

DRAFT BASIC ASSESSMENT REPORT
PROPOSED CREATION OF A LEVEL PLATFORM ON
PORTION 583 and 584 ON LOT 387 ASSAGAY KRAAL 853
17 MANQOBA DRIVE, QUADI EAST 2
FOR SYAQONDISISA (PTY) LTD



OCTOBER 2019



DRAFT BASIC ASSESSMENT REPORT
PROPOSED CREATION OF A LEVEL PLATFORM ON PORTION 583 and 584 ON LOT 387
ASSAGAY KRAAL 853
17 MANQOBA DRIVE, QUADI EAST 2

Submitted for Environmental Authorisations in terms of the National Environment Management Act, 1998 and the National Environment Management Waste Act, 2008 in respect of listed activities that have been triggered by applications in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (As Amended)

October 2019

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DEPARTMENTAL REFERENCE NUMBER(S)


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SECTION A: Details of the environmental assessment practitioner and specialists

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Successfully completed Scoping and Impact Assessments for PheZulu Game Estate, Stoneford Equestrian Estate, Bluegum Estate. Completed Basic Assessment Reports for Emeraldene Poultry Farm, Electricity supply to Bheka Bantu Clinic, The Bay residential complex.		
Declaration of independence:		
I, <u>Johannes Albert Bodenstein</u> declare that I		
<p>The work presented is my own for which I was paid an agreed professional fee. I have no other interest in the project. I have presented the information as it is and have not withheld any information. I acted independently and have provided the information that may not be of benefit to the applicant.</p>		
Signature of the environmental assessment practitioner:		
Trading name: Indiflora cc Environment Services		
Date: 18 October 2019		

Document reviewer	Qualifications	Experience
Indiflora - Ronel Niemann Tel: 0827342395 Email: roneln@indiflora.co.za	BSc Hons Environment Rehabilitation	6 Years Environment Management
Professional affiliations:	SACNASP:	
Successfully completed Bluegum Estate BAR, Umdoni Forest BAR		
Declaration of independence:		
I, <u>Petronella Niemann</u> declare that I am an independent environmental practitioner who has complied with the requirements for an EAP as stipulated in Regulation 13 of the EIA Regulations, 2014; I do not have any vested interest in the activity, other than remuneration for work performed. I have performed objectively. I am qualified and experienced in conducting environmental impact assessments, including knowledge of the National Environmental Management Act, 1998 (Act107 of 1998), regulations and any guidelines. I will be compliant with the NEMA, and undertake to disclose all material information in my possession that reasonably has or may have the potential of influencing its decision with respect to this application;		
Signature of the environmental assessment practitioner:		
Trading name: Indiflora cc Environment Services		
Date: 18 October 2019		

NAMES AND EXPERTISE OF SPECIALISTS

Names and details of the expertise of each specialist that has contributed to this report:				
Name of specialist	Education qualifications	Field of expertise	Section/ s contributed to in this basic assessment report	Title of specialist report/ s as attached in Appendix D
Andrew Briggs	MSc Conservation Ecology	Wetland delineation	Wetland assessment	Wetland and Riparian Habitat Assessment Report
Len van Schalkwyk	MSc Archaeology	Archaeology	Heritage Assessment	Application for Exemption from Phase 1 HIA Proposed DMR Sand Mining Application Erven 583/584 (Sub of 387) of the farm Assagay Kraal No.853
KDA Consulting Engineers (Pty) Ltd	B-Tech Civil Eng	Civil Engineering	Civil Engineering	Civil Services Report: Proposed Earthworks at 15&17 Manqoba Drive, Quadi South 2, Bothas Hill
Gavin McDonald	MSc	Vegetation	Vegetation peer review	Review Report on the vegetation assessment

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SECTION B: PROJECT INFORMATION

1. PROJECT TITLE:

The establishment of a level platform on Portion 583 and 584, of Lot 387 of Assagay Kraal 853

2. PROJECT DESCRIPTION

Syaqondisisa (Pty) Ltd is applying for a mining permit to remove decomposed granite gneiss by excavating the material, selling it and transporting it off-site as decomposed granite and silica gravel, in the process of establishing of a level platform of 37,192m² on Portion 583 and 584, of Lot 387 of Assagay Kraal 853 (SG code: NOFT0000000085300583 and NOFT0000000085300584) (47,7914 Ha), situated in the Magisterial District 505 Camperdown, 0.85km due north of Bothas Hill, for further development of the land, in the future and to establish a presence on the land by applying.

3. ACTIVITY DESCRIPTION

3.1 Listed and specific activities

Application for a mining permit is submitted to the Department of Mineral Resources in terms of the National Environment Management Act, 1998 and the National Environment Management Waste Act, 2008 in respect of listed activities that have been triggered by applications in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (As Amended):

Table 1: Activities environment authorisation applied for:

Indicate the number and date of the relevant notice:	Activity No(s) (in terms of the relevant notice) :	The listed activity as per the relevant Government Notice	Describe each listed activity as per the project description (and not as per wording of the relevant Government Notice):
GNR 983 4 December 2014	21	Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	The requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
GNR 983 4 December 2014	27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	An area exceeding 1 hectares but less than 20 hectares of indigenous vegetation will be cleared to create the level platform.

During the pre-application meeting with the Competent Authority on 17 October 2017 the Activity 21 was confirmed as the only activity for which environment authorisation was required as it was the

perception at the time that Activity 27 did not apply. Through the assessment of the project with the help of the specialist studies it became apparent that Activity 27 would be exceeded and needs to be included in the application.

Specific activities:

Name of Activity	Aerial extent of activity in Ha or m ²	Listed activity	Applicable Listing Notice GNR 544, GNR 545 or GNR 546
Site camp	30m ²		21 of GNR 983 of 4 December 2014
Topsoil Stockpile	3000m ²		21 of GNR 983 of 4 December 2014
Access Road	2150m ²		21 of GNR 983 of 4 December 2014
Platform	37,192m ²		21 of GNR 983 of 4 December 2014
Excavated material stockpile	2500m ²		21 of GNR 983 of 4 December 2014

3.2 Description of activities

A platform will be developed by the following activities:

1. Vegetation will be grubbed and cleared in the area where the platform will be created. The vegetation will be pushed to form a berm at the lower end of the exposed area to serve as storm water control.
2. Topsoil will be stockpiled and vegetated with Teff grass.
3. Decomposed granite will be excavated and stockpiled. Stockpiled decomposed granite will be sold to third parties and transported off-site for road construction on other development activities.
4. Excavation continues until the desired platform is established.
5. Rehabilitation work will be carried out and the project will be closed.

4. FEASIBLE AND REASONABLE ALTERNATIVES

The environment impact assessment process seeks to establish the development proposal that will ensure best environment practice with no negative environmental impacts. It wants to determine whether the development proposal is in-line with macro planning for the area, whether the development is appropriate for the area. To do so the process must evaluate alternative sites if they are available. Layout alternatives and process alternatives are investigated to determine what the impacts are and how the impacts can be avoided, mitigated and where they cannot be mitigated how they have to be off-set. The landowner owns Portion 582, 583 and 584 of Lot 387 of Assagay Kraal 853. Application for environmental authorisation is only applied for on Portion 583 and 584 as the development proposal straddles the cadastral boundary lie between the two properties. Portion 582 could be an alternative site but the impacts would be very negative as the land is very steep and a platform could not be established on the land.

The alternatives described in this report include land-use alternatives, operational alternatives and the no-go alternatives. The report includes the consideration of the purposes and needs of the proposed activities could have taking into account of the interests of the applicant in the activity and the public. The no-go alternative included in the assessment is the baseline against which the impacts of the alternatives are assessed.

4.1 Site alternatives

The landowner owns Portion 582, 583 and 584 of Lot 387 of Assagay Kraal 853. Application for environmental authorisation is only applied for on Portion 583 and 584 as the development proposal straddles the cadastral boundary lie between the two properties. Portion 582 could be an alternative site but the impacts would be very negative as the land is very steep and a platform could not be established on the land. Where a platform is feasible, just west of the hairpin bend in the road, there is primary grassland. The biodiversity loss and ecosystem services disruption will be too great. The location is also very proud and will be a visual disruption. The non-renewable resource at that location is not enough to make the development of the platform viable. Portion 583 and 584 has already been partly altered by the illegal sand winning that has occurred there. It is located within the bowl created by the surrounding topography making it less visual. The topography is more favourable and the non-renewable resource is economically viable. The position of the platform can control access onto the land better.

4.2 Land-use alternatives:

a. The preferred alternative:

The preferred alternative is to establish a level platform of 37,192m² for future intensive agricultural use yet to be determined. It is only 7% of the land area that will be used for the development of the platform. The platform will be developed by excavating the decomposed granite gneiss and selling it as gravel. The platform is located in the area where illegal sand winning has been done by unknown persons. Post construction, the platform will be top soiled and rehabilitated. A storm water control attenuation structure will be installed to prevent soil erosion. When the time is right and funds are available application will be brought for the further development on the platform or will be used for agricultural production. The remainder of the site will be cleared of invasive alien species and transformed areas will be rehabilitated. The remainder of the land will be maintained as private conservation area.

b. The first alternative:

The establishment of 6 macadamia nut orchards on 158, 800m² on 6 different areas on the farm where invasive alien plant species has transformed the natural habitat or where secondary bushveld has become established due to the absence of fire. Trees will be planted in rows along the contour at 7m intervals and 7m between rows. 3176 Trees can be accommodated which will provide 31 tons of nuts per year conservatively in 12 years time when the trees are mature.

4.3 The No-Go alternative

The No-Go alternative is the alternative where the existing land-use continues and everything remains as it is.

4.4 Technology alternatives

The shaping of the platform will be done using heavy earthmoving equipment such as an excavator, a D9 dozer and a front end loader. All of the work can be done with an excavator but to work efficiently it will be better to use a combination of machines.

5. SITE LOCATION AND BASELINE INFORMATION

5.1 Activity Position

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates are in degrees, minutes and seconds. The only and preferred site alternative is **Ptn 583 & 584 of LOT 387 ASSAGAY KRAAL 853** which is located at:

Latitude: 29° 44' 31.02" S Longitude: 30° 44' 06.58" E

5.2 Physical size of the activity

The physical size of Portion 583 and 584 of LOTS387 of Assagay Kraal 853 is **478,239m²**.

The physical size of the Preferred Alternative, The level platform is 37192m² which is 7% of the property and the physical size of the First Alternative the 6 Macadamia Nut orchards is 158,800m² which is 33% of the property. The remainder is to be left as private conservation area.

5.3 Site access

The access road in the case of both alternatives is off the existing municipal tar road Manqoba Drive. The access is typical for agricultural activities and is a 9m wide dirt road. The plan is to continue to use the road as it is. There will be a marginal increase in traffic to and from the farm as a result of the tip trucks transporting the gravel whilst the mine is in operation. It is not anticipated to result in any negative impact on the access road. A minor upgrade is required at the farm/municipal road junction.

5.4 Zoning:

The land is zoned Agriculture

5.5 Topography:

The terrain has a rolling and hilly landscape form. The site is located on the top of the ridge line where the southern side slopes quite steeply towards the drainage line to the south. The north facing slope drops quite steeply to the drainage line to the north. The ridge line slopes downwards from the east to the west. Therefore the drainage lines on either side of the ridge line drain in a westerly direction. The main watercourse flows in a northerly direction and parallel to Wooton Avenue. The two drainage lines flow into this watercourse.

5.6 Geology:

The geotechnical test confirmed the area is underlain by Granite Gneiss which generally is located under a shallow layer of mid-brown, well-drained and nutrient poor soil gritty sand of weathered granite.

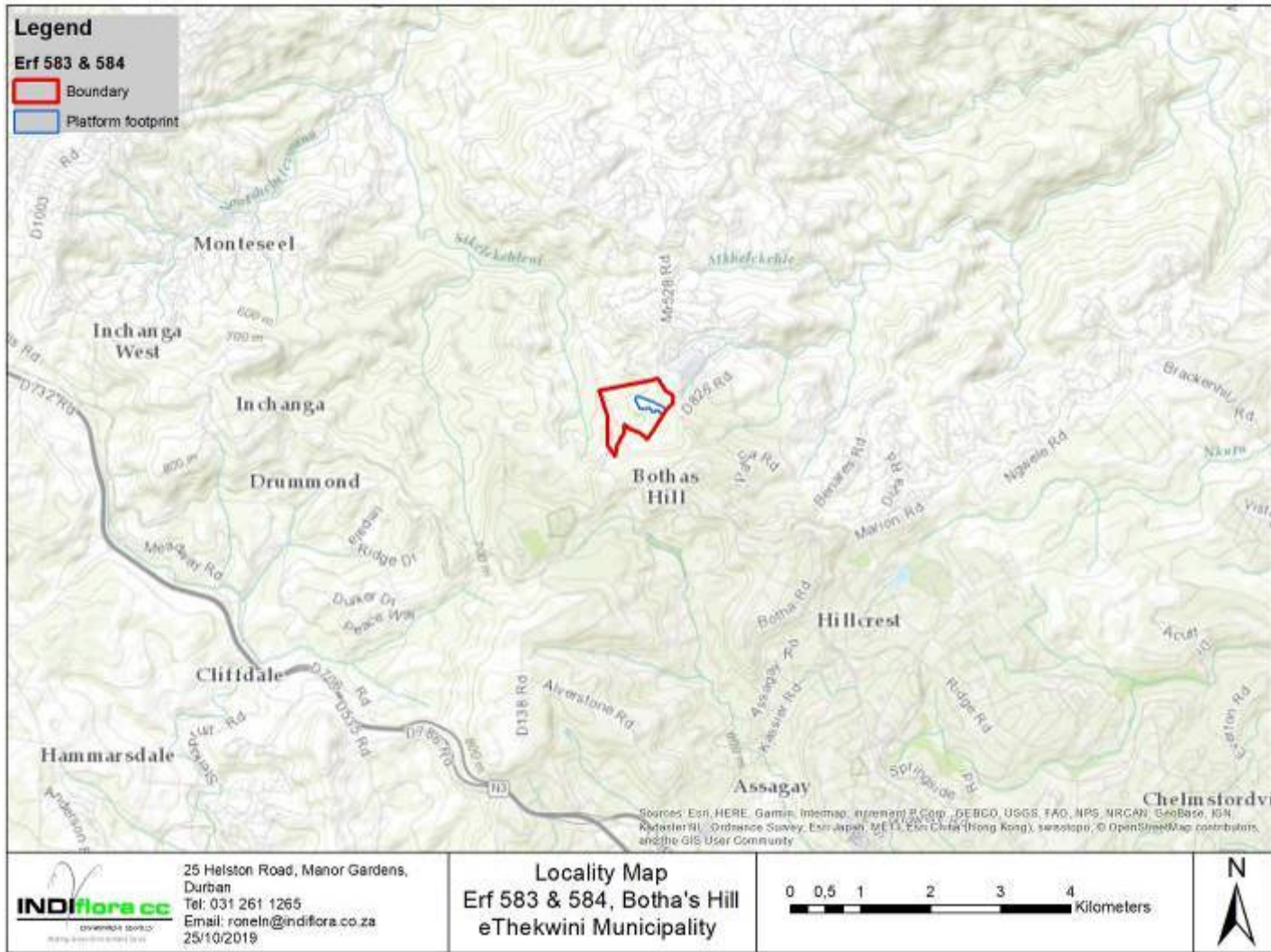


Figure 1: The locality map

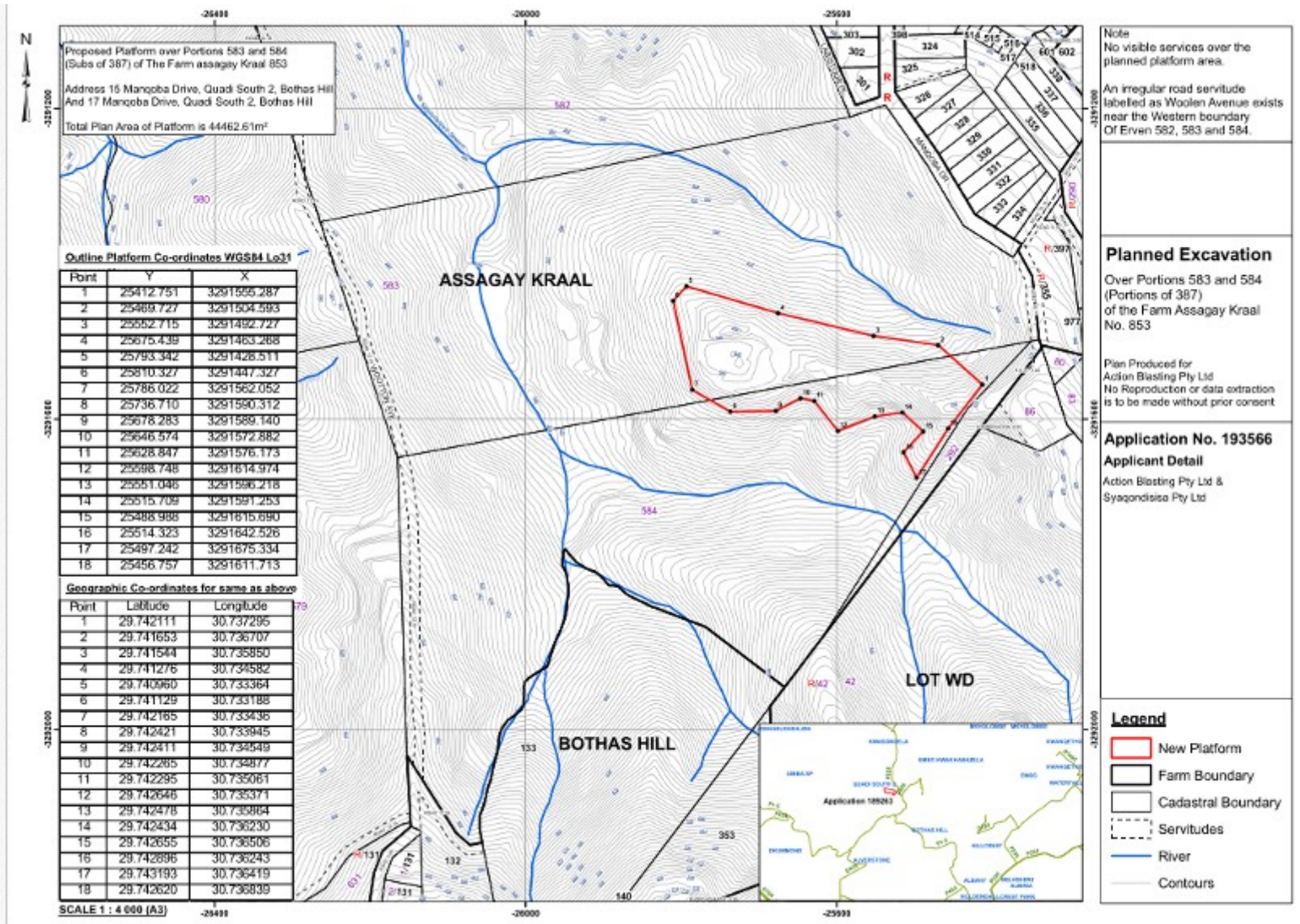


Figure 2: The site layout plan

5.7 Vegetation:

The natural vegetation that covers the ridgeline and the side slopes of the hill where the platform is to be established is Moist Coast Hinterland Grassland (GS20) (Escott, Scott-Shaw, 2011). (Mucina and Rutherford, 2006:511) called this veld type Ngongoni Veld (SVs 4) and Acocks (1975) also formerly called it Ngongoni Veld (VT 5) and Camp (1999) classed it to belong to the Moist Coast Hinterland Ngongoni Veld Bio Resource Group BRG 3.

Areas with natural untransformed Moist Coast Hinterland Grassland are recognised by the dense tall sour grassland often dominated by unpalatable Ngongoni grass (*Aristida junciformis*). Ngongoni grass has mono-dominance associated with low species diversity. When the Moist Coast Hinterland Grassland is in good condition it can be dominated by *Themeda triandra* and *Tristachya leucothrix* (Escott, Scott-Shaw, 2011).

The remaining grassland at the site has been identified, in writing, by the Biodiversity Section of eThekweni Environmental Planning and Climate Protection Department as being species rich (Thengwa, 2012).

In doing a site inspection the study area was traversed in transects and species diversity recorded until no new species were recorded. Along each transect the abundance of species was monitored by observation and photographic record.

It was very evident that much of the study area (+/- 80%) has been transformed by the contiguous infestation of woody alien invader plants of which *Lantana camara* and *Chromolaena odorata* are the most dominant. The infestation is at its densest in the valley bottom particularly in the northern drainage line. The south-facing slope on the north side of the northern drainage line has the tallest plants. The north-facing slope of the same valley has the infestation in the form of scrub. The scrub is secondary bushveld which is a combination of local indigenous trees and shrubs associated with Valley bushveld.

The grassland is fragmented and remains as disjointed pockets. There is an area of grassland on the south-facing slope north of the northern drainage line and there is a grassland area on the south-facing slope of the central ridge line. The last grassland area is located west of the main drainage line below Wooton Avenue.

These grassland areas are dominated by *Aristida junciformis* grass. The grazing by cattle from the tribal area exert pressure on the grassland and multi plant collection in the area has reduced the species richness of the grassland.

5.8 Facility illustration

A detailed illustration of the facility must be provided at a scale of 1:200 and attached to this report as Appendix C. The illustrations must be to scale and must represent a realistic image of the planned activity/ies.

5.9 D'MOSS

There is D'MOSS over Portions 583 and 584 of Lot 387 Assagay Kraal 853.

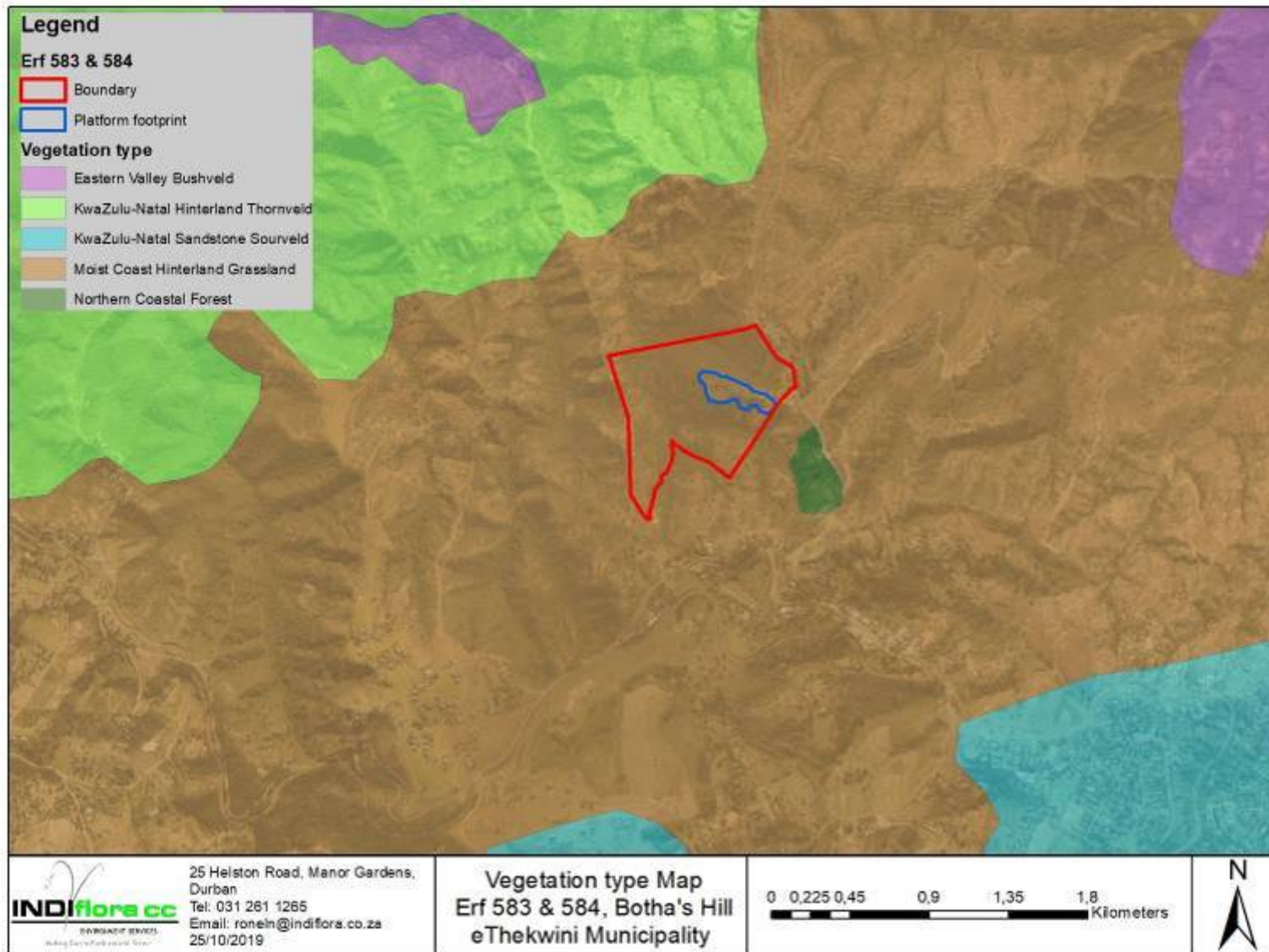


Figure 3: The vegetation of the study area

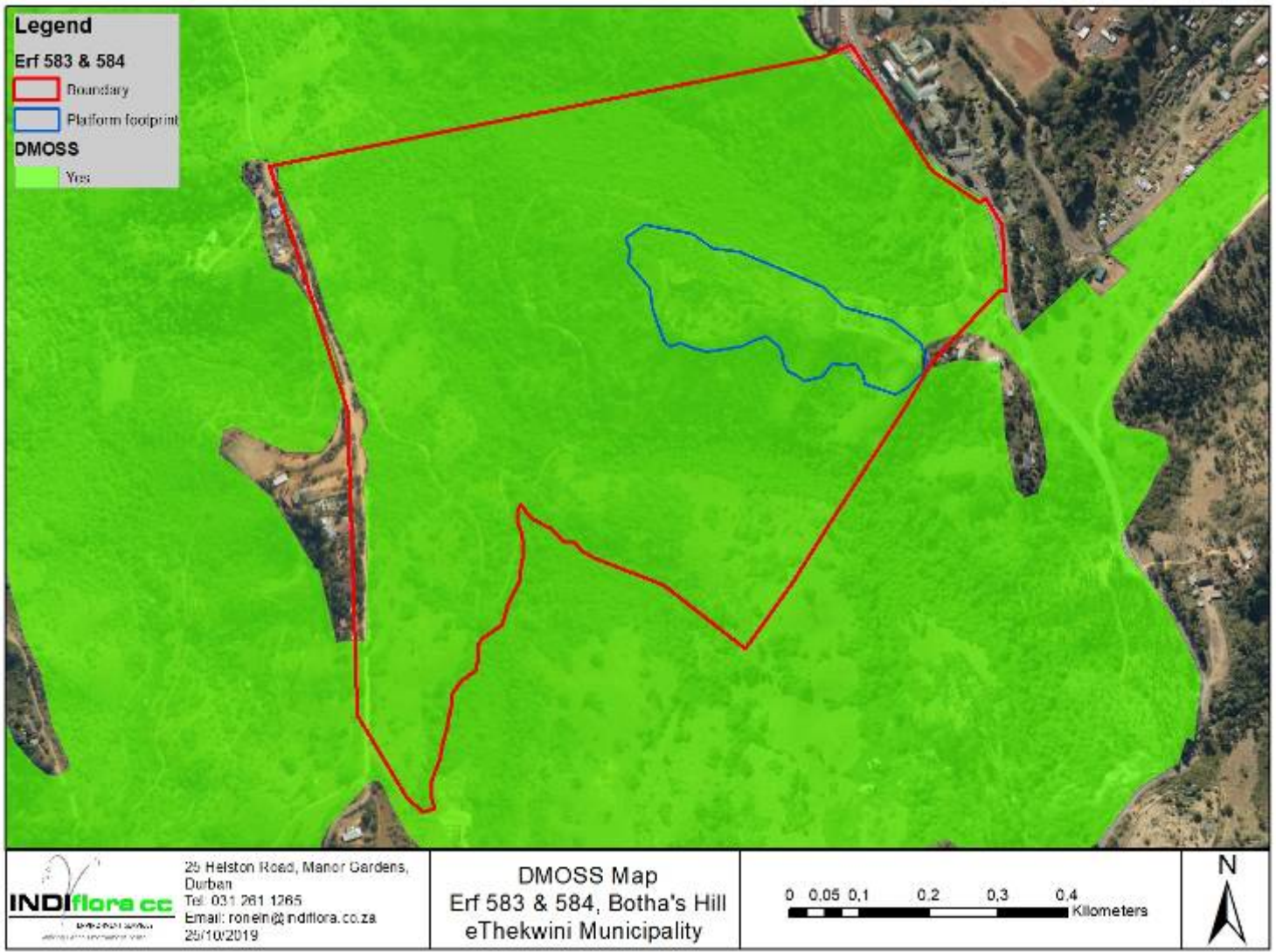


Figure 4: D'MOSS over the study area

5.10 Activity motivation - Socio-economic value of the activity

The expected capital value of the activity on completion is R 7.5 mil. The expected yearly income to be generated by or as a result of the activity is R120,000. The activity will not contribute to service infrastructure and is not a public amenity. 16 new employment opportunities will be created in the development phase of the activity and 8 permanent new employment opportunities will be created during the operational phase of the activity. The expected value of the employment opportunities during the development phase is R318,000. 100 percent of this will accrue to previously disadvantaged individuals. The expected current value of the employment opportunities during the first 10 years is R5.28mil. 90 percent of this will accrue to previously disadvantaged individuals.

5.11 Need and desirability of the activity

In a BA Process the need and desirability of the proposed project is reviewed in terms of the Need and Desirability Guidelines published in the Government Gazette 38108 of 20 October 2014. The Guidelines contain specific questions to determine why the proposed developments are needed and what about the development makes it desirable. This is a useful checklist tool when addressing specific questions regarding the need and desirability of a project. The need and desirability is explained in regional i.e. the provincial and local context. It answers questions regarding the timing and location for the proposed activity. The list of questions based on the DEA's Guideline is included in the Table below. It should be noted the responses in the table were informed by the baseline assessment and specialist studies of the BA Process.

[Table 2: The list of 22 questions to determine the "Need and Desirability"](#) of a proposed project as per the Guideline on the Need and Desirability (2014)

NEED	
Question	Response
1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area)?	
1.1. How were the following ecological integrity considerations taken into account?: 1.1.1.Threatened Ecosystems, 1.1.2.Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure, 1.1.3.Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"), 1.1.4.Conservation targets, 1.1.5. Ecological drivers of the ecosystem, 1.1.6.Environmental Management Framework, 1.1.7.Spatial Development Framework, and 1.1.8 Global and international responsibilities	Available data-sets e.g. SANBI BGIS, EKZNW Min-Set, EPCPD were interrogated in the baseline assessment to determine the No-Go areas. To make the land economically viable ecological sacrifices were secured through off-sets and land rehabilitation plans. Water courses and areas of natural grassland were provided protection. The proposed platform land-use is only 7% of the property leaving the remaining 93% for conservation. The alternative of establishing macadamia nut orchards on land already transformed takes up 33% leaving 67 for conservation.

relating to the environment (e.g. RAMSAR sites, Climate Change, etc.	
1.2. How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The platform proposal will need to destroy 2.8 Ha of primary and secondary grassland of the 4.4 Ha platform area to protect 40Ha of grassland and riverine habitats. The proposal has to be economically viable to generate the funds to protect and conserve the remainder. The negative impacts can be mitigated through rehabilitation and plant rescue can restore grasslands presently infested with invasive alien species.
1.3. How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Avoiding the impacts will leave the land devoid from financial income to fund the control of invasive alien plants or to secure the property to prevent illegal grazing, muti plant collecting, water abstraction and illegal solid waste disposal. Some compromise is necessary to achieve the biodiversity conservation targets. Off-setting is the last resort. Some activity must be allowed to raise funds to finance the AIP control program and fund the rehabilitation. Funds are not available to finance off-setting prior to the authorisation is obtained. Performance targets can be set and performance can be monitored to ensure the desired biodiversity objectives are met.
1.4. What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether; what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	Creation of the platforms will not generate much waste as only 16 jobs will be created and no permanents structures will be erected immediately. Waste generated will be domestic waste which can be sorted into compostable, recyclable and general waste. Compost will be used in the rehabilitation program. Recyclable waste can either, be reused, repurposed or sent off to a recycle company for recycling. Only general waste will be disposed of through the municipal waste stream.
1.5. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The heritage assessment did not find any proof of heritage items on the property. No mitigation is required. Should any heritage items be discovered when earthworks commence the work will stop and the Heritage Authority will be informed to investigate.
1.6. How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to	A permit application has been lodged with the Department of Mineral Resources to mine the non-renewable resource. Illegal mining by unknown persons has been taking place because there is no presence on the land. The natural resource is being depleted and lost with no recourse. With the formal application the topsoil will be saved and returned onto the formed platform. The non-renewable resource is in high demand and will be put to good use to maintain district road infrastructure and other form of development that contributes to job creation

<p>enhance positive impacts?</p>	<p>and the economy. To sacrifice a small area of this non-renewable resource makes it possible that the remainder can be protected. The protection of the remainder of the land is a positive impact.</p>
<p>1.7. How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?</p> <p>1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)</p> <p>1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra-and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources of the proposed development alternative?)</p> <p>1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resource</p>	<p>The preferred and first alternatives will not make use of the renewable resources present on the property. The ecological impact will be at the construction phase. The rehabilitation process, invasive alien plant control and operational phase will protect the renewable resources.</p> <p>1.7.1 There is limited dependency on the renewable resources for economic growth. Water may be required for the irrigation of the macadamia nut trees. The development of the platform in the future could consider using solar energy or wind energy for the provision of electricity.</p> <p>1.7.2 The limited use of renewable resources ensures the intergenerational equity remains intact.</p> <p>1.7.3 The proposed platform is the lowest impact as the footprint is so small leaving the remainder of the property as a reduced resource dependency area.</p>
<p>1.8. How were a risk-averse and cautious approach applied in terms of ecological impacts?:</p> <p>1.8.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</p>	<p>The objective of the project is to establish a presence on the land to prevent the illegal activities currently occurring unabated. In developing the concept the precautionary approach was adopted to minimise the ecological impact.</p> <p>The gaps in knowledge are the intensity of the demand for decomposed granite which will determine how quickly the material will be removed off-site. Judging from the illegal mining activity further down the road is that it is steady. The actual footprint the eThekweni Environment Planning and Climate Protection Department (EPCPD) will allow.</p>

<p>1.8.2. What is the level of risk associated with the limits of current knowledge?</p> <p>1.8.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</p>	<p>Uncertainties include the support of the EPCPD for any development on the land. The ability to obtain a mining permit for the decomposed granite because a mining permit was issued on the land in favour of a hostile third party without the landowners consent which has been stopped with court action.</p> <p>The assumption is made that some development footprint will be permitted and that the negotiation process will crystallise the final shape of it. EPCPD has not been forthcoming with the size of footprint they will tolerate on the property.</p> <p>The risk lies in the time it takes to get a development proposal approved gives the hostile third parties time to obtain a mining permit legally or otherwise which will prevent the landowner to utilise the non-renewable resource for his own benefit. The non-renewable resource is the target and it is a war out there and the one who gets there first wins. With approval the remainder of the ecosystem can be protected. With illegal mining it won't.</p> <p>1.8.3 Only the smallest footprint (7%) is proposed for land use leaving 93% to be protected.</p> <p>Environmental management controls limit or prevent further impacts.</p>
<p>1.9. How will the ecological impacts resulting from this development impact on people's environmental right in terms following:</p> <p>1.9.1. Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?</p> <p>1.9.2. Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?</p>	<p>The land is private land and people from the area have no rights to natural resources on the land. Muti plants are collected illegally as it is done with the landowners consent nor with collecting permits from EKZNWildlife. Water is abstracted by tanker truck without the landowners consent nor with a water use licence.</p> <p>The creation of a platform will have a visual impact below the surrounding ridgelines during construction. Once the topsoil is replaced and the platform is grassed the visual impact will be minimised. You cannot create the platform without having a visual impact. Construction is however a temporary phase and rehabilitation is a mitigation measure. Noise is not an impact as there is distance between the platform and the nearest developments. Dust may be an issue but will be a site issue and will not affect surrounding development.</p> <p>Illegal activities will cease. Waste will no longer be dumped illegally as a presence on the land will discourage it. Job opportunities are created and the local economy is stimulated. The greater proportion of the site is set aside for conservation. Invasive alien plants are extirpated and the veld is rehabilitated.</p>
<p>1.10. Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g.</p>	<p>Humans are dependent on an environment that is in a healthy state where biodiversity provides ecosystem services that make human life possible. By limiting the footprint of the development and securing the protection of biodiversity and</p>

on livelihoods, loss of heritage site, opportunity costs, etc	ecosystem services the well being of people is assured. Access to resources is possible when people follow the right channels of communication and seek permission from the landowner formally.
1.11. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives / targets / considerations of the area?	The proposed activity does impact negatively on the grassland component. The integrity of the existing environmental management priorities for the remainder of the area will be protected and rehabilitated by this development.
1.12. Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	If the mining and creation of a platform is unacceptable and considered to not be in line with the zoning on the land then an alternative within the zoning of the land has to be considered. Extensive farming is not viable as the risk of stock theft is too great, the carrying capacity of the veld is low and the few animal units that can be accommodated does not make it economically feasible. The land is very steep and the soil quality too poor and too steep for intensive cultivation unless contour terraces are cut which will destroy the natural vegetation. The proposal of macadamia nuts is viable as the potential income is substantial. The placement of the orchards was limited to areas where invasive aliens or secondary bushveld have become established. The primary and secondary grassland were avoided to ensure the ecological integrity remained intact. The water course corridors with buffers were left out of the developable areas.
1.13. Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	The negative impacts include the loss of biodiversity and ecosystem services on the platform area. Other developments in the area are contributing to the gradual breakdown of biodiversity and ecosystem services. The establishment of the platform and the anticipated development of the platform will change the sense of place.
NEED	
Question	Response
2.1. What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?	
2.1.1. The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,	The eThekweni Municipality IDP 2019/2020 has indicated MOSS to be present on the land and the preference for the land to remain agricultural and non-urban (p329) as a means to sustain the spatial, natural and built environment. Recreation and tourism development has been identified in the spatial development concept (p357, p365)
2.1.2. Spatial priorities and desired spatial patterns (e.g. need for integration of segregated communities, need to upgrade informal settlements, need for densification, etc	This development will create a number of job opportunities and the local economy will benefit.
2.1.3. Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.	The land use will remain agricultural although the appearance may change.
2.1.4. Municipal Economic Development Strategy ("LED Strategy	Jobs will be created during construction and in the operational stage permanent jobs will be created. Once the platform is developed additional jobs will be created. The local economy will benefit with the acquisition of materials. The activity on the platform

	will produce products to be sold or exported and will contribute to the GDP. If the first alternative is authorised the macadamia nuts will be exported earning foreign capital.
<p>2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?</p> <p>2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?</p>	Local unemployed people will be employed and this will contribute to alleviating poverty. During construction and operation people employed will receive skills training. Emerging contractors will be used to provide required services which will stimulate the local economy.
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	The creation of job opportunities and making use of the services of emerging contractors will address most of the community needs. Allowing them to graze their cattle on the land and to harvest muti plants through a sustainable-use agreement will help.
2.4. Will the development result in equitable (intra-and inter-generational) impact distribution, in the short-and long term? Will the impact be socially and economically sustainable in the short-and long-term?	The fact that 93% of the land will remain undeveloped establishes the intergenerational low impact in the long-term.
<p>2.5. In terms of location, describe how the placement of the proposed development will:</p> <p>2.5.1.result in the creation of residential and employment opportunities in close proximity to or integrated with each other,</p> <p>2.5.2.reduce the need for transport of people and goods,</p> <p>2.5.3.result in access to public transport enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport)</p> <p>2.5.4.compliment other uses in the area</p> <p>2.5.5.be in line with the planning for the area</p> <p>2.5.6.for urban related development, make use of underutilised land available with the urban edge</p> <p>2.5.7.optimise the use of existing resources and infrastructure,</p> <p>2.5.8.opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement</p> <p>2.5.9. discourage "urban sprawl" and contribute to</p>	<p>The job opportunities will be within walking distance from the KwaNyuswa community</p> <p>People can walk there as it is close to an important transport route</p> <p>The access road is accessible to all forms of transport. Public transport will most likely remain on the main route.</p> <p>Other platforms has already been created e.g. the neighbouring church site</p> <p>The area is zoned agriculture but earmarked for recreation and tourism. The proposed use is in-line with the zoning</p> <p>The development is outside the urban edge</p> <p>That is the intention with the use of the non-renewable resource whilst creating an opportunity to establish an intensive landuse later in-line with the zoning</p> <p>Opportunity costs are low and will tie into existing bulk infrastructure</p> <p>The development will not add to Urban sprawl</p>

<p>compaction/densification,</p> <p>2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,</p> <p>2.5.11. encourage environmentally sustainable land development practices and processes,</p> <p>2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),</p> <p>2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),</p> <p>2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and</p> <p>2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?</p>	<p>The proposed development will not require more use than is catered for in the existing infrastructure</p> <p>The low land usage leaves the bulk of the land undeveloped making it sustainable</p> <p>The availability of decomposed granite and silica gravel is a sought after commodity. It will be made inaccessible with other land-uses.</p> <p>The business model creates jobs and stimulates the local economy</p> <p>The topography will change which will impact on the historical look and feel which can be mitigated through the rehabilitation programme.</p> <p>Other parts of the property could be considered for integrated settlement in the future but is not presently within the scope of this development.</p>
<p>2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts?</p> <p>2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</p>	<p>The objective of the project is to establish a presence on the land to prevent the illegal activities currently occurring unabated and to secure access to the non-renewable resource. In developing the concept the precautionary approach was adopted to minimise the socio-economic impact.</p> <p>The <u>gaps in knowledge</u> are the intensity of the demand for decomposed granite which will determine how quickly the material will be removed off-site. Judging from the illegal mining activity further down the road is that the demand is steady. The limited development the eThekweni Environment Planning and Climate Protection Department (EPCPD) will allow is unknown as communication with the EPCPD has been tense and not forthcoming. <u>Uncertainties</u> include the support of the EPCPD for any development on the land. The ability to obtain a mining permit for the decomposed granite is an uncertainty because a mining permit was issued illegally on the land in favour of a hostile third party without the landowners' consent which has been stopped with court action. The illegal mining is capturing the economic benefits without the responsibility to care for the land left behind. It is uncertain whether the community benefits in any way from the illegal activities.</p> <p><u>The assumption</u> is made that some development footprint will be permitted and that the negotiation process will crystallise the final shape of it. EPCPD has not been forthcoming with the size of footprint or the form of landuse they will tolerate on the property.</p>

<p>2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?</p> <p>2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</p>	<p>The risk lies in getting development approval as without approval the risk is high for the local community to gain any benefit from the land</p> <p>The proposal will keep the risk level at low when it comes to socio-economic sustainability with regard to the local community. Developing intensive cultivation practice on the platform at a later date will alleviate the socio-economic shortfall then.</p>
<p>2.7. How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:</p> <p>2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?</p> <p>2.7.2. Positive impacts. What measures were taken to enhance positive impacts?</p>	<p>The creation of a level platform has no bearing on the environment rights of the local community.</p> <p>The creation of jobs will be a positive impact for some members of the local community</p>
<p>2.8. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio- economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?</p>	<p>The limited use of the land will ensure the remainder is protected to render the ecosystem services that will ensure the human well being and livelihoods. The people can depend on the natural resource as it will remain intact on the bulk of the property.</p>
<p>2.9. What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?</p>	<p>Developing more of the land would have created more jobs but would have been detrimental from an ecosystem service perspective. Limiting the development footprint still creates jobs and economic opportunities albeit at a smaller but economically viable scale</p>
<p>2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?</p>	<p>Environmental impacts are site bound and will not impact on the environmental justice of any person.</p>
<p>2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?</p>	<p>Access to natural renewable resources such as multi plants, grazing can arranged through mutual agreements and contracts, negotiated on fair terms.</p>

<p>2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?</p>	<p>An EMP and the rehabilitation plan ensures there is a structured plan that will bind the landowner and/or tenants to the responsibility of ensuring environmental health and safety.</p>
<p>2.13. What measures were taken to:</p> <p>2.13.1. ensure the participation of all interested and affected parties,</p> <p>2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,</p> <p>2.13.3. ensure participation by vulnerable and disadvantaged persons,</p> <p>2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,</p> <p>2.13.5. ensure openness and transparency, and access to information in terms of the process,</p> <p>2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and</p> <p>2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted?</p>	<p>Site notices were erected neighbours were hand delivered BID documents and an advert was placed in the Highway Mail. The BID provided the information in writing.</p> <p>All persons were equally able to participate</p> <p>Information was made accessible at the Hillcrest Library</p> <p>All documents were included in the Draft BAR for all to see All forms of communication received were captured in the Comments and response report and all comments positive and negative were recorded</p> <p>The invitation was open to all parties as there were no exclusion clauses included.</p>
<p>2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?</p>	<p>This is not a housing development so it does not cater for any of the groups</p>
<p>2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?</p>	<p>The final landuse is still undetermined. The EMP provides clauses that protects workers rights</p>
<p>2.16. Describe how the development will impact on job creation in terms of, amongst other aspects:</p> <p>2.16.1. the number of temporary versus permanent jobs that will be created,</p> <p>2.16.2. whether the labour available in the area</p>	<p>16 Temporary jobs and 8 permanent jobs will be created All posts will be for local workers ad where skills are</p>

<p>will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),</p> <p>2.16.3. the distance from where labourers will have to travel,</p> <p>2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and</p> <p>2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.)</p>	<p>lacking they will be trained according to the need</p> <p>Under 5km</p> <p>Within the same neighbourhood</p> <p>The land is currently vacant and derelict. All jobs will be Greenfield jobs with no opportunity costs</p>
<p>2.17. What measures were taken to ensure:</p> <p>2.17.1. that there were inter-governmental coordination and harmonisation of policies, legislation and actions relating to the environment, and</p> <p>2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?</p>	<p>This is a private development where commenting opportunity was given to state and municipal departments to comment and enforce their policies</p> <p>One on one consultation was held to alleviate any log jams</p>
<p>2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?</p>	<p>This land is in private ownership and is not public land. Undeveloped parts of the property will be managed by the landowner for the benefit of the community but not as a public amenity or a common heritage.</p>
<p>2.19. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?</p>	<p>The landowners will once the economic potential of the land is unlocked be able to invest money into the long-term management of the environmental legacy. Further development of the platform will strengthen the potential for long-term management. Management costs money which must be generated somehow. The land must pay for itself.</p>
<p>2.20. What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?</p>	<p>The environment management plan makes provision for ongoing monitoring and reporting on the state of the environment. The NEMA principles of Duty of Care and Polluter Pays are incorporated providing the framework for legal recourse and remedial work to be enforced.</p>
<p>2.21. Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?</p>	<p>The preferred option has the least impact from an area perspective with limited impacts during construction. The ultimate landuse will be subject to environmental approval which is a second round of environmental scrutiny ensuring all aspects are covered. The First Alternative makes use of a larger portion of the land and has different impacts than the platform. More people will be employed with the macadamia nut orchards</p>
<p>2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?</p>	<p>The positive impacts is that unemployed people will be employed whilst developing the land will restrict access to the land for the cattle herders and muti collectors.</p>

6. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Table 3: List of relevant legislation

Title of legislation, policy or guideline:	Administering authority:	Date:
The Constitution (as amended)		Act 108 of 1996
National Environmental Management Act (NEMA) & The National Environmental Management Amendment Act	Department of Agriculture and Environmental Affairs	Act 107 of 1998 & Act 8 of 2004
National Environmental Management: Biodiversity Act (NEMBA)	eZemvelo KZN Wildlife	Act 10 of 2004
National Environmental Management: Air Quality Act	Directorate:Air Quality Management (DEAT)	Act 39 of 2004
Environmental Conservation Act (ECA)	Department of Agriculture and Environmental Affairs	Act 73 of 1989
Natal Nature Conservation Ordinance	Ezemvelo KZN Wildlife	Act 15 of 1974
National Water Act (NWA)	Department of Water Affairs and Forestry	Act 36 of 1998
Subdivision of Agricultural Land Act (70 of 70)	National Department of Agriculture	Act 70 of 1970
Conservation of Agricultural Resources Act (CARA)	Department of Water Affairs and Forestry	Act 43 of 1983
Agricultural Products Standards Act (APS)	National Department of Agriculture	Act 119 of 1990
National Forests Act	Department of Water Affairs and Forestry	Act 84 of 1998
National Heritage Resources Act	South African Heritage Resources Agency	Act 25 of 1999
KwaZulu Natal Heritage Act	AMAFA aKwaZulu Natali	Act 10 of 1997
Restitution of Land Rights Act	Regional Land Claims Commission	Act 22 of 1994
Removal of Restrictions Act	Department of Traditional and Local Government Affairs	Act 84 of 1967
Atmospheric Pollution Prevention Act	Department of Environmental Affairs and Tourism and Department of Trade and Industry	Act 45 of 1965
Labour Relations Act	Department of Labour	Act 66 of 1995
Basic Conditions of Employment Act	Department of Labour	Act 75 of 1997
Occupational Health and Safety Act	Department of Labour	Act 85 of 1993
Hazardous Substances Act	Department of Health, Welfare and Pensions	Act 15 of 1973
Town Planning Ordinance	Department of Traditional and Local Government Affairs	Ordinance 27 of 1949

SECTION D: PUBLIC PARTICIPATION

1. Site Notice

A site notice was erected at the entrance on Maqoba Drive and on Wootton Avenue giving notice to all potential interested and affected parties of the application inviting them to participate in the public participation process.

The 60cm by 42cm notice board displayed the information regarding the site where the activity is to be undertaken; what the application is for and how to register as an I&AP.

2. Background Information Document

A Background Information Document (BID) was prepared and was hand delivered to all neighbours and was emailed to the local councillor, the relevant state department and the municipalities. Where neighbours were not at their property at the time of delivery the delivery was delayed to a different time of day in the hope of finding someone in attendance. On the third attempt of the delivery and no one was present the BID was tied with a cable tie to the post box or the gate. The BID contained the names of the applicant, the proposed development with a map indicating the land in question, the proposed development, the name and contact details of the EAP and invitation to make representations regarding the proposed development. A questionnaire for I&AP's to complete and submit as a form of registering as an I&AP.

3. Register of Interested and Affected Parties and stake holders

23 Interested and Affected Parties including the neighbours and local councillor were identified and 7 state departments and municipalities were identified as stakeholders at the commencement of the project. The Public participation process kept the registration process for I&AP's open up to when the BAR was prepared. The register is included in Appendix E.

4. Participation by district, local and traditional authorities

District and local authorities are key interested and affected parties in the application and were given the opportunity to give input. The local traditional authority was not consulted as the area lies outside of the tribal area. The district municipality did provide comment and it is included in Appendix E.

5. Consultation with other stakeholders

Comments have been received from Ezemvelo KZN Wildlife, The Department of Water and Sanitation, The Department of Agriculture Forestry and Fisheries and Amafa aKwaZulu-Natali.

6. Comments and Response Report

The comments received from I&AP's and state departments or the municipalities with the responses by the EAP to, each comment of the public, is included in the Comments and Response Report and is attached as Appendix E to this report.

7. Compilation of the Final BAR for submission to KZNDEDETEA

The Finalised BAR will be submitted to KZNDEDETEA and DMR for consideration after the 30 day commenting period has expired. In this application comments from stakeholders have been coming in long after the 30 days commenting period expired. Because this application process goes hand-in-hand with a BAR application to the DMR and KZNDEDETEA delays in submission were encountered. Each department has specific requirements to must be included in the BAR that is not required by the other department makes this a complicated application.

8. Environmental decision making and appeal period

Once the DMR and KZNDEDETEA have made their decisions and have published their decision the EAP will be given time to notify all I&AP's of the decisions. In this notice of the decision will be issued to all I&AP's and all I&AP's will be invited to lodge an appeal against the decision with the relevant department. The notice will provide the contact and addresses of the departments and the time frame within which the appeals must be lodged. All I&AP's will be advised where a copy of the EA can be obtained. On conclusion of the appeal process all I&AP's will be advised of the outcome of the appeal process.

SECTION E: IMPACT ASSESSMENT

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

1. Issues raised by interested and affected parties

List the main issues raised by interested and affected parties:

- The appropriateness of the proposed platform without a clear development vision

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

The land is zoned agriculture and the intended use is for agriculture. The natural topography of the land makes it difficult to cultivate crops on the land. The geology of the area is also not suitable for the growing of crops. The proximity of the site to the tribal area makes the keeping of livestock a high risk activity. The local community currently utilise the land for the grazing of their cattle. Introducing new herds of livestock into the area will lead to conflict. The carrying capacity of the grassland is low and the size of land is not viable for extensive farming. The possibility of erecting a structure within which high value agricultural crops can be grown is more realistic. Using the structure for the packing of fruit and vegetables will still be within the zoning of the land. The applicant has not finalised the exact form of agriculture to be applied on the land as yet. Once the material is sold and the platform created the applicant will have capital to fund the next phase of the development. The land may be sold on to a third party for development whom will have to apply for environment authorisation at that time.

2. Approach to the basic assessment

Potential environmental issues have been identified that will arise from a development of this nature. The identified environmental issues have been rated according to the "assessment criteria". Please refer to Table 1 below.

Table 4: Significance scoring used for each potential impact

Probability	Duration
1 - very improbable	1 - very short duration (0-1years)
2 - improbable	2- short duration (2-5 years)
3 - probable	3 - medium term (5-15 years)
4 - highly probable	4 - long term (>15 years)
5 - definite	5 - permanent/unknown
Extent	Magnitude
1 - limited to the site	2 – minor
2 - limited to the local area	4 – low
3 - limited to the region	6 – moderate
4 - national	8 – high
5 - international	10 – very high

The following formula was used to calculate impact significance:

$$\text{Impact Significance: Probability} \times (\text{Duration} + \text{Extent} + \text{Magnitude})$$

The formula gives a maximum value of 100 points which are translated into 1 of 3 impact significance categories; Low, Moderate and High as per **Table 5**.

Table 5: Impact significance ratings

Significance Points	Significance Rating
<30 points	Low environmental significance
31 – 59 points	Moderate environmental significance
>60 points	High environmental significance

2.1 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASES

The impacts that may occur when the proposed level platform is created are identified and assessed in the table 6 below:

Table 6: The assessment of the impacts caused by the Preferred Alternative; To create a level platform.

IMPACTS ASSOCIATED WITH THE Creation of a level platform for future agricultural use										
Impact	Probability		Duration		Extent		Magnitude		Significance scoring without mitigation	Significance scoring with mitigation
	Without	With	Without	With	With out	With	Without	With		
Construction Phase										
Removal of indigenous vegetation	5	5	2	2	1	1	10	8	65 High -	55 Moderate -
Change of natural topography in the platform area only.	5	4	2	3	1	1	8	6	55 Moderate -	40 Moderate -
Loss of biodiversity ecosystem services in the platform area only.	5	4	2	3	1	1	10	6	65 High -	40 Moderate -
Reduction in run-off from the platform area.	4	3	2	3	1	1	6	4	36 Moderate -	24 Low -
Establish a presence on the land.	3	4	2	3	1	1	6	8	27 Low +	48 Moderate +

Decomposed granite and silicate grit material becoming available to the local market.	3	4	2	2	1	1	4	6	21 Low +	36 Moderate +
Impact summary									-173	-75
Operational Phase										
Removal of vegetation	2	2	4	4	1	1	4	2	18 Low-	14 Low-
Change of natural topography in the platform area only.	2	1	1	1	1	1	2	2	8 Low -	4 Low -
Loss of biodiversity ecosystem services in the platform area only.	2	2	4	4	1	1	4	2	18 Low -	14 Low -
Reduction in run-off from the platform area.	4	3	4	4	2	2	4	2	40 Moderate -	24 Low -
Establish a presence on the land.	3	4	4	4	1	1	6	8	33 Moderate +	52 Moderate +
Decomposed granite and silicate grit material becoming available to the local market.	1	1	1	1	1	1	2	2	4 Low +	4 Low +
Impact summary									-47	0

Description of impact

The removal of vegetation will expose the soils, and can potentially lead to soil erosion. Eroded soils will most likely be colonised by invasive alien plant species. The movement of heavy machinery could result in soil compaction that will modify habitats, destroy vegetation and inhibit re-vegetation. Soil compaction as a result of vehicles and traffic, could lead to a decrease of water infiltration and an increase of water runoff. The excavation and removal of decomposed granite will alter the topography of the landscape. During construction the excavation will be visually noticeable from the surrounding higher ground. Removing the indigenous grassland, shrubs and trees from the platform area will reduce the habitat that

is presently supporting various forms of wildlife and therefore have an impact on biodiversity. The existing topography forms a larger surface area as the platform to be created. A reduction in "floor" area will generate less runoff. With the platform being made level runoff water can be trapped on the platform as a form of attenuation plus an attenuation structure is to be installed which reduces the volume and velocity of the water that reaches the water course. Many illegal activities are taking place on the vacant and derelict land. By establishing a presence on the land will discourage people from taking a chance to come on the land to abstract water, remove multi plants or graze cattle. There is a demand for decomposed granite as a base layer in road construction or as a form of paving. This non-renewable resource will be available until the platform is established and then it will be finished. This commodity will bring an economic injection into the local economy.

Mitigation Options

- A plant rescue must be conducted to remove all bulbous and herbaceous plants that are known to transplant. The plants can either be maintained in a nursery for later use during rehabilitation or it can be transplanted into the areas set aside for conservation. This also applies to grass plants as the grass plants will be the back bone of the rehabilitation programme.
- Invasive alien invader species must be removed from the area surrounding the platform to prevent reinfestation.
- There is not much opportunity during construction of the platform to hide the cut bank. Rehabilitation post-construction should see the cut face to be in the form of terraces with the vertical rise not exceeding 2m and the horizontal step being at least 1m wide. Shrubs, trees and cascading creepers are to be planted along each terrace step to break the horizontal lines of the cut face and to establish a south-west facing scarp forest. The cut bank can be obscured from view within 5 – 10 years. The level area must be covered with the topsoil saved at the beginning of the excavation. This topsoil ameliorated with organic compost is to be seeded with *Aristida junciformis* grass seed. When the grass is established the platform will appear natural until it is further developed at a later stage.
- The post-construction rehabilitation and replanting of the rescued plants can recover some of the biodiversity lost.
- The proposed attenuation structure will control the flow of storm water from the platform to the water course reducing the risk of erosion.
- Having security and workers on site during construction and tenants on the platform during operation will discourage people from gaining illegal access to the land and the resources on the land. It will help to discourage crime in the area.
- The removal of decomposed granite will come to an end as it is a finite resource and once exploited cannot be replenished. There is no mitigation for non-renewable resources.

Off-setting impacts not mitigated

The impacts identified cannot be fully mitigated and for this reason off-setting is required. The off-set recommended for this proposed development is the removal of alien invasive species from the remainder of the property and to rehabilitate the areas that have been impacted on by the invasive alien species back to natural grassland. Removing invasive alien plants is not a quick operation successfully achieved with the initial clearing. It is a prolonged process over many seasons whilst the seed bank in the soil is being depleted. To make the applicant wait until the invasive aliens have been removed, which could take 5-10 years, would be unfair. The programme to remove invasive aliens and the rehabilitation of the grassland must commence in parallel with the soil excavation process to establish the platform.

Removing the spoil material to final platform level is also a slow process and could take up to two years. By that time the bulk of the invasive alien biomass could be cut down and grass seeding commenced. For the remainder of the time a follow-up programme is required to curb new infestations and coppicing of untreated roots.

2.2 Impacts that may result from the First Alternative – 6 Macadamia nut orchards

The impacts that may occur when the 6 macadamia nut orchards are established have been identified and listed and assessed in the Table 7 below;

Table 7: Assessing the impacts of the First Alternative to establish 6 macadamia nut orchards

Impacts associated with the creation of a level platform for future agricultural use										
Impact	Probability		Duration		Extent		Magnitude		Significance scoring without mitigation	Significance scoring with mitigation
	Without	With	Without	With	With out	With	Without	With		
Construction Phase										
Removal of indigenous vegetation	5	5	2	2	2	2	10	8	70 High -	60 High -
Change of natural topography in the orchard area only.	5	4	2	2	2	2	8	6	60 High -	40 Moderate -
Loss of biodiversity ecosystem services in the orchard area only.	5	4	2	3	1	1	10	8	65 High-	48 Moderate -
Reduction in run-off from the orchard area.	4	3	2	3	1	1	8	6	44 Moderate -	30 Low -
Establish a presence on the land.	3	4	2	3	1	1	6	8	36 Moderate +	48 Moderate +
Macadamia nut orchards contribute to the national macadamia nut production.	3	4	4	3	1	1	6	8	33 Moderate +	48 High +
Impact summary									-170	-82

Operational Phase										
Removal of vegetation	3	2	3	3	2	2	6	4	33 Moderate -	18 Low -
Change of natural topography in the orchard area.	2	4	4	4	2	2	4	4	20 Moderate -	40 Moderate +
Loss of biodiversity ecosystem services in the orchard area.	5	5	4	4	2	2	10	8	80 High -	70 High -
Reduction in run-off from the orchard area.	4	3	4	4	2	2	4	2	40 Moderate -	24 Low -
Establish a presence on the land.	3	4	4	4	1	1	6	8	33 Moderate +	52 Moderate +
Macadamia nut orchards contribute to the national macadamia nut production.	4	5	4	4	2	2	6	8	48 Moderate +	52 High +
Impact summary									-92	-32

Description of the impact

The 6 areas identified as potential macadamia nut orchards are areas covered with secondary bushveld and invasive alien thickets that have become established due to the absence of fire and alien plant control. This secondary bushveld vegetation type is invasive and encroaches into the grassland. It is a threat to the well being of the grassland. The invasive bushveld fragments the grassland into unsustainable pockets and should be removed if the grasslands were to be restored. In this alternative landuse the thickest areas with secondary bushveld have been identified to plant up with macadamia nut trees. The secondary bushveld will be removed from the remainder of the grasslands set aside for conservation. The orchard locations coincide with areas covered with invasive alien plant thickets. If the invasive alien plants are removed the soil will be exposed because the natural grass veld has been over-shadowed by the invasive plants. This creates ideal areas to plant macadamia nut trees.

Mitigation options:

- Do not remove the natural grassland in the orchard footprint as it will contribute to the biodiversity retained in the area.

- Prune the lower branches of the macadamia nut trees to allow sunlight to reach the ground to sustain the natural grassland ground cover to protect it against soil erosion.
- Control the invasive alien plants on the remainder of the property to prevent infestation of the orchards.
- Restore the grassland areas set aside for conservation where the secondary bushveld has encroached into the grassland.
- Install swales along the contour between rows of macadamia nut trees at intervals within the boundary of each orchard to trap storm water and to encourage it to infiltrate the soil to water the roots of the tree at a deeper level.
- People working in the orchards will discourage other people from coming onto the land to carry out illegal activities.

Offsetting:

A larger area of the land will be used for the establishment of orchards. It takes four years for the trees to grow to a stage where they begin to produce nuts and only reaches commercial production levels after 12 years. In the initial four years there is no income generated from the land. Conducting invasive plant control and restoring the remaining grasslands should happen concurrently because the removal of invasive alien species will expose the soil to erosive forces. Rehabilitation must follow the removal of invasive alien plant clearing.

2.3 Impacts that may result from The No-Go Alternative

The impacts associated with implementing the No-Go Alternative are identified, listed and in the Table 9 below:

Table 8: The assessment of impact of the No-Go Alternative

IMPACTS ASSOCIATED WITH THE Creation of a level platform for future agricultural use										
Impact	Probability		Duration		Extent		Magnitude		Significance scoring without mitigation	Significance scoring with mitigation
	Without	With	Without	With	With out	With	Without	With		
Construction Phase										
Removal of indigenous vegetation	5	5	1	1	1	1	4	8	30 Low +	50 Moderate +
Change of natural topography in the orchard area only.	2	1	1	1	1	1	4	10	12 Low +	12 Low +
Loss of biodiversity ecosystem services in the orchard area only.	3	2	1	1	1	1	6	10	24 Low +	24 Low +

Reduction in run-off from the orchard area.	2	3	2	2	1	2	6	8	18 Low +	36 Low +
Establish a presence on the land.	1	3	2	2	1	1	2	6	5 Low -	27 Low -
Decomposed granite and silicate grit material becoming available to the local market.	2	1	1	1	1	1	4	8	12 Low -	10 Low -
Macadamia nut orchards contribute to the national macadamia nut production.	2	1	2	2	2	2	4	2	24 Low -	10 Low -
									43	75
Operational Phase										
Removal of vegetation	2	1	3	3	2	2	4	8	18 Low +	13 Low +
Change of natural topography in the orchard area.	2	1	4	4	2	2	4	8	20 Low +	14 Low +
Loss of biodiversity ecosystem services in the orchard area.	3	2	4	4	2	2	6	8	42 Moderate -	28 Low -
Reduction in run-off from the orchard area.	4	3	4	4	2	2	6	8	48 Moderate -	42 Moderate -
Establish a presence on the land.	3	4	4	4	1	1	6	8	33 Moderate +	52 Moderate +
Decomposed granite and silicate grit material becoming available to the local market.	2	1	4	4	2	2	4	10	20 Low -	16 Low -

Macadamia nut orchards contribute to the national macadamia nut production.	2	1	4	4	2	2	6	8	24 Low -	14 Low -
Impact summary									-63	35

Description of the impact:

Not implementing either of the two alternatives is good for the natural environment. The landscape characteristics will not be changed. No indigenous vegetation will be removed and the biodiversity will remain intact. Normal degradation due to climate change will continue to impact the natural habitat as there will be no mitigation for it. However the ongoing over grazing by local herdsman and muti collectors will impact on biodiversity negatively. There will be no measures in place to counter this impact. Soil erosion is a natural phenomenon and will continue to occur as there will be no natural controls. Run-off patterns will not change and water will be delivered to the stream as normal. Without any development opportunity there will be no opportunity to generate funds to invest in rehabilitating the veld. Rehabilitation is expensive and maintaining natural biodiversity through the control of invasive alien species and bush encroachment requires a constant effort from a resident team of workers. Without funds generated from the land the rehabilitation and maintenance cannot take place. Without having a presence on the land though workers moving across the land opportunists will exploit all the resources available. The sand winning of the decomposed granite will continue which will alter the landscape in any case as is already happening with the current illegal sand winning activities. Illegal grazing, water abstraction, trespassing and muti collecting will continue to rape the land. Not mining the decomposed will put the people needing gravel in difficulty as they will have to go and find the gravel elsewhere. The local economy will not benefit from the sale and use of the granite gravel. With the No-Go Alternative there will also be no macadamia nut orchards. The landscape character will not be altered with the forestation by the macadamia nut trees. Jobs will not be created and the macadamia nuts will not be earning foreign capital to boost the local GDP. The local economy will not gain any benefit from the land being left undeveloped.

Mitigation

- To mitigate the impacts No-Go Alternative will be to allow some form of landuse that will generate funds to invest in the protection of the natural topography, the natural vegetation and the biodiversity.
- Efforts by the landowner will have to be made to identify where run-off water is causing soil erosion and take the steps required to stop the erosion.
- If a presence on the land cannot be achieved with the implementation of the two alternatives then another form of landuse will be required to keep the illegal use the resources out. One way to achieve that is to fence the land and to control access. It is an experienced fact in South Africa that people who want access to an untapped resource will go out of their way to gain access, even illegally, just to gain benefit from the natural resources. This is demonstrated by the illegal activities on the land, the Zama-Zama illegal miners on the reef, the abalone poachers in the Cape Province or the rhino poachers everywhere. The prevention of the mining of decomposed granite and the loss of commodity to stimulate the local economy cannot be

mitigated. The non-availability of macadamia nuts does nothing for the creation of jobs and no foreign capital will be earned leaving South Africa cash strapped as it is.

Offsetting

There will be no need for the landowner to be concerned about offsetting to counter the impacts when not one of the plans to create a platform or the establishment of macadamia nut orchards occurs. The local economic situation and unemployment rate will remain dire and someone else will have to come up with a plan to bring relief. The eThekweni Environment Planning and Climate Protection Department should purchase the land and declare it a nature reserve and deal with the illegal activities and the raping of the environment by people who do not care for the environment.

3. Description of assumptions, uncertainties and gaps in knowledge

Assumptions:

It was assumed that the excavation process will commence at the lowest point working into the hill slope.

Uncertainties:

The actual period it will take to establish the platform and for how long the mining permit must remain valid is uncertain because it is a process driven by demand. Decomposed granite grit is used in road construction and the number of road upgrade projects in the region will determine the intensity of the demand.

Gaps in knowledge:

Who the purchasers of the granite are, is not known at this stage.

4. Environmental impact statement

The Basic Assessment process described the local environment, described the proposed development and two alternatives. It described the results of specialist studies and has assessed specific aspects identified. The proposed level platform to be created will have a high negative impact. With mitigation the impact can be turned around to a moderate positive impact. Even with the mitigation measures applied there will be a permanent change in the topography of the landscape but the mitigation measures will help to blend it into the landscape. Biodiversity will be lost but some were already lost through illegal activities by unknown persons. Some of the lost biodiversity can be recovered during the rehabilitation programme. Jobs will be created and the local economy will be stimulated with the removal of the decomposed granite. The platform will only take up 7% of the land leaving 93% to conservation.

The assessment considered the information presented and the intended landuse and weighed the impacts. The assessment determined that the proposed platform will be a moderate negative impact during construction but will have a moderate positive impact during operation. The First alternative showed up as having a moderate negative impact during construction and a low

positive impact during operation. Not doing anything is the No-Go alternative. This has a moderate positive impact during construction but a low negative impact during operation.

An offset will be required for all three the alternatives and the first alternative. The preferred alternative will provide the best outcome from a comprehensive environment perspective incorporating the economical and social components. The information provided is sufficient to make a decision in respect of the activity applied for. The BAR was made transparent and was presented to the I&AP's and stakeholders for comment. The rehabilitation plan included covers the offset aspects of removing the invasive alien invaders and the restoration of the veld in the remainder of the property not used for the platform. The EMPr sets the framework to guide the implementation of the project during the construction and operational phase. The project will be subject to ongoing monitoring and reporting. The EMPr is a living document that can be amended at any point should it be proven that it no longer achieve the objectives of sustainable development.

5. Reasons why the activity should be authorised

It is the opinion of the EAP that, taking the findings of the BA process into consideration, the project benefits outweigh the costs and that the project will make a positive contribution to protecting biodiversity provided the specified mitigation measures are applied effectively.

6. Conditions to be included in the authorisation

The Basic Assessment process identified a number of conditions that must be incorporated into the authorisation and made binding on the applicant or his successors;

- The development of the platform is the only development authorised on the property. Any future planned developments will have to undergo a separate environment authorisation application process.
- A plant rescue exercise must precede the excavation of decomposed granite.
- Top soil, comprising of the top 30cm of soil must be stripped and stored in stockpiles to be used to spread on the platform and the cut bank terraces. The toe of the stockpiles must be secured to prevent slumping and must be grassed with an abortive cover of annual grass seed such a Tef.
- Work must commence at the highest point working down slope and only vegetation within the immediate working face must be removed to keep the vegetative cover on as long as possible.
- Offsetting must be implemented concurrently with the commencement of earthworks.
- Offsetting will be deemed to have been completed when the invasive alien plants are removed and the disturbed areas restored to grassland.
- The use of the platform must remain within the permitted landuse as determined by the zoning of the land. Any other landuse planned must follow due course and apply for environment authorisation.

- Movement onto the remainder of the property by earth moving machinery must be restricted and confined to the platform area.

7. Period for which the Environment Authorisation is required

It is recommended that the proposed project receive EA in terms of the EIA Regulations promulgated under the NEMA for a period of 20 years.

8. Undertaking

The applicant confirms to meet the requirements of the EMPr and the authorisation

9. Financial Provision

i. How this figure was determined:

R92,215 - Based on the cost to spread top soil, hydroseed the area, install compacted earth berms and storm water drainage.

ii. This amount can be provided from operating expenditure

R11,527 per operating quarter

10. Specific Information Required by the Competent Authority

i. Impact on socio-economic conditions of any directly affected person

The proposed development will create temporary and permanent jobs for some members of the neighbouring community. Presence on the property will cause a reduction in illegal activity on the property which is beneficial for the community as well.

ii. Impact in terms of the National Heritage Resources Act

There are no items of heritage value on the property

SECTION F: APPENDIXES

The following appendixes are attached:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information

APPENDIX A

Note:
No utility services over the planned platform area.

An irregular road structure located at Western Avenue extends east the Eastern Boundary of Eem 582, 583 and 584.

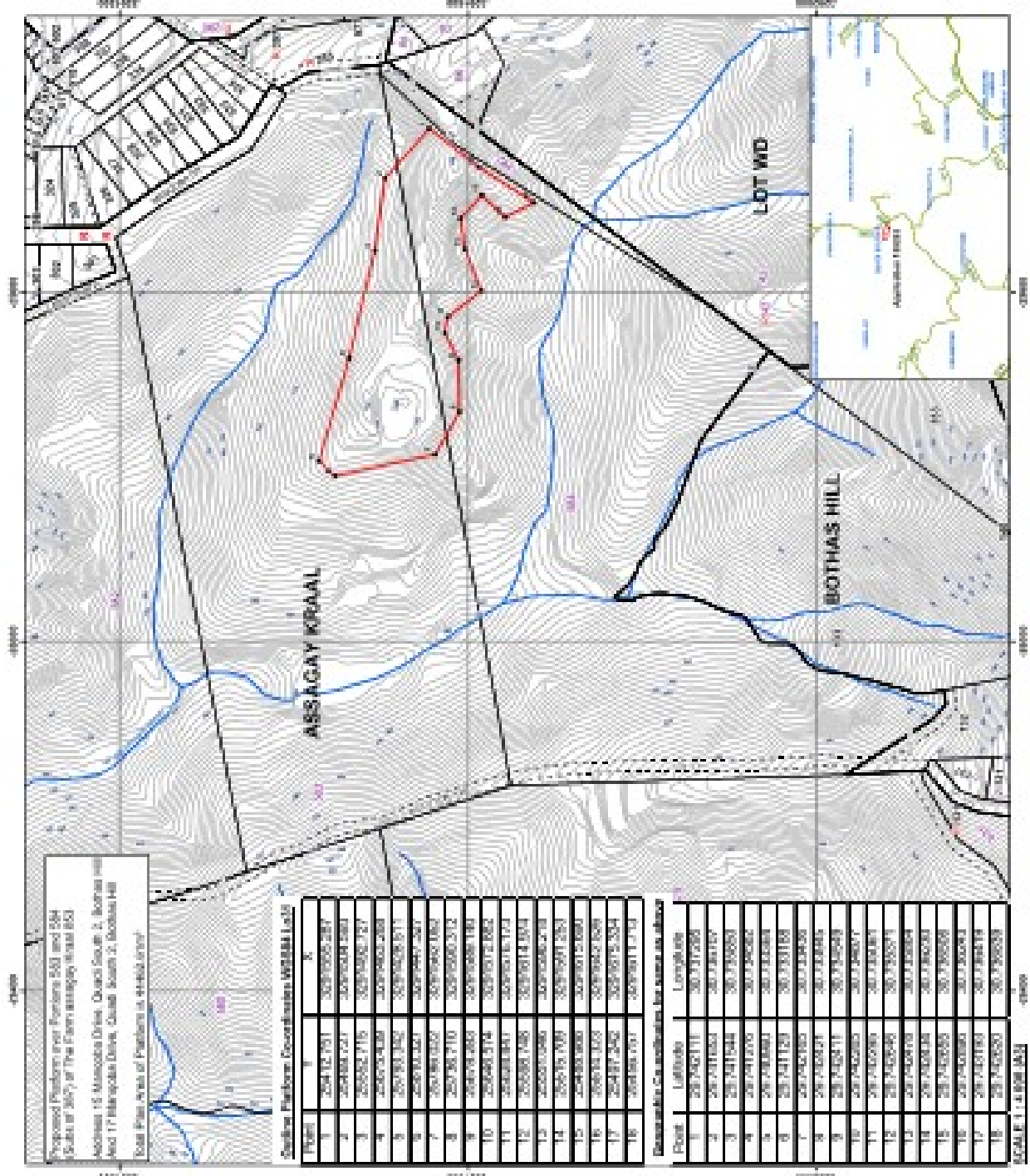
Planned Excavation
Over Portions 583 and 584 (Portions of 3817) of the Farm Assagay Kraal No. 853

Plan Prepared for
Accion Planning Pty Ltd
As Represented or duly authorized
to be made without prior consent

Application No. 193566
Applicant Detail
Accion Planning Pty Ltd &
Syncostrata Pty Ltd

Legend

- New Platform
- Farm Boundary
- Cadastral Boundary
- Services
- River
- Contours



Proposed Platform over Portions 583 and 584 (Portions of 3817) of the Farm Assagay Kraal No. 853
Address: 15 Muscadel Drive, Church South 2, Bothas Hill
and 17 Fitzpatrick Drive, Church South 2, Bothas Hill
Scale: This area of Platform is stated correct

Section Platform Description (SRMBA) Lot 2

Point	X	Y
1	297402.791	3077000.287
2	297404.727	3077000.288
3	297405.715	3077000.287
4	297407.028	3077000.288
5	297408.352	3077000.291
6	297409.681	3077000.287
7	297410.929	3077000.282
8	297412.210	3077000.282
9	297413.465	3077000.282
10	297414.574	3077000.282
11	297415.651	3077000.281
12	297416.748	3077000.281
13	297417.866	3077000.281
14	297418.995	3077000.283
15	297420.136	3077000.283
16	297421.288	3077000.283
17	297422.452	3077000.284
18	297423.627	3077000.284

Description Co-ordinates for points are given

Point	Latitude	Longitude
1	29°40'11"	30°37'28"
2	29°40'11"	30°37'28"
3	29°40'11"	30°37'28"
4	29°40'11"	30°37'28"
5	29°40'11"	30°37'28"
6	29°40'11"	30°37'28"
7	29°40'11"	30°37'28"
8	29°40'11"	30°37'28"
9	29°40'11"	30°37'28"
10	29°40'11"	30°37'28"
11	29°40'11"	30°37'28"
12	29°40'11"	30°37'28"
13	29°40'11"	30°37'28"
14	29°40'11"	30°37'28"
15	29°40'11"	30°37'28"
16	29°40'11"	30°37'28"
17	29°40'11"	30°37'28"
18	29°40'11"	30°37'28"

SCALE 1:4000 (A3)

APPENDIX B



Photo 1. A panoramic view of the hill to be excavated



Photo 2: A spur to the south from the hill to be excavated with grassland



Photo 3: A view of the northern valley north of the hill to be excavated



Photo 4: A view eastwards of the grass covered slope above where the hill will be excavated



Photo 5: Part of the hill to be excavated where illegal sand winning has occurred



Photo 6: The existing access road



Photo 7: The woody bush encroachment into the grassland combined with invasive alien plants

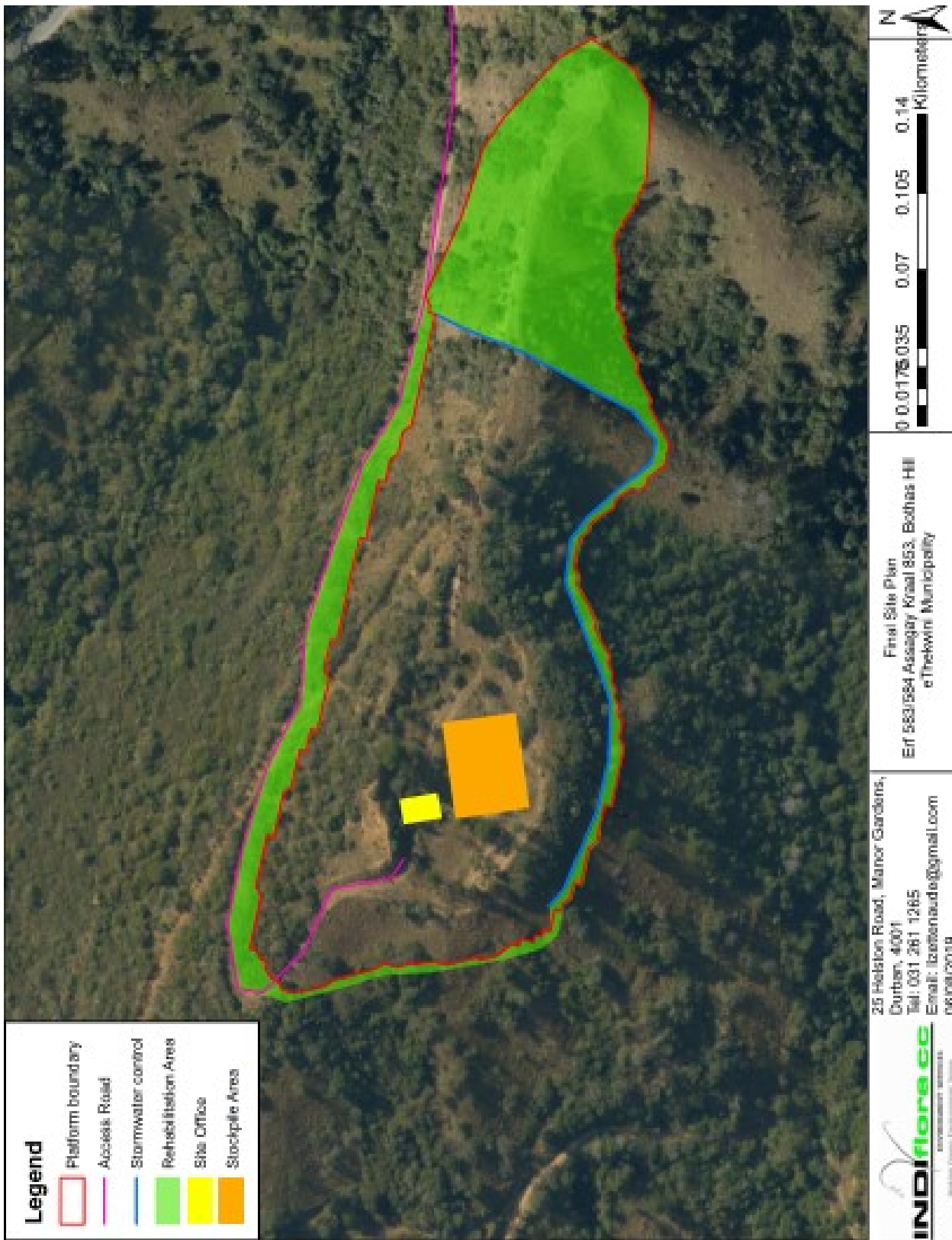


Photo 8: *Protea welwitschii* growing on the west slope of the hill to be excavated.



Photo 9: The thick woody growth combined with invasive alien species

APPENDIX C



The Facility Illustration

APPENDIX D

APPENDIX E

Site Notice

NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORIZATION, MINING PERMIT AND WATER USE LICENCE

Notice is hereby given that an application for environmental authorization in terms of the NEMA EIA Regulations, (Regulations in terms of Chapter 6 of the National Environmental Management Act, 1998, as amended in 2014) has been lodged with the KwaZulu-Natal Department of Economic Development Tourism and Environmental Affairs, application for a permit to mine decomposed granite and silica gravel in terms of the Mineral and Petroleum Resources Development Act with the Department of Mineral Resources and an application for a water use licence in terms of the National Water Act.

Project details: The developer proposes to develop a platform for future agricultural use, with storm water controls and to formalize the access road on Portion 583 and 584 of LOT 387 Assagay Kraal No 853 located at 17 Manqoba Drive, Bothas Hill. The activities requiring authorisation in terms of Regulation Notice R324 and 326 of the National Environmental Management Act are #21 an activity which requires a mining permit & 27 – clearing an area between 1 and 20 hectares of indigenous vegetation. In terms of the MPRDA application is made for the removal of decomposed granite and in terms of the Water Act application is made in terms of Section 21 (a) abstraction of water, 21 (c) for impeding the flow and 21 (i) for altering the bank of a stream.

Public participation:

You are hereby invited to register as an I&AP, lodge any concern, make representations with respect to this application, or request further information regarding this project with the Environment Practitioner within 14 days of this notice please contact:

Johan Bodenstein of INDIfloora cc Environmental Services, 25 Helston Road, Manor Gardens, 4001, Tel: 031 2611265 Fax: 0867592840, Cell: Johan 082 577 0898, Email: johan@indiflora.co.za.

Date of this notice: 28 October 2019

Site Notices erected on site



Site notice erected at main entrance off Manqobo Drive



Site notice taken off the stake the day after it was erected



Site notice erected on Wooton Avenue

APPENDIX F

**ENVIRONMENTAL MANAGEMENT
PROGRAMME
FOR
PTN 583 and 584 of LOT 387
ASSAGAY KRAAL 853
15/17 Manqoba Drive, Bothas Hill**

**PREPARED BY
Johan Bodenstein
PrSciNat**



October 2019

i. **DETAILS OF EAP AND DECLARATION OF INTEREST**

1. **PROJECT TITLE**

PROPOSED CREATION OF AN AGRICULTURAL PLATFORM

2. Environmental Assessment Practitioner (EAP): ¹	Indiflora cc Environmental Services		
Contact person:	Johan Bodenstein		
Postal address:	PO Box 30657, Mayville		
Postal code:	4058	Cell:	0825770898
Telephone:	0312611265	Fax:	0867592840
E-mail:	johan@indiflora.co.za		
Professional affiliation(s) (if any)	PrSciNat (400143/04), IAIAsa, GSSA, LRSSA		
Expertise	Johan has 12 years in the environmental field and had drafted EMPr's for PheZulu Game Estate, Stoneford Country Estate, Bluegum Estate, Mthuba Ridge Mixed Use Development and others		

The Environmental Assessment Practitioner

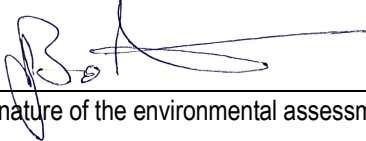
General declaration: I, Johannes Albert Bodenstein, declare that –

- I act as the independent environmental practitioner 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 in terms of regulation 71 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 Environmental Impact Assessment Regulations, 2010;
- I have a vested interest in the proposed activity proceeding, such vested interest being:



Signature of the environmental assessment practitioner:

Indiflora cc Environmental Services

Name of company:

8 April 2018

Date:

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iii. ABBREVIATIONS:

C	–	Contractor
CEMP	–	Construction Environment Management Program
Dev	--	Developer
EAP	--	Environment Assessment Practitioner
ECO	–	Environment Control Officer
EWC	--	Earthworks Contractor
I&AP's	--	Interested and Affected Parties
EPCPD	--	eThekwini Environment Planning and Climate Protection Department
KZNEDTEA	--	Department of Economic development Tourism and Environment Affairs
MSDS's	--	Material Safety Data Sheets
NEMA	–	National Environment Management Act
OEMP	–	Operational Environment Management Program

1. INTRODUCTION

1.1 The Location of the study area

The development site is located at Erf 583 and 584 of Lot 387 Assagay Kraal, 853, Bothas Hill. It lies west of west of Manqoba Drive, Quadi East 2.

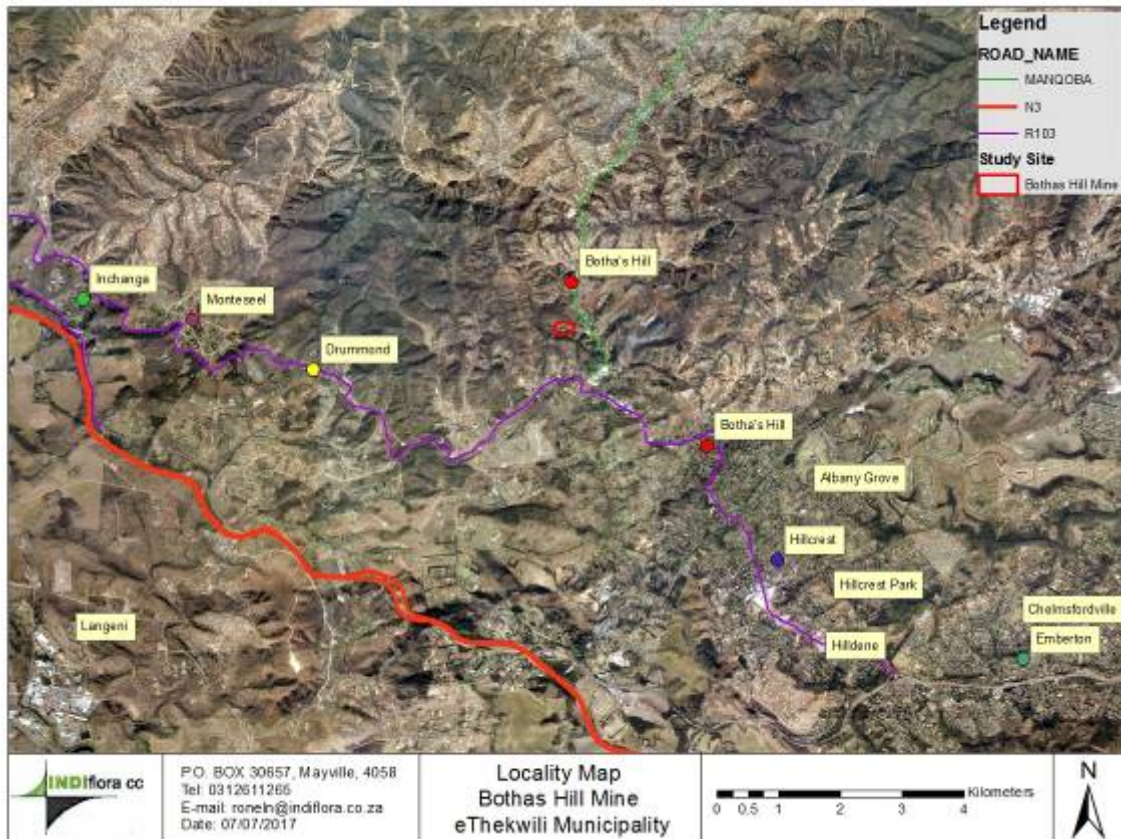


Figure 1: The location of the site indicated by the red outline.

1.2 The topography of the site:

The terrain has a rolling and hilly landscape form. The site is located on the top of the ridge line where the southern side slopes dips quite steeply towards the drainage line to the south. The north facing slope drops quite steeply to the drainage line to the north. The ridge line slopes downwards from the east to the west. Therefore the drainage lines on either side of the ridge line drains in a westerly direction. The main watercourse flows in a northerly direction and parallel to Wootton Avenue. The two drainage lines flow into this watercourse.

1.3 The geology of the site:

The area is underlain with Granite Gneiss.

1.4 The vegetation of the site:

1.4.1 The natural vegetation:

The natural vegetation that covers the ridgeline and the side slopes of the hill is Moist Coast Hinterland Grassland (GS20) (Escott, Scott-Shaw, 2011). (Mucina and Rutherford, 2006:511) called this veld type Ngongoni Veld (SVs 4) and Acocks (1975) also formerly called it Ngongoni Veld (VT 5) and Camp (1999) classed it to belong to the Moist Coast Hinterland Ngongoni Veld Bio Resource Group BRG 3.

In areas with natural untransformed Moist Coast Hinterland Grassland it is recognised by the dense tall sour grassland often dominated by unpalatable Ngongoni grass (*Aristida junciformis*). Ngongoni grass has mono-dominance associated with low species diversity. When the Moist Coast Hinterland Grassland is in good condition it can be dominated by *Themeda triandra* and *Tristachya leucothrix* (Escott, Scott-Shaw, 2011).

The remaining grassland at the site has been identified, in writing, by the Biodiversity Section of eThekweni Environmental Planning and Climate Protection Department as being species rich (Thengwa, 2012).

1.4.2 The existing vegetation:

In doing a site inspection the study area was traversed in transects and species diversity recorded until no new species were recorded. Along each transect the abundance of species was monitored by observation and photographic record. It was very evident that much of the study area (+/- 50%) has been transformed by the contiguous infestation of woody alien invader plants, mainly in the valleys, of which *Lantana camara* and *Chromolaena odorata* are the most dominant. The infestation is at its densest in the valley bottom particularly in the northern drainage line. The south-facing slope on the north side of the northern drainage line has the tallest plants. The north-facing slope of the same valley has the infestation in the form of scrub.

The Ngongoni grassland, rich in forbs, is fragmented and remains as disjointed pockets. There is an area of grassland on the south-facing slope north of the northern drainage line. There is a grassland area on the south-facing slope of the central ridge line. The last grassland area is located west of the main drainage line below Wooton Avenue.

These grassland areas are dominated by *Aristida junciformis* grass. The grazing by cattle from the tribal area exert pressure on the grassland and multi plant collection in the area has reduced the species richness of the grassland.

2. SECTION A: SCOPE OF THE EMPr

The Environment Management Programme aims to address the following areas:

During construction:

- Site camp management
- Materials management
- Education of site staff and general environmental conduct
- Dust/air pollution
- Soil erosion
- Storm water management
- Water quality
- Waste management
- Staff conduct
- Conservation of natural environment
- Social impacts – visual and noise
- Cultural environment
- Security and safety

Post construction activities

Environment compliance monitoring

3. SECTION A: CONSTRUCTION MANAGEMENT PROGRAMME (CEMP)

MANAGEMENT OF SITE ESTABLISHMENT, CONSTRUCTION ACTIVITIES AND THE WORKFORCE

3.1. Site camp management

3.1.1 Pre-commencement requirements		When	By whom	Audited by	Frequency
a)	Have an EMP drafted for submission to DMR and eThekweni Municipality for approval.	Dev	Prior to commencement	ECO	Annually
b)	Obtain Municipal approval before any work commences	Dev	Prior to commencement	ECO	At the commencement of construction
c)	Erect signage at the entrance including the name and contact details of the ECO	Dev	Prior to commencement	ECO	At the commencement of construction
d)	Appoint the ECO	Dev	Prior to commencement	HOA	At the commencement of construction
e)	Fencing of the sensitive area eg wetland, grassland or forest to compose of 1.8m wood pole with Bonnox wire to be clad with shade cloth during construction phase	Dev	Prior to commencement	ECO	At the commencement of construction
f)	Soil erosion controls to be in place comprising of 80% shade cloth soil	Dev	Prior to commencement	ECO	At the commencement of construction

	curtains with the bottom 10cm buried and the tops fixed to wooden/steel stakes and located below construction area at discretion of ECO and external authorities - Secure using sandbags or stakes. ECO to check on flow rates after introduction of curtains.				
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3.2. Access to site camp and site

3.2.1. Haulage Roads		When	By whom	Audited by	Frequency
a)	Planned construction access is to be at the approved access point.	Prior to site establishment	E, C	ECO	During construction
b)	Any access road is to follow natural contours as far possible,	Prior to site establishment	E, C	ECO	During construction
c)	Diagonal berms are to be constructed across the haulage road to divert storm water onto the platforms to prevent over surface flow leading to scour.	During construction	C	ECO	During construction

3.3. Contractor's camp in the site camp

3.3.1. Layout	When	By	Audited	Frequency
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			whom	by	
a)	<ul style="list-style-type: none"> • Choice of the site for the Contractor's camp requires Engineers permission and must consider location of local neighbours and sensitive habitats. • An approved site plan must be displayed in the site office. 	Prior to construction commencing	E, C	ECO	At the commencement of construction
b)	<p>The construction camp is expected to comprise of:</p> <ul style="list-style-type: none"> - site office - ablution facilities - stockpiles of excavated materials and topsoil 	At commissioning of construction - E, C	E, C	ECO	At the commencement of construction
c)	Avoid cut and fill where possible during the setting up of the construction camp.	During camp set-up	C	ECO	At the commencement of construction
d)	Fence and screen the site camp	During camp set-up	C	ECO	At the commencement of construction
e)	<p>Prepare an Environmental file to include the following:</p> <ul style="list-style-type: none"> • The site plan • The Approved EMPr • Source statement of material • The method statement for emergency and spill response • The MSDS's for all hazardous material kept on site • The environment incident register • Waybills for waste disposal • Service records for mobile toilets • Copies of 	During camp set-up	C	ECO	At the commencement of construction

	<p>communications with neighbours and I&AP's</p> <ul style="list-style-type: none"> • Environment Induction attendance Registers • Compliance monitoring reports • Toolbox talk topics and attendance register 				
f)	Installation of temporary services to be signed off by ECO	During camp set-up	C	ECO	At the commencement of construction
3.3.2. Ablutions		When	By whom	Audited by	Frequency
a)	<ul style="list-style-type: none"> • Where waterborne sewerage is not available, temporary chemical toilets are to be provided by a reputable company. • Such toilets must be available for all site staff, both at the campsite and the work front. • Toilets must be no closer than 50m from any water bodies. • 1 Toilet per 20 workers is required. 	During camp set-up	E, C	ECO	Monthly during construction
b)	The construction of 'long drop' toilets are forbidden.	At all times	C	ECO	Monthly during construction
c)	Do not use the surrounding bush or open areas or as toilet facilities.	At all times	C	ECO	Monthly during construction
d)	Ensure all litter is collected from the work front and camp areas daily and contained.	During construction -	C	ECO	Monthly during construction
e)	A registered chemical waste company is to remove the waste from chemical toilets on site. Keep service receipts	During construction	C	ECO	Monthly during construction

	for audit purposes on the environmental file.				
f)	<ul style="list-style-type: none"> • Maintain chemical toilets in a clean state and move them if required to ensure that they adequately service the work areas. • Appoint an internal staff member to sanitise the toilets twice daily to encourage the use of the facility. 	During construction	C	ECO	Monthly during construction
3.3.3. Provision for Camp Waste Disposal		When	By whom	Audited by	Frequency
a)	<ul style="list-style-type: none"> • Provide refuse bins, skips or temporary waste cage for temporary storage of waste within the construction camp. • Empty bins and / skips regularly and waste to be disposed of at a registered landfill site (Mariannahill) • Keep copies of waybills for review by the Engineer/ECO of such disposals on the environmental file. • The skip rental company to be contracted to frequently (weekly or as the skips are full, whichever occurs first) service the skips. Service records to be kept on the environmental file. 	At site set-up – c	C	ECO	Monthly during construction
3.3.4 Recycling of waste					
a)	<ul style="list-style-type: none"> • Recycling of waste is encouraged. • Provide separate waste receptacles 	At site set-up	C	ECO	Monthly during construction

	for different types of waste.				
3.3.4. Eating Areas		When	By whom	Audited by	Frequency
a)	Regularly service and clean eating areas to ensure the highest possible standards of hygiene and cleanliness.	During construction	C	ECO	Monthly during construction
3.3.5. Housekeeping		When	By whom	Audited by	Frequency
a)	Keep the camp and working areas clean and tidy.	During construction	C	ECO	Monthly during construction

3.4 Establishing Storage Areas in site camp

3.4.1. General Substances and Materials		When	By whom	Audited by	Frequency
a)	<ul style="list-style-type: none"> Consider prevailing winds, distance to the wetland and general on – site topography when choosing the location for storage areas. No storage permitted within the 1:100 year floodline. 	At site set-up	C, E, ECO	ECO	Monthly during construction
b)	Storage areas are to be designated and demarcated.	At site set-up	C	ECO	Monthly during construction
3.4.2. Hazardous substances and materials		When	By whom	Audited by	Frequency
<p>Definition of hazardous substances / materials is: Chemicals that are potentially: poisonous, flammable, carcinogenic or toxic. Hazardous substances / materials to be used on this site include:</p> <ul style="list-style-type: none"> - diesel, petroleum, oil, lubricants - cement - solvent based paints - bituminous products 					
a)	<ul style="list-style-type: none"> Material Safety Data Sheets (MSDS's) must be readily available on site for all chemicals and hazardous substances to 	At site set-up and ongoing	C	ECO	Monthly during construction

	<p>be used on site and placed in the environmental file.</p> <ul style="list-style-type: none"> Where possible and available, MSDS's must include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes. 				
b)	<p>Consider the proximity of neighbouring residential developments when deciding on storage areas for hazardous substances.</p>	At site set-up	C	ECO	Monthly during construction
c)	<ul style="list-style-type: none"> Notify neighbours adjacent to the construction site of the existence of the hazardous storage area. Place a copy of the notice on the environmental file. 	At site set-up and ongoing	C	ECO	Monthly during construction
d)	<p>Make staff aware dealing with these materials / substances that it has potential impacts and follow the appropriate safety measures.</p>	During construction	C	ECO	Monthly during construction

e)	Place a method statement and plans for the storage of hazardous materials and emergency procedures on the environmental file.	At site-set-up	C	ECO	Monthly during construction
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3.5 Materials Management – Sourcing

3.5.1. Source of Materials		When	By whom	Audited by	Frequency
a)	Prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay liners, etc.) and place these on the environmental file.	At site set-up	C	ECO	Monthly during construction
b)	Obtain signed documents from suppliers of natural materials confirming that they have been obtained in a sustainable manner in compliance with the relevant legislation.	At site set-up and each time a new supplier is contracted	C	ECO	Monthly during construction
c)	Provide proof of authorization to utilize borrowed (mined), from the landowner / mineral rights owner and the Department of Minerals and Energy.	At site set-up and each time a new supplier is contracted	C	ECO	Monthly during construction

3.6 Materials Management

3.6.1. Stockpile Management		When	By whom	Audited by	Frequency
a)	Stockpiles are not to obstruct natural water pathways.	During construction	C	ECO	Monthly during construction
b)	Stockpiles are not to exceed 3m in height unless otherwise permitted by the engineer.	During construction	C	ECO	Monthly during construction
c)	<ul style="list-style-type: none"> Cover exposed stockpiles against wind or heavy rain, by vegetation, or sheeting, depending on the duration of the project. Stockpiles are to be further protected by the construction of berms or low brick walls around their bases. 	During construction	C	ECO	Monthly during construction
d)	Keep stockpiles clear of weeds and alien vegetation growth by regular weeding.	During construction	C	ECO	Monthly during construction
3.6.2. Handling of Hazardous Materials		When	By whom	Audited by	Frequency
a)	Mix and work with concrete or cement on a designated impermeable surface eg shutterboard or plastic sheeting.	During construction	C	ECO	Monthly during construction
b)	No washing of concrete transporting vehicles on the site unless in a bunded area provided frequently cleared of	During construction	C	ECO	Monthly during construction

	cementitious waste or directly into poured concrete.				
c)	No washing of asphalt or any other bituminous transporting vehicles on site.	During construction	C	ECO	Monthly during construction
d)	No mixing of lime and other powders during excessively windy conditions.	During construction	C	ECO	Monthly during construction
e)	Store all vehicle maintenance and repair substances in sealed containers in the bund until they can be disposed of / removed from the site.	During construction	C	ECO	Monthly during construction
f)	Transport Hazardous substances / materials in sealed containers or bags.	During construction	C	ECO	Monthly during construction
g)	No spraying of herbicides / pesticides under windy conditions and must comply with OHSA specs and other chemical handling laws.	During construction	C	ECO	Monthly during construction
h)	Outline a method statement for the dealing with accidents/spillages of hazardous materials. This statement must be placed on the environmental file and provided to DW&S should an incident occur.	During construction	C	ECO	Monthly during construction
3.6.2 Fuel storage		When	By whom	Audited by	Frequency
a)	Construct a bund as far as possible	During construction	C	ECO	Monthly during construction

	<p>away from all environmentally sensitive areas on or near the construction site, such as streams and wetland areas, steep slopes, unstable ground, where the public occur.</p>				
b)	<p>The bund must have the appropriate hazard and no smoking signs erected on or near them.</p>	<p>During construction</p>	<p>C</p>	<p>ECO</p>	<p>Monthly during construction</p>
c)	<p>The bund must be placed on an impermeable surface such as a concrete slab or plastic sheeting and must be of sufficient height to contain any spillages or bund failures.</p>	<p>During construction</p>	<p>C</p>	<p>ECO</p>	<p>Monthly during construction</p>
d)	<p>There must be a leak proof drip tray used below the filler cap of any machinery, containers or vehicles that is filled from the tanks. Any fuel on the drip tray must be placed in an appropriate container closed for disposal to a waste disposal site.</p>	<p>During construction</p>	<p>C</p>	<p>ECO</p>	<p>Monthly during construction</p>
e)	<p>There must be adequate fire extinguishers located close by in an accessible position to the tanks.</p>	<p>During construction</p>	<p>C</p>	<p>ECO</p>	<p>Monthly during construction</p>
f)	<p>There must be a spill kit (labeled spill kit with some absorbent material</p>	<p>During construction</p>	<p>C</p>	<p>ECO</p>	<p>Monthly during construction</p>

	(such as Drizit or Peatsorb) kept close to the tanks which must be used to mop up any spillage of fuel. This used absorbent material may be placed in the container for contaminated soil and must also be disposed of to a licensed waste disposal site.				
g)	There must be a container (such as a steel drum) to collect any soil contaminated by spillages. This container must be labeled "contaminated soil", and this container must be emptied as required at a licensed waste disposal site.	During construction	C	ECO	Monthly during construction

3.7 Education of site staff on general and environmental conduct

3.7.1. Environmental Education and Awareness		When	By whom	Audited by	Frequency
a)	Induct the contractor, the foremen and sub-contractors on the contents of the EMP.	At commencement of construction	C, ECO	ECO	Monthly during construction
b)	Ensure that they convey the information to all site personnel to have a basic level of environmental awareness training. Topics covered must be include: - What is meant	At commencement of construction	C	ECO	Monthly during construction

	<p>by environment?</p> <ul style="list-style-type: none"> - Why the environment needs to be protected and conserved? - How construction activities can impact on the environment? - What can be done to mitigate against such impacts? - Awareness of emergency and spill response provisions. - Social responsibility during construction e.g. being considerate to local residents. 				
c)	Use translators where necessary.	During construction	C	ECO	Monthly during construction
d)	The Principle Agent/ Environmental Control Officer must explain more difficult / technical issues and answer questions.	During construction	C	ECO	Monthly during construction
e)	Use of pictures and real – life examples are encouraged as these tend to be more easily remembered.	During construction	C	ECO	Monthly during construction
f)	Make use of environmental awareness posters.	During construction	C	ECO	Monthly during construction
g)	Explain the ‘clean	During	C	ECO	Monthly during

	site” policy to construction workers.	construction			construction
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3.8 Dust / Air Pollution

3.8.1. Controlling dust		When	By whom	Audited by	Frequency
a)	Vehicles travelling must adhere to speed limits when travelling along the access road to avoid creating excessive dust.	During construction	C	ECO	Monthly during construction
b)	Mitigate for dust generated during site clearance and the construction phase through dust control measures which may include damping with water, maintenance of vegetation, on the boundaries of the site or spraying Reverseal SS100 obtainable from Revertex in Mobeni.	During construction	C	ECO	Monthly during construction
c)	Cover stockpiles of topsoil or plant it with abortive crops such as Tef or Rye grass to reduce dust.	During construction	C	ECO	Monthly during construction
d)	Make alternative arrangements (other than fires) for cooking and / or heating requirements. LP gas cookers may be used provided that all safety regulations are followed.	During construction	C	ECO	Monthly during construction

e)	Access and other cleared surfaces must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust.	During construction	C	ECO	Monthly during construction
f)	Screening required where dust is unavoidable in residential areas, utilizing wooden supports and shade cloth, to be installed at the discretion of the Environmental Control Officer.	During construction	C	ECO	Monthly during construction
g)	Vehicles and machinery to be maintained in good working order and to meet manufacturer's specifications for safety, fuel consumption, prevention of hydraulic systems, etc.	During construction	C	ECO	Monthly during construction
h)	Repair equipment when excessive emissions are observed.	During construction	C	ECO	Monthly during construction
i)	No fires are allowed on site.	During construction	C	ECO	Monthly during construction

3.9 Soil Erosion

3.9.1. Soil erosion		When	By whom	Audited by	Frequency
a)	Conserve topsoil during the set-up phase and the construction phase of the project, i.e. topsoil	During construction	C	ECO	Monthly during construction

	is to be conserved in a stockpile while providing access to the site and setting up of camp.				
b)	Topsoiling and revegetation to commence immediately after the completion of an activity according to the rehabilitation plan.	During construction	C	ECO	Monthly during construction
c)	No tipping of spoil and excavated materials on site. All spoilt soil material and builders' rubble must be disposed of as directed by the CEMP or used for back-fill on request to the ECO.	During construction	C	ECO	Monthly during construction
d)	<ul style="list-style-type: none"> • Battering of all banks have cut and fill embankments no steeper than previous natural slopes, unless otherwise permitted by the engineer. • Cut and fill embankments steeper than previous ground levels must be supported by a retaining facility at the toe of the bank and the resulting bank 	During construction	C	ECO	Monthly during construction

	<p>must be revegetated immediately on completion of trimming or will be protected against erosion using bio-engineered stabilization measures, including the use of deep – rooted vegetation such as <i>Aristida junciformis</i> to stabilize steeper embankments.</p>				
e)	<p>Undertake wind screening and storm water control to prevent soil loss from the site by securing it with a row of sandbags, or strips of instant lawn, or Geojute rolls or mats or the placement of brushwood across slope.</p>	<p>During construction</p>	C	ECO	Monthly during construction
f)	<p>Protect all embankments, with a cut off drain, create sandbag berms or compacted earth berms along the outer boundary of the platforms to prevent erosion of the slope face.</p>	<p>During construction</p>	C	ECO	Monthly during construction
g)	<p>Prevent water from cascading down the face of</p>	<p>During construction</p>	C	ECO	Monthly during construction

	the embankment to cause erosion by establishing a temporary drain with a PVC pipe, a V-drain packed bricks or similar for accumulated water to drain safely from the platform to a lower level.				
h)	<ul style="list-style-type: none"> • Create swales and cut-off drains on slopes in the landscape to retard sheet-flow and divert the flow to attenuation facilities • Install Biddim soil curtains or similar along the contour at intervals to trap suspended silt. • Install strips of instant lawn on fill banks the moment they are shaped to their final levels. 	During construction	C	ECO	Monthly during construction
i)	Re-vegetate areas cleared of alien vegetation by seeding the area with a sacrificial crop of grass commercially available grass seed: (<i>Aristida junciformis</i> @ 5 kg/ha) is to be	During construction	C	ECO	Monthly during construction

	spread by hand at a rate of 10 g/m ² . Once the seed is spread it is to be lightly raked into the soil and irrigated.				
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3.10 Storm water management

Construction activities frequently result in diversions of natural water flow resulting in concentration of flow and an increase in the erosive potential of the water. Measures in this section are aimed at reducing the erosive potential of stormwater.

3.10.1. General Principles		When	By whom	Audited by	Frequency
a)	Water <u>will</u> flow down-slope over the site during rain events and cause erosion.				
b)	Earth, stone and rubble is to be properly disposed of to not obstruct natural water pathways over the site, i.e. these materials must not be placed in storm water channels, drainage lines or rivers but used as energy dissipaters.	During construction	C	ECO	Monthly during construction
3.10.2 Managing storm water		When	By whom	Audited by	Frequency
a)	The Contractor is to manage the drainage of the site camp to avoid standing water where people must change or eat.	During camp set-up	C	ECO	Monthly during construction
b)	Only discharge controlled run-off from camp site into neighbouring properties.	During construction	C	ECO	Monthly during construction
c)	Provide attenuation structures to	At the onset of construction	C	ECO	Monthly during construction

	retain the run-off by installing the attenuation structures first eg excavated depressions to trap water.				
d)	Prevent storm water damage from the increase in storm water run-off resulting from construction activities by estimating and assessing the drainage system accordingly. <u>A drainage plan</u> must be placed on the Environmental File.	During construction	C	ECO	Monthly during construction
e)	Construct swales or temporary cut off drains and berms in the “between-block” areas to slow the storm water down.	During construction	C	ECO	Monthly during construction
f)	Lay sandbags, Geojute, or strips of instant lawn or Biddim soil curtains across the slope to slow the flow of the water down, trap the silt but allow the water to move through.	During construction	C	ECO	Monthly during construction
g)	Check the site’s drainage system periodically to ensure that the water flow is unobstructed and directed towards the estate drainage system.	During construction	C	ECO	Monthly during construction

h)	Storm water outfalls must be designed to reduce flow velocity and avoid downstream soil erosion.	During construction	C	ECO	Monthly during construction
3.10.3 Unchanneled Flow		When	By whom	Audited by	Frequency
a)	<ul style="list-style-type: none"> • During construction, surface flow must be controlled to avoid soil erosion. • Where large areas of soil are left exposed, erosion berms must be constructed to break the flow of run-off water. • Sandbag berms are to be used to direct and control surface flow. • The spacing between rows will be dependent on slope. • Geojute must be installed on steep exposed banks to slow surface wash and capture eroded soil. 	During construction	C	ECO	Monthly during construction
b)	Where surface run – off is concentrated (e.g. along exposed roadways/ tracks) flow must be	During construction	C	ECO	Monthly during construction

	slowed by contouring with cut-off trenches and berms.				
c)	The newly constructed access must be lined with a double row of sandbags for the entire length to guide storm water down to the open area where it must be spread out to sheet flow.	During construction	C	ECO	Monthly during construction

3.11 Water Quality

Water quality is affected by the incorrect handling of substances and materials. Soil erosion and sediment is also detrimental to water quality.

Mismanagement of polluted run-off from vehicle and plant washing, handling of chemicals and wind dispersal of dry materials into rivers and watercourses are detrimental to water quality.

3.11.1 Managing water quality		When	By whom	Audited by	Frequency
a)	Construct banded storage areas that contain all hazardous substances with an approved impermeable liner.	During construction	C	ECO	Monthly during construction
b)	Clean up spills in banded areas , remove and dispose of safely from the banded area as soon after detection as possible to minimize pollution risk and reduced	During construction	C	ECO	Monthly during construction

	bunding capacity.				
c)	<ul style="list-style-type: none"> • No area is to be set aside for vehicle washing and maintenance. • Where vehicles breakdown and need field repair adequate provision must be made to contain hazardous material by laying down plastic sheeting to protect the soil. • Materials caught in this banded area must be mopped up with a spill kit and disposed of to a suitable waste site or as directed by the engineer. 	During construction	E, C	ECO	Monthly during construction
d)	Make provision for all polluted run-off during set up to be treated to the Engineer's approval before being discharged into	During construction	E, C	ECO	Monthly during construction

	the storm water system. (This will be required for the duration of the project).				
e)	Mix / decant all chemicals and hazardous substances on a tray or on an impermeable surface. Waste from these is then be disposed of to a suitable waste site.	During construction	C	ECO	Monthly during construction
f)	<ul style="list-style-type: none"> • Do not contaminate the soil or ground water on site with any chemicals or hazardous substances • Decant all wastewater from washing into a bunded facility which must be cleared regularly for proper disposal. 	During construction	C	ECO	Monthly during construction
g)	Do not bathe or wash clothes or tools in the nearby lakes, adjacent to or within the designated site. Municipal water (or another source	During construction	E, C	ECO	Monthly during construction

	approved by the Engineer) must instead be used for all activities such as washing of equipment, or disposal of any type of waste, dust suppression, concrete mixing, compaction, etc.				
h)	Maintain and enhance the existing aquatic and water marginal vegetation using appropriate indigenous plants to ensure the filtering function of the vegetation is optimal so that the water quality leaving the site is better than the water that enters the site.	Ongoing	C	ECO	Monthly during construction
i)	All landowners /tenants are to be subject to requirements of legislation relating to such activity, including: <ul style="list-style-type: none"> • National Water Act (1998) • NEMA (1998) • NEM Biodiversity 	During construction	C	ECO	Monthly during construction

	<p>Conservation Act (2001).</p> <ul style="list-style-type: none"> National Forest Act (1998). <p>Any spillage of hazardous material is subject to reporting to the DW&S and conforming with requirements contained in National Water Act (1998). Hydrocarbon absorbent material to be available on site always for use in spillage.</p>				
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3.12 Waste management

3.12.1. On – site Waste Management		When	By whom	Audited by	Frequency
a)	<p>Place refuse in designated skips / bins/ temporary waste storage cage daily at the end of each working day which must be regularly emptied when full. These are to remain within demarcated areas and must be designed to prevent refuse from being blown out by wind.</p>	During construction	C	ECO	Monthly during construction
b)	<p>Place waste receptacles at the work front at close intervals, in addition to the waste facilities within the construction camp,</p>	During construction	C	ECO	Monthly during construction

c)	Littering on the site is forbidden. Clear the site of all litter at the end of each working day.	During construction	C	ECO	Monthly during construction
d)	Encourage recycling by providing separate receptacles for different types of waste and making sure that staff is aware of their uses.	During construction	C	ECO	Monthly during construction
e)	The excavation and use of rubbish pits on site is forbidden.	During construction - C	C	ECO	Monthly during construction
f)	Burning of waste is forbidden.				
g)	Provide individual skips for different types of waste (e.g. "domestic" type refuse, building rubble, etc.).	At site set-up	C	ECO	Monthly during construction
3.12.2. Waste disposal - Non – hazardous waste		When	By whom	Audited by	Frequency
a)	Remove waste from the site and transport it to an approved landfill site.	During construction	C	ECO	Monthly during construction
b)	Provide waybills proving disposal for audit purposes by placing copies of waybills on the environmental file.	During construction	C	ECO	Monthly during construction
c)	Storage of construction rubble is permitted at pre – agreed demarcated on-site spoil dumps approved by the Engineer, until ready for disposal. This does include waste eg. plastic, timber and metal.	During construction	E, C	ECO	Monthly during construction

d)	<ul style="list-style-type: none"> • Chemical toilet waste is to be disposed of regularly and in a responsible manner by a registered waste contractor. • Care must be taken to avoid contamination of soils and water, pollution and nuisance to adjoining areas by using an impermeable layer eg plastic sheeting. • Communicate this requirement to the service provider. • Service records (photocopies) must be kept on the environment file for audit purposes. 	During construction	C	ECO	Monthly during construction
3.12.3 Hazardous Wastes		When	By whom	Audited by	Frequency
a)	Accredited waste contractor must dispose of Hazardous waste. Provide waybills for audit purposes by placing a copy on the environmental file.	During construction	C	ECO	Monthly during construction
b)	Create a sump (earth or other) for concrete waste. De-sludge it regularly. Remove cement waste to landfill. Provide a waybill for audit purposes by placing a copy on	During construction	C	ECO	Monthly during construction

	the environmental file.				
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3.13 Staff Conduct

3.13.1. Environmental Education and Awareness		When	By whom	Audited by	Frequency
a)	Environmentally induct all contractors and sub-contractor staff into the contents of the CEMP.	At the commencement of construction, or when performance is sub-standard	C	ECO	Monthly during construction
b)	Monitor the performance of construction workers to ensure that the points relayed during their induction have been properly understood and are being followed. If necessary, the ECO and / or a translator must be called to the site to further explain certain aspects of environmental or social behaviour that are unclear.	During construction	C	ECO	Monthly during construction
3.13.2. Worker Conduct on Site		When	By whom	Audited by	Frequency
a)	Workers to respect other people working and living in the area surrounding the development	During construction	C	ECO	Monthly during construction

3.14 Conservation of Natural Environment

3.14.1. Fauna and Flora		When	By whom	Audited by	Frequency
a)	Take care to avoid the	At site set-up and ongoing	C	ECO	Monthly during construction

	<p>introduction of alien plant species to the site and surrounding areas. (Particular attention must be paid to imported material).</p> <ul style="list-style-type: none"> • Remove of aliens by weeding. This significantly reduces the amount of time and money that must be spent on alien plant management during rehabilitation. 				
b)	<p>Minimize disturbance of birds, animals and reptiles and their habitats wherever possible.</p>	<p>At site set-up and ongoing</p>	C	ECO	Monthly during construction
c)	<p>No hunting or snaring of birds and animals will lead to the person being charged criminally.</p>	<p>At site set-up and ongoing</p>	C	ECO	Monthly during construction
d)	<p>No gathering of firewood, fruit, muthi plants, crops, or any other natural material on site or in areas adjacent to the site is prohibited.</p>	<p>During construction</p>	C	ECO	Monthly during construction
e)	<p>Prevent fire from affecting</p>	<p>During construction</p>	C	ECO	Monthly during construction

	the grassland				
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3.15 Social Impacts – Visual and Noise

3.15.1. Public Participation		When	By whom	Audited by	Frequency
a)	Make contact with those people that are Interested or Affected by the development (I & AP's) during the set-up phase of the project.	During construction	C	ECO	Monthly during construction
b)	The I & AP's are those who either: <ul style="list-style-type: none"> ○ Live close by the project. ○ Work close by the site. ○ Will have their services / infrastructure affected by the project. ○ Have a general interest in the project. ○ The Councilor for the ward in which the construction is taking place. 	During construction	C	ECO	Monthly during construction
3.15.2. Disruption of Infrastructure and Services		When	By whom	Audited by	Frequency
a)	Restrict contractor's activities and movement to designated construction areas.	During construction	C	ECO	Monthly during construction
b)	Direct members of the public or other stakeholders, to the Engineer or Contractor or provide a number on which they may	During construction	E, C	ECO	Monthly during construction

	contact the Engineer or Contractor.				
c)	Be polite and courteous with the public or other stakeholders always. Failure to adhere to this requirement may result in the removal of staff from the site by the Engineer.	During construction	E, C	ECO	Monthly during construction
d)	Do not disrupt access for local residents without the Engineer's permission.	During construction	E, C	ECO	Monthly during construction
e)	Inform neighbours in writing of disruptive activities at least 24 hours beforehand. This can take place by way of leaflets placed in the postboxes giving Engineer's and contractors details or other methods approved by the Engineer.	During construction	E, C	ECO	Monthly during construction
3.15.3. Noise Impacts		When	By whom	Audited by	Frequency
a)	Fit construction vehicles with standard silencers prior to the beginning of construction.	During construction	C	ECO	Monthly during construction
b)	Use equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc.) as per operating instructions and maintained properly during site operations.	During construction	C	ECO	Monthly during construction

c)	Keep machinery and vehicles in good working order for the duration of the project to minimize noise nuisance to neighbours.	During construction	C	ECO	Monthly during construction
3.15.4. Visual Impacts		When	By whom	Audited by	Frequency
a)	Screen highly reflective materials on site.	At site-set-up	C	ECO	Monthly during construction
b)	Point lighting on the construction site downwards and away from oncoming traffic and nearby houses.	During construction	C	ECO	Monthly during construction
c)	Keep the site clean to minimize the visual impact.	During construction	C	ECO	Monthly during construction
3.15.5. Communication with outside people Regular communication between the contractor and outside people is important for the duration of the contract		When	By whom	Audited by	Frequency
a)	The Engineer and Contractor are responsible for ongoing communication with those people that are interested/affected by the project.	During construction	E, C	ECO	Monthly during construction
b)	Locate a complaint register at the site office. This must be in carbon copy format, with numbered pages. Any missing pages must be accounted for.	During construction	C	ECO	Monthly during construction
c)	People need to be made aware of the existence of the	During construction	C	ECO	Monthly during construction

	complaints book and methods of communication available to them.				
d)	<p>Queries and complaints are to be handled by:</p> <ul style="list-style-type: none"> - Documenting details of such communications - Submitting these for inclusion in the complaints register - Bring issues to the Engineer's attention immediately - Taking remedial action as per Engineer's instruction 	During construction	E, C	ECO	Monthly during construction
3.15.6 Socio-economy		When	By whom	Audited by	Frequency
a)	Employment: Create as many temporary unskilled and skilled jobs possible.	During construction	C	ECO	Monthly during construction
b)	Economy: Stimulate the local economy with construction activities	During construction	C	ECO	Monthly during construction

3.16 Cultural Environment

Possible items of historical or archaeological value include old stone foundations, tools, clayware, jewellery, remains, fossils, e.t.c.					
		When	By whom	Audited by	Frequency
a)	Inform all staff prior to commencement of construction, what possible archaeological or historical objects of value may look like, and to notify the E must such an item be uncovered	During construction	C	ECO	Monthly during construction

b)	If something of this nature is uncovered, the Research and Professional Services Division of AMAFA must be contacted and work must be stopped immediately.	During construction	C	ECO	Monthly during construction
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3.17 Security and Safety

3.17.1. Fencing		When and by whom	By whom	Audited by	Frequency
a)	Demarcate potentially hazardous areas such as trenches and clearly mark them.	During construction	C	ECO	Monthly during construction
3.17.2. Lighting		When and by whom			
a)	Set lighting out on site to provide maximum security and to enable easier policing of the site, without creating a visual nuisance to local residents or businesses. Make sure all lights shine downwards.	During construction	C	ECO	Monthly during construction
3.17.3. Risks Associated with Material on Site		When	By Whom	Audited by	Frequency
a)	Stabilise and secure material stockpiles or stacks , such as pipes, to avoid collapse and possible injury to workers.	During construction	C	ECO	Monthly during construction
b)	Store flammable materials as far as possible away from adjacent	During construction	C	ECO	Monthly during construction

	businesses.				
c)	Firefighting equipment is always to be present on site as per OHSA.	During construction	C	ECO	Monthly during construction
d)	Stockpiles and stacked materials must not obstruct driver's line of sight , especially at intersections and sharp corners.	During construction	C	ECO	Monthly during construction
e)	Do not store materials on unstable or high-risk areas, such as on steep slopes.	During construction	C	ECO	Monthly during construction
f)	Notify all I & AP's in advance of any known potential risks associated with the construction site and activities on it. Place a copy of this communication on the environmental file.	During construction	C	ECO	Monthly during construction

4. SECTION B: POST-CONSTRUCTION ACTIVITIES

The following activities need to take place before the contractor leaves the site;

4.1. Construction Camp		When	By whom	Audited by	Frequency
a)	All structures comprising the construction camp are to be removed from the site.	At completion	C	ECO	On completion of construction
b)	The Contractor must arrange the cancellation of any temporary services.	At completion	C	ECO	On completion of construction
4.2. Land Rehabilitation		When	By whom	Audited by	Frequency
a)	All surfaces	At completion	C	ECO	On

	hardened due to construction activities are to be ripped and imported materials thereon removed.				completion of construction
b)	The area that previously housed the construction camp is to be checked for spills of substances such as oil, diesel, etc. and these must be cleaned up.	At completion	C	ECO	On completion of construction
c)	All rubble is to be removed from the site to an approved disposal site. Burying rubble on the site is prohibited.	At completion	C	ECO	On completion of construction
d)	The site is to be cleared of all litter.	At completion	C	ECO	On completion of construction
e)	Surfaces are to be checked for waste products from activities such as concreting or asphaltting and cleared in a manner approved by the Engineer.	At completion	E, C	ECO	On completion of construction
f)	All embankments are to be trimmed, shaped to the satisfaction of the Engineer.	At completion	C, EO, E	ECO	On completion of construction
g)	An official site handover to the Landscape Contractor must take place,	At completion	C, LC	ECO	At site hand over
h)	Soil samples of the rehabilitated site must be analysed at a soils	At completion of construction work prior to	Dev, LC,	ECO	At site hand over

	laboratory to determine what soil amelioration measures are required to restore the soil potential.	landscaping			
i)	Vegetate the site to achieve 80% soil cover to slow the water down to sheet-flow.	Post construction	C	ECO	On completion of construction
4.3. Material and Infrastructure		When	By whom	Audited by	Frequency
a)	Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the Engineer.	At completion	C	ECO	On completion of construction
b)	All residual stockpiles must be removed to spoil or spread on site as directed by the Engineer.	At completion	E, C	ECO	On completion of construction
c)	All leftover building materials must be returned to the depot or removed from the site.	At completion	C	ECO	On completion of construction
d)	The Contractor must repair any damage the construction works has caused to neighbouring properties.	At completion	C	ECO	On completion of construction
4.4. General		When	By whom	Audited by	Frequency
a)	Meeting is to be held on site between the Engineer, ECO and the Contractor to approve all remediation	At completion	PA, ECO and C	ECO	On completion of construction

	activities and ensure that the site has been restored to a condition approved by the Engineer.				
b)	All areas where temporary services were installed are to be rehabilitated to the satisfaction of the ECO.	At completion	C, ECO	ECO	On completion of construction

5. SECTION C: ENVIRONMENTAL COMPLIANCE MONITORING

5.1. Compliance Reports		When	By whom	Audited by	Frequency
a)	There will be a monthly compliance report prepared by the ECO which will report on the environmental compliance on construction and rehabilitation activities during that month. Any aspects of non-compliance, complaints, issues or problems will be highlighted in these reports which will be forwarded to the Client, the Contractor and Ethekwini Environment Planning and Climate Protection Department.	Monthly	ECO	Dev, KZNDEDETEA, EPCPD	Monthly
b)	Annual audits are to be done by an independent EAP during operation	Annual	Independent EAP	KZNEDTEA. EPCPD	Annual
5.2. Penalty clause for non-compliance		When and by whom	By whom	Audited by	Frequency
a)	Penalties may be imposed by the developer	During construction	Developer, C	Eco	Monthly

	<p>on contractors for non – compliance. These penalties would include:</p>				
	<ul style="list-style-type: none"> • The rectification of all transgressions or damage at the contractor’s expense. • The cessation of work until a matter has been investigated, reported on and rectified. • The reporting of a transgression to the relevant authorities, which may lead to their prosecution in terms of the relevant legislation. <p>The Operator has a schedule of fines for non-compliance during the operational phase and they are to be issued after warning of non-compliance was issued or issued immediately if the situation warrants it.</p>				

6. Operational Environment Management Plan

The operational environment management plan (OEMP) is a living document that must be transferred into the successor in title and ownership of the land and onto tenants or any contractor working on the land. It must be kept current with changes in circumstances.

6.1 INTRODUCTION

6.1.1 THE PURPOSE OF THIS CONSTRUCTION EMP

The purpose of the Operation Environmental Management Program (OEMP) is to prevent any negative environmental impacts or to ensure those that do happen are kept to the minimum during the operation phase of this development by providing this practical and achievable program of management. The mitigation measures specified within this plan will assist in limiting these negative impacts during the operation process. The need for compliance and the need for monitoring compliance by inspection are explained. The various role players and their responsibilities and reporting procedures are also contained within this OEMP.

6.1.2 THE ORIGIN AND CONTEXT OF THIS EMP

KZN Department of Economic Development Tourism and Environmental Affairs (KZNDEDTEA) and eThekweni Environment Planning and Climate Protection Department (EPCPD) require that an Environmental Management Program be compiled to manage the operation of this development. This OEMP has been compiled by Indiflora cc Environmental Services. An Operation EMP is a “living document” and is subject to changes to cope with new circumstance and changes in legislation contained within this OEMP.

6.1.3. THE ORIGIN AND CONTEXT OF THIS EMP

The EMP is a requirement by KZNDEDETEA in terms of NEMA Regulation 923 (2014).

This EMP is based on:

- The Draft Basic Assessment Report to be issued by INDIflorea cc in October 2019;
- The eThekweni Municipality Generic EMP for Construction Activities (October 2009);
- The KwaZulu Natal Department of Agriculture and Environmental Affairs Interim Guidelines for Environmental Management Plans (Construction & Operational Phases) (June 2003); and,
- The Western Cape Province Department of Environmental Affairs and Development Planning's Draft Standard Construction Phase Environmental Management Plan for implementation on small or low impact developments approved under the Environment Conservation Act (Act 73 of 1989).

6.1.4 AIM AND SCOPE OF THE EMP

The Aim and Scope of the EMP is to:

- Ensure that impacts on the immediate environment are avoided;
- Where this is not possible, impacts are mitigated; and,
- Ensure that the rehabilitated environment is maintained.
- To ensure the operation is compliant with conditions of the environment authorisation

The EMP outlines the required procedures and management actions necessary to avoid, remedy, or mitigate the effects on the environment. The plan covers;

- Actions required to minimise or remedy any negative environmental impacts resulting from operational activities;
- Which bodies, organisations, or individuals are responsible for which activities;
- Performance criteria, and monitoring mechanisms to ensure instructions are achieving the desired level of protection and are correctly implemented.

The construction Phase EMP covers activities from project initiation through to the completion of construction (site handover) and rehabilitation of the site.

6.1.5. ROLE PLAYERS AND RESPONSIBILITIES

a. INTRODUCTION

The various parties involved in the operational phase, and their respective roles and responsibilities are outlined below and detailed in the following sections.

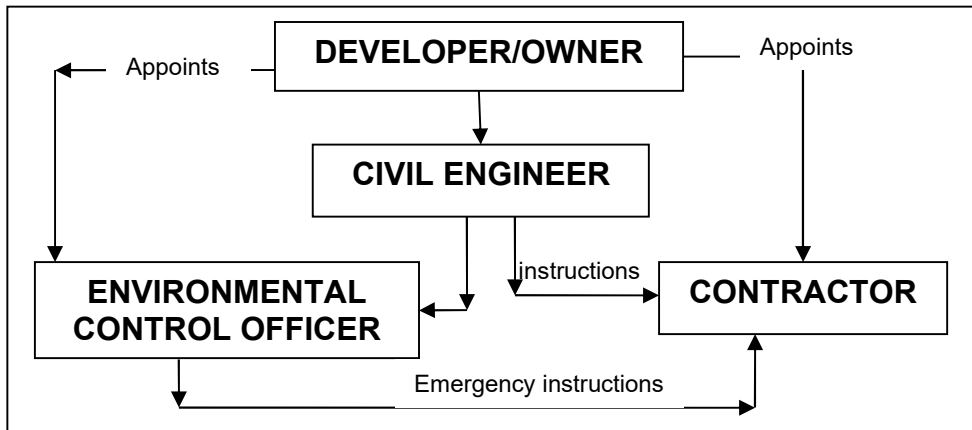


Figure 1: A schematic of the communication channels

THE DEVELOPER OR OWNER

Syaqondisisa (PTY) Ltd is responsible overall for the implementation of this EMP and to implement all necessary mitigation measures should an environmental incident occur.

Red Acres Farm, Camperdown, Cell: 0824541365 Email:

dennisawerner@gmail.com

The developer is responsible for:

- providing an engineer to oversee the operation works
- appointing or providing and Environmental Control Officer for the operation period
- appointing a maintenance and monitoring team
- notifying KZNDEDTEA and DMR of the commencement of operation phase in terms of the EA
- approving amendments to this EMP and notifying KZNDEDTEA and DMR of the amendments

THE ENGINEER

The appointed engineer:

- for the infrastructural component of the development contract AND for the management of the engineering aspects related to the development is to be confirmed.

The engineer is responsible for:

- The monitoring of all infrastructural aspects of the development including roads, stormwater, water supply and sewage disposal..

THE ECO

An ECO will be appointed to conduct annual audits, review and update the EMP and report to KZNDEDTEA and EPCPD

The ECO is responsible for:

- Conducting an annual audit of the operation
- To report the findings of the audit to KZNDEDTEA, DMR and EPCPD
- To review and update the EMP.

6.2 IMPLEMENTATION

6.2 SITE MEETINGS

The ECO shall arrange formal meetings between the developer and tenants, if there are any. The developer's compliance with the requirements of the EMP shall be discussed and recorded in the minutes which shall be distributed to the authorities for record purposes.

6.3 AMENDMENTS

The OEMP is a dynamic living document which is intended to be improved on and modified as the project progresses. Changes to ensure compliance with best environmental practice must be incorporated by an ECO, or other parties through the ECO.

Proposed and suggested changes shall be discussed with the engineer and developer and documented. Any changes to the EMPr shall be forwarded to DEDTEA, DMR and EPCPD for approval.

6.4 DISPUTES AND DISAGREEMENTS

Any dispute arising between the parties on site in respect of the requirements of this EMPr and or environmental management issues shall be resolved by the Developer.

6.5 OPERATIONS

Responsible environmental practice shall be applied to all activities taking place during the operation period.

The developer may be required to provide method statements for approval by the ECO for any activities regarded as sensitive.

6.3 SIGNIFICANT OR SENSITIVE FEATURES OF THE SITE

Significant or sensitive features are:

- The steep gradient of the land and the erodibility of the soils.
- The grassland vegetation.
- The wetland and water course including the dam.
- The biodiversity found on the site.

6.4 ACTIVITIES TO MONITOR

Nr	Activity	When and by whom	By whom	Audited by	Frequency
1.	Current status of the EMPr	During operation	ECO	Eco	Annually
2.	Conduct audit	During operation	ECO	ECO	Annually
2.1	Check compliance with conditions of the EA				
2.2	Check the environmental files for accurate records				
2.3	Check waste disposal way bills				

2.4	Check mobile toilet service records				
2.5	Check access roads				
2.6	Check platform storm water management system				
2.7	Check erosion control methods				
2.8	Check material stockpiles				
2.9	Check waste management system				
2.10	Check staff environmental awareness training				
2.11	Check water quality management				
2.12	Check conservation of natural resources				
2.13	Check heritage resources management				

7. References:

eThekwini Environment Management Department, 2009. eThekwini Municipality Generic EMP for Construction Activities Revised April 2009. Durban

Sonjica, B.P. 2010. NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS GN R 543. Pretoria

APPENDIX G

**ENVIRONMENTAL OFFSET
AND REHABILITATION PLAN FOR
PTN 583 and 584 of LOT 387 ASSAGAY KRAAL
853**

for
Mr D Werner
Bothashill
dennisarwerner@gmail.com



i. Document control

Author	Qualifications	Date
Johan Bodenstein	ND Horticulture ND Nature Conservation B-Tech Nature Conservation	7 July 2018
Reviewed	Qualifications	Date
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ii. Abbreviations:

BAR	Basic Assessment Report
cm	Centimeter
DMR	Department of Mineral Resources
EMPr	Environment Management Programme
g	Gram
kg	Kilogram
KZNP/DETEA	KwaZulu-Natal Department of Economic Development Tourism and Environment Affairs
m	Meter
m ²	Square meter
m ³	Cubic meter
mm	Millimeter
pd	Per day
plug	Seedling plant taken from a multi cavity nursery tray
ppd	Persons per day
R	South African currency - Rand
SA	South Africa

iii. Declaration

The work presented in this report is my own. I have no other interest in the project other than professional fees agreed upon prior to the commencement of the project.

iv. Contents

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ENVIRONMENTAL OFFSET AND REHABILITATION PLAN FOR THE PLATFORM AREA ON PORTION 583 and 584 OF LOT 387 ASSAGAY KRAAL 853

1. CONTEXT

Application for a mining permit has been made to DMR to excavate the decomposed granite with the aim of establishing a level platform on which an agricultural activity will take place at a future date. The topography of the land is undulated and the slopes of the hillsides are steep. This makes conventional development difficult. Application was also made to KZNDEDETEA by means of a BAR. The environment assessment process of the BAR identified various environmental impacts. The impacts can be mitigated to an extent. There will still be impacts affecting the environment after mitigation. The residual impacts must be off-set. This plan describes the proposed off-set and the off-set implementation plan. During construction of the platform there will be disturbance of the environment. The rehabilitation of the platform area post-construction will be the procedure described below that must be followed when the final platform level is achieved:

2. OFF-SET PLAN

The development of the platform takes up 7% of the land leaving 93% for conservation. The KwaZulu-Natal Moist Coast Hinterland Grassland in its natural state mostly devoid of woody vegetation except for bush-clumps on termitaria. Valley bottoms would have had a narrow ribbon of riverine vegetation. In the absence of fire that maintains grassland clear of woody plants, encroachment by woody perennials begins to transform the grasslands. Woody shrubs and trees follow and begin to fragment the grassland as outlier bush-clumps begin to establish itself. The shade of the woody species change the micro-climate and the sun-dependent grasses die out. Invasive alien plant species are introduced by wind or birds to the edge of the bush-clumps and spreads from there. Dense stands of invasive alien species dominate large areas of the property.

The off-set plan is to remove the woody bush-clumps and the invasive alien species and to restore the grassland to being grassland. The process will commence with clearing emerging woody species and invasive alien plants from the open grasslands. Clearing the grassland areas will be quick and a large area of the property can be declared IAP and bush encroachment free.

The dense areas of encroachment and alien infestation will then be evaluated to determine which areas are least infested. The least infested areas will be targeted next. The woody biomass will be cut down mechanically and the basal stems treated with a herbicide to prevent coppicing. The cut biomass will be chipped to form mulch which will be spread on the ground to protect the soil. Once cleared of all the biomass the cleared area will be seeded with Ngongoni grass (*Aristida junciformis*) which is the dominant grass in the area. Grass seed will only be spread from August to March, which are the rain months and the months when the soil temperature is optimum for seed germination.

By continuously clearing the next least infested bush-clump the areas that are heavily infested becomes isolated. Once all the lightly infested bush-clumps have been cleared will work commence on the heavily infested bush-clumps. Work will commence

from the outside of the bush-clump working inwards, throttling the bush-clump until it is all cut down. One by one the bush-clumps will be eliminated until all bush-clumps are cleared. Only indigenous trees and shrubs growing within 5m on either side of the water course or drainage line bottom will be left.

Next to clear would be the gum trees and wattle trees around the dam and wetlands. Trees will be selected to remain standing as perches for birds and raptors. These trees will be ring barked and treated with herbicide. The remainder of the trees that are to be removed will be felled mechanically and the basal stems treated with herbicide to prevent coppicing. All shrub and herbaceous invasive alien species will be removed from the wetland and water course areas.

In areas where soil erosion is active control measures will be implemented. Fascine work of woody material from the trees felled in the bush-clearing process will be used to secure the soil and to disrupt the flow of the water so that the eroded soil in suspension can settle out. This can also be done with rock packs. Establishing grass cover on disturbed areas will help curb the erosion.

This is a five year plan because invasive alien plants are never extirpated with the first clearance. There is a seed bank in the soil that must be depleted and this takes a minimum of three years. The surrounding areas will still be infested with invasive alien plants and recolonisation will be an ongoing challenge. During the five year period regular follow-up inspections must be conducted and germinating seed and seedlings removed. Follow-ups must start where the programme started and follow through the cleared areas systematically until all the cleared areas have been checked and declared invasive plant free. Follow-up events must not be further apart than four months. Some invasive alien plants begin to flower after six months. It is important to disrupt the flowering season to prevent seed from setting. New seed released into the area means another three years of clearing invasives.

3. THE REHABILITATION PLAN

3.1 De-establish the excavation operation:

This means the removal of all equipment from the site including the site office and machinery. Any foreign material must be lifted and removed off site for disposal at a registered landfill. Any remaining material must be removed off-site for storage at the depot. Any contamination by hydrocarbons must be lifted, containerised and disposed of at a hazardous landfill site. Certificates of safe disposal must be made available for audit purposes and safe keeping.

3.2 Making the platform area safe:

The steep slope created by the excavation operation must be broken into steps or terraces of 1m vertical at 1:2 and then there must be a step-back terrace of 2m to establish a stable gradient.

A compacted earthen berm must be established around the perimeter of the platform with a base of 1.5m and a crown of 0.5m wide and of 0.5m height.

The platform must be graded so that it has a fall of 1:100 to the centre of the southern boundary of the platform where the storm water attenuation structure is situated.

3.3 Erosion control:

Soil curtains must be installed on the perimeter of the disturbed area on the edge of the natural grass veld to prevent eroded soil ingress into the grassland. Soil curtains must be installed on the excavation slope to 1m intervals. Fascine work of lattice work fixed to the exposed slope with stakes or Soil Saver (Kaytech), Geojute (SA Gabions) or similar product must be laid on the exposed soil on the steep slopes and pegged to the ground with wooden stakes.

3.4 Topsoiling:

The final levels of the reshaped material must be covered with 20cm topsoil. Organic compost must be provided at a rate of 30m³ per hectare and worked into the soil to a depth of 20cm. In the absence of top soil organic compost must be supplied at 60m³ per hectare and worked into the soil to a depth of 30cm.

3.5 Revegetation:

Grass plugs of the Ngongoni grass (*Aristida junciformis*) must be planted over the excavated slope area at a minimum density of 7 plugs per m² on steep slopes. The following grasses are recommended to be sown in the planting mix to reach the ideal of coverage of 15 -21 plants per m² on the excavated slope. The perimeter of the platform and the platform must be seeded with the following grass mixture applied randomly but with *Aristida junciformis* making up 60% of the blend of seed. The seed must be broadcast by hand at a rate of 20g per 1m². The seed must be lightly raked into the soil.

Alloteropsis semialata
Aristida junciformis
Digitaria eriantha
Eragrostis capensis
Hyparrhenia filipendula
Melinis repens
Sporobolus africanus

The rehabilitated excavation slope area must be planted with broadleaf herbaceous plants found in the surrounding natural grassland. These plants can be planted as plugs and the plugs must be planted at a density of 5 plants per m². The following is a recommended list of broadleaf herbaceous plants found in the immediate area:

Alipidia amatymbica
Aloe maculata

Aristea woodii
Artemisia afra
Barleria guenzii
Barleria obtusa
Becium ovata
Berkheya rhapontica
Berkheya speciosa
Ceratotheca trilobata
Cheilanthus virridis
Commelina erecta
Conostomium natalense
Crassula alba
Cynodon nlemfuensis
Desmodium incanum
Dovyalis lycioides
Eucomis autumnalis
Eulophia tenella
Felicia erigeroides
Gazania rigens
Gerbera ambugua
Gomphocarpus physocarpus
Helichrysum aureoniteus
Helichrysum cymosum
Hypoxis argentea
Hypoxis hemerocallidea
Indigofera eriocarpa
Leonotis leunuris
Lippia javanica
Pelargonium luridum
Polygala hottentotta
Pseudarthria hookeri
Rhynchosia caribaea
Scabiosa columbaria
Senecio deltoideus
Sutera floribunda
Thunbergia natalensis
Vernonia natalensis
Vernonia oligocephala
Vigna vexillata
Watsonia densiflora
Zornia capensis

The following woody shrubs are also present in the surrounding area and can be planted on the terraces.

Dalbergia obovata
Protea welwitschii
Searsia pentheri
Vangueria infausta

3.6 Irrigation:

The area must be provided with post-planting irrigation until the plants are established and able to survive on precipitation. For the first month after planting all the plants must be watered daily. For the second and third month the irrigation period can be reduced to three times per week. A minimum of 25mm per m² is required to ensure the survival of the plants. Between months three to 6 the plants must be watered once a week. Irrigation is not required on rain-days. After 6 months the plants can survive on natural precipitation.

3.7 Post-installation maintenance:

The area must be maintained for a period of 12 months after planting is completed. During the maintenance period the area must be weeded to reduce the competition that weeds and alien invader plants bring. Should any erosion signs be observed after rain events the erosion gullies must be repaired immediately and new plants established. Such erosion gullies must receive additional fascine work to prevent the reoccurrence of erosion. Any plants that die during the maintenance period must be replaced by the installer.

3.8 Monitoring:

The rehabilitation process will be monitored by an independent engineer and by a rehabilitation specialist to ensure the correct procedures are followed throughout the process.

3.9 Sign-off:

On completion of the installation the independent engineer and rehabilitation specialist will sign the work off as practically complete, if the completed works satisfies the requirements of the specialists. Their word is final and binding. After the 12 month maintenance period the independent engineer and rehabilitation specialist will sign the work off as complete if they are satisfied that the work is complete to their standards. The installer will only then be relieved of his responsibilities.

3.10 Timeframe:

- The field work must commence within a week of the excavation slope reaching its final trimming.
- Earthworks must be complete by the end of that week.
- Retaining installations must commence the after that and must be complete within a month.

- Soil preparation must commence immediately after that
- Planting to take place in the first week after the soil preparation is done and be completed within a month.
- Maintenance commences on receiving practical completion

3.11 The Rehabilitation Budget:

The cost breakdown is tabled below:

Task	Unit price	Quantity	Time	Total
De-establish the excavation activity		1		R 20,000
Earthworks	R18/m ³	1000m ³		R18,000
Fascine work	R350/each	320		R5,760
Topsoil	R15/m ³	3,844m ³		R57,660
Grass plugs	R2.50/plug	23,625		R59,062.5
Grass seed	R250/kg	67.5kg		R16,875
Water cart	R2500/pd	66 days		R165,000
Labour - plugs	R180/pppd	5	3 days	R2,700
Labour - seed	R180/pppd	5	2 days	R1,800
Labour - weeding	R180/pppd	2	120 days	R43,200
Labour - irrigation	R180/pppd	2	66 days	R23,760
			Subtotal	R413,817.5
			15% VAT	R62,072,62
			Total	R475,890.12

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