the dedet

Department:
Economic Development, Environment and Tourism
MPUMALANGA PROVINCIAL GOVERNMENT

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

(For applicant / EAP to complete)

File Reference Number:	
Project Title:	
Name of Responsible Official:	

(For official use only)

NEAS Reference Number:	
Date Received:	

Kindly note that:

1. Required information 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. Tables can be extended as each space is filled with typing.

2. Where applicable **black out** the boxes that are not applicable in the form.

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

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 competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.

5. All reports (draft and final) must be submitted to the Department at the address of the relevant **DISTRICT OFFICE** given below or by delivery thereof to the relevant **DISTRICT OFFICE**. Should the reports not be submitted at the relevant district office, they will not be considered.

6. No faxed or e-mailed reports will be accepted.

7. One copy of the draft version of this report must be submitted to the relevant district office. The case officer may request more than one copy in certain circumstances.

8. **Copies of the draft report must be submitted to the relevant State Departments / Organs of State for comment.** In order to give effect to Regulation 56(7), proof of submission/delivery of the draft documents to the State Departments / Organs of State must be attached to the draft version of this report.

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

10. All specialist reports must be appended to this document, and all specialists must complete a declaration of independence, which is obtainable from the Department.

SECTION A: BACKGROUND INFORMATION

Project applicant:	Reach More Lydenburg 1 (Pty) Ltd		
Trading name (if any):	N/A		
Contact person:	Henning Marais		
Physical address:	Suite 1 B Woodhill Park Centre, St Bernard Road, Garsfontein, Gauteng,0060		
Postal address:	Postnet Suite 39, Private Bag X19, Menlo Park, Gauteng		
Postal code:	1020	**Cell:**	082 562 8288
Telephone:	082 562 8288	**Fax:**	N/A
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Environmental Assessment Practitioner:	Interdesign Landscape Architects (Pty) Ltd		
Contact person:	Mazolo Dube		
Postal address:	P.O Box 74648, Lynnwood Ridge		
Postal code:	0040	**Cell:**	082 652 5848
Telephone:	012 348 1922	**Fax:**	012 348 7154
E-mail:	mazolo@ilaweb.co.za		
Qualifications:	BSc (Hons) Environmental Management 6 years experience		
Professional affiliations (if any):	IWMSA, IAIAsa		

SECTION B: DETAILED DESCRIPTION OF THE PROPOSED ACTIVITY

Describe the activity, which is being applied for, in detail. The description must include the size of the proposed activity (or in the case of linear activities, the length) and the size of the area that will be transformed by the activity.

The applicant, Reach More Lydenburg 1 (Pty) Ltd, proposes to establish a township, to be named, Lydenburg Extension 107, on the Remaining Extent of Portion 79 (a Portion of Portion 70) of the farm Sterkspruit 33, Registration Division J.T., Province of Mpumalanga. The proposed township development is currently in the preliminary design phase and the appointed Town Planners, Wes Town Planners CC, have drafted a preliminary layout plan comprising of a "Mixed-Use" type of development as summarised in the Table below.

LAND USE	ERF NO.	NUMBER	AREA	%
Residential 2 (One dwelling per Erf)	1 -140	140	2.6147 Ha	31.5
Offices, Shops, Place of Refreshment, Mini/Self Storage Units, Guest House & Garden Centre	141 & 142	2	1.4749 Ha	17.8
Residential 2 (60 Dwelling Units/Ha)	143 & 144	2	1.0179 Ha	12.3
"Special" for: Access, Access Control, Gate House & Engineering Services	145 & 146	2	2.9535 Ha	35.6
Public Road			0.2294 Ha	2.8
TOTAL		**146**	**8.2904 Ha**	**100**

All the proposed landuses indicated in the Table above add up to a total of 146 erven measuring 8.2904 Ha in extent, and these are described in detail below:

- **Erven 1 – 140 (140 erven):**
  - These 140 erven will be zoned "Residential 2" and one dwelling units will be erected on each erf.
  - The average size of these erven will be ±257m².
  - The total area within this township occupied by this 140 "Residential 2"erven is ±2,6147ha, or 31,5% of the total area of the township.
- **Erven 143 & 144 (2 erven):**
  - These two erven will also be zoned "Residential 2", but at a density of 60 dwelling units per erf.
  - The two erven are ± 5000m² each (±10,000m² in total) with the net result that ±30 dwelling units can be erected on each erf, or 60 in total on the two erven.
  - These tow erven occupy ±12,3% of the total area of the township.
- **Erven 141 & 142 (2 erven):**
  - These two erven will be zoned "Special" and will consist of a mixed development with the following possible uses:
    - Offices (Professional offices and/or doctor's consulting rooms.
    - Shops (Convenience goods mainly for the residents of the townships, but not restricted to them only)
    - Places of Refreshment, such as take-a-ways and cafés and restaurants.
    - Mini storage units for the residents in the township, but not restricted to them only.
    - Gardens Centre or nursery.

- Guesthouses and/ or a hotel. These uses will be complementary to the residential component of the township and will be a small scale development.
- ❖ The two erven occupy ±1,4749ha, or 17,6% of the total area of the township.

- **Erven 145 & 146 (2 erven):**
  - ❖ These two erven will be zoned "Special" and will be used for the access routes to the erven in the township and will also accommodated the engineering services to the individual erven in the township, as well as the gate house for security control.
  - ❖ These two "private roads" will be constructed and maintained by the developers / owners of the township and will be transferred to a Non Profit Company (NPC) to be established with the proclamation of the township.
  - ❖ The two erven occupy ±2,9535ha, or ±35,6%.
- **Public Road:**
  - ❖ A portion of the land over which a Road widening servitude has been registered, with an area of ±0,2294ha will be used for public road purposes.
  - ❖ This portion of land represents ±2,8% of the total area of the land.

Refer to *Appendix A1* for the Township Layout Plan.

ENGINEERING SERVICES

Formal and informal consultations between the developer and the local municipality this far confirm existing engineering services in the area are currently inadequate or over capacitated to support the proposed township development. According to the Thaba Chweu Local Municipality (TCLM) Integrated Development Plan 2014/2015, TCLM is unable to provide the required services in the short term due to financial constraints. However, the developer's consultations with the relevant departments in the TCLM, though still ongoing have so far yielded the following consensus on each of the required engineering services (refer to ***Appendix G5*** for Minutes of the Meeting).

Water Supply

- Until such time as the township can be connected to the Municipal water network, an interim measure will be put in place for the developer to abstract water from existing boreholes according to municipal requirements.
- The officials of the Municipality and the developers will work together in achieving the necessary goals to provide water from boreholes as an interim measure. This issue will also be addressed in the Service Agreement.

Sewerage Services

- It was also agreed between the Municipality and the developer that a sewer package plant will be provided and that the sewer will only at night be pumped through the municipal network.
- This issue will also be addressed in full in the Service Agreement.

Electrical Supply

- TCM informed the developers that they cannot apply to ESKOM for an increase in their maximum demand, due to the Municipalities payment arrears to ESKOM.
- The developer and ESKOM had discussions to supply electricity directly for the ESKOM 22kV network, on receipt of a formal application. The Municipality has agreed to this, provided that the township can at a later stage connect to the Municipal Electricity network.
- This issue will also be addressed in the Service Agreement**.**

Stormwater Drainage

- The stormwater drainage will be dealt with in the design of the road network and this will also be part of the Service Agreement with the TCM.

Traffic Engineering

- This located along an existing tarred road that leads for the centre of town and the access to the township will be obtained from this road my means of a traffic light.
- This road does not carry great volumes of traffic and is nearly a road connecting the rural areas with the town centre.
- The proposed development is also not regarded as a high traffic generator since only ± 200 dwellings units are envisaged, plus a small business node which will mainly serve the residents in this township

and some passing traffic.
- No traffic engineering problems are foreseen at this stage, but if the Municipality does request a Traffic Impact Assessment, or Traffic Statement, such Assessment or Statement will be provided on request.

An Engineering Services Report compiled by Mhiduve (Pty) Ltd, proposes the following based on the above preliminary engagements with the TCLM. Refer to ***Appendix F1*** for the Engineering Services Report.

Water Supply and Reticulation

Availability of Bulk Water

According to TCLM, there is currently not sufficient capacity of treated water available for this new development.

It is however possible to supply an alternative source of potable water to the township by means of existing boreholes and a small treatment plant and storage system.

There are currently 2 existing boreholes on the site and new boreholes can be drilled and equipped if additional capacity are required.

The developer will apply for a new Water Use License for the boreholes and water treatment and supply system.

Water conservation measures can also be introduced to all units in the township to reduce the consumption of potable water. These measures can be a combination of the following:

- Rain water harvesting from roofs
- Storm water attenuation and harvesting
- Separation of grey and black water and re-use of grey water
- Red water saving and circulation systems

Water Demand Criteria

The water demand criteria used for the calculation of pipe sizes are as follows:

Average daily demand (ADD)	-	0.18 Ml
Peak factor	-	3.67
Fire risk	-	moderate
Fire flow criteria	-	8 l/s @ 0.7 hours
		Hydrant spacing 240m (max)
Instantaneous demand	-	24m
Minimum pressure	-	20m
Position	-	In road reserve
Pipe material	-	UPVC class 12
Pipe size minimum	-	63 HDPE
	-	80 UPVC
Peak demand	-	6.86 l/s

Water Demand

The water demand for the township has been calculated for three possible scenarios:

I. Instantaneous demand x Peak factor
II. Fire demand at various hydrants individually (not simultaneously)
III. Instantaneous demand x Peak factor + fire demand as above

Water reticulation

It is proposed that a supply main of 160mm dia pipe be constructed from the 160mm connection point to the north of the township. The internal reticulation will then consist of 110mm dia, 90mm dia and 75mm dia Class 9 HDPE pipes as per the detail hydraulic engineering design to be completed.

Ownership and Maintenance

The borehole field and on-site treatment plant and storage facilities will be managed by the home owners association until such time that the service can be connected to the municipal water main.

After construction and eventual connection of the water reticulation network to the municipal main, it will be taken over and managed by the TCLM.

Sewerage Services

General

A Gravity waterborne sewerage system is proposed for this township with the reticulation to be installed in both the mid-blocks and road reserves, 1m from the boundary.

The reticulation system will drain to a dedicated erf at the lowest point on the western boundary of the site where an on-site *Puricare* package plant system will be installed to accommodate and treat all sewer effluent.

The developer will apply for a new water use license for this purification plant.

The added benefit of the on-site treatment plant will be:

- Use of the treated effluent for irrigation of the estate
- Use of the treated effluent and by-products as natural fertilizer for the greenhouses and nursery
- Possible inclusion of digester system and natural gas harvester to be used for small scale power generation of provision of natural gas for water heaters and stoves

Should a sewer connection be available in the future the development would also then be able to connect to this system.

Design Criteria

The design criteria for the sewerage system are as follows:

Daily flow	-	0.1926Ml
Peak factor	-	6.8
Minimum grades		
110mm dia House connections		1:60
160mm dia		1:40
200mm dia		1:200
Min velocity	-	0.7m/s
Max manhole spacing	-	80m
Infiltration	-	15%
Max flow depth	-	167% of peak
Main lines min. dia	-	160mm
Manning coefficient	-	n=0.012
Position	-	In road reserve and mid-block
Peak flow	-	19.8 l/s
Total flow per day	-	0.1926 Ml/day

Materials to be used

The materials proposed to be used for sewerage reticulation are:

110mm dia pipes	UPVC class 34 solid wall Supradur
60mm dia pipes	UPVC class 34 solid wall Supradur
200mm dia pipes	UPVC class 34 solid wall Supradur
Bedding and backfill	SABS 1200
Minimum pipe size	
Main	160mm dia
House connection	110mm dia
Manholes	Precast concrete
Covers	Concrete

Internal reticulation

Internal sewerage disposal of the township will be handled by means of an underground uPVC pipe network. Pipe sizes will be as per the hydraulic engineering design with all relevant elements like manholes, erf connections, etc. to the specification of the local authority. The pipes will be installed within road reserves, along erf boundaries and mid block servitudes gravitating towards the on-site purification package plant.

Ownership and Maintenance

The on-site plant will be managed by the Home Owners Association until such time that the service can be connected to the municipal main.

After construction and eventual connection of the sewerage network to the municipal main, it will be taken over and managed by the TCLM.

Storm water

General

The site is characterized by slopes of between 1:100 and 1:25 and this new development will not be required to accept run-off from the higher lying areas and discharge into Berg Street from where it will be channeled within the existing system until it reaches the furrow to the south.

All stormwater management will be in accordance with the Department of Water and Sanitation and the Thaba Chweu Local Municipality requirements.

Stormwater Design Criteria

The development is situated on land with a slope of between 1% to 5%. This will lead to moderate flow velocities with very little erosion of the in-situ soils. The drainage system should be designed and constructed to minimize the impact of the development on the stormwater characteristics of the property.

The main function of the roads in a residential area is to carry traffic. They should however also have a stormwater management function. During minor to moderate rainfalls these two should not conflict.

The stormwater management system within the proposed developments will not accommodate runoff from adjacent higher lying areas.

The property is not affected by the 1:100 year floodline.

The design standards proposed are:

- Kerbed, surfaced roads to accommodate 1:20 year return period stormwater runoff.
- Kerb inlets and underground pipe on primary and secondary roads to accommodate the 1:5 year return period stormwater runoff.
- Erosion protection and stabilisation of erodable areas and associated sedimentation control.
- No attenuation or retention ponds are needed for this development due to the close proximity to the natural waterways.

The storm water system design accommodates the surface run-off from all the erven into the roads which acts as channels to dispose all storm water to lower laying areas. It is estimated that the amount of storm water run-off from this development however exceeds the maximum run-off that can be accommodated surface wise into the internal road network and therefore an underground drainage system will have to be installed.

The preliminary storm water design indicates that drainage will be by means of surface runoff in the roads, accumulated by kerb inlets at the positions shown on the drawing and it will then be conveyed by an underground pipe system to the edge of the township from where it will be channeled by a pipe system until it reaches the furrow to the south. The disposal of collected storm water from the roads is designed in such a manner as not to concentrate storm water run-off and to cause the least amount of impact on the existing environment.

Ownership and Maintenance

After construction of the storm water network, the Thaba Chweu Local Municipality will take over, operate and maintain the complete network

Roads

Existing roads

The only access to the township will be from the existing Morgan street, on the western boundary of the development. Two 7m wide dual carriage way entrance roads from the intersection will enter the township and taper to a single 7m wide entrance road into the township.

Road design criteria

The preliminary proposed geometric and pavement design norms for the roads in the proposed development are given in *Table 1 and Table 2* below:

Table 1: Geometric norms

Road Classification	Travel way width	Walkway shoulder		Design Speed	Min Horizontal	Vertical Curves
4	7.4	1.0	2% max	60 km/h	30	8/30
5a	5.5	1.0	n/a	40 km/h	15	4/20

Table 2: Proposed pavement design

Road Classification	Surfacing	Base Course	Sub-base	In-Situ
Class 4	25mm Asphalt / Double seal	G2 Natural Gravel (86% apparent Density)	C4 Cemented (95% Mod AASHTO Density)	Scarified and recompacted 150mm (93% Mod AASHTO density)
Class 5a	25mm Asphalt / Double seal	G2 Natural Gravel (86% apparent Density)	C4 Cemented (95% Mod AASHTO Density)	Scarified and recompacted 150mm (93% Mod AASHTO density)

Road Construction Standards

Roads are to be constructed to standards as specified in SABS 1200. Road materials conforming to the requirements of TRH 14 will be specified.

Road building materials in the area still needs to be identified. Slag from the chrome smelters in the area can be used as road building material and are readily available.

The Residential access collector road through the development will consist of a 6.0m wide road constructed within a 13.5m road reserve. All other collector roads will be 5.5m wide within a 10.5m road reserve.

Allowance has been made for various pavement layers of the roads as a result of the geotechnical investigations not being completed. A detailed road design can only be done once the existing soil conditions are known. All the afore-mentioned roads will be surfaced by an asphalt layer and edged by mountable kerbs and concrete edge beams as per the standards prescribed by the local authority.

Ownership and Maintenance

After construction of the road network system, the TCLM will take over, operate and maintain these roads.

Solid waste

All solid waste will be collected by the Thaba Chweu Local Municipality and disposed of at the municipal waste disposal site, subject to a Service Agreement.

Electricity Supply
Consolidated Power Engineering(Pty) Ltd was appointed to investigate the availability and capacity of electricity supply for the proposed township development. According to their findings, an 800kvA connection to the existing Eskom grid is required to service 144 stands proposed for the township. An application in this regard was submitted to the Thaba Chweu Local Municipality, and the municipality confirmed in response Lydenburg Ext 17 has serious capacity constraints and the substation feeding the area is already over its maximum supply demand. However, following further engagements on the matter the TCLM advised the client to apply directly to Eskom. Eskom confirmed that power can be made available, and an application has been submitted. Refer to ***Appendix F2*** for the confirmation and aforementioned correspondences.

SECTION C: PROPERTY/SITE DESCRIPTION

Provide a full description of the preferred site alternative (farm name and number, portion number, registration division, erf number etc.):

The proposed township development is on the Remaining Extent of Portion 79 (a Portion of Portion 70) of the farm Sterkspruit 33, Registration Division J.T., in Lydenburg within Thaba Chweu Local Municipality, Mpumalanga Province. The property is located approximately 3.5km south of Lydenburg's CBD, along Berg Road (25° 7'29.10"S, 30°27'41.27"E). Existing development on the property mainly comprises a farm house and orchard on the central portion, vegetable gardens in greenhouses to the east, and a dwelling unit for farm workers further east towards the railway line. The land is zoned, "Agriculture" which permits one dwelling house and agricultural uses. The surrounding land uses in the area are mostly agricultural and residential in nature, although a few non-agricultural uses such as brick making, lodges, fuel depot, logistics, and other small businesses are also present in the wider area

No any other site alternatives are being considered, as this is the only site in the area available to the developer for the proposed township development. The site is the most suitable and strategic location for the proposed township development because of the following reasons:

- It is in proximity to the town's Central Business District (3.5km away) and accessible through a surfaced road
- There is already an existing residential complex up the road, approximately 760m north of the site, which makes the proposed development compatible with surrounding land uses from a planning perspective and promotes interconnection of services and urban densification
- In terms of the TCLM Strategic Development Framework, the development site is located within the urban edge and spatial structure of the Lydenburg/Mashishing Primary Node. The development strategies of this primary node are to:
    - *Capitalise on its good regional connectivity and existing diverse economic base by creating space for the expansion of the industrial, retail and services sectors;*
    - *Promote the attractiveness of the area as a residential area through the provision of community facilities, social amenities and transport facilities;*
    - *Establish a sound development platform to attract and retain business and residential communities through the provision of basic services and amenities; and*
    - *Implement growth management measures such as an urban edge and promote infill development and densification as opposed to spatial expansion.*

  The development site is located in an area specifically identified for "Residential extensions" land use in the primary node, which supports the following:
    - *These areas should contain a mix of residential densities and tenure options.*
    - *Medium density (20-40 units per hectare): around public transport routes, and in and around mixed-use areas.*
    - *Low density: Up to 20 units per hectare.*
    - *Other uses accommodated in these areas: community facilities and amenities, preferably along main roads.*
    - *Small local retail and service nodes focussed on daily necessities; located near intersections of main roads.*

The following land use rights apply:

- *Residential density: medium density areas along public transport routes: 20-40 units per hectare. In mixed use areas, these densities can be increased in the consent of the municipality.*
- *Residential density: low density areas up to 20 units per hectare.*
- *Height medium density residential: 3 storeys.*
- *All other land uses: 2 storeys.*

- Although the development site is zoned "Agricultural", it is classified as of low agricultural potential in terms of the Land Capability Map in the SDF. As such, no further investigations on the agricultural potential of the land have been conducted as part of this Basic Assessment process.

IDENTIFIED SITE DEVELOPMENT CONSTRAINTS

Geotechnical

According to the findings of a Geotechnical Investigation conducted by Louis Kruger Geotechnics CC, the development site is divided into two engineering geological zones (Refer to ***Figure 1*** below).

1. Engineering geological zone 1: Hillwash underlain by residual shale and diabase bedrock (calculated heave>30mm). This zone has the following effects on the foundation of structures:
   - The hillwash is potentially expansive, and classified as "High". Therefore, it is not considered suitable founding material. If unadapted structures are founded on this material, and the moisture condition of the in-situ material should vary, unacceptable differential movements, with resultant cracking may occur in structures;
   - The residual shale is potentially expansive, and classifies as "Medium". Therefore, it is not considered suitable founding material. If unadapted structures are founded on this material, and the moisture condition of the in-situ material should vary, unacceptable differential movements, with resultant cracking may occur in structures;
   - The calculated heave exceeds 30 mm; and
   - The weathering of diabase is irregular with pockets of rock adjacent to deeply weathered slots in which corestones may be present. Founding unadapted structures partly on residual material and bedrock or diabase boulders may result in unacceptable differential, vertical movements in structures, with resultant cracking of structures.

2. Engineering geological zone 2: Hillwash underlain by residual shale and shale bedrock (calculated heave >30mm). This zone has the following effects on the foundation of structures:
   - The hillwash is potentially expansive, and classified as "High". Therefore, it is not considered suitable founding material. If unadapted structures are founded on this material, and the moisture condition of the in-situ material should vary, unacceptable differential movements, with resultant cracking may occur in structures;
   - The residual shale is potentially expansive, and classifies as "Medium". Therefore, it is not considered suitable founding material. If unadapted structures are founded on this material, and the moisture condition of the in-situ material should vary, unacceptable differential movements, with resultant cracking may occur in structure; and
   - The calculated heave exceeds 30 mm.

In terms of excavatability, it is generally classified as "soft to intermediate" up to an average depth of 1,5 meters. The possible variation in bedrock depth and the presence of boulders should be noted.

In terms of the NHRBC Zoning, the entire development site is zoned H3, as the hillwash and the residual shale are potentially expansive resulting in the presence of periodical shallow perched water table (refer to ***Appendix A4 for the large scale maps (A3 Size) depicting the above mentioned Geological Zones and Perched Water table***) .

The laboratory test results show that the hillwash is not considered suitable as construction material. The residual shale could, depending on the composition be suitable as fill.

*Refer to the Geotechnical Report attached as **Appendix D1** for further details on the above findings and recommendations made.*

Heritage

Three sites of heritage significance, two stone walled complexes and one old furrow, were identified on the development site according to a Heritage Impact Assessment conducted by Marko Hutten, attached as ***Appendix D2***. These heritage sites numbered SSP 001, SSP 002 and SSP 003 respectively, were mapped and documented as follows:

1. **Site SSP 001:** GPS 25º 07' 29.1" S, 30° 27' 33.1" E

- is an extended stone walled complex identified on the western extreme of the property and study area, covering approximately 1.5 hectares in extent. The identified site consists of several stone walled enclosures, terraces and possible cattle tracks. Some of the enclosures are connected and together they form an extended, continuous site. However, the walls are in a dilapidated state and are low and covered with grass and other vegetation, which makes them difficult to identify. The walls were also damaged to an extent as previous ploughing activities (fields) were also identified nearby the walls. The walls look like low mounds of discarded rocks, but they are continuous and do form patterns and shapes (enclosures, terraces and perimeter walls). No artefacts or any other finds were found in association with the stone walls.
  Field Rating: Generally Protected B. Grade 4B
  Heritage Significance: Medium
  Impact: Moderate
  Certainty: Definite
  Duration: Demolished
  Mitigation: B – Mapping of the site and controlled sampling required

2. **Site SSP 002:** GPS 25° 07' 27.7" S, 30° 27' 49.8" E

- is another stone walled complex identified on the northern edge of the property in between the green houses and the railway line. The site measures approximately 50m in diameter and consists of a few enclosures which are connected to each other. The walls are difficult to identify as they are in a dilapidated state, low and covered with grass and other vegetation. The walls were also damaged to an extent as previous ploughing activities (fields) were also identified nearby the walls. The walls look like low mounds of discarded rocks, but they do form inter-connecting enclosures. No artefacts or any other finds were found in association with the stone walls.
  Field Rating: Generally Protected B. Grade 4B
  Heritage Significance: Medium
  Impact: Moderate
  Certainty: Definite
  Duration: Demolished
  Mitigation: B – Mapping of the site and controlled sampling required

3. **Site SSP 003:** GPS 25° 07' 28.9" S, 30° 27' 42.0" E

- is a furrow crossing the central parts of the property from the south to the north. It is indicated to pass on the eastern side of the homestead. Possible indications of this furrow were identified next to the fence of the yard of the homestead. Most of the furrow is filled up and its exact location and course are not clear. The furrow as such is not functioning anymore and has very little heritage value or significance. No other features or any other finds were found in association with the furrow. No other references regarding this furrow were found during the literature study. The origin and age of the furrow is unknown.
  Field Rating: Generally Protected C. Grade 4C
  Heritage Significance: Low
  Impact: Low
  Certainty: Definite
  Duration: Demolished

Mitigation: A – No further action necessary

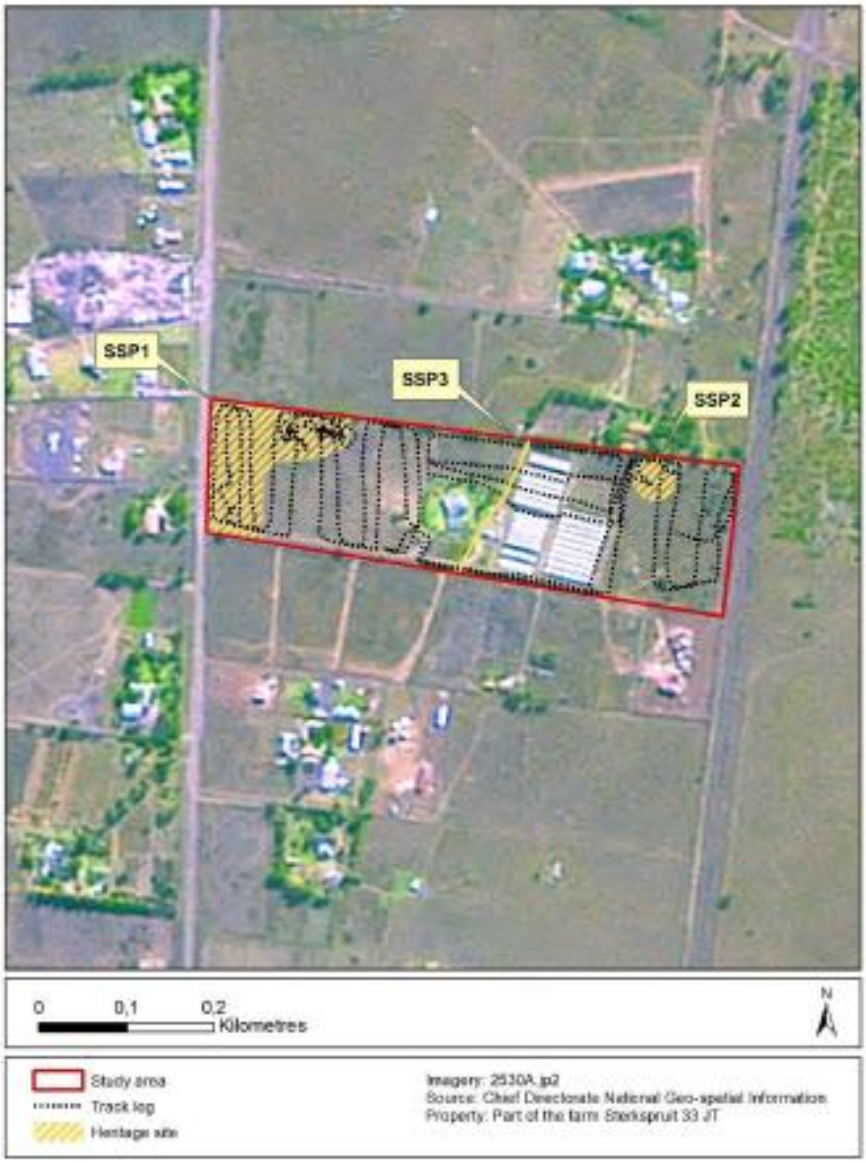

Figure 1: Sensitive heritage sites identified on the development site (refer to ***Appendix A4*** for the large scale map)

Indigenous trees

The following indigenous trees were identified on the development site:

- Sweet Thorn (*Vachellia karroo*);
- Paperbuck tree (*Vachellia sieberiana*); and
- Ankle Thorn (*Vachellia robusta*).

All the above identified tree species are not nationally protected in terms of the Department of Agriculture Forestry and Fisheries (DAFF): *Notice of the List of Protected tree species under the National Forest Act, 1998 (Act No.84 of 1998).* Therefore no permit is required for removal of the trees subject to confirmation from the Mpumalanga Tourism and Parks Agency (MPTA) , and in terms of the layout plan these trees will be removed, though this is not recommended from an ecological perspective. Appropriate mitigation measures have been included in the EPMr in Appendix H for consideration prior removal of these trees.

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

Latitude (S):		Longitude (E):	
25°	07.480‘	30°	27.698‘

In the case of linear activities:

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):		Longitude (E):	
°	‘	°	‘
°	‘	°	‘
°	‘	°	‘

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 an appendix to this document.

The site or route plans must be at least A3 and must include the following:

6.1 a reference no / layout plan no., date, and a legend / land use table
6.2 the scale of the plan which must be at least a scale of 1:2000;
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 indigenous trees taller than 1.8 metres and all vegetation of conservation concern (protected, endemic and/or red data species);
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):
- watercourses and wetlands;
- the 1:100 year flood line;
- ridges;
- cultural and historical features;

6.9 10 metre contour intervals

Refer to ***Appendix A*** for all the Site Plans including sensitivity maps.

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 as an appendix to this form**.**

Refer to ***Appendix B*** for the site photographs.

FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as an appendix 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.

No facility illustrations are available at this stage as the township layout and associated services infrastructure is still in the preliminary design phase.

SECTION D: BASIC ASSESSMENT REPORT

Prepare a basic assessment report that complies with Regulation 22 of the Environmental Impact Assessment Regulations, 2010. The basic assessment report must be attached to this form and must contain all the information that is necessary for the competent authority to consider the application and to reach a decision contemplated in Regulation 25, and must include:

		(Checklist for official use only)
1.	A description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity.	
2.	An identification of all legislation and guidelines that have been considered in the preparation of the basic assessment report.	
3.	Details of the public participation process conducted in terms of Regulation 21(2)(a) in connection with the application, including – (i) the steps that were taken to notify potentially interested and affected parties of the proposed application; (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; (iii) a list of all persons, organisations and organs of state that were registered in terms of regulation **55** as interested and affected parties in relation to the application; and (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	
4.	A description of the need and desirability of the proposed activity;	
5.	A description of any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity;	
6.	A description and assessment of the significance of any environmental impacts, including— (i) cumulative impacts, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the activity; (ii) the nature of the impact; (iii) the extent and duration of the impact; (iv) the probability of the impact occurring; (v) the degree to which the impact can be reversed; (vi) the degree to which the impact may cause irreplaceable loss of resources; and (vii) the degree to which the impact can be mitigated;	
7.	Any environmental management and mitigation measures proposed by the EAP;	
8.	Any inputs and recommendations made by specialists to the extent that may be necessary;	
9.	A draft environmental management programme containing the aspects contemplated in regulation **33**;	
10.	A description of any assumptions, uncertainties and gaps in knowledge;	
11.	A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation	
12.	Any representations, and comments received in connection with the application or the basic assessment report;	
13.	The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants;	
14.	Any responses by the EAP to those representations, comments and views;	
15.	Any specific information required by the competent authority; and	
16.	Any other matters required in terms of sections 24(4)(a) and (b) of the Act.	

The basic assessment report must take into account -

(a) any relevant guidelines; and

(b) any departmental policies, environmental management instruments and other decision making instruments that have been developed or adopted by the competent authority in respect of the kind of activity which is the subject of the application.

* In terms of Regulation 22(4), the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in subregulation 22(2)(h), exist.

Have reasonable and feasible alternatives been identified, described and assessed?		**NO**
Refer to Section 4 of the Basic Assessment Report for the motivation in terms of Regulation 22.		

SECTION E: CONSULTATION WITH OTHER STATE DEPARTMENTS

Provide a list of all State Departments / Organs of State that have been consulted and registered as interested and affected parties, and to whom draft reports have been submitted for comment. **Proof of submission / delivery of the draft report to all State Department / Organs of State must be attached to this document *(Refer to Appendix G8).***

Department:	Department of Water and Sanitation		
Contact person:	Mr. Sydney Nkuna		
Postal address:	Private Bag X11259, Nelspruit		
Postal code:	1200	**Cell:**	082 585 1155
Telephone:	(013) 759 7331	**Fax:**	(013) 759 7525
E-mail:	Nkunas2@dws.gov.za		

Department:	Mpumalanga Tourism and Parks Agency		
Contact person:	Mr. Mervyn Lötter – Acting Manager: Biodiversity Planning		
Postal address:	Private Bag X 1088		
Postal code:	1120	**Cell:**	083 299 7618
Telephone:	013 235 2395	**Fax:**	086 578 7990
E-mail:	mervyn@intekom.co.za		

Department:	Mpumalanga Provincial Heritage Resources Authority		
Contact person:	B. Moduka – Provincial Manager		
Postal address:	1st and 2nd Floor, Building 5- Government Complex, 7 Government Boulevard, Riverside Park, Nelspruit		
Postal code:	1200	**Cell:**	
Telephone:	(0)13 766 5196	**Fax:**	013 766 5575/6
E-mail:	bmoduka@mpg.gov.za		

Department:	Ehlanzeni District Municipality – Municipal Health Services and Environmental Management		
Contact person:	Mr Thapelo Shabangu – Department Manager		
Postal address:	P.O Box 3333, Mbombela		
Postal code:	1200	**Cell:**	
Telephone:	(013) 759 8554	**Fax:**	(013) 759 8539
E-mail:	tshabangu@ehlanzeni.gov.za		

Department:	Thabo Chweu Local Municipality – Community Services		
Contact person:	Olga Wallace		
Postal address:	P.O Box 61, Mashishing		
Postal code:	1120	**Cell:**	(0)76 420 7468
Telephone:	(013) 235 7338	**Fax:**	(0)13 235 1108
E-mail:	owallace@thabachweumu.gov.za		

Department:			
Contact person:			
Postal address:			
Postal code:		**Cell:**	
Telephone:		**Fax:**	
E-mail:			

SECTION E: APPENDICES

The following appendices must be attached to the basic assessment report as appropriate:

Appendix A: Site plan(s)

Appendix A1: Township Layout Plan
Appendix A2: Surveyed Layout
Appendix A3: Locality Maps
Appendix A4: Environmental Sensitivity Maps

Appendix B: Site Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix D1: Geotechnical Report
Appendix D2: Heritage Impact Assessment Report
Appendix D3: Palaeontological Assessment

Appendix E: Comments and responses report

Other information

Appendix F: Town planning info

Appendix F1: Engineering Services Report
Appendix F2: Electricity Supply

Appendix G: Details of public participation process

Appendix G1: Site notices
Appendix G2: Background Information Document (BID) and proof of notification
Appendix G3: Proof of newspaper advertisements
Appendix G4: Communications to and from I&APs
Appendix G5: Minutes of any public and/or stakeholder meetings
Appendix G6: Copy of the register of I&APs
Appendix G7: Copies of comments from I&APs on the application
Appendix G8: Proof of submission/delivery of the draft BAR

Appendix H: Draft Environmental Management Programme (EMPr)

Appendix I: Methodology for Impact Assessment

INTERDESIGN
LANDSCAPE ARCHITECTS

PRETORIA
410 Pauline Spruijt Street, Garsfontein x 8, 0081
P.O. Box 74648, Lynnwood Ridge, 0040
Tel: +27 12 348 1922, Fax: +27 12 348 7154
Email: info@ilaweb.co.za, Website: www.ilaweb.co.za

PIET RETIEF
P.O. Box 992, Piet Retief, 2380

DRAFT BASIC ASSESSMENT REPORT:

Proposed township development, to be named Lydenburg Extension 107, on the Remaining Extent of Portion 79 (a portion of Portion 70) of the farm Sterkspruit 33, J.T, in Lydenburg, Thaba Chweu Local Municipality, Mpumalanga Province

M-DARDLEA Ref: 17/2/3/E-306

15 September 2015

APPLICANT: REACH MORE LYDENBURG 1(PTY) LTD

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FIGURES

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1. Description of the biophysical, socio-economic, and cultural environment

1.1 Existing and surrounding land use

The site development is located approximately 3.5km south of Lydenburg's CBD, along Berg Road (25° 7'29.10"S, 30°27'41.27"E). Existing development on the property mainly comprises a farm house and orchard on the central portion, vegetable gardens in greenhouses to the east, and a dwelling unit for farm workers further east towards the railway line. The land is zoned, "Agriculture" which permits one dwelling house and agricultural uses. The surrounding land uses in the area are mostly agricultural and residential in nature, although a few non-agricultural uses such as brick making, lodges, fuel depot, logistics, and other small businesses are also present in the wider area (**Figure 1**).

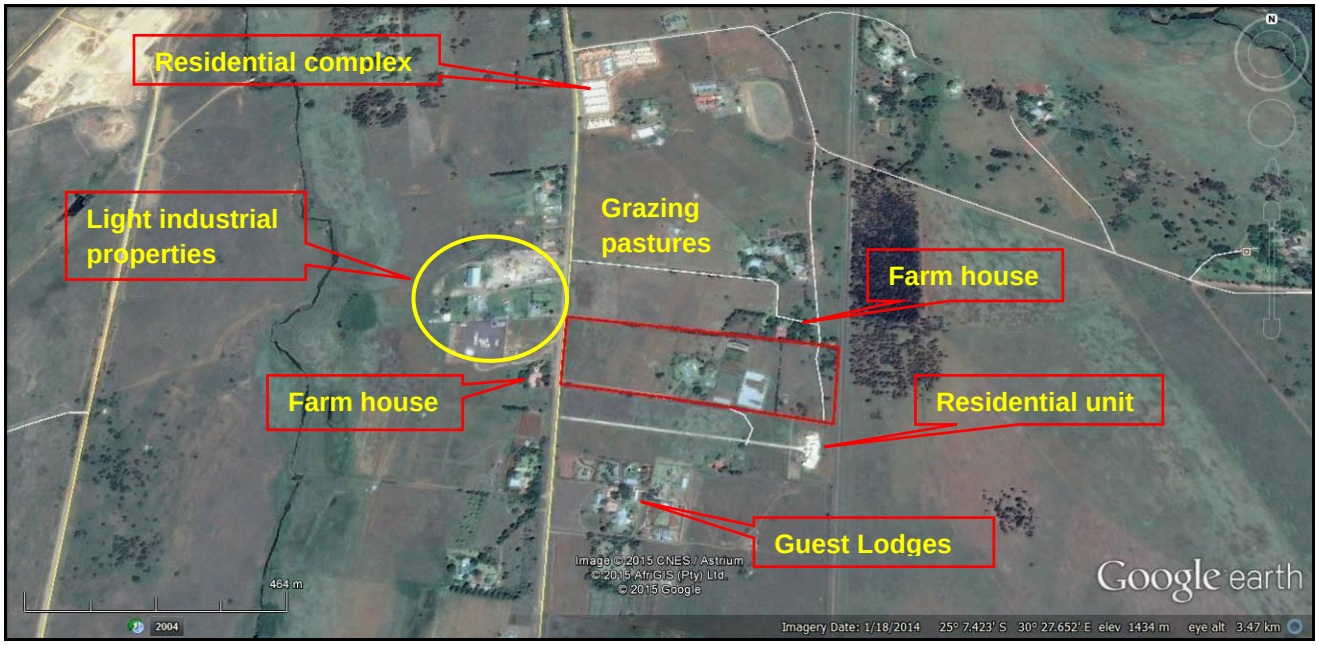

Figure 1: A satellite image of the development site showing the surrounding land uses within a 500m radius

1.2 Site Topography and Drainage

An interpretation of the contour map (refer to ***Appendix A2***) of the development site indicates a gradient predominantly gravitating westerly , and surface water mainly drains by means of sheet wash. According to the Geotechnical findings, the contours show that the western and central part of the site slope at an average of 4% towards the west and that the eastern part of the site slopes at an average of 3% towards the north-west. The average site topography is 1433m above mean sea level. Currently, stormwater flowing from the central portion of the site slowly infiltrates and gravitates north westerly into a furrow outside the western boundary of the property running in parallel and within the road servitude. The following design is therefore proposed by the engineers for storm water management on site:

- The drainage system should be designed and constructed to minimise the impact of the development on the stormwater characteristics of the property;

- The stormwater design standards proposed for the township development are:
  - Kerbed, surfaced roads to accommodate 1:20 year return period stormwater runoff.
  - Kerb inlets and underground pipe on primary and secondary roads to accommodate the 1:5 year return period stormwater runoff.
  - Erosion protection and stabilisation of erodable areas and associated sedimentation control.
  - No attenuation or retention ponds are needed for this development due to the close proximity to waterways.
- The proposed stormwater system is designed to accommodate surface run-off from all the erven into the roads, which acts as channels to dispose all stormwater to lower laying areas. It is estimated that

the amount of stormwater run-off from this development however exceeds the maximum run-off that can be accommodated surface wise into the internal road network and therefore an underground drainage system will have to be installed.

- As part of the storm water design, drainage will be by means of surface runoff on roads, accumulated by kerb inlets at the positions shown on the drawing and it will then be transported through an underground pipe system to the edge of the township from where it will be channelled by a pipe system until it reaches the furrow to the west . Appropriate control measures will be incorporated into the design to prevent the concentration of collected stormwater and subsequent high velocity discharge.

The development site is not bounded or traversed by any natural drainage, or affected by any wetland areas. Regionally, the development area lies upon the toe of the north-western slope of a prominent hill, between the Sterkspruit and Dorringkloofspruit. These two fluvial drainage lines drain northwards and coalesce north-west of the project area where they become the Dorps River.

1.3 Site Geology and Geotechnical Conditions

According to the 1:50 000 Geological Map, the development site is underlain by shale of the Silverton Formation, Pretoria Group, Transvaal Supergroup and by diabase (refer to **Figure 2** below). The Geotechnical Investigation (***Appendix D1)*** confirms the presence of shale and diabase encountered in the test pits with the following soil profile:

- **Hillwash -** slightly moist, brown to orange brown, soft, shattered, slickensided, silty sand with small and medium sized diabase cobbles and with abundant ferricrete nodules was encountered in all the test pits from surface up to an average depth of 0,8 meters.

- **Residual Shale** - slightly moist, yellow mottled orange, red and grey, soft intact, clayey sandy gravel consisting of very soft- and soft rock shale fragments and ferricrete nodules was encountered in all the test pits from an average depth of 0,8 meters up to an average depth of 1,6 meters.

- **Shale** - Medium hard rock shale was encountered in test pits 1, 4, 5, 7 and 8 at an average depth of 1,6 meters.

- **Diabase** - very soft rock diabase was encountered in test pits 2, 3 and 6 from an average depth of 1,4 meters up to an average depth of 2,0 meters. Soft rock diabase was encountered in these test pits from an average depth of 2,1 meters up to an average depth of 2,4 meters. The back actor refused at an average depth of 2,2 meters on medium hard rock diabase.

No groundwater was encountered in any of the test pits, however, the presence of pedogenic material indicates that a perched water table could be present during and after periods of high rainfall. Furthermore, this suggests the possible occurrence of temporary or seasonal wetland conditions (seepage wetland) based on mottled soil conditions encountered in test pits 2, 3,and 6.

The following observations were made based on the geotechnical properties of the soil profile:

- The hillwash and the residual shale are potentially expansive and the calculated heave exceeds 30 mm. Therefore this material is considered unsuitable in its natural state to act as a founding medium. This even applies for light structures with a foundation pressure of less than 100kPa.

- The excavatability of the materials encountered on the site was evaluated according to the South African Bureau of Standards Standardized Specification for Civil Engineering Construction DB: Earthworks (Pipe Trenches. The excavatability is considered to classify as “soft to intermediate” up to an average depth of 1,5 meters. The possible variation in bedrock depth and the presence of boulders should be noted.

- The entire site is zoned as H3 due to the potentially expansive hillwash and the residual shale with calculated heave over 30mm. The presence of the periodical shallow perched water table is accommodated by adding a zoning of P(Perched water table).

- The laboratory test results show that the hillwash is not considered suitable as construction material. The residual shale could, depending on the composition be suitable as fill.
- Limited instability occurred in the sidewalls of the test pits.
- Due to the slope of the site, it is envisaged that a level platform for the structure will be created by way of a balanced cut to fill operation. This means that on the cut end of the platform, excavations may have proceeded to the level of the bedrock, depending on the depth of cut and the thickness of the transported material at the cut end.

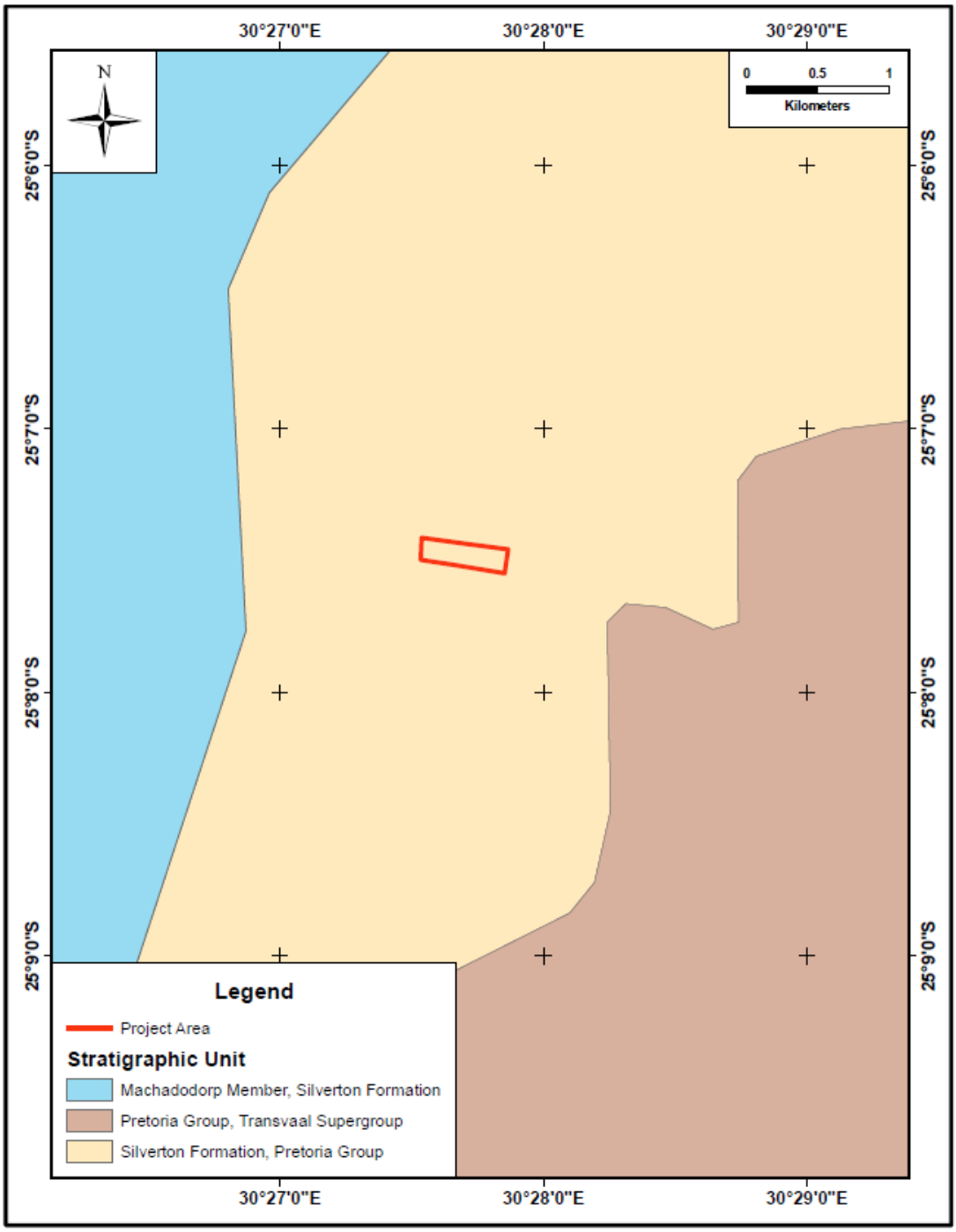

Figure 2: Geological Map of the development site

1.4 Soil and Agricultural Potential

The top soil encountered on site at an average depth of 0.8m is described in the Geotechnical Report as slightly moist, brown to orange brown, soft, shattered, slickensided, silty sand with small and medium sized diabase cobbles and with abundant ferricrete nodules. The soils are therefore very shallow and poor for cultivation of crops due to the site topography and underlying geological strata. However, despite the poor soil conditions the farm currently grows vegetables under controlled greenhouse conditions and the soil is enriched with synthetic fertilisers to improve its productive capacity.

According to the TCLM Spatial Development Framework (2014), the development site falls within a low to very low agricultural potential area based on the Land Capability Spatial Map. Considering the small scale vegetable production on the farm and the low agricultural potential of the soils, no reduction in vegetable produce is expected as a result of the consequential loss of the land to the proposed township development.

1.5 Climate

The study area falls within the summer rainfall region with the rainy season normally lasting from October to March. The average annual precipitation varies between approximately 500 and 1700 mm per year, with varying averages of between 450 to 550 mm on the eastern areas to 1500mm at the Escarpment and higher lying areas. The area also falls within the mist belt. Lydenburg, has the lowest average rainfall of 625 mm compared to other towns in the TCLM. The average midday temperatures in Lydenburg range from 17.4˚C in June to 24.3˚C in January, with the lowest temperature of 3.1˚C on average during the night in July (TCLM IDP-2014/15).

The proposed township development should be designed taking into consideration the local climatic conditions in the area. Due to the relatively dry conditions in the area, water saving strategies and technologies such as rain harvesting should be incorporated where possible in the design of the township water services infrastructure.

The incorporation of climatic factors during the design process promotes sustainable development which aims to maximise resource efficiency while promoting the natural, cultural, and socio-economic value of its surrounding environment .

1.6 Flora and Fauna

The study area falls within the grassland biome of the Lydenburg Thornveld vegetation type, which comprises of open, frost-hardy woodland. Structurally it comprises closed grasslands which is almost always wooded, sometimes densely so in rocky areas and less so in frost-ridden valleys. Part of its has been transformed mainly by dryland and irrigated cultivation. Rainfall is generally too low for plantations. Species such as the frost hardy *Acacia karroo*, *Acacia caffra*, *Cussonia paniculata*, *Diospyros lycioides* and *Euclea crispa* are prominent.

According to the Mpumalanga Biodiversity Conservation Plan, 2007, the development site is identified as of least biodiversity concern and the central portion of the site has no natural habitat remaining (**Figure 3**). Refer to ***Appendix A4*** for the MBCP in A3 size.

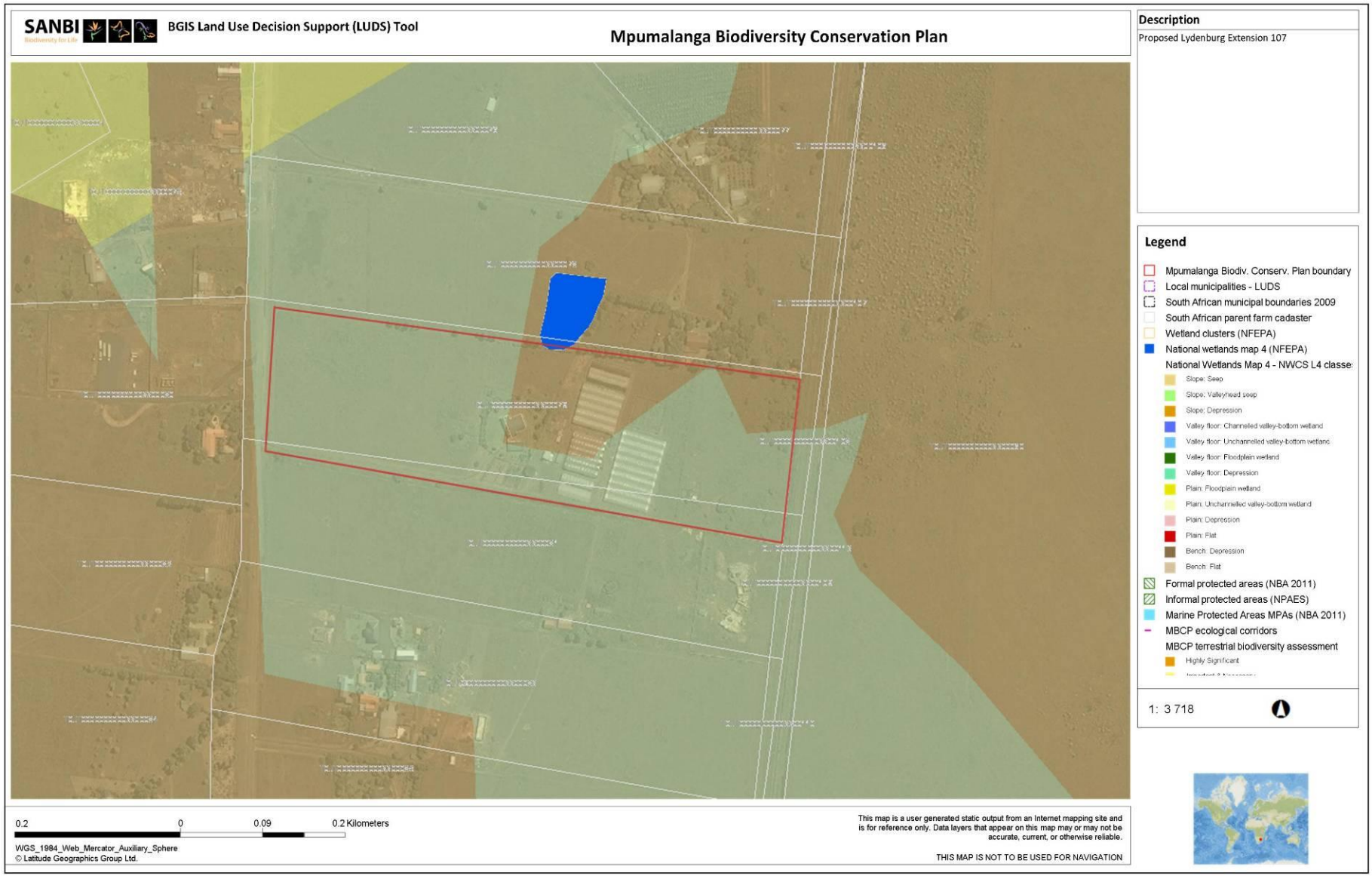

Figure 3: Biodiversity conservation status of the development site in terms of the MBCP, 2007

A site survey was conducted in October 2014 to verify if there are any species of conservation concern on site. None of these species were identified, however, a few number of indigenous trees Sweet Thorn (*Vachellia karroo*) , Paperbuck tree (*Vachellia sieberiana*), and Ankle Thorn (*Vachellia robusta*), were identified on the development site as shown in Photos 1-4 in **Figure 4**. None of these indigenous trees are listed as nationally protected in terms of the National Forest Act, 1998 (Act No.84 of 1998), nor as protected plants in terms of Schedule 11 and 12 of the Mpumalanga Nature Conservation Act, 1998 (Act No. 10 of 1998). This means no permit is required from the Department of Agriculture, Forestry and Fisheries (DAFF) and Mpumalanga Parks Board for removal of the trees.

<table>
<tr><td colspan="2">Sweet Thorn (Vachellia karroo)</td></tr>
<tr><td> 
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<tr><td>Photo 1: (25° 7.489'S, 30°27.653'E)</td><td>Photo 2: 25° 7.503'S, 30° 27.665'E)</td></tr>
<tr><td colspan="2">Paperbuck tree (Vachellia sieberiana)</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>Photo 3: (25° 7.507'S, 30° 27.697'E)</td><td>Photo 4: (25° 7.457'S, 30° 27.717'E)</td></tr>
<tr><td colspan="2">Ankle Thorn (Vachellia robusta)</td></tr>
</table>

Photo 5: Cluster observed on the north eastern corner of the property (25˚ 07.472 S, 30˚ 27.853 E)

Figure 4: Indigenous trees identified on site

The site is hugely transformed and dominated with degraded grasslands, and some few alien tress such as Black Wattle (*Vachellia mearnsii*) were also spotted. Pine trees (*Pinus sp.)* mainly border the property along the north and southern boundaries. A few alien and invasive weeds were also observed growing within the degraded grasslands.

No mammalian, amphibian, or reptile species were observed during the site survey, though precautionary measures need to be taken during construction for the possible occurrence of these species.

Considering the above ecological findings, no specialist investigation by is required as part of this Basic Assessment process.

1.7 Cultural & Heritage Resources

According to the findings of a Heritage Impact Assessment Report compiled by Marko Hutten, attached as ***Appendix D2***, the landscape within which the project area is located has a rich and diverse history. A desktop study conducted as part of the investigation revealed that some stone walled structures are present on the western extent of the proposed area for development.

This was then verified though a site investigation which confirmed the existence of these stone walled structures and an old furrow on site. Three sites with heritage significance or value were identified during the study. Two sites consisted of Late Iron Age stone walled enclosures, terraces and structures. The third site was the remains of an old furrow which traversed the study area.

A review of historical literature revealed extensive work and research that has been conducted on similar stone walled sites in the Lydenburg region over the last 60 years. These documented and researched sites were similar and most probably dated from the same time as the two sites identified during this current study. The identified sites were also exposed to some measure of damage which deteriorated their heritage value and significance.

The identified stone walled sites were most probably part of a settlement of one of these Late Iron Age Communities who settled in the region between 1600AD and 1800AD. A lot of research was done on similar sites in the region and the sites were classified into groups regarding the complexity of the stone walling.

The HIAR further makes the following conclusion:

"The identified stone walled sites will be adversely affected and therefore most probably destroyed by the proposed development. Any impact on the sites will be a transgression of the South African Heritage Resources Act (Act 25 of 1999): The structures were more than 60 years old and is protected in Section 34 of the National Heritage Resources Act 25 of 1999, which states that "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial

heritage resources authority…". Considering the fact that the sites are being classified as of medium significance, it is recommended that the site be subjected to a Phase II investigation prior to any development on the proposed development site".

The furrow identified on the 1:50 000 Topographical Map, is filled up and degraded and its exact location and course are not clear. The furrow has very little heritage value or significance as it was degraded during several developments on the property. The construction of the homestead and the development of the garden mostly contributed to the filling up of the furrow. No further heritage mitigation measures or actions are required.

The findings of a Palaeontological Impact Assessment conducted by BM Geological Services, attached as ***Appendix D3***, concluded the entire project area is underlain by rocks of the Palaeoproterozoic Silverton Formation, Pretoria Group, Transvaal Supergroup. During the Palaeoproterozoic there was no known metazoan life on Earth. The only macrofossil materials present in the South African stratigraphic sequence of this age interval are stromatolites. Stromatolites are often found in dense accumulations within carbonate sequences (dolomites) in rocks of this age. The age and non-carbonate lithology of the Silverton Formation mitigate against any fossil potential for the formation. Indeed, no fossil materials are known to occur anywhere within the Silverton Formation where ever it occurs. The palaeontological potential of the formation is therefore considered as being nil and no further palaeontological mitigation measures or actions are required.

1.8 Socio-economic status

The proposed development site falls within the urban edge of Lydenburg, under the jurisdiction of Thaba Chweu Local Municipality (TCLM) and Ehlanzeni District Municipality (EDM). In terms of population, only 5.8% of the Ehlanzeni District population reside in the TCLM, making it the second smallest municipality in the District based on population. Furthermore, the TCLM is the second smallest contributor to the District economy. In 2009, it contributed 11% of the District Gross Value Added (GVA), compared to Mbombela's contribution of close to 52%. The possible reason for this, is that it has a small population (only 5.8% of district population) and a narrow economic base (mining very dominant). This small base and small population is also two of the main obstacles to the TCLM growing to a larger share of the District economy. It is further recognised in the SDF (2014), although agriculture and forestry activities take up a larger amount of land in the TCLM, the sector is one of the lowest contributors to the GVA.

The total population in the TCLM, according to the Stats SA Census results, was 65909 in 1996, 81681 in 2001, and 98387 in 2011. The annual growth rate from 2001 to 2011 was therefore 1.86%, compared to 2.15% annual growth rate from 1996 to 2001. According to the TCLM-SDF(2014), the decline in population growth rate (expected to further decline to an average of 0.89% per annum) means that pressure for land and services in the TCLM should not be a serious issue over the medium term. Furthermore, the fact that close to 80% the population live in towns / villages makes the provision of services most cost effective than in rural areas with a more dispersed population. It is further acknowledged in the SDF that a substantial population still reside on farms and small isolated settlements. This settlement pattern is evident in the area where the township development is proposed, and in such cases, the SDF proposes the provision of off-grid service provision to be considered.

The spatial population distribution statistics indicate, Lydenburg / Mashishing have the highest population, followed by Sabie / Simile, and close to 80% of the TCLM population lives in towns or rural settlements, with the remainder being distributed across the rural areas. This implies in terms of spatial planning more financial resources in infrastructure development are required in Lydenburg / Mashishing. The proposed township development will act as a catalyst for attracting the much needed development in the area.

The population pyramid of the TCLM, shows a typical structure of a younger population age group between the ages 25 – 29 and 0 – 4. According to the SDF, such a profile should be an indication of high growth levels and increased demand for infrastructure, housing and services.

In terms of the official definition, 20.5% of the economically active people in the TCLM were unemployed in 2011 (TCLM-SDF, 2014) - substantially lower than the provincial and district rates. In terms of employment per sector, the construction industry was listed as one of the sectors showing negative growth and decline in employment in the TCLM. The proposed township development will create a number of direct and indirect job opportunities during and after the construction phase. Furthermore, the proposed development will create business opportunities for local suppliers and service providers in the construction industry

2. List of Applicable Legislation, Policies and/or Guidelines

Table 1: Applicable legislation as contemplated in the EIA Regulations

Listed Activity in terms of Listing Notice 1: GNR 544 of 18 June 2010	Equivalent Activity in terms of Listing Notice 1: GNR 983 of 04 December 2014
23.The transformation of undeveloped, vacant or derelict land to – (i) residential, retail, commercial, recreational, industrial or institutional use, inside an urban area, and where the total area to be transformed is 5 hectares or more, but less than 20 hectares,...	28. Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares..

Other applicable legislation, policy or guidelines

Title of legislation, policy or guideline	Administering authority	Promulgation Date
National Environmental Management Act, 1998 [Act 107 of 1998], as amended	National Department of Environmental Affairs (DEA) & M-DARDLEA	1998
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	DEA & M-DARDLEA	01 July 2009
National Water Act (Act No. 36 of 1998), as amended	National Department of Water and Sanitation (DWS)	20 August 1998
National Heritage Resources Act, 1999 (Act No.25 of 1999)	South African Heritage Resource Agency (SAHRA) & Mpumalanga Provincial Heritage Resources Authority (MPRA)	14 April 1999
National Environmental Management: Biodiversity Act (10/2004): Alien and invasive species Regulations, 2014	DEA & M-DARDLEA	01 August 2014
National Dust Control Regulations, 2013, in terms of section 53(o), read with Section 32 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)	DEA & M-DARDLEA	01 November 2013
Draft National Norms and Standards Relating to Environmental Health in terms of National Health Act, 2003 (Act No. 61 of 2003)	National Department of Health & Thabo Chweu Local Municipality	20 September 2013
Construction Regulations, 2014, promulgated in terms of Section 43 of the Occupational Health and Safety Act, 1993	National Department of Labour	07 February 2014
Conservation of Agricultural Resources Act (Act 43 of 1983), as amended	Department of Agriculture, Forestry & Fisheries (DAFF)	21 April 1983
Mpumalanga Nature Conservation Act, 1998 (Act No.10 of 1998)	M-DARDLEA & Mpumalanga Tourism and Parks Agency (MTPA)	
Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 5 &7	DEA	10 October 2012
DWA Guidelines for the utilization and disposal of wastewater sludge. Volume 3: Requirements for the on-site and off-site disposal of sludge, WRC Report No.TT349/08, March 2007	Department of Water and Sanitation (DWS)	2007
DWAF Technical Guidelines for the development of water and sanitation infrastructure: 2nd Edition, 2004	DWS	2004
Mpumalanga Biodiversity Conservation Plan, 2007	MTPA	2007
Ehlanzeni District Municipality IDP Review 2015/16	Ehlanzeni District Municipality (EDM)	28 May 2015
Thabo Chweu Local Municipality (TCLM): Spatial	EDM & TCLM	October 2014

Development Framework (SDF), 2014		
TCLM: Integrated Development Plan (IDP) 2014/15	TCLM	2014
TCLM Water Services By-laws	TCLM	No date
TCLM Draft Waste Management By-laws	TCLM	No date
TCLM Draft Dumping and Littering By-law	TCLM	No date
TCLM Draft Fire Prevention By-laws	TCLM	No date

3. Need and Desirability Assessment

The need and desirability of the proposed township development is assessed as follows in terms of the DEA Guidelines on Need and Desirability, 2012.

Table 2: Need and Desirability Assessment of the proposed development

Need and Desirability	Assessment
Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the relevant local authority? (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP).	Yes, according to the TCLM-SDF, 2014, the proposed township development is located within the spatial structure of the Lydenburg/Mashishing Primary Node, in an area specifically identified for Residential Expansion in terms of the TCLM-IDP-2015/16. The need for housing and supporting infrastructure services is identified as a key community priority in almost all the wards in urban areas within the TCLM, based on an assessment conducted as part of the TCLM-IDP-2015/16.
Should development, or if applicable, expansion of the town or area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time.	As indicated above, the proposed development site is in line with the current land use in terms of the TCLM's spatial planning. However, the lack of adequate infrastructure services is recognised as a an impediment to township development in the area.
Does the community/area need the activity and the associated land use concerned (is it a social priority)/? This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate)	According to a community priority assessment conducted as part of the TCLM-IDP-2015/16, the need for housing was identified as the sixth key priority, preceded by services such as roads, water, electricity, and sanitation. The proposed development also contributes to meeting the national government's priority in terms of investment in services and social infrastructure development and job creation.
Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development.	In terms of the engineering services report attached as ***Appendix F1 and F2***, currently there is inadequate capacity in water supply, sewerage, and electricity to meet the proposed township development needs. Therefore, a proposal for new and additional capacity has been put forward for TCLM's consideration in the medium-term.
Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs).	Since the proposed development site is already identified as a Residential Extension area in terms of the TCLM –SDF, 2014, the provision of infrastructure services to facilitate residential development in the area is therefore TCLM's priority. However, the TCLM acknowledges in its IDP-2015/16 of the financial challenges they are currently experiencing in the provision of infrastructure services, which cannot be addressed in a short term period.

Is the development the best practicable environmental option for this land/site?	In terms of the Mpumalanga Biodiversity Conservation Plan-2007, the development site is classified as of "least biodiversity concern" and "no natural habitat remaining". This was verified through a site survey, of which, apart from the sensitive heritage sites, no any other environmentally sensitive features or areas were identified. The proposed development therefore is practicable from an environmental perspective considering the current degraded state of the site.
Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF as agreed to by the relevant authorities?	The approval of the township development will not compromise the TCLM's IDP and SDF as it is in line with the priorities and spatial planning of the area espoused therein.
Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMPs), and if so, can it be justified in terms of sustainability considerations?	There is no approved environmental management plan for the area, as it is already transformed and under development pressure. However, the proposed township development layout is based on sustainability principles which aim to maximise space through urban densification while promoting open spaces for recreational use.
Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context).	The site is the most suitable and strategic location for the proposed township development because of the following reasons: - It is in proximity to the town's Central Business District (3.5km away) and accessible through a surfaced road; and - There is already an existing residential complex up the road, approximately 760m north of the site, which makes the proposed development compatible with surrounding land uses from a planning perspective and promotes interconnection of services and urban densification.
How will the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	The proposed development will affect two stone walled complexes of heritage significance identified within the development site. According to the Heritage Impact Assessment Report attached as ***Appendix D2***, *"The identified stone walled sites will be adversely affected and therefore most probably destroyed by the proposed development. Any impact on the sites will be a transgression of the South African Heritage Resources Act (Act 25 of 1999): The structures were more than 60 years old and is protected in Section 34 of the National Heritage Resources Act 25 of 1999, which states that "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority…". Considering the fact that the sites are being classified as of medium significance, it is recommended that the site be subjected to a Phase II investigation prior to any development on the proposed development site".* The proposed development will also result in the removal of indigenous trees, Sweet Thorn (*Vachellia karroo*) and Paperbuck tree (*Vachellia Sieberiana*), identified on the development site
How will the development impact on people's health	Apart for short term construction related nuisances

and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc.)	such as noise and dust pollution, no other adverse impacts on people's well being are anticipated. The proposed sewerage package plant might cause odour nuisance if not properly maintained. The proposed township development will improve the quality of life for the residents and surrounding neighbours through descent housing and access to better services and amenities.
Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?	The proposed township development will not result in unacceptable opportunity costs as the land use is compatible with the City's spatial planning in the area. The current agricultural land use is low in productivity and most of the surrounding farms have been converted into guest lodges or sold to property developers.
Will the proposed land use result in unacceptable cumulative impacts?	The proposed development site is already transformed and degraded, and no natural resources of conservation concern exist anywhere on site. However, sites of heritage significance identified on the development site will be affected, with the potential cumulative loss of unique heritage artefacts in the area.

4. Site Alternatives

No any other site alternatives are being considered, as this is the only site in the area available to the developer for the proposed township development. Therefore, there no any other feasible or reasonable site alternatives in the vicinity available to the developer for consideration.

The preferred and only available development site is the most suitable and strategic location for the proposed township development because:

- It is in proximity to the town's Central Business District (3.5km away) and accessible through a surfaced road
- There is already an existing residential complex up the road, approximately 760m north of the site, which makes the proposed development compatible with surrounding land uses from a planning perspective and promotes interconnection of services and urban densification
- In terms of the TCLM Strategic Development Framework, the development site is located within the urban edge and spatial structure of the Lydenburg/Mashishing Primary Node. The development strategies of this primary node are to:
    - *Capitalise on its good regional connectivity and existing diverse economic base by creating space for the expansion of the industrial, retail and services sectors;*
    - *Promote the attractiveness of the area as a residential area through the provision of community facilities, social amenities and transport facilities;*
    - *Establish a sound development platform to attract and retain business and residential communities through the provision of basic services and amenities; and*
    - *Implement growth management measures such as an urban edge and promote infill development and densification as opposed to spatial expansion.*

  The development site is located in an area specifically identified for "Residential extensions" land use in the primary node, which supports the following:
    - *These areas should contain a mix of residential densities and tenure options.*
    - *Medium density (20-40 units per hectare): around public transport routes, and in and around mixed-use areas.*
    - *Low density: Up to 20 units per hectare.*
    - *Other uses accommodated in these areas: community facilities and amenities, preferably along main roads.*
    - *Small local retail and service nodes focussed on daily necessities; located near intersections of main roads.*

The following land use rights apply:

- *Residential density: medium density areas along public transport routes: 20-40 units per hectare. In mixed use areas, these densities can be increased in the consent of the municipality.*
- *Residential density: low density areas up to 20 units per hectare.*
- *Height medium density residential: 3 storeys.*
- *All other land uses: 2 storeys.*

- Although the development site is zoned "Agricultural", it is classified as of low agricultural potential in terms of the Land Capability Map in the SDF. As such, no further investigations on the agricultural potential of the land have been conducted as part of this Basic Assessment process.

In addition to the above location and strategic advantages, the proposed development of the township will:

- Attract further investment and development in the area due to the availability of infrastructure services and access to basic amenities;
- Contribute to much needed infrastructure development in the area thereby alleviating the backlog in the provision of infrastructure services ;
- Contribute to alleviating the demand for housing, and backlogs in housing delivery at municipal level;
- Create direct and indirect job opportunities during the construction phase; and
- Create business opportunities for local contractors, building material suppliers, and service providers during the construction and operational phases
- Improve the aesthetic and monetary value of the property.

However, there some disadvantages associated with the proposed township development, and these include:

- Loss of agricultural land and continued decline in agricultural produce, and its contribution to the local economy;
- Loss of cultural and heritage resources of local and provincial significance;
- Due to the large space between the existing nearest residential area and the proposed development site, development of the township will set a precedent for leapfrog type of development in the area making it expensive to interconnect services;
- Pressure on already stressed groundwater resources for domestic supply; and
- Pressure on existing electricity supply capacity and other municipal infrastructure services.

The No-go Option will result in the continued degradation of the property due to overgrazing and alien plant infestation, and eventual loss in property value. The heritage sites will also continue to degrade as these are not formally protected.

5. Public Participation Process

The public participation process conducted is in terms of Regulation 54 – 57 of the EIA Regulations, 2010.

5.1 Identification and Registration of I&APs

A detailed database containing the contact names of all registered interested and affected parties, including stakeholders, surrounding community members, ward councillors, business and community associations or organisations, and relevant state departments, has been compiled and will remain open for the registration of any interested and affected parties for the duration of the Basic Assessment process.

A number of key stakeholders and and organs of state have been identified and listed as registered I&APs in the database. These include but not limited to the following:

- National Department of Water and Sanitation;
- Department of Public Works Mpumalanga Province;
- Mpumalanga Tourism and Parks Agency;
- Mpumalanga Provincial Heritage Resources Authority;
- Mpumalanga Economic Growth Agency;
- Ehlanzeni District Municipality;
- Thabo Chweu Local Municipality;
- Transnet Lydenburg;
- Eskom;
- Lydenburg Tourism Bureau; and

- Ward Councillor.

Please refer to ***Appendix G6*** for the I&APs database.

5.2 Notification of I&APs

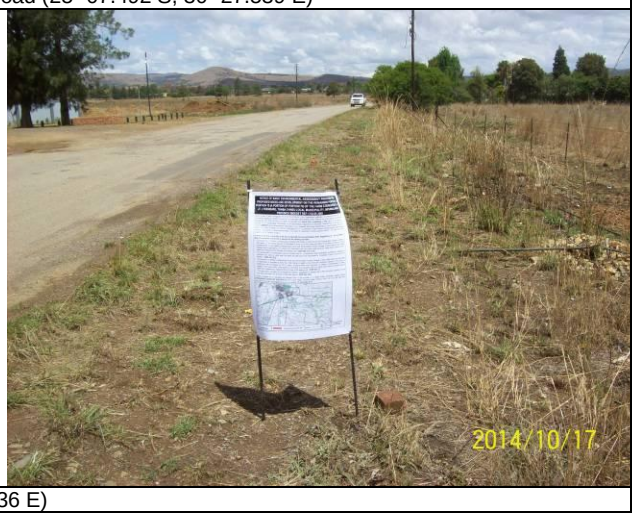
Newspaper Advertisements

An advertisement, notifying the public of the Basic Environmental Assessment process and inviting them to register as interested and affected parties was published in the Steelburger / Lydenburg on Friday, **17th October 2014** [refer to ***Appendix G3*** for a copy of the advert).

Site Notices

Two site notices inviting the surrounding community and immediate adjacent landowners to register and participate as interested and affected parties were erected at the main entrance (Photo 1 in Figure 4) and along Berg Street (Photo 2 in Figure 4) on 17th October 2014. Refer to ***Appendix G1*** for original copies of the site notices.

Site Notice erected at the main entrance of the property, off Berg Road (25˚ 07.492 S, 30˚ 27.539 E)



Site Notice erected along Lydenberg Road (25˚ 07.122 S, 30˚ 27.536 E)

Figure 5: Site Notices

Background Information Document

A Background Information Document (BID) of the proposed development compiled in English, including a comment and registration sheet, was hand delivered to surrounding landowners and distributed by email to all

registered interested and affected parties (Refer to ***Appendix G2*** for a copy of the BID, Registration sheet, acknowledgment of receipt and proof of notification).

5.3 Summary of issues raised to date

No comments have been received to date following the public notification process, except requests for I&AP registration in the database, as summarised in the Table below. Refer to ***Appendix G7*** for copies of the correspondence.

Table 3: Comments and Responses

COMMENT	I&AP	RESPONSE
Initial Public Participation Process		
I am resident in Sterkspruit Plots road in Lydenburg and have an interested in the interest in the development of the area. Please send me information on the development of Part79(a part of part 70)of farm Sterkspruit 33-JT, Lydenburg, Thaba Chweu Municipality, as indicated on plaques on the Sterkspruit road. Thank you	Anton Crossley Email: 29/10/2014	Details were captured in the I&AP database and confirmation sent thereof.
Please note that the Email address has changed to HMbatha@ehlanzeni.gov.za In future send directly to the above mentioned address.	Hugh Mbatha Municipal Manager Ehlanzeni District Municipality Email: 21/10/2014	Noted and updated in the I&APs database.

5.4 Draft Basic Assessment Report

This Draft Basic Assessment Report has been made available to all registered interested and affected parties, key stakeholders, and organs of state for a 30 day review period. Copies of the report have been submitted to the following State Departments / Organs of State for comment, and proof of submission/delivery is attached as ***Appendix G8***.

- Mpumalanga Department of Agriculture, Rural Development, Land & Environmental Affairs (M-DARDLEA);
- National Department of Water and Sanitation (DWS);
- Mpumalanga Tourism and Parks Agency (MTPA);
- Mpumalanga Provincial Heritage Resources Authority (MPHRA);
- Ehlanzeni District Municipality (EDM); and
- Thabo Chweu Local Municipality (TCLM);

Drop box download links of the report and its appendices have been sent to all registered I&APs by email. In addition, a copy of the report has also been made available at the Lydenburg Public Library, Spar Centre 41 Viljoen Street.

Interested and affected parties have until the 19th of October 2015 from the date of this report, to submit their written comments.

5.5 Final Basic Assessment Report

All comments received after the 30 day review period will be captured in the comments and response report for incorporation in the final Basic Assessment Report (BAR). The need to hold a public or focus group

meeting will be considered depending on the nature of comments received. Further, should any additional information be requested by the competent authority or key stakeholders, this will be included in the final BAR. Upon submission of the final BAR to the M-DARDLEA, registered interested and affected parties and key stakeholders will be provided with the final opportunity to comment on the report within 21 days from the submission date. However, should I&APs or stakeholders have any comments on the final BAR, these should be submitted in writing directly to the M-DARDLEA with ILA copied in all correspondence.

5.6 Environmental Management Programme

A draft Environmental Management Programme (EMPr) detailing the proposed management or mitigation measures that will be taken to address the environmental impacts identified in this report has been made available for public review and is attached as ***Appendix H.*** The final EMPr will be submitted together with the final BAR to the M-DARDLEA.

6. Impact Assessment and Mitigation

This section assesses each identified potentially significant impact in terms of Regulation 31(2) (k) & (l) of the EIA Regulations, 2010. The methodology used in assessing impact significance is attached as ***Appendix I.*** The following factors were considered in the assessment, as indicated in the impact evaluation Table below.

- Cumulative impacts.
- The nature of the impact.
- The extent and duration of the impact.
- The probability of the impact occurring.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be mitigated

6.1 Impacts that may result from the Construction and Operation Phase

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
CONSTRUCTION PHASE			
Beneficial Impacts			
Removal of alien/invasive plant species and establishment of indigenous vegetation	**6 Low** P – 2 I – 2, D – 3, SF – 6 SR – 3	▪ A Landscape Development Plan should be developed and approved by the Local Municipality. ▪ The Landscape Development Plan must as far as possible make use of indigenous trees and plants. The use of exotic species must be limited. ▪ Any indigenous groundcovers and shrubs should be removed prior to construction activities and located and maintained in an on-site nursery and replanted within landscaped areas after construction is complete. ▪ All alien and invader species classified in terms of the National Environmental Management: Biodiversity Act (10/2004): Alien and Invasive	**12 Medium** P – 4 I – 2, D – 4, SF – 8 SR – 3

		Species Regulations, 2014 must be removed, controlled, or eradicated as required in the EMPr . - Category 1a invader species identified on the development site must be combated and eradicated as specified by the ECO. - Dead weeds/exotic invader species must be discarded and disposed of at a landfill site.	
Skills development, jobs and business opportunities	**10 Medium** P – 5 I – 2, D – 2, SF – 4 SR – 2	- Direct and indirect jobs will be created during the construction phase. Local businesses in the construction industry will also benefit. - Preference should be given to local businesses in the supply of material, equipment, or services. - As far as reasonably possible people from surrounding communities must be employed by the principal construction contractor and sub-contractors. - This should be included as a contractual obligation in the main contractor's appointment.	**15 High** P – 5 I – 2, D – 4, SF – 8 SR – 3
Adverse Impacts			
Irreversible loss of identified heritage features on site	**15 High** P – 5 I – 2, D – 4, SF – 8 SR – 3	- A Phase 2 investigation must be conducted for all the heritage features identified in the Heritage Report, prior to any development on the proposed development site. A permit allowing this investigation to be conducted should be obtained from the SAHRA by an ASAP accredited archaeologist. - The heritage features must only be removed after the Phase 2 investigation has been successfully concluded and all the necessary permits have been secured from the SAHRA . - The removal of the heritage features must be conducted in accordance to the permit conditions or as instructed by the Archaeologist . - It is recommended the Archaeologist be present during the construction phase to monitor any possible or unforeseen archaeological	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2

		discoveries that might be unearthed.	
Loss of indigenous trees and related habitat	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2	▪ All the larger indigenous trees (>3m) on the site should be marked and conserved wherever possible, and retained as part of the township landscape. ▪ If not possible, indigenous trees or shrubs should be removed prior to construction activities and located and maintained in an on-site nursery and replanted within landscaped areas after construction is complete. ▪ Should the contractor or its workers observe any avifauna or herpetofauna species in any of the indigenous trees, the Mpumalanga Tourism and Parks Agency must be immediately notified for further instructions. ▪ No animals should be killed or hunted inside the premises.	**6 Low** P – 3 I – 2, D – 2, SF – 4 SR – 2
Upward groundwater seepage during excavation on a perched water table		▪ Bulk earthworks and excavations should be conducted during the dry season. ▪ Upward groundwater seepage in excavated open trenches should be controlled or prevented through appropriate engineering control measures. ▪ The trenches should be regularly dewatered by either pumping out the water into a storage tank for possible use during construction or discharging it into a formal drainage system. ▪ In order to prevent any future hydrostatic pressure on structural foundations, a suitable engineering and environmentally sustainable measure should be implemented during construction to prevent any further upward seepage of groundwater.	
Soil compaction and increased risk of sediment transport and erosion	**15 High** P – 5 I – 2, D – 4, SF – 8 SR – 3	▪ Install erosion control measures before construction commences. ▪ Install temporary drains and minimize concentrated water flows. Control storm water velocity where necessary with temporary energy dissipater structures. Divert run-off	**6 Low** P – 3 I – 2, D – 2, SF – 4 SR – 2

		around trench excavations or disturbed areas.
		- Revegetate or stabilise all disturbed areas as soon as possible.
		- Locate stockpiles away from concentrated flows and divert run-off around them.
		- The following sediment control measures are recommended:
		  ▪ Sediment filters: use materials such as fine mesh or geofabric to filter run-off prior to discharge.
		  ▪ Sediment traps: temporary sedimentation basins.
		  ▪ Drop inlet filters: e.g. hay bales and silt fences, which prevent sediment entry into the drainage system.	

Potential Noise and dust pollution during construction	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2	- Ensure compliance to Provincial Noise Control requirements during construction. - Ensure dust emissions generated during construction activities are within acceptable dustfall rates published in the National Dust Control Regulations, 2013. - No construction work to be conducted at night unless if such an arrangement has been made in consultation with the ECO. - Unless otherwise specified, construction work to be limited to normal working hours as published in the National Building Regulations; 06:00 – 18:00 during weekdays, and 08:00 – 15:00 on Saturdays - No construction work to be undertaken on Sundays and Public Holidays. - Dust suppression measures such as water spraying of the construction site should be implemented where necessary to minimise dust emissions. - Construction vehicles operating or driven in mud conditions should be cleaned on exit to prevent mud deposition along tarred access roads leading to the	**6 Low** P – 3 I – 2, D – 2, SF – 4 SR – 2

		construction area. - Dispersive material in trucks should be dampened or covered.	
Traffic disruption and damage to existing roads	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2	- Access by heavy construction machinery or vehicles to the construction site should be limited to designated access roads as much as possible. - Ensure that only authorised roads and access routes are used. - Vehicles may not leave the designated roads and tracks and turnaround points will be limited to specific sites. - Maintain all access routes and roads adequately in order to minimise erosion and undue surface damage. Repair rutting and potholing and maintain stormwater control mechanisms. - Enforce speed limits at all times, both on public roads and on-site roads. Unless otherwise specified, the recommended minimum speed limit on construction roads should be adhered to. - Allow for safe pedestrian and cycling access and crossing where necessary. - Ensure adequate and correct road signage along the main access road. - Traffic controllers should be stationed at busy traffic points along the access road to ensure the safe flow of construction vehicles and other road users.	**6 Low** P – 3 I – 2, D – 2, SF – 4 SR – 2
Improper stockpiling of excavated material and other construction material on site	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2	- Stockpiles not to exceed a height of 2m. - Stockpiles to be monitored on an ongoing basis for erosion and alien/invasive plant control. - After the stockpiled material has been removed, the site should be reinstated to its original condition – stockpiles to be limited to the areas of construction, no stockpiling is to take place beyond the demarcated construction site. - No foreign material generated / deposited during construction shall remain on site. - Areas affected by stockpiling should be landscaped,	**6 Low** P – 3 I – 2, D – 2, SF – 4 SR – 2

		topsoiled, grassed and maintained at the contractor's cost until clearance from the Site Agent is received. - Stockpiles may take the form of windrows. - To prevent erosion, material stockpiled for long periods (2 weeks) should be retained in a bermed area to avoid contact with stormwater run-off. - No vehicles shall be allowed access onto the stockpiles after they have been placed. - Stockpiles of topsoil must not be contaminated with oil, diesel, petrol, litter or any other material, which may inhibit the later growth of vegetation in the soil.	
Potential lack of or inadequate sanitation for construction workers (chemical toilet facilities)	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2	- Adequate on-site chemical sanitation systems, at least one toilet for every 8 workers, must be provided within walking distance to all construction workers. Strict penalties in re-numeration must be applied for workers that use other surrounding open areas for this purpose. - Chemical toilets should be located at least 200m away from any existing borehole and 500m away from any wetland area. - Toilets must be located within the construction camp on gentle gradient. - Toilets shall be serviced once a week to acceptable hygiene standards. - Under no circumstances may ablutions occur outside of the provided facilities. - No washing or bathing in any natural water bodies shall be allowed.	**6 Low** P – 3 I – 2, D – 2, SF – 4 SR – 2
Potential increase in crime in the area due to the presence of construction workers	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2	- Unless approved by the local municipal authority, no construction workers should be allowed to reside on site except for security reasons. - No construction activities to be allowed after normal working hours during weekdays and Saturdays, and anytime on Sundays or Public Holidays. - Principal construction contractor to ensure the recruitment of surrounding	**6 Low** P – 3 I – 2, D – 2, SF – 4 SR – 2

		local labour, prior elsewhere. - Adequate access control and security measures to be provided at the construction camp.	
Potential temporary displacement of fauna species due to disturbance caused by construction activities	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2	- All activities on site must comply with the regulations of the Animal Protection Act, 1962 (Act No.71 of 1962). - No fauna are to be trapped, hunted or killed on the development site or adjacent properties. - If any bird, mammal, amphibian or reptile is found during construction, these animals must be relocated to undisturbed areas or to conservation areas close by as instructed by the MPTA Conservation Officer. - The main Contractor shall advise workers of the penalties associated with the needless destruction of wildlife, as set out in the Animals Protection Act, 1962 (Act 71 of 1962). - All areas of increased ecological sensitivity beyond the development footprint should be designated as No-Go areas and be off limits to all unauthorised vehicles and personnel. - Should any Species of Conservation Concern or other threatened or protected faunal species be noted within the development footprint areas, the contractor is advised to immediately notify the MPTA Conservation Officer. - Informal fires in the vicinity of construction camp or area should be prohibited for the duration of the construction phase. - All disturbed habitat areas must be rehabilitated and reseeded with an indigenous seed mixture as soon as possible (preferably during the wet season) to ensure that faunal habitat ecology is re-instated.	**6 Low** P – 3 I – 2, D – 2, SF – 4 SR – 2
Improper waste management during construction	**12 Medium** P – 4 I – 4, D – 2, SF – 8 SR – 3	- General waste should be managed in terms of NEM: Waste Act 2008 (Act 59 of 2008) and relevant Municipal Waste Management By-Laws	**6 Low** P – 3 I – 2, D – 2, SF – 4 SR – 2

		▪ All building waste generated during demolition and construction must be managed in terms of the Integrated Waste Management Plan in the EMPr (***Appendix H***). ▪ A suitable free draining area must be designated for the temporary storage or separation of all waste material from the construction site. Appropriate measures should be taken to divert stormwater away from the waste storage area. ▪ All construction waste material must be separated according to its material properties for either re-use, recycling, or disposal. Disposal of waste should only be considered as the last option after all the necessary measures have been taken to re-use or recycle the waste material. ▪ None re-usable/recyclable building rubble and solid material must be disposed at a registered / licenced waste disposal facility. ▪ The contractor should ensure all waste disposal certificates are kept on file for record purposes, and as proof should these be required. ▪ Littering is strictly prohibited and appropriate receptacles should be available at convenient points of the construction site . ▪ Domestic waste generated on site during construction to be collected in waste skips. Waste skips containing food waste to be covered. ▪ No waste material must be dumped in surrounding open areas. ▪ Solid construction waste not posing a pollution hazard should be used on site as backfill material as much as possible. Should no backfilling material be required, this waste should either be taken to a recycling facility or disposed at a registered / licenced landfill facility. ▪ No waste material may be burnt on-site.	

		▪ Litter patrols should be conducted at least once a week to ensure the site as well as the surrounding area is clean and free of litter. ▪ Waste shall be separated into visibly marked recyclable and non-recyclable receptacles. ▪ The contractor must adhere to all the relevant laws and regulations applicable to the disposal of construction waste and rubble. ▪ The contractor shall provide sufficient closed containers on site, as well as waste skips, which must be placed at designated areas, to handle the amount of litter, wastes, and builder's wastes generated on site. ▪ Waste skips and bins should be emptied at least twice every week by an authorised waste services provider and disposed of at a registered / licenced landfill site. No solid waste or any materials used may be disposed of on site. ▪ No rubble or discarded building material should remain in a non-designated area for more than one week. ▪ An area must be designated for mixing of concrete, and must take place on an impervious surface such as a concrete slab, metal or plastic sheeting which is provided with cut-off drains or berms to contain any contaminated run-off. ▪ Contain water and slurry from cement and concrete mixing operations as well as from batching area wash bays. Direct such waste water into a settlement pond or sludge dam for later disposal. ▪ Hazardous waste such as petroleum substances and liquids, volatile organic compounds etc. must be collected in original containers and stored inside a surfaced or bunded storage area. The bunded surface area volume should be equal to 110% of the total volume of liquid stored. ▪ All hazardous solid and liquid waste to be disposed of at a	

		licenced hazardous waste landfill site only. - Any concrete spillages on site should be promptly removed and heaped together with concrete rubble. - After all the concrete mixing is complete, the remaining concrete mixture or residue should be stored separately for possible reuse or recycling. - No concrete residue is to be washed off into rivers, streams or wetlands.	
Accidental fire outbreaks	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2	- Any fire started on site to be in compliance with the municipal by-laws and NEM: Air Quality Act (Act No 39 of 2004). - No open fires must be allowed on site unless precautionary measures are put in place to prevent the fire from spreading. - Heavy smoke may not be released into the air. - No smoking is allowed outside of the site camp. - Fire extinguishers must be provided at the site camp, where it is easily accessible. - Fire extinguishers must be serviced, full and in good working order. - The contractor's Health and Safety Plan must include procedures for fire fighting and training.	**4 Low** P – 2 I – 2, D – 2, SF – 4 SR – 2
OPERATIONAL PHASE			
Beneficial Impacts			
Job opportunities and local economic development	**8 Medium** P – 4 I – 1, D – 4, SF – 2 SR – 2	- Once the township has been established, jobs and business opportunities in the operational maintenance of the facilities will be created. - First preference should be given to local service providers in the operational maintenance of the township development and its associated infrastructure. - The development and availability of services infrastructure will attract more property investors and drive further development in the area. This will further drive local economic growth and development in Lydenburg.	**15 High** P – 4 I – 2, D – 2, SF – 4 SR – 2

Improved quality of life	**4 Low** P – 2 I – 2, D – 2, SF – 4 SR – 2	▪ The proposed township development is expected to provide descent and affordable housing with access to basic amenities thereby improving the quality of life of its dwellers . ▪ The proposed township development is designed to cater for both the middle and lower income groups through a "cosmopolitan" type of settlement, which promotes cohesion and social integration.	**12 Medium** P – 4 I – 2, D – 4, SF – 8 SR – 3
Adverse Impacts			
Visual and Light intrusion	**15 High** P – 4 I – 2, D – 2, SF – 4 SR – 2	▪ The proposed township development should be designed in line with the character of the area. ▪ Improve by implementation of appropriate landscaping (use of indigenous species). ▪ Appointment of Architect and Landscape Architect to ensure an appropriate development within the context of the area. This should be reflected in the site development plan. ▪ Security and internal lighting shall be effectively designed so as not to spill outward onto surrounding properties. ▪ High lamp poles or floodlights must be avoided at all times. ▪ Directional lighting is advised as it contributes towards a serene environment without the impact of illumination pollution during night time. ▪ No reflective materials must be allowed. ▪ Yellow Sodium Lights are prescribed as they do not attract invertebrates at night and will not disturb wildlife.	**8 Medium** P – 4 I – 2, D – 2, SF – 4 SR – 2
Potential air, surface water, and groundwater pollution due to poor maintenance and possible malfunction of sewerage system	**15 High** P – 4 I – 2, D – 2, SF – 4 SR – 2	▪ The proposed sewerage package plant and associated infrastructure must be designed, constructed, and operated in terms of the Department of Water Affairs Guidelines for the utilisation and disposal of wastewater sludge: Vol.3 - Requirements for the on-site and off-site disposal of sludge, 2007. In addition, the sewerage system must be designed according to the TCLM Water	**6 Low** P – 2 I – 2, D – 4, SF – 8 SR – 3

		Services By-laws. - Should an anaerobic lagoon digester be considered for the treated effluent, the necessary waste permit and water use authorisation must be obtained prior to any development. The lagoon digester must be designed with a minimum freeboard of 0.8 metres above full supply level, and lined at the bottom with an approved barrier system such as Geosynthetic Clay Liners (GCLs) to prevent groundwater seepage. - A high berm should be erected upslope of the anaerobic digester to divert storm water. - An early warning ground water monitoring plan comprising of monitoring boreholes upslope and down gradient of the sewerage plant should be implemented. - The sewerage plant must be regularly maintained by a suitably qualified or approved person/company to prevent odour emissions and surface or groundwater pollution. - An emergency response plan in the event of system malfunction or failure should be made available at the premises. - A water use authorisation will be required prior to irrigation of the estate with treated effluent.	
Potential environmental health risks due to poor housekeeping or unhygienic practices	**12 Medium** P – 4 I – 2, D – 4, SF – 8 SR – 3	- General housekeeping of the estate facility must comply with the relevant norms and standards as provided in the draft National Norms and Standards relating to environmental health, published in GN.943 of 2013. The facility must also meet the local municipality's health and safety standards or by-laws. - Measures must be taken to ensure acceptable environmental health standards are maintained at all times.	**6 Low** P – 2 I – 2, D – 4, SF – 8 SR – 3
Improper management of domestic and	**12 Medium** P – 4 I – 2, D – 4, SF – 8	- All domestic and general waste generated from the premises must be managed in	**6 Low** P – 2

general waste	SR – 3	terms of the IWMP in the EMPr (***Appendix H***). The IWMP is based on an integrated approach to waste management. - A waste transfer facility for the temporary storage of waste before it is removed from the premises, must be included in the design of the township. - The waste transfer facility must be fenced and access controlled. - A minimum of two waste skips should be made available in the waste transfer facility, and skips containing putrescible waste should be covered. - Waste shall be separated into recyclable and non-recyclable waste. Bins shall be clearly marked to ease management of waste and recycling. - No dumping of waste in any surrounding open areas should be allowed, and this must be included in the estate's rules or lease agreements.	I – 2, D – 4, SF – 8 SR – 3
Increase in stormwater run-off due to extended paved areas	**12 Medium** P – 4 I – 2, D – 4, SF – 8 SR – 3	- Limit hard services and make use of materials that are pervious or absorbent. - It is imperative that adequate surface and sub-surface drainage conditions be provided prior or during development of the site. - Drainage systems must be designed and implemented. - Use of soft landscaping to be utilised as far as possible - Improve by implementation of appropriate landscaping (use of indigenous species).	**6 Low** P – 2 I – 2, D – 4, SF – 8 SR – 3
Increase in electricity demand primarily generated by Eskom, thereby, indirectly contributing to a higher carbon footprint upstream	**12 Medium** P – 4 I – 2, D – 4, SF – 8 SR – 3	- Conservation of energy or the utilisation of renewable and sustainable energy technologies is encouraged. This includes solar panels that generate and store electricity in suitable battery packs, solar water heater(s), backed up with gas, as well as gas appliances. - The storage of gas must conform to the stipulations laid out in the OHSA. - All lights used for non-security purposes should be energy efficient for example compact fluorescent lights (CFL). - Outside lights will have to be	**6 Low** P – 2 I – 2, D – 4, SF – 8 SR – 3

		downward shining (eyelid type), low wattage and should not be positioned higher than 1 m above the ground surface. - Fluorescent lamps give five times the light and last up to 10 times as long as ordinary bulbs. - Solar water heater(s) conserve energy and can be backed up with gas or electric geysers. - Installing a geyser blanket on geysers and hot water storage tanks will reduce the amount of heat lost by the geyser to cold air outside and thus conserves energy. - Hot water pipes should also be insulated to prevent heat loss. - Energy efficient heaters and air conditioners should be installed	

6.2 Cumulative Impacts

Cumulative impacts identified include the following adverse and beneficial impacts

Adverse Impacts

- Further degradation and consequent loss of heritage resources.
- Further fragmentation of agricultural land due to urban expansion.
- Impediment to surface and sub-surface flows due to development on perched water table.
- Reduced infiltration and high run-off due to compaction and paved surfaces.
- Potential surface and groundwater pollution risk if the sewerage package plant is not properly managed.
- Reduced sense of place and visual intrusion.
- Precedent for leapfrog development at the expense of urban densification.
- Increase in urban related social ills.
- Increased demand for infrastructures services resulting in capacity constraints

Positive or beneficial impacts

- Further investment and development in the area due to the availability of infrastructure services and access to basic amenities.
- Contribute to much needed infrastructure development in the area thereby alleviating the backlog in the provision of infrastructure services.
- Contribute to alleviating the demand for housing, and backlogs in housing delivery at municipal level;
- Create direct and indirect job opportunities during the construction phase.
- Create business opportunities for local contractors, building material suppliers, and service providers during the construction and operational phases.
- Improvement in quality of life for residents due to descent housing with access to basic amenities and services.
- Increase in revenue base for the TCLM through levies, contributing to economic growth and development in the municipal area.

7. Assumptions, uncertainties and gaps in knowledge

While every effort has been taken to ensure all the site sensitivities are taken into consideration as part of this Basic Environmental Assessment, it should be noted that no detailed specialist investigations for flora and

fauna were conducted as the site is degraded and already transformed, and classified of "least concern" and "no habitat" remaining in terms of the Mpumalanga Biodiversity Conservation Plan.

A perched water table suggesting the possible occurrence of a seepage wetland is noted in the Geotechnical Report. No facultative vegetation confirming this was observed, however, further investigations will be conducted during the review period of this draft BAR.

All the services proposed as part of the township development are not yet fully confirmed at this stage, as investigations and consultations with the TCLM are still ongoing.

8. Environmental Impact Statement and Recommendations

Based on the findings of this Basic Assessment Report and specialist reports, no environmental fatal flaws have been identified as a result of the proposed township development. The proposed site for the township development is already transformed and consists of a farm house on the central portion, and green house vegetable gardens to the east. The western portion comprises of a degraded grass land with stone walled complexes of heritage significance. The far north eastern corner is covered by a cluster of trees, Ankle Thorn (*Vachellia robusta*), and another stone walled enclosure of heritage significance exists just before the thicket. A few number of indigenous trees of no conservation concern, Sweet Thorn (*Vachellia karroo*), and Paperbuck tree (*Vachellia sieberiana*), were also identified on the development site.

Apart from the heritage features identified on site, no any other features of conservation concern were observed. However, a perched water table identified on the north western corner of the site is a cause for environmental concern as it suggests the possible occurrence of seasonal wetland conditions. This will be further investigated as part of the final BAR. In summary, the identified site development constraints are: heritage sites; potentially expansive soil conditions, and a perched water table.

A major constraint identified as part of the town planning process is the availability and capacity of existing engineering services. Currently there is no formal water supply and sewerage services in the area, and the developer proposes in the interim to supply the township development with water abstracted from two existing boreholes, and by installing a sewerage package plant. This, according to the engineers, is a temporary measure, until such as time the township can be connected to municipal services in the long term. It should be emphasised that an integrated township development linked to basic services and infrastructure is imperative to ensuring environmental protection and sustainable development. Bulk engineering services such as water supply, sewerage, solid waste management, storm water drainage, and electricity supply are essential for the sustainable operation of the township. These basic services infrastructure need to be well planned and integrated to ensure operational efficiency and prevent malfunctions that lead to environmental hazards.

The proposed development is in line with the provincial and municipal policies, guidelines, and spatial development framework. In terms of the TCLM-SDF, 2014, the proposed township development is located within the spatial structure of the Lydenburg/Mashishing Primary Node, in an area specifically identified for Residential Expansion in terms of the TCLM-IDP-2015/16.

Adverse biophysical and socio-economic impacts associated with the proposed township establishment can be mitigated to an acceptable level provided the development adheres to the Environmental Management Programme (EMPr) attached as ***Appendix H***. In addition, the biophysical/socio-economic impacts associated with the township development are manageable and minimal due to the small footprint size.

It is therefore recommended that the proposed development be granted environmental authorisation subject to the following conditions:

Heritage features

- A Phase 2 investigation must be conducted for all the heritage features identified in the Heritage Report, prior to any development on the proposed development site. A permit allowing this investigation to be conducted should be obtained from the SAHRA by an ASAP accredited archaeologist.
- The heritage features must only be removed after the Phase 2 investigation has been successfully concluded and all the necessary permits have been secured from the SAHRA .
- The removal of the heritage features must be conducted in accordance to the permit conditions or as instructed by the Archaeologist .

- It is recommended the Archaeologist be present during the construction phase to monitor any possible or unforeseen archaeological discoveries that might be unearthed.
- Recommendations and mitigation measures contained in the Heritage Impact Assessment must be complied with.

Services

- All the proposed services infrastructure must be approved by the Thaba Chweu Local Municipality.
- The proposed on-site sewerage treatment plant must be designed, constructed and operated in terms of the DWA Guidelines for the utilisation and disposal of wastewater sludge: Vol.3 - Requirements for the on-site and off-site disposal of sludge, 2007, and in accordance to municipal requirements.
- The developer must ensure, prior to commencing with any of the following proposed activities, that these are authorised in terms of the National Water Act:
    - Abstraction of groundwater from existing boreholes for domestic supply;
    - Irrigation of landscaped gardens with treated effluent from the sewerage package plant;
    - Installation of an aerobic lagoon digester for biogas production; and
    - Construction of a stormwater outlet structure.
- The sewerage package plant and its associated infrastructure must be located at least 200m away from any existing borehole.

Geotechnical

- The findings and recommendations of the Geotechnical Investigation must be adhered to for all structures built on site.
- In order to prevent any future hydrostatic pressure on structural foundations, a suitable engineering and environmentally sustainable measure should be implemented during construction to prevent any further upward seepage of groundwater.

Construction activities

- All construction activities must be conducted in accordance to the EMPr attached as ***Appendix H***.
- Noise levels and dust emissions during the construction phase must be kept at minimum in compliance with the applicable provincial and municipal regulations or by-laws
- All construction activities should be conducted within the development footprint, and construction vehicles and machinery must follow designated routes and access points.
- The access road to the construction site must be kept clean and free of dust or mud.
- Traffic controllers should be stationed at busy traffic points along the access road to ensure the safe flow of construction vehicles and other road users.

Waste management

- The Integrated Waste Management Plan (IWMP) in the EMPr must be implemented for all waste streams produced on-site during construction and operational phases.