BASIC ASSESSMENT REPORT FOR THE PROPOSED ECHO ACADEMY PRIVATE SCHOOL ON THE REMAINDER OF THE FARM MOLENJE 204 LT, DOVHENI VILLAGE, COLLINS CHABABE LOCAL MUNICIPALITY.

PREPARED BY:

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0004

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NOVEMBER 2019

BASIC ASSESSMENT REPORT - EIA REGULATIONS, 2014

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

File Reference Number:	
	(For official use only)
NEAS Reference Number:	
Date Received:	
Due date for acknowledgement:	
Due date for acceptance:	
Due date for decision	

Kindly note that:

1. The report must be compiled by an independent Environmental Assessment Practitioner.

2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

3. Where applicable **tick** the boxes that are applicable in the report.

4. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the Department of Economic Development, Environment and Tourism as the competent authority (Department) for assessing the application, it may result in the rejection of the application as provided for in the regulations.

5. An incomplete report may be returned to the applicant for revision.

6. Unless protected by law, all information in the report will become public information on receipt by the department. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

7. The Act means the National Environmental Management Act (No. 107 of 1998) as amended.

8. Regulations refer to Environmental Impact Assessment (EIA) Regulations of 2014.

9. The Department may require that for specified types of activities in defined situations only parts of this report need to be completed. No faxed or e-mailed reports will be accepted.

10. This application form must be handed in at the offices of the Department of Economic Development, Environment and Tourism: -

Postal Address:	**Physical Address:**
Central Administration Office Environmental Impact Management P. O. Box 55464 **POLOKWANE** 0700	Central Administration Office Environmental Affairs Building 20 Hans Van Rensburg Street / 19 Biccard Street **POLOKWANE** 0699
Queries should be directed to the Central Administration Office: Environmental Impact Management: - **For attention:** Mr E. V. Maluleke **Mobile:** 082 947 7755 **Email:** malulekeev@ledet.gov.za	

View the Department's website at http://www.ledet.gov.za/ for the latest version of the documents.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	YES	NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" or appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail[1]:

The proposed development of an Echo Academy Private School, on the remainder of the farm Molenje 204 LT, Dovheni Village, Collins Chabane Local Municipality, Limpopo Province. The project applicant for the proposed development site is Echo Academy (Pty) Ltd and the site on which the proposed development is to take place is owned by the MulenzheTraditional Council.

The school will comprise of a primary school starting from grade R until grade 7

The school will also include the sports activities such as soccer, rugby, netball, tennis athletics and cricket at no additional fee.

<u>The proposed activity entails:</u>

Construction of school blocks, administration block, sports and the ablution facilities.

The proposed development site is 3 hectares.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

(a) the property on which or location where it is proposed to undertake the activity;

The current preferred location is ideal as it is next to an existing educational facility (Mutshena Primary School). The site is easily accessible to the surrounding community. This is the only location alternative that will be considered in this Basic Assessment Report.

[1] Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

(b) the type of activity to be undertaken;

The current preferred activity is deemed to be the only feasible activity alternative as this activity will result in improved educational facilities which can accommodate more pupils and reduce the number of students who are required to commute to other schools.

(c) the design or layout of the activity;

The layout will not have a high impact on the environment, as long as it complies with criteria listed in this report as well as an EMPr .

(d) the technology to be used in the activity;

The proposed school development will be under controlled conditions and it is not expected to have negative effects on the quality of the environment. All the mitigation measures are provided in the Environmental Management Plan

(e) the operational aspects of the activity; and

The operational aspects of the activity relate to the improved educational facilities for the local community. No other alternatives were deemed feasible other than the proposed activity.

(f) the option of not implementing the activity.

It is mandatory to consider the "no-go" option in the EIA process. The "no-go" alternative refers to the current status quo and the risks and impacts associated with it. Some existing activities may carry risks and may be undesirable.

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

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

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the Hartebeeshoek 94 WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

Alternative:	**Latitude (S):**			**Longitude (E):**		
Alternative S1[2] (preferred or only site alternative)	22˚	59'	37.87"	30˚	37’	1.89"
Alternative S2 (if any)	°	'	"	°	'	"
Alternative S3 (if any)	°	'	"	°	'	"

In the case of linear activities:

Alternative:	**Latitude (S):**			**Longitude (E):**		
Alternative S1 (preferred or only route alternative)						
• Starting point of the activity	°	'	"	°	'	"
• Middle/Additional point of the activity	°	'	"	°	'	"
• End point of the activity	°	'	"	°	'	"
Alternative S2 (if any)						
• Starting point of the activity	°	'	"	°	'	"
• Middle/Additional point of the activity	°	'	"	°	'	"
• End point of the activity	°	'	"	°	'	"
Alternative S3 (if any)						
• Starting point of the activity	°	'	"	°	'	"
• Middle/Additional point of the activity	°	'	"	°	'	"
• End point of the activity	°	'	"	°	'	"

[2] “Alternative S..” refer to site alternatives.

Figure 1: Locality map of the proposed development site

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

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	**Size of the activity:**
Alternative A1[3] (preferred activity alternative)	30 000 m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

or,

<u>for linear activities:</u>

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	m
Alternative A2 (if any)	m

[3] "Alternative A.." refer to activity, process, technology or other alternatives.

Alternative A3 (if any)	m

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

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

5. SITE ACCESS

Does ready access to the site exist?	YES / NO
If NO, what is the distance over which a new access road will be built	150m

Describe the type of access road planned:

Access to the proposed development will be made from the unnamed road within the Dovheni Village.

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

6. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

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

- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species);

6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and

6.11 the positions from where photographs of the site were taken.

7. SITE PHOTOGRAPHS

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

Please refer to Appendix B.

8. FACILITY ILLUSTRATION

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

11. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	Unknown	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown	
Will the activity contribute to service infrastructure?	YES	NO
Is the activity a public amenity?	YES	NO
How many new employment opportunities will be created in the development phase of the activity?	Unknown	
What is the expected value of the employment opportunities during the development phase?	Unknown	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Unknown	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown	

9(b) Need and desirability of the activity

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

NEED:			
i.	Was the relevant municipality involved in the application?	YES	NO
ii.	Does the proposed land use fall within the municipal Integrated Development Plan?	YES	NO
iii.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		

DESIRABILITY:			
i.	Does the proposed land use / development fit the surrounding area?	YES	NO
ii.	Does the proposed land use / development conform to the relevant structure plans, Spatial development Framework, Land Use Management Scheme, and planning visions for the area?	YES	NO
iii.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	NO
iv.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
v.	Will the proposed land use / development impact on the sense of place?	YES	NO
vi.	Will the proposed land use / development set a precedent?	YES	NO
vii.	Will any person's rights be affected by the proposed land use / development?	YES	NO
viii.	Will the proposed land use / development compromise the "urban edge"?	YES	NO
ix.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		

BENEFITS:			
i.	Will the land use / development have any benefits for society in general?	YES	NO
ii.	Explain: The proposed development of a school will bring the community an advanced education programme that		

	will not only put emphasis on academic performance but also affords learners from Dovheni Village and the		
	surrounding villages an opportunity to excel in sports as well as the arts activities. The proposed land use will		
	create employment opportunities for the local community. At present, other parts of the study area comprises of		
	exposed soils that often because dust pollution during the windy season. The exposed areas will eventually cause		
	soil degradation, erosion, siltation and water pollution. Such environmental impacts could be far reaching and are		
	not only limited to the study area. The proposed development will therefore also address the current problem.		
iii.	Will the land use / development have any benefits for the local communities where it will be located?	YES	NO
iv.	Explain: According to the 2030 National Development Plan (NDP) Executive Summary (2013), the government must look to invest "in new infrastructure in areas that directly affect the poor, such as education." The NDP (2013) places emphasis on promoting sustainable livelihoods by ensuring "that individuals or families, irrespective of income, can access services such as quality education." This activity will be beneficial to the society and local communities for the following reasons: • Temporary employment opportunities will be created during the construction phase of the development; • New permanent employment opportunities will be created during the operational phase; • A wider variety of educational facilities and resources will be available to students.		

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act, 1998 (Act No.107 of 1998) Environmental Impact Assessment (EIA) Regulations and associated Listing Notices.	National Department of Environmental Affairs and Provinces.	2014 as Amended
National Environmental Management: Air Quality Act, 2004 (Act No.39 of 2004).	DEA, Provinces and Municipalities	2004
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	National Department of Environmental Affairs.	2003
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	National Department of Environmental Affairs.	2004
National Environmental Management: Waste Act, 2008 (Act 59 of 2008)	National Department of Environmental Affairs and all Provinces	2008
The Development Facilitation Act, 1995 (Act No. 67 of 1995)	National Department of Rural Development and Land Reform	1995

The National Water Act, 1998 (Act No.36 of 1998)	National Department of Water and Sanitation	1998
The National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA)	National Department of Arts and Culture	1999
The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	National Department of Agriculture, Forestry and Fisheries	1983
Collins Chabane Spatial Planning, Land Development and Land Use Management By-Law,	Collins Chabane Local Municipality	2019

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	NO
If yes, what estimated quantity will be produced per month?	The amount of waste will be known and made available during the construction phase.	

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

All solid waste generated during the construction phase will be placed in bulk waste collection area in the construction camp. Litter collection bins will be provided within the construction site not far from each other and will be regularly be disposed. Separation of waste and recycling of paper, glass, cardboards, etc. must be a priority. There will be no burning of waste on site and construction materials that will not be used will be taken out once construction comes to an end.

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

All construction solid waste will be disposed off at the nearest landfill site.

Will the activity produce solid waste during its operational phase?	YES	NO
If yes, what estimated quantity will be produced per month?	10 m^3	

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

Different kinds of waste will be produced during the operational phase of the school of which non of the waste will be of magnitude concern. The solid waste will consist of general refuse (litter) generated by the pupils and teachers. The local municipality will have to be engaged to provide bulk bins, refuse bags and refuse removal services for the proposed development.

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

Solid waste will be disposed at the nearest landfill site.

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	YES / NO

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

Is the activity that is being applied for a solid waste handling or treatment facility?	YES / NO

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

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES / NO
If yes, what estimated quantity will be produced per month?	m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	Yes / NO

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES / NO

If yes, provide the particulars of the facility:

Facility name:	Not Applicable		
Contact person:	Not Applicable		
Postal address:	Not Applicable		
Postal code:	Not Applicable		
Telephone:	Not Applicable	Cell:	Not Applicable
E-mail:	Not Applicable	Fax:	Not Applicable

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

Not Applicable

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the emissions in terms of type and concentration:

Dust from construction activities. We therefore suggest that a detailed Air Quality Study would not be necessary.

11(d) Generation of noise

Will the activity generate noise?	**YES**	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	**NO**

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the noise in terms of type and level:

General construction noise.

12. WATER USE

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

municipal	water board	groundwater	river, stream, dam or lake	other	the activity will not use water

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:		Litres
Does the activity require a water use permit from the Department of Water Affairs?	YES	**NO**

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

13. ENERGY EFFICIENCY

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

Design measures will completely be environmentally friendly. The following measures will be considered:

- The architectural design will ensure that there will be a proper natural flow of air into and outside of the building occurs deliberately as ventilation.

Proper insulation of the ceilings is required because as much as 50% of heat losses in a building can be attributed to a lack of ceilings and ceiling insulation, this will significantly reduce heating and cooling expenses.

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

Air Conditioners

- Energy efficient air conditioners must be purchased and used.

Power Supply

- Conservation of energy or the usage of renewal and sustainable energy technology must be a priority. This can be in the form of solar panels that generate and store electricity.

Lighting

- Compact fluorescent light bulbs are recommended as compared to ordinary light bulbs as they also assist for security purpose too.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

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

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

3. Has a specialist been consulted to assist with the completion of this section? YES **NO**

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Property description/physical address: Remainder of the farm Molenje 204 LT

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning: Agricultural

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to , to this application.

Is a change of land-use or a consent use application required?	**YES**	NO
Must a building plan be submitted to the local authority?	**YES**	NO

Locality map:

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.) The map must indicate the following:

- an indication of the project site position as well as the positions of the alternative sites, if any;
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline		2.6 Plain	
2.2 Plateau		2.7 Undulating plain / low hills	
2.3 Side slope of hill/mountain		2.8 Dune	
2.4 Closed valley		2.9 Seafront	
2.5 Open valley	**x**		

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

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

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

Please refer to specialist study (Appendix D)

5. LAND USE CHARACTER OF SURROUNDING AREA

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

5.1 Natural area	x	5.22 School	x
5.2 Low density residential		5.23 Tertiary education facility	
5.3 Medium density residential	x	5.24 Church	
5.4 High density residential		5.25 Old age home	
5.5 Medium industrial [AN]		5.26 Museum	
5.6 Office/consulting room		5.27 Historical building	
5.7 Military or police base/station/compound		5.28 Protected Area	
5.8 Spoil heap or slimes dam [A]		5.29 Sewage treatment plant [A]	
5.9 Light industrial		5.30 Train station or shunting yard [N]	
5.10 Heavy industrial [AN]		5.31 Railway line [N]	
5.11 Power station		5.32 Major road (4 lanes or more)	
5.12 Sport facilities		5.33 Airport [N]	
5.13 Golf course		5.34 Harbour	
5.14 Polo fields		5.35 Quarry, sand or borrow pit	
5.15 Filling station [H]		5.36 Hospital/medical centre	
5.16 Landfill or waste treatment site		5.37 River, stream or wetland	
5.17 Plantation		5.38 Nature conservation area	
5.18 Agriculture		5.39 Mountain, koppie or ridge	
5.19 Archaeological site		5.40 Graveyard	
5.20 Quarry, sand or borrow pit		5.41 River, stream or wetland	
5.21 Dam or Reservoir		5.42 Other land uses (describe)	

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

Not Applicable

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

If YES, specify and explain:	
If NO, specify:	

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

If YES, specify and explain:	
If NO, specify:	

6. CULTURAL/HISTORICAL FEATURES

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

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

Briefly explain the findings of the specialist:

Archaeological

No archaeological materials were found in the study area. 11.2. Historical No historical sites/materials found on site.

Burial Grounds and Graves

No graves were identified on site

No further studies / Mitigations are recommended given the fact that within the proposed Echo Academy (Private School) site and its surrounding there are no archaeological or place of historical significance to be impacted by the gravel extraction process. From a Heritage perspective, the development should be allowed to continue.

Will any building or structure older than 60 years be affected in any way?	YES	**NO**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	**NO**

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

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

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

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the department) at a place conspicuous to the public at the boundary or on the fence of—

  (i) the site where the activity to which the application relates is or is to be undertaken; and

  (ii) any alternative site mentioned in the application;

(b) giving written notice to—

  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;

  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;

  (v) the municipality which has jurisdiction in the area;

  (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and

  (vii) any other party as required by the department;

(c) placing an advertisement in—

  (i) one local newspaper; or

  (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the department, in those instances where a person is desiring of but unable to participate in the process due to—

  (i) illiteracy;

  (ii) disability; or

  (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and

(b) state—

(i) that the application has been submitted to the department in terms of these Regulations, as the case may be;

(ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;

(iii) the nature and location of the activity to which the application relates;

(iv) where further information on the application or activity can be obtained; and

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

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

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

Advertisements and notices must make provision for all alternatives.

Advertisements and notices will be placed after the EIA application has been submitted.

4. DETERMINATION OF APPROPRIATE MEASURES

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

5. COMMENTS AND RESPONSE REPORT

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

The comments and response report will be attached on Appendix E.

6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

Name of Authority informed:	Comments received (Yes or No)
Council of Geoscience	No
Department of Water and Sanitation	No
Vhembe District Municipality	No
Dovheni Ward Councillor	No
Mulenzhe Traditional Council	No
South African Heritage Resources Agency (SAHRA)	No
Collins Chabane Local Municipality	Yes
Limpopo Department of Education (Vhembe District Director)	No
Limpopo Department of Public Works	No
Department of Rural and Land Reform	No

7. CONSULTATION WITH OTHER STAKEHOLDERS

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

Proof of any such agreement must be provided, where applicable.

Has any comment been received from stakeholders?

YES	NO

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

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum 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.

None

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

There were no issues raised so far that must be addressed by the practitioner.

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

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

Alternative (preferred alternative)

Design/Planning Phase			
IDENTIFIED IMPACTS- PLANNING PHASE			
IMPACT	**SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION**	**PROPOSED MITIGATION**	**SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION**
Direct Impacts			
Poor Design- Structural failures	High (Negative)	Ensure compliance with the industry standards	Low (Negative)
Indirect Impacts			
Disregard of legislative requirement	High (Negative)	Ensure compliance with relevant legislation and legal standards	Low (Negative)

Construction Phase			
IDENTIFIED IMPACTS- CONSTRUCTION PHASE			
IMPACT	**SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION**	**PROPOSED MITIGATION**	**SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION**
Direct Impacts			
Loss of vegetation and faunal habitat, specifically the secondary woodland areas from construction of the school	Medium (Negative)	• Maintain the viability of the indigenous seed bank in excavated soil so that it can be used for subsequent re-vegetation of any disturbed areas. • Prevent impact of construction activities to extend on to neighbouring land- demarcated and fenced construction camp; strict control of labourers. • Avoid unnecessary loss of indigenous trees.	Low (Negative)
Increased risk of dust and erosion from clearing of vegetation and earth moving vehicles	Medium (Negative)	• All vehicles must be along existing lines or tracks. • Erosion protection measures must be implemented on the site to reduce erosion and sedimentation of the receiving environment. Measures could include: • Sediment traps • Sandbags • Bunding around soil stockpiles. • Adequate dust control strategies should be applied to minimise dust disposition, they can include periodic spraying of roads with water, cover trucks to prevent dust emission during transportation.	

Waste collection services	High	• Confirmation from the municipality must be sought to ensure the municipal waste collection service will collect the waste generated by the proposed development/ activity	Low (Negative)
Potential noise impact from the use of construction equipment (for the construction of the proposed school	Medium (Negative)	• Limit construction activities to day time hours. • Construction personnel must wear personal protective equipment where appropriate. • All machineries to be utilised on the site must be fitted with muffers and must be maintained in good working conditions in order to minimize noise. • The contractor shall warn all local community that could be affected by the noise generation from construction activities.	Low (Neutral)
Increase in stormwater runoff resulting from construction activities	Medium (Negative)	• To prevent stormwater damage, the increase stormwater runoff resulting from construction activities must be estimated and drainage patterns accessed accordingly. • Temporary cut off drains and berms may be required to capture stormwater and promote infiltration.	Low (Negative)
Potential health injuries to construction personnel as a result of construction work.	Medium (Neutral)	The contractor must ensure that all construction personnel are provided with adequate PPE for use where appropriate.	Low (Neutral)
Disturbance of Heritage Resources from construction activities.	Low (Negative)	• SAHRA must immediately be alerted in case evident or artefacts, paleontological fossils, additional graves or heritage resources are	Negligible

		discovered during the course of development.	
Socio-economic Impact: Employment creation and skills development opportunities during the construction phase, which is expected to give rise to new jobs. This impact is rated as positive.	Medium (Positive)	• Enhance the use of local labour and local skills as far as reasonably possible. • Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained. • Ensure that an equitable percentage allocation is provided for local labour employment as well as specify the use of small-to-medium enterprises and training specifications in the Contractors contract. • Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	High (Positive)
Air quality impact: Emissions from construction vehicles and generation of dust as a result of earthworks, as well as the delivery and mixing of construction materials.	Medium (Negative)	• Ensure that cleared (excavated) areas and unpaved surfaces are sprayed with water (obtained from an approved source) to minimise dust generation. • Approved soil stabilizers may be utilised to limit dust generation. • Ensure that construction vehicles travelling on unpaved roads do not exceed a speed limit of 40 km/hour. • Adequate dust control strategies should be applied to minimise dust deposition, for example: Periodic spraying of the entrance road and environmentally-friendly dust control measures (e.g. mulching and wetting) where and when dust is problematic	Low (Negative)

Indirect Impacts			
Socio-economic impact: the community may benefit from the proposed development in the form of the provision of production of school uniform This impact is rated as positive.	Low (Positive)	Ensure that local industries are utilised as suppliers, where applicable/practical.	Medium (Positive)

No-go alternative

Direct Impacts:

- None of the impacts mentioned above will occur.
- The existing site will remain uncleared which will result in no clearance of indigenous vegetation and in addition, no clearance of present alien species.
- If the proposed project does not proceed, increased income and economic spin-off activities will not be realised.

Indirect Impacts:

There are no indirect impacts during the construction phase for the No-go Option.

Cumulative Impacts:

There are no cumulative impacts during the construction phase for the No-go Option.

Operational Phase

IDENTIFIED IMPACTS- OPERATIONAL PHASE

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
Direct Impacts			
Visual impacts will increase during the operation phase due to development and lighting	High	• Lighting and layout to be maintained as per the layout plan to ensure bright street lighting is not permitted	Low
Lack of road maintenance will lead to a deterioration in the internal and access roads	High	• Road maintenance must be done regularly by the Collins Chabane Municipality	Low

Risk of fire explosion	Medium (Negative)	• Prevent spread of fire to surrounding buildings or vegetation. • Adequate firefighting training must be given to staff. • Ensure that relevant signage e.g. no smoking, is displayed in potentially dangerous areas and is abided by.	Low (Negative)
The development may lead to an increase in crime	High	• Ensure effective measures are included in the operation of the school to reduce the chances of crime increase	Low
Socio-economic Impact: Skills development opportunities and economic spin off activities will also occur during the operational phase. This impact is rated as positive.	Medium (Positive)	• Enhance the use of local labour and local skills as far as reasonably possible. • Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained. • Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	High (Positive)
Indirect Impacts			
Impact on the surrounding community in terms of visibility and great environment	Medium (Negative)	• Ensure that surrounding gardens are well maintained. The planting of indigenous vegetation is encouraged. • Use water sparingly in maintaining gardens. • Institute an appropriate building and site maintenance programme.	Low (Negative)
No-go alternative			

Direct Impacts

- None of the impacts mentioned above will occur.
- If the proposed project does not proceed, increased income and economic spin-off activities will not be realised.

Indirect Impacts

There are no indirect impacts during the operation phase for the No-go Option.

Cumulative Impacts

There are no cumulative impacts during the operational phase for the No-go Option.

3. ENVIRONMENTAL IMPACT STATEMENT

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

Alternative A (preferred alternative)

From the impact assessment of the biophysical and socio-economic aspects discussed in detail in this report it is evident that the proposed development of the school is suitable for the site assessed.

It should however be noted that this is only if the development is planned and managed in accordance with the mitigation measures supplied described in this report, the specialist studies (especially the mitigation measures as supplied in the geotechnical, ecological and heritage reports) and in the Environmental Management Programme (EMPr). Furthermore, this project will also create employment opportunity for local residents.

The socio-economic environment

During Construction Phase:

The proposed development will have a positive impact on the economy due to temporary employment opportunities more especially to the surrounding community. It will also have a positive impact on the social environment as there will be visible investment from the private sector within rural areas.

During Operational Phase:

The proposed development will have a positive impact on the socio-economic environment during the operational phase due to permanent employment opportunities.

The biophysical environment

During Construction Phase:

The biophysical environment will be affected by construction activities that could result in excessive noise and dust. However, there are mitigation measures put in place to prevent the impacts or minimizing them as explained on the Environmental Management Programme.

During Operational Phase:

All negative impacts that are likely to occur in this phase are not of significance as there are mitigation measures that are already put in place to control and protect the environment.

Results of the impact assessment

None of the adverse impacts that were identified are regarded as impacts that cannot be mitigated to acceptable levels and therefore Mang Geo-Enviro Services is of the opinion that there are no "permanent flaws" associated with the proposed development of the school.

Based on the results of the Specialist reports the proposed school is deemed as a good and profitable business concept. The impacts that are brought about can be mitigated.

No-go alternative (compulsory)

The No Go Alternative implies that the site is not developed for the purpose of the school. This option will come to the party if the proposed development has significant negative impact that cannot be mitigated effectively. The proposed site does not have any environmental constraints.

Other factors that can contribute to this option include opposite interested and affected parties with valid points to go against the proposed development as well as none compliance with legislations required by organs of sate. No objections have been received thus far as we are still to advertise and have the public participation meetings.

Our views as Mang Geo-Enviro Services, independent EAPs are that the proposed area is suitable for a proposed new development of Echo Academy Primary School based on that the area is not sensible to the environment and it is located within the Dovheni Village.

Alternative B

Alternative C

For more alternatives please continue as alternative D, E, etc.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	**YES**	NO

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

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

The EAP recommends that the implementation and strict adherence to the EMPr forms part of the conditions of an Environmental Authorisation for the development. The EAP also recommends that all mitigation measures as described in this Basic Assessment Report and specialist studies report be included as part of the conditions of the authorisations granted for the development. Furthermore, the developer should accept responsibility for appointing service providers that comply with the legislative requirements of the country and who have standing agreements with the necessary authorities where required.

The following measures/ plans must also be required as part of the approval:

- Communication or awareness must be undertaken to the project team to ensure maximum participation and compliance to the EMPr.
- The EMP attached and the mitigation measures related to it must be adhered to at all times and the appointed ECO must ensure that the developer complies with the EMP.
- An ECO must be appointed to monitor compliance with the authorization and develop compliance reports to be submitted to the Department during the construction phase.
- It is recommended that adequate storm water management be incorporated in the design of the proposed development in order to prevent erosion and the associated sedimentation of the surrounding areas. All areas affected by construction which are to remain as open space areas should be rehabilitated upon the completion of the construction phase of the development.
- All of the recommendations in the specialist reports that are included as a part of this application should be implemented & strictly adhered to in order to counteract adverse and cumulative impacts to the biophysical & social environments.

Is an EMPr attached?
The EMPr must be attached as Appendix F.

YES	NO

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information

SECTION G: DECLARATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, **Mankaleme Magoro** declare that I –

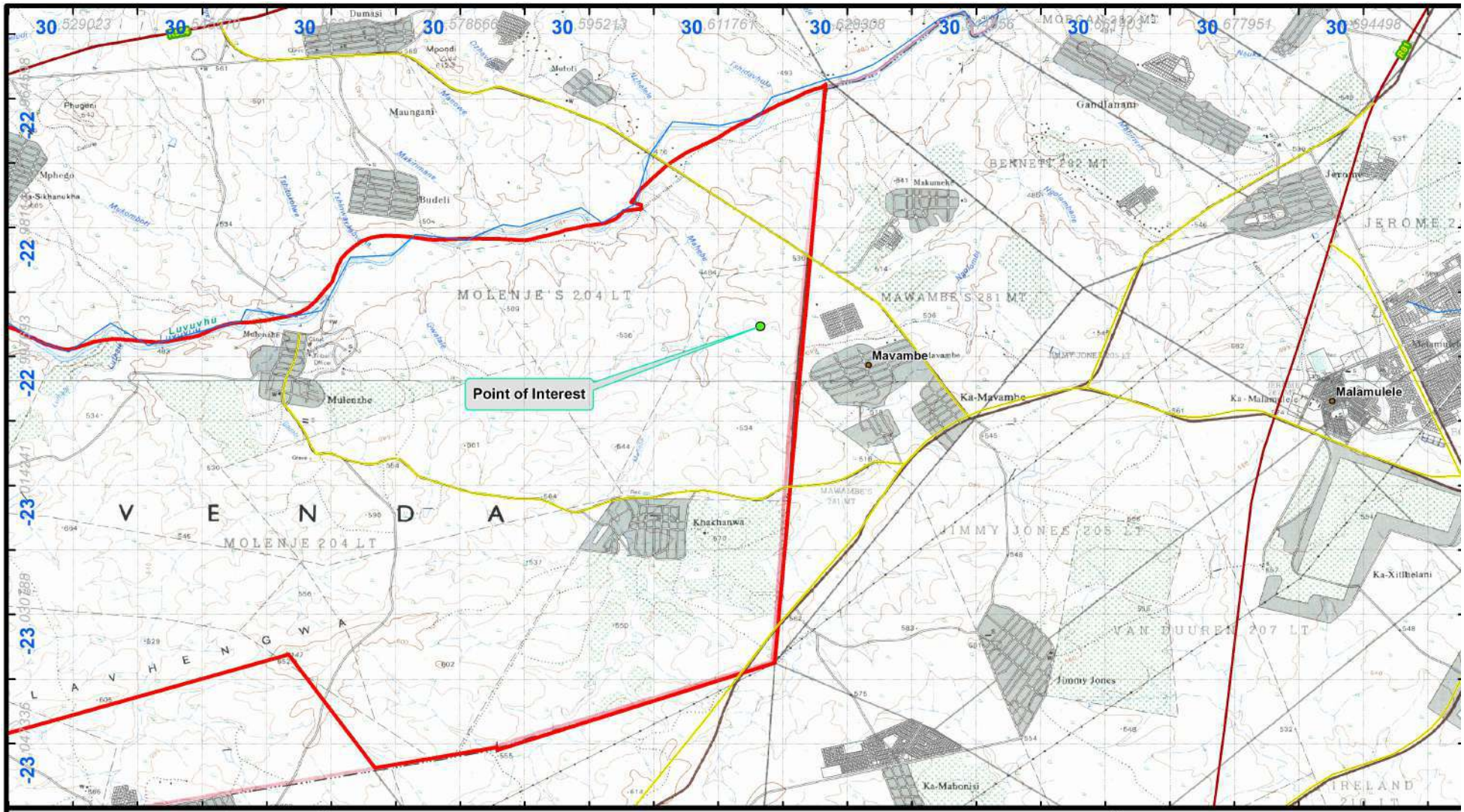
(a) act as the independent environmental practitioner in this application;
(b) do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
(c) do not have and will not have a vested interest in the proposed activity proceeding;
(d) have no, and will not engage in, conflicting interests in the undertaking of the activity;
(e) undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2006;
(f) 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;
(g) will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the Department 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 Department may be attached to the report without further amendment to the report;
(h) will keep a register of all interested and affected parties that participated in a public participation process; and
(i) will provide the Department with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Mang Geo-Enviro Services
Name of company:

November 2019
Date:

Appendix A: Site Plan(S)



Scale -**1:50 000**

N W E S

Geographic Coordinate System

GCS_Hartebeesthoek_1994

Meters

0 970 1 940 2 910 3 880

Legend

- Towns
- Proposed Site: Echo Academy School
- Rivers
- Secondary Roads
- Main Roads
- Remaining Extent of MOLENJE 204 LT

Map Title: **Topographic Map**

Project Name: **Proposed Echo Academy school, Dovheni Village, Limpopo Province**

Created By: Phoenix M&E Consulting

Created For: mang

Dataset Source: **NGI 1:50 000 Vector Data, Credits: NGI, Municipal Demarcation Board, SANPARKS**

Appendix B: Photographs

Appendix C: Facility Illustration(S)

Appendix D: Specialist Reports

Ecology/ Biodiversity Study

PROJECT DETAILS

PROJECT TITLE: BIODIVERSITY STUDY FOR THE EIA APPLICATION FOR THE PROPOSED ECHO ACADEMY PRIVATE SCHOOL DEVELOPMENT ON THE REMAINDER OF THE FARM MOLENJE 204 LT IN DOVHENI VILLAGE COLLINS CHABANE LOCAL MUNICIPALITY, LIMPOPO PROVINCE

Project Number: Biodiversity 001

Compiled by: Takalani Mudau

Compiled for: Mang Geo-Enviro Services

Date: 24 November 2019

Takalani Mudau- (Pr. Sci. Nat)

BSc (Hons) Botany – Univen

For Mveledzo Environmental and Safety Solutions Pty Ltd

Table of Contents

DEFINITIONS

Environment

The surroundings (biophysical, social and economic) within which humans exist and that are made up of

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and,
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Aspects

Elements of an organization's activities, products or services that can interact with the environment.

Environmental Degradation

Refers to pollution, disturbance, resource depletion, loss of biodiversity, and other kinds of environmental damage; usually refers to damage occurring accidentally or intentionally as a result of human activities.

Environmental Impacts

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services.

Environmental Impact Assessment

A systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes basic assessment and Scoping and EIR (NEMA EIA Regulations).

Environmental Impact Report

A report assessing the potential significant impacts as identified during the environmental impact assessment.

Land use

The various ways in which land may be employed or occupied. Planners compile, classify, study and analyse land use data for many purposes, including the identification of trends, the forecasting of space and infrastructure requirements, the provision of adequate land area for necessary types of land use, and the development or revision of comprehensive plans and land use regulations.

Pollution Prevention

Any activity that reduces or eliminates pollutants prior to recycling, treatment, control or disposal.

Public Participation Process

A process of involving the public in order to identify needs, address concerns, in order to contribute to more informed decision making relating to a proposed project, programme or development.

Topography

Topography, a term in geography, refers to the "lay of the land" or the physio-geographic characteristics of land in terms of elevation, slope and orientation.

Vegetation

All of the plants growing in and characterizing a specific area or region; the combination of different plant communities found there.

Waste

Waste is unwanted or undesired material left over after the completion of a process. "Waste" is a human concept: in natural processes there is no waste, only inert end products.

Alternatives

Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site, activity, process or technology, or the no-go alternative.

Cumulative Impacts

Impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of the other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period and can include both direct and indirect impacts.

Direct impacts

Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of activity). These impacts are usually associated with the construction, operational or maintenance of an activity and are generally obvious and quantifiable.

Mitigate

The implementation of practical measures to reduce adverse impact (DEA).

Environmental Management Plans

This document that provides appropriate mitigation measures designed to minimize or eliminate the significant adverse impacts that may be caused as a result of the proposed project.

Interested and affected parties (I&APs)

Individual, communities or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by proposal or activity and/or who are concerned with a proposal or activity and its consequences. These may include local communities, investors, business association, trade unions, customers, consumers and environmental interest group. The principle that environmental consultants and stakeholder

engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders (DEA, 1998).

ABBREVIATIONS

BAR – Basic Assessment Report

BID – Background Information Document

CBD – Central Business District

CA – Competent Authority

CEMP –Construction Environmental Management Plan

CMP -Construction Management Plan

CLO – Community Liaison Officer

DEA – Department of Environmental Affairs

DoH – Department of Health

DWS – Department of Water Affairs and Sanitation

EAP – Environmental Assessment Practitioner

ECO – Environmental Control Officer

EIA – Environmental Impact Assessment

EIAR - Environmental Impact Assessment Report

EIS – Ecological Importance and Sensitivity

EMPr – Environmental Management Programme report

GN – Government Notice

I&AP – Interested and Affected Party

KM – Kilometres

MAP – Mean Annual Precipitation

MM – Millimetres

NEMA – National Environmental Management Act, Act 107 of 1998 as amended

NEMAQA – National Environmental Air Quality Act

NEMWA – National Environmental Management Waste Act

NWA – National Water Act

PM – Project Manager

PPP – Public Participation Process

R – Regulation

SASS – South African Scoring System

SAHRA - South African Heritage Resources Agency

Declaration of Independence

I **Takalani Mudau**, in my capacity as specialist consultant, hereby declare that i -

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- As a registered member of the South African Council for Natural Scientific Professions, will undertake our profession in accordance with the Code of Conduct of the Council, as well as any other societies to which we are members; and
- Based on information provided to us by the project proponent, and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of our professional judgement.

Signature: _____ Date: _____

1. INTRODUCTION

1.1 Background

South Africa has re-affirmed the importance of the national commitment to biodiversity. The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) has been assented by the President of South Africa and was published in the Government Gazette in June 2004 (Vol. 467; No 26426). The objective of this Act is to provide for, amongst other things: management and conservation of South Africa's biodiversity within the framework of National Environmental Management Act, 1998; the protection of species and ecosystems warrant national protection; and the sustainable use of indigenous biological resources.

Mang GeoEnviro Services have been appointed by Echo Academy (Pty) Ltd, to conduct the EIA for the proposed echo academy private school development on the remainder of the farm Molenje 204 LT in Dovheni village Collins Chabane local Municipality, Limpopo Province. As part of the EIA application process, Biodiversity specialist study must be conducted. Mveledzo Environmental and safety solutions was appointed by Mang GeoEnviro Services to conduct biodiversity impact studies for the proposed Project. This report contains the results of the biodiversity aspects of the environmental impact assessment. Although several potential impacts on the biodiversity are mentioned in this report, other specialists in their specialist's reports address specifics. This report therefore focuses on the fauna and flora of the study area.

The proposed activity requires an Environmental Impact Assessment (EIA) to be undertaken in compliance with the regulatory requirements of the National Environmental Management Act (Act 107 of 1998) (NEMA) and the Environmental Impact Assessment (EIA) Regulations, 2010, GN R.453, R.544 and R546.

As part of the EIA Process, it is required that specialist studies be conducted before the construction and operational phases.

Mveledzo Environmental and safety Solutions Pty Ltd was appointed by Mang GeoEnviro Services, a representative of the applicant, to manage the biodiversity study that will form part of the environmental authorisation process for the proposed development.

This ecological report forms part of the specialist studies that were conducted prior to the commencement of the development. It is important to conduct Biodiversity assessment because in the past planning and development of urban and industrial areas did not include an assessment of the assets of the natural environment. In order to prevent the further destruction of any ecosystem, it is important that planning and co-ordination of human activities and development should include studies of the natural environment, involving soil, water, floral, faunal and cultural or historical aspects. This sspecialist studies and surveys were commissioned to:

- identify flora species
- identify vegetation communities
- identify fauna species (small mammals, reptiles, birds & large mammals) and potential habitats
- identify red data species (fauna & flora) and their habitats
- evaluate the sensitivity of each plant community & red data species habitat
- map vegetation communities & red data species / habitats, and
- identify medicinal, invasive and/or exotic plants that might occur

1.2 Project description

This Echo academy private schoolis located 25 km from Thohoyandou and 10 km from the town of Malamulele in Dovheni Village in the Limpopo province. The proposed School is proposed to be built on the remainder of the farm Molenje 204 LT in Dovheni village Collins Chabane local Municipality, Limpopo Province. The area is still within a natural state and highly biodiverse. The site is bordered to the east by Dovheni village.

1.3 Study Approach

The study was conducted in two ways which are site visits and desktop study for the proposed site.

1.3.1 Site visits

The site visit was conducted on the 23rd November 2019. The main aim of the site visit was to identify and record all the fauna and flora that are available on the proposed site. All the species that were found onsite were then recorded and identified. The method that was used to record the available species was to transect through all the areas where proposed school is to be situated. The significance of each "actual impact" was then determined and to determine the broad legal requirements of potential impacts and some broad mitigation measures, a broad legal overview has been conducted.

1.3.2 Desktop study

Different sources were visited in order to get the biodiversity of the area and information that was collected from such sources where then verified by the site visit. Although we managed to get the information from different sources the site visit was more informative and giving the clear picture of the biodiversity on site.

1.4 Vegetation study

The aim for this study was to

- Carry out fieldwork to locate and describe the current state of vegetation on the study area, key focus on the impact footprint(s) for site, so that there is a baseline description/status quo against which impacts can be identified and measured.
- Determine the species present and localities within each vegetation types.
- Generate a vegetation map showing the site in relation to any Critical Biodiversity Areas and links to ecological corridors and support areas, vegetation sensitivity, disturbed, transformed and potential "no-go" areas.
- Determine whether the study area falls wholly or partially within the distribution range of species listed as Vulnerable, Endangered or Critically Endangered and Protected.
- Provide site photos that show the current state of the vegetation (i.e. natural, transformed, disturbed etc.) Identify and describe the conservation value and

conservation planning frameworks relevant to this site (Regional Planning) for represented vegetation units.

- A detailed list of species of special concern.
- An indication of the irreplaceability value of vegetation types present on site.
- Describe the areas where indigenous vegetation has been transformed.
- Determine alien species present; their distribution within the study area and recommended management actions.
- A description of different micro-habitats, and the species associated with those habitats.
- Note and record the position of unusually large specimens of trees.
- Describe the potential direct, indirect and cumulative negative and positive impacts of the proposed activity on vegetation species during the construction, operation and decommissioning phases of the project.
- Identification of issues and potential direct, indirect and cumulative biodiversity impacts, which are to be considered in combination with any additional relevant issues that may be raised through the public consultation process. These include:
- The cumulative impact of clearing for the operation of the school on floral species of concern both on the farm and in the greater area.
- Disclose any gaps in information or assumptions made.
- Recommendations for mitigatory measures to minimise impacts identified.
- An outline of additional management guidelines.
- Provide monitoring requirements, mitigation measures and recommendations in a table format as input into the Environmental Management Plan (EMP), as well as generic rehabilitation and re-vegetation guidelines.

1.5 Study area

The project is located on the National Route R524 4 km east of Nandoni Dam between the Malamulele and Thohoyandou towns, in the Limpopo Province. The site is contained within the Collins Chabane Local Municipality. The project is located 25 km from Thohoyandou. The site falls within the Savannah biome with Nandoni dam and Luvuvhu River are located at

approximately 5 km to the west of the site, and it is bordered to the east by the Dovheni Village.

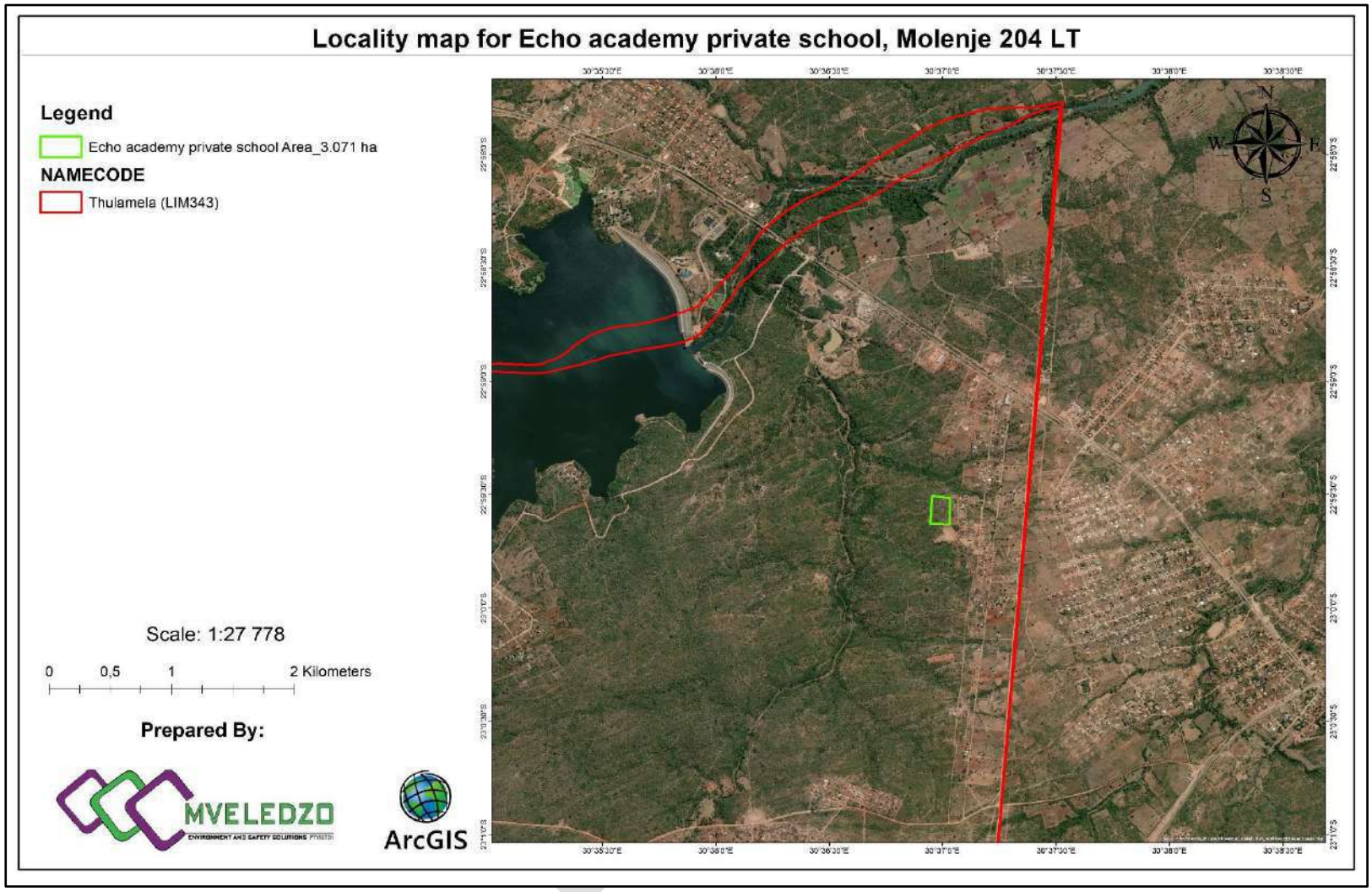


Figure 1: Locality map showing the site for the proposed Echo academy school,

1.6 Biodiversity of the Vhembe District Municipality (VDM) area

Groupings called Biomes (large-scale biotic communities) have been described for plants and/or animals living together with some degree of permanence, so that large-size patterns in global plant cover can be observed. Biomes broadly correspond with climatic regions, although other environmental controls are sometimes important. Each biome has a characteristic set of plant and animal species as well as a characteristic overall physiognomy (for example a general appearance given by the plant shapes). The general plant characteristics give a characteristic visual signature to the vegetation of the biome. Rutherford and Westfall (1994) map seven biomes of South Africa: Savanna, Thicket, Grassland, Forest, Fynbos, Nama Karoo, Succulent Karoo and Desert. The most recent treatise on the Biomes of South Africa was published in 2006 by Mucina and Rutherford).

The majority of the VDM landscape is characterized by undulating rolling hills with flat plains occurring in the east. The topography of the VDM is also characterized by the Soutpansberg, the northern most mountain range in South Africa. Its altitude ranges from 250 meters above mean sea level to 1748 meters at Lajuma, the highest peak. The Limpopo River System on the northern part of the district is considered to be the life blood of the Northern Vhembe semi-arid area. Limpopo River is the country‘s third most important river which provides sustenance to the predominantly hot and drylands. Vhembe area also boasts the widely known Lake Fundudzi which is steeped in cultural history. There is also the Mutale and Luvuvhu Catchments area with a number of tributaries emanating from the catchments. The Luvuvhu Catchment forms part of the larger Limpopo system, which extends into Mozambique. The Luvuvhu River and some if its tributaries (including the Mutshindudi and Mutale Rivers) rise in the Soutpansberg Mountains and flows for approximately 200 km before it joins the Limpopo River near Pafuri in the KNP. Other main rivers in the VDM are the Sand River, Luvuvhu River, Nzhelele River and the Shisha River.

The Savanna biome covers approximately 98% of the Vhembe District Municipality with the remainder being made up of Forest (1%) and Grassland (0.2%) biomes (CNdV Africa, 2015). Azonal vegetation is found in patches along the Limpopo, Luvuvhu and Shingwidzi Rivers. Vhembe District Municipality, inclusive of the KNP, has 24 different vegetation types. Two of

the 24 vegetation types are classified as Threatened ecosystems, namely Tzaneen Sour Lowveld which is classified as Endangered and the Lowveld Riverine Forest which is classified as Vulnerable in the national list of threatened ecosystems published in terms of the Biodiversity Act (DEA, 2011). It should also be noted that Mapungubwe Forest located on the northern border of the District near MNP is classified as Endangered. Thirteen (13) of the vegetation types occurring within the District are classified as endemic and five (5) as nearendemic. The Soutpansberg Centre of Endemism, the northern most mountain range in South Africa, stretches from east to west covering an area close to 130 Km. The Soutpansberg is truly diverse and home to approximately 2500- 3000 recorded vascular plant taxa, 594 tree taxa, 510 bird species, 116 reptile species and 145 mammal species (The Soutpansberg, 2003). This area also functions as an important biodiversity hotspot, ecological corridor, centre of endemism, Important Bird Area and Strategic Water Source Area. Additionally, the Soutpansberg Mountains houses one of the few natural inland lakes in South Africa, Lake Fundudzi. Several wetlands in this mountain range contain peat which harbours information going back 12 000 years. There is also the Makuleke Wetlands in the north east, an identified RAMSAR wetland, one of only two identified in Limpopo. The mountains also hold the catchments of several important Limpopo Province rivers, including the Sand, Mutamba, Nzhelele, Nwanedzi, Mutale and Luvuvhu. All of these flows north into the province's most important river, the Limpopo.

1.7 Climate

The Mean Annual Precipitation of Dovheni is approximately 601 mm, and Mean Annual Temperature is 16.9 °C. The average rainfall (precipitation) and temperatures of Dovheni are shown below (Fig. 1).

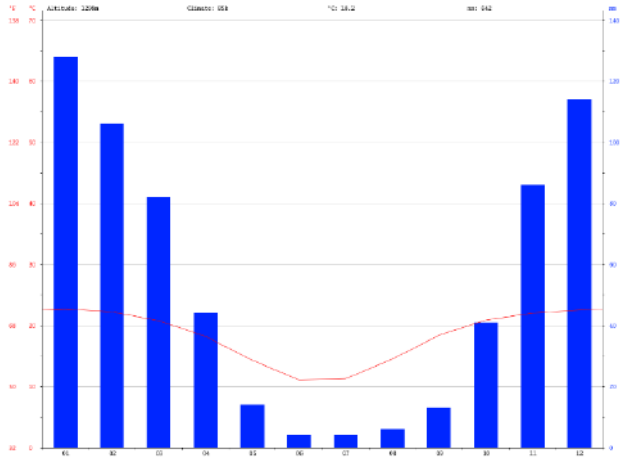


Figure 1: Climatic figures of Dovheni.

According to Köppen -Geiger system (Kottek *et al*. 2006), the study area falls within the BSk (Local steppe) climatic region (Fig. 2).

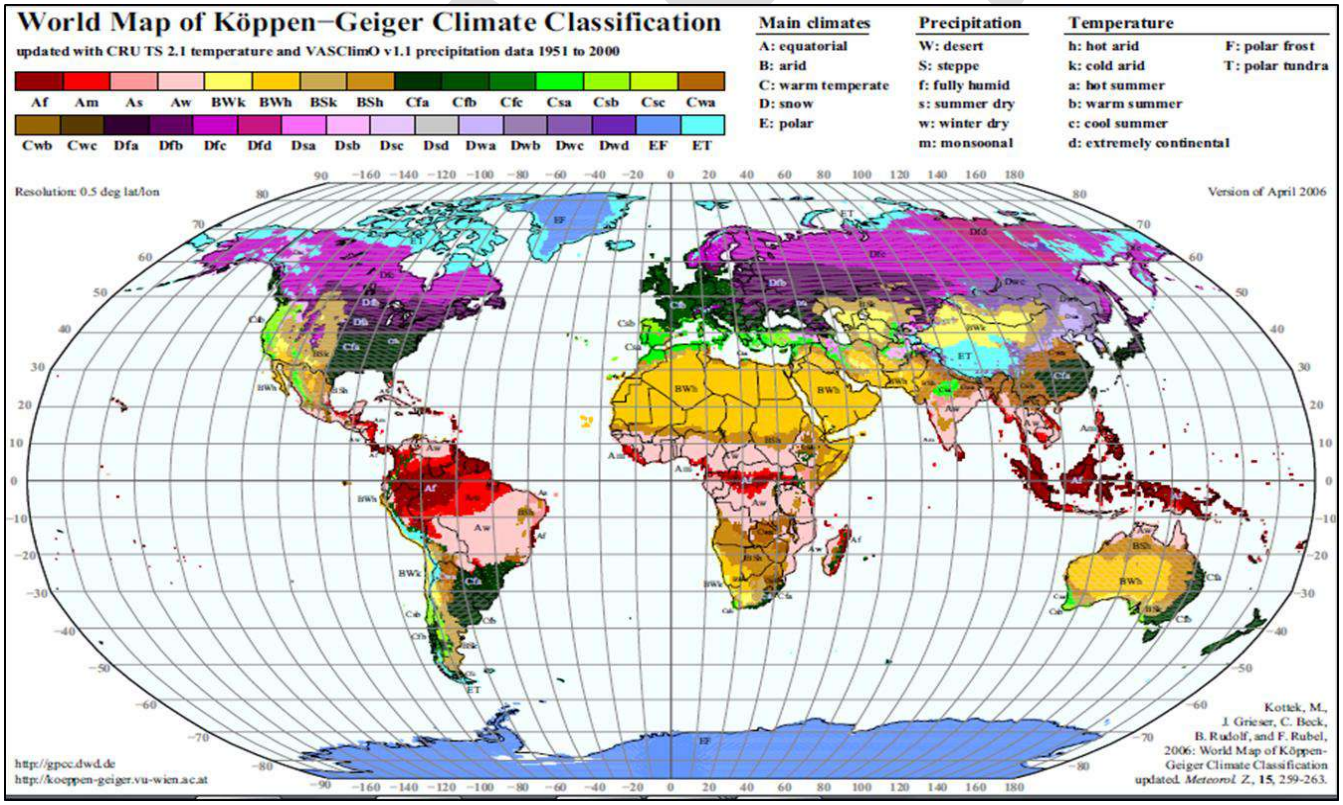


Figure 2:World map of Köppen -Geiger Climate Classification.

1.8 Water resources

The project area falls within the Luvuvhu catchment area.

- Perennial rivers

Perennial rivers are those rivers, which have a constant flow throughout the year. It mainly consists of those rivers which flow throughout the year.

- Wetlands

A wetland is an area of marsh, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed ten metres. See sensitivity map for the type of wetlands found within the project area.

1.9 Geology

Geologically, the study area covers part of the junction between the granite-greenstone terrain of the north-eastern part of the Kaapvaal Craton and the highly metamorphic rocks of the Southern Marginal zone of the Limpopo Mobile Belt (Figure 4.5). Some authors (i.e. Roering et al. 1992) have suggested that the Limpopo Mobile Belt in the northern part of South Africa is the world's earliest example of a Himalayan-type continent-continent collisional orogeny between two large 65 cratons (Kaapvaal- and Zimbabwe Cratons). However, according to Kramers et al., (2006) no consensus regarding the geological process, setting or timing of the Limpopo Mobile Belt have been reached. The resulting Limpopo Mobile Belt consists of three main crustal zones, namely the Northern Marginal Zone, the Central Zone and the Southern Marginal Zone, which lie parallel to one another in an ENE direction. he geology of the study area is dominated by two lithostratigaphical units in the crystalline complex, namely the Goudplaats-Hout River Gneiss and Groot-Letaba Gneiss. These Palaeoarcheaen (3,600-3,200 million years) gneissic bodies range from homogenous to strongly layered, leucocratic felsic to mafic minerals. The previous subdivision of the strongly migmatised Hout River Gneiss and less well-migmatised Goudplaats Gneiss is no longer regarded as tenable. However, granitoid gneisses occurring between the Murchison (Gavelotte Group) and the Pietersburg-Giyani greenstone belts have been grouped together under the term Groot-Letaba Gneiss (Brandl and Kröner, 1993). These rocks are bounded in

the southeast by the Letaba Shear Zone. Archaean Greenstone Belts. The Rhenosterkoppies (Zandrivierspoort Formation), Pietersburg (Pietersburg Group), (Giyanii Group) and northern part of the Murchison (Gravelotte Group) Greenstone Belts occur in the study area. They are composed largely of extrusive mafic and, to lesser extents, ultramafic and felsic rock. These Greenstone Belts are infolded mainly into grey granitic gneisses which dominate the early Archaean terranes. The NE-trending Pietersburg and Giyani Greenstone Belts extend parallel up to the southern part of the SMZ of the Limpopo Belt. The Murchison Greenstone Belts exists along a major ENE-WSW crustal lineament known as the "Thabazimbi-Murchison Lineament" (TML). Because of the orientation of the TML, the Greenstone Belts and the LMB, many of the geological structures recorded in the study area are parallel with this NE-SW trend. Neoarchaean Intrusions A number of massive, unfoliated granite intrusions occur as batholiths, plutons and stocks in the study area. These granitic intrusions form prominent topographical features that can be seen north of Polokwane. The most distinct of these plutons are Matlala Granite, Moletsi Granite, Mashashane Suite (Granites) and Matok Granite. The Matok Granite was emplaced just north of the HRSZ. The Duivelskloof leucogranite and the Turfloop Granite, which forms elongated northeast-trending batholiths, are the most voluminous granite bodies in the study area. However, the contacts with the surrounding granitoid gneisses of these large batholiths are not well defined. Various other granite intrusives occur throughout the study area including the Schiel Complex located immediately north of the northeast-orientated Kudus River Lineament (Figure 4.6).

1.10 Applicable environmental legislation

LEGISLATION	SECTIONS	RELATES TO
The Constitution (No 108 of 1996)	Chapter 2	Bill of rights
	Chapter 24	Environmental Rights

National Environmental Management Act (No 107 of 1998, as amended)	Section 2	Defines the strategic environmental management goals and objectives of the government. Applies through-out the republic and to the actions of all organs of state that may significantly affect the environment.
	Section 24	Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.
	Section 28	The developer has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care.
National Environmental Management: Waste Act (No 59 of 2008)		Provides for specific waste management measures and the remediation of contaminated land.
Environmental Conservation Act (No 73 of 1989) and regulations.	Section 19 and 19A	Prevention of littering by employees and sub-contractors during construction and the maintenance phases of the proposed storage dam.
National Environmental Management: Air Quality Act (No 39 of 2004)	Section 34 and 35	Control of dust

Occupational Health and safety Act (No 85 of 1993)	Section 8	General duties of employers to their employees
	Section 9	General duties of employers and self-employed persons to persons other than their employees
National Water Act (No 36 of 1998) and regulations	Section 19	Prevention and remedying the effects of pollution
	Section 20	Control of emergency incidents
Hazardous Substances Act (No 15 of 1973) and regulations		Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances
National Road Traffic Act (No 93 of 1996)		Road Safety
SANS 10103 (Noise Regulations)		The measurement and rating of environmental noise with respect to annoyance and to speech communication with some animals unable to tolerate certain noise levels.

1.11 Land use activities of the study area

The primary land use within the local area is a mixture of mainly residential, open space and livestock farming. Regardless of the human activities influence in the area, dense thicket

dominates the area. It was clear from the site visit and the aerial imagery that the area is still of high biodiversity value since indigenous vegetation still occurs.

2. POTENTIAL ENVIRONMENTAL IMPACTS

Potential impacts were evaluated against the results of the terrestrial fauna assessment. The relevant impacts were then subjected to a prescribed impact assessment methodology which is described below. Impacts were assessed in terms of the construction and operational phases. The operational phase refers to that phase of the project where the school development has been completed. Due to the nature of this development, the operational phase is assessed as lasting indefinitely and there is no closure or post- closure phases in this scenario. Mitigation measures were only applied to impacts deemed relevant based on the impact analysis. The likelihood and consequence descriptors are presented in Table 9 and Table 10. The significance rating matrix is presented in Table 11

2.1 Cultural biodiversity resources / products

Plants and animals form an integral part of the culture of communities and as such, biodiversity cannot be separated from cultural heritage. For example, Specific trees and bushes serve as grave markers and the positions are known to family members only. Biodiversity resources are used as traditional food sources (e.g. *mashonzha* worm), in traditional healing and spiritual rituals. Conserving cultural heritage therefore also includes conserving the sense of place, associated landscape and biodiversity. This impact should as such be integrated with the cultural and heritage impact study. The area has is still within its natural state< but it has been partially disturbed on the other part but it is already in the state of recovery. The original natural status of the area has been changed with some alien invasive plants establishing themselves in the area and therefore competing with native species for resources.

2.2 Habitat destruction and modification

The operation of the school and erection of infrastructure is likely to impact wildlife and birds via two primary mechanisms: 1) Large areas are often cleared for the school construction,

resulting in significant destruction / modification of habitat, and 2) Increased human pressure associated with the school personnel (workers &students) may affect animals directly through them being killed when they enter the area, etc. as well as through activities such as poaching. Moreover, many components of the infrastructure associated with the school, such as powerlines and roads, which will alter normal movement routes. However, the impact will be very minimal in this operation since the will be having less infrastructure and less clearing of vegetation is advised especially with big plant species. The development is also occurring in the close proximity of well-developed area and there are no lot of the fauna species. Human activities can also result in the establishment of populations of invasive species, such as rats and plants used in artificial wetlands for treating effluent.

2.3 Water quality

School brings people together to study in the same area, where there can be littering from general waste, vehicles leaks, hazardous waste do occurs that have the potential to adversely affect scarce water resources in the proposed development area if not properly managed. The type of wastewater emanating from the sewer blockages and hydrocarbons spillages depends largely on the chemical properties of the hydrocarbon materials that come into contact with the water. Chemical pollutants that accumulate in waterways adversely impact aquatic and riparian vegetation. Similar to the impacts of chemical air pollutants, chemical water pollutants can inhibit processes including photosynthesis, water regulation and respiration, which can reduce growth and development of plants. Water impacts that may results from township development activities:

1) Sediment run-off – rainfall can cause significant amounts of run-off especially if the soil is exposed (removed) of vegetation which in turn can results in soil erosions.

2) Leaching of pollutants from the hazardous waste – toxic substances present in hazardous waste not stored properly can be leached in groundwater during rainfall. In addition.

4) Sewage effluent – water used for domestic and sanitary purposes on site can pollute surface or ground water if not treated correctly which affects the growth of plants if water is contaminated.

POTENTIAL IMPACTS

- Washing of general waste that may be littered around the township
- Spillages from vehicles may impact on the ground and surface water
- Hydrocarbon leaks from vehicles
- Sewer blockages can flow to the nearby streams

2.4 Air quality

The significant form of air pollution from the school development is particulate matter (PM) emissions. The diesel trucks, generators and cars may be a source of PM emissions. Impacts from particulate matter (PM) emissions may include low viability of annual species or reduced growth rates during periods when fugitive dust is particularly high. Fugitive dust has the potential to impair respiratory functions of wildlife; however, there are few published studies that address the short or long-term implications of dust pollution on wildlife health. During construction or site establishment, gasoline and diesel fuelled vehicles and equipment will generate gaseous and particulate exhaust emissions, including volatile organic compounds (VOCs), carbon monoxide (CO) and nitrogen oxides (NOx). During the road transportation of fuel, gaseous, particulate exhaust emissions and particulate matter (PM) emissions will also occur along the transport route. This might be fairly localized and limited to areas along the road, but could also, depending on wind speed and direction, impact on larger areas. Pending on the length of the route, the impact will be on a large area.

POTENTIAL IMPACTS:

Particulate matter (PM) emissions through:

- Air pollution from the particulate matters of the vehicles travelling to and from the school development.

Increased PM may reduce radiation interception by plant canopies and may reduce precipitation through a variety of physical effects. It can also change the nutrient balance in coastal waters and large river basins affecting the diversity of ecosystems and contributing to acid rain effects.

2.5 Noise

Numerous environmental factors determine the level of sound at a given point of reception. These factors include: distance from the source of sound to receptor; surrounding terrain; ambient sound level; time of day; wind direction; temperature gradient and relative humidity. There are three major categories of noise sources associated with school. They are:

- fixed equipment or process operations (generators, pumps, conveyors, electrical equipment);
- Mobile equipment or process operations and
- Transport movements of products, and trucks and cars coming to the school.
- Students during the operational phase

It is expected that the noise levels generated on site may exceed the current ambient levels, resulting in a negative impact on animals. Noise may also impact on local residents.

POTENTIAL IMPACTS:

- Increase in ambient noise levels from:
- Fixed equipment or process operations,
- Mobile equipment,
- Transport movements of products, raw material or waste on site, and
- Transport of products off site,
- Students during operational phase.

Wildlife may be more sensitive to human presence during significant periods of their annual cycles, including the breeding season, therefore this may lead to animals present in the area to migrate to other quite areas, birds included.

2.6 Impact Assessment Methodology

The methods and format of the impact tables used in this chapter are in accordance to the requirements of the 2014 Regulations.

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **probability (P)** *of occurrence*, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The **duration (D)**, wherein it will be indicated whether:
    - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
    - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
    - medium-term (5–15 years) – assigned a score of 3;
    - long term (> 15 years) - assigned a score of 4; or
    - permanent - assigned a score of 5;
- The **extent (E)**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **magnitude (M)**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.

- the **significance (S)**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high;
    - the significance rating is calculated by the following formula:

S (significance) = (D + E + M) x (P)

- The **status**, which will be described as either positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The *degree* to which the impact can be *mitigated.*

Impacts should be identified for the construction and operational phases of the proposed development. Proposed mitigation measures should be practical and feasible such that they can be realistically implemented by the applicant.

2.7 Impacts on the vegetation

Table 1: Loss of indigenous vegetation due to clearing for construction of buildings, roads and other infrastructure, waste dumps etc.

Nature: The area for the proposed development will be cleared of vegetation, however it is anticipated that only the area to be developed will be stripped off vegetation. This will result in the loss of indigenous species, and the fragmentation of plant communities. The removal of vegetation will also expose soil increasing the risk of erosion.				
	Without mitigation		**With mitigation**	
CONSTRUCTION PHASE				
Probability	Definite	2	Definite	1
Duration	Permanent	2	Permanent	1
Extent	Local	2	Local	1
Magnitude	Low	4	Low	3
Significance	**Low**	**40**	**Low**	**20**
Status (positive or negative)	Positive		Positive	
OPERATIONAL PHASE				
Probability	Definite	2	Highly probable	1
Duration	Permanent	2	Permanent	1
Extent	Local	2	Local	1
Magnitude	Low	4	Low	3

Significance	**Moderate**	**40**	**Low**	**30**
Status (positive or negative)	Positive		Positive	
Reversibility	Low		Low	
Irreplaceable loss of resources?	Low		Low	
Can impacts be mitigated?	To limited extent			
Mitigation: • Limit all developments to the minimum area required, and leave as much as possible natural vegetation intact. • Conserve the areas that will not be developed, particularly the relatively large plant species that is present in the proposed development area • Control al waste dumping and avoid pollution of natural vegetation, • Avoid planting of exotic plant species, and where they have already encroached, they must be controlled as soon as possible by the land owner				
Cumulative impacts: With the surrounding area not their original state and the magnitude of this project is big, the impact won't be moving to the neighbouring farms but will however be localised to the project area.				
Residual Risks: Not currently known.				

Table 2. Loss of indigenous vegetation due to excavation, clearing for construction of buildings, roads and other infrastructure, waste dumps etc.

Nature: Alien invasive plant species has already encroached into disturbed areas that was disturbed by the disturbances that had occurred on the proposed land. It is not expected that extensive area will be disturbed since the school infrastructure is to be only on a portions of the farm, natural vegetation will not be totally destroyed.				
	Without mitigation		**With mitigation**	
CONSTRUCTION PHASE				
Probability	Definite	2	Definite	1
Duration	Permanent	2	Permanent	1
Extent	Local	2	Local	1
Magnitude	Low	4	Low	1
Significance	**Low**	**30**	**Low**	**20**
Status (positive or negative)	Positive		Positive	
OPERATIONAL PHASE				
Probability	Definite	5	Definite	5
Duration	Permanent	5	Permanent	5
Extent	Local	5	Local	5
Magnitude	Low	10	Low	10
Significance	**Low**	**20**	**Low**	**10**
Status (positive or negative)	Positive		Positive	

Reversibility	Low	Low
Irreplaceable loss of resources?	Moderate	Moderate
Can impacts be mitigated?	Not regarded as feasible	
Mitigation: • An alien invasive management programme must be incorporated into the Environmental Management Programme; • Ongoing alien plant control must be undertaken; • Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species. • Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. • Avoid planting of exotic plant species in public areas or home gardens, use indigenous species.		
Cumulative impacts: **Low,** With the surrounding area not in their original state and the magnitude of this project is big, the impact won't be moving to the neighbouring farms but will however be localised to the project area.		
Residual Risks: Not currently known		

3. RESULTS AND DISCUSSION

3.1 Site biodiversity

South Africa is considered one of the most biologically diverse country in the world due to its species diversity and endemism as well as its diversity of ecosystems. South Africa occupies only 2% of the world's land surface area yet is home to 10% of the world's plant species and 7% of the reptile, bird and mammal species. Sixty-five percent of its 23 000 plant species are endemic to South Africa. In terms of the number of endemic species of mammals, birds, reptiles and amphibians, South Africa ranks as the fifth richest country in Africa and the 24th in the world. The terrestrial biodiversity of South Africa can be divided into nine biomes. National Red List assessments of the status of South Africa's species indicate that 10% of South Africa's birds and frogs, 20% of its mammals and 13% of its plants are threatened. South Africa's biodiversity is facing threats on several fronts, including habitat loss and degradation, invasive alien species, flow modification, overharvesting, pollution and climate change. Many areas of natural habitat are replaced, often irreversibly, by alternative land uses such as urban development, industrial and mining development, agricultural activities such as clearing land for cultivation of crops, or forestry plantations. An emerging threat that could result in substantial further loss of natural habitat (and additional pressure on freshwater resources)

is crops for biofuel production. Aquatic habitats can be completely transformed by canalisation and marine habitats can be destroyed by trawling and other types of development.

The savannah biome is fairly homogenous and the proposed site is the only area remaining with vegetation in the surrounding area. It was assumed from the site visit and the google earth map that the majority of the site is recovering from an event of disturbance, since the majority of plant species are juveniles. On the site, the croplands are flourishing very well and it is dominated by the indigenous plant species with the exception of very few exotic plant species. The balance of the site was considered to be on their original state and is maintaining the indigenous plant species of conservation concern, however it may still provide valuable foraging area for some bird species but many of these species will be generalist species. There were evidence of presents of birds since there some birds' nests that were sported during the site survey.

There was no mammal species that was found and identified on site but animals that used to occur on the area before has been tabulated below on table 3. All the species that was identified on site was then checked on the SANBI red list and they were found to be endemic and none endemic to South Africa and they were all of least concern and only of them was listed as either protected or endangered and they have been listed in different tables below. Although birds' nest where noticed on site there was presence of different birds' spices noted in the vicinity of site and they have been tabulated below. Therefore, this area can be also identified as an area of medium conservation value with only protected species identified namely *schlerocharia birrea* and there is a no biodiversity sensitive environment in a close proximity of site see the biodiversity map below which shows the area that is to be developed.

Below is the list of the indigenous plant species (grasses included) that were identified onsite

Scientific name	**Family**	**Status**
Themeda triandra	Poaceae	LC
Vachellia tortilis	Fabaceae	LC
Vachellia karroo	Fabaceae	LC
Senegalia nigrescens	Fabaceae	LC
Senegalia mellifera	Fabaceae	LC
Dichrostachys cinerea	Fabaceae	LC

Sclerocarya birrea	Anacardiaceae	Protected
Terminalia sericea	Combretaceae	LC
Dombeya rotundifolia	Sterculiaceae	LC
Combretum molle	Combretaceae	LC
Peltophorum africanum Sond	Fabaceae	LC
Senegalia burkei (Benth.)	Fabaceae	LC
Burkea africana	Fabaceae	LC
Albizia adianthifolia	Fabaceae	LC
Grewia monticola	Malvaceae	LC
grewia flavescens	Malvaceae	LC
Ficus sycomorus	Moraceae	LC
Ziziphus rivularis	Rhamnaceae	LC
Ziziphus mucronata	Rhamnaceae	LC

Table 1: The list of the indigenous plant species

The list of Alien invasive plant species on site are listed below

Scientific name	**Family**
Solanum mauritianum	Solanaceae
Melia azedarach	Meliaceae
Opuntia robusta	Cactaceae
Cereus jamacara	Cactaceae
Datura stramonium	Solanaceae
Bidens pilosa	Asteraceae
Solanum incanum	Solanaceae

Table 2: The list of Alien invasive plant species on site

The list of indigenous animals that use to occur onsite are tabulated below

Scientific name	**Family**	**Status**
Tragelaphus strepsiceros	Bovidae	LC
Aepyceros melampus	Bovidae	LC
Tragelaphus sylvaticus	Bovidae	LC
Syncerus caffer	Bovidae	LC
Connochaetes taurinus.	Bovidae	LC
Chlorocebus pygerythrus	Cercopithecidae	LC

Table 3: The list of indigenous animals

List of birds that were found on site are listed below.

Scientific name	**Family**	**Status**
Corvus albus	Corvidae	LC
Vidua paradisaea	Viduidae	LC
Uraeginthus angolensis	Estrildidae	LC
Pternistis swainsonii	Phasianidae	LC
Streptopelia capicola	Columbidae	LC

Numida meleagris	Numididae	LC
Strix nebulosa	Strigidae	LC
Ploceus cucullatus	Ploceidae	LC

Table 4: List of birds that were found on site

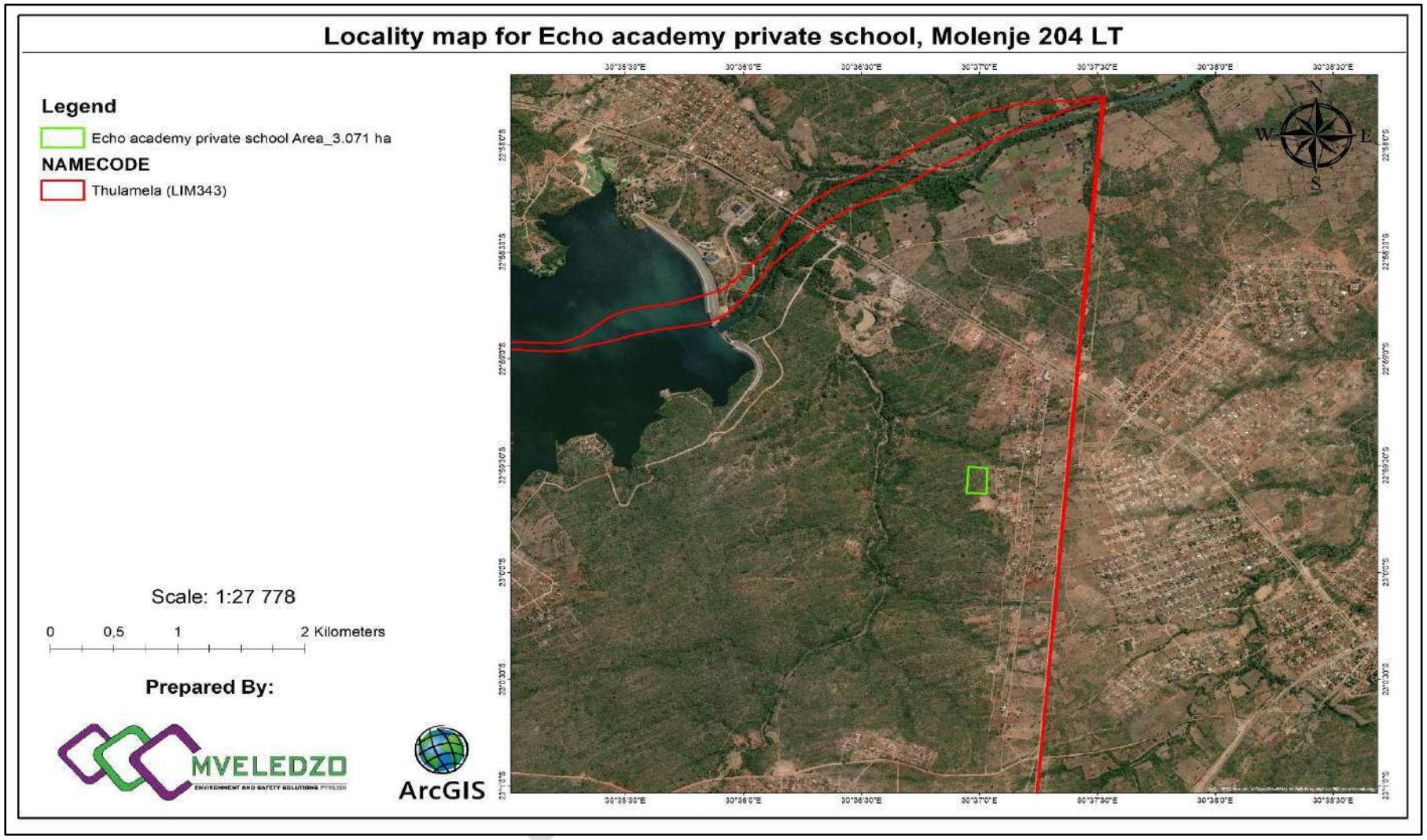


Figure 5: map showing the Biodiversity sensitivity of the area

Photo 1: Shows the proposed school border with the village.

Photo 2: Shows ground burrowing by animals.

Photo 3: Shows birds sported onsite

Photo 4: Shows the stretch of indeginous vegetation stretched onsite.

Photo 5: Shows a walking path on the proposed site

Photo 6: Shows northern part of the site.

4. CONCLUSION AND RECOMENDATIONS:

From an ecological perspective, the site is a favourable location for the school activity. There is sufficient space available at the site to accommodate the development and there are no any sensitive environmental and there were few species of *schlerocharia birrea* species which falls within the protected plant category which were noted on site. The area still maintains the indigenous environment though it is still in the original state and it does support the functional ecology since it is situated within the area that is not totally developed. Vegetation clearing must always be kept at minimal. It is recommended that since the species of (schlerocharia birrea) is mostly large trees they must be avoided and if they cant be avoided they must then contact the department of agriculture fisheries and forestry before any removal, and if one big plant is removed it must be replaced by four juvenile of the same species. If the recommendation made on the EMPr are adhered to then there will be minimal damage to the existing grassland and all associated species close to the proposed school.

It is the responsibility of the applicant that it must rehabilitate and increase the conservation value of the area after the construction of the school. Any risk and impact assessment is but an exercise based on facts, assumptions and perceptions, and can by no means give an exact reflection of all possible scenarios. The success of proposed, and still to be developed, mitigation measures will largely depend on the commitment of the developer to its social and environmental responsibility, management of the impacts and mitigation measures and allocation of financial resources to implement such mitigation measures

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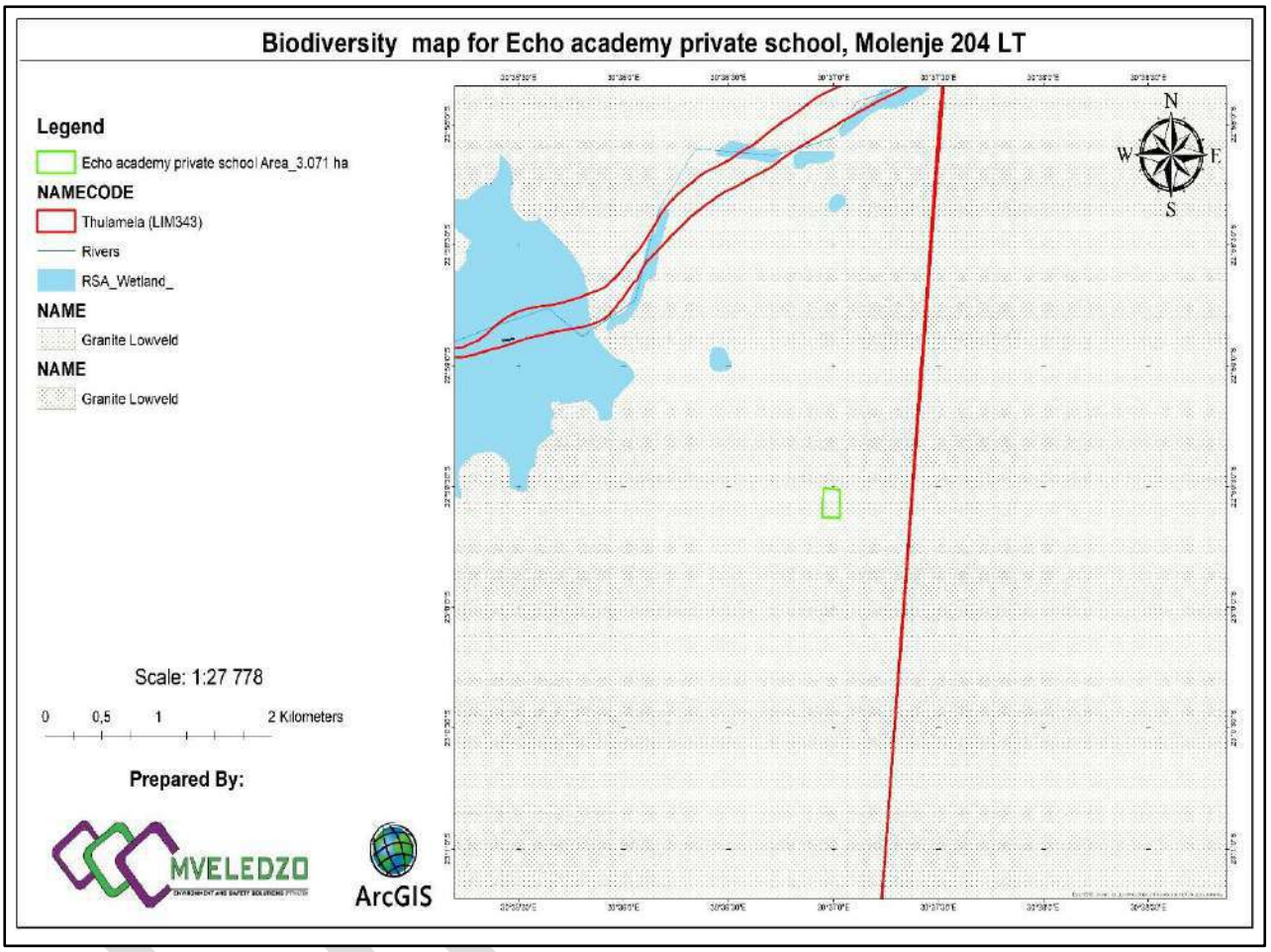
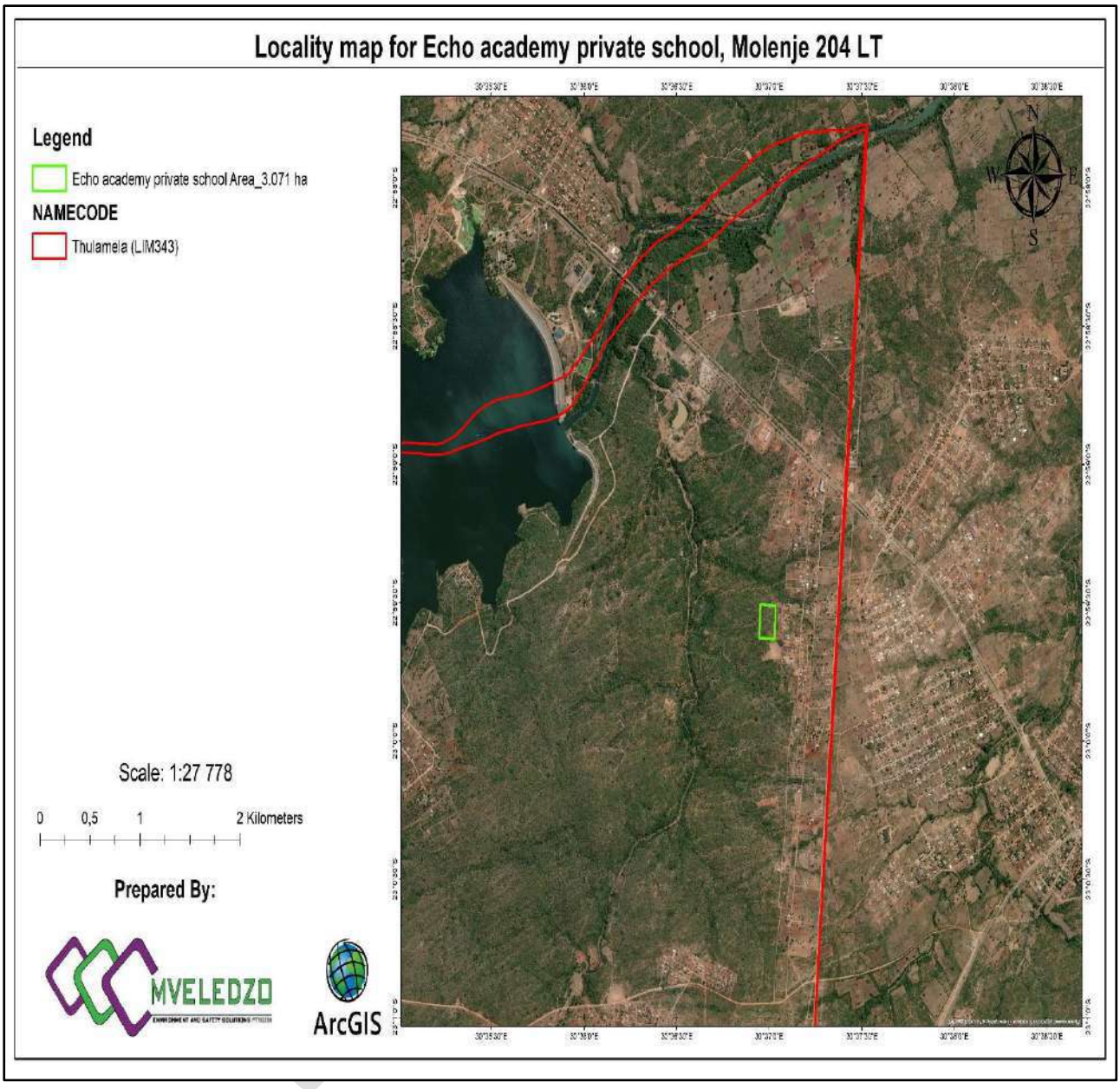
6. APPENDIX

Appendix A



Appendix B


Locality map for Echo academy private school, Molenje 204 LT
Legend
Echo academy private school Area_3.071 ha
NAMECODE
Thulamela (LIM343)
Scale: 1:27 778
0 0,5 1 2 Kilometers
Prepared By:
MVELEDZO
ArcGIS
N
W
E
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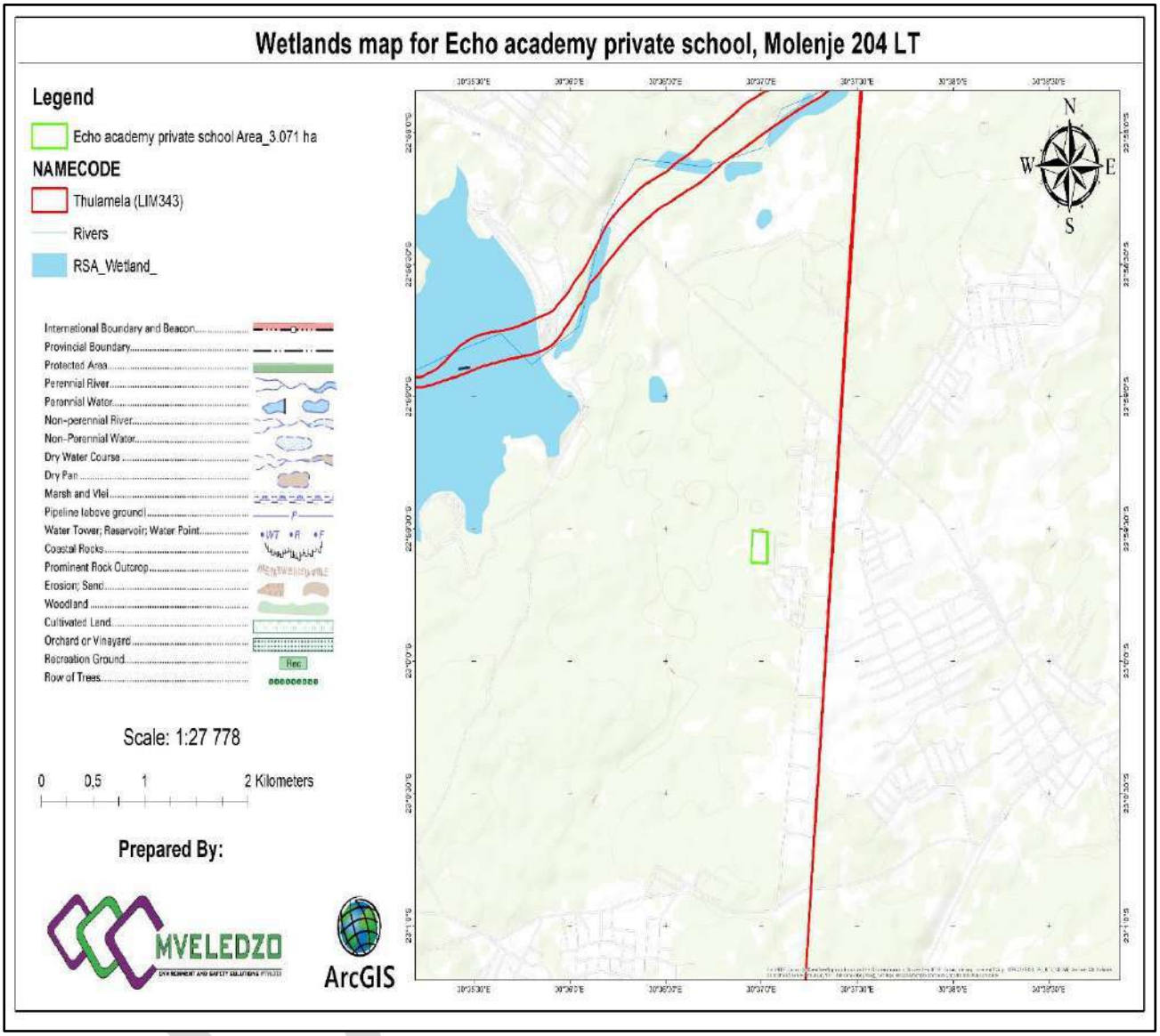
Appendix C


Wetlands map for Echo academy private school, Molenje 204 LT
Legend
Echo academy private school Area_3.071 ha
NAMECODE
Thulamela (LIM343)
Rivers
RSA_Wetland_
International Boundary and Beacon
Provincial Boundary
Protected Area
Perennial River
Perennial Water
Non-perennial River
Non-Perennial Water
Dry Water Course
Dry Pan
Marsh and Vlei
Pipeline (above ground)
Water Tower; Reservoir; Water Point
Coastal Rocks
Prominent Rock Outcrop
Erosion; Sand
Woodland
Cultivated Land
Orchard or Vinayard
Recreation Ground
Row of Trees
Scale: 1:27 778
0 0,5 1 2 Kilometers
Prepared By:
MVELEDZO
ArcGIS
N
W
E
S

Heritage Study

PHASE 1 HERITAGE IMPACT ASSESSMENT REPORT FOR THE PROPOSED ECHO ACADEMY (PRIVATE SCHOOL) ON THE REMAINDER OF THE FARM MOLENJE 204 LT WITHIN COLLINS CHABANE LOCAL MUNICIPALITY OF VHEMBE DISTRICT, LIMPOPO PROVINCE.

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November 2019

Executive Summary

Local Authority: Collins Chabane Municipality

Magisterial Authority: Vhembe District Municipality

Type of Development: Private School

Status of the Report: Final Report

Date of field work: November 2019

Date of report: November 2019

Purpose of the Study: The purpose of this study is to identify heritage resources within a proposed development area, assess their significance, the impact of the development on the heritage resources and to provide relevant mitigation measures to alleviate impacts to the heritage resources. An assessment of impacts on heritage resources defined in section 3 of the NHRA, heritage assessment is required in terms of section 38 of the NHRA.

Vhufa Hashu Heritage Consultants was appointed by Mang Geoenviro Services to undertake a phase 1 Heritage Impact Assessment of a proposed Echo Academy (Private School) and associated structures in Molenje area under Collins Chabane Local Municipality of Vhembe District, Limpopo Province, in compliance with Section 38 of the National Heritage Resources Act 25 of 1999.

South Africa's historical, archaeological and paleontological heritage resources are unique and non-renewable as defined in section 3 of the NHRA. Heritage Resources as defined in section 3 of the NHRA are given "formal" protection in terms of section 27-29 and 31-32 of the NHRA and "general" protection in terms of sections 33,34,35,36 and 37 of the NHRA. Therefore, no damage, destruction or alteration may occur to heritage resources without a permit issued by a relevant heritage authority.

An assessment of impacts on heritage resources of a development is required in terms of section 38(1 and 8) of the NHRA.Where possible, heritage resources should be preserved *in situ* and conserved for future generations. This can be achieved through a monitoring and management plan that may be stipulated in the conditions issued on a development by an authority as per section 38(4)c of the NHRA.Where it is not possible to retain the heritage resources *in situ*, and the heritage resources are not deemed significant, the loss of information can be reduced by recording and mitigation of the heritage resources

through a process of excavation (or sampling) as a condition on the development in terms of section 38(4)d and e, after obtaining a permit from the relevant Heritage Resources Authority (HRA),at the cost of the developer. This allows us to record a part of the history of the place as part of the national inventory. Assessment and mitigation in the early phase of the development may save the developer considerable delays and related costs.

Heritage Resources Descriptions and Significance

No heritage/archaeological resources was identified within the proposed Echo Academy (Private School) site.

Conclusion

No further studies / Mitigations are recommended given the fact that within the proposed Echo Academy (Private School) site and its surrounding there are no archaeological or place of historical significance to be impacted by the gravel extraction process. From a Heritage perspective, the development should be allowed to continue.

Acknowledgements:

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HERITAGE CONSULTANT: Vhufahashu Heritage Consultants

CLIENT CONTACT PERSON: Richard R Munyai

.....
Archaeologist and Heritage Consultant

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EXPLANATION OF ABBREVIATIONS USED IN THIS DOCUMENT

AIA	Archaeological Impact Assessment
ASAPA	South African Archaeological Professional Association
CMP	Conservation Management Plan
EIA	Early Iron Age
EMP	Environmental Management Plan
ESA	Early Stone Age
GPS	Geographical Positioning System
HIA	Heritage Impact Assessment
HMP	Heritage Management Plan
ICOMOS	International Council of Monuments and sites
LIA	Late Iron Age
LSA	Late Stone Age
MIA	Middle Iron Age
MSA	Middle Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Agency
OSBP	One Stop Border Post
PRHA	Provincial Heritage Resources Authority
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
VHHC	Vhufa Hashu Heritage Consultants

DEFINITIONS

"**Aesthetic value**" Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.

„**Alter**" any action affecting the structure, appearance or physical properties of a place or object, whether by a way of structural or other works, by painting plastering or other decoration or any other means;

"**Conservation**" in relation to heritage resources, includes protection maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance

"**Conservation Management Plan**" A policy aimed at the management of a heritage resource and that is approved by the Heritage Resources Authority setting out the manner in which the conservation of a site, place or object will be achieved

"**Cultural Significance**" As defined in the NHRA means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

"**Development**" means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of a heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future wellbeing, including-

(a) construction, alteration, demolition, removal or change of use of a place or a structure at a place;
(b) carrying out any works on or over or under a place;
(c) subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
(d) construction or putting up for display signs or hoardings;
(e) any change to the natural or existing condition or topography of land; and
(f) any removal or destruction of trees, or removal of vegetation or topsoil.

"**Heritage agreement**" means an agreement referred to in section 42,

"**Heritage Impact Assessment**" A report compiled in response to a proposed development that must meet the minimum requirements set out in the NHRA and should be submitted to a heritage resources authority for consideration.

"**Heritage site**" means a place declared to be a national heritage site by SAHRA or site declared to be a provincial Heritage site by a PHRA

"**Historic value**" Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.

"**Improvement**" in relation to heritage resources includes repair, restoration and rehabilitation of a place protected in terms of this Act.

"**Interested and Affected Parties**" Individuals, organisations or communities that will either be affected and/or have an interest in a development or the resulting impacts of a development.

"**Management**" in relation to heritage resources includes the conservation, presentation and improvement of a place protected in terms of this Act.

"**Scientific value**" Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period.

"**Social value**" Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.

"**Rarity**" Does it possess uncommon, rare or endangered aspects of natural or cultural heritage.

"**Representivity**" Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province region or locality.

TABLE OF CONTENTS

1. INTRODUCTION

Vhufa Hashu Heritage Consultants was appointed by Mang Geoenviro Services to undertake a phase 1 Heritage Impact Assessment of a proposed Echo Academy (Private School) in Molenje area under Collins Chabane Local Municipality of Vhembe District, Limpopo Province.

The National Heritage Resources Act (NHRA - Act No. 25 of 1999) protects all structures and features older than 60 years (section 34), archaeological sites and material (section 35) graves and burial sites (section 36). In order to comply with the legislations, the Applicant requires information on the heritage resources, and their significance that occur in the demarcated area. This will enable the Applicant to take pro-active measures to limit the adverse effects that the development could have on such heritage resources.

2. TERMS OF REFERENCE

The terms of reference for the study were to conduct heritage impact assessment for the proposed Echo Academy (Private School) in Molenje.

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the interested parties regarding the impact of the development on heritage resources;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

3. DESCRIPTION OF THE AFFECTED AREA

The proposed Echo Academy (Private School) is situated on the south eastern side of Nandoni Dam and western side of Makumeke Village and road D3765 from Thohoyandou to Mutoti/Mavambe Village (GPS S22°59'31.3"E30°37'02.4") within Collins Chabane Local Municipality of Vhembe District, Limpopo Province.

The vegetation of the area and landscape features varies from low mountains, slightly to extremely irregular plains to hills. The geology and Soils is Soutpansberg Group of sandstones with lessor amounts of conglomerate, shale and basalt is mostly exposed in this area. Some Karoo Supergroup rocks are also present. Most of the area has deep sands to shallow sandy lithosols. A few limited areas with heavier soil, particularly in the B-horizon, occur near the western boundary of the Kruger National Park.

Figure 1: Locality map

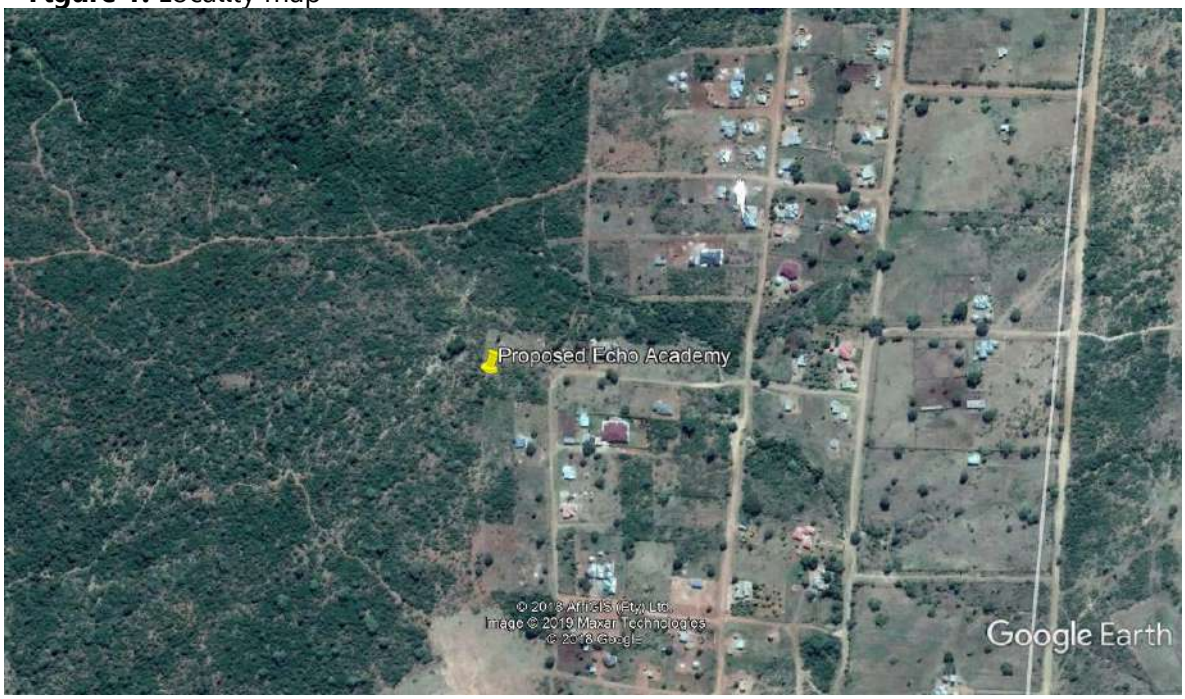

Figure 2: Arial View of the proposed site.

Figure 3: General view of the proposed Echo Academy (Private School)

Figure 4: View of the Geotech test pit.

Figure 5: View of the access road on site.

4. LEGISLATIVE REQUIREMENTS

Two sets of legislation are relevant for the study with regards to the protection of heritage resources and graves. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

4.1 The National Heritage Resources Act

According to the above-mentioned act the following is protected as cultural heritage resources:

- Archaeological artifacts, structures and sites older than 100 years
- Ethnographic art objects (e.g. Prehistoric rock art) and ethnography
- Objects of decorative and visual arts
- Military objects, structures and sites older than 75 years
- Historical objects, structures and sites older than 60 years
- Proclaimed heritage sites
- Grave yards and graves older than 60 years
- Meteorites and fossils
- Objects, structures and sites of scientific or technological value.

The National Estate includes the following:

- Places,buildings,structures and equipment of cultural significance

- Places to which oral traditions are attached or which are associated with living heritage
- Historical settlements and townscapes
- Landscapes and features of cultural significance
- Geological sites of scientific or cultural importance
- Sites of Archaeological and palaeological importance
- Graves and burial grounds
- Sites of significance relating to the history of slavery
- Movable objects (e.g. Archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.)

Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources. An HIA must be done under the following circumstances:

- The construction of a linear development (road, wall, power line, canal etc.)exceeding 300m in length
- A construction of a bridge or similar structure exceeding 50m in length
- Any development or other activity that will change the character of a site and exceed 5 000m^2 or involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m^2
- Any other category provided for in the regulations of SAHRA or a provincial heritage authority.

4.2. The National Heritage Resource Act (25 of 1999)

This act established the South African Heritage Resource Agency (SAHRA) and makes provision for the establishment of Provincial Heritage Resources Authorities (PHRA).The Act makes provision for the undertaking of heritage resources impact assessments for various categories of development as determined by Section 38.It also provides for the grading of heritage resources and the implementation of a three tier level of responsibilities and functions for heritage resources to be undertaken by the State, Provincial authorities and Local authorities, depending on the grade of the Heritage resources. The Act defines cultural significance, archaeological and palaeontological sites and material (Section 35), historical sites and structures (Section 34), graves and burial

sites (Section 36) which falls under its jurisdiction. Archaeological sites and material are generally those resources older than a hundred years, while structures and cultural landscapes older than 60 years, including gravestones, are also protected by Section 34.Procedures for managing grave and burial grounds are clearly set out in Section 36 of the NHRA. Graves older than 100 years are legislated as archaeological sites and must be dealt with accordingly. Section 38 of the NHRA makes provision for developers to apply for a permit before any heritage resource may be damaged or destroyed.

4.3. The human tissues act (65 OF 1983)

This Act protects graves younger than 60 years. These fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Heritage Authorities.

Graves 60 years or older fall under the jurisdiction of the National Heritage Resources Act as well as the Human Tissues Act, 1983.

5. METHODOLOGY

5.1. Source of information

5.1.1. Survey of Literature

The methodological approach used for the study is aimed at meeting the requirements of the relevant heritage legislation. As such a desktop study was undertaken followed by a survey of the impact areas. Most of the information was obtained through the site visit made on the 23 November 2019.In practice, most archaeological and historical sites are found through systematic survey of the target landscapes. The survey therefore, sought to identify cultural heritage sites including graves, burial grounds and contemporary religious or sacred ceremonial sites associated with the proposed Echo Academy (Private School). VHHC heritage specialists conducted the reconnaissance survey and impact assessment by transecting the affected landscape on foot looking for indicators of archaeological and any other cultural materials in the affected areas. In part the field officer also inspected soil profiles for potential archaeological materials that may still be trapped *in situ* in an area disturbed by human activities as well the burrowing animals.

5.1.1.2. Field Survey

Standard archaeological observation practices were followed; Visual inspection was supplemented by relevant written sources, and oral communications with local

communities from the surrounding area. In addition, the site was recorded by hand held GPS Garmin Oregon 65 and plotted on 1:50 000 topographical map. Archaeological/historical material and the general condition of the terrain were photographed with a Garmin Oregon 65 Camera.

The field assessment section of the study was conducted according to generally accepted HIA practices and aimed at locating all possible objects, sites and features of archaeological significance in the area of the proposed development.

5.1.1.3. Documentation

All sites, objects and features identified were documented according to the general minimum standards accepted by the archaeological profession. Co-ordinates of individual localities are determined by means of the Global Positioning System (GPS).The information is added to the description in order to facilitate the identification of each locality.

6. RESULTS OF THE FIELDWORK

No cultural heritage (archaeological or historical) sites, features or objects were found. There is no structures/buildings on site which are older than 60 years.

7. CHRONOLOGICAL SEQUENCE OF THE STONE AND IRON AGE

The Stone Age is the period in human history when lithics (or stone) was mainly used to produce tools. In South Africa the Stone Age can be divided basically into three periods. It is important to note that these dates are relative and only provide a broad framework for interpretation. A basic sequence for the South African Stone Age is as follows:

Early Stone Age (ESA):	Predominantly the Acheulean hand axe industry complex dating to + 1Myr yrs-250 000 yrs. Before present.
Middle Stone Age (MSA):	Various lithic industries in SA dating from ±250 000 yr.-30 000 yrs. before present.
Late Stone Age (LSA):	The period from ±30 000-yr.to contact period with either Iron Age farmers or European colonists.

There are no known Stone Age sites in the area including rock art. No Stone Age sites or objects were recorded during the assessment of the area.

The Iron Age is the name given to the period of human history when metal was mainly used to produce artifacts:

Early Iron Age (EIA):	Most of the first millennium AD
Middle Iron Age:	10^{th} to 13^{th} centuries AD
Late Iron Age (LIA):	14^{th} century to colonial period. The entire Iron Age represents the spread of Bantu speaking peoples.

8. BRIEF SYNTHESIS ON THE ARCHAEOLOGICAL AND HERITAGE.

The Archaeological and heritage studies in the region indicate that the area is of high prehistoric and heritage significance. It is in fact a cultural landscape where Stone Age, Iron Age and historical period's sites contribute the bulk of the cultural heritage of the region (Calabrese, 1996; Huffman, 2007).

9. STONE AGE SEQUENCE OF THE AREA (ESA, MSA and LSA)

The Early Stone Age spans a period of between 1.5 million and 250 000 years ago and refers to the earliest Homo sapiens predecessors began making stone artifacts.Archaeological material finger prints (Stone tool artifacts) of these earliest periods have been found at Olduvai Gorge. This Gorge is located in Tanzania; the stone artifact industry was referred to as the Olduwan Industry. Most of the stone artifacts recovered were not neatly made and they were very crude in makings. The ESA tools were simple tools which,were among other things used to chop and butcher meat, de- skin animal and probably to smash bones to obtain marrow. The presence of cut marks from animal fossil bones dating to this period has led to the conclusion by researchers that human ancestors were scavengers and not hunters (Esteyhuysen, 2007). They may have preyed on a drowned or crippled animals or shared a kill by another predator, which explains why at some ESA sites occur high bone proportions of large, dangerous game (Wadley, 2007).

The industries were later replaced by the Acheulian stone tool Industry which is attested to in diverse environments and over wide geographical areas. The Industry is characterized by large cutting tools mostly dominated by hand axes and cleavers. Bifaces emerged in East Africa more that 1.5 million years ago (mya) but have been reported from a wide range of areas, from South Africa to northern Europe and from India to the Liberian Coast.
The end products were astonishingly similar across the geographical and chronological distribution of the Acheulian techno-complex: large flakes that were suitable in size and morphology for the production of hand axes and cleavers perfectly suited to the available

raw materials (Sharon, 2009). Evidence presented from Sterkfontein, Swartkrans and Makapansgat caves shows that the first tool making hominids belong to either an early species of the Homo or an immediate ancestor which is yet to be discovered here in South Africa (Esteyhuysen, 2007). Both the Oldwan and Acheulian industries are well represented in the archaeology of the Cradle of Humankind from sites at Strekfontein and Kromdraai. These discoveries have made considerable contribution to the body ofscientific knowledge in the subject of tool manufacturing in association with human evolutions. At Kromdraai site two definite Oldwan stone tools estimated to date to around 1.9 million years ago were discovered.

The Middle Stone Age dates back to about 250 000 ago ending at around 25 000 years ago. In general Middle Stone Age tools are smaller than those of the Early Stone Age period. They are characterized by smaller hand axes, cleavers, and flake and blade industries. The period is marked by the emergence of modern humans through the change in technology, behavior, physical appearance, art, and symbolism. Various stone artefact industries occur during this time period, although less is known about the time prior to 120 000 years ago, extensive systemic archaeological research is being conducted on sites across southern Africa dating within the last 120 000 years (Thompson & Marean, 2008). Surface scatters of these flake and blade industries occur widespread across southern Africa although rarely with any associated botanical and faunal remains. It is also common for these stone artifacts to be found between the surface and approximately 50-80cm below ground. Fossil bone may be associated with MSA occurrences. These stone artifacts, like the Earlier Stone Age hand axes are usually observed in secondary context with no other associated archaeological material.

An early South African Middle Stone Age stone artifact industry referred to as the Mangosian had a very wide distribution stretching across Limpopo, the eastern Orange Free State, around Cape Point and Natal (Malan 1949). This stone artifact industry, according to the period, may have represented the final development that the prepared core technique of the Middle Stone Age reached prior to its replacement by the microlithic techniques of the Later Stone Age. Malan (1949) also made mention that there are variations of Middle Stone Age assemblages throughout South Africa (Binnerman et al,(2011).

A variety of MSA tools includes blades, flakes, scraper and pointed tools that may have been hafted onto shafts or handles and used as pear heads. Residue analyses on some of the stone tools indicate that these tools were certainly used as spear heads (widely, 2007).The presence of spear heads on some of the MSA assemblages is an indication that

these group of people were hunters who targeted middle sized game such as hartebeest, wildebeest and zebra (Wadley, 2007), Some assemblages are show the presence of bone tools such as bone points. The last phase of stone tool development is associated with Late Stone tools. The period is associated with the use of micro- lithic stone tools. LSA tool have been found in the Cradle of humankind.

10. REGIONAL SETTING: ARCHAEOLOGY, HISTORY AND HERITAGE

Cultural Resource Management survey programs conducted for the development of Nandoni dam has recorded the existence of cultural material finger print remains from different periods. Archaeologically the proposed study area lies within the asserted traditional territories with density of archaeological sites most of which are located on higher elevations along the water source such as Luvuvhu River and its tributaries.

The studies shed light on the understanding of pre- history and historical part south of the Soutpansberg Mountain, aerial photographic survey and the layout of the study area showed that the region starting from the western end had major concentration of recent to historical settlements, with various scattered iron production sites along the main rivers. Recent studies classified these settlements and activity areas mainly comprised of four basic units, namely: homesteads, terraces, livestock enclosure and Iron production sites.

The general archaeology within the study area took place since the Stone Age time as represented by some remarkable scattered distribution of stone tool most found on the lower lying areas dominated by agricultural activities (Cultivated lands) and erosion gullies. The presents of stone tools in such disturbed areas is a true reflection that early humans lived here, discontinuously, for thousands of years, from the Middle to the Late Stone Age periods. Majority of these finds are classified as isolated surface occurrences, and mostly are judged to have a low significance and they require no mitigation measures. Iron Age people moved into southern Africa by c. AD 200, entering the area either by moving down the coastal plains, or by using a more central route. It seems more likely that the first option was what brought people into the study area. From the coast they followed various rivers inland. Being cultivators, they preferred the rich alluvial soils to settle on.

One of the earliest dated sites is located near Tzaneen (Silver Leaves). This sequence owes much to the work undertaken by Menno Klapwijk, in the Tzaneen area, specifically at the site referred to as the earliest site component of the Iron Age period i.e. Silver Leaves site. The site was occupied in the third century, being dated by radiocarbon to circa 280 AD. Similar dates also came from Eiland sites discovered few kilometres south east of Tzaneen

in the then Northern Transvaal. On both sites, direct evidence of cultivation was extremely limited, but impressions of Pennisetum millet seeds were discovered. This was the principal evidence of the earliest Iron Age penetration with the then dominant crop being brought in and introduced to the area (Klapwijk 1974). Another archaeological evidence of great significance was the discovery of an archaeological site near the present town of Lydenburg in the Mpumalanga Province. The Lydenburg archaeological assemblage consists of the remains of the well- known seven terracotta heads (Lydenburg heads). The site was radiocarbon dated AD 470 becoming the oldest African Iron Age artwork ever found below the equator (Inskeep & Maggs 1975). Iron Age occupation of the region seems to have taken place on a significant scale and at least three different phases of occupation have been identified. Sites dating to the Early Iron Age are found in the Luvuvhu River valley. These settlements seem to have been followed at a slightly later date by settlements linked to the Eiland Phase of the EIA (c. AD 1000). The last period of pre-colonial occupation consisted of Vha- Venda who settled on stone-walled, sites at the foot on the mountains. At present it is not clear, but, judged on the pottery found here; these sites might even date to early historic times. As this was a period of population movement, conflict and change, in large part set the scene for the current population situation within the study area. Considering the time period that they were occupied, they also feature in the early historic period. Approximately 69 archaeological sites were recorded alongside the Luvuvhu river valley, during the impact assessment program of the proposed Nandoni dam 1993-1997. Sites location and distributions varied considerably, some were geo-referenced on promontory hills, ridges while others were noted on flat flood plains. One of the interesting site excavated in the study area, was Mut2/2 site, an Early Iron Age site located on river bluff, promontory ridge situated approximately 600m west of the current dam wall. Archaeological excavations yielded evidence of the early traded pieces of porcelain.

Research analysis shows that Porcelain pieces originated in Mesopotamia, unfortunately the early trade route network is not known, with possibilities link to Middle East via Mozambique ports. Another site with extra ordinary information was MUT26 ;(iron smelting site) excavated on rocky granite out crop on the bank of the Mahebe River, characterized by dry stone walls with livestock enclosures, archaeological excavations revealed that this site, was occupied more than one period, from the early iron smelting to historical period. Archaeological evidence from this site was represented by exposed hut floors, grain bin foundation and lapa floor with burnt dark brown and gray soil, and high slag concentration. Archaeological excavation of MUT26 exposed remnants of smelting

furnace roughly triangular in shape with three tuyere inlets on three corners. Similar furnace have been found elsewhere in Phalaborwa area (Mathoho 2012).The site (MUT26) was destructed by the proposed concrete quarry activities for the proposed dam construction.

To attain more understand of relative chronology of these archaeological sites, a description of classifying ceramics in southern Africa is that of Huffman (2007) which combines different shape profiles with decoration techniques and motifs. Due to heavy vessel fragmentation and the small number of samples from our sites, general descriptions of the ceramics were given. Although largely descriptive, this approach identify and characterise ceramic traditions making it possible to relate ceramics from our sites to sequences established elsewhere in northern South Africa. The ceramic analysis revealed that sites excavated ranged from the Early Iron Age to the Historical period. The ceramics from Mut 26 (Dovheni iron production site) were highly fragmented making it difficult to reconstruct the shape profiles. When cleaned, it became clear that some of the pottery fragments were decorated with designs formed by red ochre and graphite burnishing, cross hatched and fine lines of incisions which appeared on some of the recovered potsherds. These designs are typical of Letaba facies which have been dated elsewhere to between AD1600 and 1840 (Huffman 2007).

A large representative sample of undiagnostic and diagnostic ceramic were retrieved from surface collection at Mut2/2 site on the Luvuvhu River, on average, the pots were well made and fired. The decoration techniques include punctuates on the rim and multiple bands in the neck. The decoration is placed on the rim, the neck and on the shoulders/body. The decoration on the potsherds from Mut 2/2 closely resembles that observed on Early Iron Age sites in the region, particularly the Garonga phase of Silver Leaves (see Mathoho 2012). According to Huffman (2007: 133), Garonga ceramics combine the features of Mzonjani and Happy Rest. Huffman also places Garonga (AD750-900) third in a sequence that starts with Silver Leaves (AD300-450) and Mzonjani (AD450-750).The excavations yielded numerous and diverse materials of importance. The excavated ceramics were described and compared to the established typologies of Huffman (2007). For our area, the descriptions revealed the existence of not only Early Iron Age sites but also Late Iron Age and historical period ones. Given that the ceramics for early and later periods are different.

There are no doubt that some of the archaeological sites found here belongs to the pre-Vha-Venda nation, unfortunately the Vha-Venda history is so complex and subject of unending dispute amongst different parties and dynastic group that inhabit the territory.

Writings of the early 1930s has placed Vha- Venda as composite people, who don't see themselves as cultural homogenous or political united nation. Oral traditions suggest thatmost of the important migrations to the territory known today as Venda came from the north of the Limpopo River among these migrations two are particularly significant in the history of the area (Stayt 1968, Loubser 1991). Vha-Venda of today are descendants of various groups and previous studies coupled with old traditions agrees that there was at one stage an aboriginal population in the region called Vhangona whether this group had chief or tribal cohesion it is not recorded in the history, it was previously rare for a person prepared to admit that they are descendent of this despised race. The historic period started c. 1840s, with the arrival of the first white settlers. Elephant hunting and the ivory trade were the most important economic activities of Zoutpansbergers, who depended increasingly on African marksmen as elephant herds retreated north into the tsetse belt. Thus many African hunters were equipped with Guns while on expedition to raid settlement for black ivory. Negotiations between the trekkers and vha-Venda resulted in certain areas south of the Soutpansberg becoming the border between cultural groups as influenced by the early trade routes system via Mozambique. Later, tension developed between these cultural groups, giving rise to armed conflict.

One of the better known incidents is the so-called the black ivory and indenture system and slavery in the Soutpansberg between 1848 to 1869, where young children were classed as inboekenlinge (the so called 'apprentices' another name of slavery) were acquired and traded most of which were captive from African villages distributed among Boer themselves. These captives were produced by wars waged to open up certain areas of the far north for white settlement. Therefore the clashes resulted mainly from African resistance to attempts by the Boers to enforce their newly acquired authority by demanding labor and tribute among vha-Venda chiefs. According to Boeyens (1994) Soutpansberg was, after all, an open frontier where the authorities of the whites was continually challenged, resulting in regular clashes and war with local communities. Children were taken as spoils of war because they had export market value (slavery), because of this process Venda children's who were regarded as spoils of war from different Venda chiefdoms were displaced as far as Pretoria is concerned. The

Soutpansberg was known from the coast as the major source of white ivory and other game products. Under the indenture system many such labour were obtained through capture or trade. According to instruction report received by Lydenburg military officers in November 1851, only children's who were found helpless at least half a day after a military clash could be taken and indentured, children from opposing African village chiefs,

orphaned as a result of combat where taken by the Boers. Indenture system was disguised from slavery, in order not to transgress the legal aspects of the ZAR and confront the quilt question. Even president M.W. Pretorius, who took a strong public stand against slavery, participated occasionally in the illegal trade in African children. For example Soutpansberg commandant J.H Jacobs led a patrol against Rasikhuthuma, son of the Venda chief Ramabulana, in 1855 after Joao Albasini had accused Rasikhuthuma of stock theft. In the attack on Tshitungulu, Rasikhuthuma strongholds subjects were shot and 76 cattle's, 108 sheep's and goats as well as 13 young African were captured and divided amongst the Boers commander. In the same year (November 1855) L.M. Bronkhorst raided Ramabulana where eleven people were killed and five children were taken and divided amongst the burgers. In 1860 J. du Plessies led a commando against chief Mashau, because reportedly he was disobedient, livestock's, women and children were taken as spoils of war. From this point raids were confined almost entirely to African from whom the Boers claimed tribute which is equated with indentured children. In October 1863, Albasini dispatched Va-Tsonga force under Munene against Chief Rambuda, because he refused to pay tribute to the burgers and had closed the hunting trails through his territory. Munene force fails to defeat Rambuda but they managed to kill seventy-seven and abducted a number of women and children's.

On 15 July 1867 Schoemansdal was evacuated following a protracted conflict with the Vha- Venda. For two years the ZAR government tried to subdue the Vha-Venda by diplomatic and military means but abandoned their attempt at the end of 1869, the Boers were forced to assemble in laagers for their own protection, especially during the hunting season when many men were away in quest of ivory. One visitor reported that the number of white population within the soutpansberg region being 1800 between 1855-1856, with 260 families, but archaeological findings show that no more than 100 families, this show that the number decreases due to African resistance and conflict. Some of the African Chief such as Madzie, a Venda chief whose capital was situated in the mountains above Schoemansdal, he was reported to have been a regular supplier of labour to the white community. After the death of the Venda chief, Ramabulana, whites were involved in the succession dispute between his sons, Makhado and Davhana, caused conflict that spread to other part of the Soutpansberg. In August 1865, the Venda chief Magoro, who occupied a strong hold south of the Klein Letaba river, was besieged and attached by Va-tsonga, and the Boers who claimed that Magoro had colluded with Makhado, there by killing Chief Magoro and his subjects (Boeyens 1994).

11. ASSESMENT CRITERIA

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The significance of archaeological and heritage sites were based on the following criteria:

- The unique nature of a site
- The amount/depth of the archaeological deposit and the range of features (stone walls, activity areas etc.)
- The wider historic, archaeological and geographic context of the site.
- The preservation condition and integrity of the site
- The potential to answer present research questions.

11.1. Archaeological

No archaeological materials were found in the study area.

11.2. Historical

No historical sites/materials found on site.

11.3. Burial grounds and graves

No graves were identified on site

The legislation also protects the interests of communities that have an interest in the graves: they should be consulted before any disturbance takes place. The graves of victims of conflict and those associated with the liberation struggle are to be identified, cared for, protected and memorials erected in their honor.

Graves older than 60 years, but younger than 100 years, fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissue Act (Act 65 of 1983) and are under the jurisdiction of the South African Heritage Resources Agency (SAHRA).The procedure for Consultation regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorization as set out for graves younger than 60 years, over and above SAHRA authorization.

In terms of the Section 36 (3) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) no person may, without a permit issued by the relevant heritage resources authority:

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
(b) destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment, which assists in the detection or recovery of metals.

Therefore, in addition to the formal protection of culturally significance graves, all graves which are older than 60 years and which are not already located in a cemetery (such as ancestral graves in rural areas), are protected. Communities, which have an interest in the graves, must be consulted before any disturbance can take place. The graves of victims of conflict and those associated with the liberation struggle will have to be included, cared for, protected and memorials erected in their honor where practical. Regarding graves and burial grounds, the NHRA distinguishes between the following:

- Ancestral graves
- Royal graves and graves of traditional leaders
- Graves of victims of conflict
- Graves of individuals designated by the Minister by notice in the Gazette
- Historical graves and cemeteries
- Other human remains, which are not covered in terms of the Human Tissue Act, 1983 (Act No.65 of 1983).

11.4. Significance valuation Burial Ground, Historic Cemeteries and Graves

The significance of burial grounds and gravesites is closely tied to their age and historical, cultural and social context. Nonetheless, every burial should be considered as of high significance. Should any grave previously unknown be identified during construction, every effort should be made not to disturb them.

11.5. Previously unidentified burial sites/graves –

Although the possibilities of this occurring are very limited, should burial sites outside the NHRA be accidentally found during the proposed development, they must be reported to the nearest police station to ascertain whether or not a crime has been committed. If there is no evidence for a crime having been committed, and if the person cannot be identified

so that their relatives can be contacted, the remains may be kept in an institution where certain conditions are fulfilled. These conditions are laid down in the Human Tissue Act (Act No. 65 of 1983). In contexts where the local traditional authorities give their consent to the unknown remains to be re-buried in their area, such re-interment may be conducted under the same regulations as would apply for known human remains.

12. THE SIGNIFICANCE OF GRAVES AND BURIAL SITES

The significance of burial grounds or graves has been indicated by means of stipulations derived from the National Heritage Resources Act (Act No 25 of 1999)

Heritage Significance	:	GP.A; High/Medium Significance
Impact	:	Negative
Impact Significance	:	High
Certainty	:	Probable
Duration	:	Permanent
Mitigation	:	C

- *Informal graves and Formal grave yards (Cemeteries)*

Informal and formal grave yards (Cemeteries) can be considered to be sensitive remains of high significance and are protected by various laws. Legislation with regard to graves includes the National Heritage Resources Act (no 25 of 1999) this act applies whenever graves are older than sixty years. The act also distinguishes various categories of graves and burial grounds. Other legislation with regards to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on exhumation (Ordinance no 12 of 1980) and the Human Tissue Act (Act no 65 of 1983 as amended).

12.1 Site significance

The site significance classification standards as prescribed and endorsed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used as guidelines in determining the site significance for the purpose of this report.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	Grade 4A	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	Grade 4B	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	Grade 4C	Low Significance	Destruction

Grading and rating systems of heritage resources

12.2. Impact rating

VERY HIGH

These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or cultural) environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects.

Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance.

Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with VERY HIGH significance.

HIGH

These impacts will usually result in long term effects on the social and /or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.

Example: The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.

Example: The change to soil conditions will impact the natural system, and the impact on affected parties (e.g. farmers) would be HIGH.

MODERATE

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by the public or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are real, but not substantial.

Example: The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.

Example: The provision of a clinic in a rural area would result in a benefit of MODERATE significance.

LOW

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

Example: The temporary changes in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.

Example: The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people living some distance away.

NO SIGNIFICANCE

There are no primary or secondary effects at all that are important to scientists or the public.

Example: A change to the geology of a certain formation may be regarded as severe from a geological perspective, but is of NO SIGNIFICANCE in the overall context.

12.3 CERTAINTY

DEFINITE : More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.

PROBABLE : Over 70% sure of a particular fact, or of the likelihood of an impact occurring.

POSSIBLE : Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.

UNSURE : Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.

12.4 DURATION

SHORT TERM : 0 – 5 years

MEDIUM : 6 – 20 years

LONG TERM : more than 20 years

DEMOLISHED : site will be demolished or is already demolished

12.5 MITIGATION

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be classified as follows:

- **A** – No further action necessary
- **B** – Mapping of the site and controlled sampling required
- **C** – Preserve site, or extensive data collection and mapping required; and
- **D** – Preserve site

13. CONCLUSIONS AND RECOMMENDATIONS

No further studies / Mitigations are recommended given the fact that within the proposed Echo Academy (Private School) area and its surrounding there are no archaeological or place of historical significance to be impacted by the proposed project process. However, should any chance archaeological or any other physical cultural resources be discovered subsurface, heritage authorities should be informed. From an archaeological and cultural heritage resources perspective, there are no objections to the proposed construction of Echo Academy (Private School) and associated structures. We recommend to the Provincial Heritage Resource Agency, South African Heritage Resource Agency to approve the project as planned.

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Geotechnical Study

GEOTECHNICAL INVESTIGATION FOR ECHO ACADEMY PRIVATE SCHOOL ON THE REMAINDER OF THE FARM MOLENJE 204 LT, DOVHENI VILLAGE, LIMPOPO PROVINCE.

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NOVEMBER

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ACRONYMS AND ABBREVIATIONS

AASHTO	: American Association of State Highway and Transportation Officials
ARS	: Acceleration Response Spectra
CBR	: Californian Bearing Ratio
M	: Meter
MDD	: Maximum Dry Density
NHBRC	: The National Home Builders Registration Council
OMC	: Optimum Moisture Content
TP	: Trial Pit
SANAS	: South African National Accreditation System
SACNASP	: South African Council Natural Scientific Professions
USC	: Unified Soil Classification

EXECUTIVE SUMMARY

Mang Geo-Enviro Services was appointed to conduct a Geotechnical Site Investigation for the construction of a school on the remainder of the farm Molenje 204, Dovheni Village, Limpopo Province. The Geographical Positioning System (GPS) coordinates for proposed development are 22° 59' 31.6" S 30° 37' 02.4" E at an average elevation of 1.5 meters above sea level.

Test pits were positioned using a hand held GPS and the profiling of the test pits is shown on Annexure B. Six trial pits namely TP1, TP2, TP3, TP4, TP5 and TP6 were excavated with the aid of a TLB in order to obtain information on the subsurface soil; each pit was marked, photographed and profiled by a field engineering geologist in accordance with the current standard procedures proposed by Brink and Bruin (2002).

The subsurface conditions were assessed in six (6) trial pits excavated across the study area in depths of 0–1.9m. Trial pits were strategically placed across the site in order to adequately evaluate the subsoil conditions. Light brown silty sand was the dominant soil types across the investigation site. No water seepage was encountered at all trial pits.

The soils encountered on the site typically comprise of sand with no visual open-textured structures such as voids and pinholes which indicate collapse potential. Due to the medium dense nature of the soils on site, undisturbed soil samples could not be retrieved for collapse potential testing. From the site observations it is anticipated that the site will exhibit low collapse potential.

The development potential has been broadly classified in terms of a Geotechnical Sub-Area based on field observations/investigation (geological, hydrogeological, and geomorphological), Dynamic Cone penetrator and laboratory soil testing of soil samples. The recommended Foundation types in accordance with SANS 10400H-Modified normal / compaction of in-situ soil below individual footings / deep strip foundations / soil raft.

1. INTRODUCTION

Mang Geo Environmental Consultants was appointed by Ngoti Development Consultants on behalf of Echo Academy (Pty) Ltd to carry out a geotechnical site investigation for Echo Academy Private School. The proposed development will materialize on a site that is approximately **3ha** in size on the remainder of the farm Molenje 204 LT.

2. OBJECTIVES OF THE STUDY

The objectives of the investigation are as follows:

- To establish in broad terms, the nature and relevant engineering properties of the upper soil and rock strata underlying the site.
- Soil chemistry tests including pH determination and Electrical Conductivity tests.
- To present general foundation recommendations for the proposed development.
- To comment on any other geotechnical aspects as these may affect the development.

3. TERMS OF REFERENCE

The study was requested by Ngoti Development Consultants on behalf of Echo Academy (Pty) Ltd. The main objective was to conduct a geotechnical investigation at the site of the proposed development of an Echo Academy Private School (primary level) at Dovheni Village near Malamulele Town, Limpopo Province. The investigation comprised a test pits investigation and the soil/ laboratory tests.

We understand that the proposed development is to comprise of the following:

- Construction of school blocks,
- Administration block, and
- Sports and ablution facilities.

4. INFORMATION SOURCES

The following sources of information were used during the investigation:

- Geological Map
- Google earth image; scale 1: 250 000 (Digital/internet)
- Topographical Map.

5. SITE DESCRIPTION

5.1. Location

The proposed development site is located approximately 9.6 km from Malamulele town and 3.1 km from Mavambe Village. The site is can be accessed from R81 road from Giyani to Malamulele through an unnamed road in Dovheni Village. The grid co-ordinate of the proposed development site is 22° 59' 31.6" S and 30° 37' 02.4" E.

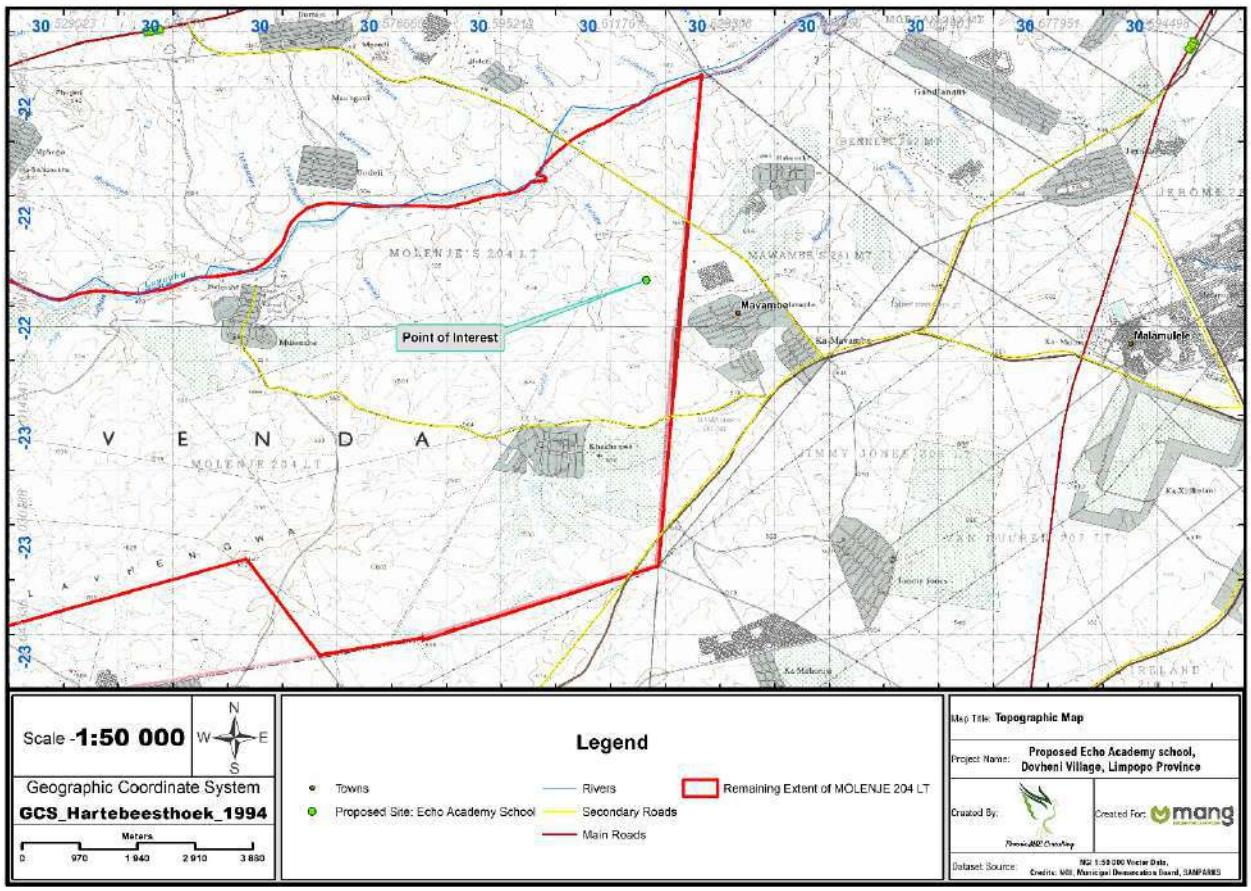

Figure 1: Locality map of the proposed development site

5.2. Topography

The Vhembe District Municipality is characterized by both high-lying and low-lying areas. Its relief is divided into the lowveld in the east; the Limpopo valley in the north and northwest; the Soutpansberg region in the central part, and the Pietersburg plateau in the south. The altitude above sea level of the Vhembe District varies between 200m in the northeastern part of the area and over 1 500 m in the Soutpansberg mountain range.

5.3. Drainage

There are no major rivers, streams or major erosion channels that traverse the area and erosion is via sheetwash in bare ground surface areas.

5.4. Climate

Malamulele normally receives about 691mm of rain per year, with most rainfall occurring mainly during mid-summer. The chart below (lower left) shows the average rainfall values for Malamulele per month. It receives the lowest rainfall (3mm) in July and the highest (139mm) in January.

The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Malamulele range from 23.2°C in June to 30.5°C in January. The region is the coldest during July when the mercury drops to 7.8°C on average during the night. Consult the chart below (lower right) for an indication of the monthly variation of average minimum daily temperatures (www.saexplorer.ac.za)

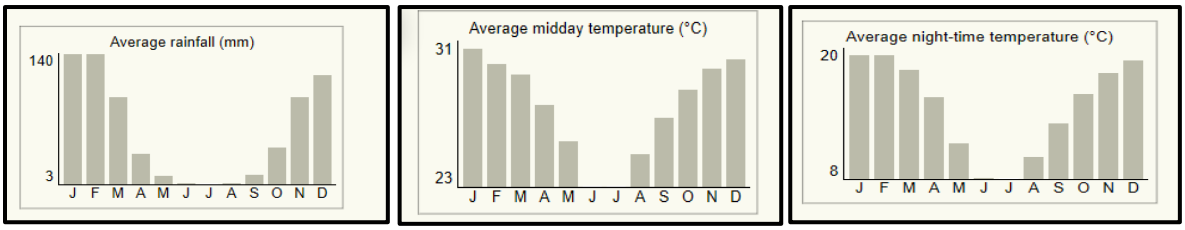

Figure 2: Climatic figures of Dovheni.

5.5. Vegetation

The Malamulele Town is characterized by the Savanna biome and covers approximately 98% of the Vhembe District Municipality with the remainder being made up of Forest (1%) and Grassland (0.2%) biomes (CNdV Africa, 2015).

6. STUDY METHODOLOGY

The fieldwork was undertaken on the 14th November 2019 and comprised of the following:

- Desktop study
- Walk over survey and field mapping
- Test Pits
- Dynamic Cone Penetromer (DCP) Tests and
- Soil Sampling/ Laboratory Tests

6.1. Desktop Study

The investigation commenced with the conducting of the following actions:

- The compilation of base map showing geological setting of the area.
- The study of geological investigation reports conducted within the vicinity of the site.

6.2. Field Mapping

On the 14th November 2019, a walk-over survey was carried out on the proposed site to obtain as much information as possible of the subsurface conditions from existing soil. No rock outcrops were identified during this investigation.

6.3. Excavation of Test Pits

The investigation entailed the assessment and sampling of the subsurface materials. The excavation of test pits was done on the 14th November 2019 and they were placed on open grid spacing throughout the site in such a way as to accurately describe the general soil conditions occurring within the boundaries and the footprint of the proposed development. The test pits were set out in the field using a hand held Garmin GPS and their location coordinates are indicated on the soil profiles attached in Appendix B of this report

The trial pits were excavated to an average depth of 1.48m, to the depth of refusal of the TLB. Each trial pit was profiled and photographed by field engineering Geologist in accordance with the current standard procedures proposed by Brink and Bruin (2002). A representative soil sample were taken from various soil layers of the trial pit and submitted to an accredited laboratory for foundation indicator tests, CBR test and pH, conductivity.

7. DYNAMIC CONE PENETROMETER (DCP) TESTS

Dynamic Cone Penetrator tests were conducted to obtain an indication of the densities and bearing capacity values for the subsoil. Six DCP tests, designated DCP1, DCP2, DCP3, DCP4, DCP5 and DCP6 were conducted on site to assess the in-situ materials consistencies. Measurements were taken at depths varying from surface to refusal. The underlying material indicated a low penetration rate because of the gravelly sandy silt soils on site. The COLTO characterization of the sub-surface soil was classified as G5. DCP results deeper than 1.5m cannot be relied on due to increased frictional resistance of the testing rods hence the tests were limited to 1.0m.

Table 1: Summary of the DCP Test results

Blows	5	10	15	20	25	30	35	40	45	50	55
TP	Penetration Depth (cm)										
TP1	1	1	3	6		3	6	1	1	1	0
TP2	0	1	2	3	1	2	1	2	1	0	0

TP3	0	2	1	2	3	1	1	2	0	0	0
TP4	1	1	1	2	2	2	1	2	1	0	0
TP5	1	1	1	1	2	2	1	2	0	0	0
TP6	2	1	3	2	1	3	2	1	2	1	1

The above-mentioned tests aid in assessing the behavior of soils due to moisture changes particularly below foundations for the proposed development.

8. GEOLOGY OF THE AREA

8.1. Regional Geology

Geologically, the study area covers part of the junction between the granite-greenstone terrain of the north-eastern part of the Kaapvaal Craton and the highly metamorphic rocks of the Southern Marginal zone of the Limpopo Mobile Belt. Some authors (i.e. Roering et al. 1992) have suggested that the Limpopo Mobile Belt in the northern part of South Africa is the world's earliest example of a Himalayan-type continent-continent collisional orogeny between two large 65 cratons (Kaapvaal- and Zimbabwe Cratons). However, according to Kramers et al., (2006) no consensus regarding the geological process, setting or timing of the Limpopo Mobile Belt have been reached.

The resulting Limpopo Mobile Belt consists of three main crustal zones, namely the Northern Marginal Zone, the Central Zone and the Southern Marginal Zone, which lie parallel to one another in an ENE direction. The geology of the study area is dominated by two lithostratigraphic units in the crystalline complex, namely the Goudplaats-Hout River Gneiss and Groot-Letaba Gneiss. These Palaeoarcheaen (3,600-3,200 million years) gneissic bodies range from homogenous to strongly layered, leucocratic felsic to mafic minerals. The previous subdivision of the strongly migmatised Hout River Gneiss and less well-migmatised Goudplaats Gneiss is no longer regarded as tenable. However, granitoid gneisses occurring between the Murchison (Gavelotte Group) and the Pietersburg-Giyani greenstone belts have been grouped together under the term Groot-Letaba Gneiss (Brandl and Kröner, 1993).

8.2. Site Geology

The geology and soils are Soutpansberg Group of sandstones with lessor amounts of conglomerate, shale and basalt is mostly exposed in this area. Some Karoo Supergroup rocks are also present. Most of the area has deep sands to shallow sandy lithosols. A few limited areas with heavier soil, particularly in the B-horizon, occur near the western boundary of the Kruger National Park.

The Soutpansberg Group occupies a graben within the Limpopo belt situated on the northern rime of the Kaapvaal craton. The Soutpansberg geological system has an approximate age of 1,7 giga-years. The mountain was created by successive ESE–WSW faulting, ranging over a distance of 560 km. This faulting caused the strata to dip to the north, and rise in the south, thus forming the main cliff lines which are south-facing with the northern side dipping at an incline of approximately 45° (Western Soutpansberg).

The main rock formations of the mountain comprise of sandstone, quartz sandstone and quartzite, with a couple of igneous intrusions consisting mainly of basalt and dolerite. The main soils of the area are derived from weathered sandstone and quartzite, giving rise to sandy soils as shown in figure2 below.

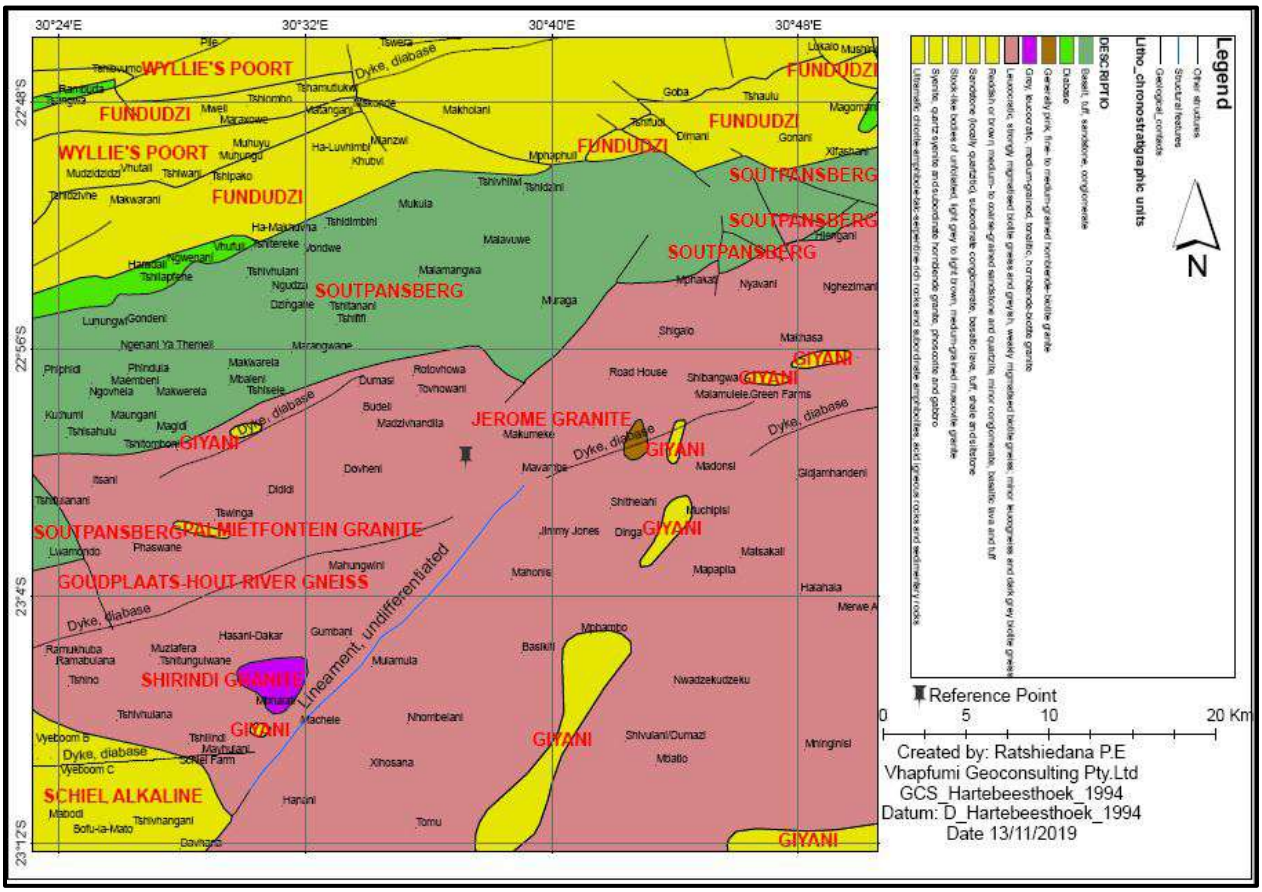

Figure 3: Geological setting of the site

9. SOIL PROFILE

Top Soils

The top soil is characterized by slightly moist to dry brownish, medium dense, silty sand with the presence of organic matter (roots). The thickness of this layer ranges from 0-0.4m

Reworked Residual soils

These are the soils that comprise the soil mattress that has been constructed across the entire site accumulated through the action of gravity. They are slightly moist, light brownish, medium dense to dense, coarse sand with some minor pebbles. The thickness of this layer ranges from 0.8m to 1.5m.

Granite Bedrock

The granite bedrock encountered on the site comprises of brown-yellowish colour and it was highly weathered.

Table 2: Summary of the trial pits profile

Test pits	Thickness of the layers			Water Seepage	End of hole	
	Top soils	Reworked Residual Soils	Bedrock		Depth (m)	Material
	Silty Sand	Silty / coarse sand	Weathered granite			
TP 01	0-0.3m	0.3m-0.8m	0.8-1.2m	None	1.2	Weathered granite
TP 02	0-0.5m	0.5-1.7m	1.7-1.9m	None	1.9	Weathered granite
TP 03	0-0.5m	0.5-1.3m	1.3-1.6m	None	1.6m	Highly weathered granite
TP 04	0-0.4m	0.4-1.15	1.15-1.3m	None	1.3m	Weathered granite
TP 05	0-0.48m	0.48-1.1m	1.1-1.5m	None	1.5	Weathered granite bedrock
TP 06	0-0.45m	0.45-1.0m	1.0-1.4m	None	1.4	Weathered granite

10. LABORATORY TESTING

Representative disturbed subsoil samples retrieved from the inspection pits during the investigation were taken to a commercial laboratory for testing. These tests aid in assessing the behavior of soils due to moisture changes particularly below foundations.

The following tests were conducted on soil samples taken during the field work phase by a suitable SANAS accredited soils laboratory (Civilab, Pretoria: Gauteng Province):

Standard foundation indicator tests were conducted on disturbed soil samples in order to determine its composition, to evaluate the heave and compressibility potential of these soils, and to calculate the maximum heave and/or differential settlement that can be expected. The following tests were conducted:

- Soil Strength and Bearing Capacity
- CBR
- PH
- Conductivity

Top soils–Topsoil layer was observed on TP3. The disturbed sample was taken from this layer. The layer was 0.5 m thick and it was dominated by sandy silt material. The sample exhibit low potential expansiveness.

Reworked Residual – Three bulk samples (TP2, TP3 and TP4) were collected from the yellowish sand layers. Due to the sandy nature of the material onsite, undisturbed soil samples could not be retrieved for collapse potential testing. The samples were found to be semi to non-plastic. The PI along with the clay content indicated that the samples exhibit low potential expansiveness. The samples indicated a grading modulus of 1.24 for TP2, 1.81 for TP3 and 1.79 for TP4. Based on the grading modulus, Atterberg limits and CBR the sample were classified as G5 material according to COLTO classification.

Highly weathered Granite – sample (TP4) was taken from the bottom highly weathered granite layer. The layer was classified as G5 according to COLTO.

Road Indicators and CBR – one bulk samples (TP01) were collected and submitted for CBR and Road Indicator testing. Homogeneity of material underlying the site was observed hence a choice of one bulk representative sample and the sample indicated a CBR of 45 at 95% MOD AASHTO with a grading modulus of 1.8 for TP1.

PH and Conductivity _ PH measurements conducted indicated that the pH of the area is 5.4 (acidic). This pH indicates more of acidic to neutral. Conductivity measurements indicated that the conductivity of the area is 0.006 Ms/m. The area can be safely classified as Non-corrosive (NC).

NB: LABORATORY RESULTS ARE ATTACHED AS ANNEXURE C

11. GENERALIZED ENGINEERING GEOLOGICAL PARAMETERS

11.1. Excavatability

During the excavation of the test pits from depths of between 0.3 m to 1.9 m were encountered to be medium to dense. No outcrops of weathered granite bedrock were encountered during this investigation on site.

11.2. Sidewall Stability

No inherent slope stability issues were identified during the field investigation. Slope stability issues are unlikely to be a problem on this site.

11.3. Instability of areas of soluble rock

Instability of areas of soluble rock such as limestone or dolomite, were not found at the site and no instability associated with this rock type is expected

11.4. Groundwater Seepage

Natural ground water seepage was not encountered in any of the test pits and there is no indication of temporary perched water tables in the soil profile, not even at the contact between soil and bedrock. It is therefore expected that if temporary perched water was to occur at all at the sites that this would occur at bedrock level and only after unusually prolonged and substantial rain. Groundwater seepage is not expected to be problematic at shallow depths on this site.

12. GEOTECHNICAL CONSTRAINTS

The impact of the geotechnical constraints on housing development may be evaluated according to the table below, which is a summary of the general geotechnical constraints relevant to developments (Partridge, Wood and Brink, 1993). The Class column indicates the severity of the specific constraints for this site.

Table 3: Geotechnical Classification: Urban Development

	CONSTRAINT	SITE CONDITION	CLASS
A	Collapsible soil	Collapsible grain structure moderate	1
B	Seepage	Perched water table more than 1,5 m below surface	1
C	Active soil	Low soil heave anticipated	1
D	High compressibility soil	Low to moderate soil compressibility expected	1-2
E	Erodability of soil	Low	1
F	Difficulty of excavation to 1.5 m	Easy to excavate	1
G	Undermined ground	No known undermined areas	1
H	Instability in areas of soluble rock	No soluble rock encountered	1
I	Steep slopes	Slightly steep slopes	1-2
J	Areas of unstable natural slopes	No unstable slopes	1
K	Areas subject to seismic activity	The area is no zone of known seismic activity	1
L	Areas subject to flooding	There is no stream adjacent to site	1

13. DEVELOPMENT RECOMMENDATIONS

From a geotechnical perspective, the site is considered suitable for the proposed development provided the recommendations given in this report are implemented.

13.1. Excavation Conditions

Excavation conditions across much of the site should categorise as “soft mechanical excavation” to about 1.0m below existing ground level. “Intermediate to hard mechanical excavation” is to be expected with depth on weathered granite bedrock. This is a good indication for the behavior of the materials; excavated ground must retain its stature vertically without unsupported.

13.2. Geotechnical Site Classification

The evaluation of the foundation soils and subsequent classification of the site into foundation classes has been carried along the guidelines as proposed by Watermayer and Tromp (1992) and the Structural Division of the SAICE

as prescribed by the NHBRC. Based on the NHBRC guidelines the subsoil encountered on the site has been classified as C- H2/S1.

13.3. Foundation Recommendations

The residual soils are not expansive, therefore will not cause any problems with relation to the proposed development.

Table 4: Residential Site Class Designation

TYPICAL FOUNDING MATERIAL	CHARACTER OF FOUNDING MATERIAL	EXPECTED RANGE OF TOTAL SOIL MOVEMENTS (mm)	ASSUMED DIFFERENTIAL MOVEMENT (%OF TOTAL)	SITE CLASS
Rock (excluding mud rocks which may exhibit swelling to some depth)	STABLE	NEGLIGIBLE	-	R
Fine grained soils with moderate to very high plasticity (clays, silty clays, clayey silts and sandy clays)	EXPANSIVE SOILS	<7,5 7,5-15 15-30 >30	50% 50% 50% 50%	H H1 H2 H3
Silty sands, sands, sandy and gravelly soils	COMPRESSIBLE AND POTENTIALLY COLLAPSIBLE SOILS	<5,0 5,0-10 >10	75% 75% 75%	C C1 C2
Fine grained soils (clayey silts and clayey sands of low plasticity), sands, sandy and gravelly soils	COMPRESSIBLE SOIL	<10 10-20 >20	50% 50% 50%	S S1 S2
Contaminated soils, Controlled fill, Dolomitic areas, Landslip Land fill, Marshy areas Mine waste fill Mining subsidence Reclaimed areas Very soft silt/silty clays Uncontrolled fill	VARIABLE	VARIABLE		P

13.4. Raft Foundation

Excavate the in-situ material down to 1.2m

- Bottom of excavation to be approved by a Geotechnical Engineer

- Import more competent material (G5/G7) and compact into layers of not more than 750 mm thickness,
- The foundation bed is then compacted by ramming

The foundation may stiffen by ribs or beams built in during construction which will add extra strength and rigidity

13.5. Stiffened Raft

Should a stiffened raft foundation solution be envisaged this should comprise a grid of reinforced concrete beams cast integrally with the floor slab. Because of its stiffness, the raft may reduce differential movements of the supporting soil to a level that can be tolerated by the superstructure. The raft can be constructed on a graded terrace to facilitate drainage. The excavations for the beams can then be made into the terrace. An approved damp-proof plastic sheet should be provided below the entire raft, and the slab and beams should be cast as a single unit. Flexible couplings should be used where possible for wet services.

Should a stiffened concrete raft foundation be adopted at the site it is recommended that the raft design be undertaken by a Structural Engineer to formulate a practical approach.

13.6. Pile Foundation

A piled solution will place the foundations in stable soils and the ground beams and floor slab must be raised above the range of ground surface movements. The piles should be designed by a Geotechnical Engineer and the ground beams and floor slab by a Structural Engineer.

A concrete apron of 1.0 m should be constructed around all structures and downpipes should be directed away from foundations and the stormwater collected to the municipal stormwater system if it exists, otherwise to a natural drainage line, away from the structures.

It is recommended that a competent geotechnical engineer or engineering geologist inspect all foundation excavations to confirm depths of founding and bearing pressures for all structures.

14. CONCLUSIONS

Taking all factors into account, it is considered that conditions prevailing at the site are generally adequate for the proposed development. This report sets out the results of a Geotechnical Investigation carried out for the proposed development on the remainder of the farm Molenje 204 LT, Limpopo Province. The site is considered suitable for the proposed development from a geotechnical perspective provided the recommendations given in this report are adhered to. All rainwater should be channeled away from the structures (Adequate drainage should be implemented). Earthworks and opening of foundations excavations should be carried out by a competent person.

15. REFERENCES

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2. SA Explorer weather services
3. Johnson, M.R., Anhausser, C.R., Thomas, R.J. (1996). The Geology of South Africa. The Geological Society of South Africa and the Council for Geoscience.
4. TRH 14, Guidelines for Road Construction Materials, Pretoria 1985.
5. Jennings, J.E., Brink, A.B.A. and Williams, A.A.B. (1973). Revised Guide to Soil Profiling for Civil Engineering Purposes in Southern Africa. Transactions of the South African Institution of Civil Engineers, Vol. 15.
6. ICONS (Institute of Conservation and Natural History of the Soutpansberg)

APPENDICES

APPENDIX A: GEOLOGICAL MAP OF THE AREA

30°24'E
30°32'E
30°40'E
30°48'E
22°48'S
22°56'S
23°4'S
23°12'S
WYLLIE'S POORT
FUNDUDZI
SOUTPANSBERG
GIYANI
JEROME GRANITE
PALMIETFONTEIN GRANITE
GOUDPLAATS-HOUT RIVER GNEISS
SHIRINDI GRANITE
SCHIEL ALKALINE
Dyke, diabase
Lineament, undifferentiated
Pile
Tswera
Lukalo
Mushiru
Tshibvumo
Rambuda
Tsangwa
Tshamutiukwi
Goba
Tshaulu
Magomani
Mweli
Tshiombo
Matangani
Makonde
Makholani
Maraxowe
Tshifudi
Dimani
Gonani
Xifashani
Muhuyu
Muhungu
Ha-Luvhimbi
Mianzwi
Khubvi
Mphaphuli
Mudzidzidzi
Vhutali
Tshiwani
Tshipako
Tshivhilwi
Tshidzini
Tshidzivhe
Makwarani
Mukula
Ha-Makhuvha
Tshidimbini
Hlengani
Vhufuli
Tshitereke
Vondwe
Malavuwe
Ngwenani
Haradali
Tshilapfene
Tshivhulani
Malamangwa
Mphakati
Nyavani
Nghezimani
Ngudza
Dzingahe
Tshitanani
Tshififi
Muraga
Lunungwi
Gondeni
Shigalo
Makhasa
Ngenani Ya Themeli
Marangwane
Phiphidi
Phindula
Maembeni
Makwarela
Mbaleni
Rotovhowa
Dumasi
Road House
Shibangwa
Ngovhela
Makwerela
Tshisele
Tovhowani
Malamulele
Green Farms
Kuthumi
Maungani
Budeli
Tshisahulu
Magidi
Madzivhandila
Makumeke
Tshitomboni
Mavambo
Madonsi
Gidjamhandeni
Itsani
Dovheni
Dididi
Tshifulanani
Shithelani
Muchipisi
Tswinga
Jimmy Jones
Dinga
Lwamondo
Phaswane
Matsakali
Mahungwini
Mahonisi
Mapapila
Halahala
Merwe A
Hasani-Dakar
Gumbani
Mphambo
Ramukhuba
Muziafera
Basikiti
Ramabulana
Tshitungulwane
Mulamula
Tshino
Nwadzekudzeku
Mbhalati
Tshivhulana
Machele
Nhombelani
Vyeboom B
Tshilindi
Shivulani/Dumazi
Mavhulani
Mninginisi
Schiel Farm
Mbatlo
Vyeboom C
Xihosana
Hanani
Mabodi
Tshivhangani
Tomu
Bofu-la-Mato
Davhana
Legend
Other structures
Structural features
Geological_contacts
Litho_chronostratigraphic units
DESCRIPTIO
Basalt, tuff, sandstone, conglomerate
Diabase
Generally pink, fine- to medium-grained hornblende-biotite granite
Grey, leucocratic, medium-grained, tonalitic, hornblende-biotite granite
Leucocratic, strongly migmatised biotite gneiss and greyish, weakly migmatised biotite gneiss; minor
Reddish or brown, medium- to coarse-grained sandstone and quartzite, minor conglomerate, basalti
Sandstone (locally quartzitic), subordinate conglomerate, basaltic lava, tuff, shale and siltstone
Stock-like bodies of unfoliated, light grey to light brown, medium-grained muscovite granite
Syenite, quartz syenite and subordinate hornblende granite, phoscorite and gabbro
Ultramafic chlorite-amphibole-talc-serpentine-rich rocks and subordinate amphibolites, acid igneous rocks and sedimentary rocks
N
Reference Point
0
5
10
20 Km
Created by: Ratshiedana P.E
Vhapfumi Geoconsulting Pty.Ltd
GCS_Hartebeesthoek_1994
Datum: D_Hartebeesthoek_1994
Date 13/11/2019

APPENDIX B: TEST PIT PROFILE & PHOTOS


BELL


BELL



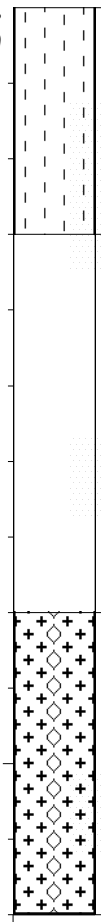

dot PLOT

Echo Academy (Pty) Ltd
Near surface geotechnical investigation

HOLE No: TP 01
Sheet 1 of 1

JOB NUMBER: 000

Scale 1:10



0.00 Slightly moist to dry, brownish, Medium dense, intact, Silty sand with roots. **TOPSOIL.**

0.3 *0.30*

Slightly moist, yellowish with streaked brown, Medium dense to dense, Medium SAND with gravel. **Reworked residual.**

0.8m *0.80*

yellowish highly weathered, medium grained,soft rock. **Granite.**

1.20

NOTES

1) Roots inclusion from a depth of 0 - 0.4m
2) Stable side walls
3) No water seepage encountered
4) Refusal encountered at 1.2 m
5) Disturbed sample taken at 0.3 - 0.8m
6) No Unditurbed sample taken

CONTRACTOR :
MACHINE : Tractor Loader Backhoe (TLB).
DRILLED BY :
PROFILED BY : Magoro Mankaleme
TYPE SET BY : *Magoro Mankaleme*
SETUP FILE : *STANDARD.SET*

INCLINATION :
DIAM : 0.7 m
DATE :
DATE : 14/11/2019
DATE : *20/11/2019 15:36*
TEXT : *..00\Examples\Examples.TXT*

ELEVATION : 519.90m
X-COORD : 30°37’0.19"E
Y-COORD : -22°59’36.73"S

HOLE No: TP 01

IN DEMO MODE!

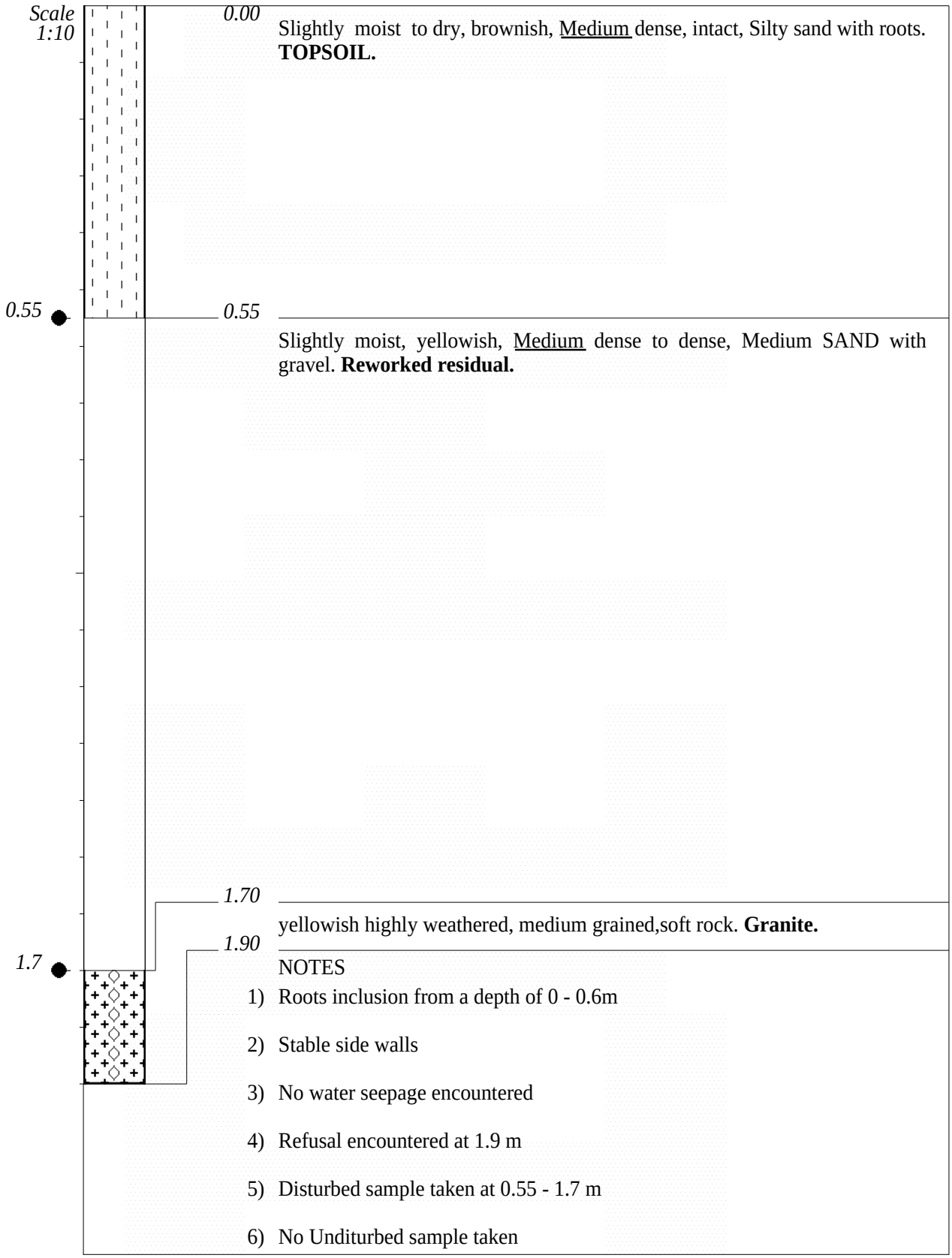
dotPLOT 7022

dot PLOT

Echo Academy (Pty) Ltd
Near surface geotechnical investigation

HOLE No: TP 02
Sheet 1 of 1

JOB NUMBER: 000



0.00 Slightly moist to dry, brownish, Medium dense, intact, Silty sand with roots. **TOPSOIL.**

0.55 Slightly moist, yellowish, Medium dense to dense, Medium SAND with gravel. **Reworked residual.**

1.70 yellowish highly weathered, medium grained,soft rock. **Granite.**

1.90

NOTES

1) Roots inclusion from a depth of 0 - 0.6m
2) Stable side walls
3) No water seepage encountered
4) Refusal encountered at 1.9 m
5) Disturbed sample taken at 0.55 - 1.7 m
6) No Undisturbed sample taken

CONTRACTOR :
MACHINE : Tractor Loader Backhoe (TLB).
DRILLED BY :
PROFILED BY : Magoro Mankaleme
TYPE SET BY : *Magoro Mankaleme*
SETUP FILE : *STANDARD.SET*

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DIAM : 0.7 m
DATE :
DATE : 14/11/2019
DATE : *20/11/2019 15:36*
TEXT : *..00\Examples\Examples.TXT*

ELEVATION : 510.70m
X-COORD : 30°36’58.76"E
Y-COORD : -22°59’34.87"S

HOLE No: TP 02

IN DEMO MODE!

dotPLOT

Echo Academy (Pty) Ltd
Near surface geotechnical investigation

HOLE No: TP 03
Sheet 1 of 1

JOB NUMBER: 000

Scale 1:10

0.00 Slightly moist, brownish, Medium dense, intact, Silty sand with roots. **TOPSOIL.**

0.4-1.15m *0.40* Slightly moist, yellowish with streaked brown, Dense, Medium SAND with gravel. **Reworked residual.**

1.15 yellowish Weathered Granite . **Bedrock.**

1.30

NOTES

1) Roots inclusion from a depth of 0 - 0.4m
2) Stable side walls
3) No water seepage encountered
4) Refusal encountered at 1.3 m
5) Disturbed sample taken at 0- 0.4m and 0.4-1.15m
6) No Unditurbed sample taken

CONTRACTOR :
MACHINE : Tractor Loader Backhoe (TLB).
DRILLED BY :
PROFILED BY : Magoro Mankaleme
TYPE SET BY : *Magoro Mankaleme*
SETUP FILE : *STANDARD.SET*

INCLINATION :
DIAM : 0.7 m
DATE :
DATE : 14/11/2019
DATE : *20/11/2019 15:36*
TEXT : *..00\Examples\Examples.TXT*

ELEVATION : 522.20m
X-COORD : 30°36’58.36"E
Y-COORD : -22°59’33.13"S

HOLE No: TP 03

IN DEMO MODE!

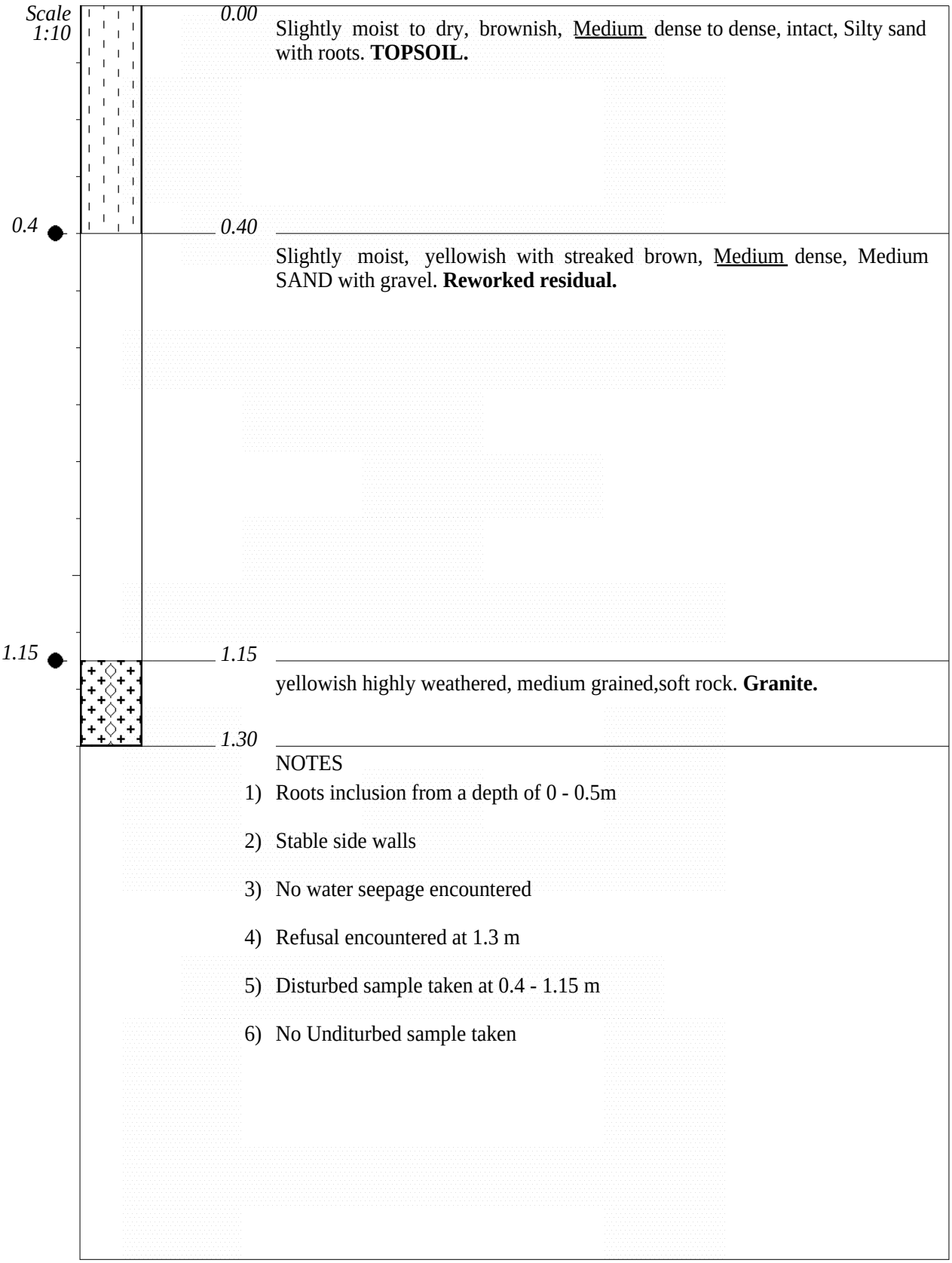
dotPLOT 7022

dot PLOT

Echo Academy (Pty) Ltd
Near surface geotechnical investigation

HOLE No: TP 04
Sheet 1 of 1

JOB NUMBER: 000



NOTES

1) Roots inclusion from a depth of 0 - 0.5m
2) Stable side walls
3) No water seepage encountered
4) Refusal encountered at 1.3 m
5) Disturbed sample taken at 0.4 - 1.15 m
6) No Unditurbed sample taken

CONTRACTOR :
MACHINE : Tractor Loader Backhoe (TLB).
DRILLED BY :
PROFILED BY : Magoro Mankaleme
TYPE SET BY : *Magoro Mankaleme*
SETUP FILE : *STANDARD.SET*

INCLINATION :
DIAM : 0.7 m
DATE :
DATE : 14/11/2019
DATE : *20/11/2019 15:36*
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ELEVATION : 522.20m
X-COORD : 30°36’58.36"E
Y-COORD : -22°59’33.13"S

HOLE No: TP 04

IN DEMO MODE!

dotPLOT 7022

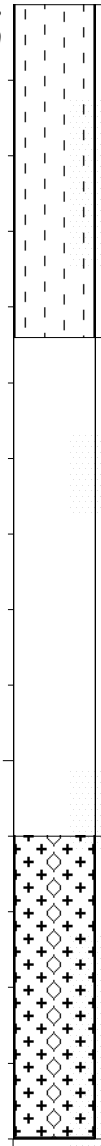
dotPLOT

Echo Academy (Pty) Ltd
Near surface geotechnical investigation

HOLE No: TP 05
Sheet 1 of 1

JOB NUMBER: 000

Scale 1:10



0.00 Slightly moist to dry, brownish, Medium dense, intact, Silty sand with roots. **TOPSOIL.**

0.44 Slightly moist, yellowish with streaked brown, Medium dense to dense, Medium SAND with gravel. **Reworked residual.**

1.10 yellowish highly weathered, medium grained,hard rock. **Granite.**

1.50

NOTES

1) Roots inclusion from a depth of 0 - 0.5m
2) Stable side walls
3) No water seepage encountered
4) Refusal encountered at 1.5 m
5) No Disturbed sample taken
6) No Unditurbed sample taken

CONTRACTOR :
MACHINE : Tractor Loader Backhoe (TLB).
DRILLED BY :
PROFILED BY : Magoro Mankaleme
TYPE SET BY : *Magoro Mankaleme*
SETUP FILE : *STANDARD.SET*

INCLINATION :
DIAM : 0.7 m
DATE :
DATE : 14/11/2019
DATE : *20/11/2019 15:36*
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ELEVATION : 542.70m
X-COORD : 30°36’57.08"E
Y-COORD : -22°59’35.46"S

HOLE No: TP 05

IN DEMO MODE!

dotPLOT 7022

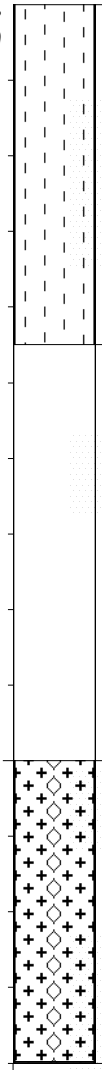
dot PLOT

Echo Academy (Pty) Ltd
Near surface geotechnical investigation

HOLE No: TP 06
Sheet 1 of 1

JOB NUMBER: 000

Scale 1:10



0.00 Slightly moist, brownish, Medium dense, intact, Silty sand with roots. **TOPSOIL.**

0.45 Slightly moist to dry, yellowish, Medium dense to dense, Medium SAND with gravel. **Reworked residual.**

1.00 yellowish highly weathered residual Granite rock . **Bedrock.**

1.40

NOTES

1) Roots inclusion from a depth of 0 - 0.45m
2) Stable side walls
3) No water seepage encountered
4) Refusal encountered at 1.4 m
5) No disturbed sample taken
6) No Unditurbed sample taken

CONTRACTOR :
MACHINE : Tractor Loader Backhoe (TLB).
DRILLED BY :
PROFILED BY : Magoro Mankaleme
TYPE SET BY : *Magoro Mankaleme*
SETUP FILE : *STANDARD.SET*

INCLINATION :
DIAM : 0.7 m
DATE :
DATE : 14/11/2019
DATE : *20/11/2019 15:36*
TEXT : *..00\Examples\Examples.TXT*

ELEVATION : 522.20m
X-COORD : 30°36’58.52"E
Y-COORD : -22°59’37.60"S

HOLE No: TP 06

IN DEMO MODE!

dotPLOT 7022

dotPLOT

Echo Academy (Pty) Ltd
Near surface geotechnical investigation

LEGEND
Sheet 1 of 1

JOB NUMBER: 000

	SILTY	{SA07}
	GRANITE	{SA17}{SA44}
Name ●	DISTURBED SAMPLE	{SA38}

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY :

INCLINATION :
DIAM :
DATE :
DATE :

ELEVATION :
X-COORD :
Y-COORD :

TYPE SET BY : Magoro Mankaleme
SETUP FILE : STANDARD.SET

DATE : 20/11/2019 15:36
TEXT : ..00\Examples\Examples.TXT

LEGEND
SUMMARY OF SYMBOLS

APPENDIX C: LABORATORY TEST RESULTS

144 Edward Street, Hennopspark, Centurion 0157
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Website: www.civilab.co.za

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Civil Engineering Testing Laboratories

Client	:	NGOTI DEVELOPMENT CONSULTANTS (COO)			
Address	:	BLOCK 9, UNIT 2	**Client Reference**	:	
	:	BOARDWALK OFFICE PARK	**Order No.**	:	Mankaleme
	:	6 EROS ROAD			
Attention	:		**Date Received**	:	15/11/2019
Facsimile	:		**Date Tested**	:	15/11/2019 - 02/12/2019
E-mail	:	fnmathebula@gmail.com	**Date Reported**	:	02/12/2019
Project	:	Proposed Development of Echo Academy Private School			
Project No.	:	2019-H-916	**Report Status**	:	Final
			Page	:	1 of 6

Herewith please find the test report(s) pertaining to the above project. All tests were conducted in accordance with prescribed test method(s). Information herein consists of the following:

Test(s) conducted / Item(s) measured	Qty.	Test Method(s)	Authorized By**	Page(s)
Moisture Density Relationship	1.000	SANS 3001 GR30	G Meyer	5
pH of Soil *	1.000	TMH1 A20	G Meyer	2
Conductivity of saturated soil paste *	1.000	TMH1 A21T	G Meyer	2
Atterberg Limits <0.425mm	4.000	SANS 3001 GR10	G Meyer	3-4, 6
Sieve Analysis 0.075mm	4.000	SANS 3001 GR1	G Meyer	3-4, 6
California Bearing Ratio (CBR)	1.000	SANS 3001 GR40	G Meyer	6

Any test results contained in this report and marked with * in the table above are "not SANAS accredited" and are not included in the schedule of accreditation for this laboratory.

Any information contained in this test report pertain only to the areas and/or samples tested. Documents may only be reproduced or published in their full context.

While every care is taken to ensure that all tests are carried out in accordance with recognised standards, neither Civilab (Proprietary) Limited nor its employess shall be liable in any way whatsoever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequences thereof.

All interpretations, Interpolations, Opinions and/or Classifications contained in this report falls outside our scope of accreditation.

The following parameters, where applicable, were excluded from the classification procedure: Chemical modifications, Additional fines, Fractured Faces, Soluble Salts, pH, Conductivity, Coarse Sand Ratio, Durability (COLTO: G4-G9).

The following parameters, where applicable, were assumed: Rock types were assumed to be of an Arenaceous nature with Siliceous cementing material.

Unless otherwise requested or stated, all samples will be discarded after a period of 3 months.

This report is completely confidential between the parties (Civilab and Civilab`s client) and shall not be disclosed to anybody else, unless agreed upon in writing or made publicly available by the client or required to make available by law.

Deviations in Test Methods:

None.

Technical Signatory:	Gerhard Meyer
Signature:	

**All results are authorized electronically by approved managers and/or technical signatories.

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Civil Engineering Testing Laboratories

Client	:	NGOTI DEVELOPMENT CONSULTANTS (COO)	Date Received:	15/11/2019
Project	:	Proposed Development of Echo Academy Private School	Date Reported:	02/12/2019
Project No	:	2019-H-916	Page No. :	2 of 6

AGGREGATE TEST REPORT

Laboratory Number		1
Field Number		TP 1 & TP 4
Client Reference		
Depth (m)		
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	3
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				5.4					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.006					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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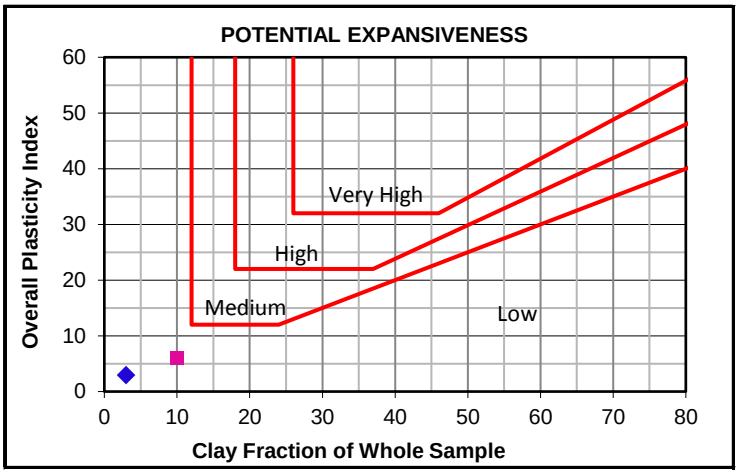
Civil Engineering Testing Laboratories

Client	:	NGOTI DEVELOPMENT CONSULTANTS (COO)	Date Received:	15/11/2019
Project	:	Proposed Development of Echo Academy Private School	Date Reported:	02/12/2019
Project No	:	2019-H-916	Page No. :	3 of 6

FOUNDATION INDICATOR

Laboratory Number		1 ◆	2 ■
Field Number		TP 1 & TP 4	TP 2
Client Reference			
Depth (m)			0.55 - 1.70
Position			
Coordinates	X		
	Y		
Description			
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

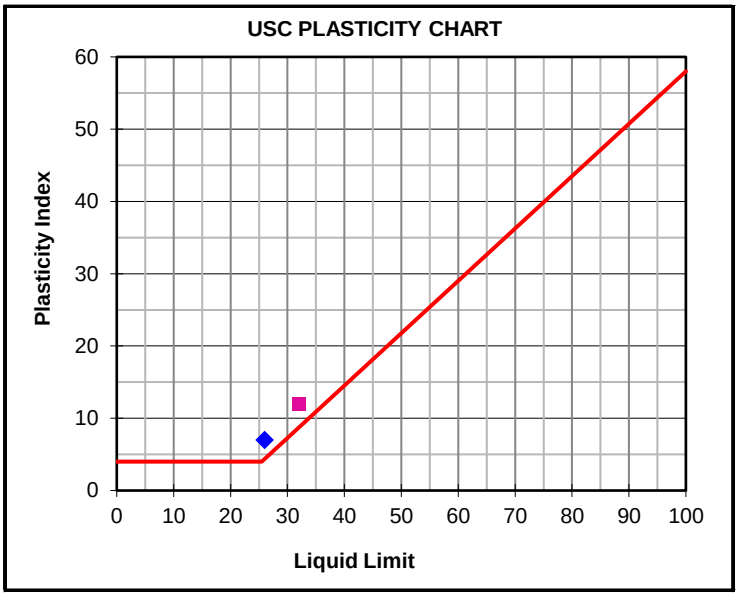


Moisture Content & Relative Density — SANS 3001 GR30

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Prep) — SANS 3001 GR1

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	99	100
	5 mm	89	99
	2 mm	66	87
	1 mm	46	66
	0.425 mm	36	53
	0.250 mm	29	45
	0.150 mm	24	41
	0.075 mm	19	36
Grading Modulus		1.79	1.24



Hydrometer Analysis — SANS 3001 GR3

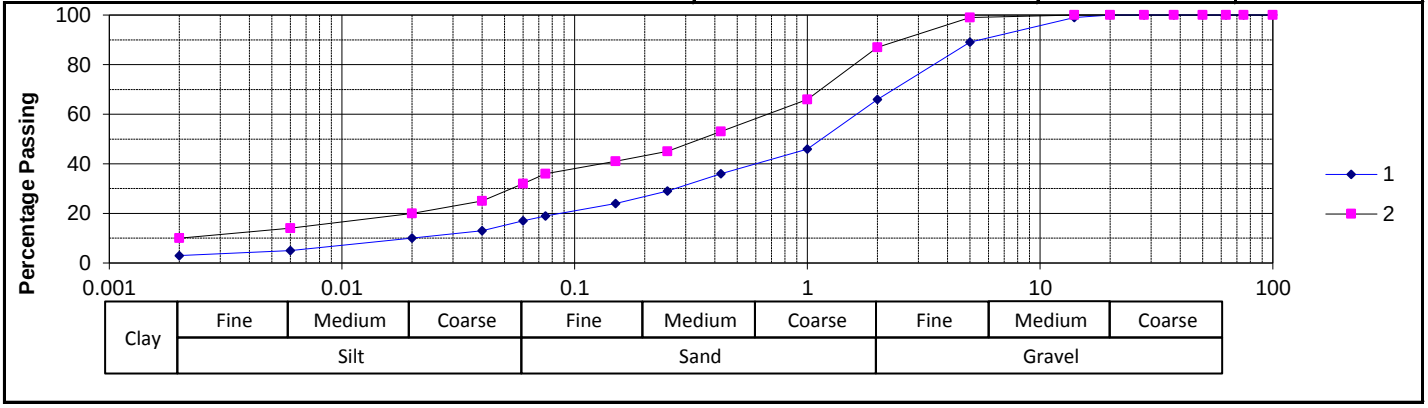
Percentage Passing	0.060 mm	17	32
	0.040 mm	13	25
	0.020 mm	10	20
	0.006 mm	5	14
	0.002 mm	3	10
Gravel	%	34	13
Sand	%	49	55
Silt	%	14	22
Clay	%	3	10

Note: An assumed S.G. may be used in Hydrometer Analysis calculations

Laboratory Number		1 ◆	2 ■
Atterberg Limits -425µ		**SANS 3001 GR10**	
Liquid Limit	%	26	32
Plasticity Index	%	7	12
Linear Shrinkage	%	3.5	7.0
Overall PI	%	3	6

Classifications

HRB (AASHTO)	A-2-4(0)	A-6(1)
Unified (ASTM D2487)	SC-SM	SC
Weston Swell @ 1 kPa		



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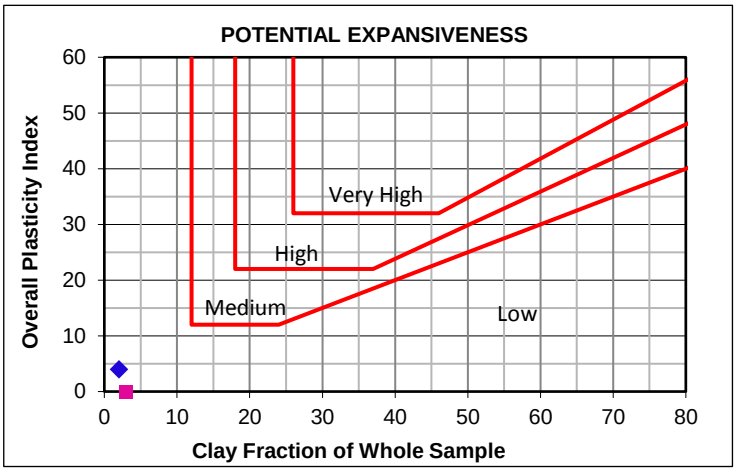
Client	:	NGOTI DEVELOPMENT CONSULTANTS (COO)	Date Received:	15/11/2019
Project	:	Proposed Development of Echo Academy Private School	Date Reported:	02/12/2019
Project No	:	2019-H-916	Page No. :	4 of 6

FOUNDATION INDICATOR

Laboratory Number		3 ◆	4 ■
Field Number		TP 3	TP 3
Client Reference			
Depth (m)		0.00 - 0.50	0.50 - 1.30
Position			
Coordinates	X		
	Y		
Description			
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

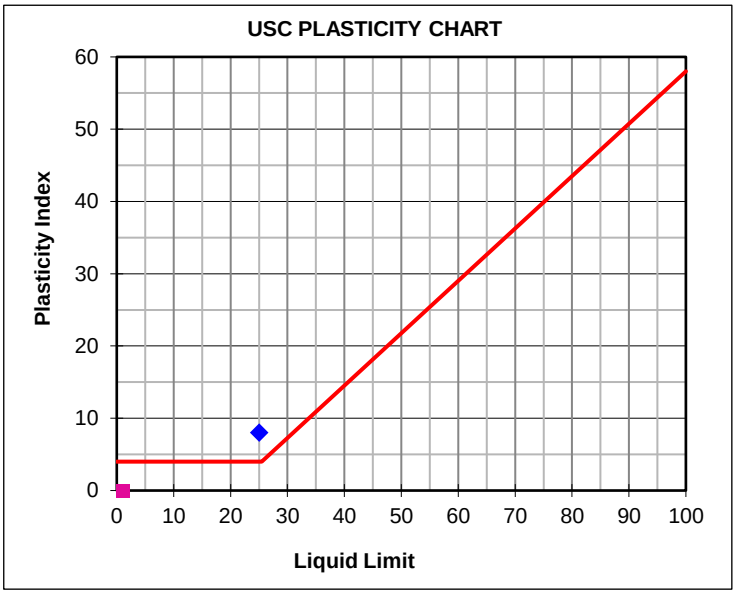


Moisture Content & Relative Density

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Prep) — **SANS 3001 GR1**

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	100	98
	5 mm	90	90
	2 mm	73	64
	1 mm	59	44
	0.425 mm	50	35
	0.250 mm	41	29
	0.150 mm	31	25
	0.075 mm	20	20
Grading Modulus		1.57	1.81



Hydrometer Analysis — **SANS 3001 GR3**

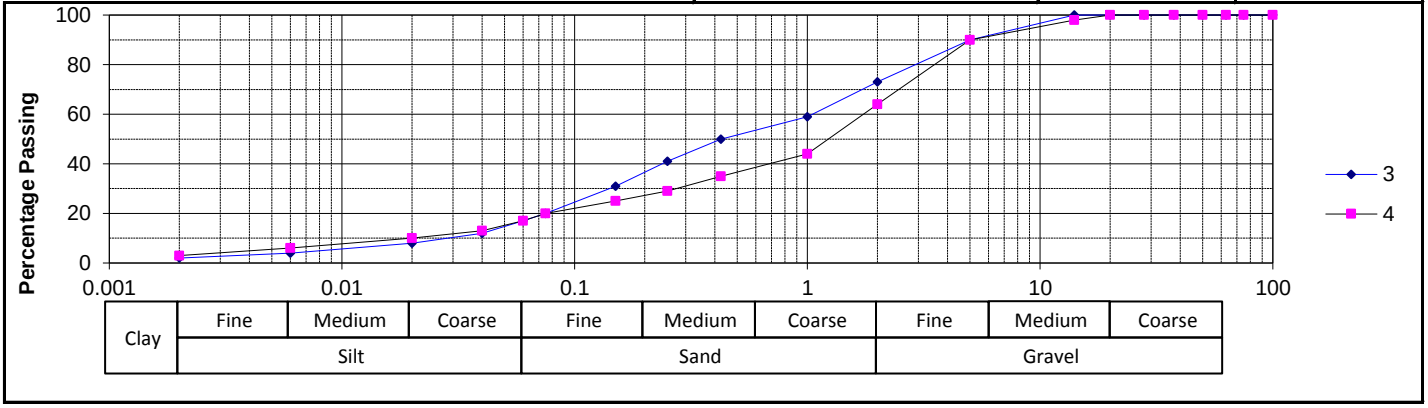
Percentage Passing	0.060 mm	17	17
	0.040 mm	12	13
	0.020 mm	8	10
	0.006 mm	4	6
	0.002 mm	2	3
Gravel	%	27	36
Sand	%	56	47
Silt	%	15	14
Clay	%	2	3

Note: An assumed S.G. may be used in Hydrometer Analysis calculations

Laboratory Number		3 ◆	4 ■
Atterberg Limits -425µ		**SANS 3001 GR10**	
Liquid Limit	%	25	
Plasticity Index	%	8	NP
Linear Shrinkage	%	3.5	
Overall PI	%	4	

Classifications

HRB (AASHTO)	A-2-4(0)	A-1-b(0)
Unified (ASTM D2487)	SC	SM
Weston Swell @ 1 kPa		



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Civil Engineering Testing Laboratories

Client	: NGOTI DEVELOPMENT CONSULTANTS (COO)	Date Received:	15/11/2019
Project	: Proposed Development of Echo Academy Private School	Date Reported:	02/12/2019
Project No:	2019-H-916	Page No. :	5 of 6

MOISTURE DENSITY RELATIONSHIP

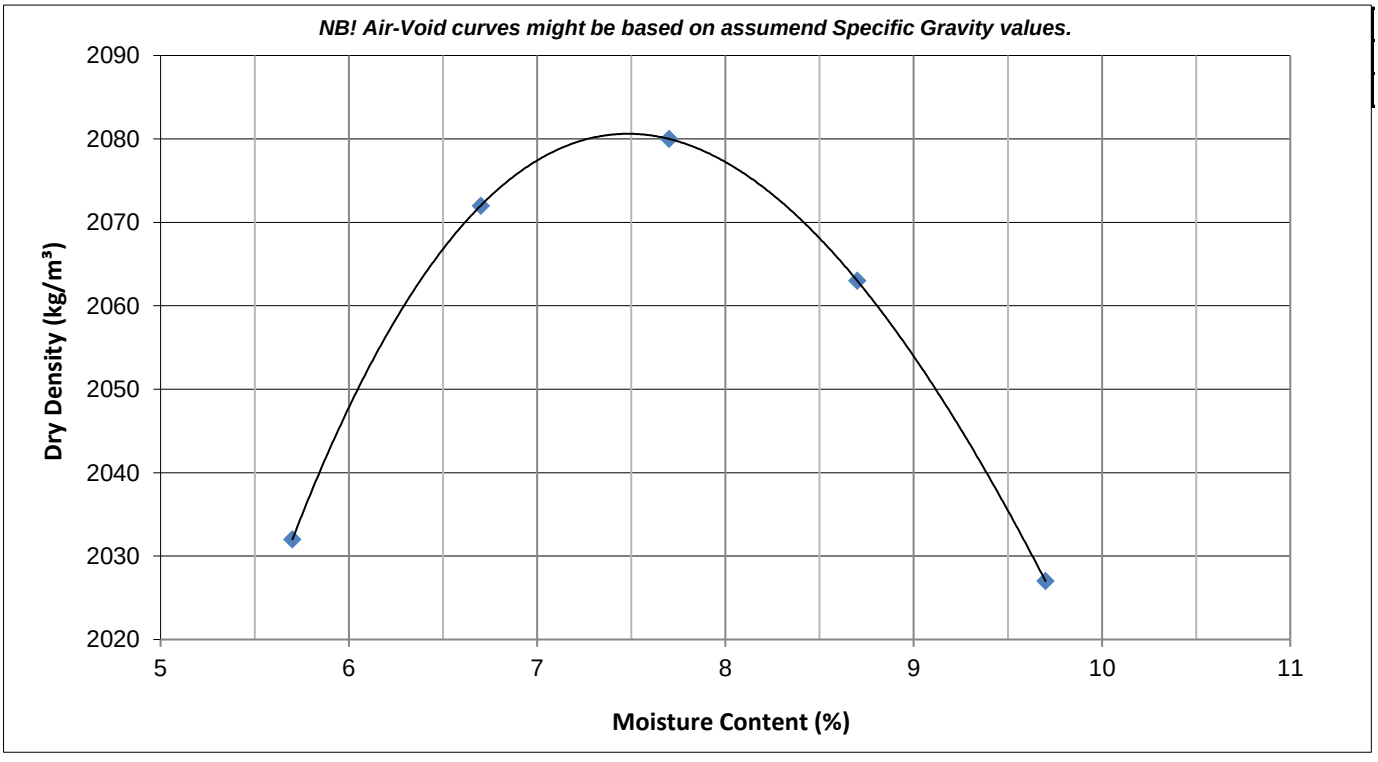
Laboratory Number		1
Field Number		TP 1 & TP 4
Client Reference		
Depth (m)		
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete / Crushed Stabilizing Agent		

Maximum Dry Density & Optimum Moisture Content - SANS 3001 GR30

Compactive Effort:	Modified AASHTO

Dry Density	kg/m³	2032	2072	2080	2063	2027	
Moisture Content	%	5.7	6.7	7.7	8.7	9.7	

Max. Dry Density	kg/m³	2081
Optimum Moisture	%	7.5



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Civil Engineering Testing Laboratories

Client	:	NGOTI DEVELOPMENT CONSULTANTS (COO)	Date Received	:	15/11/2019
Project	:	Proposed Development of Echo Academy Private School	Date Reported	:	02/12/2019
Project No.	:	2019-H-916	Page No.	:	6 of 6

CALIFORNIA BEARING RATIO (CBR) & ROAD INDICATOR REPORT

Laboratory No.		1 ◆	■
Field Number		TP 1 & TP 4	
Client Reference			
Depth (m)			
Position			
Coordinates	X		
	Y		
Description			
Additional information			
Calcrete/Crushed			
Stabilizing Agent			

Sieve Analysis (Wet preparation) — SANS 3001 GR1

Percentage Passing	100 mm	100	
	75 mm	100	
	63 mm	100	
	50 mm	100	
	37.5 mm	100	
	28 mm	100	
	20 mm	100	
	14 mm	99	
	5 mm	89	
	2 mm	66	
	1 mm	46	
	0.425 mm	36	
	0.250 mm	29	
	0.150 mm	24	
	0.075 mm	19	
Grading Modulus		1.8	

Soil Mortar Analysis

Coarse Sand	45	
Coarse Fine Sand	11	
Medium Fine Sand	7	
Fine Fine Sand	8	
Silt and Clay	29	

Atterberg Limits — SANS 3001 GR10

Liquid Limit (%)	26	
Plasticity Index (%)	7	
Linear Shrinkage (%)	3.5	

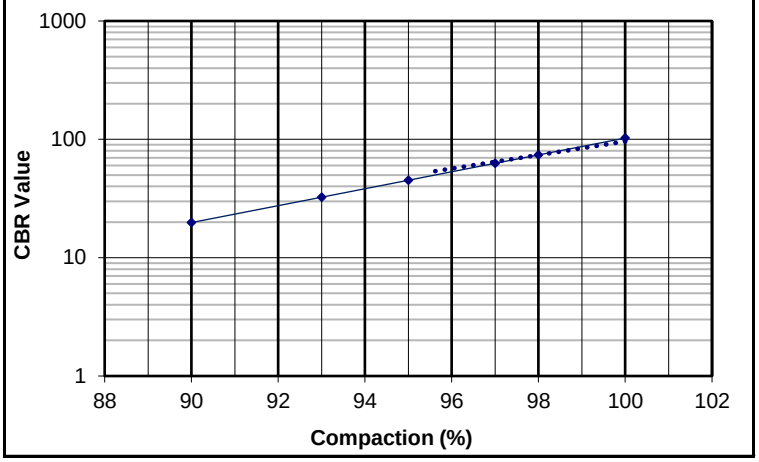
Laboratory No.		1 ◆	■

Maximum Dry Density & Optimum Moisture Content — SANS 3001 GR30

MDD	kg/m^3	2081	
OMC	%	7.5	

California Bearing Ratio — SANS 3001 GR40

Compaction Data							
Moisture	%	7.5					
Dry Density	kg/m^3	2086	1993	1911			
Compaction	%	100.0	95.5	91.6			
Penetration Data							
CBR at	2.50 mm	96	53	26			
	5.00 mm	126	64	29			
	7.50 mm	140	66	29			
Swell	%	0	0	0			
Final Moisture (%)		10.0	10.6	11.9			

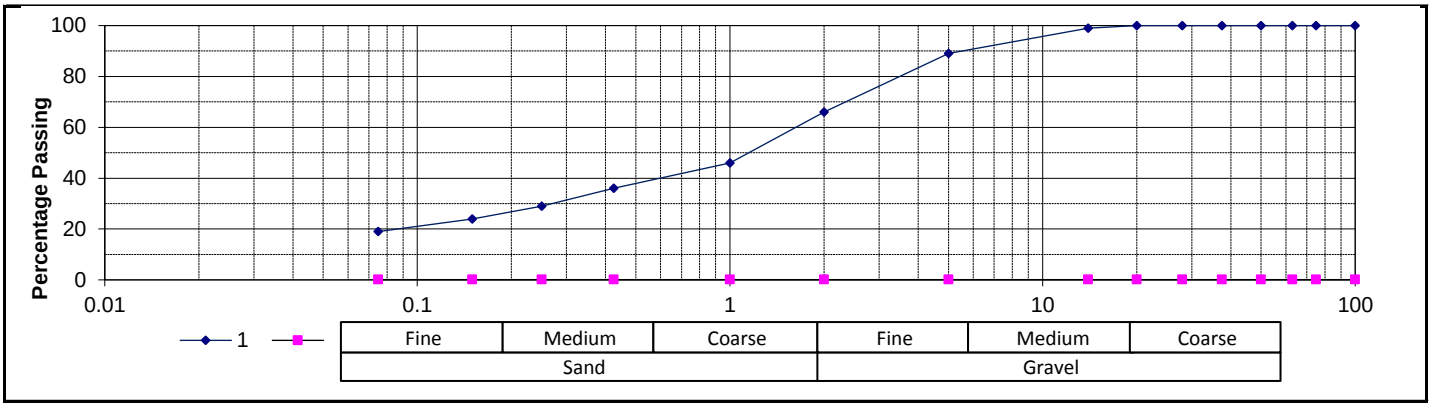


Interpolated CBR Data

CBR	@ 100%	Mod. AASHTO	103	
	@ 98%		74	
	@ 97%		63	
	@ 95%		45	
	@ 93%		32	
	@ 90%		20	
	@ SANS3001 Midpoint		71	

Classifications

HRB (AASHTO)	A-2-4(0)	
COLTO	G5	
TRH14	G5	



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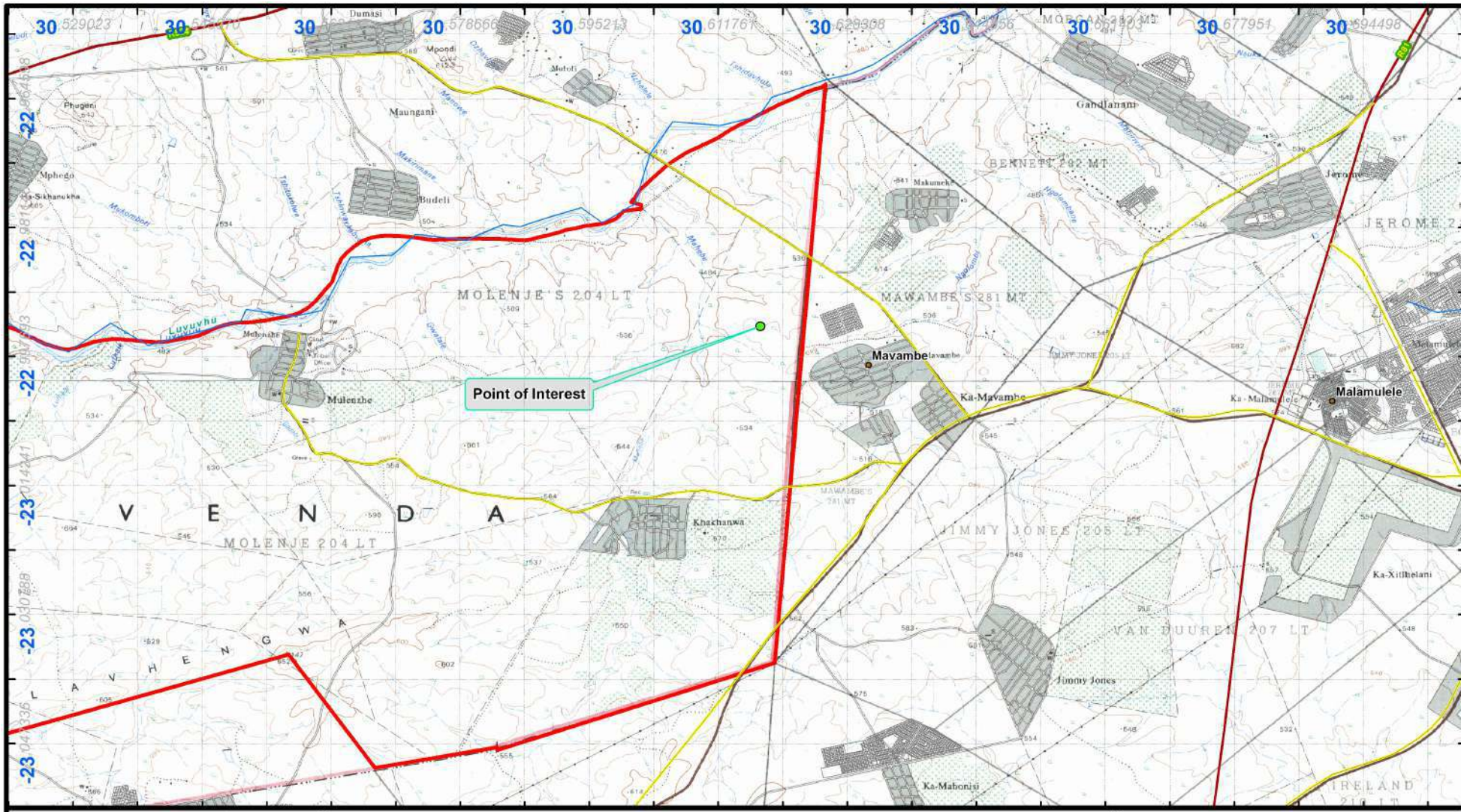
Civil Engineering Testing Laboratories

Client	: NGOTI DEVELOPMENT CONSULTANTS (COO)	Date Received	: 9 - 02/12/2019
Project	: Proposed Development of Echo Academy Private School	Date Reported	: 02/12/2019
Project No	: 2019-H-916		

SAMPLING PLAN and METHODS

Lab. No.	Field No. / Depth (m)	Sample Type/ Delivery	Client Ref. No.	Position	Description	Additional Information	Sampling Method	Sampling Date	Sampling Time	Remarks, Deviations etc.	Image
1	TP 1 & TP 4							?			
2	TP 2 / 0.55 - 1.70							?			
3	TP 3 / 0.00 - 0.50							?			
4	TP 3 / 0.50 - 1.30							?			

APPENDIX D: LOCALITY MAP



Scale -**1:50 000**

N W E S

Geographic Coordinate System

GCS_Hartebeesthoek_1994

Meters

0 970 1 940 2 910 3 880

Legend

- Towns
- Proposed Site: Echo Academy School
- Rivers
- Secondary Roads
- Main Roads
- Remaining Extent of MOLENJE 204 LT

Map Title: **Topographic Map**

Project Name: **Proposed Echo Academy school, Dovheni Village, Limpopo Province**

Created By: Phoenix M&E Consulting

Created For: mang

Dataset Source: **NGI 1:50 000 Vector Data, Credits: NGI, Municipal Demarcation Board, SANPARKS**

Engineering Service Report

PROPOSED ECHO ACADEMY (PRIVATE SCHOOL) IN REMAINDER OF THE FARM MOLENJE 204 LT

SCHOOL EMIS NO.: TBA

BULK ENGINEERING SERVICES REPORT

NOVEMBER 2019, REV 0

PREPARED BY:

Dalimede Projects (PTY) LTD
34 Jorrisen street
Polokwane
0699

Tel: 079 368 8414
Fax: 086 518 0234
Email: admin@dalimede.com

PREPARED FOR:

Mang GeoEnviro Services
Block 9, Unit 2 Boardwalk Office Park,
6 Enos Road, Faerie Glen,
Pretoria, 0004

Tel: 012 770 4022
Cell: +27 72 573 2390
Email: fnmathebula@gmail.com / info@manggeoenviro.co.za

Table of Contents

Tables

Annexures

Figures

Abbreviations

L/s	-	Litres per second
Mℓ /day	-	Mega litres per day
kℓ/day	-	Kilo Litres per day
kℓ	-	Kilo Litres
PSC	-	Project Steering Committee
WC	-	Water Committee
IDP	-	Infrastructure Development Plan
DWS	-	Department of Water and Sanitation
RWS	-	Regional Water Scheme
StatsSA	-	Statistics South Africa
m3	-	cubic metre
AADD	-	Average Annual Daily Demand
VIP toilet	-	Ventilated Improved Pit toilet
MAP	-	Mean Annual Precipitation
ADWF	-	Average Dry Weather Flow

1 INTRODUCTION

The proposed Echo Academy (Private School) is to be developed to provide primary school education to the community.
The school is to offer Grade R to Grade 7 education services.

Mang GeoEnviro Services appointed Dalimede Projects (PTY) Ltd to prepare the bulk engineering services report.

This report outlines the municipal services needed for the development, i.e. roads, water, sewer and electricity.

The school Department of Education EMIS number is yet to be advised.
The number of learners to be enrolled is to be 400, making it a medium sized school.
The school must meet the minimum uniform norms and standards for public schools infrastructure.

2 SITE DESCRIPTION

The development is sited in the remainder of the farm Molenje 204 LT, Portion 23, Dovheni Village, Limpopo Province.

The site is 11km south-west of Malamulele Town towards the Nandoni Dam. The site is in Collins Chavane Municipality, under the Vhembe District Municipality, Limpopo Province.

GPS coordinates of site are 22°59'37.87"S 30°37'1.89"E. The locality map is presented on the figure below.

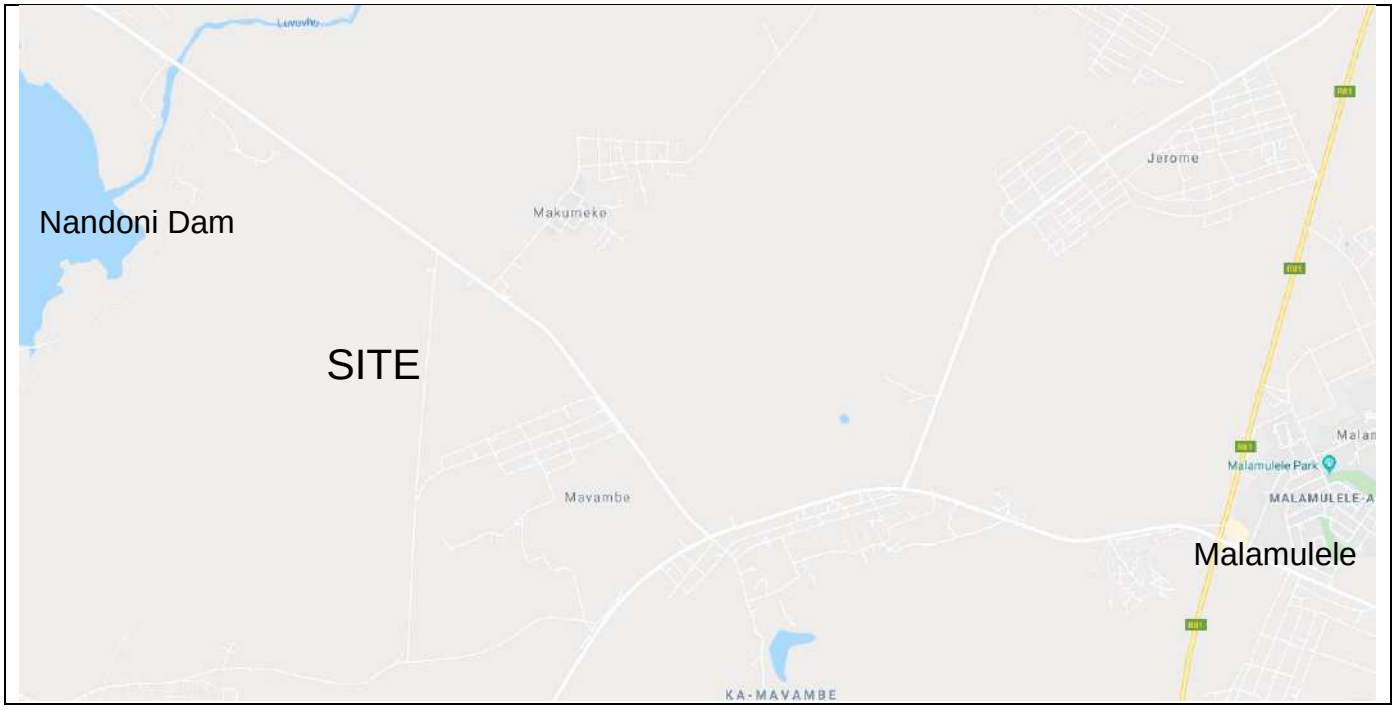


Figure 1: Locality plan

3 TOWN PLANNING

The summary of and zoning is shown in Table 1 below.

Zoning	No. of erf	Area (Ha)	Area (%)
School	1	3	100

Table 1 Town planning land use

The site will be developed on a 3 hactare land.

The proposed land demarcation map is depicted in the figure below.

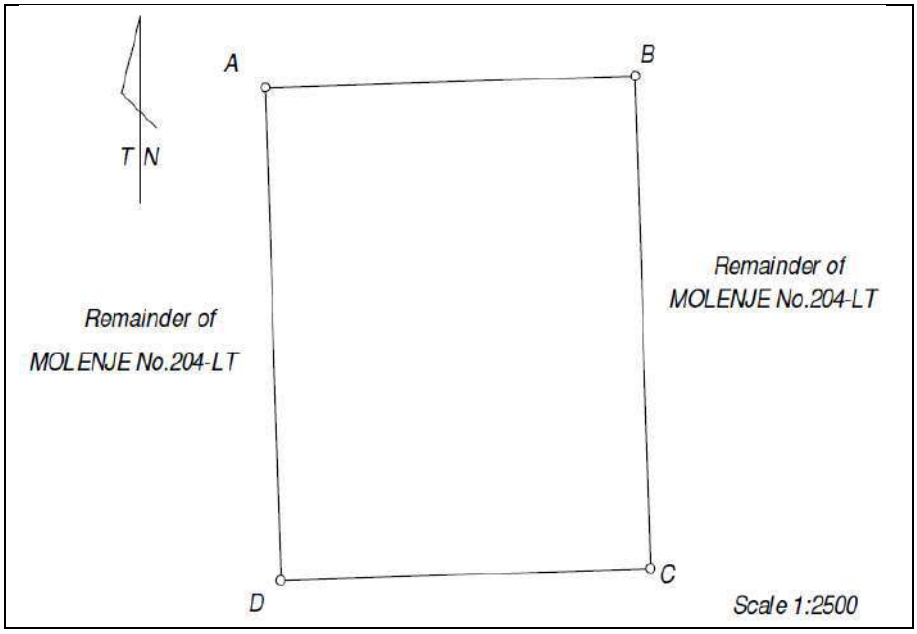


Figure 2: Land use demarcation

4 TOPOGRAPHY AND ACCESS

The proposed school 3 Hactare site is generally flat. The flat slopes allow for house development without the need for massive earthworks to level the ground.


Figure 3 Topography

The proposed development can be accessed by building a new 150m long gravel road to connect to the existing gravel road street within the Dovheni village. The existing gravel road street should be widened and re-gravelled to cater for the expected increase of average daily traffic. The proposed access road is shown in the figure below.

Figure 4 School access

An application to connect the proposed access road to the existing internal street has to be approved by road authorities prior to construction.

5 WATER SERVICE

5.1 Water source

Dovheni village, which has the proposed school site, has Nandoni Dam as a water source.

Nandoni dam was built on the Luvuvhu River and has a capacity of 163 million m^3.

Raw water from the dam is conveyed from the dam and treated at Nandoni Dam water treatment works (WTW). The Nandoni WTW has the following capacity:

- Existing WTW Capacity (Peak): 60 Mℓ/d
- Existing WTW Capacity (Average): 40 Mℓ/d
- Pump and pipeline capacity: 1 068 ℓ/s (76.9 Mℓ/d at 20 hours pumping)

The Nandoni WTW supplies potable water to the following areas:

- South Malamulele East Water Scheme
- Malamulele West Water Scheme
- Thohoyandou
- Vuwani
- Makhado Sub-Systems

Dovheni village is fed from the Malamulele West Water Scheme.

5.2 Storage tanks

The Nandoni WTW pumps to various areas including the Mavambe 5Ml command reservoir. Potable water is then conveyed from the Mavambe reservoir to the Dovheni village 300kl elevated storage tank. The elevated tank feeds Dovheni village. See the figure below.

Figure 5 Dovheni village 300kl elevated storage tank

The figure below shows the existing storage infrastructure layout.

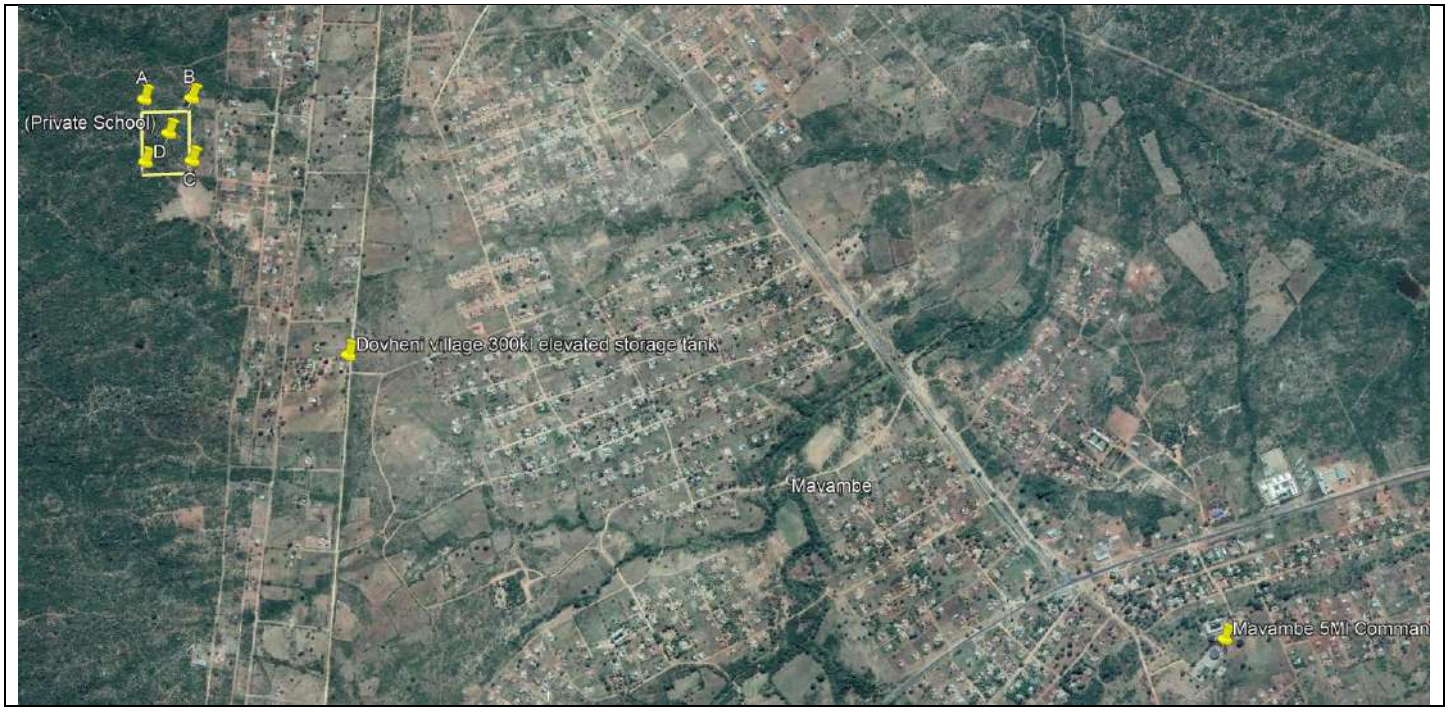


Figure 6 Water Infrastructure

5.3 Water reticulation

Dovheni village has water reticulation in place. Homesteads were observed with yard metered water connections. See the figure below.

Figure 7 Existing yard connections

5.4 Water design criteria

The water design criterion to be used is listed in the table below. The water demands were adopted from the CSIR document titled: *Guidelines for human settlement planning and design (The Red Book),* and the document titled: *Department of Water Affairs and Forestry, Technical guidelines for the development of water and sanitation infrastructure, second edition: 2004.*

Item	Design element	Criteria
i.	Average Annual Daily Demand (AADD), for residential 1	0.6kℓ/c/day
ii.	Average Annual Daily Demand (AADD), for residential 2	0.6kℓ/c/day
iii.	Average Annual Daily Demand (AADD),for business	400ℓ/100m2
iv.	Average Annual Daily Demand (AADD), for park	12.5-15kℓ/hectare
v.	Average Annual Daily Demand (AADD), for Municipal	400ℓ/100m2
vi.	Average Annual Daily Demand (AADD), for Institutional	400ℓ/100m2
vii.	Gross Average Annual Daily Demand (GAADD)	Allow 10% losses
viii.	Daily Instantaneous Peak Factor (DIPF)	1.5
ix.	Design Peak Flow Rate (DPFR) for domestic flows.	25ℓ/s
x.	Maximum static head	90m
xi.	Minimum residual head under conditions of domestic peak flow	10m
xii.	Maximum linear flow velocity under conditions of domestic peak flow	3m/s
xiii.	Pipe type	uPVC
xiv.	Minimum pipe class	9
xv.	Fire flow at any one hydrant under the conditions of domestic peak flows(one hydrant at a time)	15 ℓ/s
xvi.	Minimum residual head (fire plus domestic peak flow)	25m
xvii.	Maximum linear flow velocity under conditions of fire-fighting	3m/s
xviii.	DWS storage reservoirs sizing criteria: 48 Hrs x AADD Pumped from One Source 36 Hrs x AADD Pumped from Multiple Sources 24 Hrs x AADD Gravity Source	
xix.	School, crèche, educational (Buildings only)	60 ℓ/student
xx.	School, crèche, educational (Grounds only)	12 kℓ/Ha

Table 2 The water design criteria

Moreover, for compliance with the norms and standards, water calculations for schools are to be done using the Department of Basic Education guideline of March 2014. See the table below.

WATER CALCULATION FOR SCHOOLS as per 1st March 2014						
ENROLMENT		ELEVATED TANK SIZES @ 5Ltr per Learner for 3 days supply (2Ltr drinking, 2Ltr Nutrition and cleaning and 1Ltr wastage)				
Minimum to maximum		5 000Ltr	10 000 Ltr	15 000 Ltr	20 000 Itr	25 000 Itr
1	134					
135	160					
161	200					
201	240					
241	280					
281	320					
321	360					
361	400					
401	440					
441	480					
481	520					
521	560					
561	600					
601	640					
641	680					
681	720					
721	760					
761	800					
801	840					
841	880					
881	920					
921	960					
961	1000					
1001	1040					
1041	1080					
1081	1120					
1121	1160					
1161	1200					
1201	1240					
1241	1280					
1281	1320					
1321	1360					
1361	1400					

Table 3 School water demand on enrolment

5.5 Water demands

The estimated water demand for the township is shown in the table below.

Water demand for the proposed development

Land Use	**No.**	**Unit**	**Unit flow**		**Demand**	
School (Buildings only)	400	student	60	ℓ/student	24.0	kℓ/d
School (Grounds only)	1.2	Ha	12	kℓ/Ha	14.4	kℓ/d
Sub-total Average Annual Daily Demand (AADD)					38.4	kℓ/d
Gross Average Annual Daily Demand (GAADD) (added 10%)					42.2	kℓ/d
Gross Average Annual Daily Demand (GAADD) (added 10%)					0.5	ℓ/s
Peak Water Flow (Summer Peak Factor)			**1.5**	**peak factor**	**63.4**	kℓ/d
Peak Water Flow (Summer Peak Factor)			**1.5**	**peak factor**	**0.7**	**ℓ/s**

Table 4 Township water demand

5.6 Proposed water infrastructure

Proposed water infrastructure for the development is as follows:

- Apply to the municipality for water connection to the Dovheni village water reticulation.
- 10kl Jojo tank elevated.
- Internal water reticulation with 4No. stand pipes.
- Site, drill, test and equip borehole for the development.
- Provide electrical power supply for the borehole.

6 SEWER SERVICE

Dovheni village does not have sewer reticulation. Dry sanitation is generally utilised and onsite septic tank and soakaway system. See the figure below of enviro-loo in use at nearby Mutshena Primary School.

Figure 8 Enviro-loo

It is essential to be in compliance with the school sanitation norms and standards for primary schools as published on 29 November 2013.

The sanitation requirements for the school is determined from that guideline. See the table below.

PRIMARY SCHOOLS															
Enrol-ment range	Enrol-ment range per gender	Girls' toilets	Girls' basins	Boys' toilets	Boys' urinals	Boys' basins	Unisex Grade R Toilets	Grade R basins	Unisex Disabled toilets & basins	Female staff toilets	Female staff basins	Male staff toilet	Male staff urinals	Male staff basins	Total toilets
0 - 25	0 - 13	2	1	1	1	1	0	0	1*	0	0	1	0	0	6
26 - 65	13 - 33	2	1	1	1	1	0	0	1*	0	0	1	0	0	6
66 - 134	33 - 67	3	2	1	2	1	2	1	1	1	1	1	0	1	11
135 - 310	68 - 155	6	4	2	4	2	3	2	1	2	1	1	1	1	20
311 - 620	156 - 310	8	6	4	4	2	4	3	1	2	1	1	1	1	25
621 - 930	311 - 465	10	6	4	6	3	5	3	2	3	2	1	2	2	33
931 - 1240	466 - 620	12	8	6	6	4	5	3	2	3	2	1	2	2	37

Table 5 Sanitation requirements for primary schools

6.1 Sewer flow

The design guidelines were adopted from the Red Book. The proposed development sewer flow calculations are shown in the table below.

Land Use	**Site**	**Unit**	**Water demand**		**Sewer Return**	**Sewer Flow**	
School (Buildings only)	400	student	24	kℓ/d	85%	20	kℓ/d
Sub-total Sewer ADWF						**20**	kℓ/d
15% Extraneous flow						3.06	kℓ/d
Total Sewer						23.46	kℓ/d
Sewer Flow						0.27	ℓ/s
Peak Factor						2.5	
Peak Sewer Flow						58.65	kℓ/d
Peak Sewer Flow						0.68	ℓ/s

Table 6 Sewer flow

The new developments will produce 0.27 ℓ/s average dry weather flow and 0.68 ℓ/s peak sewer flow.

6.2 Proposed sewer infrastructure

Proposed sewer infrastructure for the development is as follows:

- Provide 25 toilet seats enviro loo or waterborne sanitation. A septic tank and soakaway would also need to be constructed when providing waterborne toilets.
- At least one seat from the proposed seats must be dedicated to disabled learners
- Walkways must also be built to enable easy movement from the ablution to the classroom blocks.

7 Electricity

See ANNEXURE 2 Electricity, for the electricity supply needs for the development.

8 TOWNSHIP ROADS

The road infrastructure to service the development will be the standards of the Red Book, TMH, TRH books and the local municipality.

8.1 Classification of roads

Description	Class no.	Function	Reserve width	Roadway width	Length (km)
Access Road	5d	Access from existing bounding road	16m	7.4m	0.150
Internal Service Road	5f	Internal Road	13	6m	0.1
Internal Service Road	5f	Internal Road	10	6m	0.1

Table 7 Classification of roads

8.2 Geometric Design Standards

Design speed	60km/h
Minimum centre line radii	50m
Minimum gradient	0.5%
Favoured maximum gradient	10%
Maximum grade/grade length	12.5% over 70m
Maximum K-value : Crest	16
: Sag	16

Table 8 Class 5d – Access road

Design speed	30km/h
Minimum centre line radii	30m
Minimum gradient	0.5%
Favoured maximum gradient	12%
Maximum grade/grade length	16% over 50m
Maximum K-value : Crest	6
: Sag	8

Table 9 Class 5f – Internal roads

8.3 Pavement Design

The proposed pavement design is based on anticipated traffic volumes and ground conditions, a detailed pavement design will require a geotechnical report.

The table below shows the pavement design for the development.

Design	**Description**
Wearing course	150mm Thick natural gravel G5 compacted to 93% of Mod AASHTO
Fill (where required)	150mm Thick layers compacted to 90% of Mod AASHTO Density. Minimum CBR= 3 at 90% of Mod AASHTO Density- G9

Table 10 Proposed pavement design

9 Stormwater Drainage

The stormwater will drain on according to the slope of the natural ground.

9.1 Stormwater systems

The terrain will be drained by V-drains or channelling of stormwater on the road surface to the natural low point. The stormwater will then flow over the veld to the stream. Stormwater discharge control will be applied in order to reduce the damaging effect of the increase in runoff due to densification.

9.2 Hydrology

The hydrological data used in the design of the stormwater drainage system is shown in the table below.

Hydrological Data	
a) Flood return period	1: 3 years for storm water pipe system. 1: 5 years for the combined storm water Pipe and road systems
b) Average yearly rainfall	699mm
c) Minimum time of concentration and run	As per Local Municipality Guidelines
d) Design Method	Rational method

Table 11 Hydrological data

9.3 Design Standards

The table below lists the standards to be used in the design of the stormwater drainage system:

Design Element	**Specification**
a) Minimum pipe size	600 concrete
b) Minimum pipe gradient	0.67%
c) Storm water details	Local Municipal Standard Details

Table 12 Stormwater design standard

10 SOLID WASTE

A regional landfill situated nearest the proposed development will be used to dispose solid waste. The local municipality will have to be engaged to provide bulk bins, refuse bags and refuse removal services for the new developments.

The document titled: Minimum Requirements for Waste Disposal By Landfill, Department of Water Affairs and Forestry, Republic of South Africa, Second Edition 1998. Indicate that the solid waste generation range from 0,5 kg per capita per day in the poor areas, to 3,5 kg per capita per day in the affluent areas.

The proposed development falls under middle income group and thus an average of 0.5kg per day is adopted for design purpose.

Solid waste will be generated by the development.

1010 residential stands (assuming high density residential to have an average are of 150m^2) which have an average household size of 3.6 persons (Source Stats SA – Botshabelo)

- Solid waste = 0.5kg/per person/day or (0.5kgx365 days) = 182.5kg/person/year

11 Conclusion

The proposed school development will address the education needs of the community.

Signature:

Signed by:
PR No.:
For Dalimede Projects (PTY) Ltd

ANNEXURES

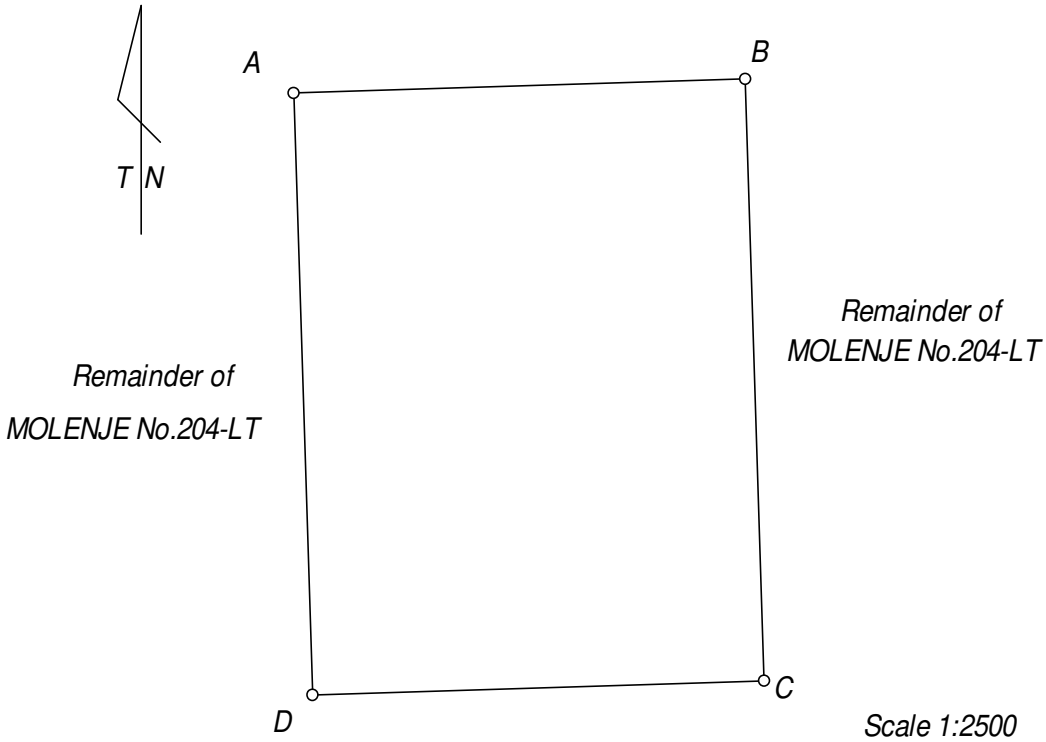
ANNEXURE 1 Layout Plan

SUBDIVISIONAL DIAGRAM

SIDES Metres		ANGLES OF DIRECTION		CO-ORDINATES Y System: WG 31° X		**S.G. No.**
		Constants:		± 0,00	± 0,00	Approved
AB	150,00	268 12 25	A	+39 413,24	+2 543 709,37	
BC	200,00	358 12 25	B	+39 263,31	+2 543 704,68	
CD	150,00	88 12 25	C	+39 257,06	+2 543 904,58	
DA	200,00	178 12 25	D	+39 406,98	+2 543 909,27	
	Pondi (44)		△	+43 410,85	+2 540 126,52	for SURVEYOR-GENERAL
	Piet Boy (142)		△	+45 436,95	+2 548 586,49	

Description of Beacons
A,B,C,D : 16mm Round Iron Peg

STATE LAND



Scale 1:2500

The figure A B C D A represents 3,0000 hectares of land being

Portion 23 of the farm
MOLENJE No.204 - LT

Province of Mpumalanga
Surveyed in October 2019 by me

P. Ngobeni
Professional Land Surveyor
Registration Number PLS0881

This diagram is annexed to	The original diagram is	File : LT - 204
No.	S.G. No. : A2902/1911	S.R. :
	Transfer Grant :	Comp. : MTSY
Registrar of Deeds MPL		T.P. :

ANNEXURE 2 Electricity

Appendix E: Comments and Responses Report

Appendix F: Environmental Management Programme (Empr)

ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED ECHO ACADEMY PRIVATE SCHOOL ON THE REMAINDER OF THE FARM MOLENJE 204 LT, DOVHENI VILLAGE, COLLINS CHABABE LOCAL MUNICIPALITY.

PREPARED BY:

Mang Geo-Enviro Services

6 Eros Road, Boardwalk Office Park, Block 9, Unit 2

Faerie Glen

0004

PREPARED FOR:

Echo Academy (Pty) Ltd

9 Yvonne Street, Brackendowns

Alberton

1448

NOVEMBER 2019

ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED ECHO ACADEMY PRIVATE SCHOOL ON THE REMAINDER OF THE FARM MOLENJE 204 LT, DOVHENI VILLAGE, COLLINS CHABABE LOCAL MUNICIPALITY

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Email: Mahlogonolomagoro@gmail.com/ info@manggeoenviro.co.za

November 2019

Author(s):

Mankaleme Magoro

TABLE OF CONTENTS

Environmental Assessment Practitioner Declaration

I **Mankaleme M. Magoro** in my capacity as an Environmental Assessment Practitioner, hereby declare that I-

• Act as an independent consultant;

• Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);

• As a registered member of the South African Council for Natural Scientific Professions, will undertake our profession in accordance with the Code of Conduct of the Council, as well as any other societies to which we are members; and

• Based on information provided to us by the project proponent, and in addition to information obtained during this study, have presented the results and conclusion within the associated document to the best of our professional judgement

CONTENTS

Annexures:

Abbreviations

Limpopo Department of Economic Development, Environment and Tourism	(LEDET)
Department of Energy	(DE)
Environmental Management Programme/ Plan	(EMPR)
Independent Environmental Auditor	(IEA)
Environmental Control Officer	(ECO)
Environmental Consultant	(EC)
Environmental Assessment Practitioner	(EAP)

Definitions

Construction:
Construction means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

Disturbance:
Any event or series of events that disrupts ecosystem, community, or population structure and changes resources, substrate availability, or the physical environment.

Earth Works:
This involves construction machinery, dampening and general preparation of the site for construction purposes.

Environmental Incident:
- Any action undertaken (or omitted) by the proponent or his duly appointed representatives (e.g. contractors) that results in overly/unnecessary disturbance or damage to the environment.
- Any action undertaken (or omitted) by the proponent or his duly appointed representatives (e.g. contractors) that could lead to (has potential for) overly/unnecessary disturbance or damage to the environment.
- Non-adherence to environmental legal requirements/laws (including the stipulations of authorisations issued in respect of a proposed activity e.g. those contained in a Record of Decision).

School:
A school is an educational institution designed to provide learning spaces and learning environments for the teaching of students under the direction of teachers**.**

Environmental Management Plan:
A guideline document/directive outlining the Plan (EMP) for mitigation, monitoring and institutional
measures to be taken during project implementation and operation to avoid or control adverse environmental impacts, as well as the actions needed to implement these measures (World Bank,
1999:1).

Environmental Officer:
Person/party appointed to monitor compliance with the Environmental Management Plan.

Interested & Affected party:
A person, group of people, an organisation (public or private), a business, or other party that has an interest or is affected in terms of their health, property rights, or economy by a proposed activity.

Impact:
A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

Mitigation Measures:
Mitigation measures encompass all actions taken to eliminate, offset or reduce potentially adverse environmental impacts to acceptable levels (World Bank, 1999:1).

ENVIRONMENTAL MANAGEMENT PROGRAMME

1 Introduction

1.1. Project background

Mang Geo-Enviro Services has been appointed as an independent environmental consultancy on behalf of Echo Academy (Pty) Ltd to compile an Environmental Management Programme (EMPr) required for the construction and operation of the proposed development of a school, trading name; Echo Academy Private School (primary level) on the remainder of the farm Molenje 204 LT, Dovheni Village within the Collins Chabane Local Municipality, Limpopo Province.

1.2. Project Description and Locality

The site is located on the remainder of the farm Molenje 204 LT, Dovheni Village within the Collins Chabane Local Municipality, Limpopo Province. The proposed development site is approximately 3 hectares and the grid reference for the proposed development site is: 22 59' 31.6'' S 30 37' 02.4'' E

Figure 1: Locality map of the proposed development site.

1.3. The proposed school incorporates the following:

- Construction of school blocks,
- administration block and
- the ablution facilities.

1.4. Aim of This Document

The purpose of this EMPr is to ensure that all environmental impacts from the various phases of development (i.e. planning, construction and operation) of the site are kept to a minimum. This includes detailing the roles and responsibilities of all parties with respect to environmental management during development, via the implementation and monitoring of this EMPr.

1.5. Status of The Document

The provisions of this EMPr are binding on the Contractor (and his subcontractors, where applicable) during the Construction Period and Defects Liability Period of the contract. This specification must therefore be read in conjunction with all the documents that comprise the contract documents for this contract. In the event that any conflict occurs between the terms of the EMPr and the Project Specification, the terms of the EMPr shall stand.

On appointment of the Contractor, the Acknowledgement Form attached to the back of this EMPr (Appendix A) is to be signed by the project Applicant, Employer's Representative (ER) and all Contractors and Subcontractors, including the Contractors Designated Environmental Officer (DEO). A copy of the signed form is to be kept by the Applicant and forwarded to the independent Environmental Control Officer (ECO).

Responsibility for environmental management on the site, as stipulated in the EMPr will be handed over from the Contractor to the Applicant upon issuing of a Completion Certificate at site handover.

2. Statutory and other legal requirements

2.1. Environmental Impact Assessment (EIA) Regulations (2014)

On review of the Environmental Impact Assessment (EIA) Regulations (2014), the proposed activity/ development triggers the following Listed Activities;

(1) Listing Notice 1 (GN R 327):

- Activity 27
- Activity 28 (ii)

Based on the above, the Applicant has applied for Environmental Authorisation from the Competent Authority, Limpopo Department of Economic Development, Environment and Tourism (LEDET) for the purpose of the commencement of the above-mentioned activity.

The Applicant, however, is reminded of Section 28 of the National Environmental Management Act (Act No. 107 of 1998) (NEMA), Duty of Care and Remediation of Environmental Damage, which states the following:

"(1) Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot be reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment. (2) the persons on whom subsection (1) imposes and obligation to take reasonable measures, including and owner or land, a person in control of land or premises, or a person who has a right to use the land or premises on which or in which – (a) any activity or process is or was performed or undertaken; or (b) any other situation exists, which causes or has caused or is likely to cause significant pollution or degradation of the environment. (3) The measures required in terms of subsection (1) may include measures to – (a) investigate, assess and evaluate the impact on the environment; (b) inform and educate Employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation of the environment; (c) cease, modify or control any act, activity or process causing pollution or degradation; (d) contain or prevent the movement of pollutants or the causing of degradation; (e) eliminate the source of the pollution or degradation; or (f) remedy the effects of the pollution or degradation…"

2.2. Other applicable legislations

Legislations/Act	Purpose/Application of the Act/Legislation
South African Constitution (No 108 of 1996)	Chapter 2 of the Constitution comprises the Bill of Rights which makes provision for Environmental Rights. This notes that everyone has the right: • To an environment that is not harmful to their health or well-being; and • To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: ✓ Prevent pollution and ecological degradation; ✓ Promote conservation; and ✓ Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.
National Water Act, 1998 (Act No. 36 of 1998) (NWA)	The primary purpose of this Act is to manage and control South Africa's water resources by: • Meeting the basic human needs of present and future generations; • Promoting the efficient, sustainable and beneficial use of water in the public interest; • Providing for growing demands for water use; • Protecting aquatic and associated ecosystems and their biological diversity; • Reducing and preventing pollution and degradation of water resources and meeting international obligations.
National Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004) (NEMAQA)	This Act provides for the control of dust, noise and offensive odors.
Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHSA)	This Act makes provision in its Regulations for the general duties of employers to their employees. The Regulations make provisions for general duties of employers and self-employed persons to persons other

	than their employees.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA)	This Act reformed the laws regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; by providing for national norms and standards for regulating the management of waste by all spheres of government; by providing for specific waste management measures; by providing for licensing and control of waste management activities; by providing for the remediation of contaminated land; by providing for the national waste information system; and by providing for compliance and enforcement and for matters connected therewith.

3. Implementation of the EMPr

3.1. The Applicant

Echo Academy (Pty) Ltd
9 Yvonne Street, Brackendowns
Alberton
1448

Cell: 082 885 4233/ 084 449 1848

Email: echoacademysa@gmail.com

3.1.1. The overall responsibility for ensuring compliance lies with Echo Academy (Pty) Ltd

3.1.2. Echo Academy (Pty) Ltd shall ensure that the contract all staff members, sub-contractors (if any) and suppliers understand and adhere to the EMPR.

3.1.3. Echo Academy (Pty) Ltd shall ensure that all sub-contractors (if any) and suppliers are contractually bound to adhere to the EMPR and Environmental Code of Conduct.

3.2. Environmental Control Officer

3.2.1. The Applicant shall nominate a suitably qualified staff member or consultant as Environmental Control Officer (ECO) to supervise the implementation of the EMPR.

3.2.2. The ECO must be notified of this appointment and furnished with the contact details of the ECO.

3.2.3. The ECO shall be responsible for:

- Day to day implementation of the EMPR and coordination of all environmental matters on site.
- Ensuring that all staff members are adequately trained and aware of the EMPR and its Environmental Code of Conduct.
- Liaison with the project manager, client and public.

4. GENERAL REQUIREMENTS OF EMPr

4.1. EMPr Administration.

i. Operational Phase

During the Operational Phase, a copy of this EMPr must be maintained. All senior operational and maintenance staff will be required to familiarise themselves with the contents of the document and will have to sign a register to the effect that they have read and understood the contents of the document. If necessary, the ECO can conduct a training session with senior personnel regarding the implementation of the EMPr during the Operational Phase. Senior staff will be required to educate their operational staff as to the contents of this document and how to remain compliant.

ii. Decommissioning Phase

The same principles as noted in the Construction Phase will apply.

No decommission is envisaged for this development. Further, decommissioning is likely to trigger listed activities in terms of the National Environmental Management: Waste Act, 59 of 2008 which will require detailed assessment and authorization.

4.2. Roles and Responsibilities

i. LEDET

LEDET is the designated authority responsible for authorising the EMPr related to the development. LEDET has overall responsibility for ensuring that the Echo Academy Private School complies with the conditions of this EMPr.

Echo Academy (Pty) Ltd under the South African environmental legislation is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts. The License/ authorization holder therefore has overall environmental responsibility to ensure that the implementation of this EMPr complies with the relevant legislation and the conditions of this EMPr. The Licence Holder will appoint a Contractor to undertake the construction and operation of the proposed development but will still ultimately be responsible for any environmental impacts.

ii. Employer's Representative (ER)

The appointed Civil and Consulting Engineers as the Employer's Representative (ER), would act as the Employer's on-site implementing agent, together with the appointed Contractors during the Construction and Operational Phases. The ER will have the responsibility to ensure that the Employer's responsibilities are executed in compliance with the relevant legislation and this EMPr.

In addition to general project management, the ER, together with the License/ Authorisation Holder, has the responsibility to appoint the Environmental Control Officer (ECO). Any on-site decisions regarding environmental management, however, are ultimately the responsibility of the ER.

iii. Operations Manager

During the Operational Phase, the Operations Manager will have the responsibility to ensure that the Licence Holder's responsibilities are executed in compliance with the relevant legislation and this EMPr. Any on-site decisions regarding environmental management are ultimately the responsibility of the Operational Manager.

The Operations Manager is to fully familiarise him / herself with the contents of this EMPr in terms of the Operational Phase. He / she will be required to sign the register confirming his / her familiarity with the document (see Appendix A). The Operations Manager must furthermore possess the necessary skills to action environmental management to all personnel under the employment of the Licence Holder and must ensure compliance with the requirements of the EMPr on a daily basis.

iii. Environmental Awareness Training

The Operations Manager shall ensure that adequate Environmental Awareness Training of senior site personnel takes place and that all Construction and Operational Phase workers receive an Induction Presentation on the importance and implications of the EMPr.

The presentation shall be conducted, as far as possible, in the employees' language of choice.

As a minimum, training shall include:

- Explanation of the importance of complying with the EMPr;
- Discussion of the potential environmental impacts of construction / operational activities;
- The benefits of improved personal performance;
- Employees' roles and responsibilities, including emergency preparedness;
- Explanation of the mitigation measures that must be implemented when carrying out their activities;
- Explanation of the specifics of this EMPr and its implementation; and
- Explanation of the management structure of individuals responsible for matters pertaining to the EMPr.
- The Operations Manager shall keep records of all Environmental Training Sessions, including names, dates and the information presented. These records will be presented to the ECO on request during his / her audits.

5. ENFORCING THE EMPr

The Applicant, or their designated representatives, has an overall responsibility to ensure that all those people involved / appointed to the project are aware of and familiar with its environmental requirements. The EMPr shall be part of the terms of reference for all contractors, sub-contractors and suppliers. All contractors, sub-contractors and suppliers have to give some assurance that they understand the EMPr and that they will undertake to comply with the conditions therein.

All senior and supervisory staff members shall familiarise themselves with the full contents of the EMPr. They shall know and understand the specifications of the EMPr and shall be able to assist other staff members in matters relating to the implementation of the EMPr.

All parties involved in the project must sign an acknowledgement that they are familiar with the requirements of the EMPr. These records must be kept on file by the Applicant.

6. PHASES OF THE PROJECT

The following abbreviations will be applicable in all phases of the project:

ER = Employer's Representative / Implementing Agent

DEO = Designated Environmental Officer

C = Contractor

OM = Operations Manager

6.1. Planning/ Designing Phase

Planning/ Designing Phase	Responsibility	Monitoring	Timeframe
Obtaining an environmental authorization from LEDET prior construction of the school.	ER	Applicant	Once off
Signing of service agreement between the applicant and the relevant service providers	Applicant	Applicant	Once off
Appointment of the contractor	Applicant	Applicant	Once off

6.2. Construction Phase

Construction Phase	Responsibility	Monitoring	Timeframe
Layout			
The Contractor is to adhere to the following with regards to the Materials Storage Area and Contractors Camp: ✓ All servitudes and existing services must be verified prior to construction; ✓ The camp site must be fenced before construction commences; and ✓ Site establishment shall not take place on steep slopes, within 50m of wetland areas and watercourses (including drainage lines), or sites declared as no-go areas.	C	ER & DEO	Before construction
Adequate parking must be provided for site staff and visitors. This must be demarcated so not as to encroach into the surrounding environment.	C	ER & DEO	Duration of Construction Phase
Temporary Fencing			
Areas where construction activities (including temporary access tracks) are prohibited are referred to as no-go areas. Entry into these areas by any person, vehicle or equipment without the ER's written permission will result in a penalty.	C	ER & DEO	Duration of Construction Phase

The Contractor shall erect temporary fencing along the perimeter of the contractor's site camp and designated no-go areas.	C	ER & DEO	Duration of Construction Phase	
The Contractor shall maintain in good order all demarcation fencing and barriers for the duration of construction activities, or as otherwise instructed.	C	ER & DEO	Duration of Construction Phase	
Topsoil removal and Stock pilling				
The Contractor shall remove topsoil from all areas where topsoil will be impacted on by construction activities, including temporary activities such as storage and stockpiling areas.	C	ER & DEO	Ongoing	
Stripped topsoil shall be stockpiled in areas agreed with by the ER for later use in rehabilitation and shall be adequately protected. Topsoil is considered to be the natural soil covering, including all the vegetation and organic matter. The depth of the soil may vary and due to this reason the top 300mm of soil must be removed and preserved as topsoil.	C	ER & DEO	Ongoing	
Topsoil stockpiles shall be convex in shape and no more than 2m high. Stockpiles shall be shaped so that no surface water ponding can take place.	C	ER & DEO	Ongoing	
Topsoil stockpiles shall be protected from erosion by wind and rain by providing suitable stormwater and cut-off drains (approved by the ER) and / or the establishment of temporary indigenous vegetation.	C	ER & DEO	Ongoing	

Any topsoil contaminated by hazardous substances shall not be used but shall be disposed of at a registered landfill site. Proof of appropriate disposal must be filed in the Environmental File in the Contractor's Camp.	C	ER & DEO	Ongoing
The Contractor shall be held responsible for the replacement, at his expense, of any unnecessary loss of topsoil due to his failure to work according to the requirements of this EMPr.	C	ER & DEO	Ongoing

Workshop, Equipment Maintenance and storage			
All vehicles and equipment shall be kept in good working order to maximize efficiency and minimise pollution.	C	ER & DEO	Ongoing
Stockpiling			
The Contractor shall plan his activities so that materials can be transported directly to and placed at the point where it is to be used.	C	ER & DEO	Ongoing
Should temporary stockpiling become necessary, the areas for the stockpiling of excavated / imported material shall be indicated and demarcated on the site plan submitted in writing to the ER for his approval, together with the Contractor's proposed measures for prevention, containment and rehabilitation against environmental damage?	C	ER & DEO	Ongoing

Should temporary stockpiling become necessary, the areas for the stockpiling of excavated / imported material shall be indicated and demarcated on the site plan submitted in writing to the ER for his approval, together with the Contractor's proposed measures for prevention, containment and rehabilitation against environmental damage?	C	ER & DEO	Ongoing
Stockpiles shall be positioned and sloped to create the least visual impact.	C	ER	Ongoing
Stormwater Control			
Temporary stormwater control measures must be installed as and when necessary, to prevent and minimise the erosion of exposed soils.	C	ER & DEO	Ongoing
If deemed necessary to prevent erosion and environmental degradation, cut-off drains must be installed to facilitate the control of surface water runoff velocities.	C	ER & DEO	Ongoing
Stormwater control barriers must be used to divert surface water runoff into vegetative buffers and not directly into the exposed workings or onto adjacent roads.	C	ER & DEO	Ongoing
Hazardous Substances			
Should any hazardous material/substances (e.g. petrochemicals, paints, etc.) need to be stored on the site, this shall be under controlled conditions. All hazardous materials/substances shall be stored in a secured, appointed area that is fenced and has restricted entry. All storage shall take place using suitable, sealable containers to the approval of the ER. These containers must be placed within a bunded area which has the capacity to contain 110% of the total volume it stores. The floor and wall of the bund area shall be impervious to prevent infiltration of any spilled / leaked material into the soil.	C	ER & DEO	Ongoing
Material Safety Data Sheets (MSDS's) must be readily available for all chemicals / hazardous substances to be used on site. Where possible and available, MSDS's should include	C/ER	ER & DEO	Before commencement of construction

additional information on ecological impacts and measures to minimise and mitigate against any negative environmental impacts in the result of an accidental spill.			
Ensure that any hydrocarbon/chemical/hazardous substance spills are cleaned up as soon as possible.	C	ER & DEO	Ongoing
Noise Control			
It must be ensured that noise levels are kept to a minimum during the Construction Phase. All machinery and equipment to be utilised on the site should be fitted with mufflers and must be maintained in good working order to minimise noise levels. It is recommended further that the Contractor encourage construction workers to minimise shouting and hooting on the site. Construction work should be completed in as short a time frame as possible in order to limit the longevity of these impacts.	C	ER & DEO	Ongoing
The Contractor shall restrict all operations that result in undue noise disturbance to local communities and / or dwellings to daylight hours on workdays (Monday to Friday) or as otherwise agreed with the ER.	C	ER & DEO	Ongoing
The Contractor shall warn any local communities and / or residents that could be disturbed by noise generating activities well in advance and shall keep such activities to a minimum.	C	ER & DEO	Ongoing
The Contractor shall be responsible for compliance with the relevant legislation with the respect to noise.	C	ER & DEO	Ongoing
The entire Contractors' equipment shall be fitted with effective exhaust silencers and shall comply with the SANS recommended code of practice Code 0103:1983, for construction plant noise generation.	C	ER & DEO	Ongoing

Waste Management			
General construction waste: Must be removed from bins at enough intervals to prevent overflow. This waste must be stored in skips within a designated waste storage area in the Contractor's Camp. General waste must be transported to the local municipal General Waste Landfill Site by the Municipality, the Contractor or a private waste disposal Contractor. Service agreements in this regard must be obtained by the Applicant / Contractor prior to the commencement of construction activities. It is recommended that general wastes be separated on site and delivered to appropriate depots for recycling. This would be facilitated by the provision of separate and labelled bins / skips.	C	ER	Ongoing
The Contractor shall ensure that all site personnel are instructed in the proper disposal of all waste.	C	ER	Ongoing
Demarcated and fenced areas where waste can be safely contained and stored on a temporary basis within the Contractors Camp must be established. General waste storage areas must be separate from hazardous waste storage areas. When adequate volumes (not more than 1 month) have accumulated, waste is to be removed from site and disposed of at a licensed facility.	C	ER	Ongoing
Waste is not to be buried or burned on site.	C	ER	Ongoing
Dust Control			
Construction vehicles shall comply with speed limits and haul distances shall be minimised. Material loads shall be suitably covered and secured during transportation.	C	ER & DEO	Ongoing
Exposed soils and material stockpiles shall be protected against wind erosion. The location of	C	ER & DEO	Ongoing

stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors.			
The Contractor shall implement dust suppression measures (e.g. Water spray vehicles, covering material stockpiles, etc.) if and when required.	C	ER & DEO	Ongoing
Environmentally friendly soil stabilisers may be used as additional measures to control dust on gravel roads and construction areas if complaints are received regarding dust generation. This is especially pertinent as excessive dust could disturb moving vehicles on adjacent roads, creating a potential traffic hazard.	C	ER & DEO	Ongoing
The Contractor shall ensure that the generation of dust is minimised and shall implement a dust control programme, as necessary, to maintain a safe working environment and minimise nuisance for surrounding residential areas/dwellings.	C	ER & DEO	Ongoing
Protection of Fauna and Flora			
The Contractor shall ensure his employees do not undertake any hunting, trapping, shooting, poisoning or other disturbance of any fauna on-site or in the areas surrounding the site.	C	ER & DEO	Ongoing
The feeding of any wild animals is prohibited.	C	ER & DEO	Ongoing
The use of pesticides is prohibited unless approved by the ER.	C	ER & DEO	Ongoing
Fire Control			
The Contractor shall ensure that basic fire-fighting equipment is available at all construction activities on site.	C	ER & DEO	Ongoing
The Contractor shall appoint a Fire Officer who shall be responsible for ensuring immediate and appropriate action in the event of a fire.	C	ER & DEO	Ongoing

The Contractor shall ensure that all site personnel are aware of the procedure to be followed in the event of a fire.	C	ER & DEO	Ongoing
Protection of Heritage and cultural features			
If any archaeological or paleontological artefacts or remains / graves are uncovered during earthmoving activities, work in the vicinity of the find shall cease immediately. The Contractor shall immediately notify the ER, who shall contact the relevant Competent Authority (SAHRA) who will take appropriate steps.	C	ER & DEO	Ongoing
The Contractor will be required to abide by the specifications as set out by the Competent Authority or the Heritage Specialist appointed to investigate the find.	C	ER & DEO	Ongoing
The Contractor may not, without a permit issued by the relevant heritage resources authority, destroy damage, excavate, alter, deface or otherwise disturb archaeological material.	C	ER & DEO	Ongoing
Environmental Education & Awareness			
It is the Contractors' responsibility to provide the site foreman with no less than 1 hour's environmental training and to ensure that the foreman has enough understanding to pass this information onto the construction staff.	C	ER & DEO	Prior to moving on site

The Contractor / ECO must be on hand to explain any technical issues and to answer questions.	C/ECO	ER & DEO	Ongoing

6.3. OPERATIONAL PHASE

Operational Phase	Responsibility	Occurrence	Method
Water Quality Management			
The Collins Chabane Local Municipality must be contacted with regard to any discharge to sewer.	OM	Ongoing	Site inspection

Management of Contaminated Land			
Contaminated land investigations, including soils, groundwater and surface water monitoring and sampling to be implemented should impact is observed. This will take into account the source-pathway-receptor (S-P-R) linkages and should serve to determine the nature and extent of any impacts to the receiving environment as a result of site activities. These investigations are to be carried out with consideration of the relevant legal processes. Risk assessment to be undertaken if considered necessary.	OM to outsource as appropriate	Ongoing	Site investigation
Risk based corrective action (RBCA) to be implemented based on the findings of the site investigations. Remedial plans will be developed based on conceptual site model (CSM) and should consider S-P-R linkages. Remedial actions may include physical, chemical and/or microbiological intervention.	OM to outsource as appropriate	Ongoing	Site remediation
Post-remediation monitoring plan to be implemented to determine effectiveness of remedial actions and serve as an early-warning system for potential re-occurrence.	OM to outsource as appropriate	Ongoing	Ongoing monitoring
Drainage Systems			
Stormwater culverts and drains must be covered with metal grids to prevent blockages.	OM	Ongoing	Site inspection

Control of Littering			
Adequate waste disposal bins are to be provided around the school. These are to be regularly emptied and the contents thereof collected by an approved Waste Service Provider.	OM	Ongoing	Site inspection
The recycling of waste is encouraged. As such, the provision of separate recycling bins for the disposal of paper, tins and plastic should be erected and displayed in a suitable and visual location on site. A reputable Recycling Waste Company must be appointed to collect recyclable waste (**if applicable).**	OM	Ongoing	Site inspection
Waste Storage and Removal			
Burning of waste is not permitted, under any conditions.	OM	Ongoing	Site inspection
Ablution facilities serviced by septic tanks (if applicable) are to be sign posted informing the public not to deposit foreign substances or objects into the system.	OM	Ongoing	Site inspection

Health and Safety			
Ensure that all staff is trained in what to do in the case of an emergency such as an on-site fire.	OM	Ongoing	Site inspection
Staff personnel are to be trained in first aid.	OM	Ongoing	Site inspection
Fire Control			
Emergency numbers must be displayed with the correct details of the nearest firefighting station at all times.	OM	Ongoing	Site inspection
Ensure that relevant signage e.g. no smoking, is displayed in potentially dangerous areas and is abided by.	OM	Ongoing	Site inspection

6.4. DECOMMISSIONING PHASE

At this stage decommissioning is not foreseen in the near future. At the time it might become applicable, an Environmental Impact Assessment must be undertaken in terms of Listed Activity Nr 31 (i) of R326 of the National Environmental Management Act, 1998 (Act No 107 of 1998), as amended; or else compliance with the environmental legislation requirements applicable at that time must take place.

7. NONE-COMPLIANCE

7.1. Procedures

The Contractor shall comply with the environmental specifications and requirements on an on-going basis and any failure on his / her part to do so will entitle the ER to impose a penalty.

In the event of non-compliance, the following recommended process can be followed:

- The ER shall issue a Notice of Non-compliance to the Contractor, stating the nature and magnitude of the contravention. A copy shall be provided to the ECO during his / her site audit;
- The Contractor shall act to correct the non-conformance within 24 hours of receipt of the notice, or within a period that may be specified within the notice;
- The Contractor shall provide the ER with a written statement describing the actions to be taken to discontinue the non-conformance, the actions taken to mitigate its effects and the expected results of the actions. A copy shall be provided to the ECO;
- In the case of the Contractor failing to remedy the situation within the predetermined timeframe, the ER shall impose a monetary penalty based on the conditions of contract;
- In the case of non-compliance giving rise to physical environmental damage or destruction, the ER shall be entitled to undertake or to cause to be undertaken such remedial works as may be required to make good such damage and to recover from the Contractor the full costs incurred in doing so; and
- In the event of a dispute or difference of opinion between any parties arising out of the interpretation of the conditions of the EMPr, or a disagreement regarding the implementation or method of implementation of conditions of the EMPr, any party shall be entitled to require that the issue be referred to specialists for arbitration.

The ER shall at all times have the right to stop work and/or certain activities on site in the case of noncompliance or failure to implement remediation measures.

7.2. Offences and Penalties

Any avoidable non-compliance with the conditions of the EMPr shall be considered sufficient ground for the imposition of a penalty. Possible offences, which must result in the issuing of a contractual penalty, include, but are not limited to:

- Unauthorised entrance into no-go areas;
- Unauthorised damage to natural vegetation;
- Unauthorised camp establishment (including stockpiling, storage etc.);
- Hydrocarbons/hazardous material: Negligent spills/leaks and insufficient storage;
- Ablution facilities: Non-use, insufficient facilities and insufficient maintenance;
- Late Method Statements or failure to submit Method Statements;
- Insufficient solid waste management (including clean-up of litter, unauthorised dumping and
- absence of weigh bills as proof of disposal at a DWS registered landfill site);
- Erosion due to negligence/non-performance;
- Excessive cement / concrete spillage / contamination;
- Insufficient fire control and unauthorised fires;
- Preventable damage to water courses or pollution of water bodies; and
- Non-induction of staff.

8. CONCLUSION

In terms of NEMA, everyone is required to take reasonable measures to ensure that they do not pollute the environment. Reasonable measures include informing and educating employees about the environmental risks of their work and training them to operate in an environmentally responsible manner. Furthermore, in terms of NEMA, the cost to repair any environmental damage shall be borne by the person responsible for the damage.

If the above-mentioned management recommendations are adopted, it is anticipated that most of the negative environmental impacts associated with the operation of the school on the remainder of the farm Molenje 204 LT, Dovheni Village within the Collins Chabane Local Municipality, in Limpopo Province can be mitigated against. The appointed ECO will need to regularly monitor the site to ensure that the required environmental controls are in place and working effectively.

ANNEXURE A

Environmental Code of Conduct

The applicant is committed to ensuring that the operation of the development is done according to the highest environmental standards so that the ecological footprint of the development is minimised where possible.

The applicant requires that all personnel involved in the operation process accept their responsibilities towards the EMP and the environment. This includes all permanent, contract or temporary workers as well as any other person involved with the project or visiting the site. Ignorance, negligence, recklessness or a general lack of commitment will not be tolerated.

If you do not understand the rules you must seek assistance to ensure compliance. The following people can assist you in ensuring compliance with the EMP.

Your Supervisor: ……..

Environmental Control Officer: ……

Project Manager: ……

ANNEXURE B

Environmental Complaints Register						
	Name of Complainant	Contact Details	Nature of Complaint	Responsible Person	Date Action Taken	Details of Action Taken

ANNEXURE C

Environmental Incidents Register					
Date	**Incident**	**Action Required**	**Responsible Person**	**Action Implemented**	**Date Action Implemented**

ANNEXURE D

Environmental Training Register					
	Company	Employee	Employee Signature	Supervisor	Supervisor Signature

ANNEXURE E

ENVIRONMENTAL AUTHORISATION / ROD

ANNEXURE F

EAP CV

ENVIRONMENTAL MANAGEMENT PROGRAMME

ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED ECHO ACADEMY PRIVATE SCHOOL ON THE REMAINDER OF THE FARM MOLENJE 204 LT, DOVHENI VILLAGE, COLLINS CHABABE LOCAL MUNICIPALITY

MANG GEO-ENVIRO SERVICES
06 Eros Road, Boardwalk Office Park
Block 9, Unit 2
Faerie Glen
0001

Cell: +27 (0) 81 4286116
Tel: (012) 770 4022
Website: www.manggeoenviro.co.za
Email: Mahlogonolomagoro@gmail.com/ info@manggeoenviro.co.za

November 2019

Compiled by:

Mankaleme Magoro (BSc. Hon. Min. Env. Geo.)

EAP

Email: Mahlogonolomagoro@gmail.com

EAP Signature 

Date November 2019

Appendix G: Other Information

Communication to the Interested and Affected Parties

INVITATION TO REGISTER AS AN INTERESTED AND AFFECTED PARTY

Mahlogonolo Magoro <mahlogonolomagoro@gmail.com> Mon, Nov 25, 2:00 PM (8 days ago)
to msebesho, Fumani

Good day,

I hope you are well.

We kindly request you to register as an interested and affected party for the proposed development of a school on the remainder of the farm Molenje 204 LT, Dovheni Village, Limpopo Province.

Kindly see the attached letter and the registration form.

Hoping to hear from you soon.

Regards
Mankaleme M. Magoro
EAP (Cand. Nat.Sci)
081 428 6116

INVITATION TO REGISTER AS AN INTERESTED AND AFFECTED PARTY Inbox ×

Mahlogonolo Magoro <mahlogonolomagoro@gmail.com> Mon, Nov 25, 1:37 PM (8 days ago)
to Bothar, Fumani

Good day,

I hope you are well.

We kindly request you to register as an interested and affected party for the proposed development of a school on the remainder of the farm Molenje 204 LT, Dovheni Village, Limpopo Province.

Kindly see the attached letter and the registration form.

Hoping to hear from you soon.

Regards
Mankaleme M. Magoro
EAP (Cand. Nat.Sci)
081 428 6116

2 Attachments

Botha Rens (GAU) <BothaR@dws.gov.za> Tue, Nov 26, 12:17 PM (7 days ago)
to Mphuma, Nethengwe, me

Limpopo colleagues – this is in the Thohoyandou area. Please respond

MLJ (Rens) Botha
Chief Engineer: Water Resources Management
Department of Water & Sanitation
North West Provincial Operations: Crocodile(West) catchment
Private Bag X995, Pretoria, 0001
15 th floor, Bothongo Plaza-east, 285 Francis Baard (Schoeman) Street
Tel: +2712392-1308
Fax: +2712392-1408
Fax to e-mail: +27865916293
Cell: +27828089560
e-mail: bothar@dws.gov.za

INVITATION TO REGISTER AS AN INTERESTED AND AFFECTED PARTY

Mahlogonolo Magoro <mahlogonolomagoro@gmail.com> Mon, Nov 25, 2:04 PM (8 days ago)
to ttshivhase, Fumani

Good day,

I hope you are well.

We kindly invite you to register as an interested and affected party for the proposed development of a school on the remainder of the farm Molenje 204 LT, Dovheni Village, Limpopo Province.

Kindly see the attached letter and the registration form.

Hoping to hear from you soon.

Regards
Mankaleme M. Magoro
EAP (Cand. Nat.Sci)
081 428 6116

2 Attachments

INVITATION TO REGISTER AS AN INTERESTED AND AFFECTED PARTY

Mahlogonolo Magoro <mahlogonolomagoro@gmail.com>
to MolepoME, Fumani

Mon, Nov 25, 2:10 PM (8 days ago)

Good day,

I hope you are well.

We kindly invite you to register as an interested and affected party for the proposed development of a school on the remainder of the farm Molenje 204 LT, Dovheni Village, Limpopo Province.

Kindly see the attached letter and the registration form.

Hoping to hear from you soon.

Regards
Mankaleme M. Magoro
EAP (Cand. Nat.Sci)
081 428 6116

2 Attachments

INVITATION TO REGISTER AS AN INTERESTED AND AFFECTED PARTY Inbox ×

Mahlogonolo Magoro <mahlogonolomagoro@gmail.com>
to nkhensani.mathonsi, Fumani

Mon, Nov 25, 1:33 PM (8 days ago)

Good day,

I hope you are well.

We kindly request you to register as an interested and affected party for the proposed development of a school on the remainder of the farm Molenje 204 LT, Dovheni Village, Limpopo Province.

Kindly see the attached letter and the registration form.

Hoping to hear from you soon.

Regards
Mankaleme M. Magoro
EAP (Cand. Nat.Sci)
081 428 6116

2 Attachments

Mahlogonolo Magoro <mahlogonolomagoro@gmail.com> Mon, Dec 2, 9:14 AM (1 day ago)
to nkhensani.mathonsi, Fumani

Good day,

I hope you are well.

Kindly note that your formal registration has been received.

We will send you all the reports regarding the proposed development.

Hope you find the contents of this mail in order.

Regards,

Nkhensani Mathonsi <nkhensani.mathonsi@collinschabane.gov.za> Mon, Dec 2, 1:27 PM (20 hours ago)
to me

Thank you

"DISCLAIMER: The information in this message is confidential and legally privileged solely for the intended addressee. The opinions or statements expressed herein are my own and should not be taken as the official opinion or endorsement of Collins Chabane Local Municipality"

Mahlogonolo Magoro <mahlogonolomagoro@gmail.com> Mon, Nov 25, 2:30 PM (8 days ago)
to mulenzhetc, Fumani

Good day,

I hope you are well.

We kindly invite you to register as an interested and affected party for the proposed development of a school on the remainder of the farm Molenje 204 LT, Dovheni Village, Limpopo Province.

Kindly see the attached letter and the registration form.

Hoping to hear from you soon.

Regards
Mankaleme M. Magoro
EAP (Cand. Nat.Sci)
081 428 6116

2 Attachments

INVITATION TO REGISTER AS AN INTERESTED AND AFFECTED PARTY

Mahlogonolo Magoro <mahlogonolomagoro@gmail.com> Wed, Nov 27, 1:36 PM (6 days ago)
to shitlhangop, Fumani

Good day,

I hope you are well.

We kindly invite you to register as an interested and affected party for the proposed development of a school on the remainder of the farm Molenje 204 LT, Dovheni Village, Limpopo Province.

Kindly also see the attached letter and registration form.

Hoping to hear from you soon.

Regards,
Mankaleme M. Magoro
EAP (Cand.Nat.Sci)
081 428 6116

2 Attachments


Mahlogonolo Magoro <mahlogonolomagoro@gmail.com> Wed, Nov 27, 1:24 PM (6 days ago)
to munyainkanu, Fumani

Good day,

I hope you are well.

We kindly invite you to register as an interested and affected party for the proposed development of a school on the remainder of the farm Molenje 204, Dovheni Village, Limpopo Province.

Kindly see the attached letter and the registration form.

Hoping to hear from you soon.

Regards,
Mankaleme M. Magoro
EAP (Cand.Nat.Sci)
081 428 6116

2 Attachments


LETTER TO I&AP.pdf

REGISTRATION FO...

mang
GEOENVIRO SERVICES

Block 9 Unit 2 Boardwalk Office Park,
6 Eros Road, Faerie Glen, Pretoria 0004
info@manggeoenviro.co.za
www.manggeoenviro.co.za
+27 12 770 4022/+27 72 573 2390

I hereby wish to register as an Interested and Affected Party (I&AP) for the proposed Echo Academy Private School, Dovheni Village, Basic Assessment Report (BAR) Process

Name: Nkhensani Mathonsi

Organization: Collins Chabane Local Municipality

Postal Address: Private Bag X9271
Malamulele
0982

Email Address: Nkhensani.Mathonsi@collinschabane.gov.za

Tel: 015 851 0110 Fax: N/A

Comments/ Issues/ Concerns:

Please e-mail me reports and other documentation regarding the development

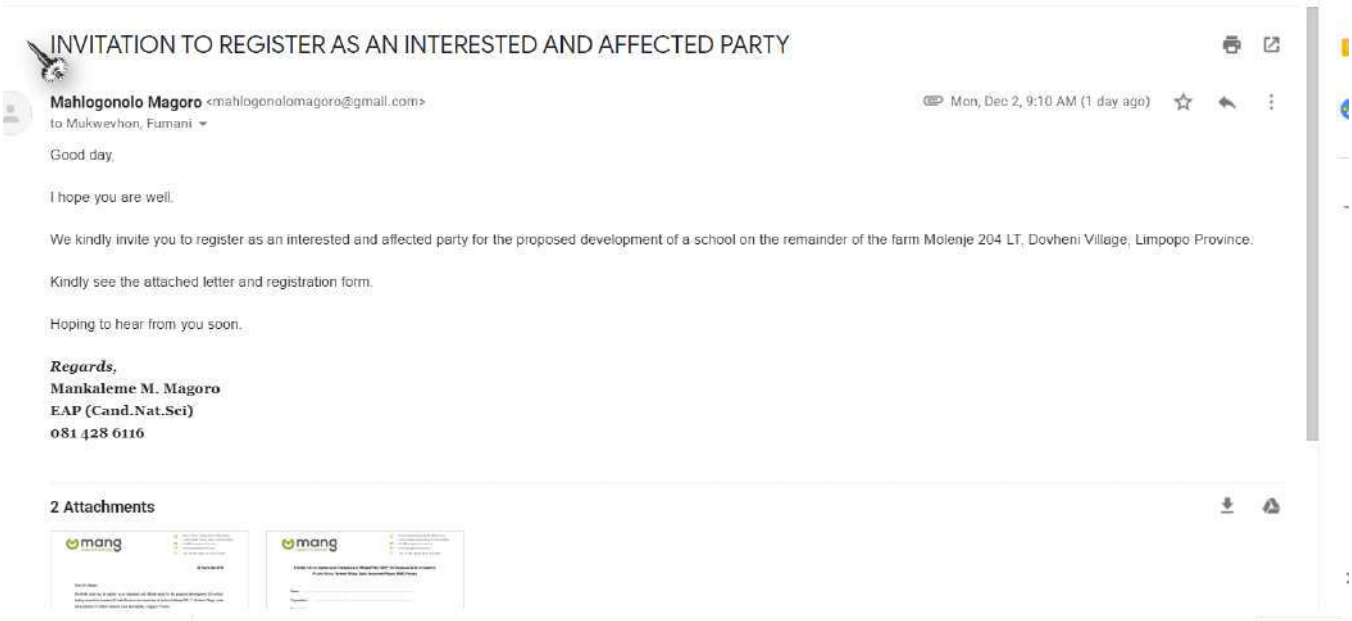
Do you know anyone who can be registered as an Interested and Affected Party?

If yes, kindly assist with the following:

Name and Organisation: .....

Postal Address: .....

Tel: .....Email: .....



INVITATION TO REGISTER AS AN INTERESTED AND AFFECTED PARTY

Mahlogonolo Magoro <mahlogonolomagoro@gmail.com>
to Mukwevhon, Fumani

Mon, Dec 2, 9:10 AM (1 day ago)

Good day,

I hope you are well.

We kindly invite you to register as an interested and affected party for the proposed development of a school on the remainder of the farm Molenje 204 LT, Dovheni Village, Limpopo Province.

Kindly see the attached letter and registration form.

Hoping to hear from you soon.

Regards,
Mankaleme M. Magoro
EAP (Cand.Nat.Sci)
081 428 6116

2 Attachments

mang

mang

Confirmation of Services

Sub divisional Layout

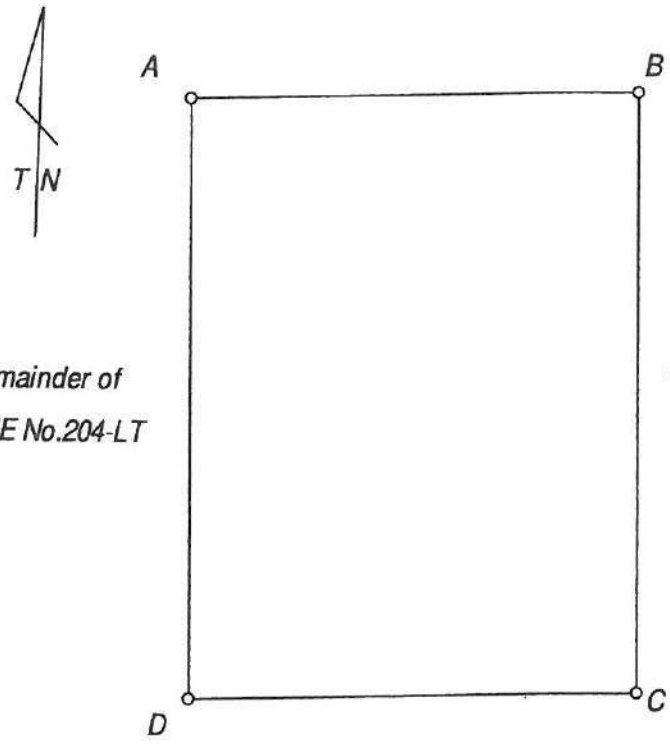
SUBDIVISIONAL DIAGRAM

SIDES Metres		ANGLES OF DIRECTION		CO-ORDINATES Y System: WG 31° X		S.G. No.
		Constants:		± 0,00	± 0,00	
AB	150,00	268 12 25	A	+39 413,24	+2 543 709,37	Approved
BC	200,00	358 12 25	B	+39 263,31	+2 543 704,68	
CD	150,00	88 12 25	C	+39 257,06	+2 543 904,58	
DA	200,00	178 12 25	D	+39 406,98	+2 543 909,27	
	Pondi (44)		△	+43 410,85	+2 540 126,52	for SURVEYOR-GENERAL
	Piet Boy (142)		△	+45 436,95	+2 548 586,49	

Description of Beacons

A,B,C,D : 16mm Round Iron Peg

STATE LAND



Scale 1:2500

The figure A B C D A represents 3,0000 hectares of land being Portion 23 of the farm MOLENJE No.204 - LT

Province of Mpumalanga
Surveyed in October 2019 by me

P. Ngobeni
Professional Land Surveyor
Registration Number PLS0881

This diagram is annexed to	The original diagram is	File : LT - 204
No.	S.G. No. : A2902/1911	S.R. :
	Transfer	
Registrar of Deeds MPL	Grant :	Comp. : MTSY
		T.P. :

Curriculum Vitae Of the EAP

CURRICULUM VITAE

APPLICANT: MAGORO MANKALEME MARTINA

1. PERSONAL DETAILS:

Surname	: Magoro
Name(s)	: Mankaleme Martina
Date of Birth	: 18 January 1994
Identity Number	: 940118 0612 088
Citizen	: South Africa
Gender	: Female
Race	: Black
Home Language	: Sepedi
Preferred Language	: English
Physical Address	: Magaliesburg Estate 1
	: 1275 Gomdoring Street, Akasia,
	: 0182
Contact Number	: 081 428 6116
Email Address	: Mahlogonolomagoro@gmail.com

2. SECONDARY EDUCATION:

High School Attended	: Motse Maria High School
Highest Grade Passed	: Grade 12
Year Obtained	: 2011

3. TERTIARY EDUCATION

3.1. Institution	**:** University of Venda
Course	: BSc Hons. In Mining and Environmental Geology
Year Obtained	: 2016

4. EMPLOYMENT HISTORY

4.1. Institution	**: Evraz Mapochs Steel and Vanadium Mine**
Duration	: 2014-2015
Nature of Appointment	: Vacation Work
Position	: Student environmental geologist
District	: Sekhukhune

CORE DUTIES AND RESPONSIBILITIES

Geological mapping, core logging, marking and correlation, data collection, sampling, laboratory work (geochemical analysis), data capturing and analysis, report writing, monitoring and ore grade control.

4.2 Work institution : University of Venda
Duration : January 2015 to November 2015
Position : Student tutor

CORE DUTIES AND RESPONSIBILITIES

Assisting students with their laboratory practicals (data analysis and report writing) and field work (data collection; geological mapping, core logging, correlation and sampling)

4.3 Work Institution : OSISA
Position : Junior environmental activist (internship)
Duration : August 2017

CORE DUTIES AND RESPONSIBILITIES

Reviewing the mining and environmental grant applications and attending the mining indabas

4.4 Work Institution : City of Tshwane Metropolitan Municipality
Position : Junior environmental officer
Duration : 2017 September – August 2018

CORE DUTIES AND RESPONSIBILITIES

Reviewing the Environmental Impact Assessment (EIA), Scoping reports and Basic Assessment Reports applications, conducting land assessments, creating maps using ArcGIS, compile monthly and weekly reports and compilation of the site inspection reports, conducting consultation meetings with Environmental Practitioners, when necessary and attending EIA forum meetings.

4.5 Work Institution : Mmadibuke Consulting and Projects (Pty) Ltd
Position : Environmental Assessment Practitioner
Duration : October 2018- October 2019

CORE DUTIES AND RESPONSIBILITIES

Compiling Environmental Impact Assessment reports, Environmental Management Plans (EMPr), Basic Assessment Reports, conducting Environmental Enquiries, site inspections and section 24G rectification

4.6 Work Institution : Mang GeoEnviro Services
Position : Environmental Assessment Practitioner
Duration : November 2019-current

CORE DUTIES AND RESPONSIBILITIES

Compiling Environmental Impact Assessment reports, Environmental Management Plans (EMPr), Basic Assessment Reports, nema queries, environmental screening reports and section 24G rectification

5. PROJECT HISTORY 2017/2018

5.1 REVIEWED

- Draft basic assessment report for the proposed construction of a telecommunication mast for mtn (Pty) Ltd Waterkloof site newsite 3, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0076.
- Draft basic assessment report for the proposed construction of eight poultry houses on Puntlyf farm no 520-jr, portion 11 Bronkospruit**.** City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E2052
- Final Environmental Impact Assessment (EIA) report for a new waste management license for the Waste Group (Pty) ltd for the recovery of hazardous waste on the premises of the Bon Accord waste treatment site, City of Tshwane Metropolitan Municipality. DEA 12/9/11/L72568/3
- Draft basic assessment report for the proposed MBT filling station on erf 389 Wapadrand extension 8 in Lynnwood, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0076
- Draft Environmental Impact Assessment report application for upgrade of road D620 and D621, Winterveld area, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/0081)
- Draft consultation basic assessment report for a prospecting right, portion 29 of the farm Uitvalgrond 434-JQ, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0076
- Draft basic assessment report for the proposed application of environmental authorisation for the proposed expansion of the existing Soshanguve shopping centre located on Buitekant road, Soshanguve, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0076
- Draft basic assessment report application for waste management license for Heaven Renewable Energy (Pty) ltd-waste tyre pyrolysis plant in Rosslyn, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0074
- Draft basic assessment report for an establishment of an ATC (Pty) ltd telecommunications mast on the remaining extent of portion 41 of the farm Doornkloof 391-JR, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0114.
- Draft basic assessment report for the proposed augmentation of the 132kv electricity supply infrastructure for the Nokeng Fluorspar Mining project on portion 5 and 11 of the Farm Kromdraai 209 JR and Naaupoort 208 JR Re in the City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0076.
- Draft basic assessment report for the proposed construction of four chicken houses on portion 40 of the farm Kloppersbos 128-JR in the City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0076.
- Draft impact assessment report for the proposed environmental authorisation amendment: duplication of the Vlakfontein (Benoni) Mamelodi water supply pipeline within the existing servitude phase 2 from the southern

boundary of the Rietvlei nature reserve to Mamelodi, City of Tshwane Metropolitan Municipality. Gaut 002/13-14/ E8845

- Final environmental impact assessment (EIA) report for the proposed township establishment and associated infrastructure to be known as Blue Hills extension 95 on portions 33, 34, 35, 36 and 37 of the farm blue hills 397-JR, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0098
- Draft basic assessment report for an establishment of an ATC (PTY) LTD telecommunications mast on the remaining extent of portion 41 of the farm Doornkloof 391-JR, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0114
- Draft basic assessment report for the proposed construction of a new boundary wall, Sefako Makgato Health Sciences University, Ga-rankuwa, City of Tshwane Municipality.
- Final Basic Assessment report for an application for the proposed township establishment on portion 573 of the farm Willow 340-jr to be known as Willow Park manor X58, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/ E0236
- Basic Assessment report for the proposed expansion of a cemetery on remainder of portion 3 of the farm Brakfontein 390-JR, City of Tshwane Metropolitan Municipality
- Basic Assessment report for the proposed filling station on portion 15 of the farm Waterval 273-JR, City of Tshwane Metropolitan Municipality
- Environmental Impact Assessment for the Gilgamesh mineral beneficiation plant in Pretoria West, City of Tshwane Metropolitan Municipality. Gaut 002/17-18/E0064
- Final Scoping Report for the proposed mixed use establishments on the remaining extent of Erf 8873, Ga-Rankuwa Unit 5, City of Tshwane Metropolitan Municipality. Gaut 002/18-19/E0060.
- Nema query for the proposed diesel depot on erf 500, Willow Park Manor Extension 5, Gauteng Province, City of Tshwane Metropolitan Municipality.

5.2. COMPILED

- Nema query for the proposed development of a filling station on erf 16029, Embalenhle extension 15, Mpumalanga Province, Govan Mbeki Local Municipality.
- Nema query for the proposed development of a filling station in Doornveld, Jane Furse, Limpopo Province, Makhuduthamaga Local Municipality.
- Nema query for the proposed development of a diesel depot on portion 21 of the farm Jachtkraal 339, North West Province, Tswaing Local Municipality
- Nema query for the proposed development of a filling station on portion 50 of the farm Benoni 77 IR, Gauteng Province, City of Johannesburg Metropolitan Municipality.
- Nema query for the proposed development of a diesel depot on erf 1042,on the remaining extent of portion 97 of the farm Witklip 232 IR, Delmas, Mpumalanga Province, Victor Khanye Local Municipality
- Nema query for the proposed development of a diesel depot on erf 1232, Delmas ext 14, Mpumalanga Province, Victor Khanye Local Municipality
- Nema query for the proposed development of a filling station on portion 23 of the farm Mimosa 61, North West Province, Mamusa Local Municipality.

5.3. PROJECTS CURRENTLY WORKING ON

- The proposed development of R510 Thabazimbi Filling Station with a total tank storage capacity of 184 m^3 on the remainder of the Farm Honingvley No. 99 K.Q, Thabazimbi, Thabazimbi Local Municipality, Limpopo Province
- The proposed development of a diesel depot with the total tank storage capacity of 498 m^3 on portion of the remainder of portion 11 of the farm Krelingspost No.425-JQ, North West Province, Madibeng Local Municipality
- Geotech Study for the Proposed Service Station in Protea Glen
- The proposed development of the filling station with the total tank storage capacity of 320m^3 on portion 19 of farm Aangewys 81/JS, Kriel, Emalahleni Local Municipality, Mpumalanga province.
- The proposed Development of a school on the remainder of the farm Molenje 204 LT, Dovheni Village Collins Chabane Local Municiality, Limpopo Province.

Specialist's Declaration Forms

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014

PROJECT TITLE

The proposed development of an Echo Academy Private School, on the remainder of the farm Molenje 204 LT, Dovheni Village, Collins Chabane Local Municipality, Limpopo Province

Specialist:	Mveledzo Environment and Safety Solution			
Contact person:	Mudau Takalani			
Field of Specialisation:	Ecology			
Physical Address:	Bester Street, Office no.2, ENM Timber Building, Nelspruit			
	Code	1200		
Postal address:	Bester Street, Office no.2, ENM Timber Building, Nelspruit			
Postal code:	1200		**Cell:**	078 9081633/ 081 4344234
Telephone:			**Fax:**	N/A
E-mail:	Mudaut2010@gmail.com			
Professional affiliation(s) and registration number (if any)	Sacnasp 117970			

Name of the Environmental Assessment Practitioner (EAP):	Magoro M.M			
Company Name:	Mang Geo-Enviro Services			
Postal address:	06 Eros Road, Boardwalk Office Park, Block 9, Unit 2, Faerie Glen			
Postal code:	0004		**Cell:**	081 428 6116
Telephone:	012 770 4022		**Fax:**	N/A
E-mail:	Mahlogonolomagoro@gmail.com			

4.2 The specialist appointed in terms of the Regulations_

I, TAKALANI MUPACI declare that –

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, 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 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; and
- All the particulars furnished by me in this form are true and correct.

Signature of the specialist:

Mveledzo Environment and Safety Solution

Name of company (if applicable):

November 2019

Date:

Signature of the Commissioner of Oaths for project/application:

01 Nov 2019

Date:

Practising Attorney

Designation:

Official stamp (below)

Ex Officio Commissioner of Oaths
807 Stanza Bopape Street
Arcadia, Pretoria

CERTIFIED TRUE COPY
OF THE ORIGINAL
DATE 01 Nov 2019
SIGNATURE TBW

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014

PROJECT TITLE

The proposed development of an Echo Academy Private School, on the remainder of the farm Molenje 204 LT, Dovheni Village, Collins Chabane Local Municipality, Limpopo Province

Specialist:	Rudzani Richard Munyai			
Contact person:	Rudzani Richard Munyai			
Field of Specialisation:	Heritage Impact Assessment			
Physical Address:	No. 25 Roodt Street, Mbombela			
	Code	1200		
Postal address:				
Postal code:			**Cell:**	083 357 3669
Telephone:			**Fax:**	086 263 5671
E-mail:	info@vhhc.co.za			
Professional affiliation(s) and registration number (if any)				

Name of the Environmental Assessment Practitioner (EAP):	Magoro M.M			
Company Name:	Mang Geo-Enviro Services			
Postal address:	06 Eros Road, Boardwalk Office Park, Block 9, Unit 2, Faerie Glen			
Postal code:	0004		**Cell:**	081 428 6116
Telephone:	012 770 4022		**Fax:**	N/A
E-mail:	Mahlogonolomagoro@gmail.com			

4.2 The specialist appointed in terms of the Regulations_

I, Rudzani R. Munyai declare that --

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, 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 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; and
- All the particulars furnished by me in this form are true and correct.

Signature of the specialist:

Vhuya Hashu Heritage Consultants

Name of company (if applicable):

27-11-2019

Date:

Signature of the Commissioner of Oaths for project/application:

2019-11-27

Date:

Designation:

Official stamp (below)

SUID AFRIKAANSE POLISIEDIENS
VISPOL
NELSPRUIT
2019 -11- 27
COMMUNITY SERVICE CENTER
NELSPRUIT
SOUTH AFRICAN POLICE SERVICE

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014

PROJECT TITLE

The proposed development of an Echo Academy Private School, on the remainder of the farm Molenje 204 LT, Dovheni Village, Collins Chabane Local Municipality, Limpopo Province

Specialist:	Mang Geo-Enviro Services			
Contact person:	Magoro M.M			
Field of Specialisation:	Earth Sciences			
Physical Address:	06 Eros Road, Boardwalk Office Park, Block 9, Unit 2, Faerie Glen			
	Code	0004		
Postal address:	06 Eros Road, Boardwalk Office Park, Block 9, Unit 2, Faerie Glen			
Postal code:	0004		**Cell:**	081 428 6116
Telephone:			**Fax:**	N/A
E-mail:	Mahlogonolomagoro@gmail.com			
Professional affiliation(s) and registration number (if any)	Sacnasp 120970			

Name of the Environmental Assessment Practitioner (EAP):	Magoro M.M			
Company Name:	Mang Geo-Enviro Services			
Postal address:	06 Eros Road, Boardwalk Office Park, Block 9, Unit 2, Faerie Glen			
Postal code:	0004		**Cell:**	081 428 6116
Telephone:	012 770 4022		**Fax:**	N/A
E-mail:	Mahlogonolomagoro@gmail.com			

4.2 The specialist appointed in terms of the Regulations_

I, MACORO M.M declare that --

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, 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 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; and
- All the particulars furnished by me in this form are true and correct.

Signature of the specialist:

Mang Geo-Enviro Services

Name of company (if applicable):

November 2019

Date:

TBN

Signature of the Commissioner of Oaths for project/application:

01 Nov 2019

Date:

Practising Attorney

Designation:

Official stamp (below)

CERTIFIED TRUE COPY OF THE ORIGINAL
01 Nov 2019
TBN