHASE

| Operational Phase Actions:                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                            |                                                                         |                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Item                                                                                       | Actions/Management Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Responsible Person & Time Frame                                                                                                                                                                                                                                                                                                                            | Monitoring Methods                                                      | Indicators                                                                                                                                                                                |
| Safety and Security                                                                        | <ul style="list-style-type: none"> <li>Ensure that emergency procedures (in relation to fire, spills, contamination of the ground, accidents to employees, use of hazardous substances, etc.) are regularly conveyed and made known to retail workers.</li> <li>Keep data of the emergency procedures practicality, including responsible personnel, contact details of emergency services, etc. updated. Make any new changed available to all the relevant personnel.</li> <li>Maintain the emergency and safety signage on site and demarcate any areas which may pose a safety risk if it fades.</li> </ul> | <ul style="list-style-type: none"> <li>The Applicant or responsible site manager are responsible throughout the operational phase.</li> <li>It must be ensured that the health and safety of staff/labours are prioritised, updated, and protocols are in place, which is the responsibility of the Applicant throughout the operational phase.</li> </ul> | <ul style="list-style-type: none"> <li>Continued monitoring.</li> </ul> | <ul style="list-style-type: none"> <li>Number of safety/emergency incidents.</li> <li>Monitoring Reports on file to be used for environmental auditing as per EA, if required.</li> </ul> |
| Prevent further loss of indigenous vegetation outside the authorised development footprint | <ul style="list-style-type: none"> <li>Development footprint must be clearly defined and maintained.</li> <li>No additional clearing of indigenous vegetation outside the established footprint may occur.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>The Applicant</li> </ul>                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Monthly inspection</li> </ul>    | <ul style="list-style-type: none"> <li>Disturbance limited to authorised footprint</li> </ul>                                                                                             |
| Maintain indigenous vegetation cover in surrounding areas.                                 | <ul style="list-style-type: none"> <li>Areas outside the development footprint must remain in a natural or semi-natural state to maintain ecological functioning</li> <li>The fire management plan must be revised annually to ensure relevance and effectiveness.</li> <li>No open fires would be allowed on the surrounding areas.</li> </ul>                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>The Applicant will be responsible for the behaviour of their staff with specific reference to environmental management during the operational phase.</li> </ul>                                                                                                                                                     | <ul style="list-style-type: none"> <li>Visual inspection.</li> </ul>    | <ul style="list-style-type: none"> <li>Presence of intact natural vegetation.</li> <li>Site is clear of alien vegetation.</li> </ul>                                                      |

|                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                      |                                                                                                                                  |                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                            | <ul style="list-style-type: none"> <li>Indigenous plant species should be encouraged to established in gardens.</li> <li></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                      |                                                                                                                                  |                                                                                                                                                                                                                         |
| Control alien invasive plant species<br>Prevent spread of invasive species | <ul style="list-style-type: none"> <li>Alien invasive species identified on site (e.g. <i>Cestrum laevigatum</i>, <i>Pinus spp.</i>, <i>Cenchrus clandestinus</i>, <i>Rubus fruticosus</i>, <i>Pteridium aquilinum</i>) must be removed and controlled through an ongoing alien vegetation management programme.</li> <li>The Alien Invasive Species (AIS) management plan must continue into the operational phase and ensure that all listed AIS are continuously remove from the site.</li> <li>Regular surveillance and follow-up clearing of AIS must take place.</li> <li>All category 1a, 1b &amp; 2 listed plants must be eradicated from the site.</li> <li>Cleared invasive plant material must be removed from site and disposed of at a suitable facility or appropriately treated to prevent re-establishment.</li> <li>Alien invasive plant species within the wetland buffer area must be controlled and removed where they occur.</li> <li>Only indigenous vegetation must be allowed to establish naturally within the wetland buffer area.</li> </ul> | <ul style="list-style-type: none"> <li>The Applicant must check for alien invasive vegetation and remove thereof.</li> </ul>         | <ul style="list-style-type: none"> <li>Check evidence of alien vegetation bi-annually.</li> <li>Alien Control Report.</li> </ul> | <ul style="list-style-type: none"> <li>Reduction of invasive species cover.</li> <li>No regeneration of cleared alien species.</li> <li>Presence of natural indigenous vegetation within the wetland buffer.</li> </ul> |
| Promote ecological rehabilitation                                          | <ul style="list-style-type: none"> <li>Where possible, disturbed areas should be stabilised and revegetated with locally occurring indigenous species.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>The Applicant</li> </ul>                                                                      | <ul style="list-style-type: none"> <li>Annually</li> </ul>                                                                       | <ul style="list-style-type: none"> <li>Successful establishment of indigenous vegetation</li> </ul>                                                                                                                     |
| Stormwater control                                                         | <ul style="list-style-type: none"> <li>Stormwater systems must be well maintained. The Aquaponics must remain a close loop system.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Site inspections should be conducted by the Applicant annually or after heavy rain</li> </ul> | <ul style="list-style-type: none"> <li>Visual inspection of stormwater structures</li> </ul>                                     | <ul style="list-style-type: none"> <li>Incidence of stormwater contamination.</li> </ul>                                                                                                                                |

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <ul style="list-style-type: none"> <li>Prevent erosion and sedimentation</li> </ul> | <ul style="list-style-type: none"> <li>Stormwater runoff must be directed through controlled flow paths to prevent erosion and sediment transport towards the adjacent wetlands.</li> <li>Stormwater management from the rest of the site should not endanger off-site environment.</li> <li>Rain harvesting is also advocated.</li> <li>Stormwater runoff from development areas must be controlled to prevent direct discharge into the wetland.</li> <li>Stormwater must be dispersed in a controlled manner to avoid erosion, sedimentation or channel formation within the wetland or buffer area.</li> <li>Any erosion or disturbance that may occur within the wetland buffer area must be stabilized immediately using appropriate rehabilitation measures.</li> </ul> | <p>events to detect signs of stormwater structure failure.</p> <ul style="list-style-type: none"> <li>The Applicant must inspect the site to ensure stormwater management systems are effective.</li> <li>Visual inspection must be conducted by the Applicant to detect any source of degradation after heavy rain events.</li> </ul> | <p>and downstream respective areas.</p> <ul style="list-style-type: none"> <li>Review stormwater system plans.</li> <li>As required following inspection.</li> </ul> | <ul style="list-style-type: none"> <li>Visible leaks/ water wastage.</li> <li>Visible surface erosion.</li> <li>No visible erosion channels</li> <li>Stormwater infrastructure directing runoff away from the wetland and evidence of no erosion or concentrated flow entering the wetland.</li> <li>No visible erosion channels, sediment deposition or scouring within the wetland.</li> <li>No active erosion or exposed soil within the wetland buffer area.</li> </ul> |
| Maintain natural drainage pattern                                                   | <ul style="list-style-type: none"> <li>Natural drainage routes must be maintained and not obstructed by infrastructure or landscaping.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>The Applicant</li> </ul>                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>Quarterly</li> </ul>                                                                                                          | <ul style="list-style-type: none"> <li>Drainage functioning effectively</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                          |
| Manage runoff from developed areas                                                  | <ul style="list-style-type: none"> <li>Stormwater from roofs, access roads and hardened areas must be managed through infiltration, dispersion or detention measures to reduce concentrated flow entering natural areas.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>The Applicant</li> </ul>                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>After major rainfall events</li> </ul>                                                                                        | <ul style="list-style-type: none"> <li>Controlled runoff and no erosion.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                         |
| Early detection of stormwater failures                                              | <ul style="list-style-type: none"> <li>Stormwater structures and drainage paths must be inspected regularly to identify erosion, blockages or failures.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>The Applicant or ECO</li> </ul>                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>Monthly</li> </ul>                                                                                                            | <ul style="list-style-type: none"> <li>Maintenance records and inspection reports</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                |



|                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                          |
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| <ul style="list-style-type: none"> <li>Prevent pollution</li> </ul> | <ul style="list-style-type: none"> <li>Regular maintenance of stormwater and sewage system – this will be the responsibility of the Applicant/Site Owner.</li> <li>Drainage systems must be monitored and maintained to ensure that the jojo tanks have a sufficient carrying capacity to cater to the volume of stormwater run-off, as per the engineer report.</li> <li>Any litter blocking the stormwater system must be removed.</li> <li>The refuse will be collected and disposed of at the registered waste disposal site as per the normal practice for business and residential premises.</li> <li>Waste must be handled as discussed under the heading 'Waste'.</li> <li>Sewerage/wastewater systems must be properly connected to the existing structures.</li> <li>No dumping of waste, rubble, garden refuse or any foreign material within the wetland or buffer area.</li> <li>Vehicles, machinery or heavy equipment must not enter the wetland area.</li> </ul> | <ul style="list-style-type: none"> <li>The Applicant</li> <li>The DEDEAT and the DWS are responsible for compliance monitoring.</li> <li>The Applicant must visually inspect runoff basins, stormwater control structures, annually to ensure that they are in an acceptable condition.</li> <li>Regular visual inspection must be conducted by the Applicant to detect any source of surface water pollution.</li> <li>The Applicant is responsible to contact the relative authority if a large spill occurs and report the incident immediately.</li> </ul> | <ul style="list-style-type: none"> <li>Visually inspect runoff basins, stormwater control structures.</li> <li>Visually inspect areas of working.</li> <li>Monthly water consumption records.</li> <li>Continued monitoring.</li> <li>Monthly inspection to ensure waste is not dumped.</li> </ul> | <ul style="list-style-type: none"> <li>Number of pollution incidents.</li> <li>Consistent water usage.</li> <li>Monitoring Reports on file to be used for environmental auditing as per EA, if required.</li> <li>Absence of waste or dumping within the wetland area.</li> <li>No tracks, compaction or disturbance within the wetland area.</li> </ul> |
| Maintain wetland ecological functioning                             | <ul style="list-style-type: none"> <li>No infrastructure, landscaping or vegetation clearing may occur.</li> <li>No additional disturbance must occur within the wetland area or sensitive aquatic habitat.</li> <li>The wetland buffer area identified in the specialist report must remain free from further development or disturbance.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>The Applicant</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Ongoing</li> <li>Quarterly and after heavy rainfall</li> <li>Alien vegetation must be</li> </ul>                                                                                                                                                            | <ul style="list-style-type: none"> <li>Wetlands remain undisturbed</li> <li>No new infrastructure, excavation, dumping or vegetation clearing within the wetland area.</li> <li>No encroachment or construction activities within the recommended buffer zone.</li> </ul>                                                                                |
| Fire Management                                                     | <ul style="list-style-type: none"> <li>The fire emergency plan must be relevant and updated and known to all workers on the site.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>The Applicant/Site Owner must appoint a fire officer.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>Continued monitoring, including:</li> </ul>                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>Compliance with measures.</li> <li>Number of fire incidents.</li> </ul>                                                                                                                                                                                                                                           |

|                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                |                                                                                                                                                                                                           |
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| <ul style="list-style-type: none"> <li>• Prevent the loss of life (humans, fauna, or flora) within the site and surrounding area.</li> <li>• No site fires are to be caused by operational activities and workers.</li> <li>• Approved emergency response procedures are relevant and updated.</li> </ul> | <ul style="list-style-type: none"> <li>• No burning of waste will be allowed at the site.</li> <li>• Fire-fighting equipment will be in working condition, regularly checked and maintained and available on-site.</li> <li>• Clearly mark fire points and fire assembly areas must be maintained.</li> <li>• Conduct a fire audit once a year, to ensure fire-fighting equipment is still functional and the emergency response plan is still appropriate.</li> <li>• Access to a fire hydrant system must not be obstructed at the site.</li> <li>• Maintain the clearly mark the fire exits and escape routes.</li> <li>• Ensure that the designs are still relevant and provide fire exits from all the working areas.</li> <li>• The Applicant/Site Owner must ensure that there is compliance with the National Veld and Forest Fire Act (No. 101 of 1998).</li> <li>• The Applicant/Site Owner must ensure proper emergency response procedures are in place for dealing with fires.</li> <li>• The Applicant/Site Owner or representative site manager must ensure that the burning of waste is not permitted.</li> <li>• The Applicant/Site Owner or representative site manager must ensure suitable precautions will be taken (e.g. suitable fire extinguishers, water bowsers, welding curtains) when working with welding or grinding equipment.</li> </ul> | <ul style="list-style-type: none"> <li>• The fire officer must inspect and ensure that firefighting equipment onsite is functional and in working condition quarterly.</li> <li>• The Applicant/Site Owner is responsible for supplying and maintaining firefighting equipment for the duration of the operation.</li> </ul> | <ul style="list-style-type: none"> <li>○ Inspect attendance register for training sessions.</li> <li>○ Inspect fire extinguishers and certificates.</li> </ul> | <ul style="list-style-type: none"> <li>• Certified extinguishers in appropriate locations.</li> <li>• Monitoring Reports on file to be used for environmental auditing as per EA, if required.</li> </ul> |
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|                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>The Applicant/Site Owner or representative site manager must ensure that all fire control mechanisms (firefighting equipment) will be routinely inspected by a qualified investigator for efficacy thereof and be approved by local fire services.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                              |                                                                                                      |                                                                                                                                                             |
| <p>Visual Impact Management</p> <ul style="list-style-type: none"> <li>Ensure the site is well maintained to minimize the visual impact.</li> <li>To receive no complaints regarding impacts on visual quality.</li> </ul> | <ul style="list-style-type: none"> <li>Outside lighting must be maintained and directed away from sensitive areas. Fluorescent and mercury vapour lighting must be avoided, and sodium vapour (green/red) lights must be used wherever possible.</li> <li>Maintain buildings and gardens of the site.</li> <li>The site and immediate surroundings must be kept clean and free of litter continuously. Regular cleanup of the entire site must be done.</li> <li>No dumping of waste in unauthorized areas around the site must be permitted.</li> <li>Time switches must be used for outdoor lighting.</li> <li>Security and internal lighting shall not spill outward onto surrounding properties.</li> <li>Use specifically designed lighting equipment (full cut-off lighting fixtures) that minimizes the upward spread of light near to and above the horizontal.</li> <li>Keep glare to a minimum by ensuring that the main beam angle of all lights directed towards any observer is not more than 70°.</li> <li>Low-wattage luminaries should be used and be directed only onto the path/s.</li> </ul> | <ul style="list-style-type: none"> <li>The Applicant must monitor and manage the personnel onsite and maintain ongoing housekeeping to keep the site tidy.</li> <li>The Applicant must keep a complaint register and log any complaints received.</li> </ul> | <ul style="list-style-type: none"> <li>Visual inspections.</li> <li>Continued monitoring.</li> </ul> | <ul style="list-style-type: none"> <li>Number of complaints</li> <li>Monitoring Reports on file to be used for environmental auditing as per EA.</li> </ul> |

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|                                                                                                                    | <ul style="list-style-type: none"> <li>• Utilize control systems to reduce light levels during inactive periods or at predetermined times while maintaining sufficient lighting for safety &amp; security.</li> <li>• Energy-efficient models must be considered and applied wherein the consumption of electricity will be reduced. These include, but are not limited to: <ul style="list-style-type: none"> <li>○ Energy-saving bulbs; such as LED technology for artificial lighting, rather than standard light fittings to reduce power consumption and increase the life span of the bulbs.</li> <li>○ Maintaining the solar panels to supply power to lights to reduce the electrical load on the national grid.</li> <li>○ Use of generators if solar is insufficient and power outages are experienced.</li> </ul> </li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                            |
| <p>Waste Management</p> <p>To ensure that appropriate waste management strategies are adhered to at all times.</p> | <ul style="list-style-type: none"> <li>• General rubble will be disposed of regularly at the local waste facility by Municipal services.</li> <li>• Waste will not be burnt or buried on the sites.</li> <li>• The sewage system will be well maintained. If there is any doubt about the impact of the system on surface or groundwater, a water analysis shall be performed and maintenance carried out by a qualified professional company.</li> <li>• Facilities must be cleaned up and will be maintained and kept neat continuously.</li> </ul>                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• The Applicant must ensure waste bins with lids should be provided at regular intervals throughout the site and that the bins are emptied regularly and the accumulated waste disposed of at an appropriately permitted disposal site.</li> <li>• The Applicant must ensure that the burning or burying of any waste is not permitted.</li> <li>• The Applicant must ensure that the site is to be checked for litter daily. All litter should be collected regularly and deposited in the waste bins.</li> </ul> | <ul style="list-style-type: none"> <li>• Visual inspection of waste materials, the handling and storage areas.</li> </ul> | <ul style="list-style-type: none"> <li>• Number of incidents of non-compliance with safety procedures concerning waste materials.</li> <li>• Contamination of water and soil.</li> <li>• Number of spills of waste materials.</li> <li>• Cost of cleaning up spills.</li> <li>• Evidence of contamination and leaks.</li> <li>• Visible litter / waste on site.</li> </ul> |

### **M3: Vegetation Assessment – Dr Paul-Pierre Steyn**



# **Retrospective assessment of vegetation impacts associated with the development of Farm 23 Cragga Kamma**



Photo: A view across the site from the west to east.

Report version 1.0

14 April 2026

Prepared for: Natalie Sharpe

Prepared by: Dr Paul-Pierre Steyn PrSciNat (114736)

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# 1. Introduction and Project Background

## 1.1 Project Description

The property under assessment is rural / agricultural in character and appears to have been used for cattle farming for a number of years. The vegetation has been transformed from the natural Colleen Glen Grassy Fynbos to grassy pasture type vegetation with scattered natural vegetation remnants.

The applicant has developed portions of the site for the establishment of a residential dwelling and associated garden (~ 1 ha), as well as an aquaponic cultivation facility (1.5 ha), and livestock farming infrastructure (< 1 ha). The cumulative area developed, including roads and water storage infrastructure amounts to approximately 5 ha, or 16% of the total site area.

The areas developed have been cleared of vegetation for the establishment of buildings and infrastructure, while the undeveloped portions of the site are used as grazing for livestock and horses. The undeveloped portion of the site has been subdivided into livestock enclosures with fencing.



Map 1. Locality of the study area off Lakeside Road, the development footprint and the track from the site survey.

## 1.2 Locality

The property, Portion 87 of Farm 23 Cragga Kamma, in the Lakeside area, is centred around the following coordinates: 33°57'54.75"S, 25°24'53.44"E (Map 1). The 31-ha land parcel is located approximately 5 kilometres west of Port Elizabeth, immediately off Lakeside Road. It is a gently sloping

portion of agricultural land, surrounded by agricultural style small holdings being that are used for small-scale livestock farming, or rural residential purposes.

### 1.3 Purpose of the Report

The purpose of this report is to retrospectively assess the loss of vegetation and biodiversity related resources at the site because of the development of a dwelling and aquaponics facility. The site is currently the subject of a Section 24G application to DEDEAT.

The report aims to compare the current vegetation and biodiversity attributes of the site with the probable historical conditions at the site prior to the development commencing and so doing assess the possible impacts that these activities may have had.

### 1.4 Assumptions and Limitations:

The assessment is based on historical aerial imagery (GoogleEarth 2006 - 2025), photographs from previous studies (2014) on or near the study area, and the remaining undisturbed vegetation on and around the property.

No detailed information on the recent vegetation and biodiversity attributes directly affected by the development (in footprints) are available. There is therefore a level of uncertainty inherent to this retrospective assessment.

The site was only sampled on one occasion. During this time certain plant species may have been dormant and were not recorded in the survey. However, since this assessment evaluated the impacts on the general vegetation and biodiversity attributes of the entire site and given the limited extent (16%) of direct physical disturbance to the site, seasonality is not considered an issue that would compromise the findings of this report.

## 2. Legislative and Policy Framework

### 2.1 National Environmental Management Act (NEMA)

The Nema EIA regulations (2010) as amended, stipulate specific listed activities that require an environmental impact assessment and approval through the competent authority before proceeding. In the event that developments that trigger such listed activities are initiated without the appropriate assessment and authorisation, it is considered illegal commencement. These activities can only be rectified through a Section 24 G application, which generally entails retrospective assessment of the impacts associated with the development.

### 2.2 National Forests Act

The National Forests Act regulates the clearing of indigenous vegetation in cases where the vegetation is considered a natural forest, as well as instances where the plants damaged in the process are listed on the National Protected Tree Lists (2023) published in terms of this statute. Within the context of this



assessment the National Forests Act regulations will be considered in so far as forest habitat or protected tree species were affected.

## 2.3 Provincial Biodiversity Acts

The Nature Conservation Ordinance 19 of 1974 makes provision for the protection of certain sensitive or rare plant and faunal species. It includes a list of plants that are considered Endangered or Protected, and for which permits need to be obtained before their removal. This assessment will consider the possible loss of such regulated species as a result of the development of the site.

## 2.4 NEMBA: Biodiversity Act (NEMBA)

The NEMBA statutes considered in this assessment were limited to the NEMBA ToPS Lists (Threatened or Protected Species), as well as the Lists of Threatened Ecosystems. The possible loss of vegetation cover or plant species represented on these lists were assessed as part of this study.

## 3. Methodology & approach

This study was undertaken in line with the guidelines provided in the terrestrial biodiversity and plant species protocols, and the companion document for these; Guideline for species environmental assessment. The findings of this survey are based on both a desktop study and site investigation component.

### 3.1 Desktop Study

The desktop study part of this study was based on a review of the following available information and electronic resources:

- Historical satellite imagery to evaluate vegetation cover transformation during the development.
- SANBI BGIS data, and vegetation maps providing information on the perceived vegetation cover and sensitivity of the site.
- Species lists, site descriptions and reports for vegetation and habitat on or near the site.

### 3.2 Site Visit

A site visit was undertaken to the site on 13 February 2026 (summer), and the site was surveyed for two hours on foot to determine the type and condition of the vegetation on the site.

During the survey photographic records of all the different plant species encountered were captured. Plant species were identified to the lowest possible taxonomic level and a species list for the site was generated. No abundance data for the vegetation was captured during the survey, simply presence or absence.

GPS coordinates for all notable biodiversity or ecological features at the site were recorded. Coordinates are provided for all the photographs in the report, and a map with a GPS logged survey track is included as an appendix to this report.

### 3.3 Impact assessment rating approach

The impacts that the development at the site have had on the biodiversity related attributes of the site were assessed in terms of the standard criteria recommended in the EIA regulations. The following outlines the criteria used to assess impacts in this report:

**Spatial extent** – The size of the area that will be affected by the impact

- Site specific (within the site boundaries)
- Local (<2 km from site)
- Regional (within 30 km of site)
- National (impacts with a sphere of influence to extends to other provinces)

**Intensity** –The anticipated severity of the impact

- High (severe alteration of natural systems, patterns or processes)
- Medium (notable alteration of natural systems, patterns or processes)
- Low (negligible alteration of natural systems, patterns or processes)

**Duration** –The timeframe during which the impact will be experienced

- Temporary (less than 1 year)
- Short term (1 to 6 years)
- Medium term (6 to 15 years)
- Long term (the impact will cease after the operational life of the activity)
- Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient)

**Probability** –The probability of the impact occurring

- Improbable (little or no chance of occurring)
- Probable (<50% chance of occurring)
- Highly probable (50 – 90% chance of occurring)
- Definite (>90% chance of occurring)

**Significance** – *Impact significance was determined in accordance with DEAT Guideline Document 5 – Impact Significance (DEAT, 2002).*

[In terms of ecology the significance of the impact is related to the degree to which the impact causes an alteration to natural systems or processes.]

- **Low to very low** – *“Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time-consuming.”*

[The impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making.]

- **Moderate** – *“Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of adverse impacts, mitigation is both feasible and fairly easily possible. Modification of the project design or alternative action may be required. In the case of beneficial impacts, other means of achieving this benefit are about equal in time, cost and effort.”*

[The impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated.]

- **High** – *“Of the highest order possible within the bounds of impacts that could occur. In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time-consuming or some combination of these. In the case of beneficial impacts, the impact is of a substantial order within the bounds of impacts that could occur.”* [The impacts will result in major alteration to the environment even with the implementation of the appropriate mitigation measures and will have an influence on decision-making.]

**Status** - Whether the impact on the overall environment will be positive, negative or neutral

- “+” (positive - environment overall will benefit from the impact).
- “-”(negative - environment overall will be adversely affected by the impact).
- “o” (neutral - environment overall will not be affected).

**Confidence** – The degree of confidence in predictions based on available information and specialist knowledge

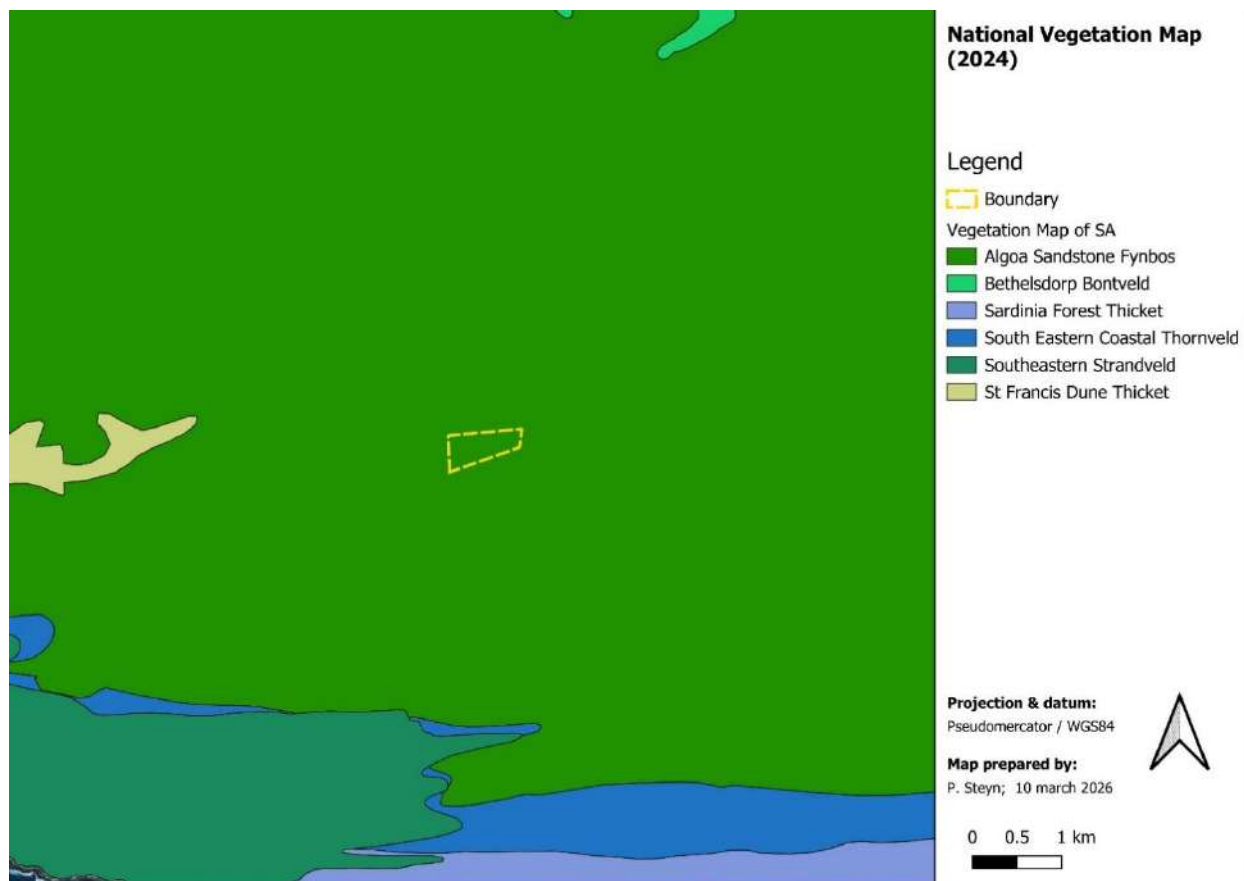
- Low
- Medium
- High

## 4. Baseline Botanical Description

This section of the report deals with the vegetation presumed to occur on the site based on the regional and national biodiversity planning instruments, as well as the findings of the site level survey findings.

### 4.1 National Vegetation Map: Algoa Sandstone Fynbos (FFs29)

Based on the National Vegetation Map (2024) mapping from SANBI (See Map 2 below), the vegetation presumed to occur at the site is Algoa Sandstone Fynbos, which is limited to the coastal belt of Port Elizabeth, between the Van Stadens River in the west and Summerstrand in the east. Typical to Fynbos vegetation, this vegetation type occurs on acidic, nutrient-poor soils derived from the Table Mountain Group sandstones.



Map 2. Vegetation types mapped in the region in terms of the National Vegetation Map [VegMap] (2024). The site is shown in yellow outline, with the surrounding area dominated by Algoria Sandstone Fynbos.

The vegetation is described as a grassy shrubland with species such as *Protea eximia*, *P. neriifolia*, and *P. repens* representative of tall shrubs, with *Agathosma hirta* and *Erica zeyheriana*, *Euryops ericifolius* and *Leucadendron* species as examples of low shrubs. A range of grass species are found in the vegetation, including *Andropogon eucomus*, *Brachiaria serrata*, *Cynodon dactylon*, and *Themeda triandra*. The plants *Agathosma gonaquensis*, *Erica etheliae* and the orchid *Holothrix longicornu*, as well as the wetland plant *Cyclopia pubescens*, are considered endemics of the vegetation type.

The 2022 National List of Threatened Ecosystems classifies Algoria Sandstone Fynbos as Critically Endangered. It is classified based on criteria B1(i), since the ecosystem type is narrowly distributed with high rates of habitat loss in the past number of years, placing the ecosystem type at risk of collapse.

**NOTE:** The site visit revealed that Algoria Sandstone Fynbos is not present at the site.

## 4.2 Plant Species Composition

A species list for the site is provided in Appendix 1. The list excludes the plant species in the private garden of the residential dwelling which were planted as part of the development.

The list gives some indication of the plant species that would have dominated the vegetation at the site prior to development. A total of 51 plant species were recorded within the study area during the site visit and survey. The species composition in no way resembles Algoa Sandstone Fynbos (as described above).

The site was clearly grass dominated with no Proteoid or Ericoid species, indicative of Fynbos vegetation, recorded.



Photo 1. Typical groundcover in the west of the site.  
(33°57'57.91"S, 25°24'45.80"E)



Photo 2. Typical groundcover in the east of the site.  
(33°57'50.89"S, 25°25'4.31"E)

### *i) Protected plants*

Two species from a Protected plant family (Iridaceae) were recorded. These would require a permit in terms of the Nature Conservation Ordinance of 1974 prior to removal.

No species listed as Threatened or Protected in terms of the NEM:BA Threatened or Protected Species regulations were recorded.

No protected trees listed in the Protect Tree list (2024) under the National Forests Act (1998) are present within the study area.

### *ii) Alien invasive plants*

The list includes 11 exotic plant species, however, only two of these are regulated problem plants. These are listed as Category 1b and 2 respectively, in terms of the NEM:BA Alien and Invasive Species regulations.

All Category 1b and 2 listed plants should be removed from the site, and follow-up control measures implemented.





Photo 3. Black Wattle (NEMBA 2) in the western portion of the site. (33°57'52.08"S, 25°24'37.44"E)



Photo 4. Forest Inkberry (NEMBA 1b) in the northern boundary of the site near the paddocks. (33°57'50.31"S, 25°24'46.12"E)

### 4.3 Vegetation Condition and Conservation Status

Based on the site visit and historical aerial imagery, the vegetation at the site has been transformed from natural fynbos to grassy pasture many years before the development on the site commenced.

The species assemblage present on the property appears to have remained largely unchanged over the past ten years or more (See photo-series 1). This is based on the historical aerial imagery of the site (2011 – 2026), which shows that the vegetation texture in the images have not changed substantially over this time.

A comparison of vegetation texture for an intact Algoa Sandstone Fynbos site (Welcome Rd.) vs this site, shows the textural differences in the aerial imagery between these two cover types (Photo-series 2).

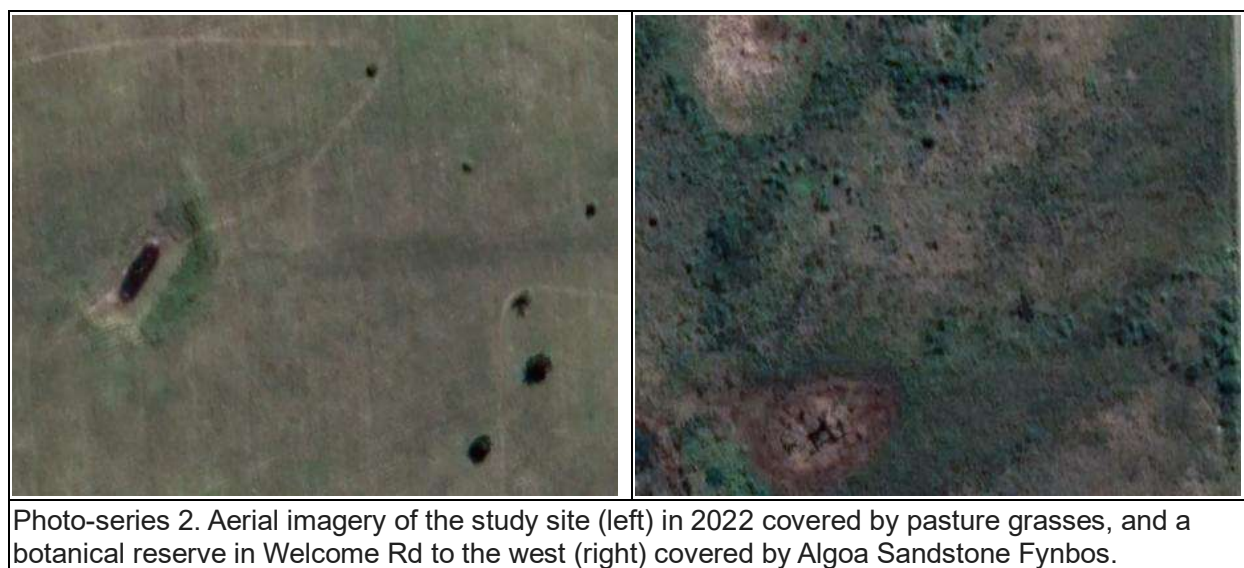
While it is not certain what subtle vegetation changes have occurred on the basis of the historical imagery, this assertion is supported by the findings of a similar vegetation survey undertaken on this site from 2014. The 2014 survey also found that the site had a low plant species sensitivity. (Steyn 2014)

It can therefore be concluded with reasonable certainty that the site was not covered by Critically Endangered Algoa Sandstone Fynbos prior to development.





The preceding pages show aerial imagery of the site over the past twenty years. Based on the vegetation pattern and texture from these images, there has not been a substantial change in the vegetation cover of the site over this period.

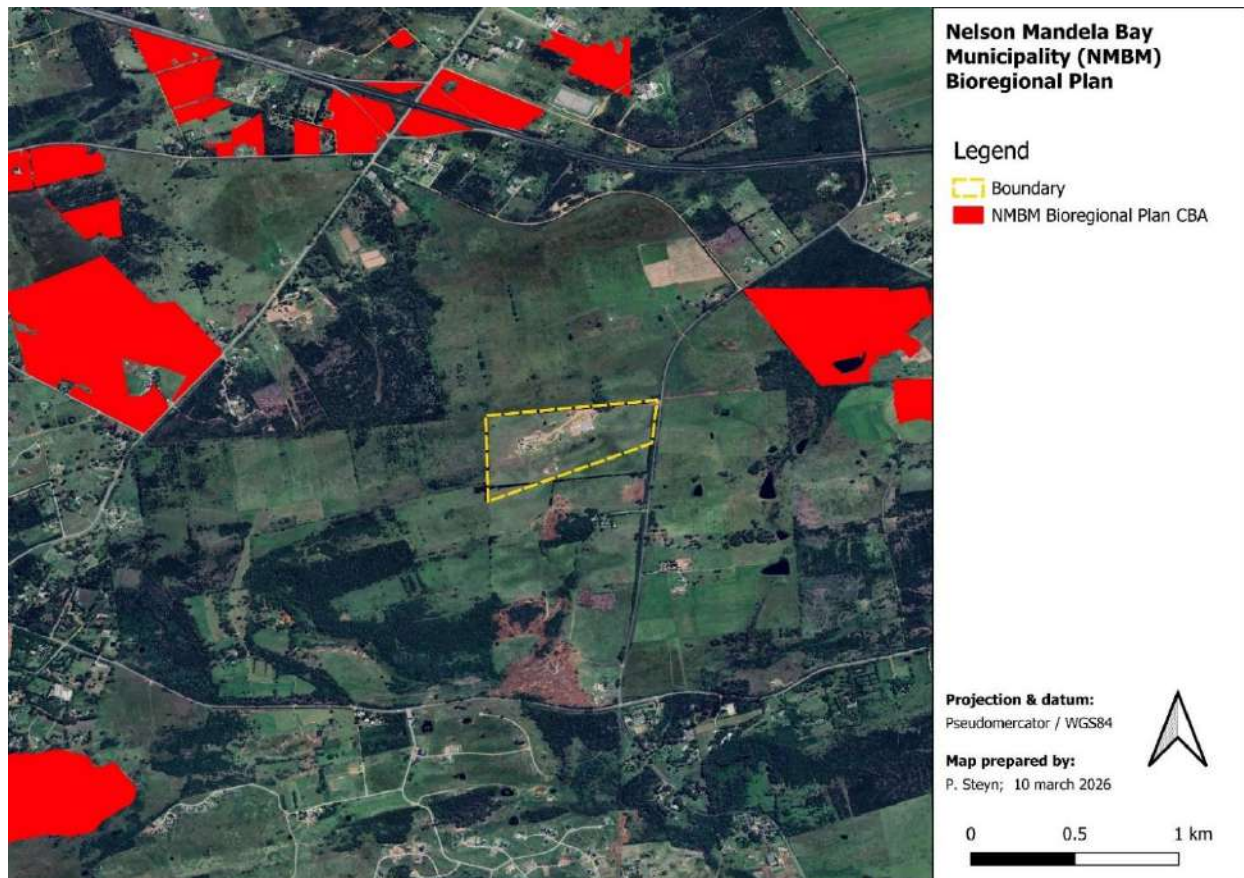


The images above show the difference in vegetation texture for the grassy pasture vegetation at the site (left) in 2022 and intact fynbos vegetation at Welcome Rd (right) in the same year. (Both images at the same scale ~ 3 ha in area).

#### 4.4 Critical Biodiversity Areas (CBAs) and Ecological processes

The CBA mapping for the site is covered by the Nelson Mandela Bioregional Plan (2014), which replaces the Eastern Cape Biodiversity Conservation Plan (2020) in the Nelson Mandela Bay municipal area. Based on this mapping the site does not fall within any Critical Biodiversity Areas (Map 3).





Map 3. Critical Biodiversity Areas mapped in the vicinity of the study site in terms of the Nelson Mandela Bioregional Plan (2014) which replaces the Eastern Cape Biodiversity Conservation Plan in the metro.

The site does not form part of any clear ecological corridors or ecological process areas like valleys, watercourses or linear natural features. One aspect of ecological connectivity that is relevant to the study area relates to the wetlands and aquatic features dotted across the landscape in the vicinity of the study site.

Drainage on the site is generally to the southeast, but due to the undulating topography of the area, most of the runoff from the site flows towards a natural depression near the centre of the site (See Photo 5 & 6 below). It is not clear whether this depression has been excavated or augmented to serve as a man-made farm dam, however this wetland represents the only ecologically significant feature of the site.

While the wetland on the site may be artificial, it could still perform the ecological functions of a natural wetland, creating refuge for aquatic plant and animal species and facilitating connectivity between other similar wetland habitats in the landscape.

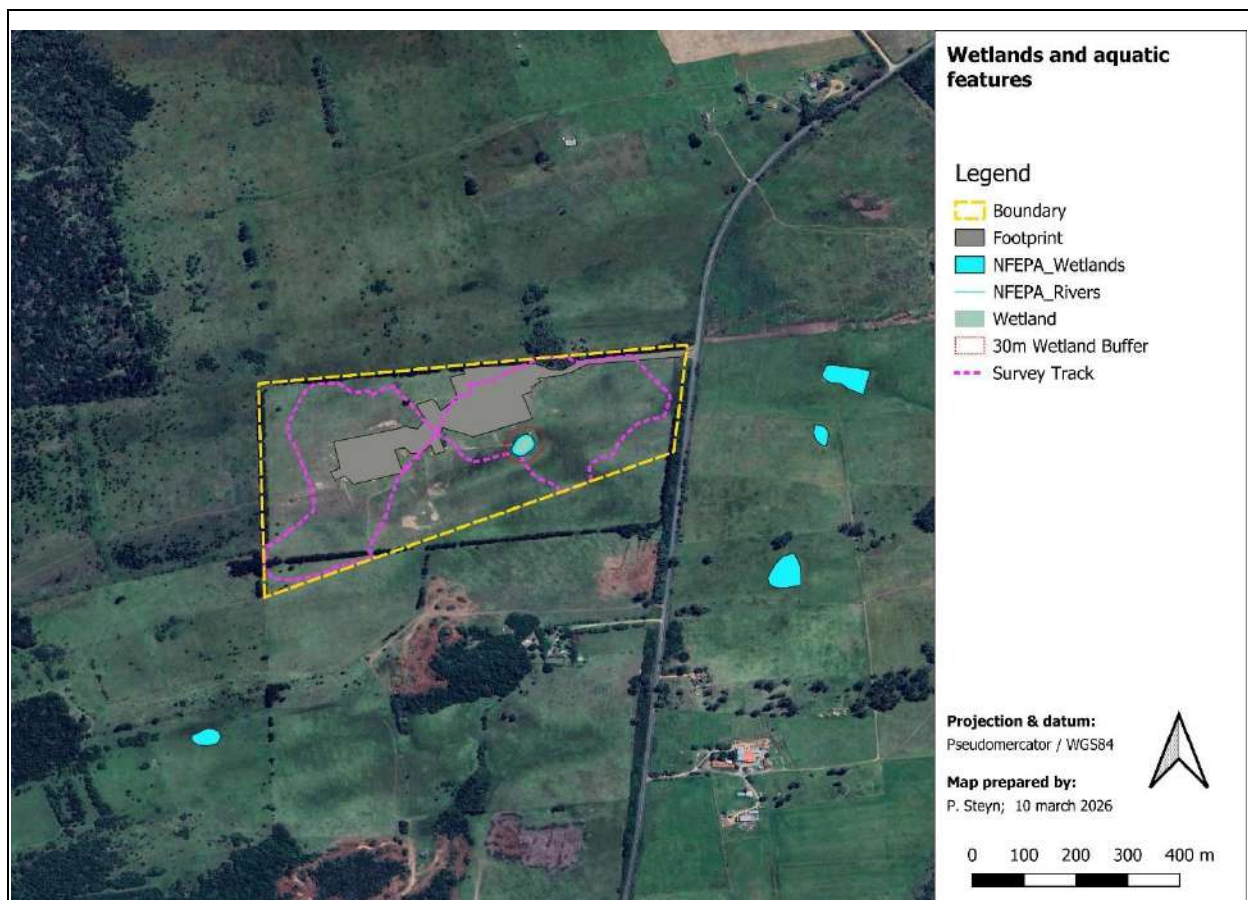


Photo 5. Wetland in the central portion of the site receives drainage from within the property.  
(33°57'54.69"S, 25°24'55.95"E)



Photo 6. The water quality and vegetation indicate that the wetland is currently in a good condition.  
(33°57'54.69"S, 25°24'55.95"E)

Furthermore, the wetland on the property is recognised in the National Freshwater Ecosystem Priority Area mapping undertaken in 2011. While no watercourses are mapped in the immediate vicinity of the study area, several small wetlands (or farm dams) are shown on the mapping (Map 4.), of which the wetland in the study area is one.



Map 4. Wetlands and aquatic features at or near the study site with NFEPA mapped wetland and watercourse areas shown in light blue.

## Recommendation

The wetland area, as well as a suitable vegetated buffer zone (30 m) around it, should be excluded from development.

A water management plan should be implemented to ensure that the hydrological regime and water-quality in the wetland is not compromised.

## 5. Impact Assessment (Retrospective)

The impact of the development in the biodiversity related resources at the site were evaluated based on standard impact rating categories as outlined in Section 3 of this report. (Extent, duration, intensity, probability, reversibility, significance with and without mitigation)

It is obviously no longer possible to proactively mitigate the impact of activities that have already taken place. However, mitigation measures are proposed to reduce the significance of the ongoing and potential future impacts that may be caused by the activities that have taken place.

### 5.1 Loss of indigenous vegetation cover and habitat

The development footprint has resulted in the loss of 4.7 ha of the vegetation at the site (4.7 of 30 ha -> 15%). This vegetation at the site prior to development was not indigenous Algoa Sandstone Fynbos but rather grassy pasture vegetation which is of little biodiversity consequence. The removal of the vegetation in the development footprint does therefore not represent the loss of any natural habitat presumed to have occurred in the area. No irreplaceable resources have been affected by activities at the site.

**Impact:** Local, long-term, irreversible, improbable, moderate intensity, low negative significance without mitigation, very low negative significance with mitigation (Confidence: high)

#### **Recommendations for rectification / remediation:**

- As far as possible, use local indigenous plant species for landscaping and gardens associated with the facility.
- Control the establishment and spread of alien invasive plant species at the site.

### 5.2 Loss of Ecosystem Services associated with the natural vegetation

Grassy pasture vegetation, while not natural, can still play a role in soil stabilisation, water retention, and habitat connectivity. Some of these services have been lost due to the transformation of a portion of the site. However, given the limited extent of the transformation (15%) and the remaining extent of grassed landscape on the site, many of these benefits will remain.

**Impact:** Local, long-term, reversible, low probability, low intensity, low negative significance without mitigation, low positive significance with mitigation (Confidence: high)



**Recommendations for rectification / remediation:**

- Where possible, retain grassy vegetation on the site and limit the sowing of pasture grass to non-invasive species.
- Stabilise areas that are disturbed during construction and operational activities by establishing indigenous grass and groundcover plants immediately after development activities cease.
- Manage the establishment and spread of alien invasive plant species at the site.

### 5.3 Fragmentation of natural habitat and associated ecological corridors

While the loss of vegetation / habitat was not important from a biodiversity perspective, it is likely that the undeveloped vegetated portions of the site would have been used as a thoroughfare for small mobile fauna (mongoose, amphibians, birds, insects). However, this land portion was not mapped as part of any important biodiversity corridors or Critical Biodiversity Areas. In addition, the limited extent of transformation to built-up infrastructure, much of the site will still be able to facilitate landscape level connectivity.

**Impact:** Local, permanent/long-term, reversible, definite, low intensity, low negative significance without mitigation, very low negative significance with mitigation (Confidence: moderate)

**Recommendations for rectification / remediation:**

- Limit the extent of paved areas and hard structures on the property to ensure the retention of extensive green (grassed / vegetated) areas at the site.
- Maintain 5 – 10 m wide vegetated buffer strips along the property boundary to allow small fauna to move between the parcels of agricultural land in the area.

### 5.4 Loss of plant / animal species of conservation concern

The transformed nature of the site prior to development suggests that very few, if any, plant and animal species of conservation concern were displaced or destroyed. This is evident when considering the low biodiversity value of the remaining undeveloped portions of vegetation and habitat remaining at the site.

**Impact:** Local, long-term, reversible, very low probability, low intensity, low negative significance without mitigation, very low negative significance with mitigation (Confidence: High)

**Recommendations for rectification / remediation:**

- Permits must be obtained for any future removal of regulated species (e.g. *Bobartia orientalis*).
- Transplant indigenous shrubs and protected species from future development footprints into gardens and the buffer area along the property boundaries.

### 5.5 Deterioration of wetland water-quality and functional integrity

The one sensitive biodiversity feature at the site is the wetland in the middle of the site. This wetland has been excluded from the development footprint, with the aquaponics facility boundary approximately 35 metres from the wetland water edge (as mapped during the site visit). The impact of the development on this wetland feature is likely limited to disturbance by livestock and potentially some runoff from the aquaponics facility and internal roads.

**Impact:** Local, long-term, reversible, probable, moderate intensity, moderate negative significance without mitigation, low negative significance with mitigation (Confidence: high)

#### **Recommendations for rectification / remediation:**

- A buffer zone of at least 30 m must be maintained around the wetland, from which all future infrastructure development activities must be excluded.
- No process water (water-water or runoff with pesticides, nutrients, etc.) must be discharged into the wetland so that it can be retained in a natural a state as possible.
- Livestock access to the wetland and buffer area must be limited by using appropriate fencing that will still allow small mobile fauna through.
- The establishment of alien invasive plants in the wetland area must be prevented by undertaking regular monitoring and clearing in the wetland area.

## 6. Mitigation and Rehabilitation Plan

Provided that responsible general environmental practices are adopted by the landowner, only two broad issues that require mitigation remain. An alien invasive plant management plan should be adopted to prevent the introduction and spread of alien invasive plant species at the site. In addition to this a water quality management plan should be implemented to ensure that the natural temporary wetland on the site retains its ecological functionality.

### 6.1 Alien Invasive Plant (AIS) Management

The alien plant management plan should aim to suppress and eradicate these species while minimizing impact on the grassy pasture vegetation and soil.

#### **i) Planning and Assessment (Pre-Control Phase)**

The site should be surveyed for the presence of AIS on a regular basis, with a particular focus on Black Wattle (*Acacia mearnsii*) and Forest Inkberry (*Phytolacca octandra*).

Other species like *Acacia longifolia*, *Acacia saligna*, *Solanum mauritianum*, and *Cestrum laevigatum* are also common invasive species in the area and surveys should also be on the lookout for these.

Where these species are encountered on the property, the location of should be noted on a map or with a GPS so that follow-up clearing and treatment can be done.

#### **ii) Control and Eradication**

a. *Acacia mearnsii* (Black Wattle)

- Seedlings (up to 1m): Hand-pulling or digging, ensuring removal of the entire root system.
- Saplings and Small Trees: Cut-stump treatment using herbicides, or stem injection / frilling for larger trees. This involves applying herbicide directly to the cut surface or into the trunk to kill the plant and prevent resprouting.
- Larger Trees: Felling and cut-stump treatment, or ring-barking combined with herbicide application to the exposed cambium layer.
- Herbicide Selection: Choose appropriate herbicides and apply according to label instructions. Common herbicides used for *A. mearnsii* include triclopyr, or glyphosate.
- Timing: Apply herbicide when the plant is actively growing and after flowering to maximize translocation and minimize seed set.

b. *Phytolacca octandra* (Forest Inkberry)

- Seedlings: Hand-pulling, ensuring removal of the fleshy taproot. This is easiest when the soil is moist.
- Mature Plants: Digging out the entire plant, including the extensive root system. Herbicide spot spraying can also be effective, targeting individual plants while avoiding desirable pasture species.
- Herbicide Selection: Use herbicides labelled for broadleaf weeds. Glyphosate can be effective but requires careful application to minimize impact on the surrounding grass. Selective broadleaf herbicides like fluroxypyr may be preferable to preserve grass.
- Timing: Control plants before flowering and fruiting to prevent seed production and dispersal by birds.

**iii) Restoration and Management**

- Monitor and Re-treat: Regularly inspect the treated areas for any regrowth or new seedlings. Re-treat any remaining or emerging invasive plants promptly.
- Ongoing Monitoring: Establish a long-term monitoring program to evaluate the effectiveness of the control efforts, detect any re-infestations, and adjust the management plan as needed.
- Record Keeping: Maintain detailed records of all control activities, including methods used, herbicides applied, dates of treatment, and monitoring results.

Additional Considerations:

- Safety First: Prioritize safety during all control operations, ensuring proper training, use of personal protective equipment (PPE), and adherence to herbicide label instructions.

## 6.2 Wetland management

These management recommendations are designed to limit the potential impacts of the residential and aquaponics activities on the temporary wetland.

## Key management objectives

- Maintain the natural **hydroperiod** (seasonal wetting/drying cycle).
- Eliminate invasive plant species that might encroach on the wetland area.
- Prevent nutrient enrichment (eutrophication) from aquaponics and residential runoff.

### *i) Access control*

Maintain a 30 m wide vegetated grassy buffer area around the wetland to filter potentially contaminated or nutrient enriched runoff directly into the wetland.

Use appropriate permeable fencing to manage faunal access to the wetland and associated habitat.

### *ii) Water quality*

**Process water:** No process water from the aquaponics facility should be discharged directly into the wetland. Process water discharge should be directed overland into the grassy pasture vegetation away from the wetland and its buffer zone.

**Stormwater and residential Runoff:** No stormwater runoff from the internal roads, roofs or residential area should be diverted directly into the wetland area. Stormwater should be directed overland into the grassy pasture vegetation away from the wetland and its buffer zone.

### *iii) Monitoring & maintenance*

Survey the wetland area for Alien Invasive Plant species (particularly Black Wattle and Forest Inkberry) on a quarterly basis and remove these plants if detected.

Check the wetland for excessive algal growth on a quarterly basis. If found, it probably indicates nutrient leakage from the house or aquaponics and remedial action should be taken immediately.

### *iv) Emergency procedures*

**Herbicide, fuel or chemical spill:** In case of a spill near the wetland, immediately use sawdust or sand to absorb the liquid. Do not hose it down, as this flushes the chemical into the water table. Remove the contaminated soil and absorbent material and discard at an appropriately licenced waste management facility.

**Aquaponics Leak:** If a tank fails, divert the water into the grassy pasture areas using temporary berms rather than letting it flood the wetland.

## 7. Conclusion and Specialist Opinion

### 7.1 Environmental Statement

The development of the site for residential, aquaponic and agricultural purposes has to date not resulted in a meaningful loss of valuable biodiversity resources.

The historical aerial imagery of the site indicates that the property was dominated by pasture grasses with negligible numbers of indigenous plants or animals. This is supported by the site survey that revealed transformed grassy vegetation on the remaining portions of the property that were not disturbed by the recent development activities.

Potential future impacts on the sensitive environmental features of the site can be adequately managed by implementing the few mitigation measures recommended in this report.

## 7.2 Recommended Conditions

All the mitigation measures recommended in this report should be included as conditions for authorisation, should it be granted.



## 8. References and Appendices

### 8.1 Species List – List of species recorded at the site during the site visit in February 2026.

- SANBI Red List Category – NE: Not evaluated, LC: Least concern, NT: Near threatened, VU: Vulnerable, EN: Endangered, CR: Critically endangered.
- NEMBA Invasives List – Number indicates the NEMBA AIS Category.
- Ordinance 19 of 1974 – P: Protected, E: Endangered

| Species                          | Family           | SANBI Red List Category | SANBI Red List (Threatened Spp) | Protected Tree 2024 (NFA) | Ordinance 19 of 1974 | NEM: BA - TOPS List (2007) | Exotic | NEM:BA Invasives List |
|----------------------------------|------------------|-------------------------|---------------------------------|---------------------------|----------------------|----------------------------|--------|-----------------------|
| 1 <i>Searsia laevigata</i>       | Anacardiaceae    | NE                      |                                 |                           |                      |                            |        |                       |
| 2 <i>Centella asiatica</i>       | Apiaceae         | LC                      |                                 |                           |                      |                            |        |                       |
| 3 <i>Cotula sericea</i>          | Asteraceae       | LC                      |                                 |                           |                      |                            |        |                       |
| 4 <i>Gazania rigens</i>          | Asteraceae       | LC                      |                                 |                           |                      |                            |        |                       |
| 5 <i>Helichrysum anomalum</i>    | Asteraceae       | LC                      |                                 |                           |                      |                            |        |                       |
| 6 <i>Helichrysum cymosum</i>     | Asteraceae       | LC                      |                                 |                           |                      |                            |        |                       |
| 7 <i>Helichrysum foetidum</i>    | Asteraceae       | NE                      |                                 |                           |                      |                            |        |                       |
| 8 <i>Hypochaeris radicata</i>    | Asteraceae       | NE                      |                                 |                           |                      |                            | +      |                       |
| 9 <i>Senecio chrysochoma</i>     | Asteraceae       | LC                      |                                 |                           |                      |                            |        |                       |
| 1 <i>Syncarpha argentea</i>      | Asteraceae       | LC                      |                                 |                           |                      |                            |        |                       |
| 11 <i>Monopsis scabra</i>        | Lobeliaceae      | LC                      |                                 |                           |                      |                            |        |                       |
| 1 <i>Capparis sepriaria</i>      | Capparaceae      | LC                      |                                 |                           |                      |                            |        |                       |
| 1 <i>Gymnosporia nemorosa</i>    | Celasteraceae    | LC                      |                                 |                           |                      |                            |        |                       |
| 1 <i>Cyperus marginatus</i>      | Cyperaceae       | LC                      |                                 |                           |                      |                            |        |                       |
| 1 <i>Eleocharis limosa</i>       | Cyperaceae       | LC                      |                                 |                           |                      |                            |        |                       |
| 1 <i>Pteridium aquilinum</i>     | Dennstaedtiaceae | LC                      |                                 |                           |                      |                            |        |                       |
| 1 <i>Erica copiosa</i>           | Ericaceae        | LC                      |                                 |                           | P                    |                            |        |                       |
| 1 <i>Vachellia karroo</i>        | Fabaceae         | LC                      |                                 |                           |                      |                            |        |                       |
| 1 <i>Acacia mearnsii</i>         | Fabaceae         | NE                      |                                 |                           |                      |                            | +      | 2                     |
| 2 <i>Indigofera heterophylla</i> | Fabaceae         | LC                      |                                 |                           |                      |                            |        |                       |
| 2 <i>Lotus subuliflorus</i>      | Fabaceae         | NE                      |                                 |                           |                      |                            | +      |                       |
| 2 <i>Psoralea glabra</i>         | Fabaceae         | LC                      |                                 |                           |                      |                            |        |                       |
| 2 <i>Sebaea macrophylla</i>      | Gentianaceae     | LC                      |                                 |                           |                      |                            |        |                       |
| 2 <i>Laurembergia repens</i>     | Haloragaceae     | LC                      |                                 |                           |                      |                            |        |                       |
| 2 <i>Hypoxis stellipilis</i>     | Hypoxidaceae     | LC                      |                                 |                           |                      |                            |        |                       |
| 2 <i>Aristea ecklonii</i>        | Iridaceae        | LC                      |                                 |                           | P                    |                            |        |                       |
| 2 <i>Bobartia aphylla</i>        | Iridaceae        | LC                      |                                 |                           | P                    |                            |        |                       |

|   |                                 |                   |           |          |          |          |          |           |          |
|---|---------------------------------|-------------------|-----------|----------|----------|----------|----------|-----------|----------|
| 2 | <i>Lobelia anceps</i>           | Lobeliaceae       | LC        |          |          |          |          |           |          |
| 2 | <i>Lobelia tomentosa</i>        | Lobeliaceae       | LC        |          |          |          |          |           |          |
| 3 | <i>Morella serrata</i>          | Myricaceae        | LC        |          |          |          |          |           |          |
| 3 | <i>Eucalyptus gomphocephala</i> | Myrtaceae         | NE        |          |          |          |          | +         |          |
| 3 | <i>Oxalis sp.</i>               | Oxalidaceae       | -         |          |          |          |          |           |          |
| 3 | <i>Pinus pinaster</i>           | Pinaceae          | NE        |          |          |          |          | +         |          |
| 3 | <i>Briza maxima</i>             | Poaceae           | NE        |          |          |          |          | +         |          |
| 3 | <i>Cynodon dactylon</i>         | Poaceae           | LC        |          |          |          |          |           |          |
| 3 | <i>Lagurus ovatus</i>           | Poaceae           | NE        |          |          |          |          | +         |          |
| 3 | <i>Leersia hexandra</i>         | Poaceae           | LC        |          |          |          |          |           |          |
| 3 | <i>Sporobolus africanus</i>     | Poaceae           | LC        |          |          |          |          |           |          |
| 3 | <i>Stenotaphrum secundatum</i>  | Poaceae           | LC        |          |          |          |          |           |          |
| 4 | <i>Muraltia alupeuroides</i>    | Polygalaceae      | LC        |          |          |          |          |           |          |
| 4 | <i>Rumex acetosella</i>         | Polygonaceae      |           |          |          |          |          | +         |          |
| 4 | <i>Thamnochorus fruticosus</i>  | Restionaceae      | LC        |          |          |          |          |           |          |
| 4 | <i>Rhamnus prinoides</i>        | Rhamnaceae        | LC        |          |          |          |          |           |          |
| 4 | <i>Rubus rigidus</i>            | Rosaceae          | LC        |          |          |          |          |           |          |
| 4 | <i>Sutera sp.</i>               | Schrophulariaceae |           |          |          |          |          |           |          |
| 4 | <i>Solanum sysimbrifolium</i>   | Solanaceae        | NE        |          |          |          |          | +         |          |
| 4 | <i>Commelina africana</i>       | Commelinaceae     | LC        |          |          |          |          |           |          |
| 4 | <i>Nymphoides thunbergiana</i>  | Menyanthaceae     | LC        |          |          |          |          |           |          |
| 4 | <i>Cenchrus clandestinus</i>    | Poaceae           | LC        |          |          |          |          | +         |          |
| 5 | <i>Atriplex sp.</i>             | Amaranthaceae     | LC        |          |          |          |          |           |          |
| 5 | <i>Chenopodium sp.</i>          | Amaranthaceae     | LC        |          |          |          |          |           |          |
| 5 | <i>Phytolacca octandra</i>      | Phytolaccaceae    |           |          |          |          |          | +         | 1b       |
|   |                                 |                   | <b>49</b> | <b>0</b> | <b>0</b> | <b>3</b> | <b>0</b> | <b>11</b> | <b>2</b> |
|   |                                 |                   |           |          |          |          |          |           |          |

## 8.2 Additional site Photographs

|                                                                                     |                                         |                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>33°57'48.99"S,<br/>25°24'59.47"E</p> | <p>A view towards the entrance to the site from the vicinity of the aquaponics facility. Internal roads are not paved and stormwater flows overland from these roads into the surrounding grassy pastures.</p> |
|   | <p>33°57'50.41"S,<br/>25°24'51.21"E</p> | <p>A shallow excavation near the aquaponics site appears to be used for composting.</p>                                                                                                                        |
|  | <p>33°57'52.00"S,<br/>25°24'47.77"E</p> | <p>The site is also used for livestock agriculture as is evident from fairly new farming infrastructure such as a paddock area.</p>                                                                            |
|  | <p>33°57'50.35"S,<br/>25°24'45.18"E</p> | <p>Evidence of historical alien invasive plant management is visible as a pile of exotic trees / shrubs that have been felled and are placed in corner of the site.</p>                                        |

|                                                                                     |                                        |                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>33°58'3.79"S,<br/>25°24'36.58"E</p> | <p>A stand of pine trees marks the highest portion of the site on a ridge near the western boundary of the site.</p>                                                                       |
|   | <p>33°57'58.43"S,<br/>25°25'2.48"E</p> | <p>The property to the south of the study site has similar grassy vegetation, but with a greater abundance of indigenous elements than the site under investigation.</p>                   |
|  | <p>33°57'51.54"S,<br/>25°25'8.21"E</p> | <p>A wet area with some Bullrush (<i>Typha</i> sp.) is located near the entrance to the site adjacent to the tarred road, probably due to stormwater accumulation in the road reserve.</p> |

## 8.3 Specialist CV and Declaration of Independence

### i. Declaration of Independence

**Project Title:** Retrospective assessment of vegetation impacts associated with the development of Farm 23 Cragga Kamma

**Specialist Field:** Botanical / Terrestrial Biodiversity Assessment.

**Application Process:** Section 24G of the National Environmental Management Act (Act 107 of 1998)

I, **Paul-Pierre Steyn**, as the appointed specialist, hereby declare/affirm the following:

**Independence:** I act as an independent specialist in this application. I have no, and will not acquire, any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations.

**Objectivity:** I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.

**Expertise:** I declare that there are no circumstances that may compromise my objectivity in performing such work. I have expertise in conducting the specialist report relevant to this application, including knowledge of the National Environmental Management Act (NEMA), the EIA Regulations, and any guidelines (including the **Species Environmental Assessment Guideline** and **SANBI** protocols) that have relevance to the proposed/commenced activity.

**Compliance:** I will comply with the Act, Regulations, and all other applicable legislation.

**Disclosure:** I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority.

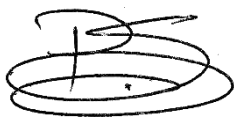
**Reporting:** I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

---

#### Specialist Details & Professional Registration

| Detail              | Information       |
|---------------------|-------------------|
| Specialist Name     | Paul-Pierre Steyn |
| Professional Body   | SACNASP           |
| Registration Number | 114736            |
| Date                | 15 April 2026     |

Signature of Specialist: \_\_\_\_\_





## ii. Curriculum Vitae

# PAUL-PIERRE STEYN

|                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BOTANY DEPARTMENT – NELSON MANDELA UNIVERSITY • PHONE 084 302 8364<br>E-MAIL PAUL.STEYN@MANDELA.AC.ZA |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>OBJECTIVE</b>                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                       | This resume provides a summary of relevant employment, experience and educational background.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>EXPERIENCE</b>                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                       | <p>2012–present<br/>Nelson Mandela University: Botany Department, Port Elizabeth, SA<br/><i>Senior Lecturer: Botany Department</i><br/>Tasks and responsibilities:</p> <ul style="list-style-type: none"><li>■ Undertake research / teaching related tasks as instructed by the Line Manager (HoD); among other:<ul style="list-style-type: none"><li>■ Prepare course material and practicals courses</li><li>■ Present undergraduate and post graduate courses in a variety of botanical fields as required.</li><li>■ Present practical courses in Botany and Botanical Techniques at undergraduate and post-graduate level.</li><li>■ Supervise undergraduate and post-graduate research students.</li><li>■ Undertake research and publish in peer-reviewed journals.</li><li>■ Provide field support, assistance and supervision to research students.</li><li>■ Undertake departmental administrative duties as required.<ul style="list-style-type: none"><li>■ Programme coordinator for BSc Honours program</li><li>■ Coordinate BSc Botany and BSc Botany Honours curriculum renewal / revision</li><li>■ Manage demonstrator / tutor appointments and budget</li></ul></li></ul></li></ul> |
|                                                                                                       | <p>2007–2012    Public Process Consultants, Port Elizabeth, SA<br/><i>Environmental Scientist</i><br/>Tasks and responsibilities:</p> <ul style="list-style-type: none"><li>■ Perform project management for environmental assessments (Basic Assessment, and Scoping &amp; Environmental Impact Assessments).</li><li>■ Prepare Environmental Assessment Reports (Basic Assessment &amp; Scoping and EIA), Environmental Management Programs, Environmental Risk Assessments.</li><li>■ Undertake Biophysical, Botanical and Ecological field work and site assessments.</li><li>■ Prepare Specialist Reports and Chapters in capacity as Botanical and Ecological Specialist.</li><li>■ Prepare site rehabilitation and vegetation management plans.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <ul style="list-style-type: none"> <li>■ Prepare and submit plant relocation permit applications in terms of the relevant provincial ordinances, Forestry Act and NEM Biodiversity Act regulations.</li> <li>■ Act as Environmental Control Officer for construction processes: undertake environmental audits and prepare audit reports for appointments.</li> <li>■ Perform basic GIS based mapping and spatial data analysis for specialist reports and environmental assessments.</li> <li>■ Liaise and deal with clients, authorities and project specialists on a day to day basis.</li> <li>■ Develop working relationships and liaise with various NGOs, government institutions and Departments on a regular basis, i.e. WESSA, Department of Economic Development and Environmental Affairs, Department of Water Affairs, Department of Agriculture Forestry and Fisheries, SA Heritage Resources Agency, NMBM Environmental Sub-directorate.</li> <li>■ Prepare project proposals and cost quotations as required; and present to prospective clients.</li> <li>■ Mentor and manage junior staff.</li> </ul> |
|                  | <p>2000–2006 Nelson Mandela Metropolitan University, <i>Botany Dept.</i>, Port Elizabeth, SA<br/><i>Contract Lecturer</i></p> <p>Tasks and responsibilities:</p> <ul style="list-style-type: none"> <li>■ Prepare course material and practicals for specific courses related to marine botany and phycology, or as instructed by the HoD.</li> <li>■ Present undergraduate and post graduate courses in Marine Botany, Plant Toxicology, Environmental Management, Plant Evolution and Systematics, as required.</li> <li>■ Present practical courses in Botany and Botanical Techniques at undergraduate and post-graduate level.</li> <li>■ Supervise undergraduate and post-graduate (honours level) student research projects.</li> <li>■ Provide field support, assistance and supervision to research students.</li> <li>■ Undertake departmental administrative duties as required.</li> </ul>                                                                                                                                                                                                                  |
|                  | <p>2000–2006 SAB Institute for Environmental and Coastal Management,<br/>Port Elizabeth, SA<br/><i>Independent Specialist Consultant – Short Term Contracts</i></p> <p>Tasks and responsibilities:</p> <ul style="list-style-type: none"> <li>■ Specialist input, as well as data collection and analysis for marine based projects and Environmental Assessments.</li> <li>■ Contribute to Specialist Chapters and Environmental Reports, particularly regarding to coastal ecology and phycology; but also with respect to terrestrial plant ecology.</li> <li>■ Conduct field work and data collection for environmental monitoring and assessment projects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>EDUCATION</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                  | <p>1996 University of Port Elizabeth<br/>Port Elizabeth, SA</p> <ul style="list-style-type: none"> <li>■ BSc - Botany and Zoology</li> </ul> <p>1997 University of Port Elizabeth</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | <p>Port Elizabeth, SA</p> <ul style="list-style-type: none"> <li>■ BSc Hons – Botany (Specialization – Marine Botany)<br/>Tank cultivation of the red alga <i>Plocamium corallorhiza</i>.<br/>Desiccation tolerance in intertidal seaweed <i>Gelidium pristoides</i>.</li> </ul> <p>2000                      University of Port Elizabeth<br/>Port Elizabeth, SA</p> <ul style="list-style-type: none"> <li>■ MSc - Botany<br/>Dissertation: Comparative study of the production and suitability of two <i>Ulva</i> species as abalone fodder in a commercial culture system.</li> </ul> <p>2009                      Nelson Mandela Metropolitan University<br/>Port Elizabeth, SA</p> <ul style="list-style-type: none"> <li>■ PhD - Botany<br/>Thesis: The Ecophysiology of the agarophyte <i>Gelidium pristoides</i> towards commercial production.</li> </ul> |
| <b>INTERESTS</b>                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                 | <p>Marine Macroalgal Physiology, Marine Intertidal &amp; Coastal Ecology, Mariculture, Conservation Planning, Restoration Ecology.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>SPECIAL SKILLS</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                 | <p>Department of Labour Certified Class IV Scientific Diver,<br/><br/>SDI Master Diver &amp; TDI Extended Range Nitrox</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>AFFILIATIONS</b>             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                 | <p>Memberships: South African Council for Natural Scientific Professions (SACNASP) [Reg. 114736- Ecological Science], <i>South African Association of Botanists (SAAB) [Mem.No. 199]</i>, <i>Phycological Society of South Africa (PSSA)</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>POSTGRADUATE SUPERVISION</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                 | <p><b>MASTERS</b></p> <p>Andrew Witte MSc 2015 -2016. Benthic algal communities of shallow reefs in the Eastern Cape: availability of abalone habitat.</p> <p>Lauren Moriarty MSc 2017-2018. Inshore benthic communities of the Port Elizabeth abalone ranching concession area.</p> <p>Alec Blewett MSc 2017-2018. The cultivation of <i>Gracilaria gracilis</i> in the Swartkops estuary, South Africa.</p> <p>William Gummow MSc 2017-2018. Recycled tyre rubber crumb as a soil ameliorant to prevent soil compaction.</p> <p>Mantshadi Mdhloso MSc 2020-2023.</p> <p><b>HONOURS</b></p>                                                                                                                                                                                                                                                                        |

|                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| William Gummow, 2016, The use of rubber crumb as an alternative growth medium in soilless cultivation systems.                                                                                                 |
| Zodidi Gwayise, 2016, <i>Gelidium pristoides</i> cultivation under a periodic drying regime.                                                                                                                   |
| Ian Mulder, 2016, <i>Gracilaria gracilis</i> as a potential biofilter: Growth, Nutrient Uptake and Agar Characteristics of <i>Gracilaria gracilis</i> (Gracilariaceae, Rhodophyta) from the Swartkops Estuary. |
| Londiwe Chiliza, 2017, Influence of benthic algal communities on refuge abalone selection at Cape Recife.                                                                                                      |
| Rowan Delport, 2017, The Effects of Flow Velocity (slope) on the cultivation of Lettuce ( <i>Lactuca sativa</i> ) using a Nutrient Film Technique.                                                             |
| Ndivhuho Takalani, 2017, Investigating the effect of grey water on growth of vegetable crops.                                                                                                                  |
| Jeremiah Hlahla, 2018, The study of the growth dynamics of <i>Arthrospira</i> sp. to optimize biomass production.                                                                                              |
| Ashley Nelson, 2018, Effectiveness of restoration in fynbos: vegetation recovery after large scale disturbance.                                                                                                |
| Nicole Wienand, 2018, The influence of reef complexity on the composition of marine benthic communities on the subtidal warm temperate reefs off the coast of Port Elizabeth, South Africa.                    |
| LordCarrington Bernabas, 2019, The Effect of Storm Water Discharge on the Biota on a Rocky Shore.                                                                                                              |
| Zoe Norval, 2019. Influence of shore geology on intertidal communities along the coast of Port Elizabeth.                                                                                                      |

## REPORTS & PRESENTATIONS

### PUBLICATIONS

- Perissinotto, R., Bornman, T.G., Steyn, P.P., Miranda, N.A., Dorrington, R.A., Matcher, G.F., Strydom, N. and Peer, N., 2014. Tufa stromatolite ecosystems on the South African south coast. *South African Journal of Science*, 110(9-10), pp.01-08.
- Rishworth, G.M., Elden, S., Perissinotto, R., Miranda, N.A., Steyn, P.P. and Bornman, T.G., 2016. Environmental influences on living marine stromatolites: insights from benthic microalgal communities. *Environmental microbiology*, 18, pp.503–513.
- Rishworth, G.M., Perissinotto, R., Miranda, N.A., Bornman, T.G. and Steyn, P.P., 2016. Phytoplankton community dynamics within peritidal pools associated with living stromatolites at the freshwater–marine interface. *Aquatic Sciences*, pp.1-14.
- Weston, R.L.A., Perissinotto, R., Rishworth, G.M. and Steyn, P.P., 2018. Macroinvertebrate variability between microhabitats of peritidal stromatolites along the South African coast. *Marine Ecology Progress Series*, 605, pp.37-47.
- Weston, R.L.A., Perissinotto, R., Rishworth, G.M. and Steyn, P.P., 2019. Benthic microalgal variability associated with peritidal stromatolite microhabitats along the South African coast. *Aquatic Microbial Ecology*, 82(3), pp.253-264.
- Rishworth, Gavin M; Dodd, Carla; Perissinotto, Renzo; Bornman, Thomas G; Adams, Janine B; Anderson, Callum R; Cawthra, Hayley C; Dorrington, Rosemary A; du Toit, Hendrik; Edworthy, Carla. 2020. Modern supratidal microbialites fed by groundwater: functional drivers, value and trajectories. *Earth-Science Reviews*. 210

McCarroll, R.J.; Scott, T.; King, E.V.; Masselink, G.; Ciotti, B. J.; Cloete, A.; Steyn, P.; Britz, P.; Vine, N. G.; Deyzel, H.P. 2021. Modelling regional and local-scale larval seeding strategies for abalone (*H. midae*) ranching in South Africa. *Aquaculture*. 540.

Edworthy, C., Steyn, P.P. and James, N.C., 2023. The role of macroalgal habitats as ocean acidification refugia within coastal seascapes. *Cambridge Prisms: Coastal Futures*, 1, p.e22.

### **SPECIALIST REPORTS**

Steyn, P. & Witte, A.D. 2016. A survey of the effect of abalone seeding on the marine benthic community at Cape Recife, Port Elizabeth (2016 Survey). Report prepared for DAFF on behalf of Ulwandle Fishing / Wild Coast Abalone. 26pp.

Steyn, P. 2016. Vegetation survey for the proposed development on Portions of Farm 28 Seaview. Report prepared for Mr D. Price. 16pp

Steyn, P. 2016. Vegetation assessment: construction of an irrigation dam on Portion 1 of Farm 663 Geelhout Boom, Humansdorp. Report prepared for Igme Terblanche & Associates. 50pp.

Steyn, P. & Witte, A.D. 2015. A survey of the effect of abalone seeding on the marine benthic community at Cape Recife, Port Elizabeth. Report prepared for DAFF on behalf of Ulwandle Fishing / Wild Coast Abalone.

Rautenbach, K. & Steyn, P. 2015. Vegetation assessment for the widening of the R75 provincial road: Section 4 – Jansenville to Graaff Reinet - Draft. Report prepared for Aurecon / SANRAL.

Steyn, P. 2014. Vegetation Assessment for Farm 714 Citrus Orchards (remaining extent) – Sunland, Sundays River Valley. Prepared for: Elize Terblanche, I.W. Terblanche & Associates - Environmental Consultants.

Steyn, P. & du Preez, D.R. 2013. A baseline survey of dominant benthic biota in a proposed experimental abalone seeding area at Cape Recife, Port Elizabeth. Report prepared for DAFF on behalf of Wild Coast Abalone.

Steyn, P. 2013. Vegetation Assessment for Wings Aero-Park, Lakeside, NMBM. Report Prepared for Wings Aero-park.

Wren, S., Steyn, P. & Jacoby, M. 2012. Scoping and Environmental Impact Assessment - Proposed Weston Packaged Sewage Treatment Plant and Sewerage Reticulation (DEA Ref Number: 12/9/11/L549/1 and DEDEAT Ref Number EC08/LN1/M/10-97), Final Environmental Impact Assessment Report.

Steyn, P., Jacoby, M. & Wren, S. 2012. Final Basic Assessment Report. Residential and Mixed Use Development on Portion 179 of Farm 113 Commandokraal Estate, SRVM. (DEDEAT Ref.: EC06/LN1&3/M/11-47)

Wren, S. & Steyn, P. 2011. Final Basic Assessment Report. Africa's Energy Footprint – Solarpower1 Project, Camdeboo Municipality, Eastern Cape. (DEA Ref.: 12/12/20/2275).

Steyn, P. & Jacoby, M. 2011. Final Basic Assessment Report. Establishment of Jeffreys Bay Technical Comprehensive School, Erf 6797, Jeffreys Bay, KLM (DEDEAT Ref.: EC08/LN1&3/M/11-96)

Steyn, P., Wren, S. & Pote, J. 2011. Final Environmental Impact Assessment – Proposed Expansion of Existing Agriculture: Portion 20 of Farm 84 Landdrost Veeplaats, Sundays River Valley Municipality. (DEDEAT Ref.: EC06/387/M/10-57).

Steyn, P. & Wren, S. 2011. Final Basic Assessment Report: Decommissioning of Sappi Adamas Mill, Erf 474 Swartkops, Deal Party, NMBM. (DEDEAT Ref.: CA/A/20/005-11)

### **CONFERENCE PRESENTATIONS**

Poster presentation at PSSA Conference 1998 (Outdoor tank cultivation of *Ulva lactuca*.)

Paper presentation at PSSA Conference 1999 (A comparison of the production and suitability of two *Ulva* species as abalone fodder in a commercial mariculture system.)

Poster presentation at PSSA Conference 2000 (Stress response of the red alga *Gelidium pristoides*, under exposed and immersed conditions.)

Poster presentation at PSSA Conference 2002. (Growth and photosynthesis of *Gelidium pristoides* from an experimental tidal tank system.)

Poster presentation at SAAB Conference 2002 (South African Association of Botanists). (Salinity and temperature tolerance in the intertidal rhodophyte *Gelidium pristoides* (Turner) Kuetzing.)



Poster presentation at PSSA Conference 2003. (Photosynthesis of *Gelidium pristoides* in response to temperature, salinity, irradiance, pH and Ca<sup>+</sup>)

Paper presented at South African Marine Science Symposium 2005 (Durban). (The Ecophysiology of *Gelidium pristoides* (Turner) Kuetzing: Towards commercial cultivation.)

Poster presentation at SAAB Conference 2006. (Differences in the Intertidal Seaweed Communities of Wave Exposed and Sheltered Rocky Shores.)

Paper presentation at SASAQS 2006. (South African Association for Aquatic Sciences). (Differences in the Intertidal Seaweed Communities of Wave Exposed and Sheltered Rocky Shores: Implications for Port Biomonitoring.)

Paper presentation at SANParks Addo Marine Symposium 2016. Monitoring intertidal communities on the Algoa Bay islands.

Paper at PSSA symposium Wavecrest 2020. Impact of abalone ranching on benthic communities in Algoa Bay.

#### REFERENCES

Dr E.E. Campbell, Head of Botany Department, Nelson Mandela University, Tel.: +27 41 504 2329, e-mail: Eileen.Campbell@mandela.ac.za

Dr P.T. Gama, former Head of Department - Department of Botany, Nelson Mandela University, Tel.: +27 41 504 2779, e-mail: Phumelele.Gama@mandela.ac.za (former line manager)

## 8.4 Key references

Cape Nature and Environmental Conservation Ordinance (No 19 of 1974).

Council for Scientific and Industrial Research. NFEPA wetlands 2011 [vector geospatial dataset] 2011. Available from the Biodiversity GIS website, downloaded on 25 February, 2026.

Dayaram, A., Harris, L.R., Grobler, B.A., Van der Merwe, S., Powrie, L.W., Rebelo, A.G. et al., 2019, 'Vegetation Map of South Africa, Lesotho and Swaziland 2018', *Bothalia - African Biodiversity and Conservation* 49(1)

De Villiers C.C., Driver A., Clark B., Euston-Brown D.I.W., Day E.G., Job N., Helme N.A., Holmes P.M., Brownlie S. and Rebelo A.B. 2005. Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape. Fynbos Forum and Botanical Society of South Africa, Kirstenbosch, 94p.

Department of Environmental Affairs and Tourism. 2007. National Environmental Management: Biodiversity Act (10/2004): Lists of critically endangered, endangered, vulnerable and protected species. (Notice 151). Government Gazette 29657, 23 February.

Nel, J.L., Murray, K.M., Maherry, A.M., Petersen, C.P., Roux, D.J., Driver, A., Hill, L., Van Deventer, H., Funke, N., Swartz, E.R., Smith-Adao, L.B., Mbona, N., Downsborough, L. and Nienaber, S. 2011. Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. 1801/2/11. Water Research Commission, Pretoria, South Africa

Nelson Mandela Bay Municipality. Nelson Mandela Bay CBAs 2009 [vector geospatial dataset] 2009. Available from the Biodiversity GIS website, downloaded on 25 February, 2026

Pierce SM and Mader AD. 2006. The STEP Handbook. Integrating the natural environment into land use decisions at the municipal level: towards sustainable development. Centre for African Conservation Ecology (ACE). Report Number 47 (Second Edition). Nelson Mandela Metropolitan University, South Africa.

Protected Tree Species under the National Forest Act (No 84 of 1998) - Government Gazette No. 50291 (Notice No. 4496) published on 13 March 2024

South African National Biodiversity Institute. 2024. National Red List for South African Plants. <https://redlist.sanbi.org/> Accessed February 2026.

SRK Consulting. (2010) Conservation Assessment and Plan for the Nelson Mandela Bay Municipality: Technical Report. Port Elizabeth: SRK Consulting.

Steyn, P., 2013. Vegetation Assessment for Wings Aero-Park, Lakeside, NMBM, December 2013, Prepared for Wings Aero-Park, Pp. 37.



**DETAILS OF SPECIALIST AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.**

(For official use only)

File Reference Number:

NEAS Reference Number:

Date Received:

Application for environmental authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amendments to the Environmental Impact Assessment Regulations, 2014. This form is valid as of **4 May 2026**.

**PROJECT TITLE**

ARH Agri Aquaponics Facility development on Ptn 217 (a Ptn of Ptn 87) of Farm Cragga Kamma No. 23, Lakeside Rd, Port Elizabeth.

SPECIALIST <sup>1</sup>

Paul-Pierre Steyn

Postal address:

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6070

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Telephone:

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Fax:

-

E-mail:

paulpierresteyn@gmail.com

Professional affiliation(s) (if any)

SACNASP (114736), SAAB (199)

Project Consultant:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Digital Soils Africa (Pty) Ltd

Natalie Sharp

45 Church Street, Walmer

6070

Cell:

082 414 0472

Fax:

082 414 0472

natalie@dsafrica.co.za

#### 4.2 The SPECIALIST

I, **Paul-Pierre Steyn**, declare that –

General declaration:

- I act as the independent Specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;



- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence and is punishable in terms of section 24F of the Act.

**Disclosure of Vested Interest** (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Amendments to Environmental Impact Assessment Regulations, 2014 as amended.

Signature of the environmental assessment practitioner:

Paul-Pierre Steyn

Name of company:

13/05/2026

Date:

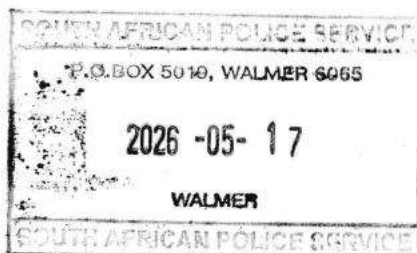
Signature of the Commissioner of Oaths:

Date:

Designation:

<sup>1</sup> Curriculum Vitae (CV) attached

Official stamp (below).





# Annexure 1

## CV

# PAUL-PIERRE STEYN

BOTANY DEPARTMENT – NELSON MANDELA UNIVERSITY • PHONE 084 302 8364  
E-MAIL PAUL.STEYN@MANDELA.AC.ZA

### OBJECTIVE

This resume provides a summary of relevant employment, experience and educational background.

### EXPERIENCE

2012–present

Nelson Mandela University: Botany Department, Port Elizabeth, SA

*Senior Lecturer: Botany Department*

Tasks and responsibilities:

- Undertake research / teaching related tasks as instructed by the Line Manager (HoD); among other:
  - Prepare course material and practicals courses
  - Present undergraduate and post graduate courses in a variety of botanical fields as required.
  - Present practical courses in Botany and Botanical Techniques at undergraduate and post-graduate level.
  - Supervise undergraduate and post-graduate research students.
  - Undertake research and publish in peer-reviewed journals.
  - Provide field support, assistance and supervision to research students.
  - Undertake departmental administrative duties as required.
    - Programme coordinator for BSc Honours program
    - Coordinate BSc Botany and BSc Botany Honours curriculum renewal / revision
    - Manage demonstrator / tutor appointments and budget

2007–2012 Public Process Consultants, Port Elizabeth, SA

*Environmental Scientist*

Tasks and responsibilities:

- Perform project management for environmental assessments (Basic Assessment, and Scoping & Environmental Impact Assessments).
- Prepare Environmental Assessment Reports (Basic Assessment & Scoping and EIA), Environmental Management Programs, Environmental Risk Assessments.
- Undertake Biophysical, Botanical and Ecological field work and site assessments.
- Prepare Specialist Reports and Chapters in capacity as Botanical and Ecological Specialist.
- Prepare site rehabilitation and vegetation management plans.
- Prepare and submit plant relocation permit applications in terms of the relevant provincial ordinances, Forestry Act and NEM Biodiversity Act regulations.
- Act as Environmental Control Officer for construction processes: undertake environmental audits and prepare audit reports for appointments.
- Perform basic GIS based mapping and spatial data analysis for specialist reports and environmental assessments.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>■ Liaise and deal with clients, authorities and project specialists on a day to day basis.</li> <li>■ Develop working relationships and liaise with various NGOs, government institutions and Departments on a regular basis, i.e. WESSA, Department of Economic Development and Environmental Affairs, Department of Water Affairs, Department of Agriculture Forestry and Fisheries, SA Heritage Resources Agency, NMBM Environmental Sub-directorate.</li> <li>■ Prepare project proposals and cost quotations as required; and present to prospective clients.</li> <li>■ Mentor and manage junior staff.</li> </ul>                                                                                                                                                                                                                                                                                                                                                      |
| <p>2000–2006 Nelson Mandela Metropolitan University, <i>Botany Dept.</i>, Port Elizabeth, SA<br/> <i>Contract Lecturer</i><br/> Tasks and responsibilities:</p> <ul style="list-style-type: none"> <li>■ Prepare course material and practicals for specific courses related to marine botany and phycology, or as instructed by the HoD.</li> <li>■ Present undergraduate and post graduate courses in Marine Botany, Plant Toxicology, Environmental Management, Plant Evolution and Systematics, as required.</li> <li>■ Present practical courses in Botany and Botanical Techniques at undergraduate and post-graduate level.</li> <li>■ Supervise undergraduate and post-graduate (honours level) student research projects.</li> <li>■ Provide field support, assistance and supervision to research students.</li> <li>■ Undertake departmental administrative duties as required.</li> </ul>                                                                                                                |
| <p>2000–2006 SAB Institute for Environmental and Coastal Management,<br/> Port Elizabeth, SA<br/> <i>Independent Specialist Consultant – Short Term Contracts</i><br/> Tasks and responsibilities:</p> <ul style="list-style-type: none"> <li>■ Specialist input, as well as data collection and analysis for marine based projects and Environmental Assessments.</li> <li>■ Contribute to Specialist Chapters and Environmental Reports, particularly regarding to coastal ecology and phycology; but also with respect to terrestrial plant ecology.</li> <li>■ Conduct field work and data collection for environmental monitoring and assessment projects.</li> </ul>                                                                                                                                                                                                                                                                                                                                           |
| <p><b>EDUCATION</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>1996 University of Port Elizabeth<br/> Port Elizabeth, SA<br/> <ul style="list-style-type: none"> <li>■ BSc - Botany and Zoology</li> </ul></p> <p>1997 University of Port Elizabeth<br/> Port Elizabeth, SA<br/> <ul style="list-style-type: none"> <li>■ BSc Hons – Botany (Specialization – Marine Botany)<br/> Tank cultivation of the red alga <i>Plocamium corallorhiza</i>.<br/> Desiccation tolerance in intertidal seaweed <i>Gelidium pristoides</i>.</li> </ul></p> <p>2000 University of Port Elizabeth<br/> Port Elizabeth, SA<br/> <ul style="list-style-type: none"> <li>■ MSc - Botany<br/> Dissertation: Comparative study of the production and suitability of two <i>Ulva</i> species as abalone fodder in a commercial culture system.</li> </ul></p> <p>2009 Nelson Mandela Metropolitan University<br/> Port Elizabeth, SA<br/> <ul style="list-style-type: none"> <li>■ PhD - Botany</li> </ul>  </p> |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thesis: The Ecophysiology of the agarophyte <i>Gelidium pristoides</i> towards commercial production.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>INTERESTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Marine Macroalgal Physiology, Marine Intertidal & Coastal Ecology, Mariculture, Conservation Planning, Restoration Ecology.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>SPECIAL SKILLS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Department of Labour Certified Class IV Scientific Diver,<br>SDI Master Diver & TDI Extended Range Nitrox                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>AFFILIATIONS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Memberships: South African Council for Natural Scientific Professions (SACNASP) [Reg. 114736-Ecological Science], South African Association of Botanists (SAAB) [Mem.No. 199], Phycological Society of South Africa (PSSA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>POSTGRADUATE SUPERVISION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>MASTERS</b></p> <p>Andrew Witte MSc 2015 -2016. Benthic algal communities of shallow reefs in the Eastern Cape: availability of abalone habitat.</p> <p>Lauren Moriarty MSc 2017-2018. Inshore benthic communities of the Port Elizabeth abalone ranching concession area.</p> <p>Alec Blewett MSc 2017-2018. The cultivation of <i>Gracilaria gracilis</i> in the Swartkops estuary, South Africa.</p> <p>William Gummow MSc 2017-2018. Recycled tyre rubber crumb as a soil ameliorant to prevent soil compaction.</p> <p>Mantshadi Mdhloso MSc 2020-2023.</p> <p><b>HONOURS</b></p> <p>William Gummow, 2016, The use of rubber crumb as an alternative growth medium in soilless cultivation systems.</p> <p>Zodidi Gwayise, 2016, <i>Gelidium pristoides</i> cultivation under a periodic drying regime.</p> <p>Ian Mulder, 2016, <i>Gracilaria gracilis</i> as a potential biofilter: Growth, Nutrient Uptake and Agar Characteristics of <i>Gracilaria gracilis</i> (Gracilariaceae, Rhodophyta) from the Swartkops Estuary.</p> <p>Londiwe Chiliza, 2017, Influence of benthic algal communities on refuge abalone selection at Cape Recife.</p> <p>Rowan Delpont, 2017, The Effects of Flow Velocity (slope) on the cultivation of Lettuce (<i>Lactuca sativa</i>) using a Nutrient Film Technique.</p> <p>Ndivhuho Takalani, 2017, Investigating the effect of grey water on growth of vegetable crops.</p> <p>Jeremiah Hlahla, 2018, The study of the growth dynamics of <i>Arthrospira</i> sp. to optimize biomass production.</p> <p>Ashley Nelson, 2018, Effectiveness of restoration in fynbos: vegetation recovery after large scale disturbance.</p> <p>Nicole Wienand, 2018, The influence of reef complexity on the composition of marine benthic communities on the subtidal warm temperate reefs off the coast of Port Elizabeth, South Africa.</p> <p>LordCarrington Bernabas, 2019, The Effect of Storm Water Discharge on the Biota on a Rocky Shore.</p> |

Zoe Norval, 2019. Influence of shore geology on intertidal communities along the coast of Port Elizabeth.

## REPORTS & PRESENTATIONS

### PUBLICATIONS

- Perissinotto, R., Bornman, T.G., Steyn, P.P., Miranda, N.A., Dorrington, R.A., Matcher, G.F., Strydom, N. and Peer, N., 2014. Tufa stromatolite ecosystems on the South African south coast. *South African Journal of Science*, 110(9-10), pp.01-08.
- Rishworth, G.M., Elden, S., Perissinotto, R., Miranda, N.A., Steyn, P.P. and Bornman, T.G., 2016. Environmental influences on living marine stromatolites: insights from benthic microalgal communities. *Environmental microbiology*, 18, pp.503–513.
- Rishworth, G.M., Perissinotto, R., Miranda, N.A., Bornman, T.G. and Steyn, P.P., 2016. Phytoplankton community dynamics within peritidal pools associated with living stromatolites at the freshwater–marine interface. *Aquatic Sciences*, pp.1-14.
- Weston, R.L.A., Perissinotto, R., Rishworth, G.M. and Steyn, P.P., 2018. Macroinvertebrate variability between microhabitats of peritidal stromatolites along the South African coast. *Marine Ecology Progress Series*, 605, pp.37-47.
- Weston, R.L.A., Perissinotto, R., Rishworth, G.M. and Steyn, P.P., 2019. Benthic microalgal variability associated with peritidal stromatolite microhabitats along the South African coast. *Aquatic Microbial Ecology*, 82(3), pp.253-264.
- Rishworth, Gavin M; Dodd, Carla; Perissinotto, Renzo; Bornman, Thomas G; Adams, Janine B; Anderson, Callum R; Cawthra, Hayley C; Dorrington, Rosemary A; du Toit, Hendrik; Edworthy, Carla. 2020. Modern supratidal microbialites fed by groundwater: functional drivers, value and trajectories. *Earth-Science Reviews*. 210
- McCarroll, R.J.; Scott, T.; King, E.V.; Masselink, G.; Ciotti, B. J.; Cloete, A.; Steyn, P.; Britz, P.; Vine, N. G; Deyzel, H.P. 2021. Modelling regional and local-scale larval seeding strategies for abalone (*H. midae*) ranching in South Africa. *Aquaculture*. 540.
- Edworthy, C., Steyn, P.P. and James, N.C., 2023. The role of macroalgal habitats as ocean acidification refugia within coastal seascapes. *Cambridge Prisms: Coastal Futures*, 1, p.e22.

### SPECIALIST REPORTS

- Steyn, P. & Witte, A.D. 2016. A survey of the effect of abalone seeding on the marine benthic community at Cape Recife, Port Elizabeth (2016 Survey). Report prepared for DAFF on behalf of Ulwandle Fishing / Wild Coast Abalone. 26pp.
- Steyn, P. 2016. Vegetation survey for the proposed development on Portions of Farm 28 Seaview. Report prepared for Mr D. Price. 16pp
- Steyn, P. 2016. Vegetation assessment: construction of an irrigation dam on Portion 1 of Farm 663 Geelhout Boom, Humansdorp. Report prepared for Igme Terblanche & Associates. 50pp.
- Steyn, P. & Witte, A.D. 2015. A survey of the effect of abalone seeding on the marine benthic community at Cape Recife, Port Elizabeth. Report prepared for DAFF on behalf of Ulwandle Fishing / Wild Coast Abalone.
- Rautenbach, K. & Steyn, P. 2015. Vegetation assessment for the widening of the R75 provincial road: Section 4 – Jansenville to Graaff Reinet - Draft. Report prepared for Aurecon / SANRAL.
- Steyn, P. 2014. Vegetation Assessment for Farm 714 Citrus Orchards (remaining extent) – Sunland, Sundays River Valley. Prepared for: Elize Terblanche, I.W. Terblanche & Associates - Environmental Consultants.
- Steyn, P. & du Preez, D.R. 2013. A baseline survey of dominant benthic biota in a proposed experimental abalone seeding area at Cape Recife, Port Elizabeth. Report prepared for DAFF on behalf of Wild Coast Abalone.
- Steyn, P. 2013. Vegetation Assessment for Wings Aero-Park, Lakeside, NMBM. Report Prepared for Wings Aero-park.
- Wren, S., Steyn, P. & Jacoby, M. 2012. Scoping and Environmental Impact Assessment - Proposed Weston Packaged Sewage Treatment Plant and Sewerage Reticulation (DEA Ref Number: 12/9/11/L549/1 and DEDEAT Ref Number EC08/LN1/M/10-97), Final Environmental Impact Assessment Report.
- Steyn, P., Jacoby, M. & Wren, S. 2012. Final Basic Assessment Report. Residential and Mixed Use Development on Portion 179 of Farm 113 Commandokraal Estate, SRVM. (DEDEAT Ref.: EC06/LN1&3/M/11-47)
- Wren, S. & Steyn, P. 2011. Final Basic Assessment Report. Africa's Energy Footprint – Solarpower1 Project, Camdeboo Municipality, Eastern Cape. (DEA Ref.: 12/12/20/2275).





**herewith certifies that**

**Paul-Pierre Steyn**

Registration Number: 114736

**is a registered scientist**

in terms of section 20(3) of the Natural Scientific Professions Act, 2003  
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Ecological Science (Professional Natural Scientist)

Effective    **18 November 2015**

Expires      **31 March 2027**



President of Council

Chief Executive Officer





**M4: Wetland / Aquatic Assessment – Dr. Brian Colloty**

**ENVIRONMENTAL ASSESSMENT SECTION 24G APPLICATION FOR PORTION 8 OF ERF  
3 KRAGGA KAMMA, IN THE NELSON MANDELA BAY MUNICIPALITY**

**WETLAND / AQUATIC ASSESSMENT**

**FOR**

**Digital Soils Africa (Pty) Ltd**

**BY**



**EnviroSci (Pty) Ltd**

**Dr Brian Colloty**

1 Rossini Rd

Pari Park

Gqeberha

6070

**DATE**

16 December 2025

**REVISION 1**

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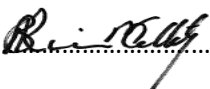


## SPECIALIST REPORT DETAILS

**Report prepared by:** Dr. Brian Colloty Pr.Sci.Nat. (Ecology 400268/07) / Member SAEIES.

**Expertise / Field of Study:** BSc (Hons) Zoology, MSc Botany (Rivers), Ph.D Botany Conservation Importance rating, and has worked as an independent consulting specialist from 1996 to present.

I, **Dr. Brian Michael Colloty** declare that this report has been prepared independently of any influence or prejudice as may be specified by the National Department of Environmental Affairs Fisheries and Forestry and or Department of Water and Sanitation

Signed:....  ..... Date:....16 December 2025.....

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# 1 Introduction

Digital Soils Africa on behalf of their client appointed EnviroSci (Pty) Ltd to conduct an aquatic impact assessment for the Section 24G Application for works that has taken place Portion 8 of Erf 3, Kragga Kamma, Nelson Mandela Bay Municipality, Eastern Cape Province (Figure 1).

Several wetlands are known to occur within 500m of the site, but the site is not located within a Strategic Water Source Area or near a Wetland Cluster. Similarly the study area (site + 500m buffer) does not contain any known rivers or streams, and is thus also not part of any Fish Support Area, as defined by the National Freshwater Ecosystem Priority Area Atlas as no mainstem rivers are associated with this subquaternary catchment, but the area is known for seepage areas.

Therefore this assessment adheres to criteria contained in the DWAF 2005 / 2008 delineation manuals and the Wetland / Riverine Classification System. The site-specific survey was in December 2025, but supported by wetland and riverine assessments conducted within the same system since 2015. Further the assessment was required as the proposed development is located within the regulated area of wetlands, thus requiring Section 21 c & i water use authorisations by the Department of Water and Sanitation

The PROTOCOL FOR SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR THE ENVIRONMENTAL IMPACTS ON AQUATIC BIODIVERSITY (Government Gazette 43110, 20 March 2020), superseding the Appendix 6 NEMA requirements, as amended, was also adhered to as the site was rated as Very High due to being located within Wetlands Depressions and Ecological Support Area (Type 1 & 2). The Screening Tool reports also mentions Strategic Water Resources Areas, but needs verification.

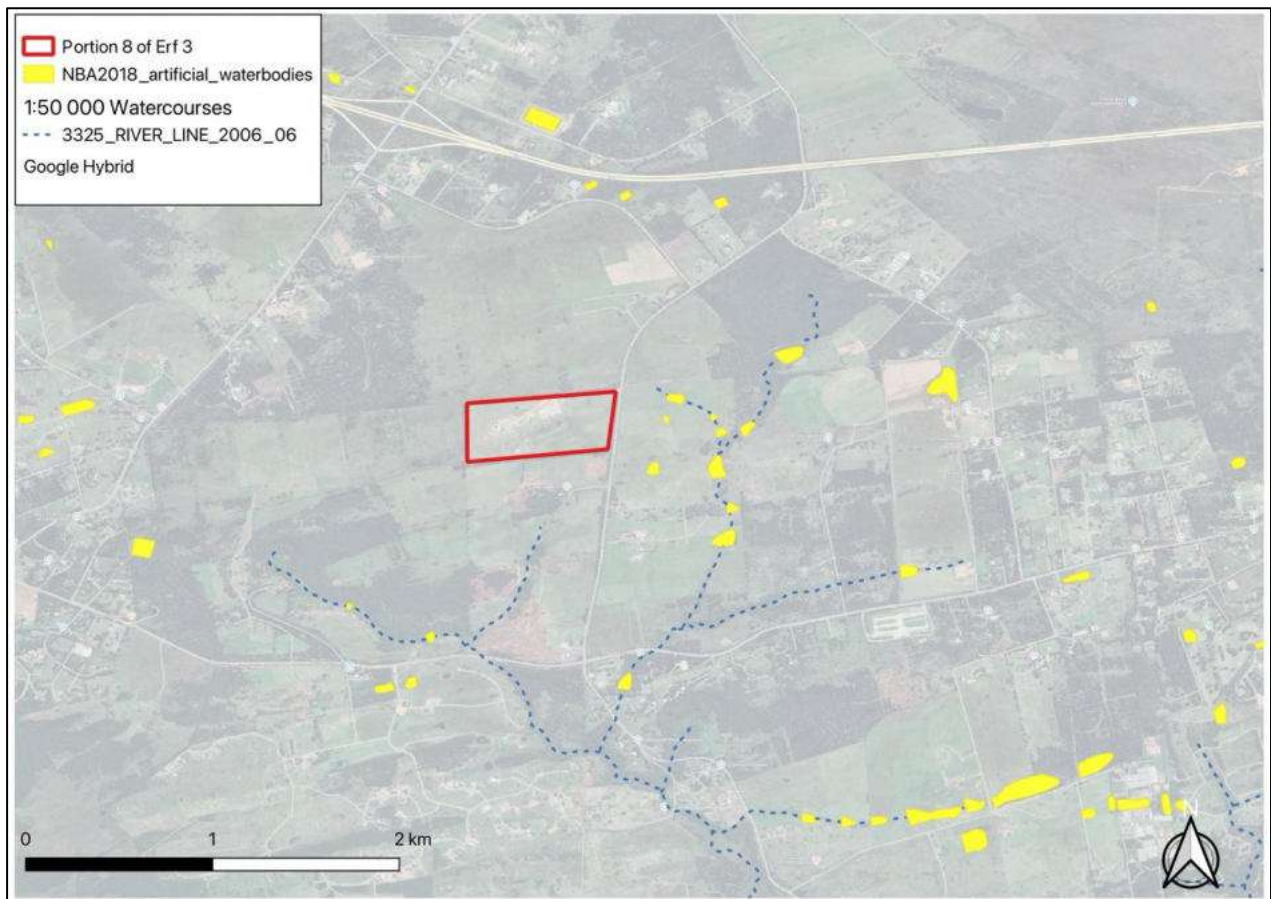
Several important national, provincial and municipal scale conservation plans were also reviewed, with the results of those studies being included in this report. Most conservation plans are produced at a high level, so it is therefore important to verify the actual status of the study area.

## 1.1 Location & Project description

The development on Portion 83 of Erf 3, Kragga Kamma comprises the establishment of a residential dwelling, an associated access road, and a small-scale aquaponics facility. The aquaponics component consists of a closed-loop, recirculating system used for the cultivation of tilapia, wherein water is continuously filtered and reused within the system, with no wastewater discharge from the site.

The system is designed to minimise water consumption and prevent the release of effluent to the receiving environment. In order to facilitate the establishment of the dwelling, access road, and aquaponics infrastructure, indigenous vegetation was cleared on the property prior to obtaining the necessary environmental authorisation, thereby triggering the need for rectification in terms of Section 24G of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

This application is therefore submitted to address the unauthorised vegetation clearance and associated activities and to regularise the development through the appropriate environmental assessment and mitigation process.



**Figure 1: Google satellite imagery showing the location of site in relation to the general environment**

## **1.2 Relevant legislation and policy**

The following is pertinent to this study:

- Section 24 of The Constitution of the Republic of South Africa;
- Agenda 21 – Action plan for sustainable development of the Department of Environmental Affairs and Tourism (DEAT) 1998;
- National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) inclusive of all amendments, as well as the NEM: Biodiversity Act;
- National Water Act, 1998 (Act No. 36 of 1998);
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA);
- Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002);
- Nature and Environmental Conservation Ordinance (No. 19 of 1974);
- National Forest Act (No. 84 of 1998); and
- National Heritage Resources Act (No. 25 of 1999).

In this regard several Alien Invasive species were observed on site and form part of control programme initiated by the land owner, with species being managed including :

- *Cestrum laevigatum*
- *Pinus spp*
- *Cenchrus clandestinus*
- *Rubus fruticosus*
- *Pteridium aquilinum subsp. capense*

## 2 Terms of Reference

Based on the request by DSA the Wetland Assessment Report contains the following:

- Delineate the wetlands within 500m of the site according to relevant DWS guidelines. Provide the required watercourse buffers.
- Determine ecological status of the receiving aquatic environment, including the identification of endangered or protected species. Determine the PES and REC of affected watercourses.
- Provide a concise description of the importance of the affected wetlands in terms of pattern and process, ecosystem goods and services, as appropriate.
- Identify potential impacts of the project on the wetland environment and suggest suitable mitigation measures to address the identified impacts.
- The report must include the appropriate mapping.
- Prepare a sensitivity map (GIS-based), based on the findings of the study. All SHP files must be provided by the Specialist.

## 3 Knowledge Gaps

To obtain a comprehensive understanding of the dynamics of both the flora and fauna of communities within a study site, as well as the status of endemic, rare or threatened species in any area, assessments should always consider investigations at different time scales (across seasons/years) and through replication. However, due to time constraints these long-term studies are not always feasible and are thus mostly based on instantaneous sampling. This limitation is common to many impact assessment type studies, but the findings are deemed adequate for the purposes of decision-making support regarding project acceptability, unless otherwise stated.

Therefore, due to the scope of the work presented in this report, a long-term investigation of the proposed site was not possible and as such not perceived as part of the Terms of Reference. However, a concerted effort was made to assess as much of the potential site, as well as make use of any available literature, species distribution data and aerial photography. Bearing in mind that the site has been assessed by EnviroSci for various other projects since 2015, inclusive of the site for a previous project proposal as well as information shown in Table 1 below.

It should be emphasised that information, as presented in this document, only has reference to the study area as indicated on the accompanying maps. Therefore, this information cannot be applied to any other area without detailed investigation.

**Table 1: Utilised data and associated source relevant to the proposed project**

| Data / Information                                                                                                    | Source                                                                                                                                                                                                  | Date                      | Type                              | Description                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------|
| National Biodiversity Assessment                                                                                      | South African National Biodiversity Institute                                                                                                                                                           | 2018                      | Report and Spatial                | Latest assessment of South African biodiversity and ecosystems, including, vegetation types, wetlands and rivers.  |
| Review of available data for a South African Inventory of Inland Aquatic Ecosystems (SAIIAE). Water SA 44 (2) 184-199 | van Deventer H., Smith-Adao, L. Petersen C., Mbona N., Skowno A., Nel, J.L.                                                                                                                             | 2018                      | Report                            | Assessment of available spatial data regards aquatic ecosystems                                                    |
| Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.                | Nel, J.L., Murray, K.M., Maherry, A.M., Petersen, C.P., Roux, D.J., Driver, A., Hill, L., Van Deventer, H., Funke, N., Swartz, E.R., Smith-Adao, L.B., Mbona, N., Downsborough, L. and Nienaber, S.     | 2011                      | Report                            | NFEPA                                                                                                              |
| FrogMAP. 2019.                                                                                                        | Animal Demography Unit. Accessed from <a href="http://frogmap.adu.org.za/?sp=400">http://frogmap.adu.org.za/?sp=400</a> ; on 2020-10-09                                                                 | 2024                      | Spatial databases                 | Frog distribution map                                                                                              |
| Eastern Cape Biodiversity Conservation Plan (ECBCP, 2019)                                                             | ECBCP (2019) Eastern Cape Biodiversity Conservation Plan Handbook. Department of Economic Development and Environmental Affairs (King Williams Town). Compiled by G. Hawley, P. Desmet and D. Berliner. | 2019                      | Spatial                           | Spatial conservation planning units and associated management recommendations for the province                     |
| Freshwater Biodiversity Information System (FBIS)                                                                     | <a href="https://freshwaterbiodiversity.org/">https://freshwaterbiodiversity.org/</a>                                                                                                                   | Accessed 15 December 2025 | Spatial species locality database | A spatial data inventory on species observations, that includes various other sources such as FishBase INaturalist |



## 4 Study Area

### 4.1 Climate

The site is located within the bimodal rainfall region of South Africa, with a Mean Annual Precipitation (MAP) for the coastal region at ca. 680 mm per annum. Annual average temperatures range between 7.6 and 25°C, with frost a rare occurrence of no more than 3 days per year (Mucina & Rutherford, 2007)).

### 4.2 Geology and soils

The site is underlain calcareous sandstone, clastic limestones and conglomerates of the Algoa Group (Council of Geoscience, 2020).

### 4.3 Slope and aspect

The region is characterised undulating areas, representative of the previous dune associated formations of the area, between 222 to 197 mASL (Above Sea Level).

### 4.4 Drainage network

The proposed project site is located in within the upper catchment areas of the Bakens River (M20A) (Figure 2), but is not connected to any mainstem river or stream as this portion of the catchment is formed by relic dune systems, that have become stable and vegetated, leaving the undulating and disconnected nature of the area, with mostly seeps and depressions (interdunal) characterising the area.

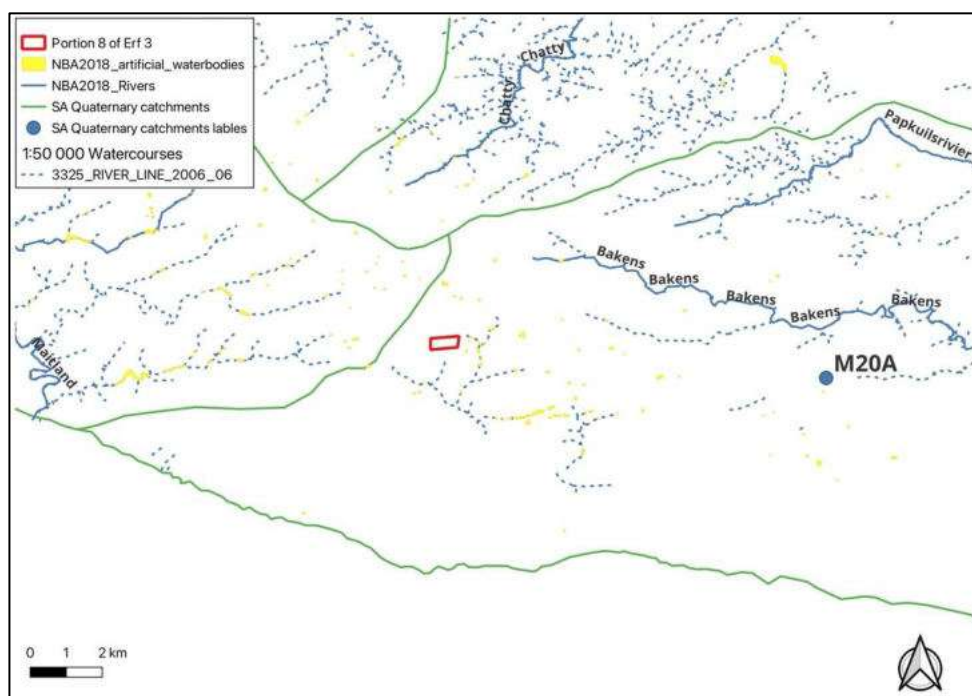


Figure 2: Watercourses and mainstem rivers known within the greater catchments with the site

### 4.5 South African Inventory of Inland Aquatic Ecosystems

The latest available river and wetland spatial datasets (Van Deventer *et al.* 2018) were used to identify the aquatic features likely to be present on site, on a desktop level, prior to groundtruthing and field delineation. The National Rivers Map and South African National Wetland Map 5 are GIS layers produced as part of the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) during the National Biodiversity Assessment (SANBI 2018). Figure 3 shows the project site in relation to the above-mentioned wetland and river inventories.

According to the National Wetland Map 5 (Van Deventer et al. 2018), confirmed the lack of any connected watercourses, but indicated the presence of a depression in the National Wetland Inventory (SAIIE v2) spatial data (Figure 4). The depression is actually the dam on site, so was misidentified.

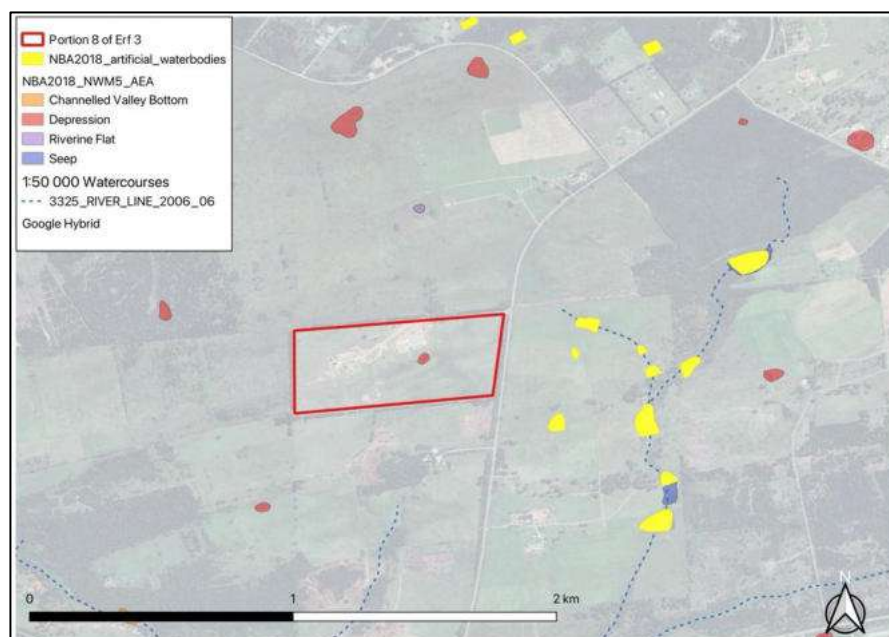


Figure 3: Potential wetland as identified in the National Wetland Inventory (v5) van Deventer *et al.* 2018)

#### 4.6 Conservation context

The study site was excluded from any National Freshwater Ecosystems Priority Atlas areas (NFEPA - Nel *et al.*, 2011, Strategic Water Resource Areas and NFEPA Wetland Clusters (Figure 4). Further the site is however not considered a Fish Support Area, and thus any impacts on surface runoff to maintain the function of the downstream mainstem rivers is limited. However the site forms part of an Aquatic Ecological Support Areas identified in the Eastern Cape Biodiversity Conservation Plan (2019) – Type 1 and 2 (Figure 5). The presence of both the ESAs has resulted in the site being rated as Very High Sensitivity in the DFFE Screening Tool. However no listed or protected aquatic plant species were observed within the adjacent aquatic features (Seepage areas and channels).

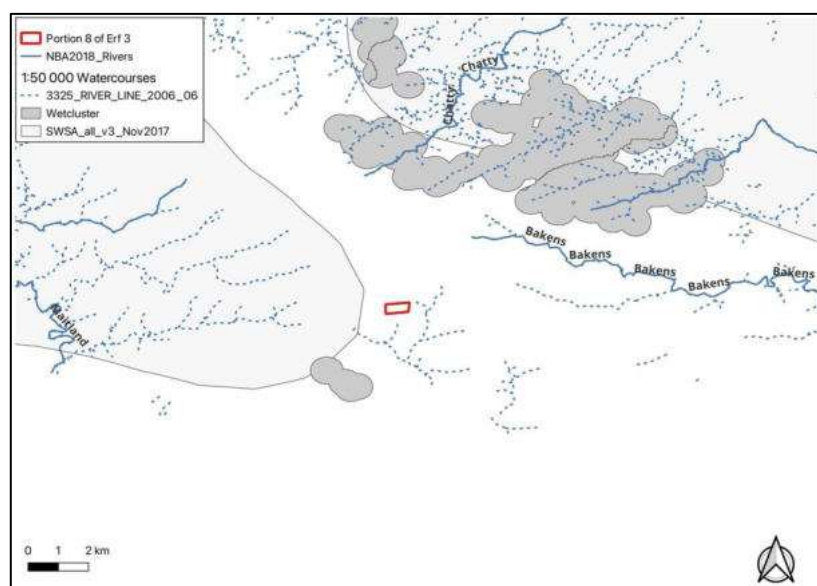


Figure 4: The study area in relation to NFEPA catchments, potential wetland clusters and Strategic Water Resources Areas of South Africa

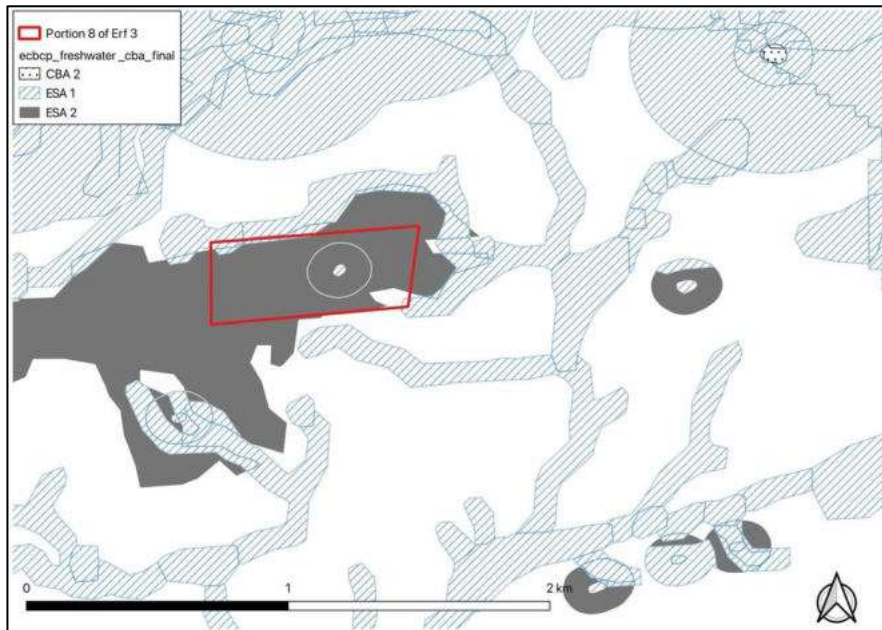


Figure 5: Results of the ECBCP 2019, for the Aquatic Environment

## 5 Expertise of the specialist

Dr Brian Michael Colloty is a SACNASP registered Ecologist & Environmental Assessment Practitioner (Pr. Sci. Nat. 400268/07). He is a member of South African Wetland Society and specialises in ecology and conservation importance rating of inland habitats, wetlands, rivers & estuaries. Specialist CV is attached in Appendix 1.

Brian has over 29 years' experience in environmental sensitivity and conservation assessment of aquatic and terrestrial systems inclusive of Index of Habitat Integrity (IHI), WET Tools, Riparian Vegetation Response Assessment Index (VEGRAI) for Reserve Determinations, estuarine and wetland delineation throughout Africa. He also has 15 years' experience in the coordination and management of multi-disciplinary teams, such as specialist teams for small to large scale EIAs and environmental monitoring programmes, throughout Africa and inclusive of marine, coastal and inland systems.

### TERTIARY EDUCATION

- 1994: B Sc Degree (Botany & Zoology) - NMU
- 1995: B Sc Hon (Zoology) - NMU
- 1996: M Sc (Botany - Rivers) - NMU
- 2000: Ph D (Botany – Estuaries & Mangroves) – NMU

## 6 Aims and objectives

The aim of this report is to provide an assessment of the aquatic habitats and provide suitable mitigation to minimise potential impacts. The potential impacts associated with the development are formally assessed, and where possible, means to avoid these are also provided (i.e., rehabilitation management recommendations based on aquatic considerations). This assessment is based on a site visit conducted on 12 December 2025, but supported by information collected for the site over several years, including summer periods and periods after heavy rainfall (2014/2015).

## 7 Methodology

This study followed the approaches of several national guidelines with regards to wetland assessment. These have been modified by the author, to provide a relevant mechanism of assessing the present state of the study area aquatic systems, applicable to the specific environment and, in a clear and objective manner, identify and assess the potential impacts associated with the proposed development site based on information collected within the relevant farm portions. See Appendix 2. For reference the following definitions are as follows:

**Drainage line:** A drainage line is a lower category or order of watercourse that does not have a clearly defined bed or bank. It carries water only during or immediately after periods of heavy rainfall i.e. non-perennial, and riparian vegetation may not be present.

**Perennial and non-perennial:** Perennial systems contain flow or standing water for all or a large proportion of any given year, while non-perennial systems are episodic or ephemeral and thus contains flows for short periods, such as a few hours or days in the case of drainage lines.

**Riparian:** the area of land adjacent to a stream or river that is influenced by stream-induced or related processes. Riparian areas which are saturated or flooded for prolonged periods would be considered wetlands and could be described as riparian wetlands. However, some riparian areas are not wetlands (e.g. an area where alluvium is periodically deposited by a stream during floods but which is well drained).

**Wetland:** land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which under normal circumstances supports or would support vegetation typically adapted to life in saturated soil (Water Act 36 of 1998); land where an excess of water is the dominant factor determining the nature of the soil development and the types of plants and animals living at the soil surface (Cowardin *et al.*, 1979).

**Water course:** as per the National Water Act means -

- (a) a river or spring;
- (b) a natural channel in which water flows regularly or intermittently;
- (c) a wetland, lake or dam into which, or from which, water flows; and
- (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks

### 7.1 Wetland identification and mapping

Terminology currently strives to characterise a wetland not only on its structure (visible form), but also to relate this to the function and value of any given wetland. The Ramsar Convention definition of a wetland is widely accepted as *“areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres”* (Davis 1994). South Africa is a signatory to the Ramsar Convention and therefore its extremely broad definition of wetlands has been adopted for the proposed NWCS, with a few modifications. The adapted definition for the NWCS is, therefore, as follows (Ollis *et al.*, 2013):

*WETLAND: an area of marsh, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed ten metres.*

This definition encompasses all ecosystems characterised by the permanent or periodic presence of water other than marine waters deeper than ten metres. The only legislated definition of wetlands in South Africa, however, is contained within the National Water Act (Act No. 36 of 1998) (NWA), where wetlands are defined as *“land which is transitional between terrestrial and aquatic systems, where the water table is usually at, or near the surface, or the land is periodically covered with shallow water and which land in normal circumstances supports, or would support, vegetation adapted to life in saturated soil.”* This definition is consistent with more

precise working definitions of wetlands and therefore includes only a subset of ecosystems encapsulated in the Ramsar definition

Wetlands must therefore have one or more of the following attributes to meet the above definition (DWAF, 2005):

- A high-water table that results in the saturation at or near the surface, leading to anaerobic conditions developing in the top 50 cm of the soil.
- Wetland or hydromorphic soils that display characteristics resulting from prolonged saturation, i.e. mottling or grey soils
- The presence of, at least occasionally, hydrophilic plants, i.e. hydrophytes (water loving plants).

## **7.2 Wetland delineation**

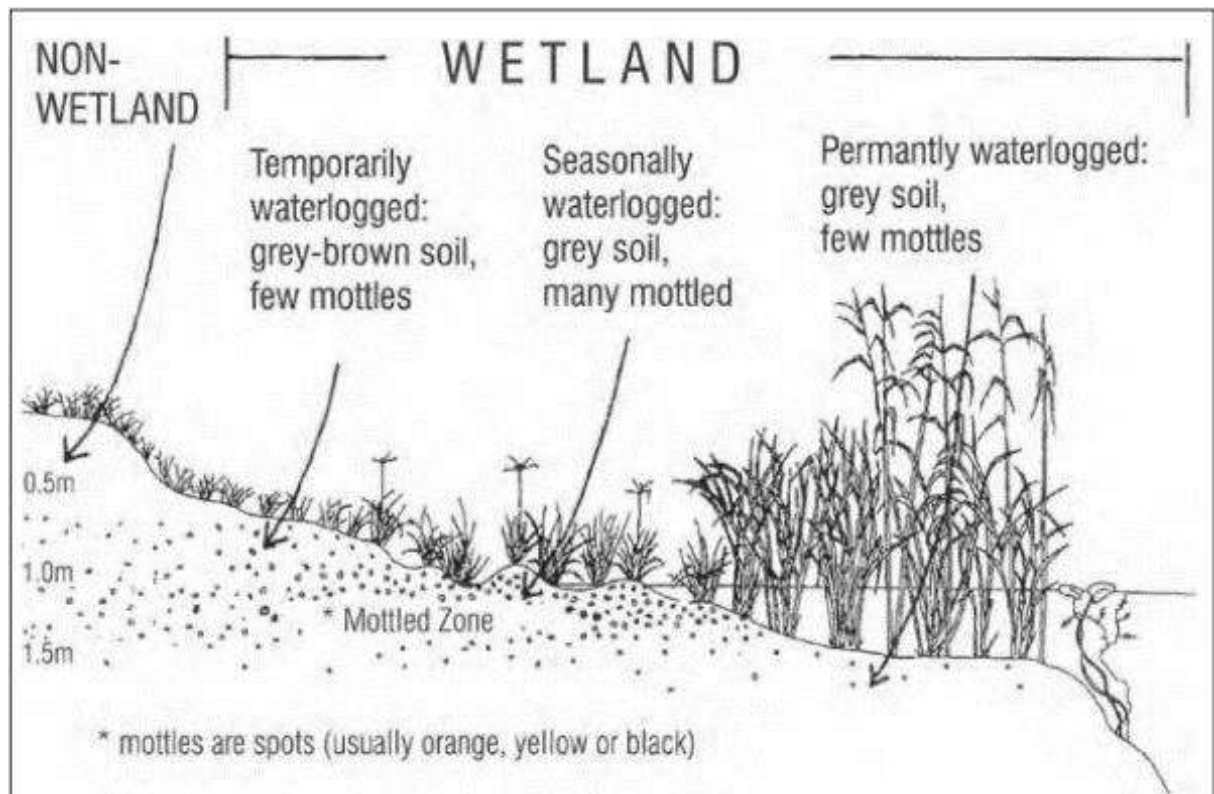
Wetland delineation includes the confirmation of the occurrence of wetland and a determination of the outermost edge of the wetland. The outer boundary of wetlands was identified and delineated according to the Department of Water Affairs wetland delineation manual 'A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas' (DWAF, 2005a).

Wetland indicators were used in the field delineation of the wetlands: position in landscape, vegetation and soil wetness (determined through soil sampling with a soil auger and the examining the degree of mottling). Figure 6 shows the different wetness and soil characteristics in a typical wetland.

Four specific wetland indicators were used in the detailed field delineation of wetlands, which include:

- The Terrain Unit Indicator helps to identify those parts of the landscape where wetlands are more likely to occur.
- The Soil Form Indicator identifies the soil forms, as defined by the Soil Classification Working Group (1991), which are associated with prolonged and frequent saturation.
- The Soil Wetness Indicator identifies the morphological "signatures" developed in the soil profile as a result of prolonged and frequent saturation.
- The Vegetation Indicator identifies hydrophilic vegetation associated with frequently saturated soils.



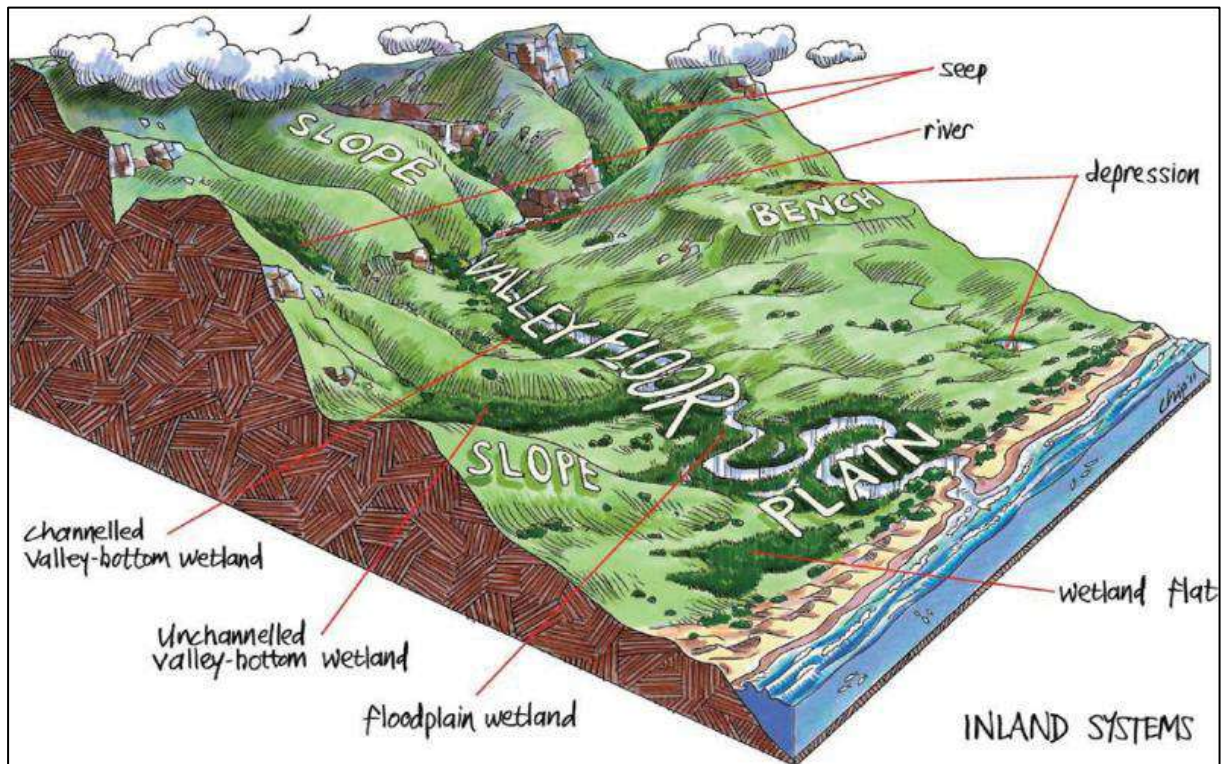


**Figure 6: Cross section through a wetland, indicating how the soil wetness and vegetation indicators change as one moves along a gradient of decreasing wetness, from the middle to the edge of the wetland. Source: Donovan Kotze, University of KwaZulu-Natal.**

According to the wetland definition used in the National Water Act, vegetation is the primary indicator, which must be present under normal circumstances. However, in practise the soil wetness indicator tends to be the most important, and the other three indicators are used in a confirmatory role. The reason is that vegetation responds relatively quickly to changes in soil moisture regime or management and may be transformed; whereas the morphological indicators in the soil are far more permanent and will hold the signs of frequent saturation long after a wetland has been drained (perhaps for several centuries).

### **7.3 Wetland functional assessment**

In order to identify the wetland types, using Kotze *et al.* (2009) and Ollis *et al.* (2013), a characterisation of hydrogeomorphic (HGM) types was conducted. These have been defined based on the geomorphic setting of the wetland in the landscape (e.g. hillslope or valley bottom, whether drainage is open or closed), water source (surface water dominated or sub-surface water dominated), how water flows through the wetland (diffusely or channelled) and how water exits the wetland (Figure 7).



**Figure 7: Illustration of wetland types and their typical landscape setting (From Ollie *et al.* 2013)**

The classification system of Ollis *et al.* (2013) uses hydrological and geomorphological traits to distinguish the primary wetland units, i.e. direct factors that influence wetland function. Other wetland assessment techniques, such as the DWAF (2005) delineation method, only infer wetland function based on abiotic and biotic descriptors (size, soils & vegetation) stemming from the Cowardin approach (Ollis *et al.*, 2013). The classification system is summarised below:

There is a six-tiered hierarchical structure, with four spatially nested primary levels of classification (Figure 8 & 9). The hierarchical system firstly distinguishes between Marine, Estuarine and Inland ecosystems (**Level 1**), based on the degree of connectivity the particular system has with the open ocean (greater than 10 m in depth). Level 2 then categorises the regional wetland setting using a combination of biophysical attributes at the landscape level, which operate at a broad bioregional scale. This is opposed to specific attributes such as soils and vegetation.

**Level 2** has adopted the following systems:

- Inshore bioregions (marine)
- Biogeographic zones (estuaries)
- Ecoregions (Inland)

**Level 3** of the NWCS assess the topographical position of inland wetlands as this factor broadly defines certain hydrological characteristics of the inland systems. Four landscape units based on topographical position are used in distinguishing between Inland systems at this level. No subsystems are recognised for Marine systems, but estuaries are grouped according to their periodicity of connection with the marine environment, as this would affect the biotic characteristics of the estuary.

**Level 4** classifies the hydrogeomorphic (HGM) units discussed earlier. The HGM units are defined as follows:

- Landform – shape and localised setting of wetland
- Hydrological characteristics – nature of water movement into, through and out of the wetland

- Hydrodynamics – the direction and strength of flow through the wetland

These factors characterise the geomorphological processes within the wetland, such as erosion and deposition, as well as the biogeochemical processes.

**Level 5** of the assessment pertains to the classification of the tidal regime within the marine and estuarine environments, while the hydrological and inundation depth classes are determined for inland wetlands. Classes are based on frequency and depth of inundation, which are used to determine the functional unit of the wetlands and are considered secondary discriminators within the NWCS.

**Level 6** uses six descriptors to characterise the wetland types based on biophysical features. As with Level 5, these are non-hierarchical in relation to each other and are applied in any order, dependent on the availability of information. The descriptors include:

- Geology;
- Natural vs. Artificial;
- Vegetation cover type;
- Substratum;
- Salinity; and
- Acidity or Alkalinity.

It should be noted that where sub-categories exist within the above descriptors, hierarchical systems are employed, and these are thus nested in relation to each other. The HGM unit (Level 4) is the focal point of the system, with the upper levels (Figure 9 – Inland systems only) providing means to classify the broad biogeographical context for grouping functional wetland units at the HGM level, while the lower levels provide more descriptive detail on the particular wetland type characteristics of a particular HGM unit. Therefore Level 1 – 5 deals with functional aspects, while Level 6 classifies wetlands on structural aspects.

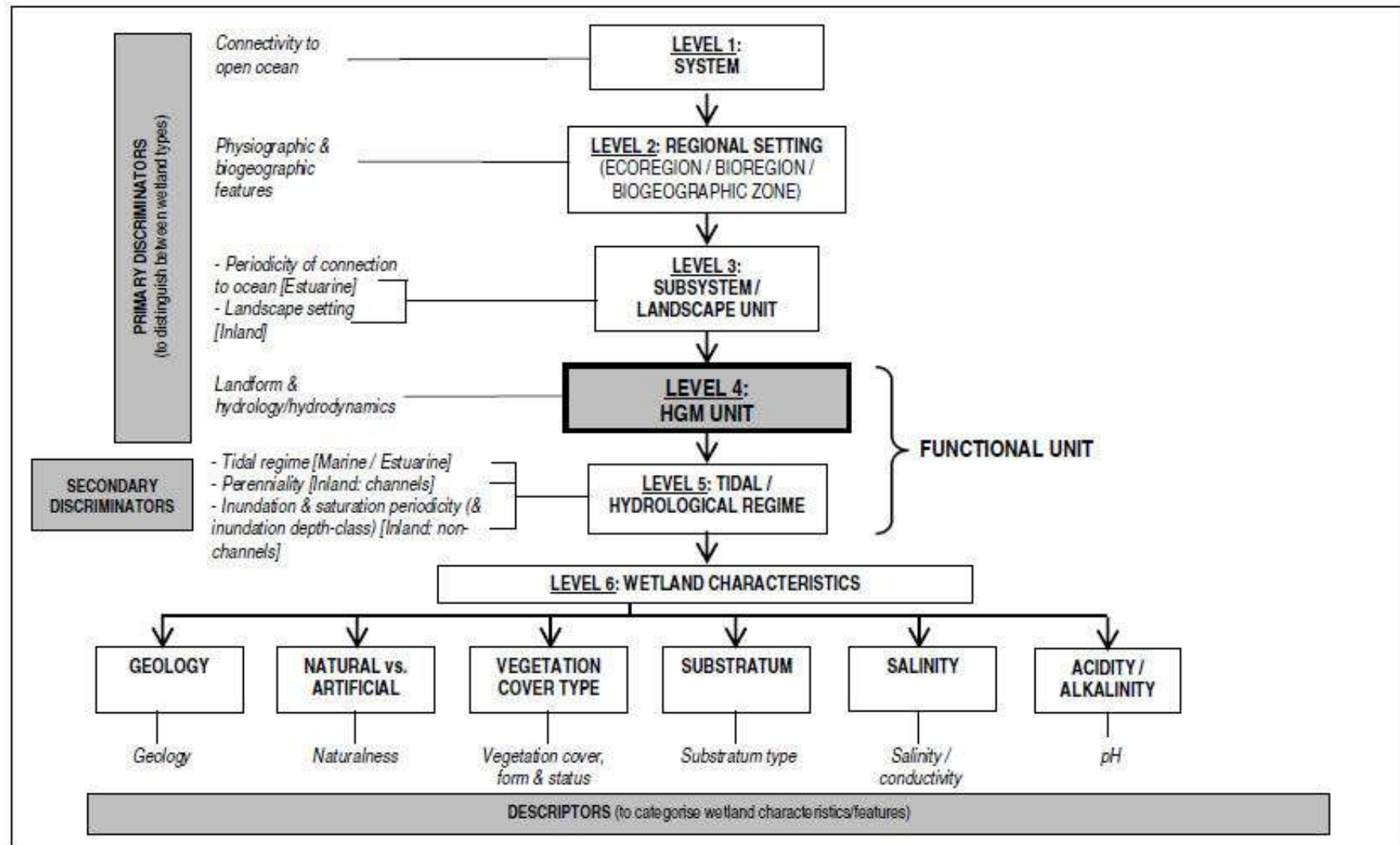


Figure 8: Basic structure of the NWCS, showing how ‘primary discriminators’ are applied up to Level 4 to classify Hydrogeomorphic (HGM) Units, with ‘secondary discriminators’ applied at Level 5 to classify the tidal/hydrological regime, and ‘descriptors’ applied



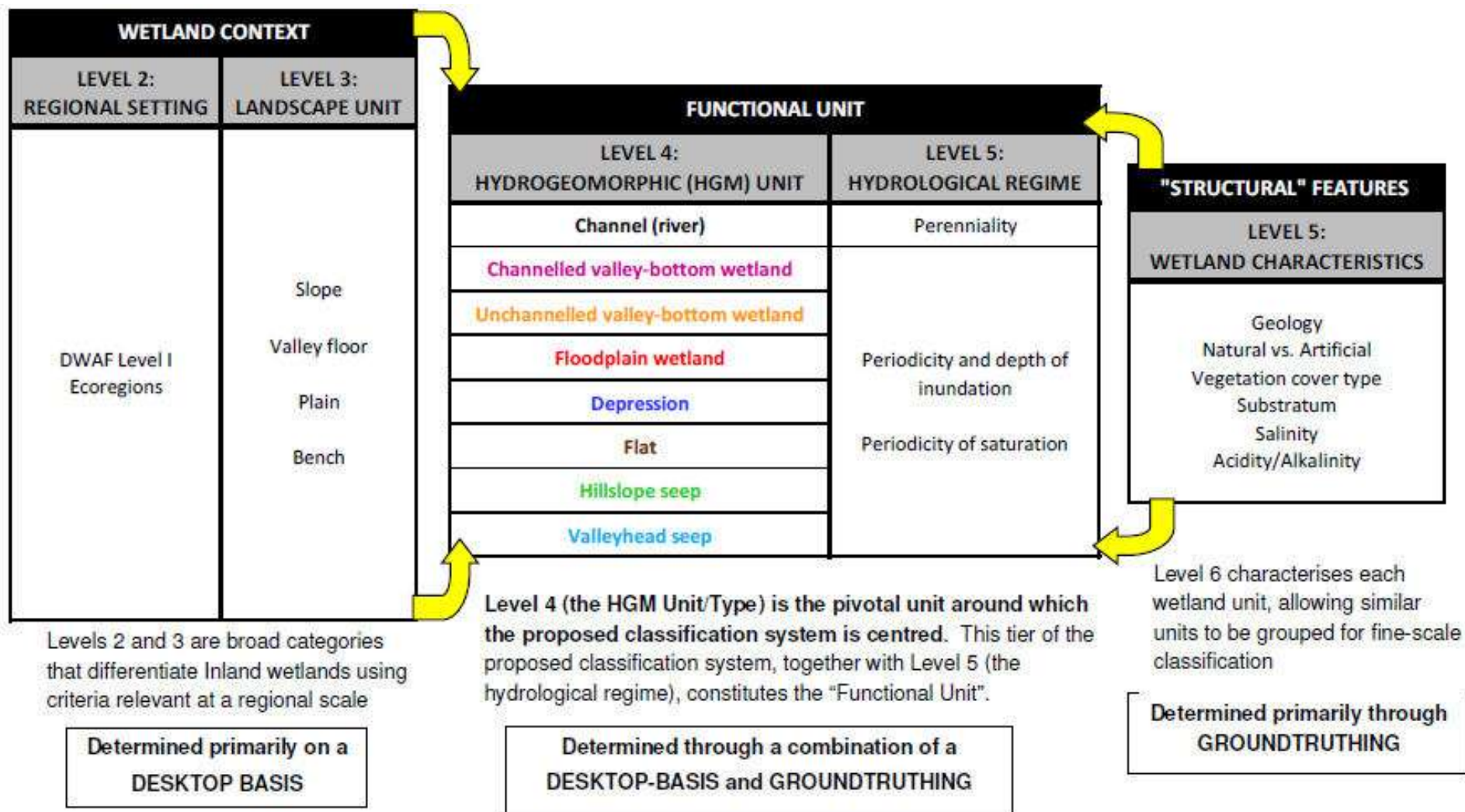


Figure 9: Illustration of the conceptual relationship of HGM Units (at Level 4) with higher and lower levels (relative sizes of the boxes show the increasing spatial resolution and level of detail from the higher to the lower levels) for Inland Systems (from Ollis et al., 2013)



## 7.4 Determining the ecological integrity of wetlands

The Wetland Index of Habitat Integrity (WETLAND-IHI) is a tool developed for use in the National Aquatic Ecosystem Health Monitoring Programme (NAEHMP), formerly known as the River Health Programme (RHP). The output scores from the WETLAND-IHI model are presented in the standard DWAF A-F ecological categories (Table 2)

**Table 2: Description of A – F ecological categories based on Kleynhans et al., (2005)**

| ECOLOGICAL CATEGORY | ECOLOGICAL DESCRIPTION                                                                                                                                                                                                                                                                         | MANAGEMENT PERSPECTIVE                                                                                                                                                                              |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A</b>            | Unmodified, natural.                                                                                                                                                                                                                                                                           | Protected systems; relatively untouched by human hands; no discharges or impoundments allowed                                                                                                       |
| <b>B</b>            | Largely natural with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged.                                                                                                                               | Some human-related disturbance, but mostly of low impact potential                                                                                                                                  |
| <b>C</b>            | Moderately modified. Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.                                                                                                                                          | Multiple disturbances associated with need for socio-economic development, e.g. impoundment, habitat modification and water quality degradation                                                     |
| <b>D</b>            | Largely modified. A large loss of natural habitat, biota and basic ecosystem functions has occurred.                                                                                                                                                                                           |                                                                                                                                                                                                     |
| <b>E</b>            | Seriously modified. The loss of natural habitat, biota and basic ecosystem functions is extensive.                                                                                                                                                                                             | Often characterized by high human densities or extensive resource exploitation. Management intervention is needed to improve health, e.g. to restore flow patterns, river habitats or water quality |
| <b>F</b>            | Critically / Extremely modified. Modifications have reached a critical level and the system has been modified completely with an almost complete loss of natural habitat and biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible. |                                                                                                                                                                                                     |

The WETLAND-IHI model is composed of four modules. The “Hydrology”, “Geomorphology” and “Water Quality” modules all assess the contemporary driving processes behind wetland formation and maintenance. The last module, “Vegetation Alteration”, provides an indication of the intensity of human land use activities on the wetland surface itself and how these may have modified the condition of the wetland. The integration of the scores from these 4 modules provides an overall PES score for the wetland system being examined. The WETLAND-IHI model is an MS Excel-based model, and the data required for the assessment are generated during a site visit.

Additional data may be obtained from remotely sensed imagery (aerial photos; maps and/or satellite imagery) to assist with the assessment.

## 7.5 Determining the Present Ecological State of wetlands

WET-Health assists in assessing the health of wetlands using indicators based on geomorphology, hydrology and vegetation. WET-Health is a tool designed to assess the health or integrity of a wetland. Wetland health is defined as a measure of the deviation of wetland structure and function from the wetland's natural reference condition. This technique attempts to assess hydrological, geomorphological and vegetation health in three separate modules.

- **Hydrology** is defined in this context as the distribution and movement of water through a wetland and its soils. This module focuses on changes in water inputs as a result of changes in catchment activities and characteristics that affect water supply and its timing, as well as on modifications within the wetland that alter the water distribution and retention patterns within the wetland.
- **Geomorphology** is defined in this context as the distribution and retention patterns of sediment within the wetland. This module focuses on evaluating current geomorphic health through the presence of indicators of excessive sediment inputs and/or losses for clastic (minerogenic) and organic sediment (peat).
- **Vegetation** is defined in this context as the vegetation structural and compositional state. This module evaluates changes in vegetation composition and structure as a consequence of current and historic onsite transformation and/or disturbance.

The overall approach is to quantify the impacts of human activity or clearly visible impacts on wetland health, and then to convert the impact scores to a Present State score. The tool attempts to standardise the way that impacts are calculated and presented across each of the modules. This takes the form of assessing the spatial extent of impact of individual activities and then separately assessing the intensity of impact of each activity in the affected area. The extent and intensity are then combined to determine an overall magnitude of impact.

Impact scores obtained for each of the modules reflect the degree of change from natural reference conditions. Resultant health scores fall into one of six health categories (A-F) on a gradient from "unmodified/natural" (Category A) to "severe/complete deviation from natural" (Category F) as depicted in Table 3, below. This classification is consistent with DWAF categories used to evaluate the present ecological state of aquatic systems.

An overall wetland health score was calculated by weighting the scores obtained for each module and combining them to give an overall combined score using the following formula:

$$\text{Overall health rating} = [(Hydrology*3) + (Geomorphology*2) + (Vegetation*2)] / 7$$

This overall score assists in providing an overall indication of wetland health/functionality which can in turn be used for recommending appropriate management measures.

**Table 3: Health categories used by WET-Health for describing the integrity of wetlands (after Macfarlane *et al.*, 2008).**

| IMPACT CATEGORY | DESCRIPTION                                                                                                                                                        | RANGE   | PES      |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|
| <b>None</b>     | Unmodified, natural.                                                                                                                                               | 0 – 0.9 | <b>A</b> |
| <b>Small</b>    | Largely natural with few modifications. A slight change in ecosystem processes is discernible and a small loss of natural habitats and biota may have taken place. | 1 – 1.9 | <b>B</b> |
| <b>Moderate</b> | Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact    | 2 – 3.9 | <b>C</b> |
| <b>Large</b>    | Largely modified. A large change in ecosystem processes and loss of natural habitat and biota and has occurred.                                                    | 4 – 5.9 | <b>D</b> |
| <b>Serious</b>  | The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.               | 6 – 7.9 | <b>E</b> |
| <b>Critical</b> | Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.   | 8 – 10  | <b>F</b> |

## 7.6 Determining the Ecological Importance and Sensitivity of wetlands

South Africa is a Contracting Party to the Ramsar Convention on Wetlands, signed in Ramsar, Iran, in 1971, and has thus committed itself to this intergovernmental treaty, which provides the framework for the national protection of wetlands and the resources they could provide. Wetland conservation is now driven by the South African National Biodiversity Institute, a requirement under the National Environmental Management: Biodiversity Act (No 10 of 2004).

Wetlands are among the most valuable and productive ecosystems on earth, providing important opportunities for sustainable development (Davies and Day, 1998). However, wetlands in South Africa are still rapidly being lost or degraded through direct human induced pressures (Nel *et al.*, 2004).

The most common attributes or goods and services provided by wetlands include:

- Improve water quality;
- Impede flow and reduce the occurrence of floods;
- Reeds and sedges used in construction and traditional crafts;
- Bulbs and tubers, a source of food and natural medicine;
- Store water and maintain base flow of rivers;
- Trap sediments; and
- Reduce the number of water-borne diseases.

In terms of this study, the wetlands provide ecological (environmental) value to the area acting as refugia for various wetland associated plants, butterflies and birds. In the past wetland conservation has focused on biodiversity as a means of substantiating the protection of wetland habitat. However not all wetlands provide such motivation for their protection, thus wetland managers and conservationists began assessing the importance of wetland function within an ecosystem.

WET-EcoServices is used to assess the goods and services that individual wetlands provide, thereby aiding informed planning and decision making. It is designed for a class of wetlands known as palustrine wetlands (i.e. marshes, floodplains, vleis or seeps). The tool provides guidelines for scoring the importance of a wetland in delivering each of 15 different ecosystem services (including flood attenuation, sediment trapping and

provision of livestock grazing). The first step is to characterise wetlands according to their hydro-geomorphic setting (e.g. floodplain). Ecosystem service delivery is then assessed either at Level 1, based on existing knowledge or at Level 2, based on a field assessment of key descriptors (e.g. flow pattern through the wetland). The overall goal of WET-EcoServices is to assist decision makers, government officials, planners, consultants and educators in undertaking quick assessments of wetlands, specifically in order to reveal the ecosystem services that they supply. This allows for more informed planning and decision making.

Table 4 below summarises the importance of wetland function when related to ecosystem services or ecoservices (Kotze *et al.*, 2008). One such example is emergent reed bed wetlands that function as transformers converting inorganic nutrients into organic compounds (Mitsch and Gosselink, 2000).

**Table 4: Summary of direct and indirect ecoservices provided by wetlands from Kotze et al., 2008**

|                                         |                          |                                                 |                                    |                        |
|-----------------------------------------|--------------------------|-------------------------------------------------|------------------------------------|------------------------|
| Ecosystem services supplied by wetlands | Indirect benefits        | Hydro-geochemical benefits                      | Flood attenuation                  |                        |
|                                         |                          |                                                 | Stream flow regulation             |                        |
|                                         |                          |                                                 | Water quality enhancement benefits | Sediment trapping      |
|                                         |                          |                                                 |                                    | Phosphate assimilation |
|                                         |                          |                                                 |                                    | Nitrate assimilation   |
|                                         |                          |                                                 |                                    | Toxicant assimilation  |
|                                         |                          |                                                 |                                    | Erosion control        |
|                                         |                          | Carbon storage                                  |                                    |                        |
|                                         | Biodiversity maintenance |                                                 |                                    |                        |
|                                         | Direct benefits          | Provision of water for human use                |                                    |                        |
|                                         |                          | Provision of harvestable resources <sup>2</sup> |                                    |                        |
|                                         |                          | Provision of cultivated foods                   |                                    |                        |
|                                         |                          | Cultural significance                           |                                    |                        |
|                                         |                          | Tourism and recreation                          |                                    |                        |
|                                         |                          | Education and research                          |                                    |                        |

Conservation importance of the individual wetlands was based on the following criteria:

Habitat uniqueness;

Species of conservation concern;

Habitat fragmentation or rather, continuity or intactness with regards to ecological corridors; and

Ecosystem service (social and ecological).

## 7.7 Ecological classification and description

The presence of any or a combination of the above criteria would result in a HIGH conservation rating if the wetland was found in a near natural state (high PES). Should any of the habitats be found modified the conservation importance would rate as MEDIUM, unless a Species of Conservation Concern (SCC) was observed, in which case it would receive a HIGH rating. Any system that was highly modified (low PES) or had none of the above criteria, received a LOW conservation importance rating. Wetlands with HIGH and MEDIUM ratings should thus be excluded from development with incorporation into a suitable open space system, with the maximum possible buffer being applied. Natural wetlands or Wetlands that resemble some form of the past landscape but receive a LOW conservation importance rating could be included into stormwater management features and should not be developed to retain the function of any ecological corridors.

## 8 Results

### 8.1 Wetland delineation

Following the contextualisation of the study area with the available desktop data, a site visit was conducted (12 December 2025), to groundtruth the findings and confirm delineated the aquatic habitat and the associated 500m Regulated Area. Subsequent screening provided an indication of which of these systems may potentially be impacted upon by the project. There are a number of factors which influence the level of impact, such as type of system, position of the system in relation to the project and position the system is located in the landscape.

### 8.2 Wetland unit identification

In order to identify the wetland types, using Kotze *et al.* (2009) and Ollis *et al.* (2013), a characterisation of hydrogeomorphic (HGM) types was conducted. For reference purposes, the freshwater HGM units were named Wetland 1 & Wetland 2 (Figure 10, Plate 1, 2 & 3 ). Both these systems form part of respective seepage areas, that drain in a easterly direction.

As previously mentioned the National Wetland Inventory (SAIIE v2) indicated a depression, but this was the farm dam located within the site, with no obligate aquatic features (see Figure 3). :



**Plate 1: A view of Wetland 1, seepage area in the north western portion of the site and extends into the neighbouring property as seen in this image (-33.9638759,25.4124729)**

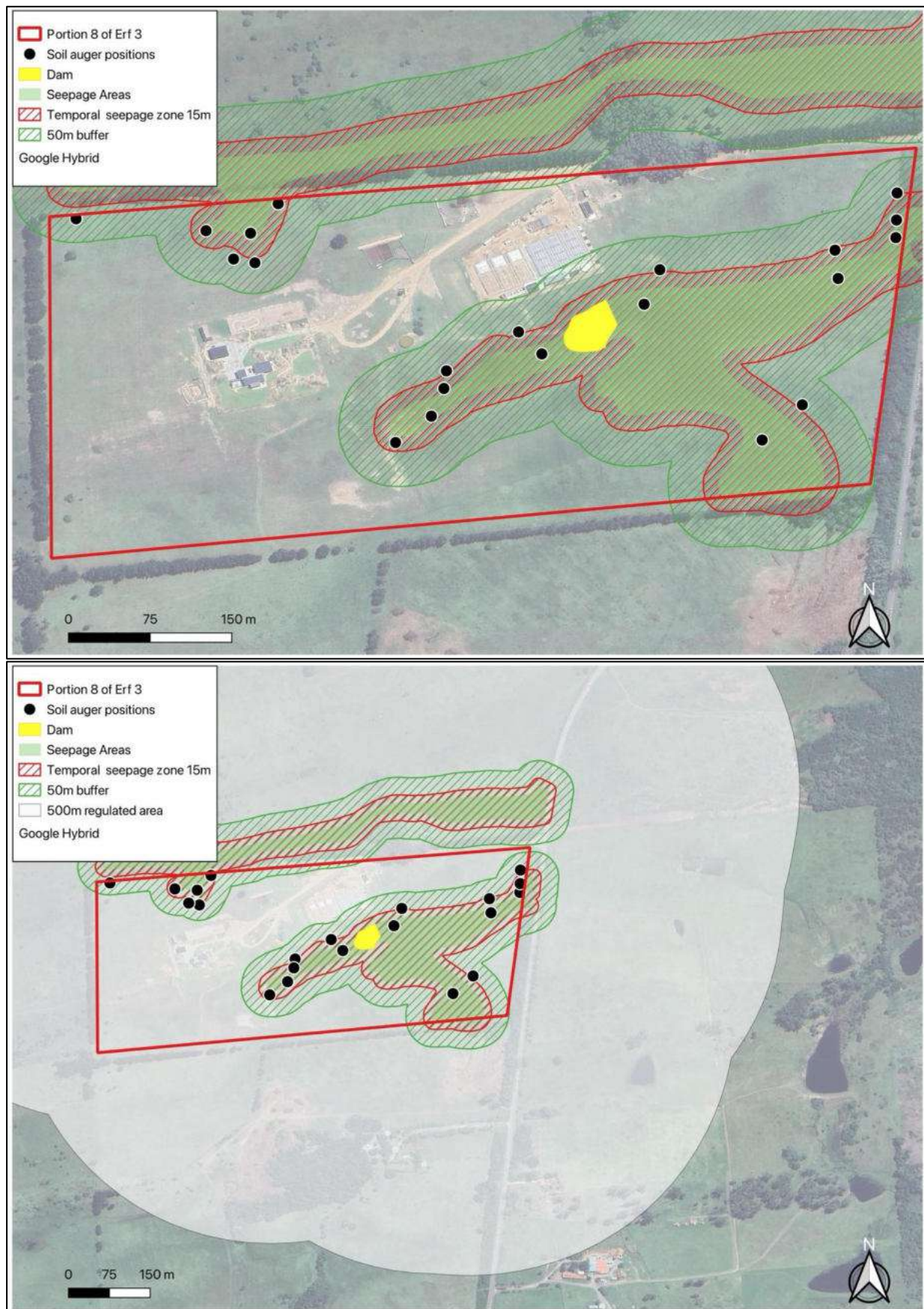




**Plate 2: A view of the seepage area (Wetland 1) within the study area taken in September 2015, showing the standing water on the surface (-33.9638509,25.4105012)**



**Plate 3: Wetland 2, Seepage wetland found in the central portion of the site, below the small dam, but avoided by any development (-33.9648929,25.4161478)**



**Figure 10: The aquatic features present within the study area, where = Wetland 1 is the northern seepage area and Wetland 2 = the southern seepage area (Top) and the site in relation to the 500m regulated zone (bottom)**



The wetlands were screened according to their proximity to the disturbance and their landscape setting (Figure 10 & Table 5).

**Table 5: Summary of screening assessment**

| Unit      | Type            | Impacted by the project and/or requires further assessment? | Reason                                                                                                                                                                        |
|-----------|-----------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wetland 1 | Seepage wetland | No                                                          | No direct impact, as the development has avoided the system. The 500m regulated zone of the systems cover all of the proposed development site                                |
| Wetland 2 | Seepage Wetland | Yes                                                         | No direct impact, even though the proposed development has avoided this area but portions of the aquaponics facility is located in the 50m buffer and the 500m regulated area |

### 8.3 Wetland soils

A handheld soil auger was used to assess the soil characteristics within the wetlands and delineate wetland edges where both Wetland 1 & 2, indicated that the temporal zone did not extend more than 15m from where saturated soils at between 30 -60cm in depth were encountered (Plate 4). Note in Plate 4, typical of coastal sand environment, gleying and extensive rust nodules due to the overall lack of any clays was limited.



**Plate 4: Saturated soils within the permanent zones within both seeps was evident at between 30 and 60cm soil depths (-33.9648929,25.4161728)**

### 8.4 Description of wetland type

All of the identified systems were classified as show in Table 5 and Table 7

### 8.5 General functional description of wetland types

With regard instream habitat and aquatic biodiversity, the study area, this was limited to a low number of obligate aquatic species such as:

- *Kylinga alba*
- *Cyperus congestus*
- *Cyperus difformis*
- *Cypeus uitehagensis*
- *Bulbostylis spp*
- *Fincinia gacilis*

Water inputs into this system, are naturally dominated by ground water flows only, Groundwater inflow, which would follow the subsurface flows would follow the natural topography of the relic interdunal areas. While more recently stormwater inputs from roads, housing and aquaponics facility seems to be limited. Regardless any runoff from these area would be captured by the dam and be allowed to percolate into the groundwater / subsurface systems.

## **8.6 Wetland ecological functional assessment**

No endemic or conservation worthy species (Listed or Protected) were observed or have been recorded within the wetlands. These would however in their natural state be important in biodiversity maintenance, (habitat provision) and water resource management, i.e. water retention with release in dry periods. Wetland 2, is currently impacted upon by the intensive grazing on site and most of the species are utilised by the game and cattle on site, thus not as evident as a seepage wetland (plant structure and form) when compared to the neighbouring Wetland 1.

## **8.7 The ecological health assessment of the project area**

The Present Ecological State (PES) of a river, watercourse or wetland represents the extent to which it has changed from the reference or near pristine condition (Category A) towards a highly impacted system where there has been an extensive loss of natural habit and biota, as well as ecosystem functioning (Category E).

The PES scores have been revised for the country and based on the new models, aspects of functional importance as well as direct and indirect impacts were included (DWS, 2014). The updated PES system also incorporates Ecological Importance (EI) and Ecological Sensitivity (ES) separately as opposed to Ecological Importance and Sensitivity (EIS) in the old model, although the new model is still heavily centred on rating rivers using broad fish, invertebrate, riparian vegetation and water quality indicators. The Recommended Ecological Category (REC) is still contained within the new models, with the default REC being B, when little or no information is available to assess the system or when only one of the parameters are assessed or the overall PES is rated between a C or D.



## 8.8 The PES assessment of the remaining freshwater wetland areas

The following summary represents the PES/EIS score of the natural wetlands found within or adjacent to the development area.

**Table 6: PES / EIS summary of the respective units**

| Feature number | Hydrogeomorphic Type | Present Ecological Sate | Ecological Importance and Sensitivity | Overall Sensitivity | Buffer (m) |
|----------------|----------------------|-------------------------|---------------------------------------|---------------------|------------|
| 1              | Seep                 | C                       | High                                  | High                | 50         |
| 2              | Seep                 | C/D (2015 & 2025)       | Moderate                              | Moderate            | 50         |

Any activities within the observed aquatic systems, i.e. 500 m from the boundary of the wetlands will require a Section 21 c and i Water Use License (mostly likely a General Authorisation (GA) if all other Section 21 uses are below the GA thresholds).

## 8.9 The EIS assessment of the remaining freshwater wetland areas

A WET-Ecoservices (Version 2) field-based assessment was undertaken to assess the ecosystem services supplied by the wetlands (Kotze *et al.* 2020). The assessment technique has recently been revised and now distinguishes clearly both ecosystem services' supply and the demand for all ecosystem services. This helps determine the potential of the wetland for delivering ecosystem services, by understanding its capacity to produce a service while also considering the societal demand for that service.

The assessment showed Wetland 1 & 2 in the study area acts as attenuator, with a high degree of flow filtration, affecting seasonal flows and or water filtration, while providing plant and bird habitat (Table 6).

**Table 7: Results of WET-Ecoservices assessment for Wetland 1 & 2**

| Present State                      |                          |        |        |                  |            |
|------------------------------------|--------------------------|--------|--------|------------------|------------|
| ECOSYSTEM SERVICE                  |                          | Supply | Demand | Importance Score | Importance |
| REGULATING AND SUPPORTING SERVICES | Flood attenuation        | 3      | 0      | 2                | Moderate   |
|                                    | Stream flow regulation   | 3      | 0      | 2                | Moderate   |
|                                    | Sediment trapping        | 3      | 0      | 2                | Moderate   |
|                                    | Erosion control          | 3      | 0      | 2                | Moderate   |
|                                    | Phosphate assimilation   | 3      | 0      | 2                | Moderate   |
|                                    | Nitrate assimilation     | 3      | 0      | 2                | Moderate   |
|                                    | Toxicant assimilation    | 3      | 0      | 2                | Moderate   |
|                                    | Carbon storage           | 3      | 0      | 2                | Moderate   |
|                                    | Biodiversity maintenance | 2.0    | 0.0    | 0.5              | Very Low   |
| PROVISIONING SERVICES              | Water for human use      | 0.0    | 0.0    | 0.5              | Very Low   |
|                                    | Harvestable resources    | 0.0    | 0.0    | 0.0              | Very Low   |
|                                    | Food for livestock       | 0.0    | 0.0    | 0.0              | Very Low   |
|                                    | Cultivated foods         | 0.0    | 0.0    | 0.0              | Very Low   |
| CULTURAL SERVICES                  | Tourism and Recreation   | 0.0    | 0.0    | 0.0              | Very Low   |
|                                    | Education and Research   | 0.0    | 0.0    | 0.0              | Very Low   |
|                                    | Cultural and Spiritual   | 0.0    | 0.0    | 0.0              | Very Low   |

## 9 Site Sensitivity Verification

Prior to commencing with the Aquatic Biodiversity Specialist Assessment in accordance with the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity (Government Notice 320, dated 20 March 2020), a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool (Screening Tool) (Figure 11).

The details of the site sensitivity verification are noted below:

- Date of Site Visit: 12 December 2025
- Specialist Name: Dr Brian Colloty
- Professional Registration Number: 400268/07
- Specialist Affiliation / Company: EnviroSci (Pty) Ltd

Government Notice No. 320, dated 20 March 2020, includes the requirement that an Initial Site Sensitivity Verification Report must be produced for a development footprint. As per Part 1, Section 2.3, the outcome of the Initial Site Verification must be recorded in the form of a report that-

- (a) Confirms or disputes the current use of the land and environmental sensitivity as identified by the national web based environmental screening tool;
- (b) Contains a motivation and evidence of either the verified or different use of the land and environmental sensitivity;
- (c) Is submitted together with the relevant reports prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

This report has been produced specifically to consider the aquatic biodiversity theme and addresses the content requirements of (a) and (b) above. The report will be appended to the respective specialist study included in the Scoping and EIA Reports produced for the projects.

Based on the DFFE Screening Tool Aquatic Biodiversity Theme, the site contains areas of Very High due to being located within Wetlands Depressions and Ecological Support Area (Type 1 & 2). The Screening Tool reports also mentions Strategic Water Resources Areas, but as with the depression both this are refuted. Therefore as shown in this assessment, important wetlands or sensitive aquatic habitat within the proposed site have been avoided (See Figure 10).



**Figure 11: Results of the DFFE Screening Tool assessment for the Aquatic Biodiversity Theme**

Based on the above outcomes, the specialist refutes the environmental sensitivities identified on site, informed by a site visit undertaken by Dr Brian Colloty in December 2025.

In conclusion, the DFFE Screening Tool identified one sensitivity rating, however it was found that the proposed development footprint, will take place within a Low sensitivity areas, and the Very High sensitivity areas (Seepage wetlands have been avoided). Similarly little in the way of the constructed development seems to impact the function of these systems, however the grazing does impact on the cover and abundance of the obligate plant cover.

## 10 Impact assessment discussions

The constructed layout has avoided any of the wetland / aquatic features shown in this assessment but located within a small portion of the 50m buffer and the 500m regulated area. During the impact assessment a number of potential key issues / impacts were identified, and assessed and the methodology contained in Appendix 2:

- Impact 1: Loss of intact wetland / seepage areas
- Impact 2: Disturbance of fauna and Habitat fragmentation (aquatic), especially areas linked to Ecological Support Areas
- Impact 3: Impact on surface water runoff patterns (impedance)
- Impact 4: Increase in sedimentation and erosion due to improper stormwater management
- Impact 5: Risks on the aquatic environment due to water quality impacts
- Impact 6: Potential spread of alien species
- Impact 7: Cumulative impacts

### 10.1 Impact 1: Loss of intact wetland / watercourses

|                                                                                                          |                                                                                                                                                                                                                                                        |                 |                  |                                                                                                                                                                                                                     |                           |                    |                            |
|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------|----------------------------|
| <b>Environmental Impact:</b><br>No clearing of any aquatic habitat as shown in Figure 10 has taken place | <b>Activity/Aspect &amp; Impact Source:</b><br>Due to the nature of the project this will persist in the long term into the operational phase, but unlikely should future phases take cognisance of the wetland areas and buffers shown in this report |                 |                  | <b>Proposed Mitigation:</b><br>Stormwater management plan must be developed to prevent any additional impacts on downstream areas, such as the increase in surface water flow velocity that will increase incision. |                           |                    |                            |
| <b>Impact Significance</b>                                                                               |                                                                                                                                                                                                                                                        |                 |                  |                                                                                                                                                                                                                     |                           |                    |                            |
| <b>Without Mitigation:</b>                                                                               | <b>Extent</b>                                                                                                                                                                                                                                          | <b>Duration</b> | <b>Magnitude</b> | <b>Reversibility</b>                                                                                                                                                                                                | <b>Irreplaceable Loss</b> | <b>Probability</b> | <b>Impact Significance</b> |
|                                                                                                          | Site (1)                                                                                                                                                                                                                                               | Long-term (4)   | Low (4)          | High                                                                                                                                                                                                                | Yes                       | Probable (3)       | Low (22.5)                 |
| <b>With Mitigation:</b>                                                                                  | <b>Extent</b>                                                                                                                                                                                                                                          | <b>Duration</b> | <b>Magnitude</b> | <b>Reversibility</b>                                                                                                                                                                                                | <b>Irreplaceable Loss</b> | <b>Probability</b> | <b>Impact Significance</b> |
|                                                                                                          | Site (1)                                                                                                                                                                                                                                               | Long-term (4)   | Low (4)          | High                                                                                                                                                                                                                | Yes                       | Probable (3)       | Low (22.5)                 |
| <b>Potential to Mitigate:</b><br>Moderate potential / easy to mitigate                                   |                                                                                                                                                                                                                                                        |                 |                  | <b>Assessment Confidence:</b><br>Complete                                                                                                                                                                           |                           |                    |                            |



## 10.2 Impact 2: Disturbance of fauna and habitat fragmentation (aquatic), especially areas linked to Ecological Support Areas – direct operational phase impact

|                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                         |                                  |                                  |                                                                                                                                                                                                                     |                                  |                                    |                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------|-----------------------------------------------|
| <b>Environmental Impact:</b><br>Based on the information collected during the assessment, that contained within the ECBCP the proposed development activities, could have resulted in habitat fragmentation - reduction in ecosystem corridors in aquatic environment but is unlikely based on the current / constructed development footprint | <b>Activity/Aspect &amp; Impact Source:</b><br>Due to the nature of the project this will persist in the long term into the operational phase, but unlikely should future phases take cognisance of the wetland areas and buffers shown in this report. |                                  |                                  | <b>Proposed Mitigation:</b><br>Stormwater management plan must be developed to prevent any additional impacts on downstream areas, such as the increase in surface water flow velocity that will increase incision. |                                  |                                    |                                               |
| <b>Impact Significance</b>                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                         |                                  |                                  |                                                                                                                                                                                                                     |                                  |                                    |                                               |
| <b>Without Mitigation:</b>                                                                                                                                                                                                                                                                                                                     | <b>Extent</b><br>Site (1)                                                                                                                                                                                                                               | <b>Duration</b><br>Long-term (4) | <b>Magnitude</b><br>Moderate (4) | <b>Reversibility</b><br>High                                                                                                                                                                                        | <b>Irreplaceable Loss</b><br>Yes | <b>Probability</b><br>Definite (5) | <b>Impact Significance</b><br>Moderate (47.5) |
| <b>With Mitigation:</b>                                                                                                                                                                                                                                                                                                                        | <b>Extent</b><br>Site (1)                                                                                                                                                                                                                               | <b>Duration</b><br>Long-term (4) | <b>Magnitude</b><br>Minor (2)    | <b>Reversibility</b><br>High                                                                                                                                                                                        | <b>Irreplaceable Loss</b><br>Yes | <b>Probability</b><br>Probable (3) | <b>Impact Significance</b><br>Low (22.5)      |
| <b>Potential to Mitigate:</b><br>Moderate potential / easy to mitigate                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                         |                                  |                                  | <b>Assessment Confidence:</b><br>Complete                                                                                                                                                                           |                                  |                                    |                                               |

### 10.3 Impact 3: Impact on runoff patterns and hydrology – direct operational impact

|                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| As the development has result in hard engineered surfaces, this poses the potential for increase runoff volumes, concentrated in areas. Increase runoff volumes, especially with high velocities, not only increases the potential for erosion, but also changes the regional hydrology, i.e. flows are redirected, but the cognisance of proper stormwater managed, as well as rain capture systems for water use must be implemented | <p><b>Activity/Aspect &amp; Impact Source:</b></p> <p>Due to the nature of the project this will persist in the long term throughout the operational phase impact.</p> | <p>An operational stormwater management plan must be developed post EA, detailing the structures and actions that must be installed to prevent the increase of surface water flows directly into any natural systems. However, An opportunity to reinstate a function drainage feature as part of the stormwater management plan.</p> <p>Effective stormwater management must include measures to slow, spread and deplete the energy of concentrated flows thorough effective stabilisation (gabions and Reno mattresses) and the re-vegetation of any disturbed areas</p> <p>Rain harvesting is also advocated.</p> <p>This can take place in the form of the development of a stormwater management plan, that can make use of approaches to managing surface water that take account of water quantity (flooding), water quality (pollution) biodiversity (wildlife and plants).</p> <p>These are collectively referred to as Sustainable Drainage Systems (SuDS). SuDS are drainage systems that are considered to be environmentally beneficial, causing minimal or no long-term detrimental damage. They are often regarded as a sequence of management practices, control structures and strategies designed to efficiently and sustainably drain surface water, while minimising pollution and managing the impact on water quality of local water bodies.</p> <p>SuDS are often designed to mimic nature and typically manage rainfall close to where it falls. SuDS can also be designed to transport (convey) surface water, slow runoff down (attenuate) before it enters watercourses. They provide areas to store water in natural contours and can be used to allow water to soak (infiltrate) into the ground or evaporated from surface water.</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Impact Significance

| Without Mitigation:                                                    | Extent   | Duration      | Magnitude    | Reversibility                             | Irreplaceable Loss | Probability  | Impact Significance |
|------------------------------------------------------------------------|----------|---------------|--------------|-------------------------------------------|--------------------|--------------|---------------------|
|                                                                        | Site (1) | Long-term (4) | Moderate (4) | High                                      | Yes                | Definite (5) | Moderate (47.5)     |
| With Mitigation:                                                       | Extent   | Duration      | Magnitude    | Reversibility                             | Irreplaceable Loss | Probability  | Impact Significance |
|                                                                        | Site (1) | Long-term (4) | Minor (2)    | High                                      | Yes                | Probable (3) | Low (22.5)          |
| <b>Potential to Mitigate:</b><br>Moderate potential / easy to mitigate |          |               |              | <b>Assessment Confidence:</b><br>Complete |                    |              |                     |

#### 10.4 Impact 4: Risks on the aquatic environment due to water quality impacts – indirect operational phase

|                                                                                                                                                                                                             |                                                                                                                                                         |                                      |                                     |                                                                                                                                                                                                                                                                                                                                                                          |                                      |                                        |                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|---------------------------------------------------|
| <b>Environmental Impact:</b><br>This impact is mostly related to the construction related impacts and to a limited degree the operational phase but also pertains to any future expansion plans to the site | <b>Activity/Aspect &amp; Impact Source:</b><br><br>Due to the nature of the project this will persist in the long term in the operational phase impact. |                                      |                                     | <b>Proposed Mitigation:</b> <ul style="list-style-type: none"><li>Limit any spills from plant, machines or camps during the construction phase.</li><li>Any use of chemical, cement or paint must be carefully monitored and the necessary spill kits should be in place.</li><li>Provide suitable solid / liquid waste management that is serviced regularly.</li></ul> |                                      |                                        |                                                   |
| <b>Impact Significance</b>                                                                                                                                                                                  |                                                                                                                                                         |                                      |                                     |                                                                                                                                                                                                                                                                                                                                                                          |                                      |                                        |                                                   |
| <b>Without Mitigation:</b>                                                                                                                                                                                  | <b>Extent</b><br><br>Site (1)                                                                                                                           | <b>Duration</b><br><br>Long-term (4) | <b>Severity</b><br><br>Moderate (4) | <b>Reversibility</b><br><br>High                                                                                                                                                                                                                                                                                                                                         | <b>Irreplaceable Loss</b><br><br>Yes | <b>Probability</b><br><br>Definite (5) | <b>Impact Significance</b><br><br>Moderate (47.5) |
| <b>With Mitigation:</b>                                                                                                                                                                                     | <b>Extent</b><br><br>Site (1)                                                                                                                           | <b>Duration</b><br><br>Long-term (4) | <b>Magnitude</b><br><br>Minor (2)   | <b>Reversibility</b><br><br>High                                                                                                                                                                                                                                                                                                                                         | <b>Irreplaceable Loss</b><br><br>Yes | <b>Probability</b><br><br>Probable (3) | <b>Impact Significance</b><br><br>Low (22.5)      |
| <b>Potential to Mitigate:</b><br>Moderate potential / easy to mitigate                                                                                                                                      |                                                                                                                                                         |                                      |                                     | <b>Assessment Confidence:</b><br>Complete                                                                                                                                                                                                                                                                                                                                |                                      |                                        |                                                   |

#### 10.5 Impact 5: Potential spread of alien species

|                                                                                          |                                                                                                                                                             |                                      |                                      |                                                                                                                                    |                                      |                                        |                                                   |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|---------------------------------------------------|
| <b>Environmental Impact:</b><br>Several alien plants species already occur with the site | <b>Activity/Aspect &amp; Impact Source:</b><br><br>Due to the nature of the project this will persist in the long term throughout operational phase impact. |                                      |                                      | <b>Proposed Mitigation:</b><br><br>All alien plant re-growth is being monitored, plants are being eradicated on a continuous basis |                                      |                                        |                                                   |
| <b>Impact Significance</b>                                                               |                                                                                                                                                             |                                      |                                      |                                                                                                                                    |                                      |                                        |                                                   |
| <b>Without Mitigation:</b>                                                               | <b>Extent</b><br><br>Site (1)                                                                                                                               | <b>Duration</b><br><br>Long-term (4) | <b>Magnitude</b><br><br>Moderate (4) | <b>Reversibility</b><br><br>High                                                                                                   | <b>Irreplaceable Loss</b><br><br>Yes | <b>Probability</b><br><br>Definite (5) | <b>Impact Significance</b><br><br>Moderate (47.5) |
| <b>With Mitigation:</b>                                                                  | <b>Extent</b><br><br>Site (1)                                                                                                                               | <b>Duration</b><br><br>Long-term (4) | <b>Magnitude</b><br><br>Minor (2)    | <b>Reversibility</b><br><br>High                                                                                                   | <b>Irreplaceable Loss</b><br><br>Yes | <b>Probability</b><br><br>Probable (3) | <b>Impact Significance</b><br><br>Low (22.5)      |
| <b>Potential to Mitigate:</b><br>Moderate potential / easy to mitigate                   |                                                                                                                                                             |                                      |                                      | <b>Assessment Confidence:</b><br>Complete                                                                                          |                                      |                                        |                                                   |

## **10.6 Aquatic buffer zone**

An aquatic impact buffer zone is defined as a zone of vegetated land designed and managed so that sediment and pollutant transport carried from source areas via diffuse surface runoff is reduced to acceptable levels (Macfarlane & Bredin 2017). Aquatic buffer zones are designed to act as barriers between human activities and sensitive water resources in order to protect them from adverse negative impacts. Buffer zones associated with water resources have been shown to perform a wide range of functions and have therefore been adopted as a standard measure to protect water resources and associated biodiversity.

Currently there are no formalised riverine or wetland buffer distances provided by the provincial authorities and as such the buffer model as described Macfarlane & Bredin (2017) for wetlands, rivers and estuaries was used.

However, in line with previous assessments conducted within the site, the 50m buffer is upheld. This has resulted in one small portion of the aquaponics facility being within this area, but based on its elevation and its position directly adjacent to the dam, it is not seen as a fatal flaw. However as mentioned any additional works or future phases of the project must take cognisance of these once they have been approved through a separate NEMA process outside of this S24g application.

## **11 Conclusions and Recommendations**

Based then on this assessment all the impacts with mitigation will be LOW and the report author has no objection to the authorisation of the this project relating to the current footprint layout, assuming all recommendations and mitigations are implemented.

It is however recommended that stormwater flows should be managed using erosion protection measures and discharge should be limited. Furthermore, the development falls within 500m of a wetland and will require a Water Use License / GA (Figure 10). However, based on this assessment all the impacts with mitigation will be LOW



## 12 References

- Agricultural Resources Act, 1983 (Act No. 43 of 1983).
- Davies, B. and Day J., (1998). *Vanishing Waters*. University of Cape Town Press.
- Department of Water Affairs and Forestry - DWAF (2005). *A practical field procedure for identification and delineation of wetland and riparian areas Edition 1*. Department of Water Affairs and Forestry, Pretoria.
- Department of Water Affairs and Forestry - DWAF (2008). *Manual for the assessment of a Wetland Index of Habitat Integrity for South African floodplain and channelled valley bottom wetland types* by M. Rountree (ed); C.P. Todd, C. J. Kleynhans, A. L. Batchelor, M. D. Louw, D. Kotze, D. Walters, S. Schroeder, P. Illgner, M. Uys. and G.C. Marneweck. Report no. N/0000/00/WEI/0407. Resource Quality Services, Department of Water Affairs and Forestry, Pretoria, South Africa.
- Driver A., Sink, K.J., Nel, J.N., Holness, S., Van Niekerk, L., Daniels, F., Jonas, Z., Majiedt, P.A., Harris, L. & Maze, K. 2012. *National Biodiversity Assessment 2011: An assessment of South Africa's biodiversity and ecosystems*. Synthesis Report. South African National Biodiversity Institute and Department of Environmental Affairs, Pretoria.
- Ewart-Smith J.L., Ollis D.J., Day J.A. and Malan H.L. (2006). *National Wetland Inventory: Development of a Wetland Classification System for South Africa*. WRC Report No. KV 174/06. Water Research Commission, Pretoria.
- GEOSS (2021). *Extended Aquifer test at Zwartenbosch Farm, Humansdorp, Eastern Cape*. Report No: 2021/08-01.
- Kleynhans C.J., Thirion C. and Moolman J. (2005). *A Level 1 Ecoregion Classification System for South Africa, Lesotho and Swaziland*. Report No. N/0000/00/REQ0104. Resource Quality Services, Department of Water Affairs and Forestry, Pretoria.
- Kotze D.C., Marneweck G.C., Batchelor A.L., Lindley D.S. and Collins N. (2008). *WET-EcoServices A technique for rapidly assessing ecosystem services supplied by wetlands*. WRC Report No: TT 339/08.
- Kotze D, Macfarlane D, Edwards R, Mander M, Collins N, Texeira-Leite A, Lagesse J, Pringle C, Marneweck G, Batchelor A And Lindley D (2020) *WET-EcoServices Version 2.0: A technique for rapidly assessing ecosystem services supplied by wetlands and riparian areas*. WRC Report No. TT 833/20. Water Research Commission, Pretoria, South Africa.
- Le Maitre, D.C., Seyler, H., Holland, M., Smith-Adao, L., Nel, J.L., Maherry, A. And Witthüser, K. (2018) *Identification, Delineation and Importance of the Strategic Water Source Areas of South Africa, Lesotho and Swaziland for Surface Water and Groundwater*. Report No. TT 743/1/18, Water Research Commission, Pretoria.
- Macfarlane, D.M. & Bredin, I.P. 2017. *Buffer Zone Guidelines for Rivers, Wetlands and Estuaries*. WRC Report No TT 715/1/17 Water Research Commission, Pretoria.
- Macfarlane, D.M., Ollis, D.J., Kotze, D.C. 2020. *WET-Health (Version 2) Technical Guide*. Report to the Water Research Commission. WRC Project No. K5/2549).
- Mitsch, J.G. and Gosselink, G. (2000). *Wetlands 3<sup>rd</sup> Ed*, Wiley, NewYork, 2000, 920 pg.
- Mucina, L., & Rutherford, M.C., 2006. *The Vegetation of South Africa, Lesotho and Swaziland*, Strelitzia 19, South Africa.
- National Water Act, 1998 (Act No. 36 of 1998), as amended
- Nel, J., Maree, G., Roux, D., Moolman, J., Kleynhans, N., Silberbauer, M. and Driver, A. 2004. *South African National Spatial Biodiversity Assessment 2004: Technical Report. Volume 2: River*

Component. CSIR Report Number ENV-S-I-2004-063. Council for Scientific and Industrial Research, Stellenbosch.

- Nel, J.L., Murray, K.M., Maherry, A.M., Petersen, C.P., Roux, D.J., Driver, A., Hill, L., Van Deventer, H., Funke, N., Swartz, E.R., Smith-Adao, L.B., Mbona, N., Downsborough, L. and Nienaber, S. (2011). Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.
- Ollis, D.J., Snaddon, C.D., Job, N.M. & Mbona, N. 2013. Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland Systems. SANBI Biodiversity Series 22. South African National Biodiversity Institute, Pretoria.
- Parsons R. (2004). Surface Water – Groundwater Interaction in a Southern African Context. WRC Report TT 218/03, Pretoria.
- Ramsar Convention, (1971) including the Wetland Conservation Programme (DEAT) and the National Wetland Rehabilitation Initiative (DEAT, 2000).
- van Deventer H., Smith-Adao, L. Petersen C., Mbona N., Skowno A., Nel, J.L. (2018) Review of available data for a South African Inventory of Inland Aquatic Ecosystems (SAIIAE). Water SA 44 (2) 184-199.

## 13 Appendix 1 CV

### CURRICULUM VITAE

**Dr Brian Michael Colloty**

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Gqeberha, 6070

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083 498 3299

Profession: Ecologist & Environmental Assessment Practitioner (Pr. Sci. Nat. 400268/07)

Member of the South African Wetland Society

Specialisation: Ecology and conservation importance rating of inland habitats, wetlands, rivers & estuaries

Years experience: 29 years

### SKILLS BASE AND CORE COMPETENCIES

- 29 years experience in environmental sensitivity and conservation assessment of aquatic and terrestrial systems inclusive of Index of Habitat Integrity (IHI), WET Tools, Riparian Vegetation Response Assessment Index (VEGRAI) for Reserve Determinations, estuarine and wetland delineation throughout Africa. Experience also includes biodiversity and ecological assessments with regard sensitive fauna and flora, within the marine, coastal and inland environments. Countries include Mozambique, Kenya, Namibia, Central African Republic, Zambia, Eritrea, Mauritius, Madagascar, Angola, Ghana, Guinea-Bissau and Sierra Leone. Current projects also span all nine provinces in South Africa.
- 15 years experience in the coordination and management of multi-disciplinary teams, such as specialist teams for small to large scale EIAs and environmental monitoring programmes, throughout Africa and inclusive of marine, coastal and inland systems. This includes project and budget management, specialist team management, client and stakeholder engagement and project reporting.
- GIS mapping and sensitivity analysis

### TERTIARY EDUCATION

- 1994: B Sc Degree (Botany & Zoology) - NMU
- 1995: B Sc Hon (Zoology) - NMU
- 1996: M Sc (Botany - Rivers) - NMU
- 2000: Ph D (Botany – Estuaries & Mangroves) – NMU

### EMPLOYMENT HISTORY

- 1996 – 2000 Researcher at Nelson Mandela University – SAB institute for Coastal Research & Management. Funded by the WRC to develop estuarine importance rating methods for South African Estuaries
- 2001 – January 2003 Training development officer AVK SA (reason for leaving – sought work back in the environmental field rather than engineering sector)
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- August 2018 Owner / Ecologist - EnviroSci (Pty) Ltd

## **SELECTED RELEVANT PROJECT EXPERIENCE**

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- Farim phosphate mine and port development, Guinea Bissau – biodiversity and estuarine assessment on behalf of Knight Piesold Canada – 2016.
- Tema LNG offshore pipeline EIA – marine and estuarine assessment for Quantum Power (2015).
- Colluli Potash South Boulder, Eritrea, SEIA marine baseline and hydrodynamic surveys co-ordinator and coastal vegetation specialist (coastal lagoon and marine) (on-going).
- Wetland, estuarine and riverine assessment for Addax Biofuels Sierra Leone, Makeni for Coastal & Environmental Services: 2009
- ESHIA Project manager and long-term marine monitoring phase coordinator with regards the dredge works required in Luanda bay, Angola. Monitoring included water quality and biological changes in the bay and at the offshore disposal outfall site, 2005-2011

### **South Africa**

- Plant and animal search and rescue for the Dassiesridge Wind Farm on behalf of EDF Current
- Plant and animal search and rescue for the Karusa and Soetwater Wind Farms on behalf of Enel Green Power, 2021
- Plant and animal search and rescue for the Nxuba, Oyster Bay and Garob Wind Farms on behalf of Enel Green Power, 2018 - 2019
- Plant and Animal Search and Rescue for the Port of Ngqura, Transnet Landside infrastructure Project, with development and management of on site nursery, Current
- Plant and Animal Search and Rescue for the Port of Ngqura, OTGC Tank Farm Project (2019)
- Plant search and rescue, for NMBM (Driftsands sewer, Glen Hurd Drive), Department of Social Development (Military veterans housing, Despatch) and Nxuba Wind Farm, - current
- Wetland specialist appointed to update the Eastern Cape Biodiversity Conservation Plan, for the Province on behalf of EOH CES appointment by SANBI – current. This includes updating the National Wetland Inventory for the province, submitting the new data to CSIR/SANBI.
- CDC IDZ Alien eradication plans for three renewable projects Coega Wind Farm, Sonop Wind Farm and Coega PV, on behalf of JG Afrika (2016 – 2017).
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- Gibson Bay Wind Farm implementation of the wetland management plan during the construction and operation of the wind farm (includes surface / groundwater as well wetland rehabilitation & monitoring plan) on behalf of Enel Green Power - 2018
- Gibson Bay Wind Farm 133kV Transmission Line wetland management plan during the construction of the transmission line (includes wetland rehabilitation & monitoring plan) on behalf of Eskom – 2016.
- Tsitsikamma Community Wind Farm implementation of the wetland management plan during

the construction of the wind farm (includes surface / biomonitoring, as well wetland rehabilitation & monitoring plan) on behalf of Cennergi – completed May 2016.

- Alicedale bulk sewer pipeline for Cacadu District, wetland and water quality assessment, 2016
- Mogalakwena 33kv transmission line in the Limpopo Province, on behalf of Aurecon, 2016
- Cape St Francis WWTW expansion wetland and passive treatment system for the Kouga Municipality, 2015
- Macindane bulk water and sewer pipelines wetland and wetland rehabilitation plan 2015
- Eskom Prieska to Copperton 132kV transmission line aquatic assessment, Northern Cape on behalf of Savannah Environmental 2015.
- Joe Slovo sewer pipeline upgrade wetland assessment for Nelson Mandela Bay Municipality 2014
- Cape Recife Waste Water Treatment Works expansion and pipeline aquatic assessment for Nelson Mandela Bay Municipality 2013
- Pola park bulk sewer line upgrade aquatic assessment for Nelson Mandela Bay Municipality 2013
- Transnet Freight Rail – Swazi Rail Link (Current) wetland and ecological assessment on behalf of Aurecon for the proposed rail upgrade from Ermelo to Richards Bay
- Eskom Transmission wetland and ecological assessment for the proposed transmission line between Pietermaritzburg and Richards Bay on behalf of Aurecon (2012).
- Port Durnford Exaro Sands biodiversity assessment for the proposed mineral sands mine on behalf of Exxaro (2009)
- Fairbreeze Mine Exxaro (Mtunzini) wetland assessment on behalf of Strategic Environmental Services (2007).
- Wetland assessment for Richards Bay Minerals (2013) – Zulti North haul road on behalf of RBM.
- Vegetation assessments on the Great Brak rivers for Department of Water and Sanitation, 2006 and the Gouritz Water Management Area (2014)
- Proposed FibreCo fibre optic cable vegetation assessment along the PE to George, George to Graaf Reinet, PE to Colesburg, and East London to Bloemfontein on behalf of SRK (2013-2015).



## 14 Appendix 2: Impact Assessment Methodology

The purpose of the Impact Assessment Report is to elaborate on the issues and potential impacts identified during the scoping phase of the proposed projects. This is achieved by site visits and research in the site-specific study area as well as a comprehensive assessment of the impacts identified during the scoping phase.

For each project, the Impact Assessment Report must include:

- » A description of the methodology used in determining the significance of potential environmental impacts.
- » A description of any assumptions, uncertainties and gaps in knowledge.
- » A description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed project.
- » A description and assessment of environmental issues and potential impacts (including direct, indirect, cumulative impacts and residual risks) that have been identified.
- » Direct, indirect, cumulative impacts and residual risks of the identified issues must be assessed within the EIA Report in terms of the criteria detailed below.
- » A statement regarding the potential significance of the identified issues based on the assessment of the issues/impacts.
- » A comparative assessment of the identified feasible alternatives, and **nomination of a preferred alternative**.
- » Mitigation measures and management recommendations to be included in the Environmental Management Programme.
- » An indication of the extent to which the issue could be addressed by the adoption of mitigation measures.
- » An environmental impact statement which contains:
  - \* a summary of the key findings of the environmental impact assessment;
  - \* an assessment of the positive and negative implications of the proposed activity.
  - \* a reasoned opinion as to whether the proposed project should be authorised.
- » Any aspects which are conditional to the findings of the assessment which are to be included as conditions of the Environmental Authorisation.

### ***Assessment of Impacts***

Direct, indirect and cumulative impacts of the issues identified through the scoping study, as well as all other issues identified in the EIA phase must be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being with 1 being local/site of development and 5 being international):
- » The **duration**, wherein it will be indicated whether:
  - \* the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - \* the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - \* medium-term (5–15 years) – assigned a score of 3;
  - \* long term (> 15 years) - assigned a score of 4; or
  - \* permanent - assigned a score of 5;
- » The **consequences (magnitude)**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).

- » the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the *degree* to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the acceptability of the development footprint, or the decision process to develop in the area),
- » 30-60 points: Medium (i.e. where the impact could influence the acceptability of the development footprint, or the decision process to develop in the area unless it is effectively mitigated),
- » > 60-90 points: High (i.e. where the impact must have an influence on the acceptability of the development footprint, or the decision process to develop in the area).
- » > 90 points: Very High (i.e. where the impact must have an influence on the acceptability of the development footprint, or the decision process to develop in the area, and may constitute a fatal flaw where motivated by a specialist consultant).



**DETAILS OF SPECIALIST AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.**

(For official use only)

File Reference Number:

NEAS Reference Number:

Date Received:

Application for environmental authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amendments to the Environmental Impact Assessment Regulations, 2014. This form is valid as of 6 January 2021.

**PROJECT TITLE**

**SECTION 24G APPLICATION FOR PORTION 8 OF ERF 3 KRAGGA KAMMA,**

SPECIALIST <sup>1</sup>

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Professional affiliation(s) (if any)

EnviroSci (Pty) Ltd

Dr Brian Colloty

1 Rossini Rd Pari Park Gqeberha 6070

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0834983299

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[brianc@envirosci.co.za](mailto:brianc@envirosci.co.za)

SACNASP Ecological 40026/07

Project Consultant:  
Contact person:  
Postal address:  
Postal code:

Telephone:  
E-mail:

|                                |       |              |
|--------------------------------|-------|--------------|
| Digital Soils Africa (Pty) Ltd |       |              |
| Natalie Sharp                  |       |              |
| 45 Church Street, Walmer       |       |              |
| 6070                           | Cell: | 082 414 0472 |
| 082 414 0472                   | Fax:  |              |
| natalie@dsafrica.co.za         |       |              |

#### 4.2 The SPECIALIST

I, \_\_\_\_\_, declare that –

General declaration:

- I act as the independent Specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and



- I realise that a false declaration is an offence and is punishable in terms of section 24F of the Act.

**Disclosure of Vested Interest** (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Amendments to Environmental Impact Assessment Regulations, 2014 as amended.

Signature of the environmental assessment practitioner:

EnviroSci (Pty) Ltd

Name of company:

Date:

13 January 2026

Signature of the Commissioner of Oaths:

7255975  
CST  
EC FORTUNE

Date:

13/01/2026

Designation: CST

<sup>1</sup> Curriculum Vitae (CV) attached

Official stamp (below).



## Annexure 1

### CURRICULUM VITAE

Dr Brian Michael Colloty

7212215031083

1 Rossini Rd  
Pari Park  
Gqeberha, 6070  
brianc@envirosci.co.za  
083 498 3299

Profession: Ecologist & (Pr. Sci. Nat. 400268/07) & Member of the South African Wetland Society  
Specialisation: Ecology and conservation importance rating of terrestrial habitats, wetlands, rivers & estuaries  
Years experience: 30 years

### SKILLS BASE AND CORE COMPETENCIES

- 30 years experience in environmental sensitivity and conservation assessment of aquatic and terrestrial systems. With the past 10 years focused on the assessment of various renewable projects in Southern Africa (ca 200 projects). A deep interest in the functioning of Karoo and Thicket systems (arid zone ecology), particularly how aquatic systems function, led to an interest in the general ecology of the systems, which has resulted in several long term plant and animal search and rescue projects for 15 wind farms in the Western, Eastern and Northern Cape areas for EGP. Red Rocket & Power Construction.
- Countries include Mozambique, Kenya, Namibia, Central African Republic, Zambia, Eritrea, Mauritius, Madagascar, Angola, Ghana, Guinea-Bissau and Sierra Leone. Current projects also span all nine provinces in South Africa.
- 15 years experience in the coordination and management of multi-disciplinary teams, such as specialist teams for small to large scale EIAs and environmental monitoring programmes, throughout Africa and inclusive of marine, coastal and inland systems. This includes project and budget management, specialist team management, client and stakeholder engagement and project reporting.
- GIS mapping and sensitivity analysis

### TERTIARY EDUCATION

- 1994: B Sc Degree (Botany & Zoology) - NMU
- 1995: B Sc Hon (Zoology – restoration ecology) - NMU
- 1996: M Sc (Botany – Rivers conservation importance and restoration) - NMU
- 2000: Ph D (Botany – Estuaries & Mangroves conservation rating and management plan) – NMU

### EMPLOYMENT HISTORY

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- 2001 – January 2003 Training development officer AVK SA (reason for leaving – sought work back in the environmental field rather than engineering sector)
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- ESHIA Project manager and long-term rehabilitation and monitoring phase coordinator with regards the dredge works required in Luanda bay, Angola. Monitoring included water quality and biological changes in the bay and at the offshore disposal outfall site, 2005-2011

#### South African (selection)

- Plant and animal search and rescue for the Witberg, Rietkloof, Brand Valley, Sankraal, Phezukomoyo, Wind Garden, Dassiesridge, Karusa, Soetwater, Nxuba, Oyster Bay, Impofu East, Impofu North and Impofu West and Garob Wind Farms for Power Construction. WBHO and Concor on behalf of their clients, 2018 – 2025.
- Plant and Animal Search and Rescue for the Port of Ngqura, Transnet Landside infrastructure Project, with development and management of on-site nursery.
- Plant and Animal Search and Rescue for the Port of Ngqura, OTGC Tank Farm Project (2019)
- Plant search and rescue, for NMBM (Driftsands sewer, Glen Hurd Drive), 2018
- Department of Social Development (Military veterans housing, Despatch), - 2018
- Plant Search and Rescue for the 400kV Eskom grid connection between Harding and East London (2017)
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- Cape Recife Waste Water Treatment Works expansion and pipeline aquatic assessment for Nelson Mandela Bay Municipality 2013
- Pola park bulk sewer line upgrade aquatic assessment for Nelson Mandela Bay Municipality 2013
- Transnet Freight Rail – Swazi Rail Link (2013) wetland and ecological assessment on behalf of Aurecon for the proposed rail upgrade from Ermelo to Richards Bay
- Eskom Transmission wetland and ecological assessment for the proposed transmission line between Pietermaritzburg and Richards Bay on behalf of Aurecon (2012).
- Port Durnford Exaro Sands biodiversity assessment for the proposed mineral sands mine on behalf of Exxaro (2009)
- Fairbreeze Mine Exxaro (Mtunzini) wetland assessment on behalf of Strategic Environmental Services (2007).
- Wetland assessment for Richards Bay Minerals (2013) – Zulti North haul road on behalf of RBM.
- Biodiversity and aquatic assessments for 200 renewable projects in the past 12 years in the Western, Eastern, Northern Cape, Mpumalanga, KwaZulu-Natal and Free State provinces. Clients included RES-SA, Red Cap, ACED Renewables, Mainstream Renewable, GDF Suez, Globeleq, ENEL, Abengoa amongst others. Particular aquatic sensitivity assessment and Water Use License Applications on behalf of Mainstream Renewable Energy (8 wind farms and 15 PV facilities.), Cennergi / Exxaro (2 Wind farms), WKN Wind current (4 wind farms & 4 PV facilities), ACED (10 wind farms) and Windlab (3 Wind farms) were also conducted. Several of these projects also

required the assessment of the proposed transmission lines and switching stations, which were conducted on behalf of Eskom.

- Vegetation assessments on the Great Brak rivers for Department of Water and Sanitation, 2006 and the Gouritz Water Management Area (2014)
- Proposed FibreCo fibre optic cable vegetation assessment along the PE to George, George to Graaf Reinet, PE to Colesburg, and East London to Bloemfontein on behalf of SRK (2013-2015).







**herewith certifies that**  
**Brian Michael Colloty**  
Registration Number: 400268/07  
**is a registered scientist**

in terms of section 20(3) of the Natural Scientific Professions Act, 2003  
(Act 27 of 2003)  
in the following field(s) of practice (Schedule 1 of the Act)  
Ecological Science (Professional Natural Scientist)

Effective    **7 November 2007**

Expires      **31 March 2026**



Chairperson

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## M5: Heritage and Palaeontology Reports

**AN ARCHAEOLOGICAL IMPACT ASSESSMENT AS PART OF A NEMA SECTION 24 (G) APPLICATION FOR THE UNLAWFUL COMMENCEMENT OF THE DEVELOPMENT OF A RESIDENTIAL HOUSE AND AN AQUAPONICS FACILITY ON PORTION 217 (A PORTION OF PORTION 87) OF THE FARM CRAGGA KAMMA NO. 23 IN GQEBERHA (PORT ELIZABETH), NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE PROVINCE.**



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**AN ARCHAEOLOGICAL IMPACT ASSESSMENT AS PART OF A NEMA SECTION 24 (G) APPLICATION FOR THE UNLAWFUL COMMENCEMENT OF THE DEVELOPMENT OF A RESIDENTIAL HOUSE AND AN AQUAPONICS FACILITY ON PORTION 217 (A PORTION OF PORTION 87) OF THE FARM CRAGGA KAMMA NO. 23 IN GQEBERHA (PORT ELIZABETH), NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE PROVINCE.**

**EXECUTIVE SUMMARY**

Eastern Cape Heritage Consultants cc has been appointed by Digital Soils Africa to conduct an Archaeological Impact Assessment (AIA) as part of an application in terms of Section 24(G) of the National Environmental Management Act (NEMA) (Act No. 107 of 1998, as amended). The application is for the *post facto* authorisation of the unlawful commencement of the development of a residential house and an aquaponics facility that required an Environmental Authorisation (EA).

A phase 1 Archaeological Impact Assessment (AIA) was not conducted prior to the commencement of the activities in terms of Section 38 of the National Heritage Resources Act, No. 25 of 1999. The purpose of this archaeological assessment is therefore to report on the findings of the site inspection and to provide additional information that will normally form part of a Phase 1 AIA. The activities that were undertaken are located on Portion 217 (a portion of Portion 87) of the Farm Cragga Kamma No. 23 approximately 18 kilometers west from the Gqeberha (Port Elizabeth) Central Business District (CBD), within the Nelson Mandela Bay Municipality, Eastern Cape Province.

The extent of the property is approximately 30 hectares (ha) that includes 3 - 4 ha that was disturbed as a result of the unauthorised activities. The project area, which consisted of vacant land used for grazing, underwent the clearance of vegetation in 2023 and the development of a residential house, an aquaponics facility as well as infrastructure to support commercial farming. The residential house, aquaponics facility and associated infrastructure were constructed over a period of 2 years and includes an access road from Lakeside Road in the Kragga Kamma suburb of Gqeberha (Port Elizabeth).

Two general areas on the property were affected by the specified activities. The development of the residential house and associated buildings took place near to the western boundary of the property and the development of the aquaponics facility adjacent to the access road located near the northern boundary of the property. The infrastructure related to the farming activities is strategically placed within the boundaries of the property. The archaeological visibility was poor due to the nature of the disturbances and the dense cover of short grass that covers the majority of the property.

Prior to the vegetation clearing the site was dominated by grass and bracken fern (*Pteridium aquilinum*), with occasional patches of indigenous shrubs. Exotic pine and gum trees were planted as either windbreaks or boundary demarcation by previous landowners and currently those trees still frame the property. No archaeological sites/materials were observed within or in close proximity to the affected areas. In general, the area affected by the development appears to be of low archaeological sensitivity. There are no known graves or historical buildings within the boundaries of the property.

Based on the results of the site visit there is no evidence that any offence has been committed in terms of Section 51(b) & (c) of the National Heritage Resources Act, No. 25 of 1999, and the provisions for a compulsory repair order in terms of Section 45 of the Act are also not applicable to the activities.

It is recommended that full Heritage Impact Assessments (HIA's) must be conducted for any future developments on the property that triggers Section 38 of the National Heritage Resources Act, No. 25 of 1999. Should any archaeological sites/remains be exposed on the property in areas where a HIA is not required then work must cease in the immediate area and it must be reported to the Eastern Cape Provincial Heritage Resources Authority (Tel: 043 492 1370).

## **NEMA SECTION 24 (G) INFORMATION**

### **Identified activities**

The activities that were identified by the Environmental Assessment Practitioner (EAP) during the site visit can be categorised as follows:

- clearance of vegetation.
- the development of a residential house and associated buildings.
- the development of an aquaponics facility and associated infrastructure.
- the development of a reservoir, fencing, livestock pen, and compost site.

The extent of the property is approximately 30 hectares (ha) that includes 3 - 4 ha that was disturbed as a result of the unauthorised activities. The residential house, aquaponics facility and associated infrastructure were constructed over a period of 2 years and includes an access road from Lakeside Road in the Kragga Kamma suburb of Gqeberha (Port Elizabeth).

### **Applicant**

Mr. Allan Hartsliel (ARH AGRI)

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### **Purpose of the study**

The purpose of the study was to conduct an Archaeological Impact Assessment (AIA) for the identified activities, to describe and evaluate:

- the importance of possible archaeological sites, features and materials on the sites affected by the activities,
- the impact of the activities on these resources (if any) and,
- to propose recommendations to prevent further damage to these resources, and
- to determine if any offences were committed in terms of Section 51(b) & (c) of the National Heritage Resources Act, No. 25 of 1999

### **Site and Location**

The property is located within the 1:50 000 topographic reference maps 3325CD & 3425AB Uitenhage (Map 1). The activities that were undertaken are located on Portion 217 (a portion of

Portion 87) of the Farm Cragga Kamma No. 23 approximately 18 kilometers west from the Gqeberha (Port Elizabeth) Central Business District (CBD), within the Nelson Mandela Bay Municipality, Eastern Cape Province. Two general areas on the property were affected by the specified activities. The development of the residential house and associated buildings took place near to the western boundary of the property and the development of the aquaponics facility adjacent to the access road located near the northern boundary of the property. The area impacted by the development of the residential house is fenced and includes a landscaped garden, a shed, a chicken coup and a nursery.

The remaining infrastructure related to the farming activities is strategically placed within the boundaries of the property. Prior to the vegetation clearing the site was dominated by grass and bracken fern (*Pteridium aquilinum*), with occasional patches of indigenous shrubs. Exotic pine and gum trees were planted as either windbreaks or boundary demarcation by previous landowners and currently those trees still frame the property. There is also evidence of historical agricultural activities on the property prior to the vegetation clearing. General GPS readings: 33.57.935S, 25. 24.734E (residential house and associated buildings) and 33.57.865S, 25.24.914E (aquaponics facility and associated infrastructure).

### **Relevant Archaeological Impact Assessments**

- Binneman, J. 2014a. A phase 1 archaeological impact assessment for the proposed integrated residential development and associated infrastructure in the Hunters Retreat area, Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2014b. A letter of recommendation (with conditions) for the exemption from a full phase 1 archaeological impact assessment for the proposed rezoning of portions 25 and 45 of the Farm Cragga Kamma No. 23 for a residential development and associated services, Port Elizabeth, Nelson Mandela Bay Municipality. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2012. A letter of recommendation (with conditions) for the exemption from a full phase 1 archaeological heritage impact assessment for a proposed residential development on Portion 62 of Farm No. 10, Little Chelsea, Colleen Glen, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for: Public Process Consultants. Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman J. 2010a. A phase 1 archaeological heritage impact assessment for the proposed rezoning and subdivision of Portion 1 and 118 of the Farm Chelsea No. 25 (Kragga Kamma Game Park), Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province, to establish a resort development. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2010b. A phase 1 archaeological heritage impact assessment for the proposed rezoning and subdivision of Farm 36 and 37, Theescombe, Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape, for the development of two residential nodes, lodge and nature reserve. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2009. A phase 1 archaeological heritage impact assessment for the proposed subdivision of Portion 12 of the Farm Kragga Kamma No. 23, Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province, for the development of an Agri Village and the necessary infrastructure. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2008a. A phase 1 archaeological heritage impact assessment for the proposed rezoning and subdivision for the establishment of a rural residential development on Portion 87 of the Farm Cragga Kamma No. 23, Port Elizabeth, Nelson Mandela Bay Municipality,

- Eastern Cape. Prepared for Anton Bok Aquatic Consultants. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2008b. A phase 1 archaeological heritage impact assessment for the proposed development of an eco-estate on portion 190 of Chelsea 25, Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2018. A letter of recommendation (with conditions) for the exemption of a full phase 1 archaeological impact assessment for the proposed mining of sand on Portion 109 of the Farm Cragga Kamma 23, Port Elizabeth, Eastern Cape Province. Prepared for: Stellenryck Environmental Solutions. Lorraine. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2017. A phase 1 archaeological impact assessment for a proposed residential development on Portion 75 of the Farm Cragga Kamma No. 23 in the Nelson Mandela Bay Municipality, Eastern Cape. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Booth, C. 2016. A letter of recommendation (with conditions) for the exemption of a full phase 1 archaeological impact assessment for the proposed expansion of the bulk water supply infrastructure of potable water to Seaview and Greenbushes supply areas, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for: SRK Consulting. Port Elizabeth. Booth Heritage Consulting. Grahamstown.
- Reichert, K. 2023. A phase 1 archaeological impact assessment for a proposed mixed - use development on Portions 98, 99 and 102 (Portions of Portion 14) of the Farm Little Chelsea No. 10 in Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for: Engineering Advice & Services (Pty) Ltd. Humewood. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Reichert, K. 2022a. A letter of recommendation (with conditions) for the exemption of a full phase 1 archaeological impact assessment for the proposed development of a fruit packhouse and the establishment of citrus orchards on Portion 13 of Farm No.10 in Little Chelsea near Gqeberha, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Reichert, K. 2022b. A letter of recommendation (with conditions) for the exemption of a full phase 1 archaeological impact assessment for the proposed expansion of the existing Port Elizabeth Rifle and Pistol Club on Portions 0 and 5 of Erf No. 8 in Greenbushes, Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape. Prepared for BlueLeaf Environmental Consulting (Pty) Ltd. Sunridge Park. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Reichert, K. 2022c. A letter of recommendation (with conditions) for the exemption of a full phase 1 archaeological impact assessment for the proposed development of a Solar Photovoltaic (PV) Facility on Erf 77 in Greenbushes, Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for Habitat Link Consulting. Mount Croix. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Reichert, K. 2022d. A letter of recommendation (with conditions) for the exemption of a full phase 1 archaeological impact assessment for the proposed development of the Greenbushes Farm Solar PV Facility on Portion 8 (Portion of Portion 3) of the Farm Kuyga No. 8, as well as electrical transmission lines in Ward 40 in Greenbushes, Gqeberha (Port Elizabeth). Prepared for: CEN Integrated Environmental Management Unit. Summerstrand. Eastern Cape Heritage Consultants cc. Jeffreys Bay.

The Albany Museum in Makhanda (Grahamstown) and the Bayworld Museum houses collections and information from the wider region



## BRIEF ARCHAEOLOGICAL BACKGROUND

### Literature review

#### Pre-colonial archaeology

The archaeology of the immediate area is largely unknown, mainly because little systematic research has been conducted there. The oldest evidence of the early inhabitants in the Gqeberha (Port Elizabeth) area are large stone tools, called handaxes and cleavers, which can be found amongst river gravels and in old spring deposits in the region (Deacon 1970). These large stone tools are from a time period called the Earlier Stone Age (ESA) and may date between 1,5 million and 250 000 years old. In the Sunday's River Valley area more recent research has focused on the morphological variability of these handaxes at Penhill Farm and Amanzi Springs (Caruana & Lotter 2022). The large handaxes and cleavers were replaced by smaller stone tools called the Middle Stone Age (MSA) flake and blade industries. Evidence of MSA sites occur throughout the Gqeberha (Port Elizabeth) region and date between 200 000 and 30 000 years old. Fossil bone may in rare cases be associated with MSA occurrences (Deacon & Deacon 1999).

The majority of archaeological sites found in the Port Elizabeth area date from the past 10 000 years (called the Later Stone Age) and are associated with the campsites of San hunter-gatherers and Khoi pastoralists. These sites are difficult to find because they are in the open veld and often covered by vegetation and sand. Sometimes these sites are only represented by a few stone tools and fragments of bone. The preservation of these sites is poor, and it is not always possible to date them (Deacon & Deacon 1999). There are many San hunter-gatherers sites in the nearby Elandsberg and Groot Winterhoekberg Mountains. Here caves and rock shelters were occupied by the San during the Later Stone Age and contain paintings along the walls. The last San/KhoiSan group was killed by Commando's in the Groendal area in the 1880s. Some 2 000 years ago Khoi pastoralists occupied the region and lived mainly in small settlements. They were the first food producers in South Africa and introduced domesticated animals (sheep, goat and cattle) and ceramic vessels to southern Africa.

The most common archaeological sites along the nearby coast are shell middens (relatively large piles of marine shell) found usually concentrated opposite rocky coasts, but also along sandy beaches (Rudner 1968). These were campsites of San hunter-gatherers, Khoi herders and KhoiSan peoples who lived along the immediate coast (up to 5 km) and collected marine foods. Mixed with the shell are other food remains, cultural material and often human remains are found in the middens. In general shell middens in the open found along the wider Port Elizabeth coast, date from the past 6 000 years. Also associated with middens are large stone floors which were probably used as cooking platforms (Binneman 2001, 2005).

## HISTORICAL BACKGROUND

Port Elizabeth was established in 1820 as a British settlement around Fort Frederick and was incorporated as a town in 1861. It was named by Sir Rufane Donkin after his deceased wife while he was the acting governor of the Cape Colony (Britannica 2023). The main transport during those early days was by ox - wagon until railways became established in the 1870's. Ox - wagons were also used to distribute general merchandise to various destinations outside of the Port Elizabeth area. The travellers and their oxen needed water, pasturage and places to rest along these routes and for this purpose the government set aside rest places known as "Outspans". There were three existing outspans in the Port Elizabeth area before Divisional Councils were eventually designated in 1860 to maintain these rest areas (McClelland 2018). There was one situated on the site of the Greenbushes Hotel and there was a smaller one at Hunter's Retreat next to Cape Road. The busiest one by far was located at Fishwaters Flats at Zwartkops outside of Port Elizabeth on route to Grahamstown (McClelland 2018). The site affected by the development is located approximately

4 kilometers south of the Greenbushes Hotel. The former Chelsea Estate (now known as the Estate Deo Volente) is located approximately 5 kilometers south east of the proposed development area. The original cottage was used in the early 1800's by the officers of the Royal Garrison Company stationed at Fort Frederick as a hunting lodge as well as weekend retreat (McClelland 2022).

A Cultural Landscape Assessment (CLA) is attached as Annexure "D" with additional information about the history of the general area as well the proposed development area.

## References

- Binneman, J. 2001. An introduction to a Later Stone Age coastal research project along the south-eastern Cape coast. *Southern African Field Archaeology* 10:75-87.
- Binneman, J. 2005. Archaeological research along the south-eastern Cape coast part1: open-air shell middens *Southern African Field Archaeology* 13 & 14:49-77.
- Britannica*. 2023., *The Editors of Encyclopaedia*. "Port Elizabeth". *Encyclopedia Britannica*. [www.britannica.com/place/Port-Elizabeth-South-Africa](http://www.britannica.com/place/Port-Elizabeth-South-Africa).
- Caruana, M. & Lotter, M.G. 2022. Comparing morphological variability in handaxes from Penhill Farm and Amanzi Springs, Eastern Cape, *South African Field Archaeology* 17:35-52.
- Deacon, H.J. 1970. The Acheulian occupation at Amanzi Springs, Uitenhage District, Cape Province. *Annals of the Cape Provincial Museums*. 8:89-189.
- Deacon, H.J. & Deacon, J. Human beginnings in South Africa. Cape Town: David Phillips Publishers.
- McClelland, D. 2022. *Port Elizabeth of Yore: The venerable Chelsea Cottage*. [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)
- McClelland, D. 2018. *Port Elizabeth of Yore: Outspans and Road Inns on the Inter-Town Roads of later 1800s*. [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)
- Rudner, J. 1968. Strandloper pottery from South and South West Africa. *Annals of the South African Museum* 49:441-663

## ARCHAEOLOGICAL INVESTIGATION

### Methodology

Google aerial images, historical aerial photographs as well as previous heritage reports related to the study area were studied prior to the investigation. The investigation was conducted on foot by an archaeologist. GPS readings were taken with a Garmin eTREX 22x and all important features were digitally recorded. The property is in a disturbed condition as a result of the past agricultural activities and the development of the residential house and aquaponics facility.

### Limitations and assumptions

It was difficult to identify *in situ* archaeological sites / material due to the nature of the disturbances and the dense cover of short grass that covers the majority of the property. The activities related to the developments resulted in extensive surface disturbances and at some of the affected areas it was not possible to determine if any archaeological sites /material were present prior to the activities taking place. It appears that the affected area has been completely transformed as a result of the historical agricultural activities as well as the more recent vegetation clearing that took place prior to the development of the residential house and aquaponics facility.

Regardless of the restrictions imposed by the natural environment, the experiences and knowledge gained from other investigations in adjacent and the wider surrounding region, provided background information to make assumption and predictions on the incidences and the

significance of possible pre-colonial archaeological sites/material which may be located in the area, or which may be covered by soil and vegetation.

## Results

No archaeological sites/materials were observed within or in close proximity to the affected areas. In general, the areas affected by the activities appears to be of **low archaeological sensitivity** and it is unlikely that any archaeological remains of significance will be uncovered by future developments. There are no known graves or historical buildings / structures within the boundaries of the property.



**Figure 1. General views of the area affected by the development of a residential house and associated buildings on Portion 217 of the Farm Cragga Kamma No. 23 in Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape Province.**





**Figure 2. General views of the area affected by the development of the aquaponics facility and associated infrastructure on Portion 217 of the Farm Cragga Kamma No. 23 in Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape Province.**

## DISCUSSION

Eastern Cape Heritage Consultants cc has been appointed by Digital Soils Africa to conduct an Archaeological Impact Assessment (AIA) as part of an application in terms of Section 24(G) of the National Environmental Management Act (NEMA) (Act No. 107 of 1998, as amended). The application is for the *post facto* authorisation of the unlawful commencement of the development of an aquaponics facility and a residential house that required an Environmental Authorisation (EA).

A phase 1 Archaeological Impact Assessment (AIA) was not conducted prior to the commencement of some of the activities in terms of Section 38 of the National Heritage Resources Act, No. 25 of 1999. The purpose of this archaeological assessment is therefore to report on the findings of the site inspection and to provide additional information that will normally form part of a Phase 1 AIA.

Several other archaeological assessments were conducted in close proximity to the area affected by the development that provided similar results to this assessment (Binneman 2008b; 2009 & 2012; Binneman & Reichert 2017; Booth 2016 and Reichert 2023 & 2022a). Middle Stone Age stone tools were found on a fossil dune ridge exposed by sand mining close to the south-eastern boundary of the Kragga Kamma Game Park, about 4 kilometres south east of the property (Binneman 2010a). The area investigated is situated further than 5 km from the coast and falls outside the maximum distance shell middens are expected to be found from the beach.

The unlawful commencement of listed activities in terms of NEMA for the development of a residential house and associated buildings as well as the aquaponics facility and the infrastructure to support commercial farming took place from 2023 over a period of two (2) years. Prior to the commencement of these activities the property was used for agricultural activities and as a result the property has been completely transformed over time. There are no known graves or buildings / structures older than 60 years located on the property.

No archaeological sites/materials were observed within or in close proximity to the affected areas. In general, the areas affected by the activities appear to be of low archaeological sensitivity and it is unlikely that any archaeological remains of significance will be uncovered by future developments.

## RECOMMENDATIONS

The main impact on possible archaeological sites/remains will be the physical disturbance of the material and its context. Should such material be exposed during future developments on the property then work must cease in the immediate area and it must be reported to the Eastern Cape Provincial Heritage Resources Authority (Tel.: 043 492 1370), so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to remove/collect such material (See Appendix B for a list of possible archaeological sites that maybe found in the area). The developer must finance the costs should additional investigations be required.

It is further recommended that:

1. No further action be taken against the applicant in terms of Section 45 or Section 51(b) & (c) of the National Heritage Resources Act, No. 25 of 1999.
2. Heritage Impact Assessments (HIA's) must be conducted for any future developments on the property that triggers Section 38 of the National Heritage Resources Act, No. 25 of 1999.



## References

- Binneman, J. 2012. A letter of recommendation (with conditions) for the exemption from a full phase 1 archaeological heritage impact assessment for a proposed residential development on Portion 62 of Farm No. 10, Little Chelsea, Colleen Glen, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for: Public Process Consultants. Greenacres.
- Binneman J. 2010a. A phase 1 archaeological heritage impact assessment for the proposed rezoning and subdivision of Portion 1 and 118 of the Farm Chelsea No. 25 (Kragga Kamma Game Park), Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province, to establish a resort development. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2009. A phase 1 archaeological heritage impact assessment for the proposed subdivision of Portion 12 of the Farm Kragga Kamma No. 23, Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province, for the development of an Agri Village and the necessary infrastructure. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2008b. A phase 1 archaeological heritage impact assessment for the proposed development of an eco-estate on portion 190 of Chelsea 25, Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2017. A phase 1 archaeological impact assessment for a proposed residential development on Portion 75 of the Farm Cragga Kamma No. 23 in the Nelson Mandela Bay Municipality, Eastern Cape. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Booth, C. 2016. A letter of recommendation (with conditions) for the exemption of a full phase 1 archaeological impact assessment for the proposed expansion of the bulk water supply infrastructure of potable water to Seaview and Greenbushes supply areas, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for: SRK Consulting. Port Elizabeth. Booth Heritage Consulting. Grahamstown.
- Reichert, K. 2023. A phase 1 archaeological impact assessment for a proposed mixed - use development on Portions 98, 99 and 102 (Portions of Portion 14) of the Farm Little Chelsea No. 10 in Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for: Engineering Advice & Services (Pty) Ltd. Humewood. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Reichert, K. 2022a. A letter of recommendation (with conditions) for the exemption of a full phase 1 archaeological impact assessment for the proposed development of a fruit packhouse and the establishment of citrus orchards on Portion 13 of Farm No.10 in Little Chelsea near Gqeberha, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for: CEN Integrated Environmental Management Unit. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.

## GENERAL REMARKS AND CONDITIONS

**Note:** This is an Archaeological Impact Assessment (AIA) report compiled for the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) to enable them to make informed decisions regarding the heritage resources assessed in this report and only they have the authority to revise the report. This report must be reviewed by the ECPHRA where after they will issue their Review Comments to the EAP/developer. The final decision rests with the ECPHRA who must grant permits if there will be any impact on cultural sites/materials as a result of the development.

This report is an Archaeological Impact Assessment and does not exempt the developer from any other relevant heritage impact assessments as specified below:

In terms of the National Heritage Resources Act, No. 25 of 1999 (section 38) ECPHRA may require a full Heritage Impact Assessment (HIA) to assess all heritage resources, that includes *inter alia*, all places or objects of aesthetical, architectural, historic, scientific, social, spiritual, linguistic, or technological significance that may be present on a site earmarked for development. A full Heritage Impact Assessment (HIA) should assess all these heritage components, and the assessment may include archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects.

It must be emphasized that this AIA is based on the visibility of archaeological sites/material and may not therefore reflect the true state of affairs. Sites and material may be covered by soil and vegetation and will only be located once this has been removed. In the event of such finds being uncovered during future activities, ECPHRA or an archaeologist must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed (see attached list of possible archaeological sites and material). The *onus* is on the developer to ensure that the provisions of the National Heritage Resources Act No. 25 of 1999 and any instructions from ECPHRA are followed. The EAP/developer must forward this report to ECPHRA in order to obtain their Review Comments, unless alternative arrangements have been made with the heritage specialist to submit the report.

## **APPENDIX A: brief legislative requirements**

Parts of sections 34, 35(4), 36(3) and 38(1) (8) of the National Heritage Resources Act, No. 25 of 1999 apply:

### ***Structures***

34 (1) *No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.*

### ***Archaeology, palaeontology and meteorites***

35 (4) *No person may, without a permit issued by the responsible heritage resources authority—*

- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;*
- (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;*
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.*

### ***Burial grounds and graves***

36. (3) (a) *No person may, without a permit issued by SAHRA or a provincial heritage resources authority—*

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;*
- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or*
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.*

### ***Heritage resources management***

38. (1) *Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –*

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of the site –*
  - (i) exceeding 5000m<sup>2</sup> in extent, or*
  - (ii) involving three or more erven or subdivisions thereof; or*
  - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
  - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;*
- (d) the re-zoning of a site exceeding 10 000m<sup>2</sup> in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must as the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

## **APPENDIX B: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM INLAND AREAS: guidelines and procedures for developers**

### **Human Skeletal material**

Human remains, whether the complete remains of an individual buried during the past, or scattered human remains resulting from disturbance of the grave, should be reported. In general, the remains are buried in a flexed position on their sides but are also found buried in a sitting position with a flat stone capping and developers are requested to be on the alert for this.

### **Freshwater mussel middens**

Freshwater mussels are found in the muddy banks of rivers and streams and were collected by people in the past as a food resource. Freshwater mussel shell middens are accumulations of mussel shell and are usually found close to rivers and streams. These shell middens frequently contain stone tools, pottery, bone, and occasionally human remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m<sup>2</sup> in extent, should be reported to an archaeologist.

### **Fossil bone**

Fossil bones or any other concentrations of bones, whether fossilized or not, should be reported.

### **Stone artefacts**

These are difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally should be reported. If the stone tools are associated with bone remains, development should be halted immediately, and archaeologists notified.

### **Stone features and platforms**

These occur in different forms and sizes, but easily identifiable. The most common are an accumulation of roughly circular fire cracked stones tightly spaced and filled in with charcoal and marine shell. They are usually 1-2 meters in diameter and may represent cooking platforms for shellfish. Others may resemble circular single row cobble stone markers. These occur in different sizes and may be the remains of wind breaks or cooking shelters.

### **Historical artefacts or features**

These are easy to identify and include foundations of buildings or other construction features and items from domestic and military activities.

### **Rock art**

Rock art is defined as: “being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation” (Section 2 (ii)(a) of the National Heritage Resources Act, No. 25 of 1999).

## **APPENDIX C: HERITAGE GRADING OF SITES**

(in terms of section 38 (3)(b) of the South African National Heritage Resources Act, No. 25 of 1999).

National: This site is considered to be of Field Rating/Grade I significance and should be nominated as such (mention should be made of any relevant international ranking);

Provincial: This site is considered to be of Field Rating/Grade II significance and should be nominated as such;

Local: This site is of Field Rating/Grade IIIA significance. The site should be retained as a heritage register site (High significance) and so mitigation as part of the development process is not advised.

Local: This site is of Field Rating/Grade IIIB significance. It could be mitigated and (part) retained as a heritage register site (High significance);

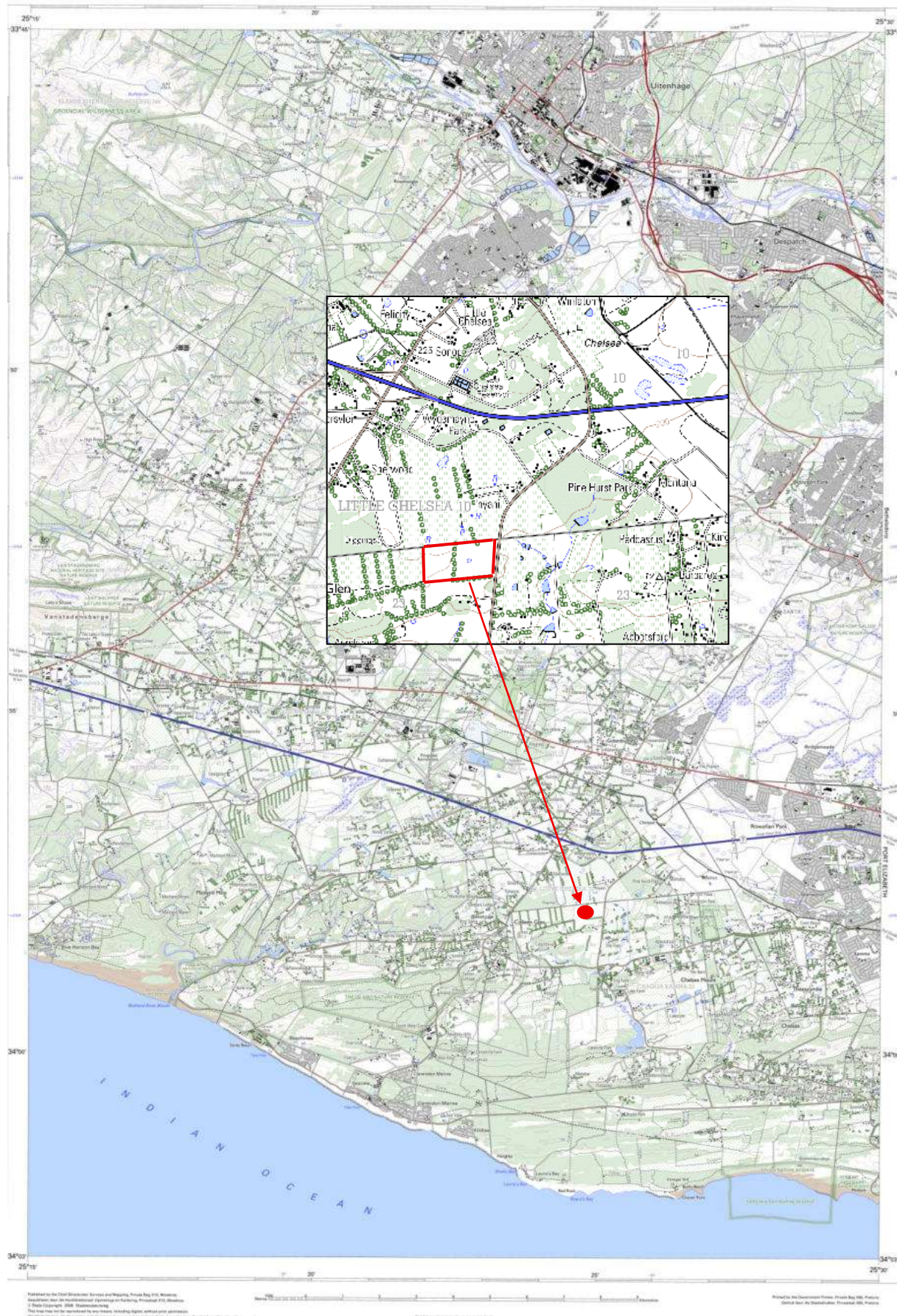
Generally Protected A (Field Rating IV A): This site should be mitigated before destruction (generally High/Medium significance);

Generally Protected B (Field Rating IV B): This site should be recorded before destruction (generally Medium significance);

Generally Protected C (Field Rating IV C): This site has been sufficiently recorded (in the Phase 1). It requires no further recording before destruction (generally Low significance).

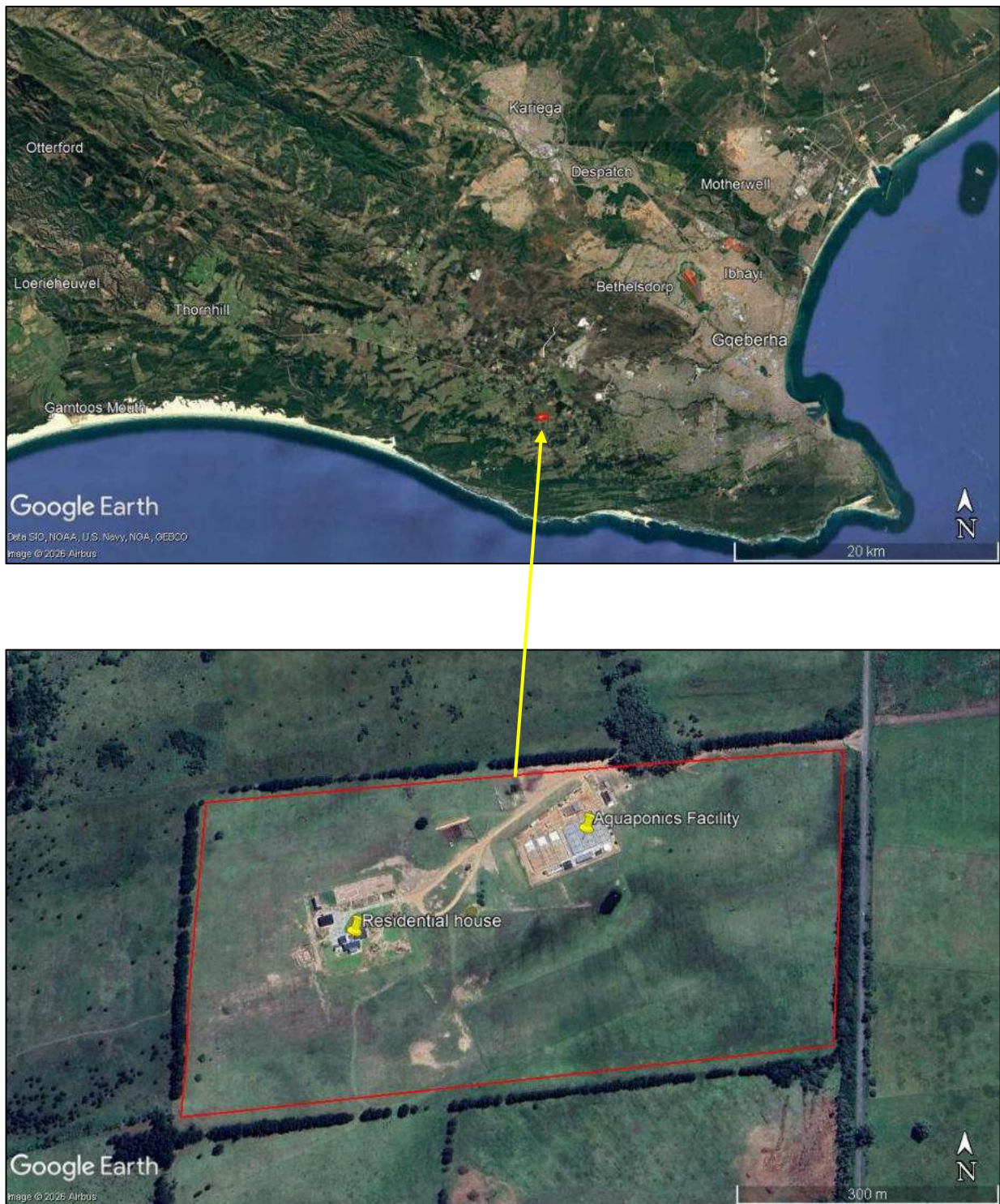


3325CD &amp; 3425AB Uitenhage

1:50 000 SOUTH AFRICA  
SUID-AFRIKA

**Map 1. 1:50 000 Topographic maps indicating the approximate location of the area affected by the activities on Portion 217 of the Farm Cragga Kamma No. 23 in Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape Province (indicated with the red arrow).**



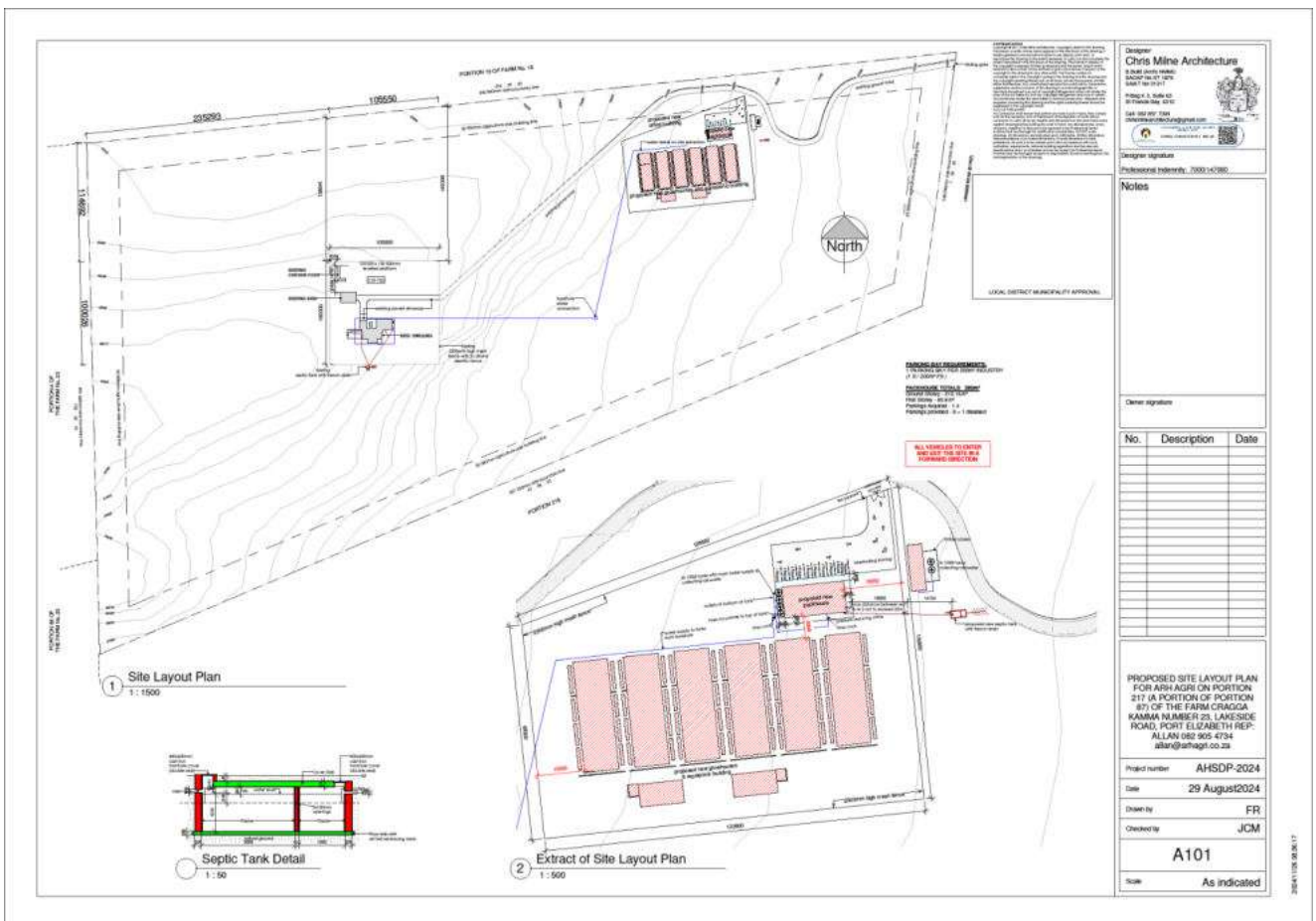


**Map 2. Aerial views of the general location of area affected by the development of a residential house and associated buildings as well as an aquaponics facility with associated infrastructure on Portion 271 ( a portion of Portion 87) of the Farm Cragga Kamma No. 23 in Gqeberha (Port Elizabeth), Eastern Cape Province (indicated with the yellow arrow). The property boundaries are outlined in red.**





**Map 3. Aerial view of the area affected by the activities with survey tracks indicated in yellow.**



**Map 4. Layout plan of the residential house and aquaponics facility on Portion 217 of the Farm Cragga Kamma No. 23 in Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape Province (Map courtesy of Chris Milne Architecture).**



2022



2023



2024



2025

**Map 5. Historic overview of the site from 2022 to 2025**



**Annexure D: Cultural Landscape Assessment as Part of a NEMA Section 24 (G) Application for the Unlawful Commencement of a Residential House and Aquaponics Facility on Portion 217 (A Portion of Portion 87) of the Farm Cragga Kamma No. 23, Lakeside Road, Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape Province.**



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Date: May 2026



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## Executive Summary

This Cultural Landscape Assessment (CLA) report has been prepared on behalf of Eastern Cape Heritage Consultants cc to accompany an Archaeological Impact Assessment (AIA) as part of a NEMA Section 24(G) application for the unlawful commencement of a residential house and aquaponics facility on Portion 217 (a portion of Portion 87) of the farm Cragga Kamma No 23, Lakeside Road, Gqeberha (Port Elizabeth), Nelson Mandela Bay Municipality, Eastern Cape Province.

### *Pre-colonial Archaeological Heritage*

Pre-colonial archaeological heritage identified within the boundaries of a study area during a field survey is described and assessed by the archaeologist in the AIA report. Eastern Cape Heritage Consultants cc reported no archaeological finds during the field survey (Reichert 2026, pers. comm.).

### *Built Heritage*

At present, the year 1966 serves as the *terminus post quem* for extant built structures and ruins protected under Section 34 of the National Heritage Resources Act (NHRA). Eastern Cape Heritage Consultants cc reported no historical built structures or ruins within the boundaries of the study area during the field survey (Reichert 2026, pers. comm.). The Cultural Landscape Assessment (CLA) desktop study corroborated these findings.

It should be noted, however, that subsurface features, such as buried foundations, may be present within undeveloped sections of the study area and could be exposed during future development activities. The property owner is therefore advised to familiarise themselves with the provisions of the NHRA and to comply with any requirements or directives issued by the Eastern Cape Provincial Heritage Resources Authority (ECPHRA).

### *Cemeteries and Graves*

In terms of Section 36 of the NHRA, cemeteries and graves older than 60 years are protected heritage resources. No cemeteries or graves were identified within the boundaries of the study area during the field survey or CLA desk top study.

It should be noted however that in the Eastern Cape, unmarked graves are relatively common, especially within coastal terrestrial zones and on the outskirts of settlements. These may also be exposed during future development activities. The property owner is again advised to familiarise themselves with the provisions of the NHRA and to comply with any requirements or directives issued by ECPHRA.

### *Cultural Landscape*

Within the study area, heritage significance is primarily associated with past agricultural land use, as evidenced by features such as field furrows and an earthen-walled dam. The CLA desktop study confirms that, aside from these features, no man-made structures (such as buildings) were present within the boundaries of the study area between 1939 and the present.

Portion 217 can therefore be described as having a cultural landscape of limited significance prior to recent development, and as such, the developments undertaken on the property have had a limited impact. The introduced infrastructure is consistent with the region's long-standing agricultural character and does not represent a significant departure from established patterns of rural activity. The scale, form, and function of the development align with the existing landscape,

resulting in minimal visual and contextual disruption. Accordingly, the integrity of the broader cultural landscape remains largely intact.

As such, the impact of the development on the cultural landscape is considered to be of **low significance**, and the site is appropriately assigned a **Grade III C cultural landscape rating**.

### *Intangible Heritage*

The CLA desktop study identified no significant intangible heritage resources directly associated with Portion 217. The study area is largely devoid of natural features that could be associated with intangible heritage value. As such, Portion 217 does not appear to hold specific symbolic, spiritual, or social significance within current living traditions. Historically, land use has been predominantly agricultural, and the introduction of infrastructure in 2023 represents a continuation of this established land-use tradition.

Accordingly, the overall intangible heritage significance of the study area is considered to be of **low local significance** and is appropriately assigned a **Grade III C intangible heritage rating**.

### *Legislative and Policy Framework*

Section 24G of the National Environmental Management Act (NEMA) provides a mechanism for the retrospective environmental authorisation of activities that have been unlawfully commenced or completed without the required prior approval (Republic of South Africa 1998). In terms of this provision, an applicant may submit a Section 24(G) application to the competent authority, which evaluates the environmental impacts of the activity and determines whether it may be authorised, subject to conditions (DEA 2014). The process typically requires the submission of specialist studies, including heritage assessments, and is accompanied by the payment of an administrative fine (Republic of South Africa 1998; DEA 2014). Importantly, Section 24(G) does not condone non-compliance but instead functions as a corrective regulatory mechanism to regularise unlawful activities and ensure that appropriate mitigation, rehabilitation, and management measures are implemented.

While the NHRA provides the primary legal framework for the identification, protection, and management of heritage resources in South Africa, The South African Heritage Resources Agency (SAHRA) is the national authority established in terms of the Act to implement and enforce this framework. The Eastern Cape Provincial Heritage Resources Authority (ECPHRA) fulfils this role at a provincial level within the Eastern Cape Province. The inclusion of a Cultural Landscape and Intangible (living) Heritage Assessment in AIA projects is a SAHRA requirement and forms an integral component of heritage management (ECPHRA 2025).

This CLA has been compiled in accordance with the applicable legislation, regulations, and guidelines administered by these authorities. In addition, relevant international heritage charters and guidelines were considered during the preparation of this assessment, ensuring alignment with recognized best practice in cultural landscape management.

## **Introduction**

The purpose of this CLA is to provide a comprehensive analysis of both historical and extant built heritage resources associated with Portion 217, and to evaluate the impacts that a recent development may have had on the cultural landscape and any associated intangible heritage.

The assessment incorporates a historical overview of the broader region to establish the contextual framework necessary for interpreting the historical processes that have shaped the present-day cultural landscape of Portion 217.

Any built heritage resources identified during the AIA and CLA are documented, described, and assessed in this report. To ensure a thorough investigation, historical maps, aerial photographs and satellite imagery are also analyzed to identify evidence of past land use and any built structures that may have existed within the boundaries of the study area but are no longer extant.

Relevant intangible (living) heritage associated with Portion 217 and the surrounding landscape is identified and considered where applicable.

## **Terms of Reference**

The terms of reference for this report are to:

- Provide a comprehensive historical overview of the greater Kragga Kamma region to establish the contextual framework necessary for interpreting the historical processes and cultural features that have shaped the present-day landscape of Portion 217.
- Assess the history, character, and heritage significance of any structures identified within the boundaries of the study area during the AIA undertaken by Eastern Cape Heritage Consultants CC.
- Determine the presence and potential significance of built heritage or historical land uses through the consultation of historical maps, sequential aerial photographs and satellite imagery.
- Describe and assess the cultural landscape associated with the study area, including spatial organization, historical land-use patterns, and landscape character.
- Identify and evaluate any intangible heritage associated with the study area and the broader Kragga Kamma region.
- Assess the overall heritage significance of all historical-period resources, both tangible and intangible.
- Assess the potential impact the development may have had on the surrounding cultural landscape.
- Provide heritage management recommendations and mitigation measures to ensure that decision-makers and project planners are equipped with a scientifically rigorous and legislatively grounded assessment of heritage resources, thereby supporting responsible development planning, appropriate mitigation measures, and compliance with the NHRA and related heritage legislation.

## **Nature of the Application**

Digital Soils Africa, on behalf of ARH AGRI, intends to submit a Section 24G application in terms of the National Environmental Management Act (NEMA) for the retrospective environmental authorisation of development activities undertaken on Portion 217 between 2023 and the present. Eastern Cape Heritage Consultants CC was commissioned by Digital Soils Africa to undertake an AIA and CLA in support of this application.

## **Definitions**

*Cultural Heritage Resources:* As defined by the NHRA, these include archaeological sites, built structures, graves, cultural landscapes, and intangible heritage that are of cultural, historical, social, or scientific significance.

*Built Heritage:* Extant structures and ruins older than 60 years, including farmsteads, outbuildings, irrigation features, and other anthropogenic constructions.

*Intangible Heritage:* Non-physical aspects of heritage, such as oral histories, traditions,

practices, rituals, knowledge systems, and cultural expressions that contribute to community identity and continuity.

*Cultural Landscapes:* Areas shaped through the interaction of humans and natural processes, reflecting historical land use, settlement patterns, agriculture, industry, and other spatial and social dynamics.

*Section 24(G) application:* A retrospective application under the National Environmental Management Act for the authorisation of listed activities that were unlawfully commenced without prior environmental approval.

## **Abbreviations**

**CLA-** Cultural Landscape Assessment

**AIA-** Archaeological Impact Assessment

**NHRA-** National Heritage Resources Act

**NEMA-** National Environmental Management Act

**SAHRA-** South African Heritage Resources Agency

**ECPHRA-** Eastern Cape Provincial Heritage Resources Authority

## **Approach**

The assessment of the study area followed a multi-tiered approach to ensure comprehensive identification and evaluation of historical-period heritage resources:

*Field Survey:* A field survey was conducted by Eastern Cape Heritage Consultants CC to document above-ground archaeological material, built heritage, graves, and other tangible heritage resources within the study area.

*Desk-based Assessment:* Historical maps, satellite images, aerial photographs, and archival records were reviewed to aid in identifying and dating built structures, past land use and cultural landscape patterns.

*Intangible Heritage Assessment:* Literature was assessed to identify any relevant intangible heritage linked to the study area and surrounding region.

*Synthesis and Analysis:* The findings from the AIA and CLA were integrated to evaluate heritage significance, continuity, and potential impacts the development may have incurred.

*Recommendations:* Where heritage resources are identified or potentially impacted, mitigation and management measures are proposed in accordance with NHRA and SAHRA guidelines, and best-practice heritage management principles. This combined methodology ensures that built, tangible and intangible heritage is recognized and appropriately considered in planning and development decisions.

## **Methodology**

### *Visual Sources:*

#### *Google Earth*

The study area was mapped using Google Earth and submitted to Eastern Cape Heritage Consultants CC to aid the AIA and CLA (Fig. 3). Historical Google Earth satellite imagery was consulted as a supplementary visual dataset to assess post-2004 landscape transformation and



land use patterns within the study area.

### *Historical Maps*

Available historical cartographic sources did not yield information of relevance to the study area itself as those identified were small-scale maps.

### *Historical Photographs*

The CDNGI Geospatial Portal preserves a series of historical aerial photographs of the study area dating from 1939 to 1996. These photographs were systematically examined to assess patterns of land use change over time and to identify and date any built heritage resources or other culturally significant features within the study area. The analysis provides a comprehensive understanding of both the historical and contemporary landscape context of the site. Structures that do not appear on aerial imagery dating to 1966 or earlier can reasonably be considered to have been constructed after that date. As such, they are less than 60 years old and therefore do not meet the age threshold for automatic protection in terms of Section 34 of the NHRA, unless specific heritage significance can otherwise be demonstrated.

### *Field Photographs*

During a field survey, extant structures and ruins are systematically recorded and photographed by the archaeologist. Photographic records provide an important visual dataset for evaluating the heritage significance of these features, assessing potential impacts, and guiding the formulation of appropriate mitigation or conservation measures, where required.

### *Mitigation Guidelines*

When built heritage resources are identified, they are assessed and graded using a four-tier significance rating system (Table 1), in accordance with Section 38 of the NHRA. The cultural landscape and intangible heritage associated with the study area were assessed and graded using the same matrix. Pre-colonial heritage resources are assessed and graded separately in the AIA report.

*Table 1. Four-Tier Heritage Significance Grading Grid.*

| <b>Grade</b>    | <b>Level of Significance</b> | <b>Description</b>                                                                                                                                              | <b>Recommended Management</b>                                                                                       |
|-----------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <i>Grade I</i>  | National Significance        | Heritage resources with exceptional value to the nation as a whole. These resources have outstanding historical, scientific, aesthetic, or social significance. | Should be formally declared as National Heritage Sites and protected at the highest level. Managed by SAHRA.        |
| <i>Grade II</i> | Provincial Significance      | Heritage resources of particular importance within a province or region. They contribute significantly to provincial heritage                                   | Should be protected as Provincial Heritage Sites and managed by the Provincial Heritage Resources Authority (PHRA). |

|                   |                                                  |                                                                                                                                                                              |                                                                                               |
|-------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|                   |                                                  | and identity.                                                                                                                                                                |                                                                                               |
| <i>Grade IIIa</i> | High Local Significance                          | Heritage resources of high significance within a local context (town, district, or cultural landscape). They should be retained and conserved where possible.                | Conservation recommended. Development should avoid or minimise impacts.                       |
| <i>Grade IIIb</i> | Medium Local Significance                        | Heritage resources of moderate local significance that contribute to the character or history of an area. Alteration may be acceptable if the resource is properly recorded. | Detailed recording and mitigation required prior to alteration or development.                |
| <i>Grade IIIc</i> | Low Local Significance                           | Heritage resources of low heritage significance but still of some heritage interest.                                                                                         | Basic recording recommended prior to development.                                             |
| <i>Grade IVa</i>  | Generally Protected A (High/Medium Significance) | Heritage resources of significance that do not warrant formal conservation but should be adequately recorded before disturbance.                                             | Site should be mitigated (e.g., excavation, sampling, or documentation) prior to destruction. |
| <i>Grade IVb</i>  | Generally Protected B (Medium Significance)      | Heritage resources of moderate significance where mitigation through limited recording is considered sufficient.                                                             | Site should be recorded and mitigated prior to destruction.                                   |
| <i>Grade IVc</i>  | Generally Protected C (Low Significance)         | Heritage resources with little contextual or research value once identified and recorded.                                                                                    | Site has been sufficiently recorded. No further mitigation required prior to destruction.     |

## History of the Kragga Kamma Region

The following broad historical overview of the Kragga Kamma region provides context for understanding the cultural landscape of the greater region and for interpreting the historical processes that have shaped the present-day setting of Portion 217.

### *Geography*

Historically, Kragga Kamma referred to a broad area extending between the Van Stadens and Baakens river systems, however, the name is now applied to a much smaller portion of this landscape which McClelland (2019) defines as lying between Surrey Hills and Kabega. Kragga Kamma can also be described as being situated between the N2 to the north and the coastline to the south, with the western suburbs of Gqeberha (Port Elizabeth) forming its eastern boundary, and the settlements of Seaview and Colleen Glen defining its western extent.

Characterised by a relatively high rainfall regime, the landscape is notably green and comprises a mosaic of bushveld, indigenous forest patches, agricultural land, and incised valleys (SA-Venues.com). A notable natural feature of the landscape is the Kragga Kamma endorheic lake (a lake with no outflow) located at Lake Farm, which appears to have been considerably larger in extent during the 1940s, as evidenced by historical photographs. Environmental changes in the late twentieth century, including drought and water abstraction, significantly affected the extent of the lake, although periodic flooding events in the early 21st century demonstrate its continued hydrological variability (Harradine 2014).

### *Pre-colonial Period*

The indigenous inhabitants of the Kragga Kamma region were Khoesan groups (Fig. 1), likely associated with the Gonoqua/Gonaqua and Damaqua/Damasqua, who occupied the greater region into colonial times (Peires 2023; Rawson 2017). The name's earliest recorded form, *//Kraxa-kamma*, is thought to derive from the Khoi terms *//kara* (pebbles in a river) and *//gami* (water), possibly referring to freshwater sources in contrast to nearby salt pans. The presence of reliable water in the area made it a significant landscape feature in an otherwise water-scarce region (McClelland 2019). Harradine (2014) suggests that the Khoe name may have historically referred directly to the endorheic lake noted earlier, and in time, was adopted to refer to the region as a whole.

Little is known about the archaeology of the immediate study area due to the lack of systematic research. The earliest evidence of human occupation in the broader region is associated with the Earlier Stone Age (ESA), represented by large stone tools such as handaxes and cleavers, dating from approximately one million to 250,000 years ago. These were followed by Middle Stone Age (MSA) flake and blade industries (c. 200,000–30,000 years ago), with sites occurring widely across the region, although preservation is generally limited. The majority of archaeological evidence dates to the last 10,000 years (Later Stone Age), associated with San hunter-gatherers and Khoi pastoralists. These sites are typically ephemeral and difficult to detect, often consisting of scattered stone tools and faunal remains (Binneman 2010).

More substantial evidence occurs in nearby mountain ranges, where rock shelters contain archaeological deposits and rock art. Along the coast, shell middens dating to the past 6,000 years represent repeated occupation by hunter-gatherer and pastoralist groups, often containing cultural material, faunal remains, and occasional human burials (Binneman 2010).

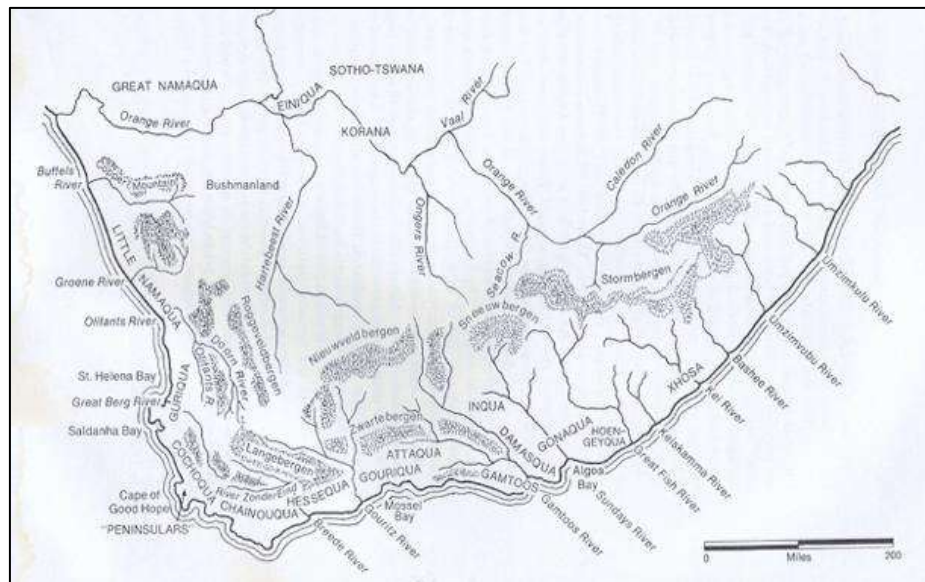


Figure 1: Approximate location of Khoekhoe groups before European contact (Rawson 2017)

### Colonial Period

One of the first European explorers to traverse the region was August Friedrich Beutler, who led the first official exploration of the Eastern Cape in 1752 under the orders of the Cape Governor, Ryk Tulbagh. While passing through Kragga Kamma, Beutler's party encountered two stranded sailors from the French sloop *La Necessaire*, which, together with other vessels from Mauritius, had been surveying the south-eastern coastline. The vessel had anchored in Algoa Bay, and a boat was dispatched ashore to obtain fresh water. During the landing, the boat capsized, and an approaching storm forced the sloop to abandon the men ashore. Realising their predicament, the stranded sailors set out on foot for Cape Town, a journey of approximately 748 km (McClelland 2019).

During the eighteenth century, the area was broadly referred to as Kragga Kamma. Early travellers consistently described the landscape as well-watered and ecologically rich, with abundant game, particularly large herds of buffalo. Accounts by explorers such as August Friedrich Beutler (1752), Carl Peter Thunberg (1773), Anders Sparrman (1775), and John Barrow (1797) attest to the environmental richness of the region and its importance as a waypoint along routes between the Gamtoos River and Algoa Bay (McClelland 2019).

By the late eighteenth century, early European occupation had begun to take shape. Sparrman (1775) records the presence of Dutch settlers, including the Potgieter and Botha families, while later sources indicate that farms such as those of Cornelius Kok at Kragga Kamma and Adolf Landman and Theunis Botha at Buffelsfontein were established by circa 1790. These early farms formed part of a frontier landscape characterised by intermittent conflict and instability. The Kragga Kamma area was directly affected by frontier conflict, including incursions during the Frontier Wars, notably in 1799 and again in 1846 (the War of the Axe). Contemporary accounts describe widespread destruction of farms, displacement of settlers, and significant economic losses, underscoring the volatile nature of the frontier environment (McClelland 2019).

In the nineteenth century, land ownership became more formalised. In 1843, the farm Kragga Kamma was subdivided, with the majority portion transferred to William Titterton and the remainder to John Owen Smith. The exact date of construction of the main homestead is uncertain; however, it is likely that a substantial structure was erected between approximately 1843 and 1870, replacing earlier, more rudimentary buildings (McClelland 2019).

Following Titterton's death in 1870 and the subsequent death of his son in 1881, the property was consolidated under Henry Bailey Christian, who played a prominent role in local agricultural and commercial development. During the Second Anglo-Boer War, portions of the farm were utilised by the British military as a remount station, reflecting its continued strategic and logistical importance (McClelland 2019).

The property remained in the Christian family until 1932, when it was acquired by Charles Clark. By the early twentieth century, Kragga Kamma had developed into a productive agricultural enterprise, including dairy operations, and retained a number of substantial built structures, some of which had earlier functioned as hospitality venues (McClelland 2019).

Additional historical features in the broader Kragga Kamma area include religious and educational structures, such as a church constructed in 1877 on land donated by the Flanagan family at Goedmoedsfontein. This building was later repurposed as a school and subsequently as a storage facility before being destroyed by fire in the mid-twentieth century (McClelland 2019).

### *Kragga Kamma Farm*

The farm Kragga Kamma/Cragga Kamma, which Portion 217 once formed part of, had been established by Cornelius Kok by circa 1790. During the nineteenth century, ownership of the farm became increasingly consolidated and structured. By 1816, the farm had been formally surveyed and granted under the quitrent system, marking the transition to more formalised land tenure. In 1843, Kragga Kamma was subdivided, with portions transferred to William Titterton and John Owen Smith. Although the precise date of construction of the main homestead remains uncertain, it is likely that a substantial stone-built dwelling was erected between the mid-nineteenth century and the 1870s, replacing earlier, more rudimentary structures (Harradine 2014).

Following the death of William Titterton in 1870 and his son in 1881, the property was acquired in full by Henry Bailey Christian, under whose ownership the farm developed into a productive agricultural enterprise. By the late nineteenth century, the property included multiple homesteads, cultivated lands, and pastoral areas, and was described as a highly productive and well-resourced farm. During the Second Anglo-Boer War, portions of the farm were utilised by the British military as a remount station, where horses and mules were rested after sea voyages before deployment inland. This reflects the continued logistical importance of the property within the regional landscape (Harradine 2014).

In the early 20th century, Kragga Kamma farm remained an active agricultural enterprise, producing a range of crops and livestock. By 1932, following the death of Owen Smith Christian, the farm was subdivided and sold in multiple lots, marking a significant shift in land ownership and use. Subsequent developments included the establishment of recreational facilities such as the Lake Farm Hotel and later tourism-related activities associated with the landscape (Harradine 2014).



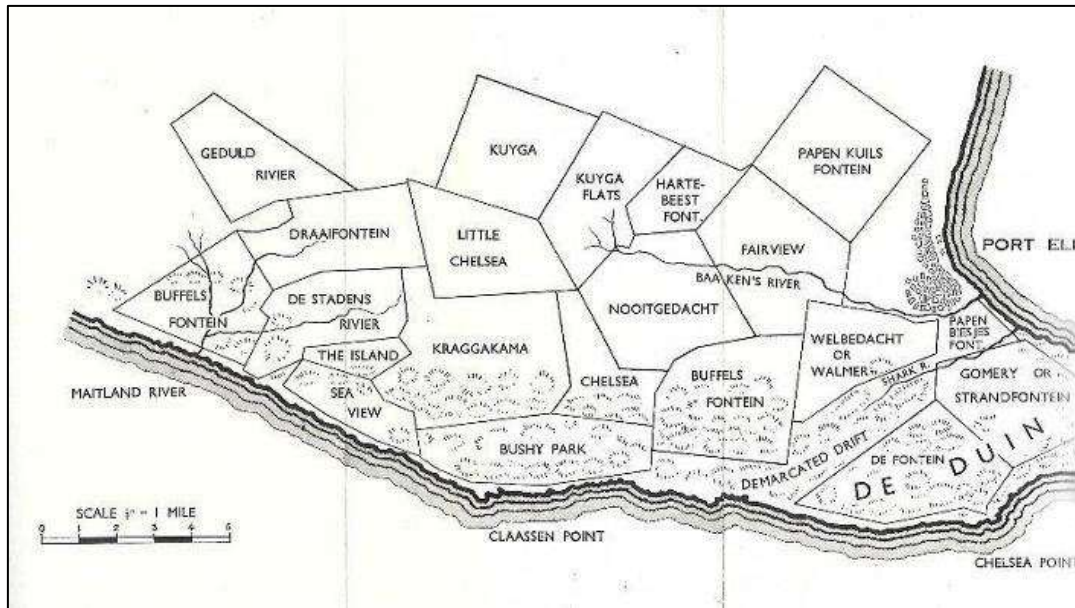


Figure 2: Early farms west of Gqeberha (Port Elizabeth). Kragga Kamma is separated from Claassen Point by Bushy Park (McClelland 2024).

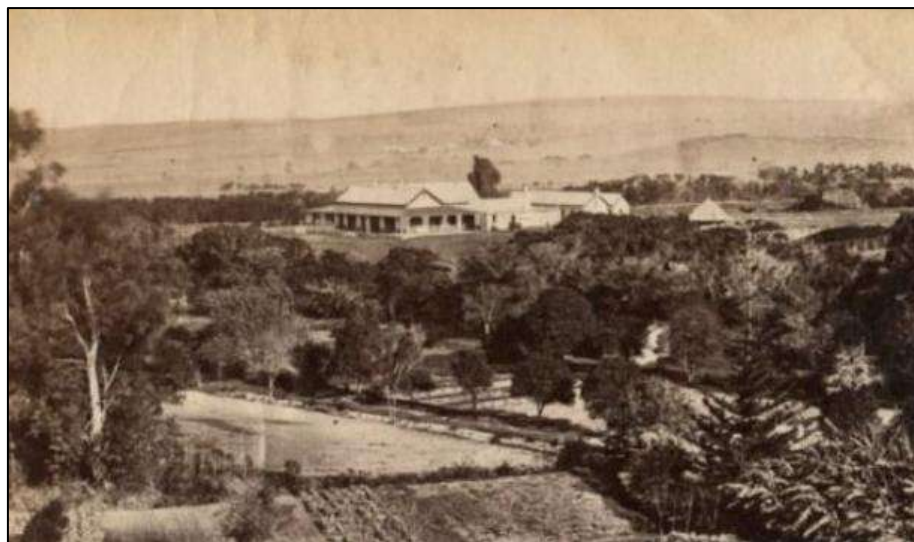


Figure 3: The Kragga Kamma farmstead in the late 19<sup>th</sup> century (McClelland 2019)

## Portion 217

### Description

The study area (Portion 217) comprises a trapezium-shaped parcel measuring approximately 29.95 ha in extent (Fig. 4). The approximate central coordinates of the site are 33°57'54.96"S, 25°24'51.80"E. Portion 217 is located approximately 6.6 km inland from Kini Bay and approximately 1.35 km south of the National Route N2. The nearest settlement is Colleen Glen which lies less than 2km to the west. The property is bordered by agricultural land to the north, south, and west, and by Lakeside Road to the east, from which access to the site is obtained. Portion 217 is mostly void of tall vegetation except for rows of trees which line the perimeter.



*Figure 4: Portion 217*

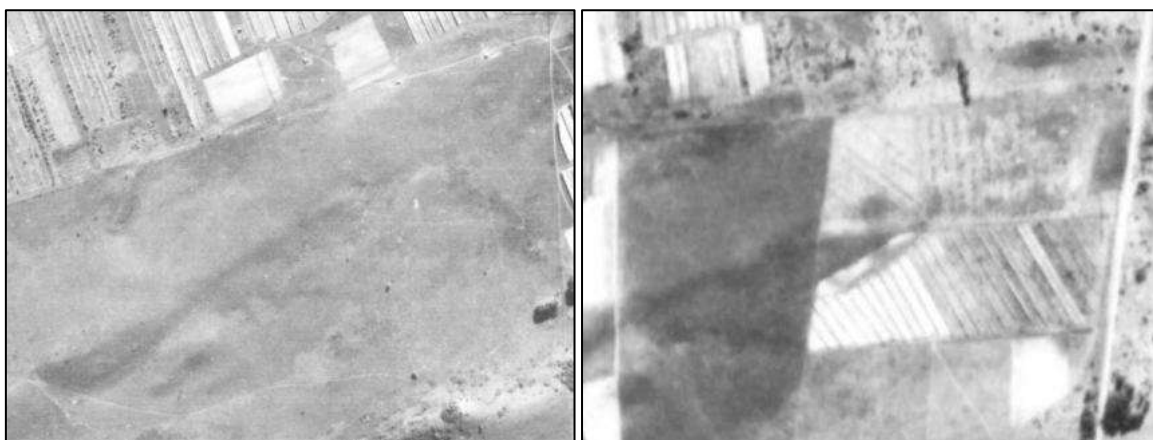
### *Built Environment*

Built structures within Portion 217 include a residential dwelling, shed, garden, reservoir, fencing, livestock pen, composting area, aquaponics facility with an associated fish farm, office space, warehouse, and workers' quarters. These features were constructed over an approximate two-year period commencing in 2023 (Digital Soils Africa 2026). Satellite imagery shows the earthen walled dam has been present since at least 2004.

### *Landscape History*

The CDNGI Geospatial Portal preserves historical aerial imagery of the study area from 1939 to 1996 while satellite imagery covers the period between 2004 and the present. A description of the historical landscape is provided below.

In 1939, the study area appears to have been covered predominantly by natural vegetation (Fig. 5). The presence of footpaths traversing the site suggests that the land was likely used for livestock grazing at the time. No built structures are visible within the boundaries of the site. By 1958, evidence of agricultural activity is evident in the eastern portion of the study area, in the form of ploughed fields, and Lakeside Road had been established (Fig. 6).



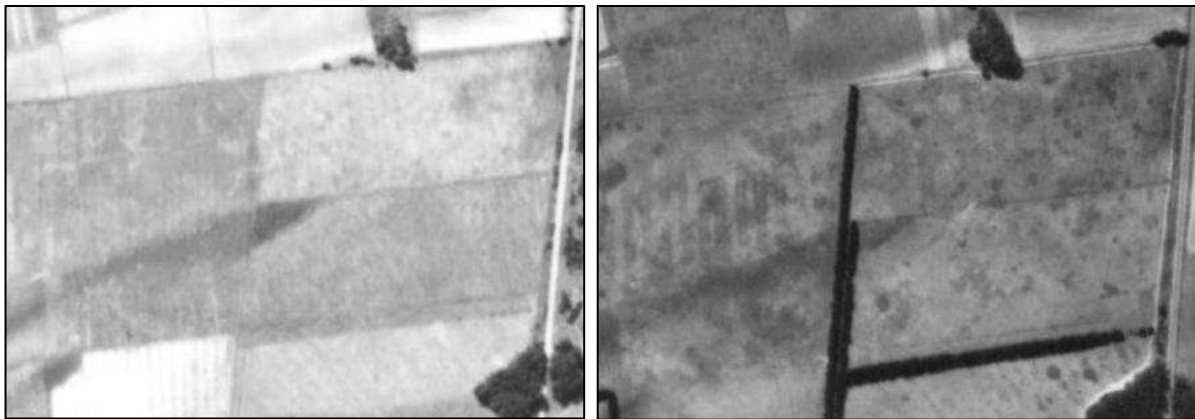
*Figures 5 & 6: The study area in 1939 (left) and 1958 (right)*

By 1965, agricultural activity had extended into the western portion of the study area, as evidenced by the presence of ploughed fields (Fig. 7). Land use appears to have remained consistent up to the time the 1969 aerial photograph was taken (Fig. 8). However, agricultural activity may have ceased by this point, as no evidence of continued ploughing is visible in subsequent aerial photographs or satellite imagery.



*Figures 7 & 8: The study area in 1965 (left) and 1969 (right)*

The landscape appears to have remained largely unchanged, as reflected in the 1972 aerial photograph (Fig. 9), with livestock grazing likely continuing on the site from at least 1969. By 1989, a line of trees had been planted, bisecting the study area along a north–south axis (Fig. 10). In addition, the eastern portion of the southern boundary had been planted with trees. Only the eastern portion of the study area is visible in the 1996 aerial photograph; however, no changes in land use are apparent (Fig. 11).



*Figures 9 & 10: The study area in 1972 (left) and 1989 (right)*



*Figure 11: The study area in 1996 (above)*



The earliest available satellite imagery of the study area dates to 2004 and was provided by Google Earth (Fig. 12). The line of trees that previously bisected the site had been removed earlier that year. By 2010, rows of trees had been planted along the full perimeter of Portion 217 (Fig. 13).



*Figures 12 & 13: The study area in 2004 (left) and 2010 (right)*

No discernible changes in land use are evident within the study area between 2015 (Fig. 14) and 2020 (Fig. 15).



*Figures 14 & 15: The study area in 2015 (left) and 2020 (right)*

By 2023, development had commenced within Portion 217 (Fig. 16), marking a significant change in land use. Figure 17 illustrates the study area as it appeared in 2025.



*Figures 16 & 17: The study area in 2023 (left) and 2025 (right)*

## Summary

The study area was predominantly covered by natural vegetation in 1939, with evidence suggesting its use for livestock grazing. By the late 1950s and mid-1960s, the land had been partially converted to agricultural use, with ploughed fields extending across much of the site. This agricultural activity appears to have declined by the late 1960s, after which the landscape remained largely stable and was likely used primarily for grazing.

From the late twentieth century, minor landscape modifications were introduced, including tree planting along boundaries and within the site, followed by their subsequent removal and reconfiguration in the early 2000s. Little change in land use is evident between 2010 and 2020. A significant transformation occurred after 2023, when development commenced within the study area, marking a shift from predominantly rural land use to a more intensively developed landscape.

## Intangible Heritage

Intangible heritage encompasses living cultural practices, traditions, belief systems, indigenous knowledge systems, oral histories, ritual activities, and social practices that are associated with specific places, landscapes, or communities. In terms of the NHRA, the national estate includes places to which oral traditions are attached or that are associated with living heritage, thereby recognising the importance of non-material cultural expressions embedded within the landscape. Intangible heritage is often spatially anchored to natural features that serve as focal points for ritual practice, resource gathering, spiritual observance, or the transmission of traditional knowledge (Darvill 2008; Johnson 2010).

For reference, natural features frequently associated with intangible heritage resources within the broader Eastern Cape context are outlined in the table below:

| Table 2: Natural Features Associated with Intangible/Living Heritage |                                                                                                            |                                                                                                                                                                                                                                          |                                                                                                                                            |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Site                                                                 | Location                                                                                                   | Description                                                                                                                                                                                                                              | Image                                                                                                                                      |
| <b>Kragga Kamma Lake</b>                                             | Within the Kragga Kamma region                                                                             | The Khoe name <i>Kragga Kamma</i> is understood to refer to the endorheic lake in the region. It has long served as a prominent landmark within the landscape and is of considerable intangible significance to locals (Harradine 2014). |  <p><i>The Kragga Kamma Lake (McClelland 2019)</i></p> |
| <b>Sacred pools</b>                                                  | Sacred pools are recognised and revered by both Khoesan and amaXhosa communities. These features typically | Sacred pools that are most frequently visited tend to occur near roads and bridges, where access is easier. Traditional                                                                                                                  |                                                                                                                                            |



|                                |                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                | occur along rivers and streams, often at bends where the water is deeper and perennial. Such locations are widely recognised and visited throughout the Eastern Cape wherever Khoesan and amaXhosa communities are present, and are commonly associated with ritual practices, ancestral communication, and spiritual observance (Coehoorn 2009).                                   | ceremonies are often conducted on their banks by diviners, and material evidence of ritual activity—such as clay vessels and other offerings—is sometimes left in situ. These sites are commonly associated with ancestral presence and various supernatural entities, reflecting their ongoing spiritual significance within local belief systems.                                                                                                   |  <p><i>Nongqawuse's pool on the Gxara River, northeast of the Kei River mouth. There are many interesting myths and legends surrounding the pool (Peires 1989).</i></p>                                 |
| <b>Caves and rock shelters</b> | In the Eastern Cape, coastal caves and rock shelters commonly occur in seaside cliffs and in krantzes along rivers and streams. Those situated near rural settlements are often used for spiritual and ritual activities, particularly in relation to ancestral practices and traditional belief systems.                                                                           | Caves and rock shelters located near water sources are particularly significant for ritual use. They are regarded as “cool” spaces, a metaphor for positive spiritual energy associated with health and well-being (Sobuwa 2022). Material evidence of ritual activity, including offerings, is sometimes left in situ. Other sites are also recognised for their rich archaeological deposits, reflecting long-term patterns of human occupation.    |  <p><i>The Klasies River Cave Complex is located about 40km northwest of Cape St Francis. The site is archaeologically significant and is a National Heritage Site (Deacon &amp; Deacon 2003).</i></p> |
| <b>Stone built structures</b>  | Although not strictly natural features, various stone-built structures occur throughout the Eastern Cape Province. Some may be attributed to Khoesan groups, while others are associated with Iron Age communities. Stone built structures associated with the Later Stone Age are relatively common along the coast where shifting dunes occasionally expose them (Binneman 2001). | These occur in various forms and sizes but are generally easy to identify in the landscape. They consist of stone piles of varying sizes (known as <i>isisivane</i> in isiXhosa) and are typically found near river crossings and mountain passes. Some are considered sacred to local communities. While their exact purpose is unclear, some may be burial cairns and others may have held symbolic or ritual significance (Binneman & Booth 2009). |  <p><i>A stone feature in the Goedeloof dune field at Cape St Francis (Binneman 2001).</i></p>                                                                                                        |

|                             |                                                                                                        |                                                                                                                                                        |                                                                                                                                                                      |
|-----------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Geological landmarks</b> | Hills are noticeable features in the landscape and are oftentimes associated with intangible heritage. | A hill on Lake Farm in the Kragga Kamma region features three historic memorial stones, two dedicated to individuals who drowned in Kragga Kamma lake. |  <p><i>Memorial stones on a hill near Kragga Kamma lake (McClelland 2023).</i></p> |
|-----------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### *Intangible Heritage Associated with the Study Area*

The CLA desktop study identified no significant intangible heritage resources directly associated with Portion 217. The study area is void of significant natural features and does not appear to hold specific symbolic, spiritual, or social significance within current living traditions. Historically, land use has been predominantly agricultural, as evidenced by the remains of ploughed fields and an earthen-walled dam. The introduction of infrastructure in 2023 represents a continuation of this established land-use tradition.

Accordingly, the overall intangible heritage significance of the study area is considered to be of **low local significance** and is appropriately assigned a **Grade IIIC** intangible heritage rating.

### **Cultural Landscape**

The cultural landscape of the Kragga Kamma area is shaped by the interaction of natural features and successive phases of human activity, including pre-colonial occupation, agricultural land use, and residential development. The following section identifies and describes the key landscape components that contribute to the character and heritage significance of the broader area, before assessing the specific significance of the study area within this context.

#### *Prehistoric Cultural Landscape*

The prehistoric cultural landscape of the Kragga Kamma region reflects a long history of hunter-gatherer and later pastoralist occupation closely tied to the availability of natural resources. The presence of a perennial freshwater sources, most notably the endorheic Kragga Kamma lake, would have been a key attractor within an otherwise water-scarce environment, supporting both human settlement and game populations. Archaeological evidence from the broader region indicates intermittent occupation from the Earlier Stone Age through to the Later Stone Age, with more intensive use during the last 10,000 years by San hunter-gatherers and Khoi pastoralists. These groups exploited a diverse range of resources across the coastal, riverine, and inland environments, as reflected in scattered stone tool assemblages, shell middens along the coast, and rock art in nearby mountain shelters (Binneman 2010). Although archaeological visibility within the immediate study area is low, the surrounding landscape formed part of a wider network of seasonal movement, resource exploitation, and cultural activity centred on reliable water sources such as the Kragga Kamma lake.

### *Historical Cultural Landscape*

The colonial-period landscape of the Kragga Kamma region was shaped by the transition from a predominantly natural, resource-rich environment to a structured agricultural frontier. From the late eighteenth century, European settlement introduced stock farming and later mixed agriculture, centred on reliable water sources such as the Kragga Kamma lake. Early farms, including those established by Cornelius Kok and subsequent settlers, formed part of a dispersed rural landscape characterised by grazing lands, cultivated fields, and rudimentary homesteads. This landscape was also shaped by instability and conflict during the Frontier Wars, which periodically disrupted settlement and land use. By the mid-nineteenth century, land tenure became more formalised, and more permanent stone-built structures and farmsteads were established, reflecting increasing agricultural productivity and investment. The landscape continued to evolve into the late nineteenth and early twentieth centuries, with expanded cultivation, multiple homesteads, and supporting infrastructure, as well as temporary military use during the Second Anglo-Boer War. Overall, the colonial landscape reflects a process of agricultural intensification, settlement consolidation, and adaptation to both environmental conditions and frontier dynamics.

### *Contemporary Cultural Landscape*

The contemporary cultural landscape of the Kragga Kamma area reflects a continuation of its long-standing agricultural character, combined with increasing diversification of land use. The broader landscape is characterised by a mosaic of smallholdings, farms, and low-density residential properties interspersed with patches of natural vegetation, including bushveld and forest remnants. Land use remains predominantly rural, with activities such as livestock grazing, small-scale cultivation, and agri-based enterprises forming the primary economic base. However, in recent decades there has been a gradual introduction of alternative uses, including lifestyle estates, tourism-related facilities, and specialised agricultural practices such as aquaponics. Overall, the contemporary landscape reflects a dynamic balance between the persistence of rural character and incremental transformation driven by development and changing economic practices.

Below are examples of cultural landscapes associated with the Kragga Kamma region:

*Table 3: Cultural Landscapes of the Kragga Kamma Region*

| <b>Landscape Type</b>                      | <b>Location</b>     | <b>Description</b>                                                                                   | <b>Image</b>                                                                                             |
|--------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>Semi-Urban Landscape (Colleen Glen)</b> | Kragga Kamma region | Along with Theescombe, Colleen Glen represents a semi-urban landscape within the Kragga Kamma region |  <p>Colleen Glen</p> |

|                                                   |                                |                                                                                                                                               |                                                                                                                                                     |
|---------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Agricultural Landscape</b>                     | Within the Kragga Kamma region | Much of the Kragga Kamma landscape is characterized by both medium and large-scale commercial farming.                                        |  <p><i>A commercial farm</i></p>                                  |
| <b>Coastal Landscape (Kini Bay)</b>               | Within the Kragga Kamma region | The coastal landscape of the Kragga Kamma region is largely unspoilt by development. Kini Bay is a low-impact settlement along this coastline |  <p><i>Kini Bay</i></p>                                          |
| <b>Natural Landscape (Kragga Kamma Game Park)</b> | Within the Kragga Kamma region | The Kragga Kamma Game Park introduces a natural component to the cultural landscape, forming a contrast to agricultural and semi-urban areas. |  <p><i>Kragga Kamma Game Park (The Roaming Taster n.d.)</i></p> |
|                                                   |                                |                                                                                                                                               |                                                                                                                                                     |



|                                      |                     |                                                                                                                                                  |                                                                                                                                                                                                                                     |
|--------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Historical Cultural Landscape</b> | Kragga Kamma region | As outlined in this report, the Kragga Kamma region has a rich historical record, which is reflected in the character of its cultural landscape. | <div>  </div> <div> <i>A Settler Cottage near Cow's Corner (McClelland 2019)</i> </div> |
|--------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### *Cultural Landscape of Portion 217*

The cultural landscape of the study area reflects a long-term pattern of rural land use shaped by the interaction between natural resources and human activity. Historically, the area formed part of a broader agrarian landscape associated with grazing and later cultivation, influenced by the availability of freshwater sources and fertile soils. This agricultural character has persisted into the present, with evidence of past ploughing, boundary planting, and water management features such as earthen dams indicating sustained use and adaptation of the land. More recent developments, including the introduction of agricultural infrastructure and associated facilities, represent a continuation and intensification of these established practices rather than a fundamental change in land-use character. As such, the cultural landscape is defined by continuity, reflecting incremental modification over time within a predominantly rural and agriculturally productive setting.

### *Impact on the Cultural Landscape*

The CLA desktop study supports the conclusion that the recent development undertaken on Portion 217 has had limited cultural impact on both the immediate study area and the surrounding landscape. The introduced infrastructure is consistent with the area's long-standing agricultural land use and does not represent a significant departure from established patterns of local rural activity. The scale, form, and function of the development align with the existing character of the landscape, resulting in minimal visual or contextual disruption. As such, the integrity of the broader cultural landscape remains largely intact.

Accordingly, the impact of the development on the cultural landscape is considered to be of **low significance**, and the site is appropriately assigned a **Grade IIC cultural landscape rating**.

### **Conclusion**

The findings of the CLA indicate that the development on Portion 217 has had a limited impact on the cultural landscape and does not significantly alter its character or heritage value. No significant tangible or intangible heritage resources were identified within the study area. The development is consistent with established agricultural land-use patterns in the area and has not resulted in the loss of heritage significance.

On this basis, the CLA supports the Section 24G application submitted in terms of the National Environmental Management Act, subject to compliance with any recommendations and mitigation measures outlined in the accompanying AIA report.



## References

- Australia ICOMOS. 2013. *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*. Burwood: Australia ICOMOS.
- Binneman, J. 2001. *An Introduction to the Later Stone Age Research Project along the South-Eastern Cape Coast*. Grahamstown: Grocott's Publishers & Printers.
- Binneman, J. 2010. *A Phase 1 Archaeological Heritage Impact Assessment for the Proposed Subdivision of Portion 12 of the Farm Kragga Kamma No. 23, Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province, for the Development of an Agrivillage and the Necessary Services Infrastructure*.
- Binneman, J. & Booth, C. 2009. *A Phase 1 Archaeological Heritage Impact Assessment for the Proposed Subdivision and Rezoning of Erf 8517, Grahamstown, Makana Municipality, Cacadu District Municipality*. Unpublished report.
- Coehoorn, P. 2009. *Cultural Landscape Values in Former Homelands, Eastern Cape, South Africa*. MSc thesis. Wageningen University.
- Deacon, H.J. & Deacon, J. 2003. *Human Beginnings in South Africa: Uncovering the Secrets of the Stone Age*. Cape Town: David Philip Publishers.
- Department of Environmental Affairs (DEA). 2014. *Environmental Impact Assessment Regulations, 2014*. Pretoria: Department of Environmental Affairs.
- Digital Soils Africa. 2026. *Part 1 – Section A: Application Information*.
- Eastern Cape Provincial Heritage Resources Authority (ECPHRA). n.d. *Guidelines for Heritage Impact Assessments*. Bhisho: ECPHRA.
- Eastern Cape Provincial Heritage Resources Authority (ECPHRA). 2025. *Inclusion of a Statement of Assessment of Intangible/Living Heritage and Cultural Landscapes in Phase 1 Heritage Impact Assessment (AIA) Reports*. Bhisho: ECPHRA.
- Harradine, M. 2014. *Addendum: The Farm Kragga Kamma*. The Casual Observer. Available at: [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)
- McClelland, D. 2019. *Port Elizabeth of Yore: Kragga Kamma – Once an Animal Eden*. The Casual Observer. Available at: [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)
- McClelland, D. 2023. *Port Elizabeth of Yore: Lake Farm in Kragga Kamma*. The Casual Observer. Available at: [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)
- Mostert, N. 1993. *Frontiers: The Epic of South Africa's Creation and the Tragedy of the Xhosa People*. Johannesburg: Pimlico.
- Peires, J. 1989. *The Dead Will Arise: Nongqawuse and the Great Xhosa Cattle-Killing Movement of 1856–57*. Johannesburg: Ravan Press.
- Rawson, K. 2017. *Land Rights and Identity: The Establishment of the Leliefontein Mission and Its Impact on the Little Namaqua of the Kamiesberg*. Master's dissertation. University of Cape Town.

Republic of South Africa. 1998. *National Environmental Management Act (Act No. 107 of 1998)*. Pretoria: Government Printer.

SA-Venues. 2026. *About Kragga Kamma*. Available at: [www.sa-venues.com](http://www.sa-venues.com)

South African Heritage Resources Agency (SAHRA). 2012. *Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessments*. Cape Town: SAHRA.

South African Heritage Resources Agency (SAHRA). 2015. *Assessment of Cultural Significance: A South African Guide*. Pretoria: SAHRA.

Sobuwa, Y. 2022. *Seeking the Healing Powers of the Isinuka Springs in Port St Johns*. City Press. Available at: <http://www.news24.com> (Accessed 24 April 2026).

UNESCO. n.d. *What is Intangible Cultural Heritage?* Available at: <https://ich.unesco.org> (Accessed 25 April 2026).

#### *Personal Communication:*

Reichert, K. 2026. Personal communication.

#### *Figure References:*

Cover image: Digitally created by the author.

Figure 1: Rawson, K. 2017. *Land Rights and Identity: The Establishment of the Leliefontein Mission and Its Impact on the Little Namaqua of the Kamiesberg*. Master's dissertation. University of Cape Town.

Figure 2: McClelland, D. 2024. Port Elizabeth of Yore: Land Ownership in the 1820s. [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)

Figure 3: McClelland, D. 2019. Port Elizabeth of Yore: Kragga Kamma-Once an Animal Eden. The Casual Observer. [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)

Figure 4: Google Earth. Image Captured 20/02/25

Figures 5-11: CDNGI Geospatial Portal. Available at: <http://www.cdngiportal.co.za> (Accessed: 7 May 2026).

Figures 12-17: Google Earth (Historic satellite imagery).

Table 2, Images 1: McClelland, D. 2019. Port Elizabeth of Yore: Kragga Kamma-Once an Animal Eden. The Casual Observer. [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)

Table 2, Images 2 & 3: Google Earth

Table 2, Image 4: Binneman, J. 2001. *An introduction to the Later Stone Age research project along the south-eastern Cape coast. Field Archaeology*. Grahamstown: Grocott's Publishers & Printers.

Table 2, Image 5: McClelland, D. 2023. *Port Elizabeth of Yore: Lake Farm in Kragga Kamma*. The Casual Observer. Available at: [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)

Table 3, Images 1, 2 & 3: Google Earth

Table 3, Image 4: The Roaming Taster. N.D. Kragga Kamma Game Park.  
[www.theroamingtaster.com](http://www.theroamingtaster.com)

Table 3, Image 5: McClelland, D. 2019. Port Elizabeth of Yore: Kragga Kamma-Once an Animal Eden. The Casual Observer. [www.thecasualobserver.co.za](http://www.thecasualobserver.co.za)

**DETAILS OF SPECIALIST AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.**

(For official use only)

File Reference Number:

NEAS Reference Number:

Date Received:

Application for environmental authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amendments to the Environmental Impact Assessment Regulations, 2014. This form is valid as of **4 May 2026**.

**PROJECT TITLE**

ARH Agri Aquaponics Facility development on Ptn 217 (a Ptn of Ptn 87) of Farm Cragga Kamma No. 23, Lakeside Rd, Port Elizabeth.

SPECIALIST <sup>1</sup>

Eastern Cape Heritage Consultants cc

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|                     |                                |       |              |
|---------------------|--------------------------------|-------|--------------|
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| E-mail:             | natalie@dsafrica.co.za         |       |              |

#### 4.2 The SPECIALIST

I, **Kobus Reichert**, declare that –

General declaration:

- I act as the independent Specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report; n/a
- I will keep a register of all interested and affected parties that participated in a public participation process n/a; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;



- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence and is punishable in terms of section 24F of the Act.

**Disclosure of Vested Interest** (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Amendments to Environmental Impact Assessment Regulations, 2014 as amended.
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

\_\_\_\_\_

\_\_\_\_\_

*J. du Toit*

Signature of the environmental assessment practitioner:

Eastern Cape Heritage Consultants cc

Name of company:

14 May 2026

Date:

Signature of the Commissioner of Oaths:

*[Signature]* 7005334504

Date:

2026-05-14

SEMOEADY

Designation:

<sup>1</sup> Curriculum Vitae (CV) attached

Official stamp (below).



## **Annexure 1**

### **CV**

#### **Abbreviated Curriculum Vitae 2025**

**NAME** : Kobus Reichert

**DATE OF BIRTH** : 16 September 1967

**ID NUMBER** : 6709165176082

**NATIONALITY** : South African

**AGE** : 58

**BUSINESS ADDRESS** : Eastern Cape Heritage Consultants cc  
Reg. no: 2006/088345/23  
6 Graceland Villas  
Waratah Street, Wavecrest  
Jeffreys Bay  
6330

**POSTAL ADDRESS** : Same as above

**CELLPHONE NO.** : 072 800 6322

**E-MAIL** : [kobusreichert@yahoo.com](mailto:kobusreichert@yahoo.com)

**HOME LANGUAGE** : Afrikaans

**OTHER LANGUAGES** : English

**DRIVING LICENCE** : CODE EB

#### **EDUCATIONAL QUALIFICATIONS**

**SCHOOL** : Hoër Volksskool - Potchefstroom

**STANDARD PASSED** : Matric with full exemption – 1985

### **TERTIARY QUALIFICATIONS**

**UNIVERSITY** : Potchefstroom University (1991)

**DEGREE** : B. Proc

**UNIVERSITY** : UNISA (2015)

**DEGREE** : BA Honours (Archaeology)

### **PREVIOUS POSITIONS**

**NAME OF EMPLOYER** : Department of Correctional Services

**POSITION** : Provincial Head: Legal Services (Eastern Cape)

Resigned from the Department in 1998

**NAME OF EMPLOYER** : Eastern Cape Heritage Consultants cc (Owner)

**POSITION** : Heritage Consultant

Obtained BA (Honours) degree in Archaeology in 2015.

### **CURRENT POSITION**

**OCCUPATION** : Archaeologist (2015 to present)  
Owner: Eastern Cape Heritage Consultants cc  
- Reg no. 2006/088345/23)

**EXPERIENCE:** Eastern Cape Heritage Consultants cc was established in 2006. Dr. Johan Binneman provided specialist archaeological services to the company and I assisted him with fieldwork and conducting Phase 1 Archaeological Impact Assessments (AIA's) from 2006 -2014. After I obtained my Honours degree in Archaeology in 2015, I became the co-author of more than 150 Phase 1 AIA and other archaeological reports until 2021. Since then I have conducted several archaeological assessments in the Eastern Cape in my personal capacity. Dr. Binneman has got 40 years' research experience of the archaeology of the eastern and southern Cape. This includes the fields of Earlier, Middle and Later Stone Age, Iron Age, Rock Art and Historical Archaeology. I have been in the privileged position to have him as a mentor over a period of 16 years and the experience gained during this time equipped me with the necessary skills and knowledge to conduct Phase1 Archaeological Impact Assessments and other archaeological work.

**SELECTED PREVIOUS PROJECTS** : Heritage Impact Assessment for the Baviaanskloof  
Mega Reserve: 2006

- : Phase 1 AIA: Kouga Development Agency Project, Jeffreys Bay, Kouga Municipality: 2007
- : Phase 1 AIA: Sarah Baartman Project, Hankey: 2008
- : Heritage Impact Assessment for the Coega Industrial Development Zone: 2010
- : Phase 1 AIA: Oyster Bay Wind Energy Facility: 2011
- : Phase 1 AIA: Deep River Wind Energy Facility, Kouga Municipality: 2011
- : Phase 1 AIA: Jeffreys Bay Wind Farm , Kouga Municipality: 2012
- : Phase 1 AIA: Cookhouse South Wind Farm, Blue Crane Route Municipality: 2013
- : Archaeological Walkthrough: Msenge Emoyeni Wind Energy Facility, Bedford: 2014
- : Archaeological Walkthrough: 132 kV power line from the Melkhout to Diep Rivier substations, Kouga Municipality: 2015
- : Phase 1 AIA: 132 kV power line for the Golden Valley Wind Farm near Cookhouse, Blue Crane Route Municipality: 2016
- : Archaeological desktop study: Impofu Wind Energy Facility, Kouga Municipality: 2017
- : Archaeological Walkthrough: Expansion of agricultural activities on the Farm Langebos, Sundays River Valley Municipality: 2018
- : Archaeological inspection: Access roads and test pits for the aquaculture and gas to power project in Zone 10 of the Coega Development Corporation (CDC), Nelson Mandela Bay Municipality: 2019
- : Archaeological monitoring: vegetation clearing and construction activities for the APLI project in Zone 1 of the CDC, Nelson Mandela Bay Municipality: 2020
- : Phase 1 AIA: Infrastructure development and upgrades within the Great Fish River Nature Reserve, Makana, Raymond Mhlaba and Ngqushwa Municipalities: 2021
- : Phase 1 AIA: Construction of the new 132 kV transmission line from Wolf-Skilpad-Grassridge Substations, Kariega / Kirkwood: 2022
- : Phase 1 AIA: Dubula Solar PV Facility and associated infrastructure between Kariega and Motherwell, Nelson Mandela Bay Municipality: 2023

- : Archaeological Walkthrough: Skilpad-Grassridge Substations - 132 kV transmission line, Sundays River Valley Municipality and Nelson Mandela Bay Municipality: 2024
- : Phase 1 AIA: Vegetation clearing to establish citrus orchards as well as a water pipeline and a dam on Farm 714 near Sunland, Sundays River Valley Local Municipality: 2025

#### **AWARDS:**

The Eastern Cape Premier's Award for Heritage Conservation (2007)

The Eastern Cape MEC for Sport, Recreation, Arts & Culture's Award for Museum and Heritage (2016)

#### **MEMBERSHIP OF PROFESSIONAL BODIES:**

Society of Africanist Archaeologists (SAfA) - 2012 to present.

#### **INTERNATIONAL CONFERENCES ATTENDED:**

**2008** Association of South African Professional Archaeologists (ASAPA), 25 - 29 March, Cape Town.

**2012** Society of Africanist Archaeologists (SAfA), 25 - 29 June, University of Toronto, Canada  
(co-author of a paper presented by Dr. Binneman)

#### **CONSULTANT PROJECTS - Clients include:**

Wilderness Foundation

Coega Development Corporation

Eskom

CSIR

Eastern Cape Parks & Tourism Agency (ECPTA)

WBHO

Wind Energy Developers in the Eastern Cape

#### **COPIES OF DEGREES ATTACHED**





POTCHEFSTROOMSE UNIVERSITEIT  
VIR CHRISTELIKE HOËR ONDERWYS

## BACCALAUREUSGRAAD

Kragtens die bevoegdheid aan die Universiteit verleen  
word hiermee aan

**\*\* JACOBUS REICHERT \*\***

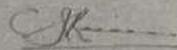
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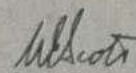
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nadat aan die vereistes vir die graad voldoen is

POTCHEFSTROOM 20 September 1991

  
Vise-kanselier



  
Registrateur



IT IS HEREBY CERTIFIED THAT THIS IS A TRUE COPY OF THE ORIGINAL DOCUMENT AND THAT THERE IS NO INDICATION THAT ALTERATIONS HAVE BEEN MADE THERETO BY AN UNAUTHORISED PERSON.

*W. Bester*  
BRANCH MANAGER : JEFFREYS BAY POST OFFICE

BRANCH MANAGER

2015 -08- 04

JEFFREYS BAY 6330

S.A. POST OFFICE LTD.

*We certify that*

**JACOBUS REICHERT**

*having complied with the requirements of the Higher Education Act  
and the Institutional Statute, was admitted to the degree of*

**BACHELOR OF ARTS HONOURS**

*in Archaeology*

*at a congregation of the University  
on 21 May 2015*

*M. Ndlovu*

Vice-Chancellor

*[Signature]*

University Registrar



*[Signature]*

Executive Dean

19940646811737C02461



# PALAEONTOLOGICAL SPECIALIST STUDY

In terms of Section 38(8) of the NHRA

Retrospective Palaeontological Impact Assessment for the  
Construction of an ARH Agri Aquaponics Facility on Portion  
217 (a portion of Portion 87) of Farm Cragga Kamma Number  
23, Lakeside Rd, Port Elizabeth,  
NMB Municipality, Eastern Cape Province.



**Prepared by**

**Dewald Wilken Pr. Sci. Nat.**

**6 Willet Place, Fern Glen, 6045**

**083 401 0969**

**Requested by**

**Digital Soil Africa**

**Church Road, Walmer, Port Elizabeth**

**084 607 4743**

**18 February 2026**

## THE INDEPENDENT PERSON WHO COMPILED A SPECIALIST REPORT OR UNDERTOOK A SPECIALIST PROCESS

I, **Dewald Wilken**, as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 (as amended) and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2014 (specifically in terms of regulation 13 of GN No. R. 326) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favorable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 14 of GN No. R. 326.

**Signed**



**Name**

**Dewald Wilken Pr. Sci. Nat.**

**Date**

**18 February 2026**

## **EXECUTIVE SUMMARY**

A retrospective palaeontological impact assessment was requested for the construction of an ARH Agri aquaponics facility on portion 217 (a portion of portion 87) of Farm Cragga Kamma Number 23, Lakeside Rd, Port Elizabeth, NMB Municipality, Eastern Cape Province. A palaeontological impact assessment was conducted to comply with the South African Heritage Resources Agency (SAHRA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).

The area under investigation is underlain by the Nanaga Formation of the Algoa Group. The Nanaga Formation is rated as very highly sensitive. Although this formation has the potential to contain scientifically valuable fossil material, fossils within it are typically sparse. It is therefore unlikely that the proposed construction of the dwelling will result in the loss or damage of palaeontological heritage resources.

There is no objection to the completed development or any future development of the property, provided that the fossil-find procedure outlined at the end of this document is followed in the unlikely event that fossil material is encountered.



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**List of Abbreviations**

- ECO – Environmental control officer
- ECPHRA – Eastern Cape Province Heritage Resources Authority
- EIA – Environmental Impact Assessment
- HWC – Heritage Western Cape
- Ma – mega annum (i.e. one million years)
- NEMA - National Environmental Management Act
- NHRA - National Heritage Resources Act
- PIA – Palaeontologic Impact Assessment
- SAHRA - South African Heritage Resources Agency
- SAHRIS - South African Heritage Resources Information System

## 1. Introduction

### 1.1 Background Information on Project

A retrospective palaeontological impact assessment was requested for the construction of an ARH Agri Aquaponics facility on portion 217 (a portion of portion 87) of Farm Cragga Kamma Number 23, Lakeside Rd, Port Elizabeth, NMB Municipality, Eastern Cape Province. A palaeontological impact assessment was conducted to comply with the South African Heritage Resources Agency (SAHRA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).

Figure 1 shows the area under investigation in relation to Port Elizabeth and Figure 2 shows a closer view of the same area. Figure 3 relates the palaeo-sensitivity to the area of interest.



Figure 1. The study site in relation to Port Elizabeth, Eastern Cape, South Africa.



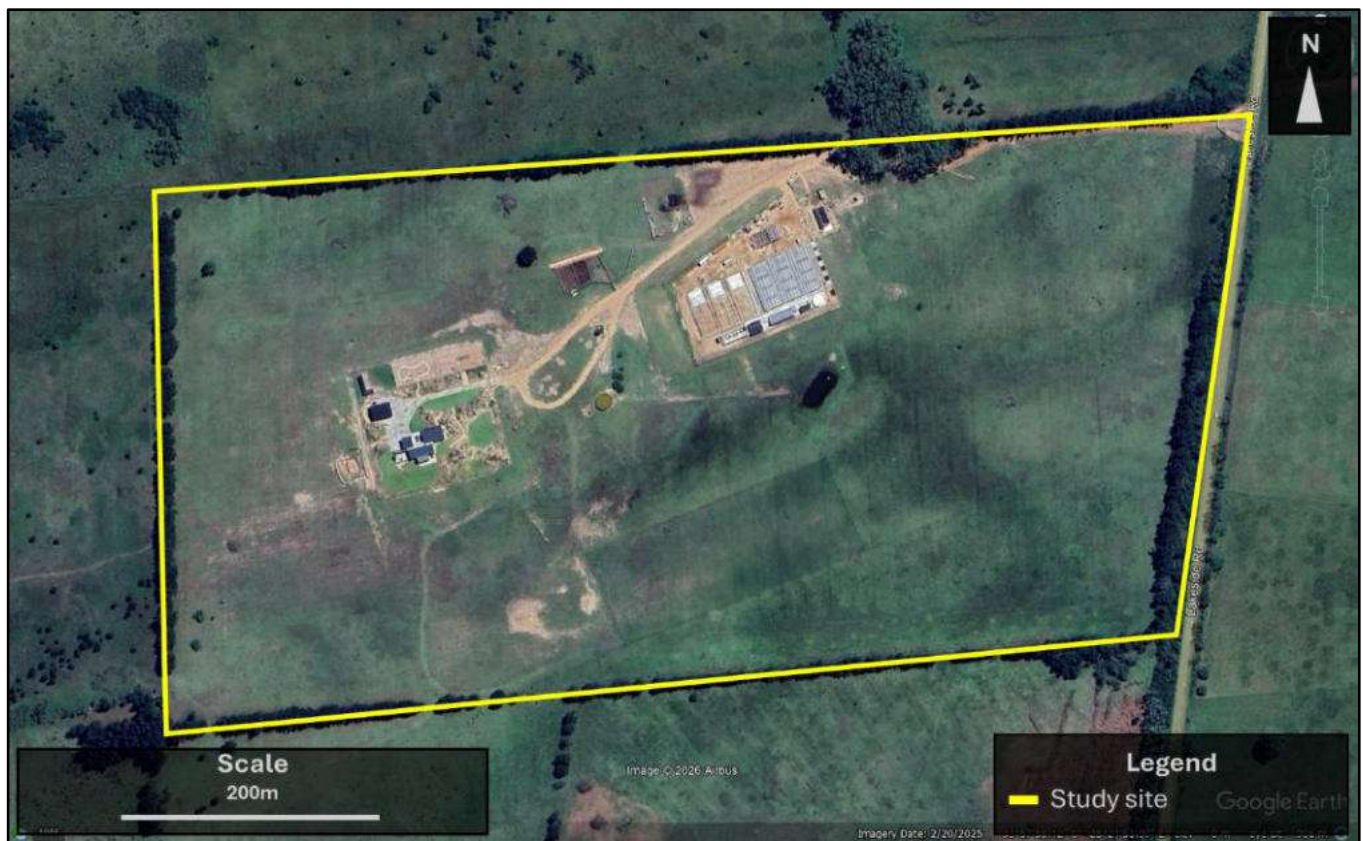


Figure 2 a Closer view of the area of interest.



Figure 3 Palaeo-sensitivity Map. Extracted from <https://sahris.sahra.org.za/map/palaeo> and 3324 Port Elizabeth geologic map. Indicating the fossil sensitivity underlying the study area in the Eastern Cape. The Nanaga Formation in red (very high sensitivity).



## **1.2 Study approach**

This PIA report provides a record of the inferred palaeontological heritage resources within the study area. The identified resources have been assessed to evaluate their heritage significance in terms of the grading system outlined in Section 3 of the NHRA (Act 25 of 1999). Recommendations for specialist palaeontological mitigation are made where this is considered necessary. The report is based on (1) a review of the relevant scientific literature in the broader study region, (2) published geological maps and accompanying sheet explanations (e.g., Toerien, D.K. (1984)).

## **2. Geological and Palaeontological context of the study area**

The following section will provide a basic review of the geology and palaeontology in the study area. The area lies over the Nanaga Formation of the Algoa Group.

### **2.1. Algoa Group**

The Algoa Group consists of aeolian deposits of the Southeast coast of South Africa. The Algoa Group is split into 6 formations based on their lithology and age. These formations are the Schelm Hoek Formation, Nahoon Formation, Salnova Formation, Nanaga Formation, Alexandria Formation, Bathurst Formation. The Algoa Group and its subdivisions can be seen in Figure 4. These formations are related to transgressive/regressive seas. Only the Nanaga Formation will be further discussed.

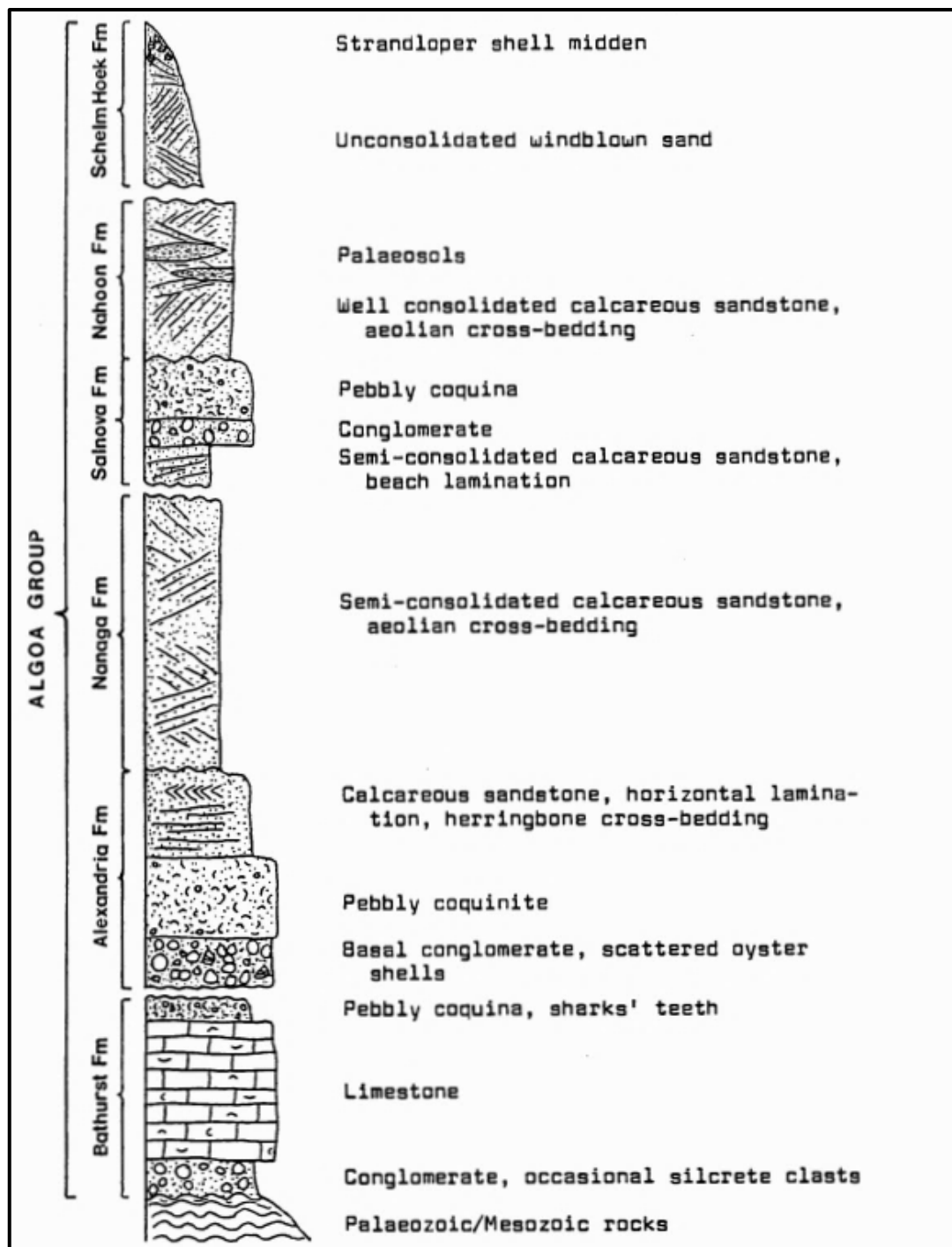


Figure 4 Idealised composite section of Algoa Group showing relative stratigraphic positions and lithology of formations (not to scale) Le Roux (1989).



Figure 5 Geologic map underlying the study area in the Eastern Cape. Adapted from 3324 Port Elizabeth. Proposed development area marked yellow.

## Nanaga Formation – Very High Palaeo-Sensitivity

The Nanaga Formation overlies Alexandria Formation mostly para-conformably and overlies the Cape Supergroup and the Uitenhage Group unconformably. In some areas it is overlain by the Kinkelbos and Schelm Hoek Formations. The formation is named after the farm Nanaga (Nanaga 166) where it is well exposed in road cuttings.

This formation occurs extensively on the northern hinterland of Algoa Bay, and on the coast to the east of Port Elizabeth, this can be seen in Figure 6. It is composed of aeolian sediment from palaeo – dune fields which formed during the regression of the “Alexandria sea”. The formation is medium – grained, with typical large-scale cross-bedded, calcareous sandstone, sandy limestones and calcretes up to 250m (thick Le Roux (1989)). It can be structureless in some areas. The colour can range from very light grey to greyish yellow to yellowish grey.

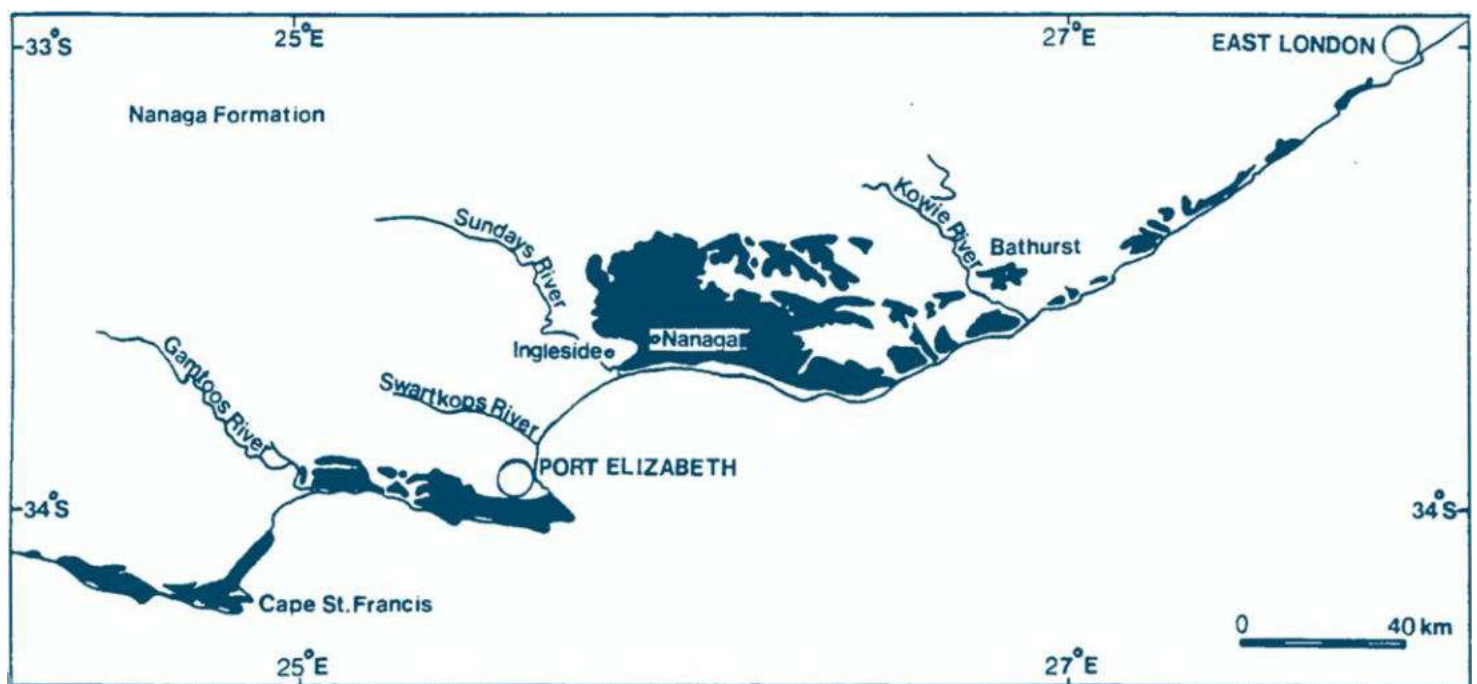


Figure 6. The extent of the Nanaga Formation on the East Coast of South Africa. (Le Roux, 1989)

This formation is probably Pliocene to Early Pleistocene in age (Le Roux (1990a), Bamford (2018) SACS, (1980)). “It is distinguished from the underlying Cape Supergroup and Uitenhage Group by its calcareous nature and poorer consolidation, and from the Alexandria Formation by its aeolian cross-bedding and lack of pebbles and/or coarse fragments of marine shells exceeding about 0,5 cm in diameter. Regarding the Kinkelbos Formation it is distinguished from the (locally) overlying formation by its aeolian cross-bedding, coarser-grained lithologies, lack of clasts and whitish colour (as opposed to the reddish-brown colour of the Kinkelbos Formation)” Le Roux (1989). Geomorphologically, the formation occurs as smooth rounded hills within undulating ridges, trending sub-parallel to the present shoreline.

The formation is mostly devoid of significant fossils, however minute fragments of marine macro-organisms (mainly shells), foraminifera (sometimes constituting up to 80 per cent of the rock), and occasional extant land gastropods such as *Achatina* spp., *Tropidophora* spp., *Trigonephris* spp. and *Natalina* spp. are present (Figure 7).



Figure 7 *Natalina* sp. top left, *Achatina zebra* top right, *Tropidophora* spp. bottom pseudo fossils (Wilken (2017))



### **3. Assumptions and Uncertainties**

Based on the palaeontological record and the geology of the area, it is assumed that the Nanaga Formation could contain valuable fossils, however these fossils are sparse and the chance of finding valuable fossils in this formations is low.

Groenewald (2016) made the following relevant statement: “The key assumption for these scoping studies is that the existing geological maps and datasets used to assess site sensitivity are correct and reliable. However, the geological maps used were not intended for fine scale planning work and are largely based on aerial photographs alone, without ground-truthing. When ground-truthing is done, work is often hampered by sediment and vegetation cover. There is also an inadequate database for fossil heritage for much of the RSA, due to the small number of professional palaeontologists carrying out fieldwork in RSA. Most development study areas have never been surveyed by a palaeontologist.

These factors may have a major influence on the assessment of the fossil heritage significance of a given development and without supporting field assessments may lead to either:

an underestimation of the palaeontological significance of a given study area due to ignorance of significant recorded or unrecorded fossils preserved there, or

an overestimation of the palaeontological sensitivity of a study area, for example when originally rich fossil assemblages inferred from geological maps have in fact been destroyed by weathering or are buried beneath a thick mantle of unfossiliferous “drift” (soil, alluvium etc.).”

It is important to note that field assessments are often hampered by vegetation and thick sediment cover (as in this case), and it is often the case that fossil material is only uncovered and discovered during excavation.

### **4. Assessment of impact of the development**

The area lays over the Nanaga Formation of the Algoa Group. The Nanaga Formation contains sparse fossils of foraminifera, rhizo-creations (root concretions) and root casts. Figure 8 and Figure 9 show the aquaponics facility and the main store/admin building. Figure 10 shows a pit dug on site which shows the thickness of the topsoil layer, Figure 11 shows the sandy topsoil. Figure 12 shows the otherwise featureless landscape with no outcrop of the Nanaga Formation in sight.



Figure 8. The aquaponics facility.

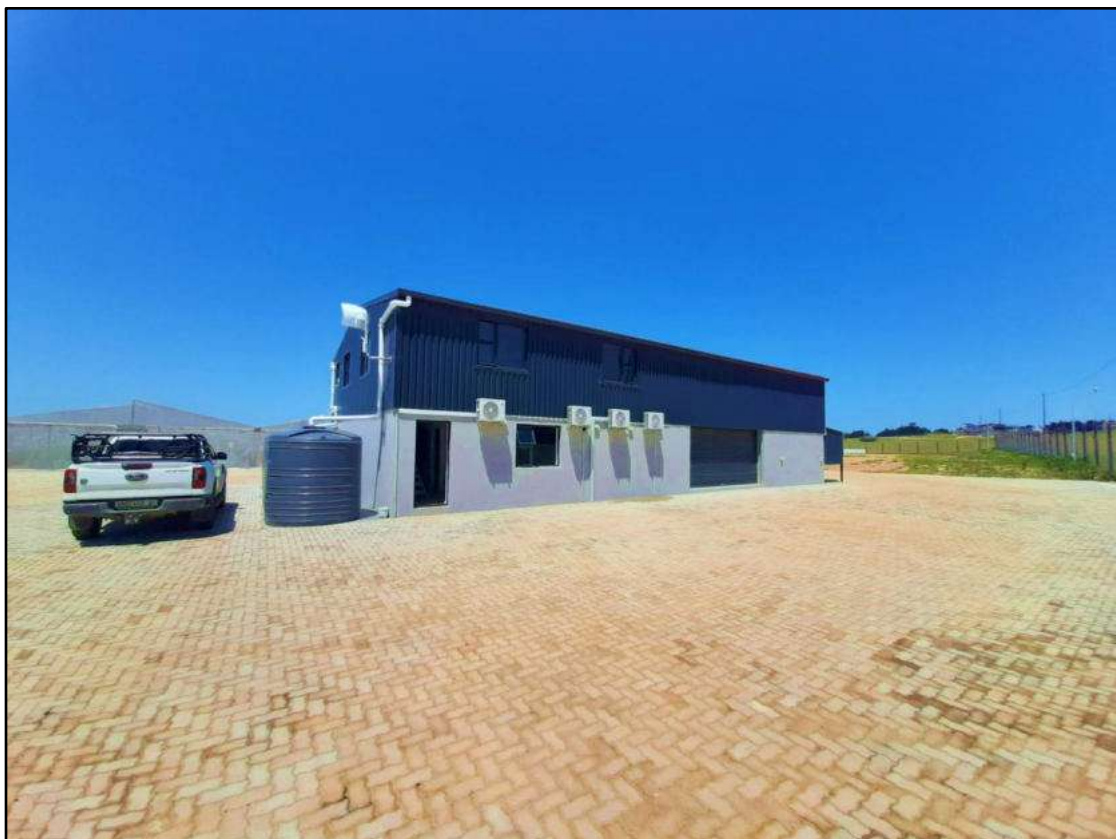


Figure 9. The admin building.



Figure 10. a Pit dug on site indicated the topsoil layer to be more than 2 meters.





Figure 11 Geo-pick indicating the thickness of the topsoil layer.





Figure 12 The rest of the plot is relatively flat and featureless no outcrops of the Nanaga Formation were found during the site visit.



Table 1. Impact Assessment Criteria pre and post Mitigation.

|                      | Pre-Mitigation                               |                                                                                                                                                | Post-Mitigation                              |                                                                                                                                                |
|----------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Criteria             | Category                                     | Explanation                                                                                                                                    | Category                                     | Explanation                                                                                                                                    |
| Overall Nature       | <i>Slightly Negative</i>                     | Fossil find is highly unlikely                                                                                                                 | <i>Slightly Negative</i>                     | Fossil find is highly unlikely                                                                                                                 |
| Type                 | <i>Direct</i>                                | The development will directly impact these resources                                                                                           | <i>Direct</i>                                | The development will directly impact these resources                                                                                           |
| Extent               | <i>Site</i>                                  | Impact is limited to the site footprint                                                                                                        | <i>Site</i>                                  | Impact is limited to the site footprint                                                                                                        |
| Duration             | <i>Short term</i>                            | Only during Construction                                                                                                                       | <i>Short term t</i>                          | Only during Construction                                                                                                                       |
| Severity             | <i>Negative</i>                              | Fossil find is highly unlikely                                                                                                                 | <i>Negative</i>                              | Fossil find is highly unlikely                                                                                                                 |
| Reversibility        | <i>Completely reversable</i>                 | If Fossil Find procedure is followed in case of fossil find.                                                                                   | <i>Completely reversable</i>                 | If Fossil Find procedure is followed in case of fossil find.                                                                                   |
| Irreplaceable Loss   | <i>Resources may be partially destroyed.</i> | Fossil find is highly unlikely. Impact will remain negligible if the Chance Fossil Find Procedure is followed in the case of any fossil finds. | <i>Resources may be partially destroyed.</i> | Fossil find is highly unlikely. Impact will remain negligible if the Chance Fossil Find Procedure is followed in the case of any fossil finds. |
| Probability          | <i>Unlikely</i>                              | Fossil find is highly unlikely                                                                                                                 | <i>Unlikely</i>                              | Fossil find is highly unlikely                                                                                                                 |
| Mitigation Potential | <i>High</i>                                  | If the Chance Fossil Find Procedure is followed in the case of any fossil finds.                                                               | <i>High</i>                                  | If the Chance Fossil Find Procedure is followed in the case of any fossil finds.                                                               |
| Impact Significance  | <i>Negligible</i>                            | Fossil find is highly unlikely                                                                                                                 | <i>Negligible</i>                            | Fossil find is highly unlikely                                                                                                                 |
| Overall significance | <i>Low</i>                                   |                                                                                                                                                | <i>Low</i>                                   |                                                                                                                                                |

Table 2. Assessment criteria on the NO GO option.

|                             | <b>No Go</b>                                  |                                                            |
|-----------------------------|-----------------------------------------------|------------------------------------------------------------|
| <b>Criteria</b>             | <b>Category</b>                               | <b>Explanation</b>                                         |
| <b>Overall Nature</b>       | <b><i>Negative</i></b>                        | No fossils could be discovered.                            |
| <b>Type</b>                 | <b><i>Direct</i></b>                          | There will be no impact                                    |
| <b>Extent</b>               | <b><i>Site (0)</i></b>                        | No development negates the possibility of finding Fossils. |
| <b>Duration</b>             | <b><i>Very short term (0)</i></b>             | No development negates the possibility of finding Fossils. |
| <b>Severity</b>             | <b><i>Negative (0)</i></b>                    | No development negates the possibility of finding Fossils. |
| <b>Reversibility</b>        | <b><i>Completely reversible (0)</i></b>       | No development negates the possibility of finding Fossils. |
| <b>Irreplaceable Loss</b>   | <b><i>Resources will not be lost. (0)</i></b> | But resources can also not be discovered.                  |
| <b>Probability</b>          | <b><i>Unlikely (0)</i></b>                    | Fossil find is highly unlikely                             |
| <b>Mitigation Potential</b> | <b><i>High</i></b>                            | No mitigation required.                                    |
| <b>Impact Significance</b>  | <b><i>Negligible</i></b>                      | No development negates the possibility of finding Fossils. |
| <b>Overall significance</b> | <b><i>Negligible</i></b>                      |                                                            |

## **5. Conclusion and Recommendations**

The area under investigation lays over the Nanaga Formation of the Algoa Group.

This formation has the potential to contain fossil material. However, fossils in this formation are very sparsely distributed, and it is very unlikely that the construction of the aquaponics facility has caused loss or damage to the palaeontological heritage of the area. There would be no objection to the completed development or any future development on the condition that the fossil-find procedure at the end of this document is followed in the unlikely event of fossil material being found.

Should important new fossil remains be found the finder should alert ECPHRA (i.e. The Eastern Cape Provincial Heritage Resources Authority. Contact details: Ms. Lungiswa Mzaza, 16 Commissioner Street, East London; lungiswam@ecphra.org.za, (081 434 3544) as soon as possible. This is so that appropriate action can be taken in good time by a professional palaeontologist at the developer's expense. Palaeontological mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy). The palaeontologist concerned with mitigation work will need a valid fossil collection permit from ECPHRA and any material collected would have to be curated in an approved depository (e.g. museum or university collection). All palaeontological specialist work should conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere as far as possible to the minimum standards for Phase 2 palaeontological studies recently developed by SAHRA (2013). These recommendations are summarised in tabular form in Appendix 1 (Chance Fossil Finds Procedure) and should be incorporated into the Environmental Management Programme (EMPr) for the proposed development.

## 6. Bibliography

- Almond, J.E., 2013.** Expansion of agricultural activities on Portion 5 of the Farm Nooitgedacht No. 118, Sunland, near Addo, Sundays River Valley Municipality, Eastern Cape. *Unpublished Palaeontological Assessment Report*. Cape Town: Natura Viva CC, 17 pp.
- Almond, J.E., de Klerk, B. & Gess, R., 2009.** Palaeontological heritage of the Eastern Cape. *Unpublished report*.
- Booth, P.W.K. & Shone, R.W., 2002.** A review of thrust faulting in the Eastern Cape Fold Belt, South Africa, and the implications for current lithostratigraphic interpretation of the Cape Supergroup. *Journal of African Earth Sciences*, **34**, pp.179–190.
- Braddy, S.J. & Almond, J.E., 1999.** Eurypterid trackways from the Table Mountain Group (Ordovician) of South Africa. *Journal of African Earth Sciences*, **29**(1), pp.165–177.
- Gabbott, S.E., Browning, C., Theron, J.N. & Whittle, R.J., 2017.** The late Ordovician Soom Shale Lagerstätte: an extraordinary post-glacial fossil sedimentary record. *Journal of the Geological Society*, **174**, pp.1–9.
- Geological Survey of South Africa, Toerien, D.K. & Hill, R.S., 1989.** 1:250 000 Geological Series, Sheet 3324 Port Elizabeth. Pretoria: Government Printer.
- Groenewald, D.P., 2016.** Palaeontological Desktop Assessment for the Prospecting Activities on the Dannhauser Farms, South of Dannhauser, Amajuba District Municipality, KwaZulu-Natal. *Unpublished PIA Report*. HIA Consultants.
- Hälbich, I.W., Fitch, F.J. & Miller, J.A., 1983.** Dating the Cape orogeny. In: Söhne, A.P.G. & Hälbich, I.W. (eds.) *Geodynamics of the Cape Fold Belt*. Special Publication of the Geological Society of South Africa, 12, pp.149–164.
- Johnson, M.R., 1991.** Sandstone petrography, provenance and plate tectonic setting in Gondwana context of the southeastern Cape–Karoo Basin. *South African Journal of Geology*, **94**(2/3), pp.137–154.
- MacRae, C., 1999.** *Life etched in stone: Fossils of South Africa*. Johannesburg: Geological Society of South Africa, 305 pp.
- Nolte, C.C., 1990.** Structure and tectonostratigraphy of the Gamtoos Belt between Tweewaters and Classen Point, Eastern Cape Province, R.S.A. *Unpublished MSc thesis*. University of Port Elizabeth, 237 pp.
- Rust, I.C., 1967.** On the sedimentation of the Table Mountain Group in the Western Cape Province. *Unpublished PhD thesis*. University of Stellenbosch, 110 pp.
- SAHRA (South African Heritage Resources Agency), 2013.** *Annual Report 2012/2013*. Pretoria: SAHRA.
- Tankard, A.J., Jackson, M.P.A., Eriksson, K.A., Hobday, D.K., Hunter, D.R. & Minter, W.E.L., 1982.** Crustal evolution of Southern Africa: 3.8 billion years of Earth history. New York: Springer-Verlag.
- Thamm, A.G. & Johnson, M.R., 2006.** The Cape Supergroup. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (eds.) *The Geology of South Africa*. Pretoria: Council for Geoscience, pp.443–459.
- Theron, J.N., 1969.** The Baviaanskloof Range — a South African nappe. *Transactions of the Geological Society of South Africa*, **72**, pp.29–30.
- Toerien, D.K. & Hill, R.S., 1989.** *The geology of the Port Elizabeth area: Explanation of Sheet 3324, Scale 1:250 000*. Pretoria: Government Printer.
- Viljoen, W.P., 1979.** *Geological Map of the Oudtshoorn Area, Sheet 3322 (1:250 000 Series)*. Geological Survey of South Africa.

## **Appendix 1**

# **Chance Fossil Finds Procedure**

(Adopted from the HWC Chance Fossils Finds Procedure: June 2016)

### **Introduction**

This document is aimed to inform workmen and foremen working on a construction and/or mining site. It describes the procedure to follow in instances of accidental discovery of palaeontological material (please see attached poster with descriptions of palaeontological material) during construction/mining activities. This protocol does not apply to resources already identified under an assessment undertaken under s. 38 of the National Heritage Resources Act (no 25 of 1999).

Fossils are rare and irreplaceable. Fossils tell us about the environmental conditions that existed in a specific geographical area millions of years ago. As heritage resources that inform us of the history of a place, fossils are public property that the State is required to manage and conserve on behalf of all the citizens of South Africa. Fossils are therefore protected by the National Heritage Resources Act and are the property of the State. Ideally, a qualified person should be responsible for the recovery of fossils noticed during construction/mining to ensure that all relevant contextual information is recorded.

Heritage Authorities often rely on workmen and foremen to report finds, and thereby contribute to our knowledge of South Africa's past and contribute to its conservation for future generations.

### **Training**

Workmen and foremen need to be trained in the procedure to follow in instances of accidental discovery of fossil material, in a similar way to the Health and Safety protocol. A brief introduction to the process to follow in the event of possible accidental discovery of fossils should be conducted by the designated Environmental Control Officer (ECO) for the project, or the foreman or site agent in the absence of the ECO. It is recommended that copies of the attached poster and procedure are printed out and displayed at the site office so that workmen may familiarise themselves with them and are thereby prepared in the event that accidental discovery of fossil material takes place.

### **Actions to be taken**

One person in the staff must be identified and appointed as responsible for the implementation of the attached protocol in instances of accidental fossil discovery and must report to the ECO or site agent. If the ECO or site agent is not present on site, then the responsible person on site should follow the protocol correctly in order to not jeopardize the conservation and well-being of the fossil material. Once a workman notices possible fossil material, he/she should report this to the ECO or site agent.



**Procedure to follow if it is likely that the material identified is a fossil:**

- The ECO or site agent must ensure that all work ceases immediately in the vicinity of the area where the fossil or fossils have been found;
- The ECO or site agent must inform SAHRA of the find immediately. This information must include photographs of the findings and GPS co-ordinates;
- The ECO or site agent must compile a Preliminary Report and fill in the attached Fossil Discoveries: Preliminary Record Form within 24 hours without removing the fossil from its original position. The Preliminary Report records basic information about the find including:
  - The date
  - A description of the discovery
  - A description of the fossil and its context (e.g. position and depth of find)
  - Where and how the find has been stored
  - Photographs to accompany the preliminary report (the more the better):
  - A scale must be used
  - Photos of location from several angles
  - Photos of vertical section should be provided
  - Digital images of hole showing vertical section (side);
  - Digital images of fossil or fossils.

Upon receipt of this Preliminary Report, SAHRA will inform the ECO or site agent whether a rescue excavation or rescue collection by a palaeontologist is necessary.

- Exposed finds must be stabilised where they are unstable and the site capped, e.g., with a plastic sheet or sandbags. This protection should allow for the later excavation of the finds with due scientific care and diligence. SAHRA can advise on the most appropriate method for stabilisation.
- If the find cannot be stabilised, the fossil may be collected with extreme care by the ECO or the site agent and put aside and protected until SAHRA advises on further action. Finds collected in this way must be safely and securely stored in tissue paper and an appropriate box. Care must be taken to remove all the fossil material and any breakage of fossil material must be avoided at all costs.

**No work may continue in the vicinity of the find until SAHRA has indicated, in writing, that it is appropriate to proceed.**

**FOSSIL DISCOVERIES: PRELIMINARY RECORDING FORM**

|                                                                                            |                                          |       |
|--------------------------------------------------------------------------------------------|------------------------------------------|-------|
| Name of project:                                                                           |                                          |       |
| Name of fossil location:                                                                   |                                          |       |
| Date of discovery:                                                                         |                                          |       |
| Description of situation in which the fossil was found:                                    |                                          |       |
| Description of context in which the fossil was found:                                      |                                          |       |
| Description and condition of fossil identified:                                            |                                          |       |
| GPS coordinates:                                                                           | Lat:                                     | Long: |
| If no co-ordinates available then please describe the location:                            |                                          |       |
| Time of discovery:                                                                         |                                          |       |
| Depth of find in hole                                                                      |                                          |       |
| Photographs (tick as appropriate and indicate number of the photograph)                    | Digital image of vertical section (side) |       |
|                                                                                            | Fossil from different angles             |       |
|                                                                                            | Wider context of the find                |       |
| Wider context of the find. Temporary storage (where it is located and how it is conserved) |                                          |       |
| Person identifying the fossil Name:                                                        |                                          |       |
| Contact:                                                                                   |                                          |       |
| Recorder Name:                                                                             |                                          |       |
| Contact:                                                                                   |                                          |       |
| Photographer Name:                                                                         |                                          |       |
| Contact:                                                                                   |                                          |       |



**DETAILS OF SPECIALIST AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.**

(For official use only)

File Reference Number:

NEAS Reference Number:

Date Received:

Application for environmental authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amendments to the Environmental Impact Assessment Regulations, 2014. This form is valid as of 6 January 2021.

**PROJECT TITLE**

ARH Agri Aquaponics Facility development on Ptn 217 (a Ptn of Ptn 87) of Farm Cragga Kamma No. 23, Lakeside Rd, Port Elizabeth.

**SPECIALIST <sup>1</sup>**

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Professional affiliation(s) (if any)

Dewald Wilken

Witklippe, Krakeelrivier

6430

Cell:

078 097 9969

Fax:

SACNASP

|                     |                                |       |              |
|---------------------|--------------------------------|-------|--------------|
| Project Consultant: | Digital Soils Africa (Pty) Ltd |       |              |
| Contact person:     | Natalie Sharp                  |       |              |
| Postal address:     | 45 Church Street, Walmer       |       |              |
| Postal code:        | 6070                           | Cell: | 082 414 0472 |
| Telephone:          | 082 414 0472                   | Fax:  |              |
| E-mail:             | natalie@dsafrica.co.za         |       |              |

#### 4.2 The SPECIALIST

I, **Dewald Wilken**, declare that –

General declaration:

- I act as the independent Specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;

- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence and is punishable in terms of section 24F of the Act.

**Disclosure of Vested Interest (delete whichever is not applicable)**

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Amendments to Environmental Impact Assessment Regulations, 2014 as amended.

Signature of the environmental assessment practitioner:

*A. Wilken*

Name of company:

Dewald Wilken

Date: 21 Maart 2026

Signature of the Commissioner of Oaths:

*T. Joubertina*  
T. Joubertina  
M. J. C. Joubertina

Date: 2026-03-21

Designation: CONSTABLE

<sup>1</sup> Curriculum Vitae (CV) attached

Official stamp (below).





## Annexure 1

### CV

**Dewald Wilken**

**Palaeontologist | Geologist**

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#### Professional Profile

Dewald is a palaeontologist and geologist with experience in palaeontological impact assessments, fossil excavation, and the preservation of heritage resources. He has a strong foundation in fieldwork and reporting, with a focus on compliance with heritage legislation and contributing to the understanding of South Africa's fossil record.

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#### Professional Registration

- Registered Professional Natural Scientist (Pr.Sci.Nat.)  
South African Council for Natural Scientific Professions (SACNASP)  
Registration No: 115344/11

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#### Key Skills

- Palaeontological Impact Assessments (PIAs)
- Fossil excavation, stabilisation, and preservation
- Fossil Finds Procedures (FFP)
- Heritage compliance (NHRA)
- Geological field mapping and logging
- Environmental monitoring
- Data collection and interpretation
- Technical report writing

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#### Professional Experience

##### Environmental Assessment Practitioner (Geologist / Palaeontologist)

*2018 – Present*

- Conduct palaeontological impact assessments for a range of developments
- Develop and implement Fossil Finds Procedures
- Undertake fossil stabilisation, excavation, and preservation
- Perform palaeontological monitoring during construction phases
- Compile technical reports for environmental and heritage compliance

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**SRK Consulting – Geologist / Palaeontologist / Environmental Control Officer**

2015 – 2017

- Conduct environmental and palaeontological impact assessments
- Monitor compliance with environmental regulations on-site
- Undertake sampling, data collection, and analysis
- Compile technical and compliance reports

---

**Nelson Mandela Metropolitan University – Lecturer**

2004 – 2015

- Lectured undergraduate and honours-level students
- Subjects included:  
Mineralogy, Petrology, Sedimentology, Stratigraphy, Palaeontology, GIS, Geomorphology, and Mapping
- Delivered both theoretical lectures and practical field-based training

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**AngloGold Ashanti – Facilitator**

2009 – 2013

- Delivered and assessed geology training programmes
- Subjects included Mineralogy, Structural Geology, and General Geology

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**Council for Geoscience – Data Capturer**

2005

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**Nelson Mandela Metropolitan University – Demonstrator**

2002 – 2005

- Assisted students with practical coursework and methodology

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**Education & Qualifications****MSc (Palaeontology)**

Nelson Mandela Metropolitan University (now Nelson Mandela University), 2011

Thesis: *A palaeolimnological study of the Knysna Wilderness area and its application to sea-level change*

Supervisors: R. Shone & C. Anderson

**BSc Honours (GIS)**

Nelson Mandela Metropolitan University, 2012

**BSc Honours (Geology)**

Nelson Mandela Metropolitan University, 2005

**BSc (Geosciences)**

Nelson Mandela Metropolitan University, 2005

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**Selected Project Experience****Palaeontological Impact Assessments & Fossil Finds Procedures**

Extensive experience across infrastructure, residential, agricultural, and renewable energy developments in: Saldana Bay, Mbotyi, Jeffreys Bay, Coega, St Francis Bay, Humansdorp, Makhanda, Plettenberg Bay, Kirkwood, and surrounding regions.

**Palaeontological Monitoring**

- Coega Zone 1 developments (APLI & BAIC)
- Kirkwood–Addo road upgrade

**Fossil Excavations**

- Kirkwood–Addo road upgrade
- Coega bulk water and sewer infrastructure