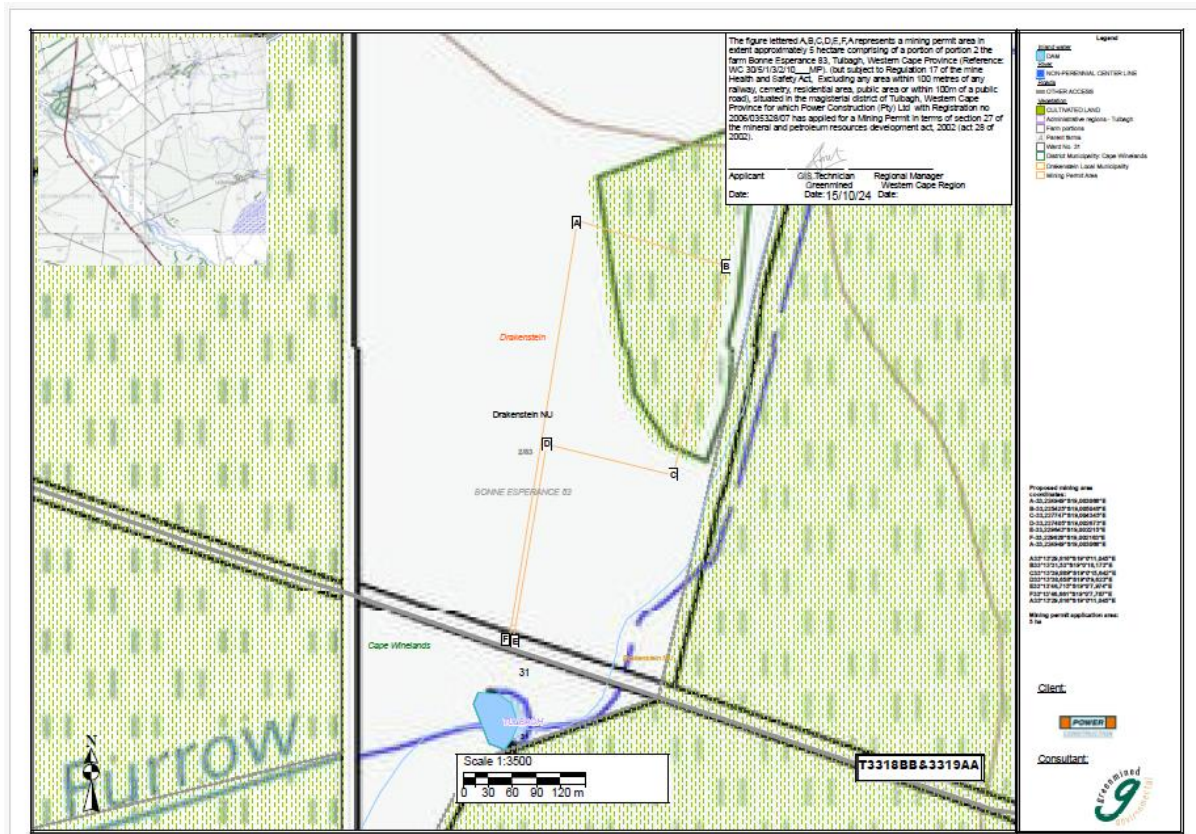




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SECTION 21(C) & (I) RISK ASSESSMENT PROPOSED GOUDA BORROW PIT IN THE WESTERN CAPE PROVINCE



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Declaration (Author)

I, **Nonjabulo Matomela**, declare that -

- I act as the independent specialist in this matter;
- I do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014 (as amended in 2017);
- I performed the work relating to the application in an objective manner, even if it results in views and findings that are not favourable to the applicant;
- I declare that there were no circumstances that compromised my objectivity in performing such work;
- I have expertise in conducting the specialist assessment relevant to this application, including knowledge of the National Environmental Management Act (Act 107 of 1998) (NEMA), regulations and any guidelines that have relevance to the proposed activity;
- I comply with the NEMA Act, regulations and all other applicable legislation; and
- I disclosed 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;
- All the particulars furnished by me in this report are true and correct.
- I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of sub-regulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B (1) of the National Environmental Management Act, 1998 (Act 107 of 1998).

Signature of the specialist:



Date: 15th November 2024

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Declaration (Reviewer)

I, **Corlien Lambrechts**, declare that -

- I act as the independent specialist in this matter;
- I do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- 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 the specialist report relevant to this application, including knowledge of the National Environmental Management Act (Act 107 of 1998) (NEMA), regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the NEMA Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity; and
- 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; all the particulars furnished by me in this report are true and correct.

Signature of the specialist:



Date: 15th November 2024

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Table of Contents

Declaration (Author)	5
Declaration (Reviewer)	6
1. INTRODUCTION	8
1.1 Project Background & Locality	8
1.2 Project Description	8
1.3 Limitations	9
2. WATERCOURSE DETAILS	10
3. GEOLOGY AND VEGETATION DETAILS	4
3.1 Geology	4
3.2 Vegetation Description	4
4. WATER USE AUTHORIZATION	4
5. CONCLUSION	7
6. REFERENCES	8
7. APPENDIX	9

List of Tables

Table 1.1: Coordinates for the proposed mining footprint.....	8
Table 4.1: Desktop DWS Risk Assessment Results for the non-perennial river after mitigation considerations have been implemented.....	5

List of Figures

Figure 1.1: Locality map of the proposed mining footprint, Cape Winelands District Municipality	8
Figure 2.1: Watercourses the general area of the borrow pit footprint.	4
Figure 3.1: Geology of the proposed borrow pit.	4
Figure 3.2: Vegetation of the proposed borrow pit	4
Figure 7.1: Master Layout Plan of the proposed project.....	9

1. INTRODUCTION

1.1 Project Background & Locality

Afzelia Environmental Consultants (Pty) Ltd was appointed by Greenmined Environmental (Pty) Ltd on behalf of the Power Construction (Pty) Ltd (Applicant) to undertake a Desktop DWS Risk Assessment for the proposed borrow pit located on Portion 2 of the Farm Bonne Esperance 83, Tulbagh, Western Cape Province. The locality map of the site can be seen in Figure 1.1 below.

The co-ordinates for the mining coordinates are listed in table 1.1 below:

Table 1.1: Coordinates for the proposed mining footprint

POINT LOCATION	LATITUDE	LONGITUDE
A	33° 13' 29.82"S	19° 0' 11.05"E
B	33° 13' 31.56"S	19° 0' 18.18"E
C	33° 13' 39.89"S	19° 0' 15.64"E
D	33° 13' 38.68"S	19° 0' 9.63"E
E	33° 13' 46.72"S	19° 0' 7.98"E
F	33° 13' 46.65"S	19° 0' 7.78"E



Figure 1.1: Locality map of the proposed mining footprint, Cape Winelands District Municipality

1.2 Project Description

The proposed mining operation will take place on a 5-hectare site within an undisturbed agricultural area. The mining method will involve the use of earthmoving equipment to extract material directly from the ground. The extracted material will be transported to a mobile crushing and screening plant, where it will be processed into various sizes and stockpiled. The processed materials, including silty sand and quartzitic sandstone pebbles, will

be transported to clients via trucks. All mining activities will be confined within the approved mining permit boundaries.

The mining activities will consist of the following:

- Stripping and stockpiling of topsoil;
- Excavating / Loading of insitu material;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and replacing the topsoil and vegetation the disturbed area.

The mining site will contain the following:

- Excavating / loading equipment;
- Earth moving equipment;
- Access Roads;
- Site office (Container);
- Site vehicles;
- Parking area for visitors and site vehicles;
- Weighbridge;
- Ablution facilities (Chemical toilet).

1.3 Limitations

The below limitations are applicable:

- Without ground truthing, the risk matrix may fail to account for local environmental conditions, land uses, and other site-specific factors that could impact water quality. This can lead to an incomplete or misleading understanding of potential risks to the watercourse.
- Risks such as illegal waste dumping, contamination from nearby industries, or local land management practices might not be visible or identifiable without an on-site inspection, leading to gaps in the risk assessment matrix.
- If the risk assessment is based purely on remote data (e.g., satellite images, historical records, or general geographic information), it may not reflect current conditions at the site.
- Site conditions, including water quality, flow patterns, and land use, can change over time due to seasonal variations

2. WATERCOURSE DETAILS

The site falls within quaternary catchment G10F which forms part of the Berg-Olifants Water Management Area (WMA). There is one non-perennial stream within 100m of the proposed mining area, which is the focal point of this report. The stream has been highly canalised and modified to accommodate the surrounding agricultural activities. Additionally, there is one perennial River, the Berg Klein River which is located about 1km away from mining footprint. This river is unlikely be impacted by the project. There are no major NFEPA rivers, or prioritised wetlands located within the regulated area, although a non-prioritised wetland is located within 500m of the site. This wetland appears to be a small dam system Considering the surrounding landscape characteristics, it is possible that the wetland system could extend into the site footprint. Although the extensive history of agricultural farming on the site would suggest that the wetland unit is likely to be highly degraded. The drainage network within the study area is shown in Figure 2.1.

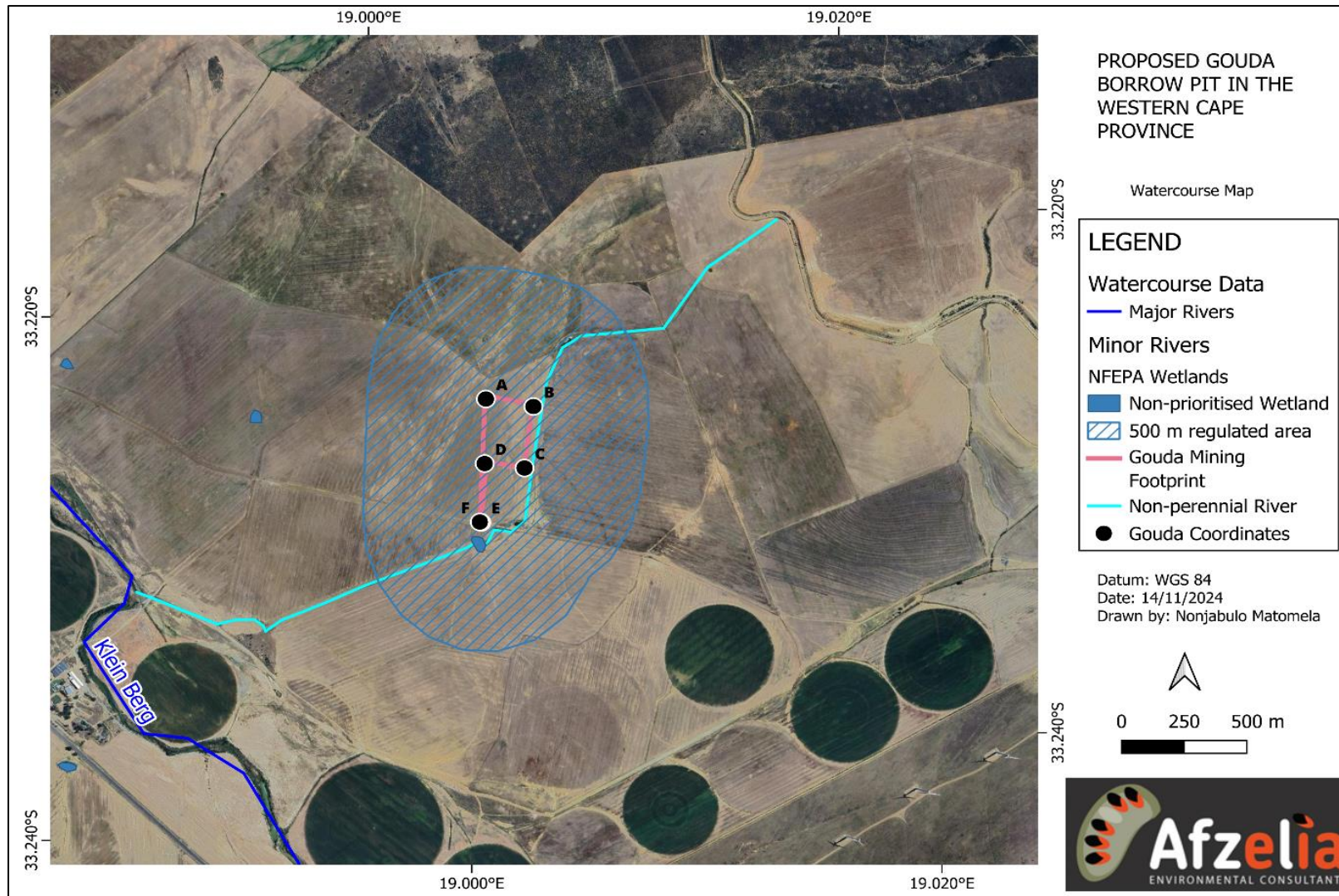


Figure 2.1: Watercourses the general area of the borrow pit footprint.

3. GEOLOGY AND VEGETATION DETAILS

3.1 Geology

The geology of the area consists of a variety of rock types, including phyllite, greywacke, limestone, and arenite (Figure 3.1) derived from the Malmesbury Group. Phyllite is a fine-grained metamorphic rock formed from shale or mudstone, while greywacke is a type of sandstone with a high proportion of rock fragments. Limestone is a sedimentary rock composed primarily of calcium carbonate, and arenite is a sandstone with well-sorted grains. Additionally, the soil in the area is highly erodible, with an erodibility factor of 0.61. This indicates a high susceptibility to erosion, particularly when exposed to wind or water.

While the presence of phyllite, greywacke, limestone, and arenite can indicate potential mineral resources, these rock types are not typically suitable for borrow pits. Borrow pits are typically excavated in unconsolidated materials like soil or soft rock.

The high erodibility of the soil, with a factor of 0.61, is a significant concern for a borrow pit. Erodible soils can lead to rapid degradation of the pit walls, increased sediment runoff, and potential water pollution. Therefore, while the area may have potential for mining certain minerals, it may not be the ideal location for a borrow pit due to the soil's high erodibility.

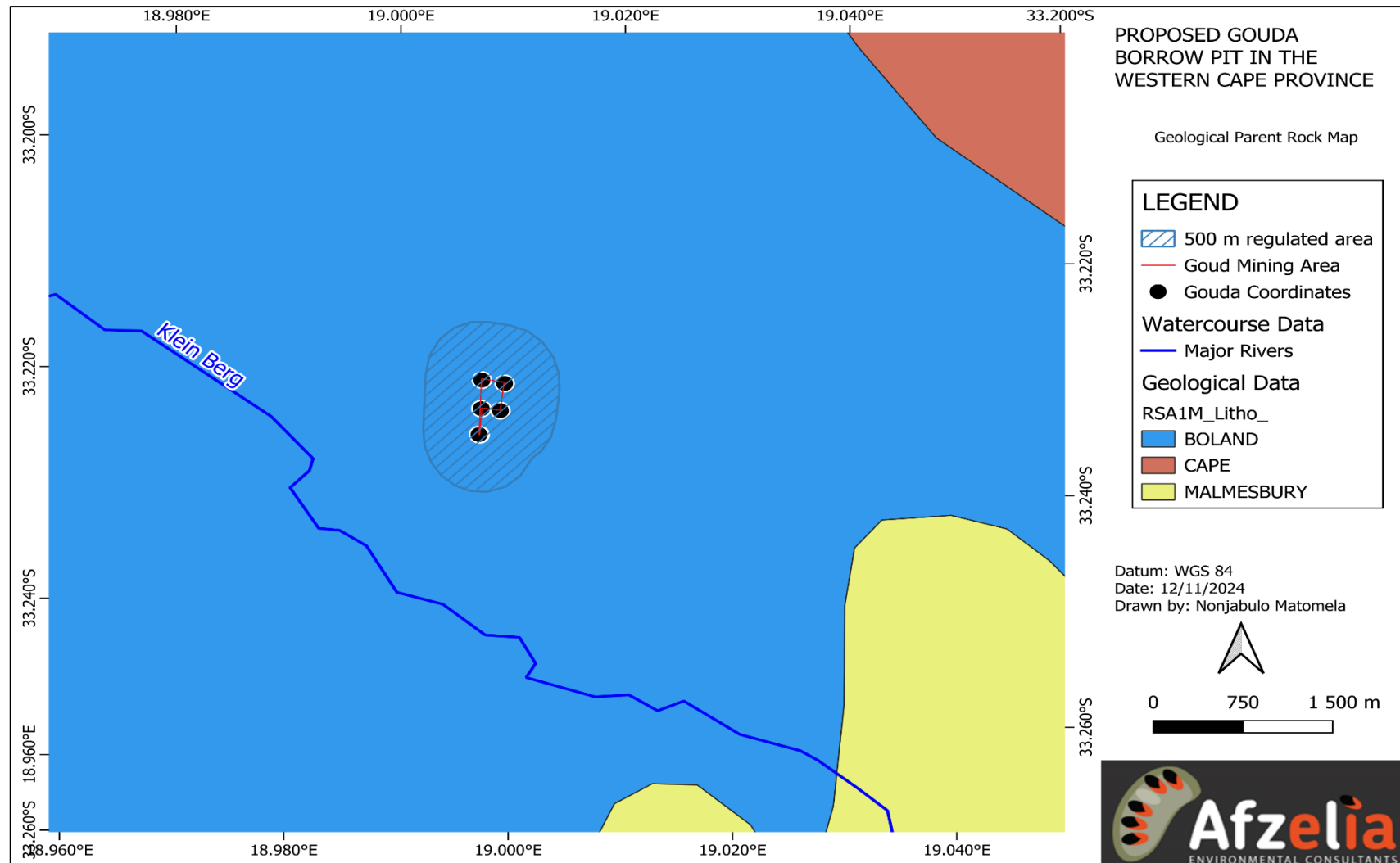


Figure 3.1: Geology of the proposed borrow pit.

3.2 Vegetation Description

The project area is located within the Swartland Alluvium Fynbos which is Critically Endangered (Rebelo et al, 2006). The vegetation is a matrix of low, evergreen shrubland with emergent sparse, moderately tall shrubs and a conspicuous graminoid layer. Additionally, Swartland Shale Renosterveld is also located within the mining footprint and is Critically Endangered. The vegetation is low to moderately tall leptophyllous shrubland of varying canopy cover as well as low, open shrubland dominated by renosterbos (Figure 3.2).

The presence of a borrow pit within areas of Swartland Alluvium Fynbos and Swartland Shale Renosterveld, both classified as critically endangered (Rebelo et al, 2006) vegetation types have several significant ecological implications:

- Both Swartland Alluvium Fynbos and Swartland Shale Renosterveld are known for their high levels of biodiversity, including many endemic and threatened species. The disturbance caused by a borrow pit can lead to a decline in plant and animal populations, particularly those that are specialized or sensitive to habitat changes.
- Disturbance from the borrow pit can create opportunities for invasive species to establish themselves in the area. Invasive plants can outcompete native species, further threatening the integrity of the critically endangered ecosystems.
- The fynbos and renosterveld ecosystems provide essential services, such as carbon sequestration, water filtration, and habitat for wildlife. The degradation of these areas due to a borrow pit can diminish these services, impacting both the environment and human communities that rely on them.

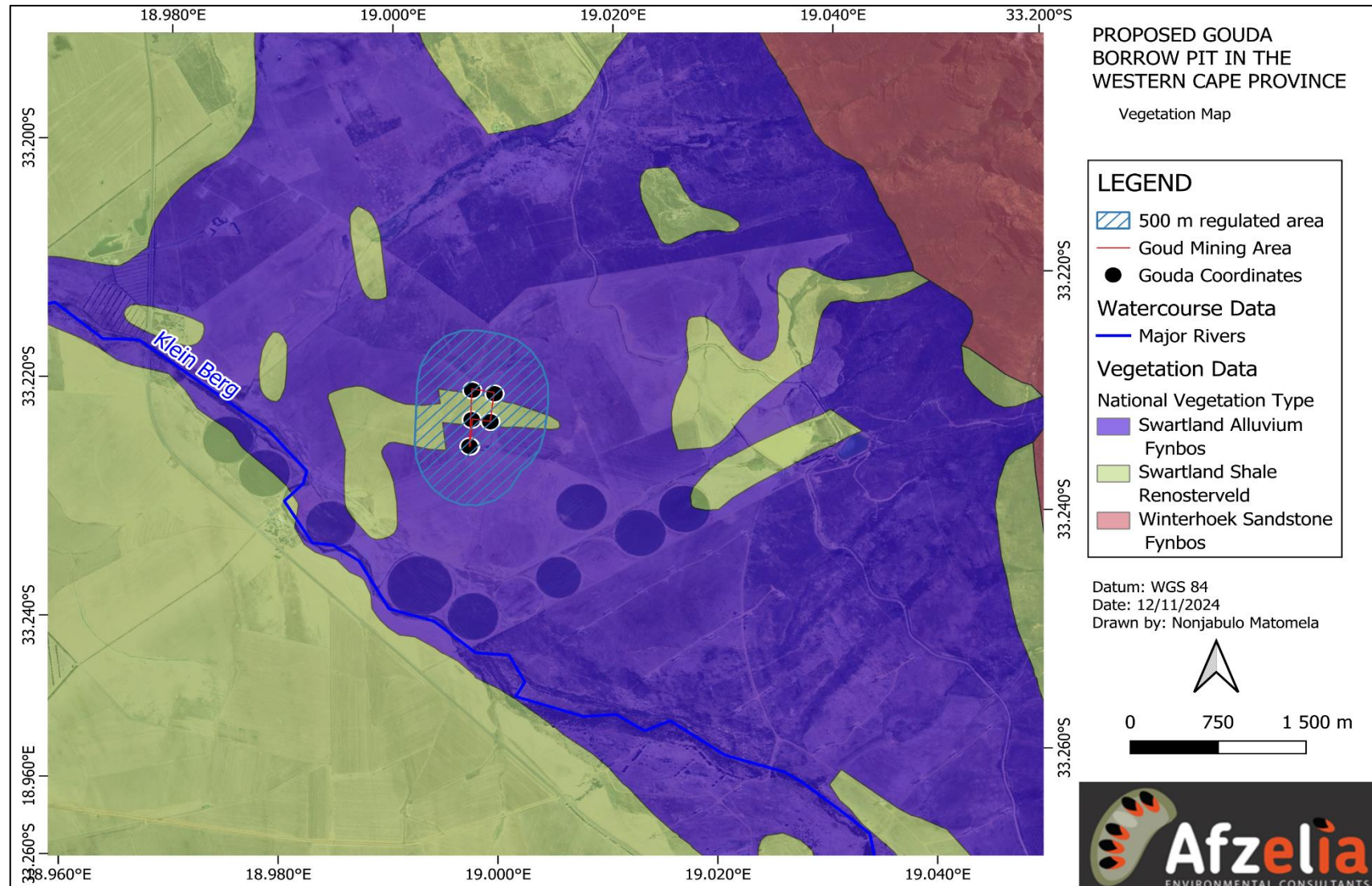


Figure 3.2: Vegetation of the proposed borrow pit

4. WATER USE AUTHORIZATION

Section 21 of the National Water Act (Act no 36 of 1998) states that water uses must be licensed unless it is listed in Schedule I, is an existing lawful use, is permissible under a general authorisation, or if a responsible authority waives the need for a licence. There are several reasons why water users are required to register and license their water use with the DWS, the most important being: to manage and control water resources for planning and development; to protect water resources against over-use, damage and impacts; and to ensure fair allocation of water among users.

Water uses as per section 21 of the National Water Act (Act 36 of 1998) which have bearing on the project include:

- i. Section 21 (c) Impeding or diverting the flow of water in a watercourse; and
- ii. Section 21 (i) Altering the bed, banks, or characteristics of a watercourse

The General Authorisation (GA) for the Impeding or diverting the flow of water in a watercourse; Section 21 (c) Impeding or diverting the flow of water in a watercourse; and Section 21 (i) Altering the bed, banks, or characteristics of a watercourse as contemplated in the National Water Act (Act No. 36 of 1998) as amended on 8 December 2023 was developed to replace the need for a water user to apply for a licence provided that the water use is within the limits and conditions of this GA (DWS, 2023). A low-risk class must be obtained for all activities to qualify for a GA.

The Risk Assessment Matrix indicated that the project's impacts were generally low risk, Therefore, the activities associated (Table 4.1) with the borrow pit operation qualify for a **General Authorisation Application Process**.

Additionally, a possible wetland occurs within close or immediate proximity of the proposed borrow pit footprint. Surface and hydrogeological interflow flows can pose risk to erosion due to i) disturbance of the surface during excavation, and ii) Loss of vegetative cover. This can only be confirmed via field verification and may alter the outcome of the desktop risk assessment.

A Precautionary principle was applied for the ratings as the specialist has not ground-truthed the study area.

Table 4.1: Desktop DWS Risk Assessment Results for the non-perennial river after mitigation considerations have been implemented

Phase	Activity	Impact	Potentially affected watercourses			Intensity of Impact on Resource Quality					Overall Intensity (max = 10)	Spatial scale (max = 5)	Duration (max = 5)	Severity (max = 20)	Importance rating (max = 5)	Consequence (max = 100)	Likelihood (Probability) of impact	Significance (max = 100)	Risk Rating	Confidence level
			Name/s	PES	Overall Watercourse Importance	Abiotic Habitat (Drivers)			Biota (Responses)											
						Hydrology	Water Quality	Geomorph	Vegetation	Fauna										
OPERATIONAL	Vegetation Disturbance	The excavation process often leads to the removal of native vegetation		D/E	Moderate	2	2	0	5	3	10	2	4	16	3	48	20%	9,6	L	Medium
		The disturbance of soil and vegetation can create opportunities for invasive species to establish themselves		D/E	Moderate	3	3	0	5	2	10	2	4	16	3	38,4	20%	9,6	L	Medium
	Sedimentation and soil erosion	The disturbance of soil during the excavation process can increase soil erosion		D/E	Moderate	1	3	4	2	2	8	1	3	12	3	36	20%	7,2	L	Medium
		sediment runoff into nearby water bodies.		D/E	Moderate	3	4	3	1	2	8	2	3	13	3	39	20%	7,8	L	Medium

Water Quality Degradation	The creation of borrow pits can change local hydrological patterns, affecting the natural flow of water in riparian zones		D/E	Moderate	5	4	2	2	3	10	1	3	14	4	42	20%	8,4	L	Medium
	There is a risk of groundwater contamination from pollutants associated with borrow pit operations.		D/E	Moderate	5	5	2	1	2	10	1	1	12	3	36	20%	7,2	L	Medium
Access Road	Roads can be sources of various pollutants, including oils, heavy metals, and sediment		D/E	Moderate	3	3	3	1	1	6	1	3	10	3	30	60%	18	L	Medium
Ablution Facilities	Improper disposal of chemical waste from ablution facilities can contaminate soil and water, harming local ecosystems		D/E	Moderate	3	4	0	1	2	8	1	1	10	3	30	80%	24	L	Medium

5. CONCLUSION

Afzelia Environmental Consultants was appointed by Greenmined Environmental (Pty) Ltd on behalf of the Power Construction (Pty) Ltd to conduct a DWS Risk Assessment for a proposed borrow pit. Afzelia Environmental Consultants assessed the potential environmental impacts of the proposed borrow pit on behalf of Power Construction (Pty) Ltd.

The assessment process indicated low-risk impacts, it's crucial to note that it was conducted without on-site verification. Given the potential for unforeseen ecological consequences, particularly regarding vegetation disturbance, water quality degradation, and sediment runoff, a cautious approach is necessary.

Although the project may qualify for **General Authorisation**, it is imperative to implement robust mitigation measures and consider additional on-site verification to minimize environmental impact and ensure sustainable development.

Given that the risk assessment was conducted without ground truthing by a specialist, it is crucial to exercise caution and consider the potential ecological consequences of these findings. A site verification (Wetland assessment) must be undertaken to confirm the desktop findings and risk ratings.

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7. APPENDIX

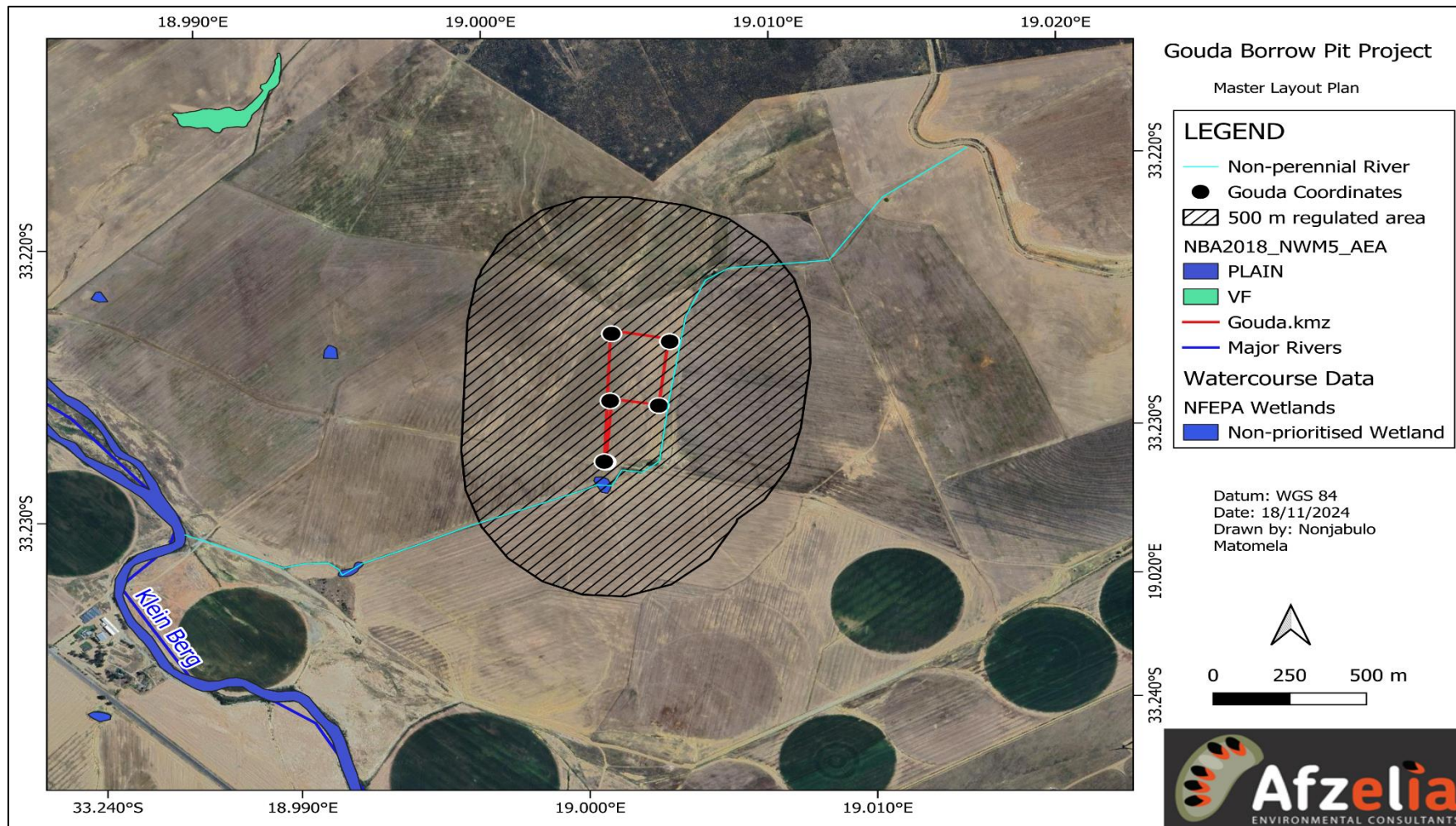


Figure 7.1: Master Layout Plan of the proposed project.