

**ENVIRONMENTAL AUTHORIZATION
APPLICATION FOR THE PROPOSED TOWNSHIP
ESTABLISHMENT ON A PORTION OF THE FARM
TWEELING TOWNLANDS NO. 1032, TWEELING,
FREE STATE PROVINCE**

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

REF NO: EMS/15/13/07

AUGUST 2014

Project Applicant:

MAFUBE LOCAL MUNICIPALITY
PO Box 2
Frankfort
9830

Contact Person: Mr. I. Radebe
Phone number: (058) 813 1052

Prepared by:



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ABBREVIATIONS

DEA	-	Department of Environmental Affairs
DETEA-FS	-	Department of Economic Development, Tourism and Environmental Affairs – Free State Province
DM	-	District Municipality
DMR	-	Department of Mineral Resources
DSR	-	Draft Scoping Report
DWA	-	Department of Water Affairs
ECA	-	Environmental Conservation Act of 1989
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
FSR	-	Final Scoping Report
I&AP	-	Interested and Affected Party
IAR	-	Impact Assessment Report
IDP	-	Integrated Development Plan
LM	-	Local Municipality
NEMA	-	National Environmental Management Act of 1998 as amended
S1	-	Site Alternative 1
S2	-	Site Alternative 2
SAHRA	-	South African Heritage Resources Agency
SDF	-	Spatial Development Framework
WWTW	-	Waste Water Treatment Works

EXECUTIVE SUMMARY

NSVT Consultants were appointed by Pula Strategic Resource Management, the project consultant, as independent environmental assessment practitioners to undertake the EIA process for the proposed residential development of 418 erven on a Portion of the Farm Tweeling Townlands No. 1032, Tweeling, within the Mafube Local Municipality, who is the project applicant.

A multidisciplinary approach was undertaken to achieve a development which is integrated and have minimal environmental impacts, i.e. specialists input from Archaeologist, Electrical and Traffic engineers have been incorporated during the EIA process.

Environment description of the proposed site is as follows:

- Area is a summer rainfall region with hot summers and cold winters.
- It is characterized by a flat terrain with a gentle slope towards the south
- No groundwater users were identified within 500m radius and during geotechnical investigation, no groundwater seepage was encountered.
- There is an established residential development in the vicinity of the proposed site, livestock enclosures and a railway line.
- No fauna species were encountered during the walkover study. Due to the proximity of livestock enclosures, livestock (sheep, cattle, etc.) and domestic animals are expected to frequent the area. The small burrowing mammals are also expected to occur and this is evident from occurrence of hills or burrows and droppings.
- The establishment of the township will provide units for new business opportunities (day-care facilities, spaza shops, etc.) and the development of construction related skills during the construction period. Therefore the activity will provide income over the short, medium and long term to local residents.

The proposed development is in line with the Integrated Development Programme and Spatial Development Framework of the municipality in that one of the strategies is to improve the standards of the living conditions of the communities by improving the housing conditions of residents.

The layout of the proposed development is based on the environmental parameters, economic restraints, availability of land and connection points of existing bulk services infrastructure, therefore based on that no alternatives were considered. A no-go alternative was considered not feasible because if the site remains undeveloped, it will attract criminals, illegal dumping will take place and informal settlements could be established because the housing backlog won't be addressed.

The following impacts were identified and evaluated during the assessment process, i.e.:

1. Loss of topsoil during the construction and operation period due to erosion;
2. Potential impact of the infrastructure on the socio-economic structure of the area;
3. Employment of local community;
4. Excessive noise generation during construction;
5. Potential damage or destruction to undiscovered heritage sites and artefacts;
6. Traffic congestion due to construction vehicles;
7. Potential impact to fauna and flora;
8. Improvement in quality of life for the residents of the area.

The identified impacts were assessed using the Significance Assessment Methodology, which have the severity rating, extent rating, frequency, probability and the duration. The extents of the above impacts after mitigation are mostly site specific and local. Mitigation measures were outlined to reduce the impacts to a greater extent and a draft environmental management plan compiled to ensure contractor operates his construction activities in environmental sensitive manner.

The Public Participation was completed as per DEAT's Guideline 4: Public Participation in support of the EIA Regulations. From the Public Participation Process undertaken, no objections were received. Copies of consultation with the Environmental Manager, Ward Councillor and Department of Water Affairs are attached. Comments received from the Department of Water Affairs have been incorporated in the EAP recommendations.

With the information provided, the EAP is of the opinion that the proposed development should be authorised.

1 PROJECT DETAILS

1.1 INTRODUCTION

NSVT Consultants was appointed by Pula Strategic Resource Management to complete the Environmental Impact Assessment Report component of the Environmental Impact Assessment (EIA) as per the requirements of the Department of Economic Development, Tourism and Environmental Affairs for the township establishment of 418 erven and related infrastructure on a 33.7018 hectares undeveloped land on a Portion of the Farm Tweeling Townlands No. 1032, Tweeling.

1.2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

EAP	NSVT Consultants		
Contact Person	Lorato Tigedi <i>Pr. Sci. Nat.</i>		
Postal Address	P. O. Box 42452, Heuwelsig, 9332		
Telephone	(051) 436 1698	Facsimile	(086) 239 9133
E-mail	lorato@nsvt.co.za	Cell	082 784 8259
Qualifications	B. Sc (Natural Science) B. Sc Hons (Wildlife)	Experience	+10 years in the Environmental Management Field, conducting Environmental Impact Assessment, Public Participation Process, compilation of Environmental Management Plans and Environmental Compliance Monitoring for various projects within the Northern Cape, North West, Free State, and Eastern Cape Provinces, and Lesotho.
Expertise/Training	Resources & Sustainability, Physical & Biological Environment and Informatics Project Management for Environmental Management Social & Economic Sustainability Use of Matrices in EIA Public Participation Training Introduction to Social Impact Assessment		
		Professional Affiliate	Professional Natural Scientist (400161/09) Member of IAP2 Member of IAIAA and Chair of the FS Branch 2010/2011

2 PROJECT DESCRIPTION

2.1 BASELINE INFORMATION

Mafube Local Municipality consists of four (4) towns (Frankfort//Namahadi, Villiers/Qalabotjha, Cornelia/Ntswanatsatsi and Tweeling/Mafahlaneng), as well as a rural area consisting mainly of commercial agriculture. Tweeling is located in an area of agricultural significance and mainly provide restricted services in this regard to the surrounding rural communities and primarily accommodate farm workers migrating to these towns. The area of jurisdiction of the Mafube Local Municipality is situated in the north eastern part of the Fezile Dabi District Municipality region. The total estimated residents in the Mafube Region, is 53 722.

Tweeling/Mafahlaneng is located approximately 150 km east of Sasolburg and 350 km north-east of Bloemfontein and is situated adjacent to the Frankfurt/Reitz primary road. Other larger centre such as Vereeniging and Vanderbijlpark are all within 160 km from Tweeling. Primary agricultural activities include sheep and cattle farming, maize and sunflower seed production. Other larger centres such as Vereeniging and Vanderbijlpark are all within 160km from Tweeling.

In order to assist the Mafube Local Municipality to obtain the proposed erven, the Department of Rural Development decided to manage the process. The Department of Rural Development appointed Pula Strategic Resource Management to proceed with the planning and surveying of 2000 erven in Mafahlaneng, Tweeling. As is indicated in the SDF of Tweeling and Mafahlaneng attached hereto as **Appendix 2.1A**, the identified portions of land have been earmarked for future extension and this area can also be serviced from the adjacent networks. Furthermore, the portions of land are in the ownership of the Mafube Municipality. The Mafube Council approved the proposed layout at the Council meeting in 2013.

A Motivational Report (Memorandum) compiled by *Pula* is attached hereto as **Appendix 2.1B** and Geotechnical Report compiled by *Roadlab Prehab JV Bloemfontein*, which indicate the founding conditions for the proposed development is **Appendix 2.1C**. The Bulk Services Report is contained in **Appendix 2.1D**.

2.2 PROPOSED ACTIVITY

The proposed development entails township establishment and related infrastructure of 418 erven on 33.7018 hectares on a Portion of the Farm Tweeling Townlands No. 1032, Tweeling.

Layout Plan of the proposed residential development is attached hereto as **Appendix 2.2**.

Erven composition of the proposed township establishment is shown in *Table 1* below:

TABLE 1 ERVEN COMPOSITION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT

ERVEN COMPOSITION			
RESIDENTIAL	BUSINESS	COMMUNITY FACILITY CRÈCHE	COMMUNITY FACILITY CHURCH
401	4	2	2
PUBLIC OPEN SPACE		SPECIAL FOR TRANSPORT	ROADS
7		1	1

The proposed activity is a listed activity in terms of sections 24(2) and 24D of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended and the Environmental Impact Assessment Regulations, 2010 set out in Regulation R. 545 of NEMA:

NEMA GNR 545: Listing Notice 2

Activity 15: Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more;

except where such physical alteration takes place for:

- (i) Linear development activities; or
- (ii) Agriculture or afforestation.

2.3 PROJECT LOCATION

The proposed development is situated on the property described as Portion of the farm Tweeling Townlands No. 1032, Free State Province within the jurisdiction of the Mafube Local Municipality, project applicant. The site is located towards the north of Tweeling and to the east of Mafahlaneng. The property is currently used for Commonage (Agricultural use) area and is approximately 33, 7 hectares in extent. It is bounded on the southern and western side by residential development and there is a railway line between the residential area (Mafahlaneng) and the proposed site.

Location of the proposed site is shown in the Google Satellite Imagery and the Locality Map is attached hereto as **Appendix 2.3**.

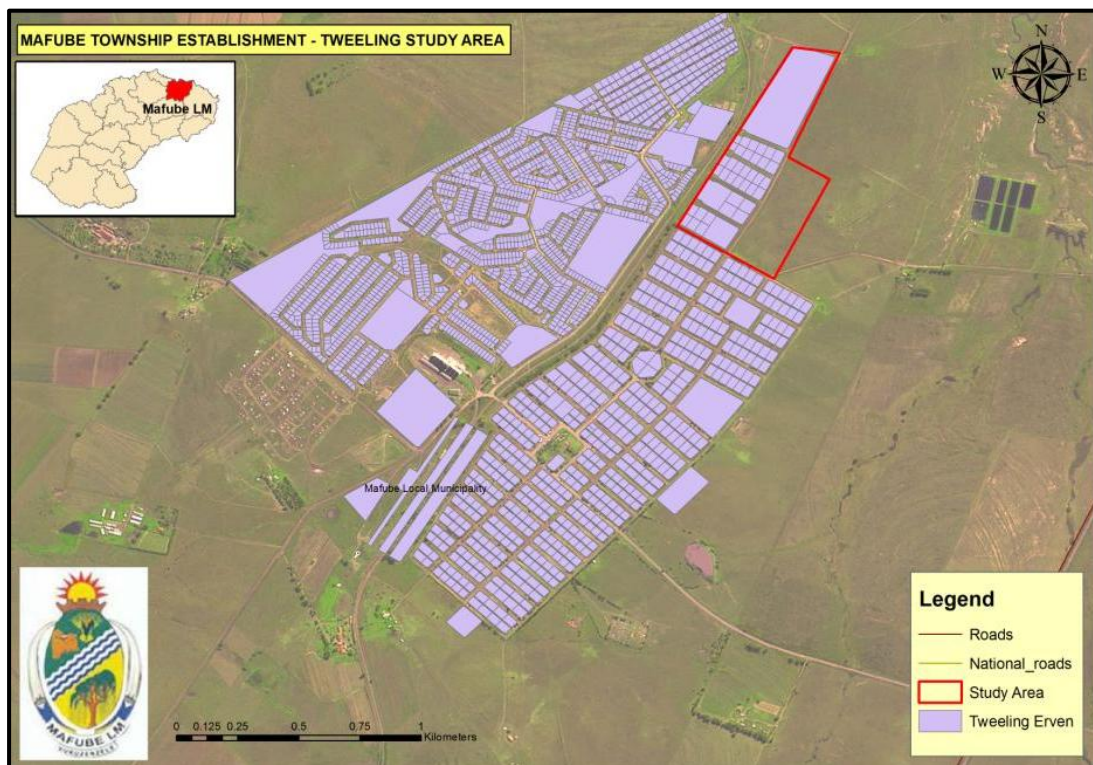


FIGURE 1 GOOGLE SATELLITE IMAGERY SHOWING LOCATION OF THE PROPOSED SITE

Locality Map of the proposed site is attached in Appendix 2.3

2.4 SITE DESCRIPTION

2.4.1 PHOTOGRAPHIC HISTORY

The photographs of the proposed site are attached hereto as **Appendix 2.4.1** and they indicates the typical environment of the study area and its surrounding.

Significance on the *Photos* is the following:

- Panoramic view of the proposed site;
- Typical condition of the proposed site, i.e. access roads, wheel tracks and footpaths;
- Typical topography of the proposed site;
- Location of Mafahlaneng and Tweeling in relation to the proposed site (surrounding land use); and
- Typical vegetation and potential habitat for fauna of the proposed site.

3 ENVIRONMENTAL DESCRIPTION

3.1 PHYSICAL ENVIRONMENT

3.1.1 CLIMATE

Summer-rainfall region, with MAP of 638mm (much of which falls in the form of thunderstorms). MAT 14-15°C, indicating a cool to warm-temperature climate, characterized by great temperature differences between summer and winter (thermic continentally due to the deep inland situation and high altitude of the unit). Occurrence of frost is frequent in winter. The area falls within the summer rainfall region. The mean annual precipitation of the region is approximately 638 mm. Most of the precipitation falls in the form of thunderstorm. Frequent occurrences of frost are seen in the winter. The area is subject to a continental climate. (Mucina & Rutherford, 2006)

3.1.2 TOPOGRAPHY

The area surrounding Tweeling/Mafahlaneng is characterized by a flat to slightly undulating and undulating terrain. The proposed township development is situated to the north of Tweeling and east of the existing township. The property gently slopes towards the North West. The whole Mafube Local Municipality ground falls in the Vaal River catchment's drainage region. Water will drain away from the site towards the east. (Mucina & Rutherford, 2006)

3.1.3 GEOLOGY AND SOILS

The study area is mainly under laid by Permian sedimentary rocks of the Karoo Supergroup. These Permian sedimentary rocks are classified as the Ecca Subgroup of the Karoo Supergroup. The site is mainly underlain by the Vryheid formation Dolerite.

Soil forms that dominate the moist bottomlands include Sepane, Arcadia, Estcourt and Rensburg forms while the outcrops and slightly elevated areas are dominated by Glenrosa, Bonheim, Avalon, Clovelly and Mayo (Mucina & Rutherford, 2006).

3.1.4 GROUND AND SURFACE WATER

During the geotechnical investigation, no ground water seepage or water table was encountered in any of the test pits at the time of the investigation. Tweeling is situated just east of the Liebensbergvlei River drainage. The Vaal River runs to the west of the proposed development from the north to the south.

3.1.5 LAND USE

The site, on which the proposed activity will take place, has been profoundly impacted on by anthropologic activities, including grazing and other uses. The principal land use on the municipal area is for agricultural purposes, with the land use associated with area's surrounding towns being for residential purposes. There is a railway line in the vicinity of the proposed site administered by Transnet.

3.2 BIOLOGICAL ENVIRONMENT

The proposed site of development is situated in Veld type Gm 6 Frankfort Highveld Grassland (Mucina & Rutherford 2006). The area is characterized grassland dominated by *Eragrostis curvula* and *Themeda triandra*, accompanied by *E. capensis*, *E. plana*, *E. racemosa*, *Cymbopogon pospischilii*, *Elionurus muticus* and *Aristida junciformis* (Mucina & Rutherford, 2006). No red data or endangered species were noted / recorded during the site visit.

3.2.1 FAUNA

During the walkover study, no species were encountered, however, burrows of small mammals were found on the proposed site. From the walk over study conducted, it is indicated that small burrowing animals, rodents and reptiles may occur on site. However, due to the development of the adjacent residential area, Mafahlaneng, the proposed site is not suitable for ungulates and large mammals to inhabit the site due to regular disturbances of a residential area, e.g. vehicular movement, kids playing, illegal dumping, etc. Mortality rate of the animal is not significant because the animals inhabiting the proposed site will relocate to the adjacent undeveloped areas. This is due to the highly disturbed nature of the site. It is expected that some avi-fauna may be found on site, but the development impact on these are not significant.

3.3 SOCIAL ECONOMIC STRUCTURE OF THE AREA

Mafube Local Municipality consists of four (4) towns (Frankfort//Namahadi, Villiers/Qalabotjha, Cornelia/Ntswanatsatsi and Tweeling/Mafahlaneng), as well as a rural area consisting mainly of commercial agriculture. Villiers, Tweeling and Cornelia are located in an area of agricultural significance and mainly provide restricted services in this regard to the surrounding rural communities and primarily accommodate farm workers migrating to these towns. The area of jurisdiction of the Mafube Local Municipality is situated in the north eastern part of the Fezile Dabi District Municipality region. The total estimated residents in the Mafube Region, is 53 722.

3.3.1 ECONOMIC CONTEXT

Tweeling is predominantly agricultural orientated with activities such as sheep and cattle farming, maize and sunflower seed production. Tweeling mainly provide restricted services in this regard to the surrounding rural communities and primarily accommodate farm workers migrating to town. Substantial future growth of this town is not foreseen, although the newly advertised and published industrial incentives by the former Tweeling Council to promote development of the industrial area of Tweeling have the potential to contribute to future growth in the industrial area.

3.3.2 SOCIAL CONTEXT

The total number of farms in the region, based on the Demarcation Board (2002) data is 449 (excluding the subdivisions of agricultural land adjacent the Vaal River and Vaal Dam). Provision of housing to farm workers, and more specifically permanent ownership thereof, is a main development priority in the region. The current tendency is for most farm labourers' families to rather reside in the urban areas with only the labourers

residing on the farms during the week. It would thus be accurate to indicate that an enormous migration occurred the past few years from the rural areas to the urban areas so far as the work force of the agricultural sector of the region is concerned.

The region faces an enormous task to deal with the erf and housing shortages and proper co-ordination and integration will be required to eradicate backlogs and to provide for future growth.

3.3.3 DEVELOPMENT STRATEGIES

According to the 2012/2017 IDP review report, sanitation, roads, housing and storm water was highlighted as the main priorities. Therefore these priorities will be met by the proposed development. The project is also in line with the Spatial Development Framework (SDF) in that one of the strategies is to improve the standards of the living conditions of the communities by improving the housing conditions of residents.

3.4 AREAS OF HISTORICAL AND/OR CULTURAL IMPORTANCE

According to Section 38 of NHRA, a Heritage/Archaeological Impact Assessment should be done for a new development exceeding 5000m². Therefore Dr. Lloyd Rossouw was appointed to conduct Palaeontological and Archaeological Impact Assessment.

The findings and recommendations of the assessments are summarized in Section 8 below and the Palaeontological and Archaeological Report is contained under **Appendix 8**.

4 PUBLIC PARTICIPATION

4.1 BACKGROUND

The Public Participation was completed as per DEAT's Guideline 4: Public Participation in support of the EIA Regulations. The objective of the process is to provide the local community and potential interested and affected parties with adequate information and give them an opportunity to raise their issues and concerns. Methods used to inform the various IAPs of the project included, direct contact, an on-site notice, pamphlets, posters, and press advertising in the local newspaper. The Draft Scoping and EIA Reports were sent to DWA for perusal, comments on the reports were received. Draft Scoping Report was forwarded to Transnet for review but no comments were received.

4.2 REGISTERED ORGANS OF STATE, COMPANIES AND PRIVATE INDIVIDUALS

TABLE 2: LIST OF INTERESTED AND AFFECTED PARTIES

NAME OF DEPARTMENT/ COMPANY/ INDIVIDUAL	CONTACT PERSON	MEANS OF CONTACT	RESPONSE YES/NO
Free State Department of Water Affairs	George Motheo	E-mail	No
Gauteng Department of Water Affairs	James Mofokeng	E-mail	Yes
Mafube Local Municipality	Speaker' s Officer - Ward Councillor	Hand delivery	No
	Environmental manager	E-mail	No
Transnet	Francois Malan- Servitude Supervisor	Courier	No

4.3 SUMMARY OF COMMENTS/ISSUES RECEIVED

During the public participation process comments were received from the Department of Water Affairs and they are bulleted below:

Department of Water Affairs comments:

- Should any of the proposed activity be locate within regulated areas as stipulated in GA 1199 as listed below water use authorization must be obtained for section 21(c) and(i) water use before any construction may commerce:
 - If any activity is located within 1:100 year flood line;
 - Be located within 500 m radius from boundary of wetland.
- Storm water must be managed on site both during construction and after construction.
- All constructions activities must remain within construction boundaries of the proposed site.
- Pollution of ground water and surface water must be prevented.
- Any pollution incident occurred should be reported to the department within 24 hours.
- Storm water contaminated on site must be contained separate from clean water.
- Applicant should ensure that this activity complies with all applicable legislations.
- Stormwater infrastructure should be designed and constructed in accordance with acceptable engineering practices, considering the geotechnical properties of soil and geology underlying the property to prevent flooding, structural damage of the infrastructure and property, injury or loss of lies, pollution of surface and groundwater, degradation of resource morphology due to increased runoff, etc.
- Applicant should adhere to Section 144 of the National Water Act, 1998 (Act 36 of 1998), which stipulates that “no person may establish a township unless the layout plan shows, in a form acceptable to the local authority concerned, lines

indicating the maximum level likely to be reached by floodwaters on average once in every 100 years.

- Applicant should also ensure that the proposed township development complies with all applicable municipal by-laws and policies for the jurisdiction of the Mafube Municipality pertaining to health, waste management, and stormwater, water and sanitation services.
- Applicant should ensure that during construction, site toilets or sanitary convenience should not be located within 1:100 year flood line, or within a horizontal distance of 100m of a watercourse.
- The responsibility rests with the applicant to ensure that there is enough capacity to accommodate the proposed township establishment in terms of bulk services.

4.4 COPIES OF CONSULTATION WITH IDENTIFIED I&APS

Consultation was done by sending notifications to the Mafube Local Municipality Speaker's Office and Environmental Manager and the Department of Water Affairs. The Draft Scoping Report was sent to the Department of Water Affairs for review and after the Final Scoping report has been accepted by DETEA, it was forwarded to Transnet but no comments were received. The Draft EIAR submitted to DWA for perusal.

Comments received from DWA are shown in *Figures 5 and 6* below.

Notification to Ward Councillor



P.O. Box 42452, Heuwelsig, 9332 | 54 Kenneth Kaunda Road, Baywater, 9301

Tel: (051) 436 1696/3 | Fax: 086 239 9133 | Cell: 082 784 8259

Email: lorato@nsvt.co.za / amrtha@nsvt.co.za | Website: www.nsvt.co.za

Date: 2013-06-26

**MAFUBE LOCAL MUNICIPALITY
WARD 8
TWEELING**

Attention: Councillor WC Motloung

**RE: NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS TWEELING
RESIDENTIAL DEVELOPMENT**

Notice is hereby given that an Application for authorization in terms of the National Environmental Management Act (No. 107 of 1998) and the Environmental Impact Assessment Regulations (2010) was submitted to the competent authority. The notice is given in terms of section 54(3) (a) (b) under R543.

Mafube local Municipality proposes development of a residential area and associated amenities at Tweeling. The proposed activity require an application subject to a Scoping and Environmental Impact Assessment (EIA), therefore the application forms for environmental authorization has been submitted to the Department of Economic Development, Tourism and Environmental Affairs (DETEA). The project description indicating the site location, number of erven, property size and DETEA reference number are tabulated below.

Table 1: Project Description

TOWN	SITE LOCATION	NO. OF ERVEN	PROPERTY SIZE (HA)	DETEA REFERENCE NUMBER
Tweeling	Portion 1032 of Tweeling Townlands	400	57.08	EMS/15/13/07

Activity Number: Activity 15 as listed under R545 of NEMA, 2010: The alteration/transformation of a vacant space for residential area with the total area of more than 20 hectares.

Name of Client: Mafube Local Municipality

Environmental Consultant: NSVT Consultants was appointed as the Independent Environmental Consultant by Mafube Local Municipality, to undertake the Environmental Impact Assessment for the above mention proposed projects.

Contact Person/Details: Lorato Tigidl or Jano Louw (Environmental Assessment Practitioner)
PO Box 42452, Heuwelsig, Bloemfontein, 9332
Tel: (051) 436 1693, Fax: (086) 549 7674
Email: lorato@nsvt.co.za or jano@nsvt.co.za

ENVIRONMENTAL MANAGEMENT BEYOND TODAY'S HORIZON

All interested and affected parties are invited to register with *NSVT Consultants* (contact details below) within 14 days of the issuing of this notice.

Please contact the consultant for further information.

Kind Regards,



Lorato Tigedi
Public Participation Practitioner

ENVIRONMENTAL MANAGEMENT BEYOND TODAY'S HORIZON

Vat No: 4320258272 | Reg. No: CK 2011/008951/23 | Sole Member LC Tigedi

FIGURE 2: NOTIFICATION SENT TO WARD COUNCILLOR

Notification to the Mafube Local Municipality Environmental Manager



P.O. Box 42452, Heuwelsig, 9332 | 54 Kenneth Kaunda Road, Baywater, 9301

Tel: (051) 436 1896/3 | Fax: 086 239 9133 | Cell: 062 784 8259

Email: lorato@nsvt.co.za / emniha@nsvt.co.za | Website: www.nsvt.co.za

Date: 2013-06-26

MAFUBE LOCAL MUNICIPALITY
P.O. Box 2
FRANKFORT
9830

Attention: Ms. Londeka Phetha

RE: NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS-MAFUBE LOCAL MUNICIPALITY TOWNSHIP ESTABLISHMENTS

Notice is hereby given that an Application for authorization in terms of the National Environmental Management Act (No. 107 of 1998) and the Environmental Impact Assessment Regulations (2010) was submitted to the competent authority. The notice is given in terms of section 54(3) (a) (b) under R543.

Mafube local Municipality proposes development of four residential areas and associated amenities at Frankfort, Comella, Villiers and Tweeling. The proposed activities require an application subject to a Scoping and Environmental Impact Assessment (EIA), therefore the application forms for environmental authorization has been submitted to the Department of Economic Development, Tourism and Environmental Affairs (DETEA). The project description indicating the site location, number of erven, property size and DETEA reference number are tabulated below.

Table 1: Project Description

TOWN	SITE LOCATION	NO. OF ERVEN	PROPERTY SIZE (Ha)	DETEA REFERENCE NUMBER
Comella	Cornella Portion 668 of Liefgekozen Farm	700	65	EMS/15/13/04
Frankfort	Portion 75 of Ayr	500	52	EMS/15/13/06
Tweeling	Portion 1032 of Tweeling Townlands	400	57.08	EMS/15/13/07
Villiers	Portion 492 of Villiers	400	22	EMS/15/13/05

Activity Number: Activity 15 as listed under R545 of NEMA, 2010: The alteration/transformation of a vacant space for residential area with the total area of more than 20 hectares.

Name of Client: Mafube Local Municipality

Environmental Consultant: NSVT Consultants was appointed as the Independent Environmental Consultant by Mafube Local Municipality, to undertake the Environmental Impact Assessment for the above mention proposed projects.

Contact Person/Details: Lorato Tigedi or Jano Louw (Environmental Assessment Practitioner)
PO Box 42452, Heuwelsig, Bloemfontein, 9332
Tel: (051) 436 1693, Fax: (086) 549 7674
Email: lorato@nsvt.co.za or jano@nsvt.co.za

All interested and affected parties are invited to register with *NSVT Consultants* (contact details below) within 14 days of the issuing of this notice.

Please contact the consultant for further information.

Kind Regards,



Lorato Tigedi
Public Participation Practitioner

ENVIRONMENTAL MANAGEMENT BEYOND TODAY'S HORIZON

Vat No: 4320298272 | Reg. No: CK 2011/008851/03 | Sole Member LC Tigedi

FIGURE 3: NOTIFICATION SENT TO THE ENVIRONMENTAL MANAGER

Notification sent to Department of Water Affairs



P.O. Box 42452, Heuwelsig, 9332 | 54 Kenneth Kaunda Road, Bayswater, 9301

Tel: (051) 436 1696/3 | Fax: 086 239 9133 | Cell: 082 784 8259

Email: info@nsvt.co.za / emrtha@nsvt.co.za | Website: www.nsvt.co.za

Date: 2013-06-26

DEPARTMENT OF WATER AFFAIRS
P.O. Box 528
BLOEMFONTEIN
9300

Attention: Mr. George Motheo

RE: NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS-MAFUBE LOCAL MUNICIPALITY TOWNSHIP ESTABLISHMENTS

Notice is hereby given that an Application for authorization in terms of the National Environmental Management Act (No. 107 of 1998) and the Environmental Impact Assessment Regulations (2010) was submitted to the competent authority. The notice is given in terms of section 54(3) (a) (b) under R543.

Mafube local Municipality proposes development of four residential areas and associated amenities at Frankfort, Comella, Villiers and Tweeling. The proposed activities require an application subject to a Scoping and Environmental Impact Assessment (EIA), therefore the application forms for environmental authorization has been submitted to the Department of Economic Development, Tourism and Environmental Affairs (DETEA). The project description indicating the site location, number of erven, property size and DETEA reference number are tabulated below.

Table 1: Project Description

TOWN	SITE LOCATION	NO. OF ERVEN	PROPERTY SIZE (HA)	DETEA REFERENCE NUMBER
Comella	Cornella Portion 668 of Liefgekozen Farm	700	65	EMS/15/13/04
Frankfort	Portion 75 of Ayr	500	52	EMS/15/13/06
Tweeling	Portion 1032 of Tweeling Townlands	400	57.08	EMS/15/13/07
Villiers	Portion 492 of Villiers	400	22	EMS/15/13/05

Activity Number: Activity 15 as listed under R545 of NEMA, 2010: The alteration/transformation of a vacant space for residential area with the total area of more than 20 hectares.

Name of Client: Mafube Local Municipality

Environmental Consultant: NSVT Consultants was appointed as the Independent Environmental Consultant by Mafube Local Municipality, to undertake the Environmental Impact Assessment for the above mention proposed projects.

Contact Person/Details: Lorato Tgedi or Jano Louw (Environmental Assessment Practitioner)
PO Box 42452, Heuwelsig, Bloemfontein, 9332
Tel: (051) 436 1693, Fax: (086) 549 7674
Email: lorato@nsvt.co.za or jano@nsvt.co.za

All interested and affected parties are invited to register with *NSVT Consultants* (contact details below) within 14 days of the issuing of this notice.

Please contact the consultant for further information.

Kind Regards,



Lorato Tgedi
Public Participation Practitioner


ENVIRONMENTAL MANAGEMENT BEYOND TODAY'S HORIZON

VMI No: 4320258272 | Reg. No: CK 2011008951/23 | Sole Member LG Tgedi

FIGURE 4: NOTIFICATION SENT TO THE DEPARTMENT OF WATER AFFAIRS

Comments received from the Department of Water Affairs are in *Figure 5* and *6* below.

Comments received on the Draft Scoping Report



water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE REGIONAL HEAD: GAUTENG
Bothongo Plaza East, 285 Francis Baard Street, Pretoria

(012) 392 1359 P/Bag X995 James Mofokeng
e-mail: mofokengj@dwa.gov.za PRETORIA (012) 392-1426
0001 16/2/7/C805/D/020

NSVT Consultants
P O Box 42452
Heuwelsig
9332

Attention Ms. Lorato Tigedi

COMMENTS: APPLICATION FOR THE PROPOSED TOWNSHIP ESTABLISHMENT ON A PORTION OF THE FARM TWEELING TOWNLANDS NO.1032, TWEELING, FREE STATE PROVINCE (REF: EMS/15/13/07).

Reference is made to the above-mentioned report received by this Office on 07 April 2014.

Should any of the proposed activity be located within the regulated areas as stipulated in GA 1199, as listed below. A Water use authorisation must be obtained for Section 21 (c) and (i) water uses before any construction may commence:

- 1) If any activity is located within 1:100 year floodline or riparian habitat whichever is the greatest of any watercourse or drainage line or,
- 2) Be located within 500m radius from the boundary of any wetland.
- 3) It is vitally important that stormwater is managed on site both during and after construction. The development and implementation of a stormwater management plan will facilitate this.

All construction activities must remain within the boundaries of the proposed area.

All possible measures must be taken to prevent any further pollution of groundwater and surface water.

The applicant should also ensure that this activity complies with all applicable legislations including municipal by-laws and policies pertaining to health, waste management, and stormwater, water and sanitation services.

Any pollution incident occurred should be reported to the Department within 24 Hours.

Storm water contaminated on site must be contained separated from clean water

Should you have any concerns, comments or queries, do not hesitate to contact James Mofokeng on the above-mentioned contact details.



REGIONAL HEAD (Acting)
DATE: 09/05/2014

FIGURE 5: COMMENTS RECEIVED ON THE DRAFT SCOPNG REPORT FROM THE DEPARTMENT OF WATER AFFAIRS



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

GAUTENG PROVINCIAL OFFICE

Enquiries: J Mofokeng
Telephone: 012 392 1426
Reference: 16/2/7/C805/D/020

By email: Lorato@nsvt.co.za

NSVT Consultants
P O Box 42452
Heuwelsig
9332

Dear Ms Tigedi

COMMENTS ON DRAFT ENVIRONMENTAL ASSESMENT REPORT FOR THE PROPOSED TOWNSHIP ESTABLISHMENT ON A PORTION OF THE TWEELING TOWNLANDS NO. 1032, TWEELING

Reference is made to the above-mentioned report received by this Office on 30 June 2014.

Please note that the Department does not have any objection to the proposed township establishment provided that the following adhered to:

- Stormwater infrastructure should be designed and constructed in accordance with acceptable engineering practices, considering the geotechnical properties of soil and geology underlying the property to prevent flooding, structural damage of the infrastructure and property, injury or loss of lives, pollution of surface and groundwater, degradation of resource morphology due to increased runoff, etc.
- The applicant should adhere to section 144 of the National Water Act, 1998 (Act 36 of 1998) which stipulate that " no person may establish a township unless the layout plan shows, in a

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form acceptable to the local authority concerned, lines indicating the maximum level likely to be reached by floodwaters on average once in every 100 years.

- The applicant should also ensure that the proposed township development complies with all applicable municipal by-laws and policies for the jurisdiction of Mafube Municipality pertaining to health, waste management, and stormwater, water and sanitation services.
- The applicant should ensure that during the construction, site toilets or sanitary convenience should not be located within 1:100 year flood line, or within a horizontal distance of 100m of a water course.
- The responsibility rest with the applicant to ensure that the there is enough capacity to accommodate the proposed township establishment in terms of bulk services.
- Please also note that the comments dated 09 May 2014 from this Office are still applicable for the proposed township establishment and therefore it is your responsibility to comply with them.

Should you have any concerns, comments or queries, do not hesitate to contact James Mofokeng on the above-mentioned contact details.

Yours sincerely



Mr M Keet

ACTING PROVINCIAL HEAD

DATE: 31/07/2014

Private Bag X995, PRETORIA, 0001
285 Bothongo Plaza East Building, Francis Baard Street, PRETORIA CBD
E-mail: mofokengj@dwa.gov.za

FIGURE 6: COMMENTS RECEIVED FROM DWA ON THE DRAFT EIAR

5 NEED AND DESIREBILITY FOR THE PROPOSED ACTIVITY

It is a given fact that one of the development priorities of today lies in the provision of housing. The Reconstruction and Development program of the Government has identified five inter-linked policy programs, whereby housing is defined as a basic need. A tremendous backlog in the provision of housing exists and has to be addressed as a matter of priority. Development pressure in housing provision has placed enormous pressure on the development of vacant land within the urban edge, and existing transport routes.

Therefore the proposed residential development of 418 erven will contribute to the improvement of the services and infrastructure for the surrounding communities, as it will provide more social services within the area and enable the municipality to reduce the housing backlog.

The proposed development promotes a safe and user friendly urban environment. An open space system has been identified to link the amenities from the eastern side with the southern side.

From a strategic planning point of view it is deemed both necessary and desirable to develop parcels of land within the municipal area and urban edge of the Mafube (Tweeling) Local Municipality. Especially those that is highly accessible to necessary urban facilities and amenities.

The proposed township establishment will also create job opportunities for the local community which will improve their skills. The project will otherwise be a social and financial upliftment for the community.

6 ALTERNATIVES

In the planning process of the proposed project, Pula Strategic Resource Management had several consultation meetings with the Local Municipality in order to determine the best site for the proposed township establishment.

6.1 NO-GO ALTERNATIVE (DO NOTHING ALTERNATIVE)

Should the proposed township establishment not take place, serious consequences can be expected, as there will be a backlog in housing, which may lead to service protests as the community's needs are not addressed. This is therefore not a desirable alternative as the option of not establishing a township, will be detrimental to the environment. Should the proposed development not be approved, the un-development of this site could result in establishment of informal settlement, increase in veld fires and illegal dumping.

6.2 SITE ALTERNATIVE

Due to land availability and service connections, the proposed site, Alternative 1, is the only site that has been identified for establishing a township during the consultation process with the Local Municipality. The site is also compatible with the surrounding land use. Therefore, no alternative site has been identified or considered during this study.

6.3 TECHNOLOGY ALTERNATIVE 1:

Due to the type of project, no alternative technology can be considered.

6.4 SELECTION PROCESS

Consultation meeting has been held with the Local Municipality and relevant role-players to determine the most suitable area available for the establishment of a township. Economic restraints, existing infrastructure and available land was major constraints on the selection process

7 SIGNIFICANT ASSESSMENT METHODOLOGY

The impacts were evaluated by applying the methodology as described below. The impact is defined and the significance is rated from Low to High as indicated in the table below with an explanation of the impact magnitude and a guide that reflects the extent of the proposed mitigation measures deemed necessary. Significance Rating is explained in *Table 3* below.

TABLE 3: SIGNIFICANCE RATING

Significance	Low	Low-Medium	Medium	Medium-High	High
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine Potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to Reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

Following is a short description of the assessment criteria as mentioned above:

The **Nature of impact** is a broad indication of what is being affected and how.

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment. *Table 4* below explains the Severity Rating used in the assessment methodology.

TABLE 4: SEVERITY RATING

Type of criteria	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Extent refer to the spatial influence of an impact be local (extending only as far as the activity, or will be limited to the site and its immediate surroundings), regional (will have an impact on the region), national (will have an impact on a national scale) or international (impact across international borders).

The Extent Rating is shown in *Table 5* below.

TABLE 5: EXTENT RATING

Rating	Description
1: Low	Immediate, fully contained area
2: Low-Medium	Surrounding area
3: Medium	Within Business Unit area of responsibility
4: Medium-High	Within Mining Boundary area
5: High	Regional, National, International

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken. The Frequency Rating is shown in *Table 6* below.

TABLE 6: FREQUENCY RATING

Rating	Description
1: Low	Once a year or once/more during operation/LOM
2: Low-Medium	Once/more in 6 Months
3: Medium	Once/more a Month
4: Medium-High	Once/more a Week
5: High	Daily

Probability considers the likelihood of an impact/incident occurring over time, it is shown in *Table 7* below.

TABLE 7: PROBABILITY RATING

Rating	Description
1: Low	Almost never / almost impossible
2: Low-Medium	Very seldom / highly unlikely
3: Medium	Infrequent / unlikely / seldom
4: Medium-High	Often / regularly / likely / possible
5: High	Daily / highly likely / definitely

Duration: Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place. Duration Rating is explained in *Table 8* below.

TABLE 8: DURATION RATING

Rating	Description
1: Low	Almost never / almost impossible
2: Low-Medium	Very seldom / highly unlikely
3: Medium	Infrequent / unlikely / seldom
4: Medium-High	Often / regularly / likely / possible
5: High	Daily / highly likely / definitely

8 SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALISTS

The following specialist studies and specialist were undertaken during the EIA phase:

- Archaeology and Palaeontology - Paleo Field Services
- Geotechnical Study - Roadlab Prehab JV (Pty) Ltd
- Traffic Impact Survey - Pula Strategic Resource Management
- Bulk Services Report - Pula Strategic Resource Management
- Electrical Services Study - FCE Consulting Engineers

The specialists' reports are attached hereto as **Appendix 8** except for the Geotechnical and Bulk Services Report. The findings and recommendations of specialists are tabulated in *Table 9* below.

TABLE 9: FINDINGS AND RECOMMENDATIONS OF SPECIALISTS

SPECIALIST STUDY	FINDINGS	RECOMMENDATIONS
Palaeontological and archaeological impact assessment	<ul style="list-style-type: none"> ▪ There is no evidence of intact or capped Stone Age archaeological material or Quaternary fossil remains within the confines of the affected area. ▪ There is no indication of prehistoric structures or rock engravings within the affected areas. ▪ There is no evidence of graves, graveyards or historical structures within the confines of the affected areas. ▪ It is also unlikely that the proposed development will significantly impact on the potentially fossil-bearing bedrock. ▪ Modern structures recorded during the survey include a water through and informal kraals 	<ul style="list-style-type: none"> ▪ Newly uncovered objects of Palaeontological significance must be reported to the relevant heritage authorities (SAHRA or FSPHRA). ▪ There are no major archaeological or Palaeontological grounds to suspend the proposed development.
Traffic Impact Survey	<ul style="list-style-type: none"> ▪ Existing road and traffic conditions on the major road network in the vicinity of the site are moderate. Some potholes do occur that needs to be rectified. ▪ All analysed intersections are expected to operate at acceptable level of service ▪ Long term road proposal are not compromised by the 	<ul style="list-style-type: none"> ▪ The proposed access points will streamline traffic flow and will ensure proper and effective traffic flow ▪ Andries Pretorius Street should be upgraded by re-surfacing and re-signaging of the intersection to allow an easier traffic flow at the intersection. ▪ This access be design and

	<p>proposed development</p> <ul style="list-style-type: none"> ▪ The trips generated are very low and won't have detrimental effects on the existing traffic flow in study area. ▪ Suitable access to the proposed development is possible from the Andries Pretorius Street. This access will require to be constructed to an appropriate standard in order to ensure traffic safety and be operationally efficient 	<p>constructed to the suit to accommodate light vehicle, the design to be carried out by a registered professional and submitted to the Mafube local municipality for approval.</p> <ul style="list-style-type: none"> ▪ The Andries Pretorius Circle proposed below be well surfaced and designed to ensure that the proposed Business Centre be well managed in terms of traffic flow.
<p>Geotechnical Report</p>	<ul style="list-style-type: none"> ▪ The site condition seem favourable for the proposed township development, subject to the aforementioned considerations ▪ No ground or surface water was encountered during the investigation. ▪ No erosion was evident during the investigation. 	<ul style="list-style-type: none"> ▪ A contour map be utilised to determine the best possible design in terms of drainage. ▪ The transported material found in the first 500mm is saturated with water and compacted with an impact roller or rammer to ensure a collapse prior to the construction of any structures.
<p>Bulk Services Report</p>	<ul style="list-style-type: none"> ▪ It is believed that the existing infrastructure can support the initial development of approximately 418 units in Mafahlaneng. Tweeling/Mafahlaneng forms a small part of the bigger picture of Tweeling/Mafahlaneng. To support the full development Mafube Local Municipality depends on Upper Vaal regional Water for bulk water. ▪ No Bulk Service contributions will be needed because of the formalizing of the existing informalized area. ▪ The Tweeling/Mafahlaneng sewer works would be the receiver of the sewerage from Tweeling/Mafahlaneng development. 	<ul style="list-style-type: none"> ▪ Non-ferrous material should not be used for services piping. ▪ A need for Outfall sewers upgrading is required to accommodate the additional flows due to existing capacity in main outfall sewers and 2. Additional capacity is created at the Tweeling/Mafahlaneng works to accommodate the additional flows. ▪ No accumulation of surface water is to be permitted and the entire development must be properly drained. ▪ All trenches and excavations must be properly backfilled and compacted in 150mm thick layers and compacted to 90% of modified AASHTO density. ▪ No trees should be planted within five meters of the line of the water bearing services. ▪ It is therefore recommended that Mafube Municipality

		approve the application for the development of Tweeling /Mafahlaneng.
Electrical Services Report	<ul style="list-style-type: none"> ▪ The proposed township establishment falls within the electricity supply area of Eskom. ▪ The developer will pay Eskom a Distribution Standard Connection Fee which will include the supply of the pre-paid meters. This only becomes applicable when capacity is available. 	<ul style="list-style-type: none"> ▪ The internal network distribution will be done as a Developers Project, meaning that the developer will erect and built the complete network according to Eskom General Standards and after completion thereof be handed over to Eskom for operation and maintenance.

9 ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS

The term “environment” is used to describe the total integrated environment, which includes aspects of the natural, economic and social environment. Environmental issues identified for this project are listed in *Table 10* below. The nature and significance of these identified impacts will addressed in the EIAR and specialist’s input will be incorporated where necessary.

TABLE 10: IDENTIFIED ENVIRONMENTAL ISSUES

ENVIRONMENTAL ISSUE	POSSIBLE IMPACT	EXTENT AFTER MITIGATION
Geology and Soils	Loss of topsoil during the construction period.	Site Specific
	Loss of topsoil during the operational phase due to erosion.	Site Specific
Socio-economic structure of the area	Potential impact of the infrastructure on the socio-economic structure of the area (Positive Impact).	Local
	Employment of local communities.	Regional
	Noise created by the construction.	Site Specific and Surroundings
Cultural, Historical and Archaeological aspects	Potential damage or destruction to undiscovered heritage sites in the area.	Regional
Traffic	Potential impact due to the increase in traffic	Local
Fauna	Potential impact of sensitive habitat destruction	Local

Flora	Potential impact of destruction of red data plants	Regional
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10 ASSESSMENT OF IDENTIFIED ENVIRONMENTAL ISSUES

The environmental issues identified in Section 9 are assessed in *Table 11* below in terms of the outlined Significance Assessment Methodology in Section 7 above.

TABLE 11: ASSESSMENT OF IDENTIFIED ENVIRONMENTAL ISSUES

POTENTIAL ENVIRONMENTAL IMPACT	PROJECT ACTIVITY OR ISSUE	PROPOSED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION					SIGNIFICANCE
			SEVERITY	EXTENT	FREQUENCY	PROBABILITY	DURATION	
Geology and soils	Loss of topsoil during the construction period	<ul style="list-style-type: none"> ◇ Exposure of bare ground will be minimized. Topsoil stripping should be limited and it should be stored separately from subsoil, i.e. no mixing of soils. ◇ In situ material should be removed to an average depth of 1000mm. ◇ Cleared and grubbed topsoil must be stockpiled as a top layer of at least 150mm thickness on the backfilled trenches for rehabilitation purposes. ◇ Soil conservation measures such as berms, gabions and mats should be used on-site to help reduce erosion. ◇ Topsoil stockpile should be weed free, ◇ Litter should be removed from the stockpiled topsoil. 	3	1	5	4	5	Medium to High (Without Mitigation)
		Low (With Mitigation)						

Soil erosion	Loss of topsoil during the operational phase due to erosion	<ul style="list-style-type: none"> ◇ Make use of geotextiles within disturbed areas of steeper topography to avoid erosion through surface water runoff; ◇ Soil conservation measures such as berms, gabions and mats should be used on-site to help reduce erosion. ◇ Areas that were compacted during construction activities should be ripped to allow re-establishment of natural vegetation. ◇ Planting of indigenous trees on park erven should be done. ◇ The disturbed area must be rehabilitated as to adhere to municipal standards & requirements, where necessary. 	2	1	5	2	3	Medium Without mitigation
			5	3	5	5	5	High (No mitigation required)
Socio-economic Environment	Employment of local communities (Positive)	<ul style="list-style-type: none"> ◇ Local labourers, especially from Ward 2 and neighbouring wards, sub-contractors (local contractors) and SMMEs should be utilized to a greater extent. ◇ Labour intensive construction methods should be adopted. ◇ Work force should include youth, women and disabled. 	4	3	5	5	5	High (No mitigation required)
			4	2	5	4	5	Medium high (Without Mitigation)

		<p>acceptable manner while on site, both during work hours and after hours.</p> <ul style="list-style-type: none"> ◇ Limit working hours of noisy equipment to daylight hours, ◇ Fit silencers to construction equipment and vehicles. 						<p>Low – medium (with mitigation)</p>
<p>Cultural, Historical and Archeological Aspects</p>	<p>Potential damage or destruction to undiscovered heritage sites in the area</p>	<ul style="list-style-type: none"> ◇ Should the contractors make any archaeological, geological, or newly uncovered Palaeontological significance, must be reported to the ECO/resident engineer who in turn must report it to SAHRA, FSHRA and DETEA within 24 hours. Construction work must not proceed if it will cause damage to such findings. Unauthorized persons may not remove artifacts of cultural or historical importance from the site. ◇ There are no major archaeological or Palaeontological grounds to suspend the proposed development. 	2	3	2	3	2	<p>Low-medium (Without Mitigation)</p>
<p>Traffic</p>	<p>Potential impact due to increase in traffic</p>	<p>Construction:</p> <ul style="list-style-type: none"> ◇ Flag men and traffic controllers should be appointed to regulate traffic flow of vehicle construction. ◇ Speed limits of construction vehicle should be limited to 40km/h and drivers should be observant at all times. ◇ Signage should be place at the entrance of the construction site indicating construction is in 	3	2	4	4	5	<p>Medium without (mitigation)</p>

		<p>progress, therefore there is movement of construction vehicles transporting materials to the proposed site.</p> <p>Operation:</p> <ul style="list-style-type: none"> ◇ Andries Pretorius Street should be upgraded by re-surfacing and re-signaging of the intersection to allow an easier traffic flow at the intersection. ◇ This access be design and constructed to the suit to accommodate light vehicle, the design to be carried out by a registered professional and submitted to the Mafube local municipality for approval. 							Low (With Mitigation)
Fauna	Potential impact of sensitive habitat destruction	<ul style="list-style-type: none"> ◇ Loss of habitat especially for small burrowing mammals and reptiles is inevitable because the land use will change to a residential area. ◇ The species (small burrowing animals) inhabiting the site currently will relocate to the adjacent undeveloped areas, when they feel threatened or disturbed, especially during construction and this will reduce possible mortality. 	4	3	5	5	5		<p>High (Without Mitigation)</p> <hr/> <p>High (with mitigation)</p>
Flora	Potential impact of destruction of red data plants	<ul style="list-style-type: none"> ◇ No red data plants are present 	1	3	1	1	1		Low without mitigation

Note: 5 green is for positive impacts.

11 ASSUMPTIONS, UNCERTAINTIES, OR GAPS IN KNOWLEDGE

Assumptions:

- The scope is limited to assessing the potential impacts associated with the proposed development; therefore the effect on the surrounding environment is based on the current land use.
- All information provided by NSVT Consultants and specialists involved is deemed valid and correct at the time it was provided.
- Since during the public participation process, no indigenous local knowledge came forth, it is assumed that there are no sensitive cultural, e.g. initiation schools sites on the proposed site.

Assumptions from Specialists:

- The Outline Scheme Report is based on the bulk services information received from Mafube Local Municipality.

Limitations/Gaps in Knowledge:

None

12 EAP RECOMMENDATION

The EAP is of the opinion that the development should be authorized because the negative impacts can be mitigated to a satisfactory level. However, the following recommendations should be considered:

1. Relocation of livestock enclosures to a suitable position.
2. Loss of topsoil during construction should be avoided to a greater extent.
3. Corridors of natural vegetation should be allowed to encourage relocation of the animals to the neighbouring undeveloped areas.
4. The municipality should consider planting of grasses and trees, especially at the park erven to promote greening and to minimize soil exposure, which could result in accelerated soil erosion process.
5. Proper maintenance of roads and streets.
6. Proper management procedures and mitigation measures must be implemented as outlined in the EMP.
7. ECO should be appointed for monthly environmental compliance monitoring during the construction phase.
8. The following recommendations from specialists should be considered and adhered to
 - **Recommendations from Traffic Impact Study:**
 - .Andries Pretorius Street should be upgraded by re-surfacing and re-signaging of the intersection to allow an easier traffic flow at the intersection

- This access be designed and constructed to the suit to accommodate light vehicle, the design to be carried out by a registered professional and submitted to the Mafube local municipality for approval.
- **Recommendation from Water Affairs**
 - Storm water contaminated on site must be contained separate from clean water.
 - Stormwater infrastructure should be designed and constructed in accordance with acceptable engineering practices.
 - During construction, site toilets or sanitary convenience should not be located within 1:100 year flood line, or within a horizontal distance of 100m of a water course.
 - Applicant should ensure that this activity complies with all applicable legislations
- **Recommendations from Geotechnical Investigations**
 - A contour map be utilised to determine the best possible design in terms of drainage.
 - The transported material found in the first 500mm is saturated with water and compacted with an impact roller or rammer to ensure a collapse prior to the construction of any structures.

13 ENVIRONMENTAL IMPACT STATEMENT

It should be recognized that no development could be completed without impacting in some way on the environment; therefore, it is imperative that negative impacts are minimized to a greater extent.

During the scoping phase of the EIA process, the environmental issues that were identified were for both the construction and operation phase, the proposed development won't be decommissioned therefore no decommissioning impacts were identified.

The identified impacts are summarized below:

1. Economic impact, e.g. job creation
2. Social impacts, e.g. nuisance as a result of noise generation, increased traffic volumes during construction, and improvement of the quality of life for residents, i.e. beneficiaries of the proposed residential development.
3. Biodiversity impacts, i.e. loss of potential habitat for fauna and loss of flora.

From the evaluation identified impacts using the assessment methodology, the significance ratings of negative impacts were reduced to low with outlined mitigation measures and the positive impacts were accentuated. The extent with mitigation ranged between site specific and local. Adherence to the draft EMP will also ensure that impacts occurring due to the development will be reduced to a greater extent.

To determine the ability of the municipality to provide basic services to the proposed development, a Motivation Report and Bulk Services Report are attached hereto and

recommendations were made so as to promote sustainable development. In terms of the findings, the municipality has the ability to accommodate the proposed site for water supply and sewerage network will be adequate if the outfall sewer is upgraded. The development traffic can be accommodated on the existing road network provided that the recommended upgrading requirements are implemented. Adequate provision has been made within the development layout to provide stormwater attenuation to cater for a 50 year flood event.

Specialists' studies that were undertaken as part of the EIA process included a geotechnical investigation to determine whether the land is suitable for human settlement and to give foundation recommendations, and a heritage impact assessment to inspect the site for any possible archaeological and historical material and Paleontological Investigation to determine the likelihood of fossil preservation in the area. According to the site has no major palaeontological and archaeological grounds to suspend the proposed development, therefore no mitigation measures are required but mitigation is provided in the EMP in case there is unearthing of fossils, grave sites, etc during earthmoving activities.

The proposed site is suitable for a residential development because it is compatible with the surrounding area, easily accessible and availability of connection points to services, e.g. water, electricity. The development will enable the municipality to decrease their housing development backlog and minimize the formation of illegal settlements on areas not considered for residential planning and to provide basic amenities, e.g. church, sport ground, and parks. The future residents will have proper shelter and access to basic services and in turn their livelihood will be improved.

During the public participation, no objections were received.

A no-go option for this project is not feasible because the site has been earmarked for residential development and it is an extension of existing Thembalihle therefore connections to basic amenities like water and sewerage are economically feasible. Housing provision is regarded as a basic need and the municipality should ensure that its local community's basic needs are met. If the proposed development is not approved, opportunistic developments could arise with more environmental impacts, e.g. illegal occupation of the land.

14 ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) identifies possible impacts of the project on the environment and the mitigation thereof. It gives guidelines to the responsible person(s) to follow appropriate contingency plans in the case of various possible impacts, thus the copy of the EMP should be given to the contractor to ensure adherence. The Draft EMP is attached hereto as **Appendix 14** and should it be approved by DETEA, it will serve as the final EMP.

REFERENCES

Department of Environmental Affairs and Tourism. 2006. Guideline 4: Public Participation in support of the EIA Regulations. Pretoria

Department of Environmental Affairs, 2004. Scoping, Integrated Environmental Management, Information Series 2, DEAT. Pretoria

Integrated Development Plan of Mafube Local Municipality 2011/2012

Mucina, L., Rutherford, M.C. and Powrie, L.W. (eds) 2005. Vegetation Map of South Africa, Lesotho and Swaziland. 1:1000 000 scale sheet maps. South Africa Biodiversity Institute, Pretoria. ISBN 1-919976-22-1

Spatial Development Framework

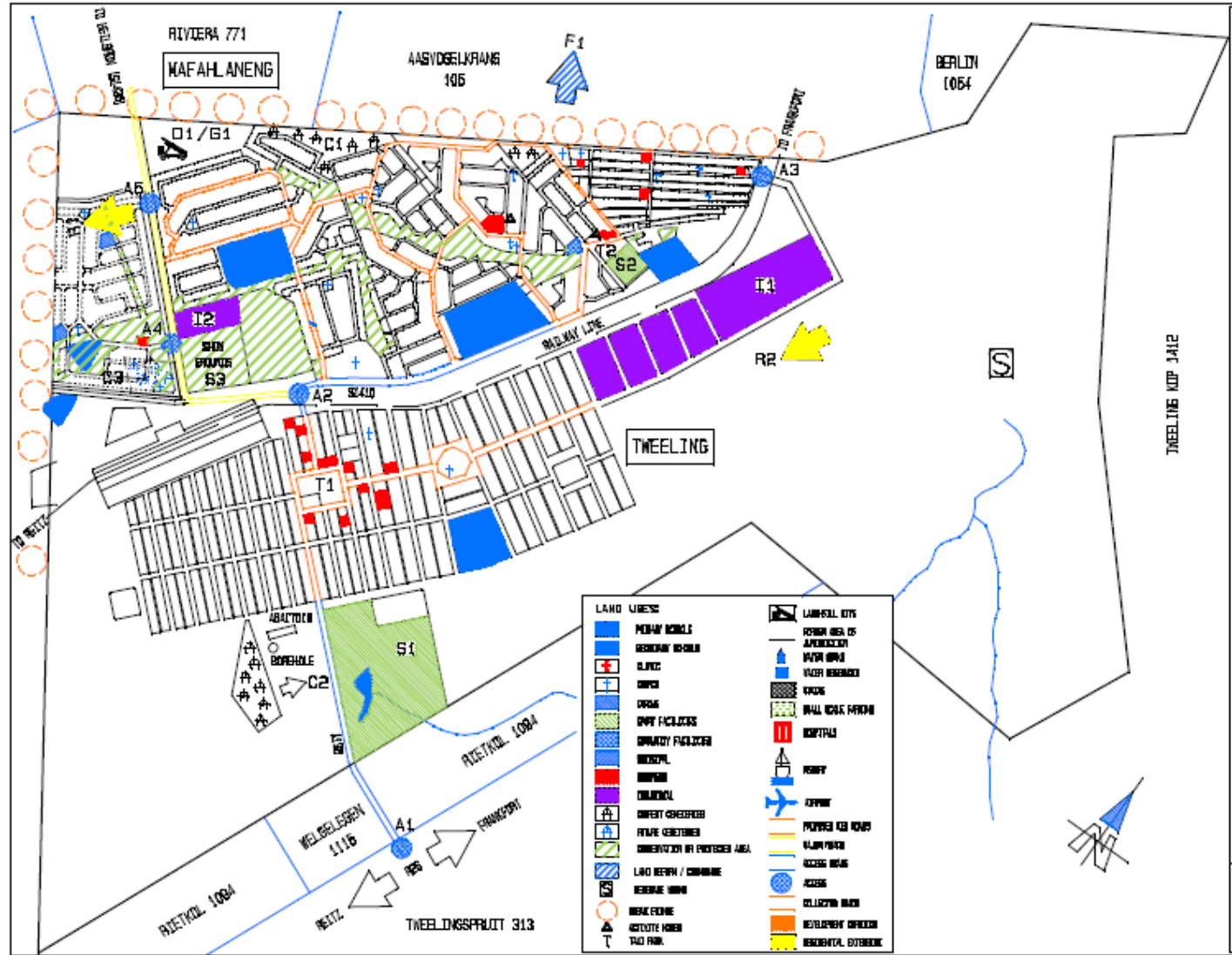
1: 50 000 Topographical Map 2728 AD Tweeling

1: 250 Geological Map 2728 Frankfort

APPENDIX 2.1A

SPATIAL DEVELOPMENT FRAMEWORK MAP





LAND USES		LANDMARKS	
	Medium Density Residential		Formal Use of Agriculture
	Primary Schools		Water Works
	Clinic		Water Reservoir
	Office		Waste
	Open		Small Scale Farms
	Open Facilities		Hospital
	Primary Facilities		Port
	Medical		Airport
	Industrial		Planned Use Zones
	Current Reserves		Water Power
	Future Reserves		Access Roads
	Conservation or Protected Area		Access
	Land Reclaim / Contaminate		Collection Basin
	Reserve Water		Recreation Area
	Service Zone		Residential Extension
	Service Zone		
	Service Zone		

TWEELING / MAF AHL ANENG SPATIAL DEVELOPMENT FRAMEWORK

Jubelo professionals

PROJECT NO. / 17/400
 DATES: 01/10/2017
 DRAWN: 21/02/2018

PREPARED BY: / 17/400
 PROJECT NO. / 17/400
 DATES: 01/10/2017
 DRAWN: 21/02/2018

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 DRAWN: 21/02/2018

PREPARED BY: / 17/400
 PROJECT NO. / 17/400
 DATES: 01/10/2017
 DRAWN: 21/02/2018

FIGURE 5

APPENDIX 2.1 **B**

MOTIVATIONAL REPORT



APPENDIX 2.1C

GEOTECHNICAL REPORT



APPENDIX 2.1D

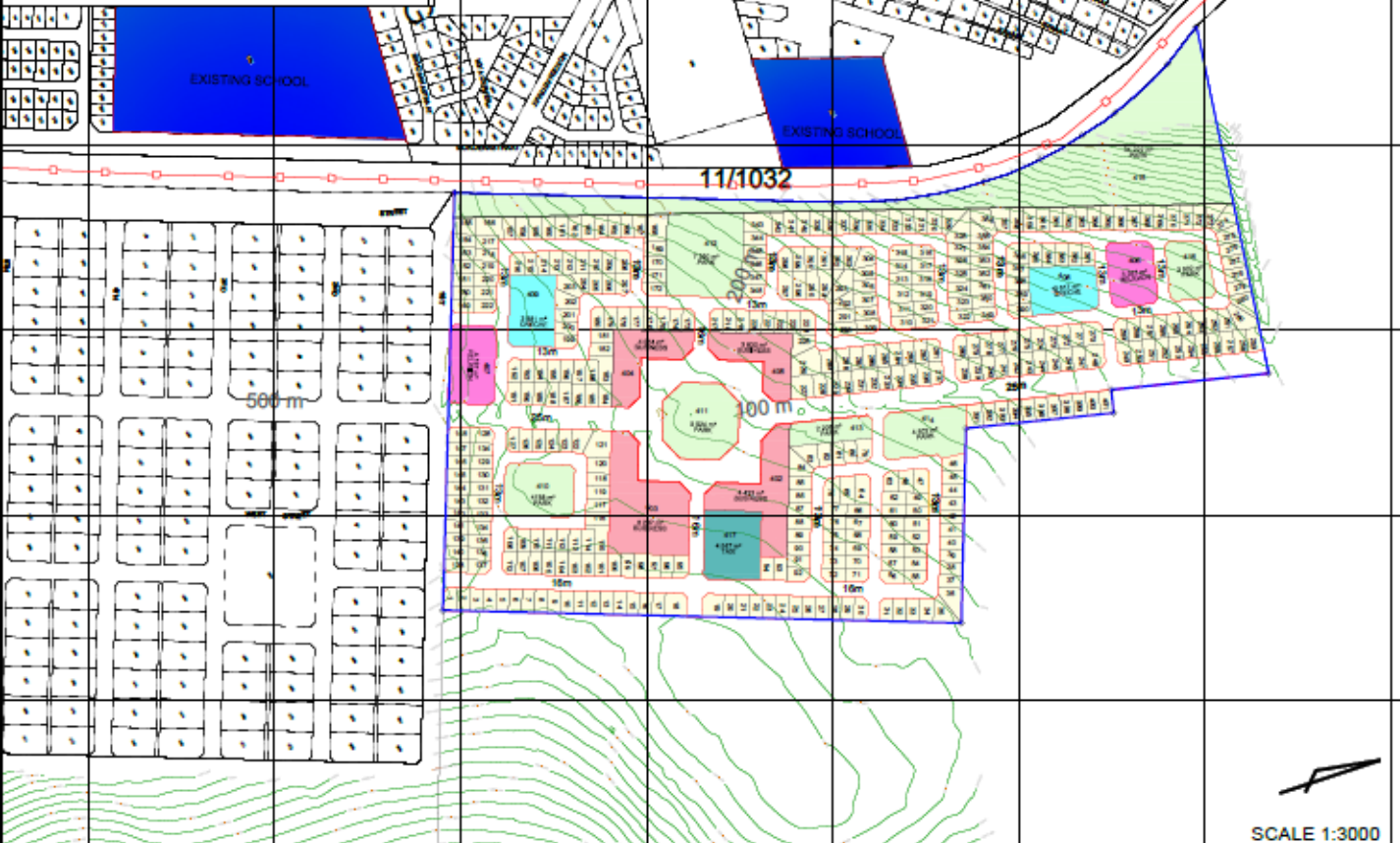
BULK SERVICES REPORT



APPENDIX 2.2

LAYOUT PLAN





**Proposed Township
TWEELING**

Situated on
Portion of the farm
Tweeling Townlands No. 1032

LEGEND

DESCRIPTION	REP. CO.	TOTAL	%	AREA
Residential	1 - 401	401	44,27%	148 233 m ²
Roads	402 - 405	4	0,45%	15 953 m ²
Community Health Centre	406 - 407	2	0,22%	7 488 m ²
Community Health Clinic	408 - 409	2	0,22%	7 994 m ²
Space for Township	410	1	0,11%	3 987 m ²
Public Open Space	411 - 414	7	0,77%	27 290 m ²
Roads	415	1	0,11%	40 428 m ²
TOTAL		418	100	337 014 m²

Minimum 80' Size: 200m²
 Maximum 80' Size: 200m²
 Average 80' Size: 27m²

- NOTES**
- All areas & dimensions are approximate pending final survey.
 - All dimensions are in meters.
 - The township boundary is depicted by _____
 - The township is situated in the municipal area of the Local Municipality of Matielah.

Plan No. 100 / 103 / 01

REVISIONS:

NO.	DESCRIPTION	DATE

CONTOURS
Contours are in accordance with the provisions of the Township Ordinance of 1992 (Ordinance 9 of 1992). Contour intervals are 2,5m.

FLOODLINES
The proposed township is not affected by the 1:100 year floodlines.

Date: 05 / 03 / 2013



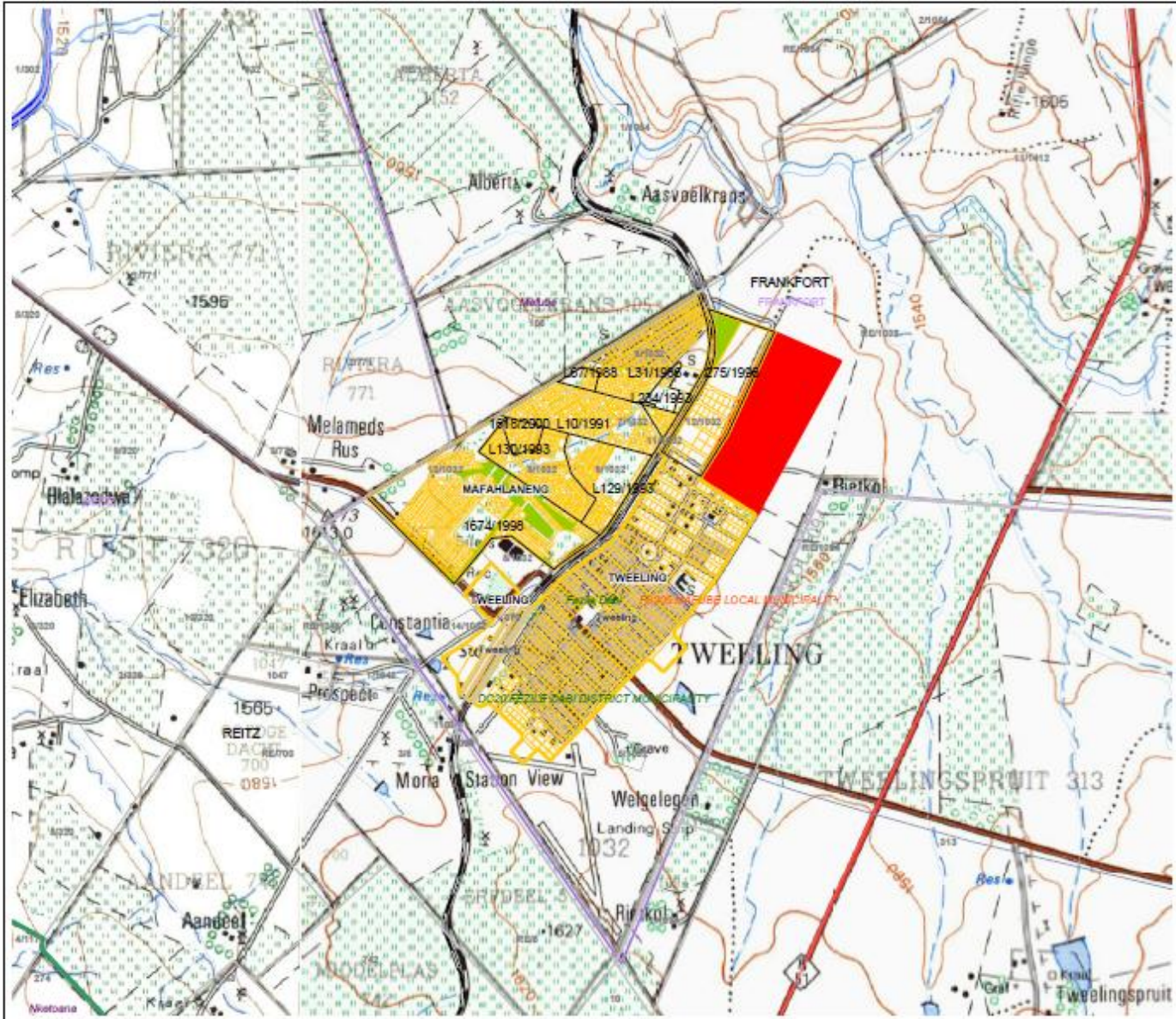
CONSULTANT:
Pula Strategic Resource Management (Pty) Ltd

SCALE 1:3000

APPENDIX 2.3

LOCALITY MAP





**TOWNSHIP ESTABLISHMENT-
ON THE FARM TWEELING
TOWNLANDS 1032, MAFUBE LM**

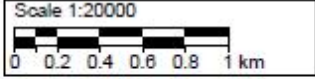
NOTES:

Legend

1:50 000 Vector

Roads
 - National route
Railways
 - Standard
 - Marshaling line
Water source
 - Reservoir
River
 - Non-perennial extent
 - Flood bank
 - Perennial extent
 - Perennial center line (named)
 - Perennial center line (unnamed)
 - Non-perennial center line (lines)
 - Non-perennial center line (area)
Inland water
 - Dam (named)
 - Non-perennial pan
 - Perennial pan
 - Marsh vlei
 - Purification plant
 - Swamp
 - LOCALITY

Design: L. Tigedi
 Drawn: AJ Pelsler
 Approved: L Tigedi
 Date: 27 May 2014



APPENDIX 2.4.1

PHOTOGRAPHIC HISTORY





PHOTO 1: VIEW OF THE PROPOSED SITE FROM THE SOUTH WEST CORNER OF THE DEVELOPMENT



PHOTO 2: PROPOSED SITE LOCATION FROM THE SOUTH EAST CORNER



PHOTO 3: PROPOSED SITE AS SEEN FROM THE NORTH WEST CORNER



PHOTO 4: VIEW OFR THE PROPOSED SITE FROM THE NORTH WEST



PHOTO 5: VIEW OF THE PROPOSED SITE STARTING AT THE SOUTH, GOING THROUGH TO THE WEST, NORTH, EAST AND ENDING AT THE SOUTH AGAIN

APPENDIX 8

REPORTS OF SPECIALISTS



APPENDIX 14

DRAFT ENVIRONMENTAL MANAGEMENT PLAN

