SIGNIFICANCE ASSESSMENT METHODOLOGY

1. INFORMATION ON THE METHODOLOGY ADOPTED IN THE ASSESSMENT OF IDENTIFIED IMPACTS

The methodology adopted for the assessment of identified impacts is the Impact Rating Matrix, which is explained below.

<table>
<tr><td colspan="4">NATURE: The character of the impact</td></tr>
<tr><th>EXTENT</th><th>DURATION</th><th>PROBABILITY</th><th>MAGNITUDE</th></tr>
<tr><td>Area</td><td>Time Frame</td><td>Likelihood</td><td>Intensity of impact to destroy or alter the environment.</td></tr>
<tr><td>IRREPLACEABLE LOSS OF RESOURCES</td><td colspan="3">This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.</td></tr>
<tr><td>REVERSIBILITY</td><td colspan="3">This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity</td></tr>
<tr><td colspan="4">SIGNIFICANCE:
Implication of the impact both with or without mitigation</td></tr>
<tr><td colspan="4">TYPE:
Description as to whether the impact is negative or positive or neutral.</td></tr>
<tr><td colspan="4">MITIGATION:
Possible impact management, minimization and mitigation of the identified impacts.</td></tr>
</table>

1.1. STATUS OF IMPACT

Status of impact describes whether the impact is positive (beneficial) on the affected environment (social) or negative (detrimental) or neutral.

1.2. NATURE OF IMPACT

Nature of impact describes the character of the impact in terms of the effect on the relevant environmental aspect.

1.3. SPATIAL EXTENT OF IMPACT

Measures the area extent, physical and spatial scale over which the impact will occur. This implies the scale limited to the Project Site (footprint) - including adjacent areas; or the town and neighbouring areas (localized), or the Local Municipality area (regional) or the entire Province (Provincial), or the entire country (National) or beyond the borders of South Africa.

Criteria	Footprint (F)	Site/Local (S-L)	Regional (R)	Provincial (P)	National and Beyond (International) (N)
Rating	1	2	3	4	5

1.4. DURATION OF IMPACT

Duration measures the timeframe of the impact in relation to the lifetime of the project. It gives an assessment of whether the impact can be eliminated by mitigation immediately (0-1 year) after a short time (1-5 years), medium term (5-10 years), long term (11- 30 years of the Project activities), or permanent (persists beyond life) due to the Project activities.

Criteria	Temporary (T)	Short Term (ST)	Medium Term (MT)	Long Term (LT)	Permanent (P)
Rating	1	2	3	4	5

1.5. MAGNITUDE/INTENSITY OF IMPACT

Magnitude or intensity of the impact measures whether the impact is destructive or benign, whether it destroys, alters the functioning of the environment, or alters the environment itself. It is rated as insignificant, low, medium, high or very high.

Criteria	Insignificant (I)	Low (L)	Medium (M)	High (H)	Very High (VH)
Rating	2	4	6	8	10

1.6. IRREPLACEABILITY OF NATURAL RESOURCES BEING IMPACTED UPON

This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.

Criteria	Very Low (VL)	Low (L)	Moderate (M)	High (H)	Definite (D)
Rating	1	2	3	4	5

1.7. REVERSIBILITY OF IMPACT

This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity

Criteria	Reversible (R)	High Reversibility (HR)	Moderate Reversibility (MR)	Low Reversibility (LR)	Irreversible (IR)
Rating	1	2	3	4	5

1.8. PROBABILITY OF IMPACT

Probability measures the probability or likelihood of the impact occurring, as either probable, possible, likely, highly likely or definite (impact will occur regardless of preventative measures).

Criteria	Probable(PR) (0-10%)	Possible (PO) (10-25%)	Likely (L) (25-50%)	Highly Likely (HL) (50-75%)	Definite (D) (75-100%)
Rating	1	2	3	4	5

1.9. SIGNIFICANCE OF IMPACT

Significance measures the foreseeable significance of the impacts of the Project both with and without mitigation measures. The significance on the aspects of the environment is classified as:

Significance Score (SS) =	(Extent + Duration + Magnitude + Irreplaceability + Reversibility) x Probability

The Significance Score is then used to rate the Environmental Significance of each potential environmental impact with or without mitigation.

Significance Score	Significance Rating	Description/ Criteria
125-150	**Very High**	the impact will result in large, permanent and severe impacts, such as local species extinction, minor human migrations or local economic collapses; even projects with major benefits may not go ahead with this level of impact; project alternatives which are substantially different should be looked at, otherwise the project should not be approved.
100-124	**High**	the impact will affect the environment to such an extent that permanent damage is likely, and recovery will be slow and difficult; the impact is unacceptable without significant mitigation efforts or reversal plans; project benefits must be proven to be very substantial; the approval of the project will be in jeopardy if this impact cannot be addressed.
75-99	**Medium-High**	the impact is significant and will affect the integrity of the environment; effort must be made to mitigate and reverse this impact; in addition, the project benefits must be clearly shown as outweighing the negative impact.
50-74	**Medium**	the impact will be noticeable but should be localised or occur over a limited time period and not cause permanent or unacceptable changes; it should be addressed in the EMPr and managed appropriately.
<50	**Low**	the impact should cause no real damage to the environment, except where it could contribute to cumulative impacts.
+	**Positive Impact**	A positive impact is likely to result in a beneficial consequences/effect and should therefore be viewed as a motivation for the development

The following is a guide to interpreting the final scores of impact:
LOW: the impact should cause no real damage to the environment, except where it has the opportunity to contribute to cumulative impacts.
MEDIUM: the impact will be noticeable but should be localised or occur over a limited time period and not cause permanent or unacceptable changes; it should be addressed in the environmental management plan (EMP) and managed appropriately.
MEDIUM-HIGH: the impact is significant and will affect the integrity of the environment; effort must be made to mitigate and reverse this impact; in addition the project benefits must be shown to outweigh the impact.
HIGH: the impact will affect the environment to such an extent that permanent damage is likely and recovery will be slow and difficult; the impact is unacceptable without real mitigation or reversal plans; project benefits must be proven to be very substantial; the approval of the project will be in jeopardy if this impact cannot be addressed.
VERY HIGH the impact will result in large, permanent and severe impacts, such as local species extinction, minor human migrations or local economic collapses; even projects with major benefits may not go ahead with this level of impact; project alternatives which are substantially different should be looked at, otherwise the project should not be approved.

IMPACT ASSESSMENT

The identified environmental issues are assessed in *Table 1* below in terms of the outlined Significance Assessment Methodology above.

TABLE 1: ASSESSMENT OF IDENTIFIED ENVIRONMENTAL IMPACTS

ASPECT: Non-Compliance to applicable Environmental Legislation during implementation		
NATURE OF IMPACT: Continuation of the project without obtaining the necessary authorisation, licenses of permits in terms of the applicable legislation could result in a fine or jail term (Economic impact).		
Status (positive or negative)	Negative	
	Without Mitigation	**With Mitigation**
Extent	Regional (3)	Regional (3)
Duration	Short term (2)	Temporary (1)
Magnitude	Very High (10)	Low (4)
Irreplaceable loss of resources?	Definite (5)	Low (2)
Reversibility	Low (4)	Reversible (1)
Probability	Definite (5)	Probable (1)
Significance	High (120)	Low (11)
Can impacts be mitigated or ~~augmented~~	Yes	
Mitigation: ◊ Application for Environmental Authorisation is in progress in terms of National Environmental Management Act (Act 107 of 1998) as amended ◊ Water Use License must be obtained in terms of the National Water Act (Act 36 of 1998) as drainage lines within the proposed site will be affected prior to commencement of construction phase. ◊ Borrow pits that will be used to source construction material must have a Mining Permit/ Right in terms of Mineral Petroleum Resources Development Act (28 of 2002) and Environmental Authorisation in terms of NEMA, 1998 as amended or alternatively, material must be obtained from a commercial quarry.		
Cumulative impacts: Limited because the current informal settlement is incorporated in the township establishment.		
Residual Impacts: None		
Discussion:		

Should the municipality go ahead with the construction of the proposed residential development and associated amenities without obtaining the necessary approvals from competent authorities, they will be in contravention of the applicable environmental legislation and this could result in an administration fine or jail term.

ASPECT: SOCIO-ECONOMIC		
NATURE OF IMPACT: Employment opportunities created but not to the benefit the local community during construction phase (socio-economic impact)		
Status (positive or negative)	Positive	
	Without Mitigation	**With Mitigation**
Extent	National (5)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Low (4)
Irreplaceable loss of resources?	High (4)	Very Low (1)
Reversibility	Moderate (3)	Irreversible (5)
Probability	Definite (5)	Possible (1)
Significance	Medium-High (90)	Medium (14)
Can impacts be mitigated ~~or augmented~~	Yes	
Mitigation: Mitigation measures is required to ensure that the local community ◊ Local labourers, especially from the Ward 2, local sub-contractors and SMMEs should be utilized to a greater extent and recruitment should consider gender equality in mind. ◊ Work force should include youth, women and disabled. The Expanded Public Works Programme targets in terms of recruitment must be met. ◊ Labour intensive construction methods should be adopted. ◊ Appropriate training should be provided based on the skills audit to be undertaken within the area. ◊ Community Liaison Officer should be appointed, and Project Steering Committee established prior to construction to ensure that all social issues are resolved, and the project does not result in any delays due to unresolved issues, e.g. recruitment of local labourers.		
Cumulative impacts:		

The unemployed individual will increase the opportunity of being employed in a similar work, therefore level of unemployment could be reduced within the area and its surroundings for construction related projects. Hence, it is important that general skill workers should be recruited from local community especially the affected ward.
Residual Impacts: The general workers would have gained experience and skill to work in similar projects in the future and CIBD grading of sub-contractors would improve thus have the experience to become main contractors in similar jobs.
Discussion: It is important to involve the councillor and ward committee of Ward 2 during labour recruitment. A skills audit should also be undertaken to determine training that could be offered to the general workers as well as determine upfront what tasks will be allocated for sub-contractors. Therefore, there should be a database of local sub-contractors that will be empowered from this project. Construction material that will be required for undertaking of the project must be sourced locally before other areas are considered.

ASPECT: PROVISION OF BULK SERVICES		
NATURE OF IMPACT: Insufficient capacity to provide bulk services to the community could result in social unrests from the beneficiaries and deterioration of their health and wellbeing.		
Status	Negative	Positive
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (2)
Duration	Medium Term (3)	Short Term (2)
Magnitude	High (8)	Medium (6)
Irreplaceable loss of resources?	Moderate (3)	Low (2)
Reversibility	Low (4)	High (2)
Probability	Highly-Likely (4)	Possible (2)
Significance	Medium-High (80)	Low (28)
Can impacts be mitigated or augmented?	Yes	
Mitigation: ◊ Availability of bulk services has been determined during the planning phase and it is confirmed in the services report that there is adequate capacity to accommodate the proposed development. The development will connect to the existing municipal bulk water and sewer reticulation network. ◊ For sewer connection, gravity sewer links will form part of the development and the nearby wastewater treatment plant can accommodate effluent from the development.		

◊ After refurbishment of the water treatment plant, there will be adequate capacity to provide potable water but a new bulk line could be required.
Cumulative impacts: None expected
Residual Impacts: None
Discussion: Should the basic essential services not be provided after the formalization, this could result in social unrests. The lack of basic services could also affect the health and well-being of the residents, e.g. continued use of pit latrines. Therefore, the services to be provided to avoid any social unrests includes adequate housing, safe drinking water, adequate sanitation, lighting, roads in good condition, stormwater management and waste management. It is the municipality's mandate to ensure that adequate housing with acceptable level of basic services are provided to ensure decent living conditions because lower level can also bring unacceptable risk to the health and wellbeing of the residents.

ASPECT: FLORA		
NATURE OF IMPACT: Transformation of the western portion of the assessment area identified for the expansion		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Footprint (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Irreplaceable loss of resources?	Moderate (3)	Moderate (3)
Reversibility	Low (4)	Low (4)
Probability	Likely (3)	Likely (3)
Significance	Medium (51)	Low (48)
Can impacts be mitigated ~~or augmented~~?	Yes	
Mitigation: ◊ The new development construction footprint must be kept as small as possible to reduce the surface impact on surrounding vegetation. ◊ No unnecessary/unauthorised footprint expansion into the surrounding areas may take place. ◊ Adequately cordon off the proposed development construction footprint prior to commencement of site preparation to ensure no construction activities, machinery, or equipment operations.		

◊ No temporary tracks may be constructed or implemented within the surrounding undeveloped areas outside the construction development footprint. ◊ Adequate operational procedures for construction footprint area must be used during the construction phase.
Cumulative impacts: Yes, the total area for expansion will be totally transformed as well as the total area of the development footprint.
Residual Impacts: Yes, the area will be totally transformed by the buildings, roads, etc. associated with township establishment
Discussion: To ensure that the transformation only takes place on the development footprint, construction development footprint must be cordon-off prior to construction activities. Areas that area earmarked for open space must be left with minimal vegetation cover.

ASPECT: FLORA		
NATURE OF IMPACT: Transformation of an Ecological Support Area two (ESA 2) associated with the assessment area		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Regional (3)	Footprint (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Irreplaceable loss of resources?	Moderate (3)	Moderate (3)
Reversibility	Low (4)	Low (4)
Probability	Likely (3)	Likely (3)
Significance	Medium (54)	Low (48)
Can impacts be mitigated ~~or augmented~~?	Yes	
Mitigation: ◊ No construction base camps may be established within the surrounding undeveloped areas outside the proposed development footprint. ◊ The new development construction footprint must be kept as small as possible to reduce the surface impact on surrounding vegetation. ◊ No unnecessary/unauthorised footprint expansion into the surrounding areas may take place. ◊ Adequately cordon off the proposed development construction footprint prior to commencement of site preparation to ensure no construction activities, machinery, or equipment operations.		

◊ No temporary tracks may be constructed or implemented within the surrounding undeveloped areas outside the construction development footprint. ◊ Adequate operational procedures for construction footprint area must be used during the construction phase.
Cumulative impacts: Yes, the total area for expansion will be totally transformed as well as the total area of the development footprint.
Residual Impacts: Yes, the area will be totally transformed by the buildings, roads, etc. associated with township establishment.
Discussion: To ensure that the transformation only takes place on the development footprint, construction development footprint must be cordon-off prior to construction activities. Areas that area earmarked for open space must be left with minimal vegetation cover. It should also be noted that the grassland within the proposed site is not reminiscent of the natural climatic state of the relevant nationally Endangered Vaal-Vet Sandy grassland vegetation type.

ASPECT: FLORA		
NATURE OF IMPACT: Destruction of-/damage to Red Data Listed Nationally or Provincially protected species individuals/habitats associated with the assessment area		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Footprint (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Irreplaceable loss of resources?	Moderate (3)	Moderate (3)
Reversibility	Low (4)	Low (4)
Probability	Possible (2)	Probable (1)
Significance	Low (34)	Low (16)
Can impacts be mitigated~~ or augmented~~?	Yes	
Mitigation: ◊ No Red Data Listed, other Provincially or Nationally protected species or any other species of conservational significance were found within the proposed site.		

◊ An additional ecological walkthrough must be conducted, prior to commencement of the proposed development, during the flowering period of bulb plant species. This will ensure that no other provincially protected or other conservationally significant species have potentially been omitted. ◊ A Provincial Flora Permit must be obtained from the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs prior to the removal of provincially protected species, approximately 15 individuals of *Helichrysum nudifolium*. ◊ No construction base camps may be established within the surrounding undeveloped areas outside the proposed development footprint. ◊ The new development construction footprint must be kept as small as possible to reduce the surface impact on surrounding vegetation. ◊ No unnecessary/unauthorised footprint expansion into the surrounding areas may take place. ◊ Adequately cordon off the proposed development construction footprint prior to commencement of site preparation to ensure no construction activities, machinery, or equipment operations. ◊ No temporary tracks may be constructed or implemented within the surrounding undeveloped areas outside the construction development footprint. ◊ Adequate operational procedures for construction footprint area must be used during the construction phase.
Cumulative impacts: Yes, this will result in an increase in the damage and/or destruction of Nationally- and Provincially protected species
Residual Impacts: Limited
Discussion: The proposed expansion area is situated on historically cultivated lands thus have been previously subjected to vegetation clearance. Confined portions of the site were subjected to burning and it is reasonably assumed that the area is likely anthropogenically burnt on a regular basis. Although, no Red Data Listed Species were found, an additional walkover by an experienced and skilled ecologist will ensure that there are no underground bulbous plants that may have been omitted during the initial site visit. Will be affected by the development. A Flora Permit for removal of the *Helichrysum nudifolium* individuals found on site must be obtained prior to site preparation.

ASPECT: ALIEN INVASIVE SPECIES		
NATURE OF IMPACT: Establishment and spread of alien invasive species during construction		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Regional (3)	Footprint (1)
Duration	Long term (4)	Short term (2)
Magnitude	Medium (6)	Low (2)

Irreplaceable loss of resources?	Low (2)	Low (2)
Reversibility	High (2)	Reversible (1)
Probability	High Likely (4)	Possible (2)
Significance	Medium (68)	Low (16)
Can impacts be mitigated ~~or augmented~~?	Yes	

Mitigation:

- ◊ All individuals of the identified alien invasive species must be actively eradicated and adequately disposed of in accordance with the National Environmental Management Biodiversity Act (Act 10 of 2004); Alien and Invasive Species Regulations, 2014
- ◊ There should be a dedicated person responsible for the control of alien vegetation species during construction phase.
- ◊ Implement an adequate Alien Invasive Species Establishment Management and Prevention Plan compiled by a suitably qualified and experienced ecologist during the construction and operational phases.
- ◊ Construction vehicles and equipment/machinery must be cleaned before entering the construction site.
- ◊ Areas surrounding the construction footprint must be adequately rehabilitated as soon as practically possible after construction in order to prevent significant alien invasive species establishment.

Cumulative impacts:
Yes, because alien species have been recorded on the proposed site and if not controlled, they can infest the surrounding undeveloped areas.

Residual Impacts:
Limited

Discussion:
The alien invasive species tends to spread during construction activities, and they end up even infesting the neighbouring areas. This is due to the movement/removal of topsoil and introduction by construction vehicles and/or machinery/equipment. To curb this from happening, introduction of alien species must be avoided and the existing once must be removed by hand/machinery, if it fails then herbicides may be used as part of site preparation and adequately disposed.

ASPECT: SOIL EROSION		
NATURE OF IMPACT: Loss of topsoil during the construction period from earthmoving activities, movement of construction vehicles and operation of machinery, and exposure of bare soil to wind and water, which could result in soil erosion.		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Footprint (1)
Duration	Long term (4)	Short term (2)

Magnitude	Low (4)	Low (4)
Irreplaceable loss of resources?	Low (2)	Low (2)
Reversibility	High (2)	High (2)
Probability	Likely (3)	Possible (1)
Significance	Low (42)	Low (11)
Can impacts be mitigated ~~or augmented~~?	Yes	

Mitigation:

◊ Implement an adequate Erosion Management Plan during the construction and operational phases in order to sufficiently manage stormwater runoff.

◊ Exposure of bare ground should be minimized, and topsoil stripping limited to the development footprint.

◊ Cleared and grubbed topsoil must be stockpiled.

◊ No topsoil stockpiling should be allowed within the protective buffer zone.

◊ Soil conservation measures such as berms, gabions and mats should be used on site to help reduce erosion.

◊ Movement of construction vehicles should be limited to the access road and hauling roads approved by the RE/ECO to avoid compacting of soils in areas not required for the development footprint.

◊ Areas that were compacted during construction should be ripped to allow re-establishment of natural vegetation.

◊ All disturbed areas should be rehabilitated immediately when construction ceases to abate channel and gulley formation.

◊ Excavations must be done per the recommendations of the Geotechnical Engineer.

Cumulative impacts:
None

Residual Impacts:
Limited

Discussion:
The proposed development will result in the removal of vegetative cover and subsequent excavation activities required for infrasrtructure installation. The exposure of soil could result in an increased surface run-off that cause soil erosion therefore, site clearing must be done in phases to minimize the area of exposed soil at any given time. The ervens earmarked for open spaces must not be subjected to vegetation clearance except removal and control of alien invasive species.

ASPECT: WATERCOURSE (DRAINAGE LINES)		
NATURE OF IMPACT: Impeding and contamination of the flow regimes of the two larger more significant first-order ephemeral water drainage lines and the associated local water catchment and drainage areas		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Regional (3)	Local (2)
Duration	Short term (5)	Short term (2)
Magnitude	Medium (6)	Low (4)
Irreplaceable loss of resources?	Moderate (3)	Low (2)
Reversibility	Low (4)	Low (4)
Probability	Highly Likely (4)	Possible (2)
Significance	Medium (72)	Low (28)
Can impacts be mitigated ~~or augmented?~~	Yes	

Mitigation:

- ◊ If the proposed 32 metres buffer around the significant drainage lines are approved by DESTEA, no construction related activities may be take place. It should be cordoned off as a no-go area.
- ◊ Stormwater Management Plan should be compiled as part of the detailed design and implemented to avoid stormwater concentration and to ensure that sufficient volumes and quality of surface water runoff from the footprint area is still towards the drainage lines.
- ◊ Stormwater Management measures must be put in place for the construction and operational phase to ensure that there is sufficient volumes and quality of surface water runoff from the footprint area is still channeled into the water drainage line.
- ◊ The stormwater management measures incorporated into the development layout designs should be inspected on a minimum biannual basis (twice a year). They must be adequately maintained to ensure that sufficient volumes and quality of surface water runoff from the footprint area is still channeled back into the water drainage line to ensure its continued flow and subsequent ecological functionality and integrity.
- ◊ The natural drainage pattern of the area should not be altered and on completion of construction activities, topography should blend with that of the surrounding area.
- ◊ If hydrocarbons or other chemicals are to be stored on site during the construction phase, the storage area must be situated as far away as possible from water drainage lines.
- ◊ Adequate hydrocarbon and other chemical storage, handling, usage and emergency spill procedures must be developed and implemented, and all relevant construction personnel mist be sufficient trained on and apply these procedures during the entire construction phase.

Cumulative impacts:

There could be cumulative impacts if mitigation measures are not implemented and they could affect the surrounding areas. However, with mitigation, the impacts will be minimal.

Residual Impacts: Limited
Discussion: If the natural drainage patterns are altered/modified, and there is lack of proper drainage measures, this could result in localized flooding. This could damage properties and the significant drainage line will not be recharged thus affecting streams that needs to be recharged by them. The localized flooded water would have a foul odour and become a breeding ground for insects and vermin, and this could negatively affect the residents. It is important that stormwater management plan takes into consideration the significant drainage lines. No hydrochemical products must be stored within the drainage lines.

ASPECT: TRAFFIC MANAGEMENT		
NATURE OF IMPACT: Increase in movement of construction vehicles that could result in an impact on traffic in the area, e.g. traffic congestion.		
Status (positive or negative)	Negative	
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	High (8)	Low (4)
Irreplaceable loss of resources?	Low (4)	Low (4)
Reversibility	High (2)	High (2)
Probability	Definite (5)	Possible (2)
Significance	Medium-High (90)	Low (28)
Can impacts be mitigated ~~or augmented~~	Yes	
Mitigation: ◊ Flag mans and traffic controllers should be appointed to regulate traffic flow of construction vehicles. ◊ 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 progress. ◊ Construction vehicles should be parked at designated locations so that the neighbouring residents will not be inconvenienced.		
Cumulative impacts: None expected		

Residual Impacts: No residential impact
Discussion: The level of vehicle ownership in the area is low, meaning there is an increased pedestrian movement thus it is important that warning road signs are in place

ASPECT: NOISE POLLUTION		
NATURE OF IMPACT: Excessive generation of noise that could be nuisance to the surrounding landusers, owners and workforce during construction.		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Low (4)
Irreplaceable loss of resources?	Moderate (3)	Low (2)
Reversibility	Moderate (3)	High (2)
Probability	Medium (3)	Possible (2)
Significance	Low (42)	Low (24)
Can impacts be mitigated ~~or augmented~~?	Yes	
Mitigation: ◊ All vehicles and equipment used on site must conform to the noise regulations standard. ◊ Construction should be limited to normal working days and office hours from 08h00 to 17h00. Should there be any deviation, then the surrounding community should be informed and municipal by-laws must be adhered to. ◊ Ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours. ◊ Limit working hours of noisy equipment to daylight hours ◊ Fit silencers to construction equipment and vehicles. ◊ All operators of heavy construction equipment must wear earplugs or mufflers. ◊ Construction vehicles and machinery must be kept in good working conditions.		
Cumulative impacts: None expected		

Residual Impacts: Minimal noise is still expected from the vehicles and the equipment to be used on site during construction activities.
Discussion: Contractor and workforce should be considerate of the neighbouring community, noise levels during construction and operation should be within the acceptable limits so that it does not cause any hearing impairment to the workforce and sleep disturbances to the surrounding land users or owners. Construction should be limited to normal working days and should there be a need to work after hours, the community should be informed. Operation of heavy machinery after hours should be prohibited.

ASPECT: AIR QUALITY		
NATURE OF IMPACT: Excessive dust generation during the construction phase and fumes emissions from construction vehicles and/or machinery, which could impact on the health of the surrounding land users and the workforce.		
Status	Negative	Negative
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Low (4)
Irreplaceable loss of resources?	Moderate (3)	Low (2)
Reversibility	Moderate (3)	High (2)
Probability	Medium (3)	Possible (2)
Significance	Low (42)	Low (24)
Can impacts be mitigated ~~or augmented~~?	Yes	
Mitigation: ◊ Occasional wetting of access roads, hauling roads and construction site should be done by using a water tank. ◊ Speed limit of 20km/h should be adhered to and 40km/h on the access road. ◊ Restrict movement of machinery to avoid unnecessary fugitive dust emissions. ◊ Construction vehicles and machinery should be serviced regularly to minimize the exhaust fumes. ◊ Water should be obtained from the municipality or an alternative source should be considered. ◊ No water may be obtained from a stream or river without obtaining a Water Use License from the Department of Water and Sanitation. ◊ Workforce must be provided with Personal Protective Equipment, e.g. dust mask.		
Cumulative impacts:		

None expected
Residual Impacts: Limited
Discussion Dust generation is expected during construction and it could result in respiratory of cardiovascular health problems. Dust could also irritate the eyes, throat and skin, however, should the outlined mitigation measures be implemented, then the impact on the quality of the air will be minimized. Therefore, considering the location of the proposed site in relation to the sensitive receptors, *i.e.* neighbouring residents, dust control should be prioritized.

ASPECT: WASTE MANAGEMENT		
NATURE OF IMPACT: Incorrect and improper storage and disposal of solid waste during construction that could result in contamination of the environment and reduce visual aesthetics of the area.		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Footprint (1)
Duration	Short term (2)	Short term (2)
Magnitude	Very High (10)	Low (4)
Irreplaceable loss of resources?	High (4)	Low (2)
Reversibility	Moderate (3)	High (2)
Probability	Highly Likely (4)	Possible (2)
Significance	Medium-High (84)	Low (22)
Can impacts be mitigated~~ or augmented~~?	Yes	
Mitigation: ◊ Contractor should provide a method statement for waste management prior to construction. ◊ Environmental Awareness Training and/or Toolbox Talks must include housekeeping and waste management. ◊ System for regular waste removal must be set up. ◊ Refuse receptacles with lids should be placed at the camp depot and construction site. They should be marked to avoid mixing of waste streams and easily accessible. ◊ Burning of waste should be prohibited. ◊ All excavations should be backfilled after completion of construction to prevent illegal dumping.		

◊ Letter or agreement between contractor and pollution control officers or companies dealing with hazardous waste should be on site.
Cumulative impacts: None expected.
Residual Impacts: Limited
Discussion: There should be a designated place with refuse bins so that there is no littering. Waste management should be included in toolbox talks and good housekeeping should always be maintained.

ASPECT: PALAEONTOLOGICAL, CULTURAL, HISTORICAL OR ARCHAEOLOGICAL ARTEFACTS		
NATURE OF IMPACT: Potential damage or destruction to undiscovered heritage sites in the area during construction.		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Regional (3)	Local (2)
Duration	Permanent (5)	Short term (2)
Magnitude	Very High (10)	Low (4)
Irreplaceable loss of resources?	Definite (5)	Low (2)
Reversibility	Low (4)	Moderate (3)
Probability	High (108)	Low (26)
Can impacts be mitigated ~~or augmented~~?	Yes	
Mitigation:		
Cumulative impacts: None expected.		
Residual Impacts: None		
Discussion: Should there be any new discoveries during construction, construction work must not proceed if it will cause damage to such findings. No unauthorized persons may remove artefacts of cultural or historical importance from the site before Environmental Control Officer is informed and SAHRA and Free State Heritage Authority are notified of the find. A professional palaeontologist must be called in to record an remove fossil material before further excavations takes place.		

ASPECT: SPREAD OF HIV/AIDS DURING CONSTRUCTION (Health Impact)		
NATURE OF IMPACT: Increase in income and introduction of people (employed in the project) may cause unsafe behaviours and casual sexual relationship during construction, which could result in the increased risk of spreading Human Immuno-Virus/Acquired Immuno-Deficiency Syndrome (HIV/AIDS) and other Sexually Transmitted Diseases cases.		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Regional (4)	Regional; (4)
Duration	Permanent (5)	Permanent (5)
Magnitude	Very High (10)	Medium (6)
Irreplaceable loss of resources?	Moderate (3)	Moderate (3)
Reversibility	Irreversible (5)	Irreversible (5)
Probability	Highly Likely (4)	Possible (2)
Significance	High (108)	Low (46)
Can impacts be mitigated ~~or augmented~~?	Yes	

Mitigation:

To build an HIV resilient workforce the following must be implemented:

1. HIV/Aids awareness training from an accredited institution.
2. Ensuring condoms are made available on site.
3. Support peer education programmes within the workforce.
4. Promote local procurement to minimize influx of workers, e.g. subcontracting or use of the local community through the involvement of the ward councillors or recruitment strategy that is used by the municipality.

Cumulative impacts:

Yes

Residual Impacts:

Yes

Discussion:

Construction sites tend to result in introduction of people into areas, seeking employment and some leaving their families behind but then end up having casual unprotected sex, especially in instances whereby there are labour camps others end up using their income, this is prevalent to first time general worker as a means to be involved in promiscuous sex. This is one of the factors that cause the spread of HIV/Aids. However, this can be managed if HIV/Awareness training is provided to the workers from an accredited institution to ensure the workforce is aware of the consequences of having casual unprotected sex and promote voluntary testing and treatment that is provided by the Healthcare institutions as well as basic financial management. A partnership may also be formed with the local Health departments, e.g. government clinics to raise

awareness in the community to prevent further transmission of HIV/Aids. Local labour procurement should also be prioritized to minimize the relocation of new people into the community.

ASPECT: Land Use		
NATURE OF IMPACT: Continued overgrazing activities within the proposed site		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Footprint (1)
Duration	Long term (4)	Permanent (5)
Magnitude	Very High (10)	Low (4)
Irreplaceable loss of resources?	High (4)	Moderate (3)
Reversibility	Low (4)	Low (4)
Probability	Highly Likely (4)	Definite (2)
Significance	Medium-High (96)	Low (34)
Can impacts be mitigated ~~or augmented~~?	Yes	
Mitigation: 1. For the proposed development to go ahead as planned as most of the identified impacts are short-term and could be reduced significantly with the outlined mitigation measures, thus rendering the site unsuitable for grazing purposes as it will be a built-up area on completion of the construction activity.		
Cumulative impacts: Yes, as the area was previously cultivated lands but not subjected to continued grazing.		
Residual Impacts: Yes		
Discussion: The proposed site is subjected to intensive grazing for long periods, without any form of grazing management and this in return will eventually reduce the productivity of the land because the soil will lose it fertility and grass cover growth will be sparse. Therefore, it important that adequate grazing measure be implemented in the surrounding areas excluded from the development footprint The significance has not reduced because if the development goes ahead as planned, there will be environmental impacts but they are mostly short-term and significance can be reduced with the outlined mitigation measures but they will be confined to the development footprint.		

ASPECT: Social Impact-		
NATURE OF IMPACT: No provision of low-cost income housing for the beneficiaries from Majwemasweu/Brandfort		
Status	Negative	
	Without Mitigation	**With Mitigation**
Extent	Regional (4)	Local (4)
Duration	Long term (4)	Short Term (2)
Magnitude	Very High (10)	Medium (6)
Irreplaceable loss of resources?	Moderate (3)	Moderate (3)
Reversibility	Low (4)	Low (4)
Probability	Highly Likely (4)	Possible (2)
Significance	Medium-High (100)	Low (38)
Can impacts be mitigated ~~or augmented~~?	Yes	
Mitigation: 1. For the proposed development to go ahead as planned as most of the impacts are short-term and could be reduced significantly with the outlined mitigation measures.		
Cumulative impacts: Yes, the municipality will not be able to address their current housing backlog		
Residual Impacts: Limited		
Discussion: Should the proposed expansion of the Slovopark Township Establishment not go ahead as planned, the municipality will not be able to provide residential units to the beneficiaries and this could result in land grabbing, especially areas that are not suitable for development of residential area. It should be noted that there will be impacts associated with the proposed mitigation but with the adoption of the mitigation measures, the significance will be reduced.		