

1. BACKGROUND

1.1 INTRODUCTION

Township development within South Africa has grown significantly over the last few years as a result of urbanization and continued economic development. Lydenburg town, like many other towns in the country, is experiencing a rapid mushrooming of informal settlements. The government, through its housing agencies, is working hard to alleviate this scourge. The government will not win this battle alone and needs the private sector to join forces. It is encouraging that private companies are taking the initiative to make a contribution. The Lydenburg town has experienced rapid industrial growth in the last few years, with a number of economic activities taking place in and around. The town has attracted a lot of people who are looking for job opportunities, thereby creating the need for residential housing. This has resulted in the creation of informal settlements in the form of shack dwellings.

The Thaba Chweu Municipality Promotes the development of residential townships in the Lydenburg area, which falls under its jurisdiction, for the purposes of disposing off serviced and improved erven to purchasers wishing to acquire ownership of erven in the Townships. This development was originally initiated in 2006 by the then Mpumalanga Housing Finance Company. While preliminary activities were under way to get the project off the ground, the Mpumalanga Housing Finance Company, together with others, amalgamated to form Mpumalanga Economic Growth Agency (MEGA). When this change happened many initiatives fell through the cracks and this project was one of those. VIPCON (Pty) Ltd, Property Developers & Project Managers, has seen the need and intends to develop a residential township in the town.

The objective of this project is to establish a sustainable housing settlement comprising of approximately 4162 housing opportunities, creating both employment opportunities and housing facilities for the residents of Thaba Chweu Local Municipality.

The applicant, **VIPCON (PTY) LTD, PROTERTY DEVELOPERS & PROJECT MANAGEMENT** has appointed **WANDIMA ENVIRONMENTAL SERVICES** as independent consultants, to undertake an Environmental Impact Assessment (EIA) process for the Proposed Establishment of Residential Development on a portion of Portion 39 of the Farm Townlands, Lydenburg 31 JT, Thaba Chweu Local Municipality, Ehlanzeni District Municipality of Mpumalanga Province.

The aim of the Environmental Impact Assessment is to ensure that:

- Potential environmental impacts associated with the proposed activities are taken into consideration;
- Public Participation Process is conducted, i.e. to afford any Interested and/or Affected Party (I&AP) sufficient opportunity to provide comments; and
- Sufficient information is submitted to decision makers in order to ensure an informed decision making process

1.2 PROJECT MANAGERS

Project applicant:	VIPCON (PTY) LTD, PROPERTY DEVELOPERS & PROJECT MANAGEMENT		
Trading name (if any):			
Contact person:	THEMBA SIMEON SGUDLA		
Physical address:	14 BATELEUR BASTION, 969 DISSELBOOM STREET EAST, WAPADRAND EXTENTION 5, PRETORIA, 0045		
Postal address:	P O BOX 74162, LYNWOOD RIDGE		
Postal code:	0040	Cell:	
Telephone:	082 557 4814	Fax:	083 237 0700
E-mail:	themba@vipcon.co.za		

Environmental Assessment Practitioner:	WANDIMA ENVIRONMENTAL SERVICES		
Contact person:	SIKHUMBUZO DLAMINI		
Postal address:	P.O. BOX 1072, NELSPRUIT		
Postal code:	1200	Cell:	076 156 4942
Telephone:	(+27)13 752 5452	Fax:	(+27)13 752 6877
E-mail:	sikhumbuzo@wandima.co.za		
Qualifications:	MSc Env. Mgt		
Professional affiliations (if any):	IAIAsa, SAWMA		

1.3 TERMS OF REFERENCE

Wandima Environmental Services Pty (Ltd) was appointed as an independent Environmental Assessment Practitioner (EAP) by **Vipcon (PTY) LTD, Property Developers & Project Management**, to conduct a Basic Assessment Process for the project in accordance with the NEMA Regulations GN R543, 2010. Potential environmental impacts, direct and indirect, positive or negative, associated with a proposed project were to be identified, assessed and reported on. These identified impacts are to be managed and mitigated through the environmental planning and control processes.

In terms of section 24 (2) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), the proposed residential development will trigger listed activities under the **GNR 545, Listing Notice 2 of NEMA Regulations, 2010**, for the construction of residential township and where the total area to be developed is more than 20ha.

An application to downgrade the S&EIR was lodged with the Competent Authority and accepted.

1.4 REGULATING AUTHORITY

An application was lodged with the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA), Ehlanzeni District. **DARDLEA** reference number is **17/2/3/E-314** and the responsible officer is **Ms. Robyn Luyt**.

1.5 ASSUMPTIONS

For the purpose of this report it has been assumed that all information received from the developer and project manager is correct.

2. DESCRIPTION OF THE PROJECT AND THE ENVIRONMENT

2.1 DESCRIPTION OF THE PROJECT

The proposed development will consist of residential erven, business area, schools, municipal area, institution (clinic, pre-school, church) and public open space. The size and number of stands for each activity is as tabled below:

Table 1: Zones and Sizes of the Residential Township Development

Zoning	Number of erven	Size
Residential 1	3767	138,3211 m ²
Residential 2	4	3,9319 m ²
Business 1	5	6,8818 m ²
Educational	3	11,9494 m ²
Special (Buss/ Comm Fac)	3	0,4628 m ²
Special (Comm Fac)	5	1,6232 m ²
Special (Mixed Uses)	88	10,9615 m ²
Special (Telecommunication)	1	0,5049 m ²
Open Space	16	66,1368 m ²
Public Roads		63,3027 m ²
Total	3892	304,0761 m ²

2.2 NEED AND DESIRABILITY

NEED FOR THE ACTIVITY

The need for the intended development is described below:

- The municipality is faced with challenges of population growth, unemployment and poverty, and is trying its best to solve those challenges. Therefore, the objective of the municipality, according to the IDP (2011-2016), is to create decent work and sustainable livelihood, speed up economic growth and transform the economy to create decent work and sustainable livelihood.
- Housing is one of the strategic objectives for the Thaba Chweu Municipality (TCM) Strategic 5 years Implementation Plan. The integrated housing strategic and implementation plan is approved by the Department of Human Settlements and TCM Council.
- The proposed development will also play an important role in combating unemployment and poverty because more jobs will be created during construction and operational phase. The project will also contribute to alleviating the squatter challenge within the area.
- Vipcon (Pty) Ltd, Property Developers & Project Managers identified a need to help the TCM in implementing its strategic objectives by developing a Township at Lydenburg. The area proposed for the development is vacant and has not been used for more than 7 years. Currently, part of the area has been invaded by informal settlement (squatters).

DESIRABILITY FOR THE ACTIVITY

The desirability of the proposed project can be motivated as follows:

- The proposed development is the best practicable environmental option for this site since it will benefit the community by establishing a township, providing houses to people and creating jobs. The site is currently zoned as Agricultural and is vacant.
- The proposed development will not have a negative impact on the surrounding land uses.

2.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT AREA

Lydenburg is surrounded by the Gustav Klingbiel Nature Reserve and the Sterkfontein Nature Reserve, and lies at the foot of the northern Drakensberg mountain range. The Long Tom Pass is to the east of town on the Provincial R37 Road to Sabie. Dullstroom is on the Provincial R540 Road south of Lydenburg and Ohrigstad to the north on the R36 Road. Lydenburg is approximately 230Km from Pretoria.

The proposed township development is located on a portion of Portion 39 of the Farm Townlands, Lydenburg 31 JT, Thaba Chweu Local Municipality, Ehlanzeni District of the Mpumalanga Province.

Currently 70% of the site is vacant with 30% being invaded by informal squatters on the western boundary of the development site, disturbed grassland vegetation dominates the project area. The site is zoned agricultural and is in the process of being zoned residential.

The site is bounded by Lydenburg Extension 6 to the east, Mashishing Township to the west and Voortrekker Street to the north. See Figure 1: Proposed Layout Map.

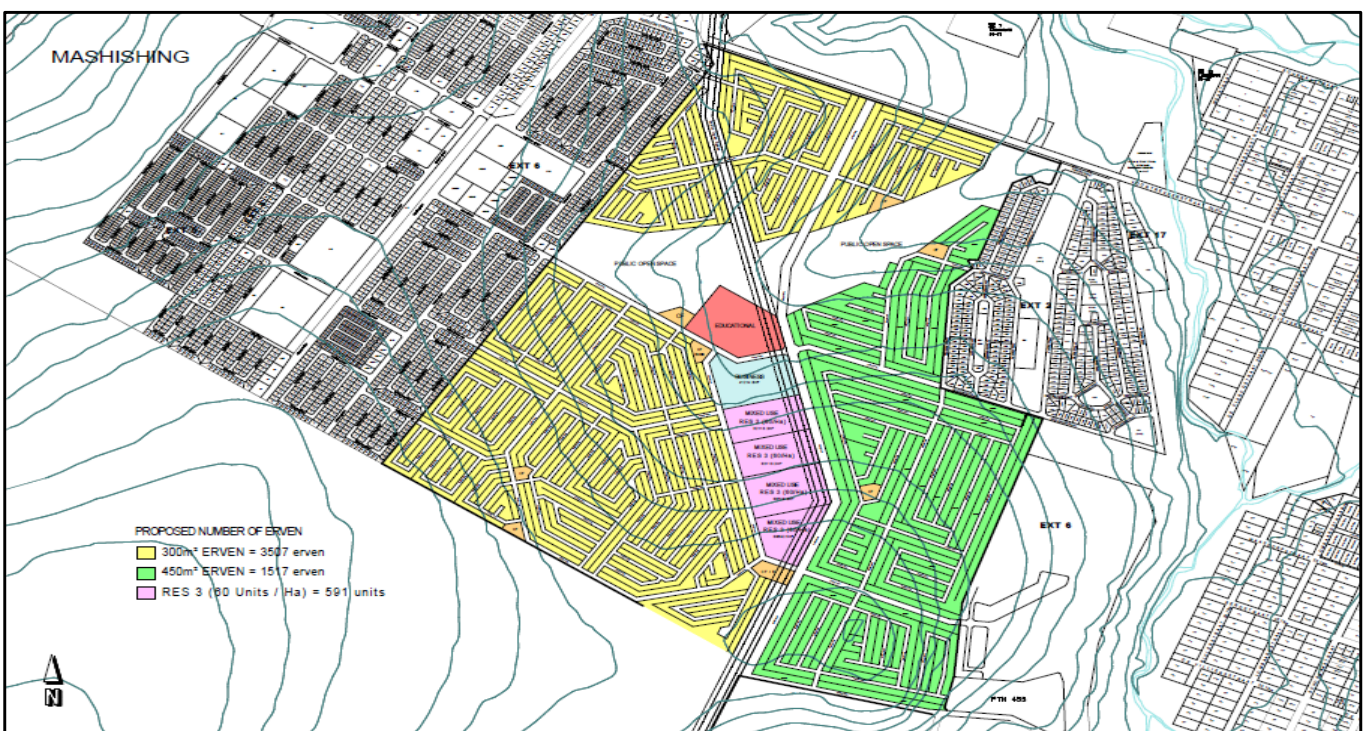


Figure 1: Proposed Layout Map

2.4 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The purpose of providing this information is to understand the possible effects of the proposed project on the environment. The concept of sustainability underpinning this Environmental Impact Assessment considers three interrelated dimensions of the environment, viz. the social, economic and biophysical dimensions. For an option or project to be sustainable, it needs to demonstrate economic viability, social equity & soundness, and ecological integrity within a framework of good governance. All three of these dimensions of sustainability need to be taken into account when assessing a proposed option or project, taking due cognisance that the three dimensions are seldom in perfect balance, often dictated by local circumstances.

TOPOGRAPHY

Lydenburg is located at the base of the Long Tom Pass on the banks of the Sterkspruit River. The average elevation of Lydenburg is 1,416 m.a.s.l. The site itself has an undulating and generally flat landscape, sloping gently from the south west to the north east.

GEOLOGY AND SOILS

According to the Geotechnical Investigation, Mashishing and its surrounds are underlain by greenish grey fine-grained shale and mudstone belonging to the Boven Member of the Silverton Formation of the Pretoria Group, Transvaal Sequence. Diabase belonging to the Marico Diabase Suite, which is probably related to an early intrusive phase of the Bushveld Complex, has intruded into the sediments of the Transvaal Sequence. The diabase is encountered mainly as dykes and is characteristically encountered at the contact between shales and quartzites and often over long distances of strike. As a result along the margins of the dykes, within the chill zone, hornfels has formed due to the baking effect on the sediments.

The Lydenburg diabase is generally hornblende-bearing dykes and sills, often of gabbroic composition. The diabase sills may vary in thickness from 1m to over 300m. The above rocks are covered with a layer of fine-grained colluvium often underlain by a pebble marker horizon. Boulders and/or sub-outcrop was observed on surface in the central northern, eastern and south-eastern portions. Smaller areas of outcrop and/or sub-outcrop were observed along the edge of the wetland in the central north-western portion of the site. Ferricrete, classed as pedogenic material, was encountered as abundant nodules and concretions within the site soils.

A pebble marker horizon was encountered sporadically across the site and this represents the most recent major geological unconformity in the soil profile and occurs at the base of the transported soil. This is generally a zone of high permeability as it contains abundant gravel.

CLIMATE

Mpumalanga is a province where the climate varies due to its topography. Lydenburg is located on the Lowveld Region and has a tropical climate with warm sub tropical temperatures and experiences high summer rainfalls. The

Mean Average Temperatures (MAT) ranges at 16°C. The Annual rainfall ranges between 580mm and 810mm (MAP 707 mm) and it falls within rainshadow because it is generally lower than in surrounding areas. The area experiences fairly infrequent frost.

The study area experiences a humid and hot weather during summer seasons. During winter season the area is dry, with relatively moderate temperatures of 23°C during the day and cold temperatures at night. The coldest months are usually May and July with minimum temperature of 3°C and the coldness is experienced mostly in the morning. High rainfall is experienced during summer months with an average of 573mm and increases with summer months up to 625mm.

General climate conditions of the project area and those of the surrounding areas are dictated by the surrounding physiological conditions and activities that may affect the rainfall patterns of the area. Due to the topography, rainfall varies considerably according to altitude and compass direction. The climatic data presented that the planning and implementation of the proposed project is planned for the less rainfall period to minimise stoppages of project implementation due to rains, which may be costly to the project.

FLORA

The site falls within Lydenburg Thornveld vegetation unit according to Musina and Rutherford (2006). This vegetation unit is a transition zone between the high-lying grasslands and the warmer and drier bushveld areas.

The conservation target is 27% and 2% is protected. A total of 22% of this unit is has been transformed, mainly by dry land and irrigated cultivation. Rainfall is generally too low for plantations. Erosion from very low (45%), low (26%) and moderate (18%).

Species found on site includes:

Tall shrubs: *Diospyros lycioides subsp. guerkei*, *Euclea crispa. crispa*, *Ormocarpum kirkii*, *Rhamnus prinoides*, *Vernonia crataegifolia*.

Low Shrubs: *Rubus transvaaliensis*, *Senecio microglossus*, *Anthospermum rigidum subsp. pumilum*, *Lippia javanica*, *Nemesia fruticans*, *Polygala nodiflora*, *Rhus gerrardii*.

Succulent Shrubs: *Euphorbia clavarioides var. truncata*, *Lopholaena coriifolia*.

Geoxylic Suffrutex: *Elephantorrhiza elephantina*.

Graminoids: *Aristida canescens*, *A. congesta*, *A. diffusa*, *Brachiaria serrata*, *Bulbostylis burchelli*, *Digitaria tricholaenoides*, *Eragrostis racemosa*, *Heteropogon contortus*, *Microchloa caffra*, *Trachypogon spicatus*, *Tristachya leucothrix*, *Andropogon schirensis*, *Bewsia biflora*, *Cymbopogon caesius*, *Diheteropogon amplexans*, *Elionurus muticus*, *Eragrostis chloromelas*, *E. gummiflua*, *E. patentissima*, *E plana*, *Eulalia villosa*, *Hyparrhenia hirta*, *Melinis repens.subsp. repens*, *Monocymbium ceresiursulus*, *Setaria ningrirostris*, *S. sphacelata*, *Sporobolus centrifugus*, *S. pyramidalis*, *Themeda triandra*, *Tristachya biseriata*, *T. rehmannii*.

Herbs: *Acalypha glandulisanum*, *Geigeria burkei*. Subsp. *Burkei*, *Helichrysum cephaloideum*, *H. rugulosum*, *Kohautia amatymbica*, *Macleodiumzeyheri argyrophyllum*, *Rothea hirsute*, *Schistostephium crataegifolium*, *Senecio bupleuroids*, *S. coronatus*, *Vernonia oligocephala*.

Geophytic Herbs: *Hypoxis multiceps*, *H.rigidula* var. *pilosissima*.

Succulent Herbs: *Aloe fosteri*, *A. greatheadii* var. *davyana*, *kleinia stapeliiformis*.

Endemic Taxa

Low Shrubs: *Argyrolobium wilmsii*, *Adenia wilmsii*.

Geophytic Herbs: *Gladiolus rufomarginatus*.

FAUNA

The literature review indicates that a diverse but limited group of birds may utilize the area. Due to the topography and habitat types present in the study area, the expected birds will vary from those commonly found in savannah and bushveld to forest and grassland specific species. The area may have at least two species of birds that are vulnerable and/or near threatened which are *Tyto capensis* and *Vanellus amatus*.

A few species of small mammals will use the natural habitats on the site. While the area has capacity to host some medium sized mammals, human interference and habitat degradation due to human activities has meant that a few if any such mammals could be found here. No mammals were sighted during the site visits.

Frogs will utilize the aquatic and terrestrial habitats on the site for various reasons, such as breeding purposes. Frogs are rather sensitive to pollution and ecological imbalances, which is why the presence of frogs in an area indicates that the habitat is not totally degraded.

The terrestrial habitats at the site provide habitat for a limited group of reptiles. Literature indicates that a significant number of species can occur in the area, habitat fragmentation and degradation has resulted in few species of reptiles having potential to occur in the area. No RDL species are expected. The reptile survey indicates that several lizard species are present in the area. However, it is not anticipated that these species will be adversely affected if given the necessary protection and habitat conservation.

A detailed checklist of Fauna and Flora is attached in Appendix D.

LAND USE

The site is currently zoned "Agricultural" but is in the process of being rezoned for township development. 70% of the site is vacant with 30% being invaded by informal squatters on the western boundary of the development site. The land use for adjacent neighbouring areas is mainly "Residential".

SURFACE AND GROUND WATER

According to the Wetland Specialist, the study area consists of drainage lines and an intermittent stream. The study area has a relatively high rainfall regime and during the summer rainy seasons the stream fills up quickly. The soils and undulating landscape facilitate seepage and subsurface water flow, which very often allow for continued water

seepage and movement into these water bodies long after rainy seasons and even into the dry, winter season in the cases where the quaternary catchment areas are large. Two perennial rivers were identified in the study region, namely Dorp River stretching from the south of the study area along the east towards the north and Marambane River on the west of the proposed development area, which drains its water into the Dorp River. These drainage lines have deep channels with no water. The small stream is non-perennial to semi-perennial; however, they sometimes become active during the rainy seasons, especially during summer. During field investigations a valley bottom wetland and undulating Pan (depression) were identified and considered to be sensitive (No-Go zone).

AIR QUALITY

Regionally, coal mining, electricity generation, agriculture, veld fires and industrial activities on the Mpumalanga Highveld contribute to poor air quality. Locally, mining operations, amongst others, are likely to contribute to the reduced air quality. Particulate matter from veld fires, mining activities, mine dumps, ash dams, ploughing activities and exposed agricultural lands potentially contributes to increased dust levels in the area. The proposed development will not have a negative impact on the air quality of the area.

NOISE

Current noise levels of the area are typical of semi-urban areas and the sources noise are mainly traffic and household noise, etc. Noise levels will not be affected from what they are at present, the noise from construction activities will only be present during that phase and will be minimal.

VISUAL

The area where the proposed activities will take place is largely residential. Although this proposed development is close to residential areas, no negative impacts on the visual aesthetics are anticipated. The planting of indigenous trees can mitigate possible negative visual impacts for neighbouring owners.

HERITAGE

According to the Heritage Impact Assessment (See Appendix D), Late Iron Age sites were identified on the study area; they are situated in the south eastern section of the proposed development. These are included in the proposed development and considered sensitive and no go area. Mitigation measures are recommended in the HIA.

No other archaeological, historical or heritage features were observed in the rest of the study area.

SOCIO ECONOMIC ENVIRONMENT

It is anticipated that the Proposed Residential Township Establishment will have far reaching positive impacts to the local society and community of Thaba Chweu Local Municipality at large. The project will create temporary employment opportunities for the local residents during the construction phase, provide affordable housing and access to social services and economic opportunities that will be within reasonable distance from the development.

ROADS: ACCESS, PUBLIC AND FUTURE ROADS

It is proposed that access to the township will be established from the Voortrekker Street, which will serve as access corridor into the proposed township. The Voortrekker Street runs on the northern part of the development site. The necessary applications with the Department of Public Works, Roads and Transport will be done in ensuring that access to the development meets with the department's requirements.

2.5 ALTERNATIVES CONSIDERED

- **Demand Alternative**

Up-market housing and blocks of flats were considered but these would be out of the financial reach of the target population earmarked to benefit from this development.

- **Activity Alternatives**

No activity alternatives were considered for this project as the developer owns the proposed site, and a need for a residential development has been identified by both the client and the Thaba Chweu Local Municipality.

- **Site Alternatives**

Residential developments that account for a total of more than twelve thousand and fifteen (12 015) new residential units have been submitted to the local town council since 2006. This proposed development was initiated in 2009 by the Municipality together with the former Mpumalanga Housing Finance Company (now referred to as Mpumalanga Economic Growth Agency). The proposed development land was earmarked for establishment of +-4162 housing units, the challenge for the municipality was funding for the township establishment and provision of services. Needless to say with the shortage of housing as it is in the country and the province, the housing project was identified so long ago but held up by funding issues, hopes and expectations had been raised amongst the people who are in desperate need of housing.

- **No-go Alternatives**

This is the option of not implementing the development. This would mean that the area will not be utilised for the proposed development with the consequent that sufficient and adequate housing provision would remain an unrealised dream, and the proliferation of informal settlements would continue. Also, the fact that possible job opportunities for locals would be forfeited especially during the planning and construction phases respectively. This option is considered to be not a viable one.

3. LEGISLATIVE CONTEXT OF A BA STUDY

3.1 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The BA has been undertaken in accordance with the requirements of the EIA Regulations, 2010 and the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998).

Activities identified in terms of the 2010 Regulation, R543 may not commence without environmental authorization from the competent authority, DARDLEA, and in respect of which the investigation, assessment and communication of activities must follow the EIA procedure as described in Section 22. An application has been lodged with DARDLEA according to Section 21 of R543 of the EIA regulations, 2010. **The following activity is registered under GN 545 (LN2), 2010:**

- **GNR 545 of 2010, Activity 15 (iii):** *Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational institutional use where the total area to be transformed is 20 hectares or more*

The Listing Notice requires the applicant to undertake S&IER. However, a downgrading application was lodged with the Competent Authority and approved.

The Basic Assessment process was undertaken in two stages namely Draft and Final BA phase.

DRAFT BASIC ASSESSMENT PHASE:

After the project was registered at the DARDLEA, a Public Participation Process (PPP) commenced according to Section 54 of GNR. 543. Public were invited on the 21st of November 2014 to register as Interested and Affected Parties (I&APs) and to comment on the Draft BA Report that was available for comments during **March 2015**. The report included the description of the proposed project, an assessment of the environmental impacts and an EMP, as well as specialist reports.

FINAL BA PHASE:

The FINAL BA Process consists of the following phases:

- The impact assessment phase during which the environmental impacts of issues identified by I&AP's are re-evaluated to determine their potential impacts and the mitigations thereof;
- The Reporting phase, during which the findings and recommendations are integrated into a Final BA Report;
- The decision making phase during which the authorities decide whether the project should go ahead and what conditions would apply if it is approved.

3.2 OTHER LEGISLATIVE REQUIREMENTS

Other legislation, plans and policies that are related to this proposed project will be used in the compilation of the reports and are listed in table 2.

Table 2: Other Legislations Related to the Proposed Township Development.

LEGISLATION	IMPLICATIONS
Nature Conservation ordinance, 1974 (Act no 19 of 1974)	The protection of fauna and flora.
Conservation of Agricultural Resources Act, 1983 (Act no 43 of 1983)	Legislation – control of invasive alien plants.
Division of land ordinance, 1986 (Ordinance 20 of 1986)	Management of municipal areas.
Environmental Conservation Act, (Act no 73 of 1986)	Conservation of natural areas
Physical Planning Act, 1991 (Act no 125 of 1991)	Planning of municipal areas in an orderly manner.
Occupational Health and Safety Act, 1993 (Act no 85 of 1993)	The protection of the health and safety of workers in the construction and operational phase of the development.
Development and Facility Act, 1995 – DFA (Act no 67 of 1995)	Planning of municipal areas in an orderly manner.
The Constitution of the Republic of South Africa, 1996 (Act No 108 of 1996)	Section 24 of the Constitution provides for the environment that is not harmful for the health and people's wellbeing. The proposed development should be done following environmental impact assessment procedures to ensure a sustainable environment for all.
National Building Regulations and Building Standards Act, 1997 (Act no 103 of 1997)	Control building standards to prevent houses that are a danger for the residents.
National Environmental Management Act 1998 - NEMA (Act No 107 of 1998)	The development must be socially, environmentally and economically sustainable.
Local Government: Municipal Structures Act, 1998 (Act no 117 of 1998)	Regulation of building standards.
Mpumalanga Conservation Act, 1998 (Act 10 of 1998)	Provides for the management and conservation of Mpumalanga's biodiversity.
National Forest Act, 1998 (Act No 84 of 1998)	Protection of endangered trees according to the list mentioned in the act.
National Water Act, 1998 (Act No 36 of 1998)	Legislation which gives a mandate to DWF to maintain good water quality.
National Heritage and Resources Act, 1999 (Act no 25 of 1999)	The protection of heritage areas.
Promotion of Access to Information Act, 2000 (Act No2 of 2000)	Legislation that allows the public access to information about activities that influence their well-being and to make contributions to decision making
National Health Act, 2003 (Act No 61 of 2003)	The development must be developed and operate according this regulations.
National Environmental Management : Biodiversity Act, 2004 (Act no 10 of 2004)	The protection of the national biodiversity.
NEMA (Act 107 of 1998 and GN R385 (Regulations of NEMA, Chapter 5) and GN 386 & 387 (Listed Activities), 2006	Give the Department of Environment a change to evaluate possible impacts and the management there off.
National Roads Act, 7	To make provision for a national roads agency for the Republic to manage and control the Republic's national roads system and take charge, amongst others, of the development, maintenance and rehabilitation of national roads within the framework of government policy.
Integrated Development Plan (IDP), 2011-2016	Sound future municipal planning. The development has to be part of the future planning of TCLM.

4. ENVIRONMENTAL ISSUES AND IMPACTS

4.1 INTRODUCTION

The proposed establishment of Lydenburg Residential Township will have positive and negative environmental impacts. The positive impacts on the environment were identified and will be used to enhance the environment. The negative impacts were identified and mitigation measures will be proposed to minimize the adverse impacts on the receiving environment. These mitigation measures are tabled in an Environmental Management Program (EMPr).

4.2 KEY ISSUES IDENTIFIED

Key issues identified within the proposed project were:

- Environment
- Social issues
- Bulk services – Roads, sewerage management, water and electrical supply.

4.3 ANTICIPATED IMPACTS AND RECOMMENDATIONS

ENVIRONMENT

4.3.1 Topography

- **Anticipated impacts:**

The proposed development area will be on a disturbed vacant area characterised by a gently undulating plateau. Erosion possibility is high during the construction phase if areas to be constructed are cleared and left bare for an extended period of time.

- **Recommendations:**

All sensitive areas should be protected and no activities or development are allowed in these areas. Only the planned building/construction areas may be cleared from vegetation.

4.3.2. Geology & Soils

- **Anticipated impacts:**

The proposed project will have a potential to encourage avenues for erosion in the footprint of the site during the construction and post construction phases. Intensive utilisation of service and access roads by construction vehicles may cause loss of stability of road surfaces which will result in soil erosion through wind and surface water run-off. Occasional deviation from the access and service roads by heavy construction machinery might result in most of the road-side vegetation being trampled thereby disabling the roots in their binding effect on the soil. This will enable surface run-off to cut the edges of the roads into undesired and uneven slopes.

Newly created access roads might encourage erosion if not properly designed especially if located on steep slopes.

- **Recommendations**

It is imperative that movement of equipment and machinery be restricted to designated roads to access the site. Newly established access roads during the construction phase should be designed in such a way that steep slopes are avoided. If unavoidable, surface run-off humps should be made to direct the flow into the streams and vegetated surfaces in mitigation against soil erosion.

Unused/abandoned roads or disturbed terrains should be tilled and reseeded with local vegetation during rehabilitation. Excavated areas should be backfilled to avoid unnecessary accumulation of surface water and high velocity overflow. Disturbed steep slopes should be supported with surface rock cladding or vegetation. Stipulations of the Environmental Management Programme (EMPr) should be adhered to during the construction phase of the project till decommissioning.

4.3.3 Flora and Fauna

- **Anticipated impacts:**

The main conservation concern is the loss of flora and fauna, especially protected species in construction projects. Vegetation removal is often unavoidable during construction projects. While impacts on both fauna and flora will be inevitable, this result will not be significant. A variety of bird species, reptiles and mammals are nomadic in the area and during construction displacement of terrestrial animals, insects and reptiles might occur. Construction of the township might have an impact on the vegetation. Deviation of heavy machinery from designated access roads might account for most of the vegetation being trampled thereby destroying the habitat of smaller faunal species.

- **Recommendations:**

The contractor should stick to the engineer's designs and recommendations by the consultant. There is a variety of reptiles, amphibians, insects, mammals and birds that occur in this type of habitat. Care should be taken during the planning and construction phases to restrict the development to areas of lower biodiversity sensitivity. Vegetation removal should be restricted to areas where the development is to take place and undesired tree felling or vegetation removal should be avoided at all costs. Construction workers should be discouraged from killing of animals and birds for relish as this might interfere with the integrity of the ecosystem and will encourage poaching. Activities associated with the construction should have an element of conservation through avoiding undesired destruction of wildlife within the site.

4.3.4 Surface and Ground Water Quality

- **Anticipated Impact:**

The study area consists of drainage line and stream, and has a relatively high rainfall regime. During the summer rainy seasons the stream fills up quickly. Two perennial rivers were identified in the surrounding area, namely Dorp River and Marambane River.

The storm water can impact wetland changing the aquatic habitat. Bad waste management can pollute the water bodies and have a negative impact on the aquatic life.

- **Recommendations:**

The wetland should be considered a 'No Go Zone'. A storm water management plan will mitigate all possible negative impacts. Solid waste management must form part of the management of the township to prevent waste entering the wetland/ stream.

4.3.5 Air Quality

- **Anticipated impacts:**

Increased vehicular traffic and numbers of construction crew during site clearance are likely to increase dust occurrence and ambient noise levels. Construction activities on site will lead to noise and dust from construction vehicles when they move in and out of the construction site for, excavation, loading, hauling and dumping of construction materials. Because of the temporary nature of activity (construction), the impact is low.

- **Recommendations**

Dust occurrence on access roads should be limited by using dust suppression methods such as water spraying through the use of water cart. It is the responsibility of the contractor to ensure that dust and noise generated during site clearance and construction does not encroach on the aesthetic freedom of the surrounding areas.

4.3.6 Noise Pollution

- **Anticipated impacts:**

Current noise levels in the area are typical of semi-urban areas and the sources of noise are mainly traffic and household activities.

Noise levels will not be affected from what they are at present, the noise from construction activities will only be present during that phase, and however, it will be minimal.

- **Recommendations**

Construction vehicles should be serviced regularly and be kept in good working condition at all times to prevent them from making high pitched roaring sounds. Construction has to be during working hours – 7:00 till 17:00. If it is necessary that construction has to be done after working hours, neighbours have to be notified and consent has to be given by the neighbours.

4.3.7 Visual Impact

- **Anticipated impacts**

The area where the proposed activities will take place is largely residential. Although this proposed development is close to residential areas, no negative impacts on the visual aesthetics are anticipated, on activities and final product will blend with the built environment.

- **Recommendations**

Buildings can be painted earth colours to blend in with the environment. Fast growing trees can be planted to mitigate any possible negative visual impact on the border of the property.

SOCIAL ISSUES

- **Anticipated impacts:**

It is anticipated that the development will have far reaching positive impacts on the local society and community such as availability of residential areas and job creation during the construction phase.

The proposed project will attract commercial and business investment. It will also stimulate a contribution to the provision of the essential social infrastructure development and services.

BULK SERVICES

4.3.8 Roads – Access roads to the property

- **Anticipated impacts:**

The access to the development will be from the Voortrekker Street which is located on the northern part of the development site. The Voortrekker Street is frequently used, amongst others, by the Mashishing Extensions 4, 5 and 6 residents going to and from the Lydenburg Town. The necessary applications with the Department of Roads and Public Works will be done in ensuring that access to the development meets with the department's requirements.

4.3.9 Sewerage management

- **Anticipated impacts:**

The internal sewer network will be waterborne and will follow the conventional method of underground piping mid-block along erf boundaries and along the internal road reserves. The main sewer outfall pipelines will be located along the lowest part of the development site, this may impact on the wetland vegetation and may be subjected to flooding.

- **Recommendations:**

The internal network must consist of 250mm diameter Class 34 uPVC pipes with 110mm diameter connections to each erf. The sewer network must be planned in such a way that the network is located away from the wetland and/or any other water bodies found on site, this will help prevent the eradication of the wetland vegetation during construction and maintenance.

4.3.10 Water Supply

- **Anticipated impacts:**

The developer, in collaboration with the Municipality, will provide clean water to the proposed township. The bulk services will be linked to or from the existing services supplying nearby township extensions.

- **Recommendations:**

It is recommended that harvested rain water be used on site to prevent storm water impact. No water for construction or any other activity should be drawn from the nearby Dorp River or any water bodies found on site.

4.3.11 Electrical Supply

- **Anticipated impacts:**

Electricity to the township will be provided by the Municipality. The expected increase in electricity demand to the proposed township development is expected to require the upgrading of the electricity network servicing the nearby township extensions. This is covered in the Services Report.

A summary of the key issues that were identified in the Basic assessment phase is summarised in Table 3. It includes the potential impacts and if specialist investigations were needed.

Table 3: Issues identified, their potential impacts and recommendations for specialist studies

ISSUE	POTENTIAL IMPACT	RECOMMENDATIONS
Topography	<p>The proposed development area will be on a vacant but intensively disturbed area characterised by a gently undulating landscape.</p> <p>Erosion possibility is high during the construction phase if areas to be constructed are cleared and left bare for extended periods.</p>	<p>All sensitive areas should be protected and no activities or development are allowed in such areas.</p> <p>Only the planned building/constructed areas may be cleared from vegetation. Areas that could be cleared have to be build up as soon as possible or be re-vegetated to prevent erosion of bare areas.</p>
Geology and soils	<p>The proposed project will have a potential to encourage avenues for erosion in the footprint of the site during the construction and post construction phases. Intensive utilisation of service and access roads by construction vehicles may cause loss of stability of road surfaces which will result in soil erosion through wind and surface water run-off. Occasional deviation from the access and service roads by heavy construction machinery might result in most of the road-side vegetation being trampled thereby disabling the roots in their binding effect on the soil. This will enable surface run-off to cut the edges of the roads into undesired and uneven slopes.</p>	<p>It is imperative that movement of equipment and machinery be restricted to designated roads to access the site. Newly established access roads during the construction phase should be designed in such a way that steep slopes are avoided.</p> <p>If unavoidable, surface run-off humps should be made to direct the flow into the river and vegetated surfaces in mitigation against soil erosion.</p>
Flora (Vegetation)	<p>The main conservation concern is the loss of flora during construction of the township, site offices and storage facilities. Vegetation removal will also be required for the purpose of construction.</p>	<p>A Biodiversity assessment conducted showed no protected species on the site. No additional studies required.</p>
<ul style="list-style-type: none"> • <i>Invader species</i> 	<p>Due to the increased levels of human activity at the site and the large amount of disturbance and bare soil associated with the development, ideal conditions for the invasion of alien plants will be created.</p>	<p>Vegetation clearing and soil disturbance should be kept to a minimum. Natural re-vegetation of disturbed areas such as road verges should be encouraged. Seed of indigenous species collected on site could be used to re-vegetate cleared areas.</p> <p>No foreign plant material should be brought onto the site; All alien plants observed at the site should be removed on a regular basis</p>

ISSUE	POTENTIAL IMPACT	RECOMMENDATIONS
Fauna	High levels of human activity will be associated with the development; these activities pose several different risks to the fauna of the site, including collisions with vehicles, fires, collecting and disturbance. These risks will be very high during the construction phase and decrease during the operational phase.	Vehicles must adhere to a speed limit, 30-40 km/h is recommended for light vehicles and a lower speed for heavy vehicles. All construction and maintenance vehicles must stick to properly demarcated and prepared roads. Off-road driving should be strictly prohibited Fauna must have 'right of way' on the roads. Littering should be strictly forbidden and waste generated by staff or at the compound should be disposed of in an appropriate manner, preferably off-site.
Surface & Ground Water quality	Storm water can change the banks of the wetland and has a negative impact on the aquatic life. Polluted surface water can have a negative impact on the aquatic life.	A storm water management plan needs to be finalised to incorporate possible mitigations. A waste management plan has to be in place for the new development.
Air quality	Dust can be created during the construction phase. No significant impact is anticipated.	No additional studies required
Noise pollution	Noise can be created during the construction period.	Noise levels will not be affected from what they are at present, the noise from construction activities will only be present during that phase, however, it will be within acceptable levels.
Visual	Indigenous trees can be planted to mitigate any possible negative impact. No significant impact is anticipated.	No additional studies required
Socio-economic	The project will have a positive impact as it will create work opportunities and housing.	No additional studies required
Bulk services		
Roads	The Voortrekker Street will not be able accommodate a higher volume of traffic.	The access will be designed to handle traffic off and onto the township.
Sewerage	Sewerage can have a negative impact on the environment with the amount of people that are expected on the site.	The sewer network must be planned in such a way that the network is located away from the wetland and/or any other water bodies found on site.
Water supply	Water will be connected to the municipal water system.	It may become necessary to also increase the capacity of the water treatment works in order to cater for the additional capacity which excludes emergency water.
Electrical supply	TCLM has to supply electricity.	There has been some contact with TCLM in order to get the existing

ISSUE	POTENTIAL IMPACT	RECOMMENDATIONS
		electrical capacity and determine whether the demand will be met by the existing capacity.

4.4 ASSESSMENT OF SIGNIFICANCE

IDENTIFICATION OF IMPACTS

The following was done to determine possible impacts:

- determine the current environmental conditions (i.e. baseline) against which to assess impacts;
- determine the future changes in the receiving environment baseline if the project does not proceed;
- an understanding of the proposed activity in sufficient detail; and
- all findings from the Basic Assessment process was taken into account.
- Comments from I&APs were incorporated in the mitigation of impacts.

The classification of an issue as a **'key issue'** during the Basic assessment phase does not necessarily imply that an impact of high significance will result. The significance of the impact can only be ascertained once a specialist assessment has been conducted. After such an assessment, it is possible that a **key issue** may turn out to have an impact of **low** or **no** significance.

ASSESSMENT OF IMPACTS

The methodology for assessing impacts and assigning significance to the key issues is according to "Guideline 5: Assessment of alternatives and Impacts in support of the Environmental Impact Assessment Regulations, 2006" published by DEAT in June 2006. The description and prediction of the impacts include the following components:

- **Nature of impact**

Describes the type of effect that a proposed activity would have on the environment ("what would be affected and how?")
indicates whether the impact is direct, indirect or cumulative;
indicates whether the impact occurs during the construction, operations Or decommissioning phases of the project.

- **Magnitude / Intensity of the impact**

Low	where no environmental functions and processes are affected
Medium	where the environment continues to function but in a modified manner
High	where environmental functions and processes are altered such that they temporarily or permanently cease

- **Extent / location**

whether the impact would be site specific and limited to the immediate area of the development site	
local	limited to within approximately 5km of the site
regional	Limited to the region
National/ international	National impact

- **Duration**

the lifetime of the impact, whether the impact is permanent or reversible	
short-term	(0 – 5 years),
medium-term	(5 - 15 years),
long-term	(>15 years but where the impacts would cease after the operation of the site); and/or whether the impact is intermittent or continuous.

- **Probability**

considers the likelihood of the impact occurring	
improbable	low likelihood
probable	distinct possibility
highly probable	most likely
definite	impact would occur regardless of prevention measures

- **Significance**

Based on a synthesis of the above predictions, the significance of the impact shall be evaluated as follows:	
Low	Where the impact would not have an influence on the decision or require to be significantly accommodated in the project design.
Medium	Where it could have an influence on the environment which would require modification of the project design or alternative mitigation.
High	Where it could have a 'no-go' implication for the project unless effective measures are taken to avoid or mitigate the impact.

The degree of confidence with respect to the assessment of significance in the prediction of the impacts is based on the availability of information. The significance of impacts was evaluated **before** mitigation was suggested ("as predicted" impacts). Most impacts are mitigated or will have a low impact after mitigation. The predicted impacts before mitigation were analysed and summarised in Table 4. Also summarised is if the impacts will be positive or negative impacts.

4.5 MANAGEMENT ACTIONS AND MONITORING

The following was done to suggest management and monitoring actions of possible impacts:

- Where negative impacts are identified, mitigation objectives and mitigation actions (i.e. ways of avoiding or reducing negative impacts) is set. Where no mitigation is feasible, this will be stated and the reasons given.
- Where positive impacts are identified, actions to enhance the benefit will be recommended.
- Quantifiable standards for measuring the effectiveness of mitigation and enhancement will be set. In addition, monitoring and review programmes will be recommended in order to assess the effectiveness of mitigation.

The suggested management actions to mitigate possible negative impacts are summarised in Table 5.

Table 4: Assessment of predicted impacts before mitigation measurements are applied in the operational phase

ISSUE	NATURE OF IMPACT	DIRECT / INDIRECT / CUMULATIVE	MAGNITUDE / INTENSITY	EXTENT / LOCATION	DURATION	PROBABILITY	SIGNIFICANCE	STATUS
Topography	Gentle slopes - Erosion	Direct	Low	Local	Long-term	Improbable	Low	Negative
Geology and soils	Erosion	Direct	Low	Local	Long-term	Probable	Low	Negative
Flora (Vegetation)	Impact on the Grassland biome / vegetation	Direct	Low	Local	Long-term	Improbable	Low	Negative
• Invader species	Biodiversity of indigenous plant species will be reduced.	Indirect	Medium	Local	Long-term	Highly probable	High	Negative
Fauna	Biodiversity of indigenous animal species.	Indirect	Low	Local	Short-term	Improbable	Low	Negative
Surface & Ground water quality	Storm water impact and polluted waste storm water can impact the aquatic life of the dams and stream.	Indirect	Medium	Local	Long-term	Probable		Negative
Air quality	Dust during construction phase.	Direct	Low	Local	Short-term	Probable	Low	Negative
Noise pollution	Noise created by construction vehicles.	Direct	Low	Local	Long-term	Improbable	Low	Negative
Visual	No significance impact	Indirect	Low	Local	Long-term	Improbable	Low	Negative
Socio-economic	<ul style="list-style-type: none"> • Job creation • Boost of local economy 	Direct	High	Regional	Long-term	Definite	High	Positive
Roads	<ul style="list-style-type: none"> • High traffic volumes, busses and cars. Upgrading of access road. • Future planned road by TCLM on property. 	Direct	High	Local	Long-term	Highly Probable	High	Negative
Sewerage	Sewerage can have a negative impact.	Direct	Medium	Local	Long-term	Probable	Low	Negative
Water supply	TCLM Capacity To supply the proposed development	Direct	Medium	Local	Long-term	Highly Probable	High	Negative
Electricity supply	Electricity is a country wide problem.	Direct	Medium	Local	Long-term	Highly Probable	High	Negative

Table 5: Suggested management actions to mitigate possible negative impacts.

ISSUE	POTENTIAL IMPACT	MANAGEMENT ACTIONS	MONITORING OF IMPACTS
Topography	The proposed development area will be on a vacant but intensively disturbed area characterised by a gently undulating plateau. Erosion possibility is high during the construction.	During the construction phase, cleared areas to be constructed should not be left bare for more than 7 days.	Monitor the effectiveness of contours on a yearly basis.
Geology and soils	Intensive utilisation of service and access roads by construction vehicles may cause loss of stability of road surfaces which will result in soil erosion through wind and surface water run-off.	It is imperative that movement of equipment and machinery be restricted to designated roads to access the site.	Monitor the effectiveness of contours on a yearly basis.
Flora (Vegetation)	Vegetation removal will also be required for the purpose of construction.	No additional studies required.	Be aware of the protected plant species list (red data list).
• <i>Invader species</i>	Impact on biodiversity of indigenous vegetation. Invader species could increase in areas that are disturbed. Landowners are legally responsible for the control of invasive alien plants on their properties.	A management program to control invader plant spp will be part of the planning and management of the site. No additional studies required.	Monthly monitoring for alien plant species.
Fauna	The impacts on large and small terrestrial fauna, including mammals, reptiles and amphibians is considered to be of high significance.	No additional studies required.	Monitoring of faunal species.
Surface & Ground water quality	Storm water impact and polluted waste storm water can impact the aquatic life of the Dorp river and wetland.	Storm water management plan. Waste management plan	Monitor gabions on a monthly basis. Waste has to be managed on a daily basis.
Air quality	Dust can be created during the construction phase. No significant impact is anticipated.	No additional studies required.	Daily monitoring of covered areas.
Noise pollution	Noise can be created during the construction period.	No additional studies required.	No monitoring needed

ISSUE	POTENTIAL IMPACT	MANAGEMENT ACTIONS	MONITORING OF IMPACTS
Visual	Indigenous trees can be planted to mitigate any possible negative impact. No significant impact is anticipated.	No additional studies required	No monitoring needed
Socio-economic	The project will have a positive impact, it will <ul style="list-style-type: none"> • create work opportunities, • attract commercial and business investment, as well as deem the provision of the essential social infrastructure viable. 	No additional studies required	No monitoring needed.
Bulk services			
Roads	The Voortrekker Street will not accommodate a higher volume of traffic.	The access road to the site will be upgraded. The Voortrekker Street will be upgraded and maintained on a regular basis.	Monitoring as per Engineer's stipulation.
Sewerage	Sewerage can have a negative impact on the environment with the amount of people that are expected on the site.	The sewer network must be planned in such a way that the network is located away from the wetland and/or any other water bodies found on site.	Monitoring as per Engineer's stipulation.
Water supply	Water will be connected to the municipal water system.	It may become necessary to also increase the capacity of the water treatment works in order to cater for the additional capacity which excludes emergency water.	Monitoring as per Engineer's stipulation.
Electricity supply	TCLM has to supply electricity.	There has been some contact with the TCLM in order to get the existing electrical capacity and determine whether the demand will be met by the existing capacity.	Monitoring as per Engineer's stipulation.

5. PUBLIC PARTICIPATION PROCESS

5.1 BACKGROUND

The Public Participation Process was undertaken in accordance with the EIA Regulation R543, 2010 Section 54 (1-8). The involvement of I&AP encourages them to comment during the Draft BA phase of the project. This process also identifies issues in order to enhance the social and environmental benefits, whilst minimizing social and ecological costs to the project.

Public participation gives I&APs the opportunity to raise their concerns regarding the proposed development. In terms of EIA Regulations, R543, 2010, Section 55, a register of all I&APs has to be kept at all times. According to Section 56(1) a registered I&AP is entitled to comment in writing on all written submissions including draft reports made available to the competent authority by the applicant. I&APs were informed and involved from the initiation to promote participation and transparency.

5.2 METHODOLOGY

IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES (I&AP'S)

The key I&AP's were identified and registered during **November 2014**. The key I&AP's includes different Government Departments, the District Municipality, the Thaba Chweu Local Municipality and the neighbouring land owners (100 m from the proposed project). See **Appendix E** for registered I&APs.

BACKGROUND INFORMATION DOCUMENT (BID)

The main objective of the BID is to inform and introduce the proposed project to any affected and interested parties. The BID was handed out to neighbours and e-mailed on request to the direct neighbours that were not available to receive the BID.

ADVERTISEMENT

Advertisements were placed in the Steelburger News on **Friday, 21 November 2014** to announce the proposed development and to provide the public the opportunity to register as I&APs.

SITE NOTICES

Laminated site notice (60 X 42 cm) were placed at key points along the proposed development site on 21 November 2014. Proof of the site notice boards is attached in Appendix E.

PUBLIC MEETING

A public meeting was conducted on Wednesday, 28th of January, 2015. The attendance register and minutes of the meeting is attached in Appendix E.

ISSUES AND RESPONSES

Environmental issues associated with the proposed project were identified and those which have to be considered a risk were summarised and discussed in Table 4. Suggested management actions to mitigate possible impacts and the monitoring thereof is summarized in Table 5. The issues mentioned by the I&APs and the response there off is attached in Appendix E.

6. CONCLUSIONS AND RECOMMENDATIONS

From the analysis given in the specialist reports and other site impact assessments, the proposed development will have the minimal impacts ecologically and socially. It is however recommended that the mitigation measures presented in the Environmental Management Program (EMPr) be fully implemented. If there is vagueness in the wording and actions to be undertaken, clarifications must be sought from the environmental consultant that compiled the reports and whose contact details are presented within the main report.

The negative impacts will be mitigated with measures proposed to minimize the adverse impacts on the receiving environment in the EMPr. The negative impacts that have to be considered a risk are:

1. Rehabilitation of constructed areas after construction.
2. Prevention of erosion.
3. Storm Water Management.
4. Protection of natural vegetation and fauna species in the natural areas.
5. Mitigate visual impact by planting indigenous vegetation.
6. Prevent noise pollution in the construction and operational phase.
7. Traffic Impacts associated with the Voortrekker Street.
8. Surface and Groundwater pollution.
9. Bulk services.

This project could have a positive social-economic impact on the community with minor negative impacts on the environment if mitigations are implemented. The negative impacts should be mitigated and are addressed in the EMPr.

It is proposed that ECO compile monthly audit reports for the Compliance Section of DARDLEA until end of construction.

This project can have positive impacts on the biophysical and socioeconomic environment of Lydenburg. Thaba Chweu Local Municipality and local communities will benefit from this project. The positive impacts are:

1. The economic benefits for the people in and around Thaba Chweu Local Municipality.
2. Job opportunities.
3. The proposed development will take place on a vacant disturbed area and minimum impact on the flora and fauna are foreseen.
4. Biodiversity can be improved if indigenous vegetation will be used for landscaping of the development.
5. An extra income for some of the households involved with the project during the construction phase, through vendor activities.

From the assessment and analyses of findings, the positive impacts of the project far outweigh the negative impacts. Moreover, the negative impacts can be adequately ameliorated if the mitigations outlined in the EMP are implemented. It is therefore the recommendation of the EAP that the development be approved.

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