



G E M
s c i e n c e

(No. 2002/007510/23)

Draft Basic Assessment Report

Kliparani Grain Storage Bunker 2

DEDECT Ref: NWP/EIA/43/2012

August 2012

Prepared for:

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Prepared by GEM Science cc

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the DEDECT

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(For official use only)

File Reference Number:

Application Number:

Date Received:

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

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES

NO



If YES, please complete the form entitled "Details of specialist and declaration of interest"

for appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail¹:

Locality

Prima Pasta and Biscuits (Pty) Ltd intends to establish a grain storage bunker on the remainder of Portion 1 of the farm Kliparani 519 IO (hereafter referred to as "the site"). The site is situated west of the N18 National Road on the farm Kliparani 519 IO, and falls within the jurisdictional boundaries of the Ratlou Local Municipality in the Ngaka Modiri Molema District Municipality (refer to **Appendix A** as well as *Figure 3 and 4* below for Site Locality Maps).

Activity

The proposal entails the construction of five Grain Storage Bunkers on site (*Figure 1 below*). This type of storage system offers a non-permanent alternative to bulk grain storage, usually associated with permanent structures such as grain silos.

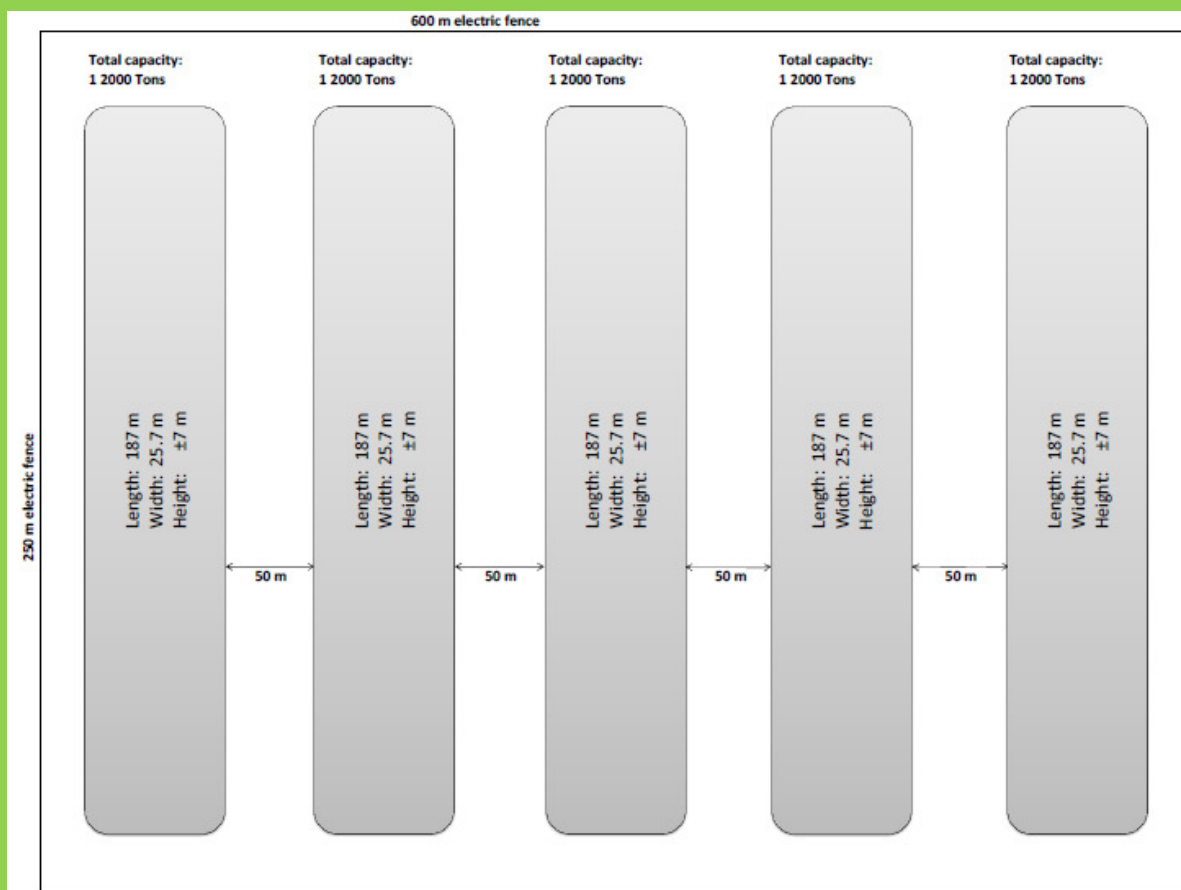


Figure 1: Preliminary site layout plan (Refer **Appendix C** for A3 size image)

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

A grain bunker is used to store dry grain. The grain is stored on the ground in a purpose-built storage area. The ground surface of the storage area is compacted and covered with a waterproof liner. The grain is then loaded onto the storage area from a centre point and retained by retaining walls of aluminium sheeting. The grain is then tightly covered with plastic sheeting (*Figure 2 below*).

All structures are removable once the grain bunker is no longer required.



Figure 2: Example of what this type of Grain Storage Bunker typically would look like when filled with grain

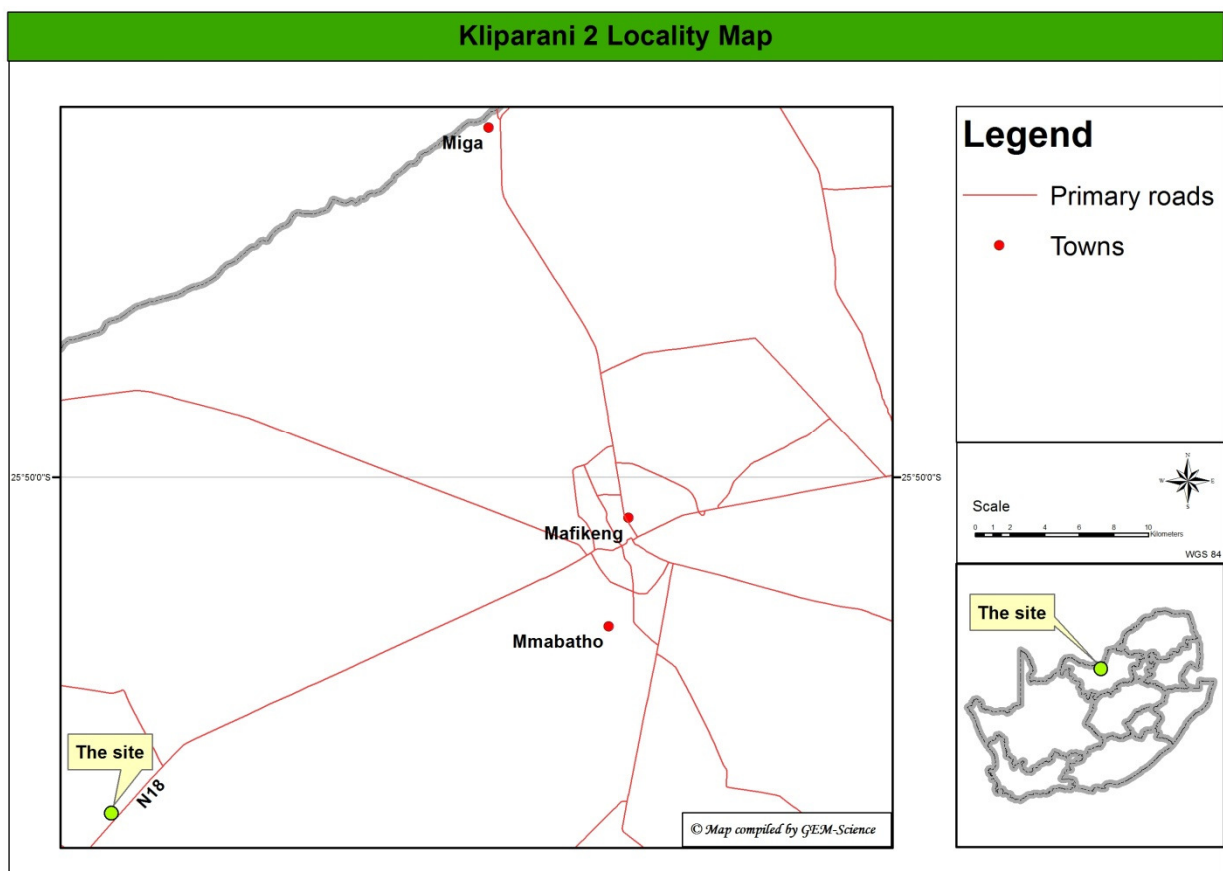


Figure 3: Site locality (Please refer to **Appendix A1** for A3 size map)

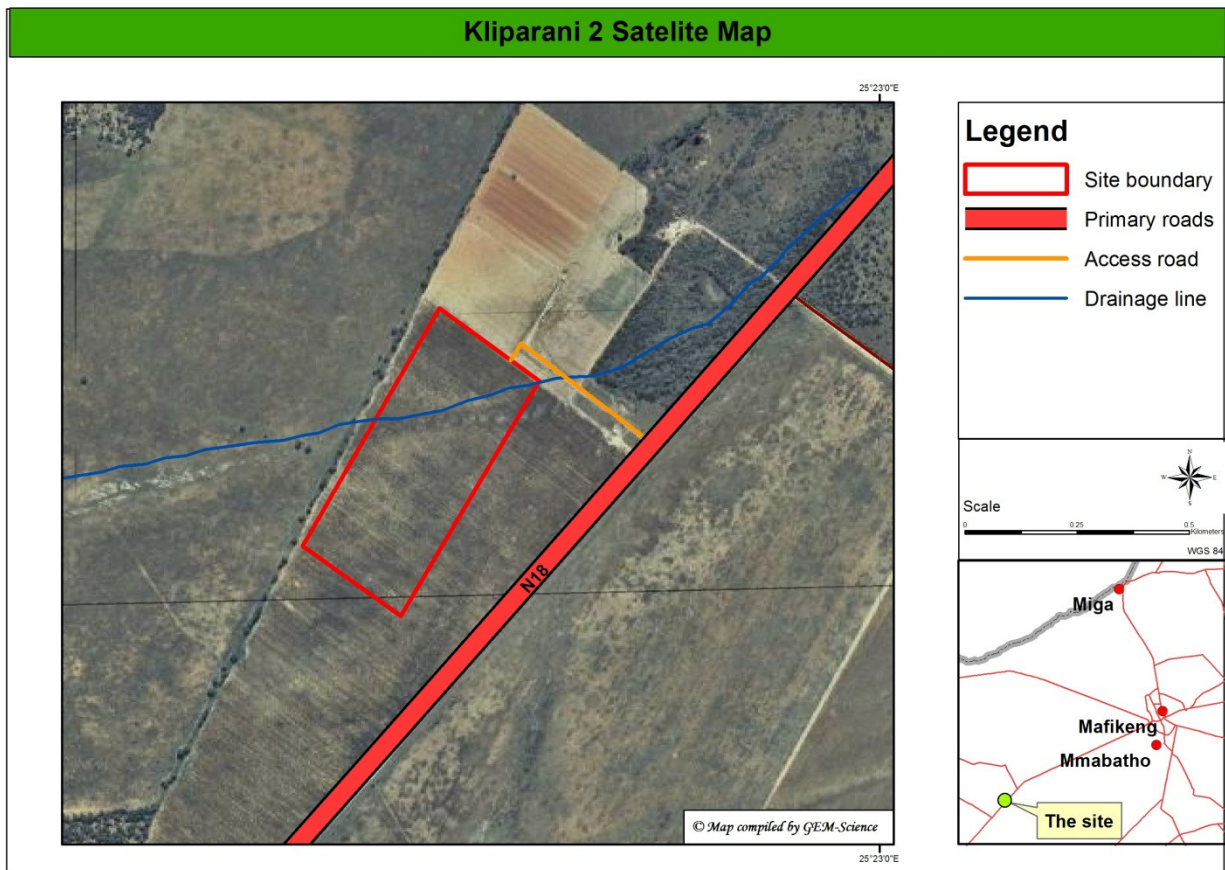


Figure 4: Satellite image of the site (Please refer **Appendix A3** for A3 size map)

Access

Access to the site will be from the N18 National Road via an existing dirt road (farm road). No additional access roads will be constructed.

Land use

The current land use of the portion in question is agriculture.

The site has been used for maize production in recent years, but due to the proposed development no maize has been planted since 2010. The activities will therefore not have any significant detrimental impact on the environment, as the site has already been severely disturbed by previous agricultural practices.

The site is surrounded by farms of which the land is used mainly for maize production and grazing.

Drainage line

The Topographical Map for the location of the site indicates that a non-perennial drainage line runs through the site (refer to **Appendix A2** for Topographical Map). The drainage line flows in a north-northwest direction towards the Madibe River, which is a tributary of the Molopo River.

The drainage line was observed to carry surface water runoff only during rainfall events.

It is anticipated that the proposed activities may have an impact on the portion of the drainage line that runs across the site (*Figure 5 below*).

The existing farm road that serves as the access road to the site, also traverses a portion of the drainage line (*Figure 6 below*).

The activities will, however, not have any significant detrimental impact on the environment, as the site has already been severely disturbed by previous agricultural practices.



Figure 5: Location of the non-perennial drainage line that runs across the site (arrow indicating the direction of flow)



Figure 6: Access road traversing the drainage line (view towards N18, arrow indicating the location of the drainage line)

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;

- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

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

Alternative 1

The Construction of a Grain Storage Bunker

(Preferred Alternative)

The proposal entails the construction of five grain storage bunkers on the remainder of Portion 1 of the farm Kliparani 519 IO. This type of storage system offers a non-permanent alternative to bulk grain storage, usually associated with permanent structures such as grain silos. Grain bunkers are used solely as temporary storage facilities.

Grain bunkers provide a particularly cheap and effective storage method. Because they require so little capital outlay, these structures are the ideal storage method to provide for good crop years rather than investing in expensive permanent storage space that is unoccupied in years of lower yields.

Grain bunkers are a new technology recently introduced into South Africa. The establishment of horizontal storage bunkers is significantly more cost effective and environmentally friendly than large concrete or steel vertical silo structures. They also allow for a quicker and more direct response to customer needs as varying the storage capacity of individual installations is easily managed.

Need and desirability

Due to the food shortage in South Africa, Namibia and Botswana, a grain bunker for maize storage near the borders of all three countries will facilitate the transport, export and import of maize. This will result in grain (maize) and grain products reaching consumers faster and cheaper which could result in a decrease in the pricing of the produce for the consumer.

The location of the site is considered ideal because of its accessibility from the N18 and close proximity to the borders of three countries (Botswana, Namibia and South Africa) where the grain will be delivered.

The proposed development will result in beneficial socio-economic impacts as it will provide work and an injection into the local economy.

Alternative 2

The Implementation of Erosion Protection Measures

(Preferred Erosion Protection Measures)

Alternative 2 is the same as Alternative 1 except that this design alternative will include the implementation of erosion control of the drainage line.

A suitable buffer zone should be incorporated along the entire drainage line. The size of the buffer will depend on the feedback the Applicant receives from the Department of Water Affairs (DWA) on the Water Use Licence Application.

One of the following erosion protection measures could be implemented:

- a) **Grass-lined swale.** This method works successfully on flat to gentle slopes. Grass-lined swales will also allow a reasonable degree of infiltration. When correctly installed, a grass-lined swale will provide instant erosion protection. Endemic grass species must be used to vegetate the swale. Grass-swales are generally a cost-effective way to convey stormwater.



- a) **Stone lined swale.** The stones will effectively break the force of the run-off and trap water-carried debris. The stones shall be embedded in line with the parabolic waterway surface.



- b) **Interlocking concrete erosion control blocks.** Erosion control blocks packed tightly along the drainage line and buffer. Vegetate with suitable endemic grass species.



- c) **Barrier lines.** Water run-off dispersal and velocity can be managed with the use of physical barriers, the most commonly used are called barrier lines. Barrier lines can be made from commonly available materials such as logs, brushwood, stones, straw bales, sand bags or gabions. Endemic grass species must be used to vegetate the drainage line and buffer area.



The existing access road traverses a portion of the drainage line. It will also be necessary for vehicles to go across the portion of the drainage line that runs across the site.

A drift or culvert installation may be necessary at the drainage line crossings. This will however depend on the feedback the Applicant receives from DWA on the Water Use Licence Application that will be submitted in terms of Section 21(c) and (i) of the National Water Act (Act 36 of 1998).

Need and desirability

The drainage lines on site might be susceptible to sheet erosion. Sheet erosion is the loss of a thin layer of topsoil over large areas by wind and water action. It is usually characteristic of gentle gradients and sparsely vegetated terrain.

Alternative 3

The Construction of a Grain Storage Silo

(Non-preferred Alternative)

The alternative entails the construction of permanent grain storage silos.



Figure 7: Example of how a grain storage silo typically looks

Silos offer a more permanent storage option. Storage silos are cylindrical structures, typically 4 to 30 m in diameter and 10 to 84 m high. They can be made of many materials, but are most commonly made out of concrete. Grain silos use gravity to pack and distribute the grain. The weight of the material pushes down, compressing the bottom layers, thereby increasing storage capacity.

Competitively priced grain storage has always been a challenge in the agricultural sector. Besides the ever-present risk of loss and contamination, silos and other mass storage facilities are relatively expensive. Silos have a higher initial capital outlay. There are also additional on-farm handling and site maintenance requirements. A high level of maintenance is required to prevent deterioration of the silo structures.

Grain silos are hazardous, and people die every year in the process of filling and maintaining them.

Need and desirability

The construction of permanent vertical silo structures is not as cost effective and environmentally friendly as grain storage bunkers. This alternative is therefore not the most viable option, nor preferred.

No go Option

Agricultural practices (maize production & grazing) to continue as is.

Should the application not be granted, this portion of land will not be economically developed to its full potential.

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

3. ACTIVITY POSITION

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

List alternative sites, if applicable.

Note: As all three alternatives are located on the same site this section of the report has not been duplicated.

Alternative 1 & 2:

Latitude (S):

Longitude (E):

Alternative S1² (preferred or only site alternative)

Alternative S2 (if any)

Alternative S3 (if any)

26°	0.472'	25°	22.447'
°	'	°	'
°	'	°	'

In the case of linear activities:

Alternative:

Latitude (S):

Longitude (E):

Alternative S1 (preferred or only route alternative)

² "Alternative S.." refer to site alternatives.

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

0	'	0	'
0	'	0	'
0	'	0	'

Alternative S2 (if any)

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

0	'	0	'
0	'	0	'
0	'	0	'

Alternative S3 (if any)

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

0	'	0	'
0	'	0	'
0	'	0	'

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

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:

Size of the activity:

Alternative A1³ (preferred activity alternative)

± 150 000 m ²
m ²
m ²

Alternative A2 (if any)

Alternative A3 (if any)

or, for linear activities:

Alternative:

Length of the activity:

Alternative A1 (preferred activity alternative)

m
m
m

Alternative A2 (if any)

Alternative A3 (if any)

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

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

Alternative:

Size of the site/servitude:

Alternative A1 (preferred activity alternative)

m²

Alternative A2 (if any)

m²

Alternative A3 (if any)

m²

5. SITE ACCESS

Does ready access to the site exist?

YES 	NO
---	----

If NO, what is the distance over which a new access road will be built

m

Describe the type of access road planned:

Access to the application site will be from the N18 National Road, tuning off onto an existing dirt road (farm road).

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site. (Refer to **Appendix A)**

6. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

- 6.1 the scale of the plan which must be at least a scale of 1:500; (Refer to **Appendix A** for site plans)
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site; (Refer to **Appendix G4** for Adjacent Properties Map)
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites; (Refer to **Appendix A4** for Topographical Locality Map)
- 6.4 the exact position of each element of the application as well as any other structures on the site; (Refer to **Appendix C** for Facility Illustration)
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure; (Refer to **Appendix G3** for Servitude Map)
- 6.6 all trees and shrubs taller than 1.8 metres; (Refer to **Appendix A2** for Satellite Map)
- 6.7 walls and fencing including details of the height and construction material; (Refer to **Appendix C** for Facility Illustration)

- 6.8 servitudes indicating the purpose of the servitude; (Refer to **Appendix G3** for Servitude Map)
- 6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto): (Refer to **Appendix A4** for Topographical Locality Map)
- rivers;
 - the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and (Refer to **Appendix A4** for Topographical Locality Map)
- 6.11 the positions from where photographs of the site were taken. (Refer to **Appendix B** for site photographs)

7. SITE PHOTOGRAPHS

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

Colour photographs taken on site together with a description of each photograph are attached under **Appendix B**.

8. FACILITY ILLUSTRATION

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

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

±R11m


What is the expected yearly income that will be generated by or as a result of the activity?

±R108m

Will the activity contribute to service infrastructure?

YES	NO 
-----	--

Is the activity a public amenity?

YES	NO 
-----	--

How many new employment opportunities will be created in the development phase of the activity?

± 30

What is the expected value of the employment opportunities during the development phase?

±R1.5m

What percentage of this will accrue to previously disadvantaged individuals?

±80%

How many permanent new employment opportunities will be created during the operational phase of the activity?

Permanent	= 15
+ Seasonal	= 18
Total	= 33

What is the expected current value of the employment opportunities during the first 10 years?

±R24m

What percentage of this will accrue to previously disadvantaged individuals?

±80%

9(b) Need and desirability of the activity

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

The establishment of the grain bunker (grain storage facility) will provide various advantages for Prima Pasta and Biscuits (Pty) Ltd whom provide maize to Namib Mills (NMI) in Namibia as well as other NMI group subsidiaries such as Bolux Milling in Botswana. The bunker will have a storage capacity of approximately 60,000 tons of maize of which 30,000 tons will be exported to Namibia and Botswana. A privately owned grain storage area and the purchasing of raw product (maize) directly from the South African farmers, provides various advantages including the optimisation of loading times (in terms of transport) and a decrease in expenses to local farmers.			
1.	Was the relevant provincial planning department involved in the application?	YES	NO
2.	Does the proposed land use fall within the relevant provincial planning framework? It has been confirmed via e-mail on 22 November 2011 with Mr John Lekgetho of the North West Department of Agriculture and Rural Development, that the current land use zoning of the portion in question is "Agriculture".	YES	NO
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation: The project is a privately initiated development.		
DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES	NO
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area? According to the North West Provincial Spatial Development Framework and Zoning Plan of 2003, the site falls within an area zoned for Agriculture.	YES	NO
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	NO
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
5.	Will the proposed land use / development impact on the sense of place?	YES	NO
6.	Will the proposed land use / development set a precedent?	YES	NO
7.	Will any person's rights be affected by the proposed land use / development?	YES	NO
8.	Will the proposed land use / development compromise the "urban edge"?	YES	NO
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation:		
BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES	NO
2.	Explain:		

	Due to the food shortage in South Africa, Namibia and Botswana, a grain bunker for maize storage near the borders of all three countries, will facilitate the transport, export and import of maize. This will result in grain (maize) and grain products reaching consumers faster and cheaper which could result in a decrease in the pricing of the produce for the consumer.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES 	NO
4.	<p>Explain:</p> <p>A grain bunker will not only provide direct employment opportunities to the local community but due to the grain bunker in close proximity to maize producing farms, farmers might decide to increase their yield by planting more fields. This will result in further employment opportunities for the local communities.</p>		

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Administering authority	Date
National Environmental Management Act No. 107 of 1998 as amended.	National & Provincial	27 November 1998
GNR 544 (Listing Notice 1), Activity 8: “The construction of a hatchery or Agri-industrial infrastructure outside industrial complexes where the development footprint covers an area of 2 000 square meters or more.”	Department of Economic Development, Environment, Conservation and Tourism (DEDECT)	18 June 2010
GNR 544 (Listing Notice 1), Activity 11 (xi): “The construction of infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.”	Department of Economic Development, Environment, Conservation and Tourism (DEDECT)	18 June 2010
Guideline Documents 3,4 & 5 to EIA Regulations, 2006	Department of Environmental Affairs and Tourism (DEAT)	2006
IEM Guideline Series 5 and 7, Companion to the NEMA EIA Regulations of 2010	Department of Environmental Affairs and Tourism (DEAT)	2010
National Water Act (Act 36 of 1998)	Department of Water Affairs	1998
North West Provincial Government Spatial Development Framework	North West Provincial Government	2003
Conservation of Agricultural Resources Act 43 of 1983	Department of Agriculture, Forestry and Fisheries	1983

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES 	NO
± 2 m ³	

If yes, what estimated quantity will be produced per month?


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

A very small amount of solid waste will be produced during the construction phase, since most of it will be stored for later reuse. An area on the application site will be earmarked for dumping of all solid waste. This area must be situated as far away as possible from the drainage line and buffer area, and should not be visible from the surrounding residents or amenities. The demarcated area must be easily accessible for dumping trucks to collect waste. The waste will be transported to the Mafikeng municipal landfill site (which is the nearest registered landfill site). The disposal of solid waste will be the responsibility of the applicant.

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

All construction solid waste that is not reused will be disposed of at the Mafikeng municipal landfill site. No solid waste will be dumped on surrounding open areas or adjacent properties.

Will the activity produce solid waste during its operational phase?

YES 	NO
± 2 m ³	

If yes, what estimated quantity will be produced per month?

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

Solid waste to be generated will comprise mainly of domestic waste. A waste disposal area will be designated and this should be equipped with a suitable container (i.e. skip or bins) of sufficient capacity and designed to contain and prevent refuse from being blown by wind, thereby preventing the potential pollution of the surrounding areas by litter. Once the skip/bins are full, waste will be transported to the Mafikeng municipal landfill site for disposal. The applicant will be responsible for the transport of waste to the Mafikeng landfill site.

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

Ratlou Local Municipality does not offer any waste removal services or have any waste disposal facilities. All solid waste (general waste) will therefore be disposed of at the Mafikeng municipal landfill site, which is the nearest registered landfill site. Waste will be transported to the Mafikeng municipal landfill site at the applicant's own cost.

Mr Kitso Komane of the Mafikeng Municipality has confirmed in writing that the Mafikeng municipal landfill site does have sufficient capacity to accept all general waste produced on site (letter attached as **Appendix G2**).

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

YES	NO 
-----	--

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

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO 
-----	--

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

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO 
-----	--

If yes, what estimated quantity will be produced per month?

m ³	
Yes	NO 

Will the activity produce any effluent that will be treated and/or disposed of on site?

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO 
-----	--

If yes, provide the particulars of the facility:

Facility name:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

	Cell: <table border="1"><tr><td></td></tr></table>	
	Fax: <table border="1"><tr><td></td></tr></table>	

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

The activity will not create any waste water.

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	NO 
YES	NO

If yes, is it controlled by any legislation of any sphere of government?

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

If no, describe the emissions in terms of type and concentration:

The proposed development will not generate any emissions. The additional vehicle traffic and exhaust fumes may have an influence, but is regarded as insignificant.

11(d) Generation of noise

Will the activity generate noise?

YES	NO 
YES	NO

If yes, is it controlled by any legislation of any sphere of government?

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

If no, describe the noise in terms of type and level:

Noise associated with normal construction activities can be anticipated during the construction phase. This would include noise generated by earth moving equipment and other general construction activities. Construction activities will, as far as practically possible, be limited to normal working hours (Monday to Friday, 7am to 5pm).

During the operational phase, noise will be generated by the tractors on site as well as trucks that collect grain from the bunker. The noise from these sources will be limited and all measures will be taken to ensure that the vehicles are serviced on a regular basis in order to ensure that no unacceptable noise levels occur.

Noise levels will be kept within legislated limits for the area, in accordance with the requirements of the relevant national and local noise control statutes.


12. WATER USE

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

municipal	water board	groundwater	river, stream, dam or lake	other	the activity will not use water
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use permit from the Department of Water Affairs?

N/A	
YES 	NO

Legislation prescribes that a water use license should be obtained for activities that alter the bed, banks, course or characteristics of a watercourse, where the definition of a watercourse includes a natural depression in which water flows intermittently.

In terms of the National Water Act, 36 of 1998, for the purposes of this Act, the water uses include:

Section 21 (c) - Impeding or diverting the flow of water in a watercourse; ***(The placement of bunkers might impede the flow of water within the drainage line.)***

Section 21 (i) - Altering the bed, banks, course or characteristics of a watercourse. ***(The Access Road currently traverses the drainage line. A vehicular crossing is also planned for a portion of the drainage line that runs across the site.)***

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

A Water Use Licence Application has been submitted to the Department of Water Affairs (proof thereof will be included in the final BAR).

13. ENERGY EFFICIENCY

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

The activity will not use any electricity.

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

No alternative energy sources have been included due to the fact that no energy is required for this activity.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

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

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

Note: As all three alternatives are located on the same site this section of the report has not been duplicated.

3. Has a specialist been consulted to assist with the completion of this section?

YES 	NO
--	----

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed: (Refer to **Appendix G5** for Details of Specialist and Declaration of Interest for the Geology Report.)

All specialist reports must be contained in Appendix D. (Refer to **Appendix D1** for the Geology Report.)

Property description/physical
address:

The Remainder of Portion 1 of the farm Klipparani 519 IO

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

Ratlou Local Municipality

Ngaka Modiri Molema District, near Mafikeng

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

Current land use zoning:

Agriculture (grazing & arable)


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

Is a change of land use or a consent use application required?

YES	NO 
-----	---

No change of land use will be required because the construction of a grain storage bunker is an agri-industrial activity on land that has been zoned for agricultural purposes.

Must a building plan be submitted to the local authority?

YES	NO 
-----	---

Locality map:

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

- an indication of the project site position as well as the positions of the alternative

sites, if any;


- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)

See **Appendix A** for the locality and other maps.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

2. LOCATION IN LANDSCAPE

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

NB: Indicate by highlighting/ticking

2.1 Ridgeline

2.2 Plateau

2.3 Side slope of hill/mountain

2.4 Closed valley

2.5 Open valley

2.6 Plain 

2.7 Undulating plain / low hills

2.8 Dune

2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

The soil type for this site is Clovelly, which is sensitive to erosion, especially when not protected by vegetation.

(Refer to **Appendix A4** for a Geotechnical Map of the area & **Appendix D1** for the Geology Report.)

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

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

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

NB: Indicate by highlighting/ticking

5.1 Natural area ✓ - *The possible occurrence of downstream siltation during high rainfall periods.*
- *Should natural drainage routes be affected, this may have an impact on the natural area located downstream from the site.*

5.2 Low density residential

5.3 Medium density residential

5.4 High density residential

5.5 Informal residential^A

5.6 Retail commercial & warehousing

5.7 Light industrial

5.8 Medium industrial^{AN}

5.9 Heavy industrial^{AN}

5.10 Power station

5.11 Office ✓ - *No influence/impact.*

5.12 Military or police base/station/compound

5.13 Spoil heap or slimes dam^A

5.14 Quarry, sand or borrow pit

5.15 Dam or reservoir

5.16 Hospital/medical centre

5.17 School

5.18 Tertiary education facility

5.19 Church

5.20 Old age home

5.21 Sewage treatment plant^A

5.22 Train station or shunting yard^N

5.23 Railway line^N

5.24 Major road (4 lanes or more)^N

5.25 Airport^N

5.26 Harbour

5.27 Sport facilities

5.28 Golf course

5.29 Polo fields

5.30 Filling station^H

5.31 Landfill or waste treatment site

5.32 Plantation

5.33 Agriculture ✓ - *No influence/impact.*

5.34 River, stream or wetland ✓ - *The possible occurrence of downstream siltation during high rainfall periods.*

5.35 Nature conservation area

5.36 Mountain, koppie or ridge

5.37 Museum

5.38 Historical building

5.39 Protected Area

5.40 Graveyard

5.41 Archaeological site

5.42 National Road ✓ - *Some additional traffic might be expected.*

5.43 Agri-industrial (grain storage bunker) ✓ - *No influence/impact.*

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

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

If YES, specify and explain:

If YES, specify:

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

If YES, specify and explain:
If YES, specify:

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including

YES	NO 
-----	--

Archaeological or palaeontological sites, on or close (within 20m) to the site?

If YES,
explain:


--

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


Briefly
explain the
findings of
the specialist:

--

Will any building or structure older than 60 years be affected in any way?

YES	NO 
-----	--

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES 	NO
---	----

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

Any development exceeding 5 000 m² in extent must apply for a heritage permit in terms of the National Heritage Resources Act 199 (Act 25 of 1999).

Due to the fact that no historically significant elements were reported by the land owners and I&AP's, as well as the disturbed state of the site due to previous agricultural practices, an Application for Exemption was submitted to the South Africa Heritage Resource Agency (SAHRA) (refer to **Appendix G1**).

GEM-Science is currently awaiting feedback on this application. Should exemption not be granted, a Heritage Assessment will be conducted and the Heritage Assessment Report will be included in the final Basic Assessment Report.

SECTION C: PUBLIC PARTICIPATION

7. ADVERTISEMENT

(Refer to **Appendix E** for Public Participation documentation)

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

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—

- (i) illiteracy;
- (ii) disability; or
- (iii) any other disadvantage.

8. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
 - (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
 - (iii) the nature and location of the activity to which the application relates;
 - (iv) where further information on the application or activity can be obtained; and
 - (iv) the manner in which and the person to whom representations in respect of the application may be made

9. PLACEMENT OF ADVERTISEMENTS AND NOTICES

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

Advertisements and notices must make provision for all alternatives.

10. DETERMINATION OF APPROPRIATE MEASURES

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

11. COMMENTS AND RESPONSE REPORT

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

12. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable. (Refer to **Appendix E4** for I&AP Database)

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

List of authorities informed:

National Government Departments / Agencies

- SANRAL Northern Region (Mr J Oliver)
- DWA North West (Ms R Maphaha)
- ESKOM (Ms K Motlhabane)

Local Municipality

- Ratlou Local Municipality (Mr PE Motoko)
- Ward Councillor - Ward 10 (Cllr L Sekwati)

District Municipality

- Ngaka Modiri Molema District Municipality (Mr M Mojaki)
- Ward Councillor (Cllr P Saku)

NGO's (Non-Government Organisations)

- SAHRA North West (Mr M Mosiane)

Agriculture

- Landbou Unie Mareetsane (Mr L Dreyer)
- AGRI SA North West (Mr B du Toit)

List of authorities from whom comments have been received:

There are no comments received thus far, however all comments will be included in the final Basic Assessment Report once received.

13. CONSULTATION WITH OTHER STAKEHOLDERS

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

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

Has any comment been received from stakeholders?

YES

NO 

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

Potentially affected stakeholders have been identified and consulted regarding the proposed project, including, inter alia:

- Affected and neighbouring landowners;

- Local and Provincial Authorities;
- NGO's;
- Members of the public.

There are no comments received thus far, however all comments will be included in the final Basic Assessment Report once received.

A Stakeholder database is attached as **Appendix E4** and proof of consultation with stakeholders attached as **Appendix E3**.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

No official or written issues have been raised by I&AP's. Issues and comments provided by interested and affected parties will be included in the final report.

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

Responses to the issues raised by interested and affected parties will be included in the final report.

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

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

METHODOLOGY

The Significance Assessment Methodology in accordance with the DEAT (2006) Guideline Document 5 (Assessment of Impacts) has been consulted. The mentioned document states that the significance of impacts can be determined through a synthesis of the aspects produced in terms of the nature, duration, intensity, extent and probability of identified impacts. Furthermore the significance of an impact is the product of a probability rating and a severity rating. A detailed description of the mentioned methodology follows:

SIGNIFICANCE

Significance is the product of **probability** and **severity**.

PROBABILITY (P)

Probability describes the likelihood of the impact actually occurring, and is rated as follows:

- | | | |
|--------------------------|--|------------------|
| • Improbable | - Low possibility of impact to occur due to design or history. | Rating: 2 |
| • Probable | - Distinct possibility that impact will occur. | Rating: 3 |
| • Highly probable | - Most likely that impact will occur. | Rating: 4 |
| • Definite | - Impact will occur regardless of any prevention measures. | Rating: 5 |

SEVERITY RATING (SR)

The **severity rating** is calculated from the **factors** allocated to **intensity** and **duration**. Intensity and duration factors are awarded to each impact, as described below.

INTENSITY FACTOR (IF)

The **intensity factor** is awarded to each impact according to the following method:

- | | | |
|------------------------|---|-----------------|
| • Low intensity | - nature and/or man-made functions not affected (minor process damage or human/wildlife injury could occur. | Factor 1 |
|------------------------|---|-----------------|

- **Medium intensity** - environment affected but natural and/or man-made functions and processes continue (Some process damage or human/ wildlife injury may have occurred). **Factor 2**
- **High intensity** - environment affected to the extent that natural and/or man-made functions are altered to the extent that it will temporarily or permanently cease (Major process Damage or human/wildlife injury could occur). **Factor 4**

DURATION (D)

Duration is assessed and a **factor** awarded in accordance with the following:

- **Short term** - ≤1 to 5 years **Factor 2**
- **Medium term** - 5 to 15 years **Factor 3**
- **Long term** - impact will only cease after the operational life of the activity has ended, either because of natural process or by human intervention **Factor 4**
- **Permanent** - mitigation, either by natural process or by human intervention, will not occur in such a way or in such a time span that the impact can be considered transient **Factor 4**

SEVERITY FACTOR (SF)

The **severity rating** is obtained from calculating a **severity factor**, and comparing the severity factor to the rating in the table below. For example:

$$\begin{aligned}\text{The Severity factor} &= \text{Intensity factor} \times \text{Duration factor} \\ &= 2 \times 3 \\ &= 6\end{aligned}$$

A severity factor of six (6) equals a Severity Rating of Medium severity (Rating 3) as per *Table 1*.

TABLE 1: SEVERITY RATINGS

RATING	FACTOR
Low Severity (Rating 2)	Calculated values 2 to 4
Medium Severity (Rating 3)	Calculated values 5 to 8
High Severity (Rating 4)	Calculated values 9 to 12
Very High severity (Rating 5)	Calculated values 13 to 16
Severity factors below 3 indicate no significant impact	

SIGNIFICANCE RATING (SR)

A Significance Rating is calculated by multiplying the Severity Rating with the Probability Rating. *The significance rating should influence the development project as described below:*

- **Low significance (calculated Significance Rating 4 to 6)**
 - **Positive** and **negative impacts** of low significance should have no significant influence on the proposed development project.
- **Medium significance (calculated Significance Rating ≥ 7 to 12)**
 - **Positive impact:** Should weigh towards a decision to continue
 - **Negative impact:** Should be mitigated before project can be approved.
- **High significance (calculated Significance Rating ≥ 13 to 18)**
 - **Positive impact:** Should weigh towards a decision to continue, should be enhanced in final design.
 - **Negative impact:** Should weigh towards a decision to terminate proposal, or mitigation should be performed to reduce significance to at least a low significance rating.
- **Very High significance (calculated Significance Rating ≥ 19 to 25)**
 - **Positive impact:** Continue
 - **Negative impact:** If mitigation cannot be implemented effectively, proposal should be terminated.

ALTERNATIVE 1
(Preferred Proposal)

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
CONSTRUCTION PHASE			
BENEFICIAL IMPACTS			
Skills development and job opportunities.	8 Medium (P = 4, IF = 2, D = 2, SF = 4, SR = 2)	<ul style="list-style-type: none"> As far as reasonably possible people from surrounding communities must be employed. Transport to and from work should be provided by contractors in order for labourers to reside at their current residence as far as reasonably possible. Where possible materials must be sourced from local businesses this will result in a boost of the local economy of the immediate vicinity and surrounding areas. Care should be taken to avoid any negative impacts on farming activities in the area. 	15 High (P = 5, IF = 4, D = 2, SF = 8, SR = 3)
Eradication of invaders and establishment of indigenous vegetation.	4 Low (P = 2, IF = 1, D = 4, SF = 4, SR = 2)	<ul style="list-style-type: none"> All Classified Invader Species in terms of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) to be identified, eradicated and controlled (i.e. Black Wattle, Pompom weed, Muskietboom etc.). Eradication of exotic invader plant species by means of mechanical control methods (the removal of species by hand or with appropriate tools, instruments and machines). Wherever possible try to prevent weeds from producing seeds or fruit by controlling before they flower. Dead weeds/exotic invader species must be discarded and disposed of at landfill sites. An on-going monitoring programme should be established to enforce continual eradication of alien and invasive species. All disturbed or bare soil areas that are not utilised for bunkers must be revegetated to prevent the invasion and/or establishment of alien and/or invasive vegetation on site. Where possible, rehabilitation should make use of locally occurring (endemic) plant species such as <i>Eragrostis lehmanniana</i>, <i>Digitaria eriantha</i> and <i>Brachiaria nigropedata</i>. Species utilized to be determined by a suitably qualified specialist. Stockpiles to be monitored on on-going basis for erosion and invasive exotic species. 	12 Medium (P = 4, IF = 2, D = 4, SF = 8, SR = 3)
ADVERSE IMPACTS			
Soil erosion & sedimentation of receiving watercourses such as the non-perennial streams and	15 High (P = 5, IF = 3, D = 2, SF = 6, SR = 2)	<ul style="list-style-type: none"> Control stormwater and runoff to avoid erosion impacts with the implementation of proper stormwater management measures on site (as described under alternative 2). All stormwater management features should be 	8 Medium (P = 4, IF = 1, D = 2, SF = 2, SR = 2)

Madibe River (cumulative impact).	SR = 3)	<p>constructed in a manner that will ensure the continued functioning of the drainage line on site. Stormwater management should not impede or divert surface water flow.</p> <ul style="list-style-type: none"> • The extent and location of erosion scars must be monitored at least once every three months. If erosion scars begin to form on the landscape, appropriate erosion counter measures must be implemented immediately. • All disturbed or bare soil areas that are not utilised for bunkers must be revegetated as soon as possible to prevent sediment input into the downstream watercourses. • No structures should be positioned within the drainage line or buffer area. A suitable buffer zone to be confirmed with the DWA. • Obtain a permit from the DWA in terms of Section 21(c) and (i) of the National Water Act (Act 36 of 1998). • Vehicles must only move in those areas clearly demarcated as roads. • Due to the loose unconsolidated nature of the sand on the site, the access road will have to be compacted or surfaced to cover the sand and prevent wind erosion of these areas and maintain them in a navigable condition. • Avoid construction during the rainy season. • To prevent erosion, material stockpiled for long periods (2 weeks) should be retained in a bermed area to avoid contact with stormwater run-off. 	SR = 2)
Potential impact on the drainage line that runs through the site as well as groundwater pollution (cumulative impact).	15 High (P = 5, IF = 3, D = 2, SF = 6, SR = 3)	<ul style="list-style-type: none"> • If at all possible, construction activities should not take place during the rainy season. • Preserve natural vegetation, especially adjacent to drainage line area. Revegetate all disturbed or bare soil areas within the drainage line and buffer area. Species utilized to be determined by a suitably qualified specialist. • No washing of vehicles to take place on site. • Vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site. • Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. • Potentially hazardous and non-degradable waste must be collected and disposed of at a registered waste site. • All spills on site must be reported to the ELO and ECO. • Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed and bunded. • Ensure that a proper spill-kit is available on site. The kit must include absorptive material that can handle all forms of hydrocarbon. Ensure that any hydrocarbon spills are cleaned up as soon as possible. • Spread absorbent sand on areas where oil spills have occurred. Oil-contaminated soils are to be removed to a contained storage area and disposed of at a licensed 	8 Medium (P = 4, IF = 1, D = 2, SF = 2, SR = 2)

		<p>facility.</p> <ul style="list-style-type: none"> No cement/concrete mixing to take place on the bare soil surface. Cement mixers must be placed on plastic sheets or large trays to prevent accidental spills from coming into contact with the soil surface. Cement shall be mixed only in areas, which have been specially demarcated for this purpose. Cement mixing must not be permitted to occur where run-off can enter the drainage line. Stockpiles must not exceed 2m in height and must be covered if exposed to heavy wind or rain. Stockpiles must not be located in close proximity to the drainage line and must not be allowed to erode to this feature. No foreign material generated/ deposited during construction shall remain on site. Stockpiles must not be contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation in the soil. 	
Dust to be generated during construction activities could affect visibility of the N18 and also impact on adjacent properties (direct impact).	<p>10 Medium</p> <p>(P = 5, IF = 2, D = 2, SF = 4, SR = 2)</p>	<ul style="list-style-type: none"> Stockpiles must not exceed 2m in height and must be covered if exposed to heavy wind. Where possible stockpiles are to be located in sheltered areas and the usable/cut face orientated away from the direction of the prevailing wind for that season. Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent). A water cart or sufficient watering equipment must be available to wet soils during windy days when wind-blown sand and dust may become a nuisance to adjacent property owners or motorists travelling past the site on the N18. Dust controlling measures such as spraying of the construction site should be implemented to reduce the impact of dust generated during construction. Tyres of construction vehicles should be sprayed with water before leaving the site, in order to prevent dust generation. Blowing of waste material by the wind to neighbouring properties should be prevented. Loose material should be dampened or covered. The area on which the proposed construction activities will take place should be demarcated/fenced off in order to limit the extent of the impacts associated with these activities to a confined area. Limit vegetation disturbance outside the site. The speed limit on the access road must be limited to 30 km/h and strictly enforced. 	<p>6 Low</p> <p>(P = 3, IF = 1, D = 2, SF = 2, SR = 2)</p>
Habitat loss due to removal of vegetation within construction area (cumulative impact).	<p>20 Very High</p> <p>(P = 4, IF = 4, D = 4, SF = 16, SR = 3)</p>	<ul style="list-style-type: none"> Vegetation should only be cleared when and where absolutely necessary. If possible, vegetative cover should be left in place. All cleared areas which do not need to remain clear of vegetation should be revegetated. Revegetation must make use of locally occurring (endemic) plant species to 	<p>12 Medium</p> <p>(P = 3, IF = 2, D = 4, SF = 8, SR = 3)</p>

	SR = 5)	<p>be determined by a suitably qualified specialist. Endemic plant species selection must promote the attraction of bird species, butterflies etc.</p> <ul style="list-style-type: none"> • Revegetated areas must be regularly watered until vegetation has become established. • Where construction vehicles must traverse the site, they must remain on demarcated roads. • The contractor must ensure that no faunal species may unnecessarily be handled, killed, hunted or harassed during the construction period. • If any bird, mammal, amphibian or reptile is found during construction, these animals must be relocated to undisturbed areas or to conservation areas close by. • The Contractor shall advise his workers of the penalties associated with the needless destruction of wildlife, as set out in the Animals Protection Act, 1962 (Act 71 of 1962) sec. 2. • All construction activities should be limited to daylight hours (e.g. from sunrise to sunset). 	
Heavy vehicle traffic on the N18 could prove to be a nuisance to nearby neighbours and could impact negatively on safety of the road (indirect impact).	6 Low (P = 3, IF = 1, D = 2, SF = 2, SR = 2)	<ul style="list-style-type: none"> • Make use of existing access road from main road. • No unauthorised access is permitted. • Access road for earthmoving equipment and delivery of construction material must be clearly designated. • Ensure adequate and correct road signage in the construction affected area. • Limit construction activities strictly to daylight hours. 	4 Low (P = 2, IF = 1, D = 2, SF = 2, SR = 2)
Safety & security (indirect impact).	6 Low (P = 3, IF = 1, D = 2, SF = 2, SR = 2)	<ul style="list-style-type: none"> • No construction activities to be allowed after hours during weekdays, or over weekends. • Contractor to mainly make use of labour from local communities. • Only a limited number of two night watchmen to be allowed to overnight on property to ensure safety of equipment stored on site. • No construction staff should be allowed to stay on the construction site. • Signs should be erected on all entrance gates indicating that no temporary jobs are available, thereby limiting opportunistic labourers and crime. • The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993). • Potentially hazardous areas to be cordoned off and clearly marked at all times. • Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.). • All vehicles and equipment used on site must be operated by appropriately trained and/or licensed individuals in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act 85 of 1993) (OHSA). • An environmental awareness training programme for all staff members shall be put in place by the Contractor. 	4 Low (P = 2, IF = 1, D = 2, SF = 2, SR = 2)

		<p>Before commencing with any work, all staff members shall be appropriately briefed about the EMPr and relevant occupational health and safety issues.</p> <ul style="list-style-type: none"> • All construction workers shall be issued with ID badges and clearly identifiable uniforms. • Access to equipment stores is to be strictly controlled. • No unauthorized firearms are permitted on site. • Emergency procedures must be produced and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimised. This will also ensure that potential liabilities and damage to life and the environment are avoided. • Adequate emergency facilities must be provided for the treatment of any emergency on the site. • The nearest emergency service provider must be identified. Emergency contact numbers are to be displayed conspicuously at prominent locations around the construction site at all times. • The Contractor must have a basic spill control kit available at each construction crew camp and around the construction site. 	
Unsupervised and misuse of fire on site could impact negatively on the environment (direct impact).	6 Low (P = 3, IF = 2, D = 2, SF = 4, SR = 2)	<ul style="list-style-type: none"> • Fires will only be allowed in a facility especially constructed for the purpose of keeping warm and for onsite cooking, within the site camp. • The ECO is to be informed as to the type of cooking facilities that will be used prior to construction. • Wood for the fire must be supplied by the contractor and NOT taken from the surrounding area. • Heavy smoke may not be released into the air. • No smoking is allowed outside of the site camp. • Any fire that is ignited outside of the construction camp must be extinguished immediately. • Fire extinguishers must be provided at the site camp, where they are easily accessible. • Fire extinguishers must be serviced, full and in good working order. • The contractor's Health and Safety Plan must include particulars in terms of fire fighting and training. • No burning of refuse or vegetation is permitted. 	4 Low (P = 2, IF = 1, D = 2, SF = 2, SR = 2)
Poor waste management could result in contamination of surface and groundwater & soil pollution (direct impact).	8 Medium (P = 4, IF = 2, D = 2, SF = 4, SR = 2)	<ul style="list-style-type: none"> • Adequate litter bins must be provided on site. • No burning, on-site burying or dumping of waste shall occur. • No construction waste will be stockpiled on site, unless the waste will be reused at a later stage. • Construction waste not posing a pollution hazard should be re-used if possible and where it is not possible must be disposed of at the nearest registered landfill site. • All solid waste must be suitably stored on site. A waste disposal area must be designated and this should be equipped with a suitable container (i.e. skip or bins) of sufficient capacity and designed to contain and prevent refuse from being blown by wind, thereby preventing the potential pollution of the surrounding areas by litter. Once 	4 Low (P = 2, IF = 1, D = 2, SF = 2, SR = 2)

		<p>the skip/bins are full they should be taken to a registered landfill site for disposal.</p> <ul style="list-style-type: none"> Waste areas should preferably be covered and banded to keep stormwater out of the waste. 	
Possible damage/loss of subterranean artefacts (indirect impact).	<p>6 Low</p> <p>P = 3, IF = 2, D = 2, SF = 4, SR = 2</p>	<ul style="list-style-type: none"> Should archaeological structures/artefacts be found during the construction phase, these may not be removed, destroyed or interfered with. The area should be cordoned off until it can be investigated by an archaeological specialist or SAHRA. The Contractor must immediately cease construction activities and inform the archaeological specialist and SAHRA within 24 hours, should they come across any archaeological artefacts/sites. In terms of the National Heritage Resources Act (No. 25 of 1999), graves older than 60 years (not in a municipal graveyard) are protected. The relevant heritage resources authority and the archaeologist must be informed as a matter of urgency should any human remains be exposed on the terrain. Human remains younger than 60 years should only be handled by a registered undertaker or an institution declared under the Human Tissues Act. 	<p>4 Low</p> <p>P = 2, IF = 1, D = 2, SF = 2, SR = 2</p>
OPERATIONAL PHASE			
BENEFICIAL IMPACTS			
Job Opportunities and Economic upliftment	<p>12 Medium</p> <p>(P = 4, IF = 2, D = 4, SF = 8, SR = 3)</p>	<ul style="list-style-type: none"> The proposed development will result in direct jobs being created. Indirectly, jobs are also created in industries that provide goods, materials and services. The proposed development will increase skills development and also local employment in the area. Both short-term and long-term employment will be created in this case. In South Africa the applicant's infrastructure comprises 67 grain silos and nine bunkers across the country. Vertical silos provide post-harvest storage for a significant percentage of the South African crop, including maize, wheat, sunflower, soya and sorghum, while innovative bunker storage provides adaptable storage facilities for specific applications. The proposed development will increase the number of grain bunker storage facilities in the country and also increase grain storage capacity in its area of operation. 	<p>15 High</p> <p>(P = 5, IF = 2, D = 4, SF = 8, SR = 3)</p>
Eradication of invaders and establishment of indigenous vegetation.	<p>4 Low</p> <p>(P = 2, IF = 1, D = 4, SF = 4, SR = 2)</p>	<ul style="list-style-type: none"> All Classified Invader Species in terms of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) to be identified, eradicated and controlled (i.e. Black Wattle, Pompom weed, Muskietboom etc.). Eradication of exotic invader plant species by means of mechanical control methods (the removal of species by hand or with appropriate tools, instruments and machines). Wherever possible try to prevent weeds from producing seeds or fruit by controlling before they flower. Dead weeds/exotic invader species must be discarded and disposed of at landfill sites. 	<p>12 Medium</p> <p>(P = 4, IF = 2, D = 4, SF = 8, SR = 3)</p>

		<ul style="list-style-type: none"> An on-going monitoring programme should be established to enforce continual eradication of alien and invasive species. Indigenous vegetation must be used in landscaping. All disturbed or bare soil areas that are not utilised for bunkers must be revegetated to prevent the invasion and/or establishment of alien and/or invasive vegetation on site. Where possible, rehabilitation should make use of locally occurring (endemic) plant species such as <i>Eragrostis lehmanniana</i>, <i>Digitaria eriantha</i> and <i>Brachiaria nigropedata</i>. Species utilized to be determined by a suitably qualified specialist. 	
ADVERSE IMPACTS			
Soil erosion & sedimentation of receiving watercourses such as the non-perennial streams and Madibe River (cumulative impact).	15 High (P = 5, IF = 2, D = 4, SF = 8, SR = 3)	<ul style="list-style-type: none"> Control stormwater and runoff to avoid erosion impacts with the implementation of proper stormwater management measures on site (as described under alternative 2). All stormwater management features should be constructed in a manner that will ensure the continued functioning of the drainage line on site. Stormwater management should not impede or divert surface water flow. The extent and location of erosion scars must be monitored at least once every three months. If erosion scars begin to form on the landscape, appropriate erosion counter measures must be implemented immediately. All disturbed or bare soil areas that are not utilised for bunkers must be revegetated as soon as possible to prevent sediment input into the downstream watercourses. No structures should be positioned within the drainage line or buffer area. A suitable buffer zone to be confirmed with the DWA. Obtain a permit from the DWA in terms of Section 21(c) and (i) of the National Water Act (Act 36 of 1998). Vehicles must only move in those areas clearly demarcated as roads. Due to the loose unconsolidated nature of the sand on the site, the access road will have to be compacted or surfaced to cover the sand and prevent wind erosion of these areas and maintain them in a navigable condition. 	8 Medium (P = 4, IF = 1, D = 4, SF = 4, SR = 2)
Potential impact on the drainage line that runs through the site as well as groundwater pollution (cumulative impact).	15 High (P = 5, IF = 2, D = 4, SF = 8, SR = 3)	<ul style="list-style-type: none"> Preserve natural vegetation, especially adjacent to drainage line area. Revegetate all disturbed or bare soil areas within the drainage line and buffer area. Species utilized to be determined by a suitably qualified specialist. Vehicles must only move in those areas clearly demarcated as roads. No washing of vehicles to take place on site. Ensure that a proper spill-kit is available on site. The kit must include absorptive material that can handle all forms of hydrocarbon. Ensure that any hydrocarbons spills are cleaned up as soon as possible. The Site Manager or at least one person on site must 	8 Medium (P = 4, IF = 1, D = 4, SF = 4, SR = 2)

		<p>receive formal training in the use of the spill control kit.</p> <ul style="list-style-type: none"> • Vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site. • Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. • All spills on site must be reported to the ELO and ECO. • Spread absorbent sand on areas where oil spills have occurred. Oil-contaminated soils are to be removed to a contained storage area and disposed of at a licensed facility. • Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed and bunded. • Potentially hazardous and non-degradable waste must be collected and disposed of at a registered waste site. 	
Dust generated during the operational phase could affect visibility of the N18 and also impact on adjacent properties (direct impact).	<p>15 High</p> <p>(P = 5, IF = 2, D = 4, SF = 8, SR = 3)</p>	<ul style="list-style-type: none"> • Indigenous trees such as <i>Acacia erioloba</i>, <i>Acacia karroo</i> and <i>Dichrostachys cinerea</i> must be planted between the site and N18 as a barrier to dust and also to mitigate visual impacts. Species utilized to be determined by a suitably qualified specialist. • Groves or clumps of trees and shrubs, which provide microhabitats for birds etc., rather than perfectly spaced lines or avenues, are preferred. • Undeveloped portions of the site that have been cleared during the construction phase must be revegetated. Revegetation species to be determined by a suitably qualified specialist. • The speed limit on the access road must be limited to 30 km/h and strictly enforced. • A water cart or sufficient watering equipment must be available on site to wet soils during windy days when wind-blown sand and dust may become a nuisance to adjacent property owners or motorists travelling past the site on the N18. • Limit vegetation disturbance outside the site. 	<p>6 Low</p> <p>(P = 3, IF = 1, D = 4, SF = 4, SR = 2)</p>
Non-biological pest control programs implemented for rodent control could have a negative impact on birds, and other animals which could consume the poisoned rodents (direct impact). (This could also lead to contamination of surface- and ground water – indirect impact.)	<p>25 Very High</p> <p>(P = 5, IF = 4, D = 4, SF = 16, SR = 5)</p>	<p>Biological or mechanical Pest control measures to be implemented. The best biological and mechanical rodent control measures as recommended by BirdLife Africa includes:</p> <ul style="list-style-type: none"> • Barn Owls as a Biological control measure. Barn Owls can be attracted to the site by putting up owl nest boxes; and • Rat Zappers as a Mechanical control measure. With this method rodents are enticed into a trap in which they are killed by a quick but powerful electrical shock. 	<p>4 Low</p> <p>(P = 2, IF = 1, D = 4, SF = 4, SR = 2)</p>

Heavy vehicle traffic on the N18 could impact negatively on safety of the road (indirect impact).	6 Low (P = 3, IF = 1, D = 4, SF = 4, SR = 2)	<ul style="list-style-type: none"> Access to the site is from the N18 National Road, turning off onto an existing dirt road (farm road). Access to and from the site must not impact on the traffic on the N18. The speed limit on the access road should be limited to 30km/h. Road surfaces in the immediate vicinity of the site should be monitored. If the road is damaged the relevant authority must be notified. 	4 Low (P = 2, IF = 1, D = 4, SF = 4, SR = 2)
Safety & Security (indirect impact).	6 Low (P = 3, IF = 1, D = 4, SF = 4, SR = 2)	<ul style="list-style-type: none"> The site and staff are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993). Emergency procedures must be produced and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimised. This will also ensure that potential liabilities and damage to life and the environment are avoided. Potentially hazardous areas to be cordoned off and clearly marked at all times. No unauthorized firearms are permitted on site. Adequate emergency facilities must be provided for the treatment of any emergency on the site. Emergency contact numbers are to be displayed conspicuously at prominent locations around the site. Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.). Access to equipment stores is to be strictly controlled. All vehicles and equipment used on site must be operated by appropriately trained and/or licensed individuals in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act 85 of 1993) (OHSA). A basic spill control kit must be on site. 	4 Low (P = 2, IF = 1, D = 4, SF = 4, SR = 2)
Unsupervised and misuse of fire on site could impact negatively on the environment (direct impact).	9 Medium (P = 3, IF = 2, D = 4, SF = 8, SR = 3)	<ul style="list-style-type: none"> No smoking is allowed outside of the site boundaries. Fires must be extinguished immediately. An adequate number of fire extinguishers must be provided on site, and they must be easily accessible. Fire extinguishers must be serviced, full and in good working order. The Health and Safety Plan must include particulars in terms of fire fighting and training. No burning of refuse or vegetation is permitted. 	4 Low (P = 2, IF = 1, D = 4, SF = 4, SR = 2)
Waste Generation & Disposal (direct impact).	12 Medium (P = 4, IF = 2, D = 4, SF = 8, SR = 3)	<ul style="list-style-type: none"> Adequate litter bins must be provided on site. No burning, on-site burying or dumping of waste shall occur. Solid waste generated needs to be collected at a central point. A waste disposal area must be designated and this should be equipped with a suitable container (i.e. skip or bins) of sufficient capacity and designed to contain and prevent refuse from being blown by wind, thereby 	4 Low (P = 2, IF = 1, D = 4, SF = 4, SR = 2)

		<p>preventing the potential pollution of the surrounding areas by litter. Once the skip/bins are full they should be taken to the closest registered landfill site for disposal.</p> <ul style="list-style-type: none"> • Waste areas should preferably be covered and banded to keep stormwater out. • Hazardous waste will only be produced during emergency situations such as a spill that has been cleaned up with an absorbent material. This will be disposed of at a registered hazardous landfill site. These materials may be removed by an appropriate hazardous waste Contractor. Proof of appropriate disposal must be obtained by the Contractor. 	
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ALTERNATIVE 2

(Preferred Erosion Control Measures)

Impacts for Alternative 2 are anticipated to be similar to those as indicated for Alternative 1, except that the implementation of additional erosion control measures will result in a lower significance rating for 'Soil Erosion'.

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
ADVERSE IMPACTS			
<p>Soil erosion & sedimentation of receiving watercourses such as the non-perennial streams and Madibe River (cumulative impact).</p> <p>&</p> <p>Potential impact on the drainage line that runs through the site as well as groundwater pollution (cumulative impact).</p>	<p>8 Medium</p> <p>(P = 4, IF = 1, D = 4, SF = 4, SR = 2)</p> <p><i>(When only implementing erosion control measures as described under Alternative 1)</i></p>	<ul style="list-style-type: none"> • Additional to the implementation of all mitigation measures as described under Alternative 1 for "erosion control", one or more of the following erosion protection measures could be implemented: <ul style="list-style-type: none"> • Grass-lined swale; • Stone lined swale; • Interlocking concrete erosion control blocks; • Barrier lines; • Culverts. • Endemic plant species must be used to vegetate the drainage line and buffer area. • A suitable buffer zone should be incorporated along the entire drainage line. The size of the buffer will depend on the feedback the Applicant receives from the DWA on the Water Use Licence Application • Construction activities should be scheduled as far as possible to take place during the dry season. 	<p>6 Low</p> <p>(P = 3, IF = 1, D = 4, SF = 4, SR = 2)</p> <p><i>(When implementing additional erosion control measures as described under Alternative 2)</i></p>

ALTERNATIVE 3

(Non-preferred Alternative)

Impacts for Alternative 3 are anticipated to be similar to those as indicated for Alternative 1, except for the following additional impacts that can be expected. Due to these additional impacts, this option can be justifiably dismissed as an alternative.

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:

			mitigation:
<p>Visual impact</p> <p>Silo structures can be up to 84 m high. The construction of a grain silo will result in both temporary and permanent visual impacts. (Direct impact.)</p>	<p>15 High</p> <p>(P = 5, IF = 2, D = 4, SF = 8, SR = 3)</p>	<ul style="list-style-type: none"> Reducing the scale of the project (numbers of silos or height of silos) may assist a visually dominant project to fit more comfortably into its context and surroundings. The colour of the structures must blend in with the surrounding vegetation or skyline. Appropriate positioning is important. Choose a location that will be the least visible from the N18. Trees can help reduce the visual impact. Locate structures behind existing trees if at all possible. Use of materials that will minimize light reflection should be used for all project components. 	<p>10 Medium</p> <p>(P = 5, IF = 1, D = 4, SF = 4, SR = 2)</p>
<p>Energy</p> <p>The construction of a grain silo complex will entail the construction of additional infrastructure (e.g. grain elevator & temperature control system). (Cumulative impact.)</p>	<p>15 High</p> <p>(P = 5, IF = 2, D = 4, SF = 8, SR = 3)</p>	<ul style="list-style-type: none"> Make use of energy-efficient temperature control system. Maximize energy efficiency in all on-site and off-site operations. Ensure all machinery is properly maintained. 	<p>8 Medium</p> <p>(P = 4, IF = 1, D = 4, SF = 4, SR = 2)</p>
<p>Safety</p> <p>Safety hazards include:</p> <ul style="list-style-type: none"> Fires and explosions from grain dust accumulation; Suffocation from engulfment and entrapment in grain bins; Falls from height and crushing injuries; and Amputations from grain handling equipment. <p>(Indirect impact)</p>	<p>20 Very High</p> <p>(P = 4, IF = 4, D = 4, SF = 16, SR = 5)</p>	<p>When workers enter silos, employers must , amongst others:</p> <ul style="list-style-type: none"> Turn off and lock out all powered equipment associated with the silo, including augers used to help move the grain, so that the grain is not being emptied or moving out or into the silo. Standing on moving grain is deadly; the grain can act like "quicksand" and bury a worker in seconds. Moving grain out of a silo while a worker is in it creates a suction that can pull the workers into the grain in seconds. Prohibit walking down grain and similar practices where an employee walks on grain to make it flow. Provide all employees a body harness with a lifeline and ensure that it is secured prior to the employee entering the silo. Provide an observer stationed outside the silo being entered by an employee. Ensure the observer is equipped to provide assistance and that their only task is to continuously track the employee in the bin. Prohibit workers from entering silos underneath a bridging condition, or where a build-up of grain products on the sides could fall and bury them. Train all workers for the specific hazardous work operations they are to perform when entering and working inside of grain silos. Test the air within a silo prior to entry for the presence of combustible and toxic gases, and to determine if there is sufficient oxygen. If detected by testing, vent hazardous atmospheres to ensure that combustible and toxic gas levels are reduced to non-hazardous levels, and that sufficient oxygen levels are maintained. Ensure a permit is issued for each instance a worker enters a silo, certifying that the precautions listed above 	<p>9 Medium</p> <p>(P = 3, IF = 2, D = 4, SF = 8, SR = 3)</p>

		<p>have been implemented.</p> <p>To prevent dust explosions and fires, employers must, amongst others:</p> <ul style="list-style-type: none"> • Develop and implement a safety program with instructions to reduce dust accumulations on equipment and other exposed surfaces. • Employers should make every effort to minimize dust accumulations on exposed surfaces since dust is the fuel for a fire or explosion. • Implement a preventative maintenance program with regularly scheduled inspections for mechanical and safety control equipment. • Minimize ignition sources. • Install wiring and electrical equipment suitable for hazardous locations. • Design and properly locate dust collection systems to minimize explosion hazards. 	
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NO-GO OPTION

Since the anticipated environmental impacts associated with the proposed Grain Storage Bunker development can be mitigated to acceptable standards, the consideration of the no-go option can be justifiably dismissed as an alternative.

DECOMMISSIONING AND CLOSURE

Alternative 1, 2 & 3 (The site will only be decommissioned if it is no longer required)

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
BENEFICIAL IMPACTS			
Skills development and job opportunities (limited to the decommissioning phase).	8 Medium (P = 4, IF = 1, D = 2, SF = 2, SR = 2)	<ul style="list-style-type: none"> • As far as reasonably possible people from surrounding communities must be employed. • Care should be taken to avoid any negative impacts on farming activities in the area. 	10 Medium (P = 5, IF = 2, D = 2, SF = 4, SR = 2)
ADVERSE IMPACTS			
Direct impacts The direct impacts associated with the decommissioning of the site are likely to be similar to the construction phase: <ul style="list-style-type: none"> • Surface water pollution. • Soil & groundwater pollution • Dust pollution. 	12 Medium (P = 4, IF = 2, D = 3, SF = 6, SR = 3)	<ul style="list-style-type: none"> • Decommissioning should take place during the dry winter months. • Dismantling of equipment must be conducted by an accredited Contractor. • Deep excavations must 	4 Low (P = 2, IF = 1, D = 3, SF = 3, SR = 2)

<ul style="list-style-type: none"> The demolition of structures will result in waste that requires disposal. <p>Indirect impact</p> <p>The indirect impacts associated with the decommissioning of the site are likely to be similar to the construction phase:</p> <ul style="list-style-type: none"> Increased traffic. Security. Spread of alien vegetation. The decommissioning of the site will result in a loss of revenue for the local economy and the loss of jobs in the long term. In the short term the decommissioning phase will create jobs. <p>Cumulative impacts</p> <p>The cumulative impacts associated with the decommissioning of the site are likely to be similar to the construction phase:</p> <ul style="list-style-type: none"> Surface- and ground water pollution. Socio Economic losses. 		<p>be cordoned off prior to being back-filled.</p> <ul style="list-style-type: none"> Certificates must be obtained for all actions performed. 	
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3. ENVIRONMENTAL IMPACT STATEMENT

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

ALTERNATIVE 1 (Preferred Proposal)

Adverse Impacts

Alternative 1 is the preferred option. The potential negative impacts associated with this proposal can be mitigated to decrease their significance (refer to Section D2 above).

Adverse and beneficial impacts were identified for the proposed activity. The following adverse impacts have been identified (note that the significance rating indicated is after implementation of management and mitigation measures):

CONSTRUCTION PHASE

- Soil erosion & downstream sedimentation (MEDIUM);
- Impact on drainage line & groundwater pollution (MEDIUM);
- Dust (LOW);
- Traffic (LOW);
- Safety & Security (LOW);
- Risk of Fire (LOW);
- Waste Generation & Disposal (LOW);
- Possible damage/loss of subterranean artefacts (LOW).

OPERATIONAL PHASE:

- Soil erosion & downstream sedimentation (MEDIUM);
- Impact on drainage line & groundwater pollution (MEDIUM);
- Dust (LOW);
- Impact of non-biological pest control programs on Fauna (LOW);
- Traffic (LOW);
- Safety & Security (LOW);
- Risk of Fire (LOW);
- Waste Generation & Disposal (LOW).

It can be noted that, with implementation of the mitigation measures as indicated in Section D2, most of the anticipated adverse impacts can be successfully mitigated to a low significance, except for 'soil erosion & downstream sedimentation' and 'impact on drainage line & groundwater pollution' which can be mitigated to a medium significance.

The reason for the medium significance rating for 'soil erosion & downstream sedimentation' is that the site has already been impacted upon by previous agricultural practices as it has been used for maize production in recent years. Due to the proposed development no maize has been planted since 2010. As a precautionary design measure to keep pests such as rodents and insects away from the bunkers, large portions of the site will be kept clear of vegetation for the entire life of the activity.

It is anticipated that the proposed activities may also have an impact on the portion of the non-perennial drainage line that runs across the site. The drainage line flows in a north-northwest direction towards the Madibe River, which is a tributary of the Molopo River. Even though a medium significance rating is attributed to this expected impact, the proposed activities are unlikely to have a significant detrimental impact on this drainage line because of the following reasons:

- The site has already been severely disturbed by previous agricultural practices;
- There is no visible indication of the drainage line (no natural depression or channel);
- The drainage line was observed to carry surface water runoff only during rainfall events;
- The drainage line does not support any aquatic, wetland or riparian habitat within the site;
- The drainage line does not represent an ecologically sensitive area.

It is recommended that the attached EMPr (**Appendix F**) be included in the conditions of the Environmental Authorisation to ensure that activities on site are adequately managed and monitored.

Beneficial Impacts

The following beneficial impacts have been identified:

CONSTRUCTION PHASE:

- Removal of exotic plant species and establishment of indigenous vegetation (MEDIUM);
- Skills development and job opportunities (HIGH).

OPERATIONAL PHASE:

- Job opportunities and economic upliftment (HIGH);
- Eradication of invaders and establishment of indigenous vegetation (MEDIUM).

ALTERNATIVE 2

(Additional Erosion Control Measures)

Alternative 2 includes the implementation of additional erosion control measures.

The medium significance rating under Alternative 1 indicated for 'soil erosion & downstream sedimentation' and 'impact on drainage line & groundwater pollution' can be mitigated to a low significance rating following the implementation of the additional erosion control measures described under Alternative 2 (Section D2 above).

ALTERNATIVE 3

(Non-preferred Alternative)

Alternative 3 proposes the construction of permanent grain storage silos on the remainder of Portion 1 of the farm Kliparani 519 IO.

Additional to the adverse impacts identified for Alternative 1, the following adverse impacts have been identified for this alternative (note that the significance rating indicated is after implementation of management and mitigation measures):

- Visual (MEDIUM);
- Energy (MEDIUM);
- Safety (MEDIUM).

Even though a medium significance rating is attributed to visual impact, this impact is unlikely to be significant, as grain silos and grain elevators are very typical in the area, and may “fit” reasonably well in this landscape.

It will be noted that in contrast with Alternative 1 and 2, this Alternative will require electricity supply. As the site currently has no existing electrical infrastructure, the applicant will have to apply to ESKOM for electricity supply to the site. Alternatively, an on-site generator may be used as an alternative source of energy.

As discussed under Section A2, silos offer a more permanent storage option and therefore have a higher initial capital outlay. Silos also have additional maintenance requirements.

Silos are hazardous, and people die every year in the process of filling and maintaining them.

The construction of permanent vertical silo structures is not as cost effective and environmentally friendly as grain storage bunkers. This Alternative is therefore not considered to be the most viable option.

NO-GO

(Compulsory)

The impact significance rating as described in Section D (above) has been undertaken using the no-go status quo of the site as a baseline against which the impacts have been assessed. The no-go option is not considered feasible due to the following reasons:

- Alien and invasive vegetation will be eradicated.
- Local communities stand to benefit from employment opportunities which will arise during the construction and operational phases of the development.
- The proposed development will increase the number of grain bunker storage facilities in the country and also increase grain storage capacity in its area of operation.
- The proposed development will serve as an economic injection in the Ratlou Local Municipal area.

SECTION E: RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

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

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

It is recommended that the attached EMPr (**Appendix F**) be included in the conditions of the Environmental Authorisation to ensure that activities on site are adequately managed and monitored.

Is an EMPr attached?

YES 	NO
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The EMPr must be attached as Appendix F.

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plans

- Appendix A1: Site Locality Map
- Appendix A2: Satellite Map
- Appendix A3: Geotechnical Map
- Appendix A4: Topographical Locality Map

Appendix B: Photographs

Appendix C: Facility illustration

Appendix D: Specialist reports (Should the DEDECT request any other specialist reports, these will be included in the final Basic Assessment Report)

- Appendix D1: Geology Report

Appendix E: Record of Public Involvement Process

- Appendix E1: Proof of Advert Placement
- Appendix E2: Proof of Site Notice Placement
- Appendix E3: Notification Letter to I&AP's
- Appendix E4: I&AP Database
- Appendix E5: ~~Comments & Response Report~~ (There are no comments received thus far, however all comments received on the draft Basic Assessment Report will be included in the final Basic Assessment Report)

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other Information

- Appendix G1: Proof of Application for Exemption that was submitted to SAHRA
- Appendix G2: Confirmation of sufficient capacity from Mafikeng Municipal Landfill Site
- Appendix G3: Servitude Map
- Appendix G4: Adjacent Properties Map
- Appendix G5: Details of Specialist and Declaration of Interest for the Geology Report