

**BASIC ASSESSMENT REPORT
IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107
OF 1998) AND ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 (AS
AMENDED)**

October 2017

PROJECT TITLE

MARYKE BOERDERY CATTLE HOUSING

12 January 2018

REPORT TYPE CATEGORY	REPORT REFERENCE NUMBER	DATE OF REPORT
Pre-Application Basic Assessment Report (if applicable) ¹	DEA&DP REFERENCE NR: 16/3/3/6/7/1/F5/5/2071/18	4 July 2018
Draft Basic Assessment Report ²	DEA&DP REFERENCE NR: 16/3/3/6/7/1/F5/5/2071/18	2 November 2018
Final Basic Assessment Report ³ or, if applicable Revised Basic Assessment Report ⁴ (strikethrough what is not applicable)		

Notes:

- In terms of Regulation 40(3) potential or registered interested and affected parties, including the Competent Authority, may be provided with an opportunity to comment on the Basic Assessment Report prior to submission of the application but must again be provided an opportunity to comment on such reports once an application has been submitted to the Competent Authority. The Basic Assessment Report released for comment prior to submission of the application is referred to as the "Pre-Application Basic Assessment Report". The Basic Assessment Report made available for comment after submission of the application is referred to as the "Draft Basic Assessment Report". The Basic Assessment Report together with all the comments received on the report which is submitted to the Competent Authority for decision-making is referred to as the "Final Basic Assessment Report".
- In terms of Regulation 19(1)(b) if significant changes have been made or significant new information has been added to the Draft Basic Assessment Report, which changes or information was not contained in the Draft Basic Assessment Report consulted on during the initial public participation process, then a Final Basic Assessment Report will not be submitted, but rather a "Revised Basic Assessment Report", which must be subjected to another public participation process of at least 30 days, must be submitted to the Competent Authority together with all the comments received.

DEPARTMENTAL REFERENCE NUMBER(S)

Pre-application reference number:	DEA&DP REFERENCE NR: 16/3/3/6/7/1/F5/5/2071/18
File reference number (EIA):	DEA&DP REFERENCE NR: 16/3/3/6/7/1/F5/5/2071/18
NEAS reference number (EIA):	NA
File reference number (Waste):	NA
NEAS reference number (Waste):	NA
File reference number (Air Quality):	NA
NEAS reference number (Air Quality):	NA
File reference number (Other):	NA
NEAS reference number (Other):	NA

CONTENT AND GENERAL REQUIREMENTS

Note that:

1. The content of the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended), any subsequent Circulars, and guidelines must be taken into account when completing this Basic Assessment Report Form.
2. This Basic Assessment Report is the standard report format which, in terms of Regulation 16(3) of the EIA Regulations, 2014 (as amended) must be used in all instances when preparing a Basic Assessment Report for Basic Assessment applications for an environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") and the EIA Regulations, 2014 (as amended) and/or a waste management licence in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("NEM:WA"), and/or an atmospheric emission licence in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:AQA") when the Western Cape Government: Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority/Licensing Authority.
3. This report form is current as of October 2017. It is the responsibility of the Applicant/ Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the report form have been released by the Department. Visit the Department's website at <http://www.westerncape.gov.za/eadp> to check for the latest version of this checklist.
4. The required information must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The tables may be expanded where necessary.
5. The use of "not applicable" in the report must be done with circumspection. All applicable sections of this report form must be completed. Where "not applicable" is used, this may result in the refusal of the application.
6. While the different sections of the report form only provide space for provision of information related to one alternative, if more than one feasible and reasonable alternative is considered, the relevant section must be copied and completed for each alternative.
7. Unless protected by law, all information contained in, and attached to this report, will become public information on receipt by the competent authority. If information is not submitted with this report due to such information being protected by law, the applicant and/or EAP must declare such non-disclosure and provide the reasons for believing that the information is protected.
8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this report must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.
9. This Report must be submitted to the Department and the contact details for doing so are provided below.
10. Where this Department is also identified as the Licencing Authority to decide applications under NEM:WA or NEM:AQA, the submission of the Report must also be made as follows, for-
 - Waste management licence applications, this report must also (i.e., another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (tel: 021-483-2756 and fax: 021-483-4425) at the same postal address as the Cape Town Office.
 - Atmospheric emissions licence applications, this report must also be (i.e., another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (tel: 021 483 2798 and fax: 021 483 3254) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE		GEORGE REGIONAL OFFICE
REGION 1 (City of Cape Town & West Coast District)	REGION 2 (Cape Winelands District & Overberg District)	REGION 3 (Central Karoo District & Eden District)
Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1) Private Bag X 9086 Cape Town, 8000 Registry Office 1 st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 1) at: Tel.: (021) 483-5829 Fax: (021) 483-4372	Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 2) Private Bag X 9086 Cape Town, 8000 Registry Office 1 st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 2) at: Tel.: (021) 483-5842 Fax: (021) 483-3633	Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530 Registry Office 4th Floor, York Park Building 93 York Street George Queries should be directed to the Directorate: Development Management (Region 3) at: Tel.: (044) 805-8600 Fax: (044) 805 8650

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ACRONYMS USED IN THIS BASIC ASSESSMENT REPORT AND APPENDICES:

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
DEA	National Department of Environmental Affairs
DEA&DP	Western Cape Government: Environmental Affairs and Development Planning
DWS	National Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
HWC	Heritage Western Cape
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM:ICMA	National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
PPP	Public Participation Process

DETAILS OF THE APPLICANT

Applicant / Organisation / Organ of State:	Maryke Boerdery (Pty) Ltd		
Contact person:	Mr C Thompson		
Postal address:	12 Faure Street, Malmesbury		
Telephone:	022 482 2788	Postal Code:	7300
Cellular:	083 460 2090	Fax:	022 482 2716
E-mail:	effthompson@telkomsa.net		

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

Name of the EAP organisation:	Eco Impact Legal Consulting (Pty) Ltd		
Person who compiled this Report:	Nicolaas Hanekom		
EAP Reg. No.:	SACNASP Pri.Sci.Nat (Ecological Science) 400274/11.		
Contact Person (if not author):	NA		
Postal address:	P.O. Box 45070		
Telephone:	(021) 671 1660	Postal Code:	7735
Cellular:	NA	Fax:	(088) 021 671 1660
E-mail:	admin@ecoimpact.co.za		
EAP Qualifications:	M.Tech Nature Conservation. Cape Peninsula University of Technology. EMS ISO 14001. North West University Environmental Audit ISO 19011. North West University		

Mr Nicolaas Hanekom:

Mr Hanekom is a registered Professional Natural Scientist in the ecological science field with the South African Council for Natural Scientific Professions ("SACNASP") and a qualified EAP who holds a Masters Technologiae, Nature Conservation ("Vegetation Ecology and Biodiversity Assessment") degree from the Cape Peninsula University of Technology.

He further qualified in Environmental Management Systems ISO 14001:2004, at the Centre for Environmental Management, North-West University, as well as Environmental Management Systems ISO 14001:2004 Audit: Internal Auditors Course to ISO 19011:2003 level, from the Centre for Environmental Management, North-West University qualifying him to audit to ISO/SANS environmental compliance and EMS standards.

Mr Hanekom has been responsible for many environmental impact assessments and several EIA, waste license and atmospheric emission license applications as well as being involved in the implementation of several environmental management systems.

EXECUTIVE SUMMARY OF THE BASIC ASSESSMENT REPORT:

The proposed development will entail:

- The construction of 17 cattle housing units of approximately 1100m² each with an 5m service road in between the cattle housing; and
- A cattle manure and urine collection pond of 36.8m x 250.8m x 1.5m deep.

Each cattle housing unit can house 115 cattle with a total of 2185 cattle to be housed at the facility.

Location alternatives – The property was the only alternative considered. Existing access, the existing cattle housing operational requirements and infrastructure were all considered when the location of the expansion facilities was taken in consideration on the property. No other location, site or property alternatives were considered as they are not feasible or reasonable due to the fact that the proposed activity is for the expansion of the existing cattle housing.

Activity alternatives - The activity was the only alternative considered. No other activity alternatives were considered as they are not feasible or reasonable due to the fact that the proposed activity is for the expansion of the existing cattle housing.

Layout or design alternatives – Two design and layout alternative was considered. The alternative layout had a buffer of 32m from the non-perennial river. The amended and preferred alternative layout has a 50m buffer area in between the development and proposed development. The existing cattle housing, operations and facility designs were used and multiplied to increase the facility. The existing infrastructure on the farm, the non-perennial water course and operational requirements will all taken in consideration when the units were placed on the property. The existing water source from the borehole that is registered for the property and authorized by the Department of Water and Sanitation was used to determine the number of cattle that could be housed at the facility. The existing pond to collect urine and cattle manure was expanded to collect the manure and urine. From the pond the urine and manure will be treated at the on site licensed compost facility before it will be utilized as compost fertilizer. The clay content on the farm is of good quality and impermeable and will be used to line the ponds. The same clay was used to line the compost facility and its collection pond on the property.

Technology alternatives - No technological alternatives other than dual flush toilet systems and energy efficient lighting are considered at the facilities. Furthermore, the facility will capture rain water from the roofs in tanks to help in the supply of water to the cattle to reduce the need from the ground water source.

Operational alternatives – No operational alternatives were considered or assessed. There are no feasible or reasonable alternatives. The existing cattle housing operations were considered in the

design of the facility in order to continue with the existing operations of the facility as this was developed over the years and is the best operations for the facility.

The No-Go Option - The No-Go option will result in the site remaining as is presently and the existing cattle housing will continue as is without the expanded infrastructure. However, the No-Go Option is nevertheless considered and assessed in relation to the potential implications of the proposed project, as required in terms of NEMA and its EIA Regulations.

Impact Summary

The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance.

Construction phase:

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures);
- Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);

Operational phase:

- Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures);
- Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);

Decommissioning phase:

Similar to impacts associated with construction phase.

SECTION A: PROJECT INFORMATION

1. ACTIVITY LOCATION

Location of all proposed sites:	The property is situated north of the R315 (Malmesbury to Darling) road approximately 15 Km west of the town Malmesbury
Farm / Erf name(s) and	Portion 4 Nieuwe post East no 706, Darling

number(s) (including Portions thereof) for each proposed site:	
Property size(s) in m ² for each proposed site:	Approximately 125 ha
Development footprint size(s) in m ² :	Approximately 3.8ha
Surveyor General (SG) 21 digit code for each proposed site:	C04600000000070100004

2. PROJECT DESCRIPTION

(a) Is the project a new development? If "NO", explain:

YES

NO

The cattle housing is an existing development which is now expanding on its existing operations.

(b) Provide a detailed description of the scope of the proposed development (project).

The proposed development will entail:

- The construction of 19 cattle housing units of approximately 1100m² each with an 5m service road in between the cattle housing; and
- Two cattle manure and urine collection pond of (36.8m x 210m x 1.5m deep and 36.8m x 130m x 1.5m deep.

Each cattle housing unit can house 115 cattle with a total of 2185 cattle to be housed at the facility.

Please note: This description must relate to the listed and specified activities in paragraph (d) below.

(c) Please indicate the following periods that are recommended for inclusion in the environmental authorisation:

(i) the period within which commencement must occur,	5 years
(ii) the period for which the environmental authorisation should be granted and the date by which the activity must have been concluded, where the environmental authorisation does not include operational aspects;	10 years
(iii) the period that should be granted for the non-operational aspects of the environmental authorisation; and	10 years
(iv) the period that should be granted for the operational aspects of the environmental authorisation.	Unlimited.

Please note: The Department must specify the abovementioned periods, where applicable, in an environmental authorisation. In terms of the period within which commencement must occur, the period must not exceed 10 years and must not be extended beyond such 10 year period, unless the process to amend the environmental authorisation contemplated in regulation 32 is followed.

(d) List all the listed activities triggered and being applied for.

Please note: The onus is on the applicant to ensure that all the applicable listed activities are applied for and assessed as part of the EIA process. Please refer to paragraph (b) above.

EIA Regulations Listing Notices 1 and 3 of 2014 (as amended):

Listed Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 1 (GN No. R. 983)	Describe the portion of the development that relates to the applicable listed activity as per the project description.	Identify if the activity is development / development and operational / decommissioning / expansion / expansion and operational.
4	The development and related operation of facilities or infrastructure for the concentration of animals in densities	Cattle housing infrastructure and manure and urine collection pond	Development and operational

	<p>that exceed—</p> <p>(i) 20 square metres per large stock unit and more than 500 units per facility;</p> <p>(ii) 8 square meters per small stock unit and;</p> <p>a. more than 1 000 units per facility excluding pigs where (b) applies; or</p> <p>b. more than 250 pigs per facility excluding piglets that are not yet weaned;</p> <p>(iii) 30 square metres per crocodile and more than 20 crocodiles per facility;</p> <p>(iv) 3 square metres per rabbit and more than 500 rabbits per facility; or</p> <p>(v) 250 square metres per ostrich or emu and more than 50 ostriches or emus per facility.</p>		
8	<p>The development and related operation of hatcheries or agri-industrial facilities outside industrial complexes where the development footprint covers an area of 2 000 square metres or more.</p>	<p>Cattle housing infrastructure and manure and urine collection pond</p>	<p>Development and operational</p>
39	<p>The expansion and related operation of facilities for the concentration of animals in densities that will exceed—</p> <p>(i) 20 square metres per large stock unit, where the expansion will constitute more than 500 additional units;</p> <p>(ii) 8 square meters per small stock unit, where the expansion will constitute more than;</p> <p>(a) 1 000 additional units per facility or more excluding pigs where (b) applies; or</p> <p>(b) 250 additional pigs, excluding piglets that are not yet weaned;</p> <p>(iii) 30 square metres per crocodile where the expansion will constitute an additional 20 crocodiles or more;</p> <p>(iv) 3 square metres per rabbit where the expansion will constitute more than 500 additional rabbits; or</p>	<p>Cattle housing infrastructure and manure and urine collection pond</p>	<p>Development and operational</p>

	(v) 250 square metres per ostrich or emu where the expansion will constitute more than 50 additional ostriches or emus.		
43	The expansion and related operation of hatcheries or agri-industrial facilities outside industrial complexes, where the development footprint of the hatcheries or agri-industrial facilities will be increased by 2 000 square metres or more.	Cattle housing infrastructure and manure and urine collection pond	Development and operational
Listed Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 3 (GN No. R. 985)	Describe the portion of the development that relates to the applicable listed activity as per the project description.	Identify if the activity is development / development and operational / decommissioning / expansion / expansion and operational.
NA	NA		

Waste management activities in terms of the NEM: WA (GN No. 921):

Category A Listed Activity No(s):	Describe the relevant Category A waste management activity in writing as per GN No. 921	Describe the portion of the development that relates to the applicable listed activity as per the project description
NA	NA	

Note: If any waste management activities are applicable, the **Listed Waste Management Activities Additional Information Annexure** must be completed and attached to this Basic Assessment Report as **Appendix I**.

Atmospheric emission activities in terms of the NEM: AQA (GN No. 893):

Listed Activity No(s):	Describe the relevant atmospheric emission activity in writing as per GN No. 893	Describe the portion of the development that relates to the applicable listed activity as per the project description.
NA	NA	

(e) Provide details of all components (including associated structures and infrastructure) of the proposed development and attach diagrams (e.g., architectural drawings or perspectives, engineering drawings, process flowcharts, etc.).

Buildings Provide brief description below:	YES	NO
The construction of 19 cattle housing units of approximately 1100m ² each with an 5m service road in between the cattle housing.		
Infrastructure (e.g., roads, power and water supply/ storage) Provide brief description below:	YES	NO
Cattle manure and urine collection ponds of 36.8m x 210m x 1.5m deep and 36.8m x 130mx 1.5m deep.		
Processing activities (e.g., manufacturing, storage, distribution) Provide brief description below:	YES	NO
NA		
Storage facilities for raw materials and products (e.g., volume and substances to be stored) Provide brief description below:	YES	NO
NA		
Storage and treatment facilities for effluent, wastewater or sewage: Provide brief description below:	YES	NO
Cattle manure and urine collection ponds of 36.8m x 210m x 1.5m deep and 36.8m x 130mx 1.5m deep.		
Storage and treatment of solid waste Provide brief description below:	YES	NO
NA. All waste generated will be organic and will be treated to compost at the onsite licensed compost facility. License number 14/2/1/1/F5/5/0004/14		
Facilities associated with the release of emissions or pollution. Provide brief description below:	YES	NO
NA		
Other activities (e.g., water abstraction activities, crop planting activities) –	YES	NO

Provide brief description below:		
NA		

3. PHYSICAL SIZE OF THE PROPOSED DEVELOPMENT

(a) Property size(s): Indicate the size of all the properties (cadastral units) on which the development proposal is to be undertaken	Approximately 125 ha	m ²
(b) Size of the facility: Indicate the size of the facility where the development proposal is to be undertaken	Approximately 3.2ha	m ²
(c) Development footprint: Indicate the area that will be physically altered as a result of undertaking any development proposal (i.e., the physical size of the development together with all its associated structures and infrastructure)	Approximately 3.8ha	m ²
(d) Size of the activity: Indicate the physical size (footprint) of the development proposal	Approximately 3.8ha	m ²
(e) For linear development proposals: Indicate the length (L) and width (W) of the development proposal	(L) NA	m
	(W) NA	m
(f) For storage facilities: Indicate the volume of the storage facility	Clay lined pond (12 512)	m ³
(g) For sewage/effluent treatment facilities: Indicate the volume of the facility (Note: the maximum design capacity must be indicated)	Clay Lined pond (12 512)	m ³

4. SITE ACCESS

(a) Is there an existing access road?	YES	NO
(b) If no, what is the distance in (m) over which a new access road will be built?	m	

(c) Describe the type of access road planned:

NA

Please note: The position of the proposed access road must be indicated on the site plan.

5. DESCRIPTION OF THE PROPERTY(IES) ON WHICH THE LISTED ACTIVITY(IES) ARE TO BE UNDERTAKEN AND THE LOCATION OF THE LISTED ACTIVITY(IES) ON THE PROPERTY

5.1 Provide a description of the property on which the listed activity(ies) is/are to be undertaken and the location of the listed activity(ies) on the property, as well as of all alternative properties and locations (duplicate section below as required).

The property is situated north of the R315 (Malmesbury to Darling) road approximately 15 Km west of the town Malmesbury
Farm 649 portion 4 Grootverlangen, Malmesbury

Coordinates of all the proposed activities on the property or properties (sites):	Latitude (S): (deg.; min.; sec)			Longitude (E): (deg.; min.; sec.)		
	33°	26'	21.52"	18°	33'	12.70"

Note: For land where the property has not been defined, the coordinates of the area within which the development is proposed must be provided in an addendum to this report.

5.2 Provide a description of the area where the aquatic or ocean-based activity(ies) is/are to be undertaken and the location of the activity(ies) and alternative sites (if applicable).

NA

Coordinates of the boundary /perimeter of all proposed aquatic or ocean-based activities (sites) (if applicable):	Latitude (S): (deg.; min.; sec)			Longitude (E): (deg.; min.; sec)		
	°	'	"	°	'	"
	°	'	"	°	'	"
	°	'	"	°	'	"
	°	'	"	°	'	"

5.3 For a linear development proposal, please provide a description and coordinates of the corridor in which the proposed development will be undertaken (if applicable).

NA

For linear activities:	Latitude (S): (deg.; min.; sec)			Longitude (E): (deg.; min.; sec)		
• Starting point of the activity	o	'	"	o	'	"
• Middle point of the activity	o	'	"	o	'	"
• End point of the activity	o	'	"	o	'	"

Note: For linear development proposals longer than 1000m, please provide an addendum with co-ordinates taken every 250m along the route. All important waypoints must be indicated and the GIS shape file provided digitally.

5.4 Provide a location map (see below) as **Appendix A** to this report that shows the location of the proposed development and associated structures and infrastructure on the property; as well as a detailed site development plan / site map (see below) as **Appendix B** to this report; and if applicable, all alternative properties and locations. The GIS shape files (.shp) for maps / site development plans must be included in the electronic copy of the report submitted to the competent authority.

Locality Map:	<p>The scale of the locality map must be at least 1:50 000. For linear development proposals 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:</p> <ul style="list-style-type: none"> • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; • a linear scale; • the prevailing wind direction (during November to April and during May to October); and • GPS co-ordinates (to 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). <p>For an ocean-based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken.</p> <p>Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94; WGS84 co-ordinate system.</p>
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Site Plan:	<p>Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following:</p> <ul style="list-style-type: none"> • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be indicated on the site plan. • The position of each element of the application as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the development <u>must</u> be indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): <ul style="list-style-type: none"> o Watercourses / Rivers / Wetlands - including the 32 meter set back line from the edge of the bank of a river/stream/wetland; o Flood lines (i.e., 1:100 year, 1:50 year and 1:10 year where applicable); o Ridges; o Cultural and historical features; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow <p>A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas.</p> <p>The GIS shape file for the site development plan(s) must be submitted digitally.</p>
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6. SITE PHOTOGRAPHS

Colour photographs of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached as **Appendix C** to this report. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.

SECTION B: DESCRIPTION OF THE RECEIVING ENVIRONMENT

Site/Area Description

For linear development proposals (pipelines, etc.) as well as development proposals that cover very large sites, it may be necessary to complete copies of this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area that is covered by each copy on the Site Plan.

1. GRADIENT OF THE SITE

Indicate the general gradient of the sites (highlight the appropriate box).

Flat	Flatter than 1:10	1:10 – 1:4	Steeper than 1:4
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2. LOCATION IN LANDSCAPE

(a) Indicate the landform(s) that best describes the site (highlight the appropriate box(es)).

Ridgeline	Plateau	Side slope of hill / mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
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(b) Provide a description of the location in the landscape.

The site is located on a flat area between Malmesbury and Darling.

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

(a) Is the site(s) located on or near any of the following (highlight the appropriate boxes)?

Shallow water table (less than 1.5m deep)	YES	NO	UNSURE
Seasonally wet soils (often close to water bodies)	YES	NO	UNSURE
Unstable rocky slopes or steep slopes with loose soil	YES	NO	UNSURE
Dispersive soils (soils that dissolve in water)	YES	NO	UNSURE
Soils with high clay content	YES	NO	UNSURE
Any other unstable soil or geological feature	YES	NO	UNSURE
An area sensitive to erosion	YES	NO	UNSURE
An area adjacent to or above an aquifer.	YES	NO	UNSURE
An area within 100m of a source of surface water	YES	NO	UNSURE
An area within 500m of a wetland	YES	NO	UNSURE
An area within the 1:50 year flood zone	YES	NO	UNSURE
A water source subject to tidal influence	YES	NO	UNSURE

According To the Aquifer Classification of South Africa¹ the underlying area represents the minor aquifer region which is a moderately-yielding aquifer system of variable water quality.

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department.

¹ <http://www.dwa.gov.za/Groundwater/documents/Aquifer%20Classification.pdf>

(Information in respect of the above will often be available at the planning sections of local authorities. The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

(c) Indicate the type of geological formation underlying the site.

Granite	Shale	Sandstone	Quartzite	Dolomite	Dolerite	Other (describe)
Provide a description.						
<p>Soil: Prismacutanic and/or pedocutanic diagnostic horizons dominant, B horizons mainly not red</p> <p>Geology: Mainly alluvium and Quaternary quartz sand of the Springfontein Formation as well as surficial cover formed in situ on Malmesbury rocks.</p> <p>Class: Soils with a strong texture contrast</p> <p>Description: Soils with a marked clay accumulation, strongly structured and a non-reddish colour. In addition one or more of vertic, melanic and plinthic soils may be present</p> <p>Clay Depth: >= 450 mm and < 750 mm</p> <p>*Source: Soils and Geology ENPAT, CapeFarmMapper, 26 June 2018.</p> <p>A soil investigation was conducted (see Appendix G) during which three trial holes were dug at random across the site to a depth of approximately 1500mm. The excavated profile revealed a sandy layer of approximately 300-700mm depth and a yellow brown to white clayey material for the remainder of the hole. No seepage water was encountered in the holes. The compost facility (License number 14/2/1/1/F5/5/0004/14) where this study was done is approximately 1km west of the cattle housing site on the same property. Inspection of the excavated sites revealed similar clayey material for the full height of the excavation below the sandy layer. A sample of clay mater was taken from each trial pit. Laboratory testing on the material revealed an average permeability of 3.49E-07 cm/s, indicating that the clay material is impervious. The site with the underlying clay layer can therefore be rendered to be impervious to water penetration. The impermeable material can also be used as a liner for the proposed irrigation storage dam.</p>						

4. SURFACE WATER

(a) Indicate the surface water present on and or adjacent to the site and alternative sites (highlight the appropriate boxes)?

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	NO	UNSURE
Seasonal Wetland	YES	NO	UNSURE
Artificial Wetland	YES	NO	UNSURE
Estuarine / Lagoon	YES	NO	UNSURE

(b) Provide a description.

A non-perennial river which is a tributary of the Groen River runs north east from the site. A 50m buffer area was left to protect this non-perennial river from possible impacts. This non-perennial river has almost no ecological functioning left. The Groen River forms part of the Berg River Water Management Area as located within quaternary drainage region G10L.

5. THE SEAFRONT / SEA

(a) Is the site(s) located within any of the following areas? (highlight the appropriate boxes).

If the site or alternative site is closer than 100m to such an area, please provide the approximate distance in (m).

AREA	YES	NO	UNSURE	If "YES": Distance to nearest area (m)
An area within 100m of the high water mark of the sea	YES	NO	UNSURE	

An area within 100m of the high water mark of an estuary/lagoon	YES	NO	UNSURE
An area within the littoral active zone	YES	NO	UNSURE
An area in the coastal public property	YES	NO	UNSURE
Major anthropogenic structures	YES	NO	UNSURE
An area within a Coastal Protection Zone	YES	NO	UNSURE
An area seaward of the coastal management line	YES	NO	UNSURE
An area within the high risk zone (20 years)	YES	NO	UNSURE
An area within the medium risk zone (50 years)	YES	NO	UNSURE
An area within the low risk zone (100 years)	YES	NO	UNSURE
An area below the 5m contour	YES	NO	UNSURE
An area within 1km from the high water mark of the sea	YES	NO	UNSURE
A rocky beach	YES	NO	UNSURE
A sandy beach	YES	NO	UNSURE

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department. (The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

6. BIODIVERSITY

Note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed development. To assist with the identification of the biodiversity occurring on site and the ecosystem status, consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc ("cd") from the Biodiversity-GIS Unit, Tel.: (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) must be provided as an overlay map on the property/site plan as **Appendix D** to this report.

(a) Highlight the applicable biodiversity planning categories of all areas on preferred and alternative sites and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category. Also describe the prevailing level of protection of the Critical Biodiversity Area ("CBA") and Ecological Support Area ("ESA") (how many hectares / what percentages are formally protected).

Systematic Biodiversity Planning Category	CBA	ESA	Other Natural Area ("ONA")	No Natural Area Remaining ("NNR")
If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan and the conservation management objectives	Take note that the area is wrongly identified as a terrestrial CBA. The area consists of ploughed and agricultural lands with no Natural vegetation present.			
Describe the site's CBA/ESA quantitative values (hectares/percentage) in relation to the prevailing level of protection of CBA and ESA (how many hectares / what percentages are formally protected locally and in the province)	CBA 1: Terrestrial as well as CBA1: Aquatic, wetland.			

(b) Highlight and describe the habitat condition on site.

Habitat Condition	Percentage of habitat condition class (adding up to 100%) and area of each in square metre (m ²)		Description and additional comments and observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing/harvesting regimes, etc.)
Natural	0%	m ²	
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	m ²	
Degraded (includes areas heavily invaded by alien plants)	0%	m ²	

Transformed (includes cultivation, dams, urban, plantation, roads, etc.)	100%	m ²	All newly constructed infrastructures will be on ploughed agricultural lands.
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- (c) Complete the table to indicate:
- the type of vegetation present on the site, including its ecosystem status; and
 - whether an aquatic ecosystem is present on/or adjacent to the site.

Terrestrial Ecosystems		Description of Ecosystem, Vegetation Type, Original Extent, Threshold (ha, %), Ecosystem Status
Ecosystem threat status as per the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	Critically	NA
	Endangered	NA
	Vulnerable	NA
	Least Threatened	NA

Aquatic Ecosystems						
Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
YES	NO	UNSURE	YES	NO	YES	NO

- (d) Provide a description of the vegetation type and/or aquatic ecosystem present on the site, including any important biodiversity features/information identified on the site (e.g. threatened species and special habitats). Clearly describe the biodiversity targets and management objectives in this regard.

The development site vegetation type used to be Atlantis Sand Fynbos. A non-perennial river which is a tributary of the Groen River runs north east from the site. A 50m buffer area was left to protect this non-perennial river from possible impacts. The ecological functioning of the non-perennial river and terrestrial area is all of very low value and non-functional.

7. LAND USE OF THE SITE

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

Untransformed area	Low density residential	Medium density residential	High density residential	Informal residential
Retail	Commercial & warehousing	Light industrial	Medium industrial	Heavy industrial
Power station	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Tourism and Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical centre	School	Tertiary education facility	Church	Old age home
Sewage treatment plant	Train station or shunting yard	Railway line	Major road (4 lanes and more)	Airport
Harbour	Sport facilities	Golf course	Polo fields	Filling station
Landfill or waste treatment site	Plantation	Agriculture	River, stream or wetland	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archaeological site
Other land uses (describe):	NA			

- (a) Provide a description.

The site and farm is existing cattle housing and ploughed lands. The expansion areas of the sites will be all on ploughed agricultural lands.

8. LAND USE CHARACTER OF THE SURROUNDING AREA

- (a) Highlight the current land uses and/or prominent features that occur within +/- 500m radius of the site and neighbouring properties if these are located beyond 500m of the site.

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

Untransformed area	Low-density residential	Medium-density residential	High-density residential	Informal residential
Retail	Commercial & warehousing	Light industrial	Medium industrial	Heavy industrial
Power station	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Tourism and Hospitality facility
Open-cast mine	Underground mine	Spoil heap or slimes dam	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical centre	School	Tertiary education facility	Church	Old age home
Sewage treatment plant	Train station or shunting yard	Railway line	Major road (4 lanes and more)	Airport
Harbour	Sport facilities	Golf course	Polo fields	Filling station
Landfill or waste treatment site	Plantation	Agriculture	River, stream or wetland	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archaeological site
Other land uses (describe):	NA			

- (b) Provide a description, including the distance and direction to the nearest residential area, industrial area, agri-industrial area.

The property is situated north of the R315 (Malmesbury to Darling) road approximately 15 Km west of the town Malmesbury.

9. SOCIO-ECONOMIC ASPECTS

- a) Describe the existing social and economic characteristics of the community in the vicinity of the proposed site, in order to provide baseline information (for example, population characteristics/demographics, level of education, the level of employment and unemployment in the area, available work force, seasonal migration patterns, major economic activities in the local municipality, gender aspects that might be of relevance to this project, etc.).

Municipal Area:

The cattle expansion is located east of the town Malmesbury and falls under the jurisdiction of the West Coast District Municipality within the Swartland is a Local Municipality. The West Coast District Municipality covers an approximate area of 31.119 km². The Swartland Municipality covers a total area of approximately 3.700 km².

Population:

Swartland includes the towns of Malmesbury, Moorreesburg, Darling, Yzerfontein, Riebeek West, Riebeek Kasteel, Koringberg, Ruststasie, Ongegund, Riverlands, Chatsworth, Kalbaskraal and Abbotsdale as well as the rural areas adjacent to and between these towns. 78% of the persons in the Swartland area are Afrikaans speaking and 12.34% isiXhosa speaking.

Socio-Economics:

The Swartland Municipality, is committed to the social and economic development of the people in the area, unemployment and a lack of skills development continue to be one of the biggest problems faced in the Swartland area. As reported in the Swartland Municipality Annual Report 2016/17. The average unemployment rate in the West Coast district is 14.5%.

Swartland households receive fairly good municipal services and most of the households use electricity for heating, cooking and lighting. The provision of low cost housing continues to be a major challenge for the municipality. If housing backlogs are to be addressed meaningfully, the rate and quantity of housing developments must be increased.

Tourism Opportunities:

There is a great deal of tourism opportunities for the Swartland Municipality such as the growth of towns/ Service Centres where Malmesbury is focused as regional, Moorreesburg as agricultural and Darling as agricultural and agri-tourism) centre.

10. HISTORICAL AND CULTURAL ASPECTS

- (a) Please be advised that if section 38 of the NHRA is applicable to your proposed development, you are requested to furnish this Department with written comment from Heritage Western Cape as part of your public participation process. Heritage Western Cape must be given an opportunity, together with the rest of the I&APs, to comment on any Pre-application BAR, a Draft BAR, and Revised BAR.

Section 38 of the NHRA states the following:

"38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

- (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000m² in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000m² in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development".

- (b) The impact on any national estate referred to in section 3(2), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii), of the NHRA, must also be investigated, assessed and evaluated. Section 3(2) states the following: "3(2) Without limiting the generality of subsection (1), the national estate may include—
- (a) places, buildings, structures and equipment of cultural significance;
 - (b) places to which oral traditions are attached or which are associated with living heritage;
 - (c) historical settlements and townscapes;
 - (d) landscapes and natural features of cultural significance;
 - (e) geological sites of scientific or cultural importance;
 - (f) archaeological and palaeontological sites;
 - (g) graves and burial grounds, including—
 - (i) ancestral graves;
 - (ii) royal graves and graves of traditional leaders;
 - (iii) graves of victims of conflict;
 - (iv) graves of individuals designated by the Minister by notice in the Gazette;
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
 - (h) sites of significance relating to the history of slavery in South Africa;
 - (i) movable objects, including—
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens;
 - (ii) objects to which oral traditions are attached or which are associated with living heritage;
 - (iii) ethnographic art and objects;
 - (iv) military objects;
 - (v) objects of decorative or fine art;
 - (vi) objects of scientific or technological interest; and
 - (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996)".

Is Section 38 of the NHRA applicable to the proposed development?		YES	NO	UNCERTAIN
If YES or UNCERTAIN, explain:	Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), is applicable to the proposed development as the re zoning of the site exceeds 10 000 m ² in extent. No archaeologically significant resources were found during the foot survey. The development will not impact on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 or impact on any building or structure older than 60 years in any way.			
Will the development impact on any national estate referred to in Section 3(2) of the NHRA?		YES	NO	UNCERTAIN

If YES or UNCERTAIN, explain:	NA			
Will any building or structure older than 60 years be affected in any way?	YES	NO	UNCERTAIN	
If YES or UNCERTAIN, explain:	NA			
Are there any signs of culturally or historically significant elements, as defined in section 2 of the NHRA, including Archaeological or paleontological sites, on or close (within 20m) to the site?	YES	NO	UNCERTAIN	
If YES or UNCERTAIN, explain:	NA			

Note: If uncertain, the Department may request that specialist input be provided **and** Heritage Western Cape must provide comment on this aspect of the proposal. (Please note that a copy of the comments obtained from the Heritage Resources Authority must be appended to this report as Appendix E1).

11. APPLICABLE LEGISLATION, POLICIES, CIRCULARS AND/OR GUIDELINES

- (a) Identify all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to the development proposal and associated listed activity(ies) being applied for and that have been considered in the preparation of the BAR.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	ADMINISTERING AUTHORITY and how it is relevant to this application	TYPE Permit/license/authorisation/comment / relevant consideration (e.g. rezoning or consent use, building plan approval, Water Use License and/or General Authorisation, License in terms of the SAHRA and CARA, coastal discharge permit, etc.)	DATE (if already obtained):
National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] and relevant regulations	Western Cape Department of Environmental Affairs and Development Planning	Environmental Authorisation Application	N/A
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [NEMWA] and relevant regulations	Western Cape Department of Environmental Affairs and Development Planning	N/A	N/A
National Environmental Management: Biodiversity Act 10 of 2004 [NEMBA]	Western Cape Department of Environmental Affairs and Development Planning	N/A	N/A
National Environmental Management: Air Quality Act, 39 of 2004 [NEMAQA] and Relevant Regulations	Western Cape Department of Environmental Affairs and Development Planning	N/A	N/A
National Water Act, 1998 (Act No. 36 of 1998) [NWA] and relevant regulations	Department of Water Affairs	Water Use Authorization	N/A
Conservation of Agricultural Resources Act, 43 of 1983 [CARA]	National Department of Agriculture, forestry and Fisheries Western Cape Department of Agriculture	N/A	N/A
National Health Act, 61 of 2003 [NHA]		N/A	N/A

Constitution of the Republic of South Africa, 1996 [CRSA]		General application of individual rights of all on and adjacent to the sites	N/A
National Building Regulations and Building Standards Act 103 of 1977 [NBRBSA] and relevant regulations		N/A	N/A
National Heritage Resources Act 25 of 1999 [NHRA]	Heritage Western Cape South African Heritage Resource Agency	NID	In progress
National Veld and Forest Fire Act 101 of 1998 [NVFFA]		N/A	N/A
Fertilizers, Farm Feeds, Agricultural Remedies And Stock Remedies Act, 36 Of 1947 [FFFARSRA] and Relevant Regulations	National Department of Agriculture, forestry and Fisheries Western Cape Department of Agriculture	N/A	N/A
Section 42 of Spatial Planning and Land Use Management Act (16 of 2013) ("SPLUMA")	Swartland Municipality	Consent Use.	N/A
Western Cape Land Use Planning Act, 2014 ("LUPA")	Swartland Municipality	Consent Use.	N/A

(b) Describe how the proposed development **complies with and responds** to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	Describe how the proposed development complies with and responds:
NEMA	Various general activities, including but not limited to, the control of emergency incidents and the care and remediation of environmental damage.
NEMWA	Listed waste management activities and the requirements for a license for usage of general waste.
NEMBA	The management and conservation of biological diversity and the sustainable use of indigenous biological resources.
NEMAQA	Activities that may affect the air quality on site and the environment surrounding it.
NWA	Impacts and pollution to ground and surface water. A water use authorisation under section 21 is required.
CARA	Weeds and the tolerance thereof.
National Health Act	Littering and causing a nuisance.
Constitution of the RSA	General application to individual rights of all on and adjacent to the sites.
National Building Regulations and Building Standards Act	The erection of new buildings.
NHRA	Development of the site and dealing with graves and burial sites and any structures older than 60 years.
NVFFA	Any activities that could result in the start of veld fires.
FFFARSRA	<ul style="list-style-type: none"> Activities associated with pest control and the use of agricultural remedies. Activities associated with providing / manufacturing fertiliser.
Guideline on Public Participation	The public participation guideline was used to determine the best way to define and inform all relevant I&APs of the project. The guideline was also used to determine the most effective

	communication strategies for public participation.
Guidelines on Alternatives	The guidelines for alternatives assessment was used to develop a methodology for alternatives assessment. This methodology was applied to determine and assess the most viable alternatives to the project. The assessment was undertaken against the base environment (i.e. the no-go option).
Guideline on Need and desirability	The guideline was taken into account to determine whether the project complied according to the concept of Best Practicable Environmental Option as well as environmental and social sustainability.
Guideline for EMP's	The guideline for EMP's was taken into account to determine the most effective minimize, mitigation and management measures to minimise or prevent the impacts identified in the report

Note: Copies of any comments, permit(s) or licences received from any other Organ of State must be attached to this report as **Appendix E**.

Section C: PUBLIC PARTICIPATION

The PPP must fulfil the requirements outlined in the NEMA, the EIA Regulations, 2014 (as amended) and if applicable, the NEM: WA and/or the NEM: AQA. This Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must also be taken into account.

- Please highlight the appropriate box to indicate whether the specific requirement was undertaken or whether there was an exemption applied for.

In terms of Regulation 41 of the EIA Regulations, 2014 (as amended) -			
(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of -			
(i) the site where the activity to which the application relates, is or is to be undertaken; and	YES	EXEMPTION	
(ii) any alternative site	YES	EXEMPTION	N/A
(b) giving written notice, in any manner provided for in Section 47D of the NEMA, to -			
(i) the occupiers of the site and, if the applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	YES	EXEMPTION	N/A
(ii) owners, persons in control of, 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;	YES	EXEMPTION	
(iii) 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;	YES	EXEMPTION	
(iv) the municipality (Local and District Municipality) which has jurisdiction in the area;	YES	EXEMPTION	
(v) any organ of state having jurisdiction in respect of any aspect of the activity; and	YES	EXEMPTION	
(vi) any other party as required by the Department;	YES	EXEMPTION	N/A
(c) placing an advertisement in -			
(i) one local newspaper; or	YES	EXEMPTION	
(ii) any official <i>Gazette</i> that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	YES	EXEMPTION	N/A
(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 district municipality in which it is or will be undertaken	YES	EXEMPTION	N/A
(e) using reasonable alternative methods, as agreed to by the Department, in those instances where a person is desirous of but unable to participate in the process due to— (i) illiteracy; (ii) disability; or (iii) any other disadvantage.	YES	EXEMPTION	N/A
If you have indicated that "EXEMPTION" is applicable to any of the above, proof of the exemption decision must be appended to this report.			
Please note that for the NEM: WA and NEM: AQA, a notice must be placed in at least two newspapers circulating in the area where the activity applied for is proposed.			
If applicable, has/will an advertisement be placed in at least two newspapers?	YES	NO	
If "NO", then proof of the exemption decision must be appended to this report.			

2. Provide a list of all the State Departments and Organs of State that were consulted:

State Department / Organ of State	Date request was sent:	Date comment received:	Support / not in support
CapeNature	06 July 2018	13 August 2018	Recommend that the buffer be increase from 32m to 50m
Department of Agriculture	06 July 2018	-	-
Heritage Western Cape	06 July 2018	-	-
Department of Water Affairs	06 July 2018	31 July 2018	No indication. Water Use Authorization application required.
West Coast District Municipality	06 July 2018	13 August 2018	Comments to adress
Swartland Municipality	06 July 2018	31 July 2018	No indication. Zoning application required.
Department of Health	06 July 2018	1 August 2018	No comments
DEA&DP Waste Management	06 July 2018	13 August 2018	Commenst to address.
DEA&DP Pollution and Chemicals Management	06 July 2018	14 August 2018	Commenst to address.

3. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated, or the reasons for not including them.
 (The detailed outcomes of this process, including copies of the supporting documents and inputs must be included in a Comments and Response Report to be attached to the BAR (see note below) as **Appendix F**).

None to date

4. Provide a summary of any conditional aspects identified / highlighted by any Organs of State, which have jurisdiction in respect of any aspect of the relevant activity.

Swartland Municipality

- A land use application needs to be made in terms of Section 25 (2) of the Swartland Municipality Land Use Planning By-law (PK 7741, dated 3 March 2017) in order to obtain the correct land use rights for the proposed cattle housing.

Department of Water & Sanitation

- Water use in terms of section 21 (g) "disposing of waste in a manner which may detrimentally impact on a water resource" of the National Water Act, 1998 (Act 36 of 1998) are triggered and water use authorisation must be applied for and obtained prior to the construction of the collection pond.
- It also triggers water uses in terms of section 21 (c) "impending/diverting the flow of water in a watercourse" and section 21 (i) "altering the bed, banks, course and characteristics of a watercourse" of the National Water Act, 1998 (Act 36 of 1998).
- A Risk Matrix (Appendix A) must be completed. The risk matrix can be found on the Department's website www.dws.gov.za under Document Library – Documents-"Section 21 (c) and (i)" – click all scroll down to "Final Risk Assessment Matrix".

West Coast District Municipality

- Pest control plan must be developed

CapeNature

- Strongly recommend that the standard buffer recommendation of 32 metres be increased to at least 50 metres.

DEA&DP: Waste Management

- The waste management licence number (WML) for the "onsite licenced compost facility", (License number 14/2/1/1/F5/5/0004/14) must be included in all documents.

DEA&DP: Pollution & Chemicals Management

- Locality map and appendix A is not clearly legible and a larger print of the must
- The impact of noise and odour on neighbouring properties must be addressed in the Draft BAR.

Note:

Even if pre-application public participation is undertaken as allowed for by Regulation 40(3), it must be undertaken in accordance with the requirements set out in Regulations 3(3), 3(4), 3(8), 7(2), 7(5), 19, 40, 41, 42, 43 and 44.

If the "exemption" option is selected above and no proof of the exemption decision is attached to this BAR, the application will be refused.

A list of all the potential I&APs, including the Organs of State, notified and a list of all the registered I&APs must be submitted with the BAR. The list of registered I&APs must be opened, maintained and made available to any person requesting access to the register in writing.

The BAR must be submitted to the Department when being made available to I&APs, including the relevant Organs of State and State Departments which have jurisdiction with regard to any aspect of the activity, for a commenting period of at least 30 days. Unless agreement to the contrary has been reached between the Competent Authority and the EAP, the EAP will be responsible for the consultation with the relevant State Departments in terms of Section 24O and Regulation 7(2) – which consultation must happen simultaneously with the consultation with the I&APs and other Organs of State.

All the comments received from I&APs on the BAR must be recorded, responded to and included in the Comments and Responses Report included as **Appendix F** of the BAR. If necessary, any amendments made in response to comments received must be effected in the BAR itself. The Comments and Responses Report must also include a description of the PPP followed.

The minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded, must also be submitted as part of the public participation information to be attached to the final BAR as **Appendix F**.

Proof of all the notices given as indicated, as well as notice to I&APs of the availability of the Pre-Application BAR (if applicable), Draft BAR, and Revised BAR (if applicable) must be submitted as part of the public participation information to be attached to the BAR as **Appendix F**. In terms of the required "proof" the following must be submitted to the Department:

- a site map showing where the site notice was displayed, a dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:

- if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
- if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
- if a facsimile was sent, a copy of the facsimile report;
- if an electronic mail was sent, a copy of the electronic mail sent; and
- if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and
- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible).

SECTION D: NEED AND DESIRABILITY

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and guidelines available on the Department's website: <http://www.westerncape.gov.za/eadp>. In this regard, it must be noted that the *Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010* published by the national Department of Environmental Affairs on 20 October 2014 (GN No. 891 on Government Gazette No. 38108 refers) (available at: http://www.gov.za/sites/www.gov.za/files/38108_891.pdf) also applied to EIAs in terms of the EIA Regulations, 2014 (as amended).

1. Is the development permitted in terms of the property's existing land use rights?	YES	NO	Please explain
Consent use zoning from agriculture 1 for the expansion areas required.			
2. Will the development be in line with the following?			
(a) Provincial Spatial Development Framework ("PSDF").	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land.			
(b) Urban edge / edge of built environment for the area.	YES	NO	Please explain
Falls outside urban edge on agricultural property.			
(c) Integrated Development Plan and Spatial Development Framework of the Local Municipality (e.g., would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF ?).	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land.			
(d) An Environmental Management Framework (" EMF ") adopted by this Department. (e.g., Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO	Please explain
No EMF adopted for the area			
(e) Any other Plans (e.g., Integrated Waste Management Plan (for waste management activities), etc.).	YES	NO	Please explain
NA			
3. Is the land use (associated with the project being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (in other words, is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land.			
4. Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur on the proposed site at this point in time?	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land.			
5. Does the community/area need the project and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g., development is a National Priority, but within a specific local context it could be inappropriate.)	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land.			
6. Are the necessary services available together with adequate unallocated municipal capacity (at the time of application), or must additional capacity be created to cater for the project? (Confirmation by the relevant municipality in this regard must be attached to the BAR as Appendix E .)	YES	NO	Please explain
No external services required. Water allocation in terms of existing WUA out of ground water source.			
7. Is this project provided for in the infrastructure planning of the municipality and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant municipality in this regard must be attached to the BAR as Appendix E .)	YES	NO	Please explain
NA			
8. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO	Please explain
NA			

9. Do location factors favour this land use (associated with the development proposal and associated listed activity(ies) applied for) at this place? (This relates to the contextualisation of the proposed land use on the proposed site within its broader context.)	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land.			
10. Will the development proposal or the land use associated with the development proposal applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land.			
11. Will the development impact on people's health and well-being (e.g., in terms of noise, odours, visual character and 'sense of place', etc.)?	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land. The proposed expansion will not increase odours or any possible health impacts and impacts on people well-being. The expansion odours or the impacts will stay similar.			
12. Will the proposed development or the land use associated with the proposed development applied for, result in unacceptable opportunity costs?	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land.			
13. What will the cumulative impacts (positive and negative) of the proposed land use associated with the development proposal and associated listed activity(ies) applied for, be?			
Increase in trip generations, cattle manure and urine to be treated at the compost facility. License number 14/2/1/1/F5/5/0004/14			
14. Is the development the best practicable environmental option for this land/site?	YES	NO	Please explain
Expansion of existing cattle housing on agricultural land.			
15. What will the benefits be to society in general and to the local communities?			Please explain
Job security and production of food to help with food security.			
16. Any other need and desirability considerations related to the proposed development?			Please explain
None anticipated.			
17. Describe how the general objectives of Integrated Environmental Management as set out in Section 23 of the NEMA have been taken into account:			
<p>The general objectives of Integrated Environmental Management were taken into account by considering all the potential negative and positive impacts of the proposed project on both the biophysical and socio-economic environments. In order to avoid potentially significant impacts, specialist inputs were obtained in relation to terrestrial and aquatic ecology. Based on the findings of the specialist studies a number of recommendations / mitigation measures have been identified for consideration in further project design and implementation. The public and authorities will be given adequate opportunity to comment on the proposed project and to participate in the Basic Assessment Process.</p>			
18 Describe how the principles of environmental management as set out in Section 2 of the NEMA have been taken into account:			
<p>All decisions during the planning and assessment by all involved for the activity promote the integration of the principles of environmental management set out in section 2 to minimize and mitigate any significant effect on the environment. All these mitigations and management measures are included and written into the EMP.</p> <p>All involved in the planning and design identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage. The risks, consequences, alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2 were taken into consideration and used in the assessments, mitigations and recommendations throughout this report.</p> <p>Specialists involved in the planning and design of the activity are independent and ensure that the effects of the activities on the environment receive adequate consideration before recommendations and actions are taken for inclusion in the EA conditions and EMP.</p> <p>Adequate and appropriate opportunity for public participation will be provided and included in Appendix F as per the guidelines and regulations in decisions that may affect the environment. The consideration of environmental attributes in management and decision making which may have a significant effect on the environment was ensured. The modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2 were identified and employed. Refer to the section below.</p>			

SECTION E: DETAILS OF ALL THE ALTERNATIVES CONSIDERED

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and guidelines available on the Department's website <http://www.westerncape.gov.za/eadp>.

The EIA Regulations, 2014 (as amended) defines "alternatives" as "in relation to a proposed activity, means different means of fulfilling the general purpose and requirements of the activity, which may include alternatives to the—

- (a) property on which or location where the activity is proposed to be undertaken;
- (b) type of activity to be undertaken;
- (c) design or layout of the activity;
- (d) technology to be used in the activity; or
- (e) operational aspects of the activity;
- (f) and includes the option of not implementing the activity;"

The NEMA (section 24(4)(a) and (b) of the NEMA, refers) prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, with respect to every application for environmental authorisation –

- ensure that the general objectives of integrated environmental management laid down in the NEMA and the National Environmental Management Principles set out in the NEMA are taken into account; and
- include an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity.

The general objective of integrated environmental management (section 23 of NEMA, refers) is, *inter alia*, to "identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management" set out in the NEMA.

The identification, evaluation, consideration and comparative assessment of alternatives directly relate to the management of impacts. Related to every identified impact, alternatives, modifications or changes to the activity must be identified, evaluated, considered and comparatively considered to:

- in terms of negative impacts, firstly avoid a negative impact altogether, or if avoidance is not possible alternatives to better mitigate, manage and remediate a negative impact and to compensate for/offset any impacts that remain after mitigation and remediation; and
- in terms of positive impacts, maximise impacts.

1. DETAILS OF THE IDENTIFIED AND CONSIDERED ALTERNATIVES AND INDICATE THOSE ALTERNATIVES THAT WERE FOUND TO BE FEASIBLE AND REASONABLE

Note: A full description of the investigation of alternatives must be provided and motivation if no reasonable or feasible alternatives exists.

- (a) Property and **location/site** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

The property was the only alternative considered. Existing access, the existing cattle housing operational requirements and infrastructure were all considered when the location of the expansion facilities was taken in consideration on the property. No other location, site or property alternatives were considered as they are not feasible or reasonable due to the fact that the proposed activity is for the expansion of the existing cattle housing.

- (b) **Activity** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

The activity was the only alternative considered. No other activity alternatives were considered as they are not feasible or reasonable due to the fact that the proposed activity is for the expansion of the existing cattle housing.

- (c) **Design or layout** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

Two design and layout alternative was considered. The alternative layout had a buffer of 32m from the non-perennial river. The amended and preferred alternative layout has a 50m buffer area in between the development and proposed development. The existing infrastructure on the farm, the non-perennial water course and operational requirements will all taken in consideration when the units were placed on the property. The existing water source from the borehole that is registered for

the property and authorized by the Department of Water and Sanitation was used to determine the number of cattle that could be housed at the facility. The existing pond to collect urine and cattle manure was expanded to collect the manure and urine. From the pond the urine and manure will be treated at the on site licensed compost facility before it will be utilized as compost fertilizer. The clay content on the farm is of good quality and impermeable and will be used to line the ponds. The same clay was used to line the compost facility and its collection pond on the property.

- (d) **Technology** alternatives (e.g., to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No technological alternatives other than dual flush toilet systems and energy efficient lighting are considered at the facilities. Furthermore, the facility will capture rain water from the roofs in tanks to help in the supply of water to the cattle to reduce the need from the ground water source.

- (e) **Operational** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No operational alternatives were considered or assessed. There are no feasible or reasonable alternatives. The existing cattle housing operations were considered in the design of the facility in order to continue with the existing operations of the facility as this was developed over the years and is the best operations for the facility.

- (f) The option of **not implementing** the activity (the 'No-Go' Option):

The No-Go option will result in the site remaining as is presently and the existing cattle housing will continue as is without the expanded infrastructure. However, the No-Go Option is nevertheless considered and assessed in relation to the potential implications of the proposed project, as required in terms of NEMA and its EIA Regulations.

- (g) **Other** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No additional alternatives to avoid negative impacts were considered.

- (h) Provide a **summary** of all alternatives investigated and the outcome of each investigation:

Location alternatives – The property was the only alternative considered. Existing access, the existing cattle housing operational requirements and infrastructure were all considered when the location of the expansion facilities was taken in consideration on the property. No other location, site or property alternatives were considered as they are not feasible or reasonable due to the fact that the proposed activity is for the expansion of the existing cattle housing.

Activity alternatives - The activity was the only alternative considered. No other activity alternatives were considered as they are not feasible or reasonable due to the fact that the proposed activity is for the expansion of the existing cattle housing.

Layout or design alternatives – Two design and layout alternative was considered. The alternative layout had a buffer of 32m from the non-perennial river. The amended and preferred alternative layout has a 50m buffer area in between the development and proposed development. The existing infrastructure on the farm, the non-perennial water course and operational requirements will all taken in consideration when the units were placed on the property. The existing water source from the borehole that is registered for the property and authorized by the Department of Water and Sanitation was used to determine the number of cattle that could be housed at the facility. The existing pond to collect urine and cattle manure was expanded to collect the manure and urine. From the pond the urine and manure will be treated at the on site licensed compost facility before it will be utilized as compost fertilizer. The clay content on the farm is of good quality and impermeable and will be used to line the ponds. The same clay was used to line the compost facility and its collection pond on the property.

Technology alternatives - No technological alternatives other than dual flush toilet systems and

energy efficient lighting are considered at the facilities. Furthermore, the facility will capture rain water from the roofs in tanks to help in the supply of water to the cattle to reduce the need from the ground water source.

Operational alternatives – No operational alternatives were considered or assessed. There are no feasible or reasonable alternatives. The existing cattle housing operations were considered in the design of the facility in order to continue with the existing operations of the facility as this was developed over the years and is the best operations for the facility.

The No-Go Option - The No-Go option will result in the site remaining as is presently and the existing cattle housing will continue as is without the expanded infrastructure. However, the No-Go Option is nevertheless considered and assessed in relation to the potential implications of the proposed project, as required in terms of NEMA and its EIA Regulations.

- (i) Provide a detailed **motivation for not further considering** the alternatives that were found not feasible and reasonable, including a description and proof of the investigation of those alternatives:

The proposed development is for expansion of the existing cattle housing. The layout, operations and technology is guided by the existing facility.

2. PREFERRED ALTERNATIVE

- (a) Provide a **concluding statement** indicating the preferred alternative(s), including preferred location, site, activity and technology for the development.

The property was the only alternative considered. No other location, site or property alternatives were considered. The activity was the only alternative considered. Only one design and layout alternative was considered. No technological alternatives other than dual flush toilet systems and energy efficient lighting are considered at the facilities. The proposed development is an expansion of cattle housing and the current operations as for the rest of the facility will continue as is. The No-Go option will result in the site remaining as is presently and the existing cattle housing will continue as is without the expanded infrastructure. However, the No-Go Option is nevertheless considered and assessed in relation to the potential implications of the proposed project, as required in terms of NEMA and its EIA Regulations.

The only alternatives thus assessed were the construction of the expanded infrastructure versus the No Go option which is the current activities.

SECTION F: ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE ALTERNATIVES

Note: The information in this section must be DUPLICATED for all the feasible and reasonable ALTERNATIVES.

1. DESCRIBE THE ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE PROPOSED DEVELOPMENT AND ITS ALTERNATIVES, FOCUSING ON THE FOLLOWING:

- (a) Geographical, geological and physical aspects:

The site and farm is existing cattle housing and ploughed lands. The expansion areas of the sites will be all on ploughed agricultural lands. The property is situated north of the R315 (Malmesbury to Darling) road approximately 15 Km west of the town Malmesbury. The development site vegetation type used to be Atlantis Sand Fynbos. A non-perennial river which is a tributary of the Groen River runs north east from the site. A 50m buffer area was left to protect this non-perennial river from possible impacts. The ecological functioning of the non-perennial river and terrestrial area is all of very low value and non-functional.

Soil:

Prismacutanic and/or pedocutanic diagnostic horizons dominant, B horizons mainly not red

Geology:

Mainly alluvium and Quaternary quartz sand of the Springfontein Formation as well as surficial cover formed in situ on Malmesbury rocks.

Class:

Soils with a strong texture contrast

Description:

Soils with a marked clay accumulation, strongly structured and a non-reddish colour. In addition one or more of vertic, melanic and plinthic soils may be present

Clay Depth:

>= 450 mm and < 750 mm

(b) Ecological aspects:

Will the proposed development and its alternatives have an impact on CBAs or ESAs? If yes, please explain: Also include a description of how the proposed development will influence the quantitative values (hectares/percentage) of the categories on the CBA/ESA map.	YES	NO
Take note that the area is wrongly identified as a terrestrial and aquatic CBA. The area consists of ploughed and agricultural lands with no Natural vegetation present.		
Will the proposed development and its alternatives have an impact on terrestrial vegetation, or aquatic ecosystems (wetlands, estuaries or the coastline)? If yes, please explain:	YES	NO
Take note that the area is wrongly identified as a terrestrial and aquatic CBA. The area consists of ploughed and agricultural lands with no Natural vegetation present.		
Will the proposed development and its alternatives have an impact on any populations of threatened plant or animal species, and/or on any habitat that may contain a unique signature of plant or animal species? If yes, please explain:	YES	NO
Ploughed agricultural lands		
Describe the manner in which any other biological aspects will be impacted:		
NA		
Will the proposed development also trigger section 63 of the NEM: ICMA?	YES	NO
If yes, describe the following: (i) the extent to which the applicant has in the past complied with similar authorisations; (ii) whether coastal public property, the coastal protection zone or coastal access land will be affected, and if so, the extent to which the proposed development proposal or listed activity is consistent with the purpose for establishing and protecting those areas; (iii) the estuarine management plans, coastal management programmes, coastal management lines and coastal management objectives applicable in the area; (iv) the likely socio-economic impact if the listed activity is authorised or is not authorised; (v) the likely impact of coastal environmental processes on the proposed development; (vi) whether the development proposal or listed activity— (a) is situated within coastal public property and is inconsistent with the objective of conserving and enhancing coastal public property for the benefit of current and future generations; (b) is situated within the coastal protection zone and is inconsistent with the purpose for which a coastal protection zone is established as set out in section 17 of NEM: ICMA; (c) is situated within coastal access land and is inconsistent with the purpose for which coastal access land is designated as set out in section 18 of NEM: ICMA; (d) is likely to cause irreversible or long-lasting adverse effects to any aspect of the coastal environment that cannot satisfactorily be mitigated; (e) is likely to be significantly damaged or prejudiced by dynamic coastal processes; (f) would substantially prejudice the achievement of any coastal management objective; or (g) would be contrary to the interests of the whole community; (vii) whether the very nature of the proposed activity or development requires it to be located within coastal public property, the coastal protection zone or coastal access land; (viii) whether the proposed development will provide important services to the public when using coastal public property, the coastal protection zone, coastal access land or a coastal protected area; and (ix) the objects of NEM: ICMA, where applicable.		
NA		

(c) Social and Economic aspects:

What is the expected capital value of the project on completion?	± R 9 Milj
What is the expected yearly income or contribution to the economy that will be generated by or as a result of the project?	Unknown
Will the project contribute to service infrastructure?	YES NO
Is the project a public amenity?	YES NO
How many new employment opportunities will be created during the development phase?	Unknown
What is the expected value of the employment opportunities during the development phase?	Unknown
What percentage of this will accrue to previously disadvantaged individuals?	Unknown %
How will this be ensured and monitored (please explain):	

The developer can include in the contract with contractor that he must use local labour as far as possible.	
How many permanent new employment opportunities will be created during the operational phase of the project?	± 15
What is the expected current value of the employment opportunities during the first 10 years?	± R 720 000
What percentage of this will accrue to previously disadvantaged individuals?	90 %
How will this be ensured and monitored (please explain):	
The EA holder will be responsible to appoint previously disadvantaged individuals and it is recommended that this be included as an EA condition.	
Any other information related to the manner in which the socio-economic aspects will be impacted:	
NA	

(d) Heritage and Cultural aspects:

Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), is applicable to the proposed development as the re zoning of the site exceeds 10 000 m² in extent. No archaeologically significant resources were found during the foot survey. The development will not impact on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 or impact on any building or structure older than 60 years in any way.

2. WASTE AND EMISSIONS

(a) Waste (including effluent) management

Will the development proposal produce waste (including rubble) during the development phase?	YES	NO
If yes, indicate the types of waste (actual type of waste, e.g. oil, and whether hazardous or not) and estimated quantity per type?	10 m ³	
Inert waste during construction.		

Will the development proposal produce waste during its operational phase?	YES	NO
If yes, indicate the types of waste (actual type of waste, e.g. oil, and whether hazardous or not) and estimated quantity per type?	45 000 m ³ per year	
Mortalities = approximately 0.5 tons per week. Manure and Urine = 865 m ³ per week		

Will the development proposal require waste to be treated / disposed of on site?	YES	NO
If yes, indicate the types of waste (actual type of waste, e.g. oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?	45 000 m ³ per year	
All mortalities and organic waste generated by the facility will be treated at the onsite licensed compost facility.		
If no, where and how will the waste be treated / disposed of? Please explain. Indicate the types of waste (actual type of waste, e.g. oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?	m ³	
NA		
Has the municipality or relevant authority confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? If yes, provide written confirmation from the municipality or relevant authority.	YES	NO
Will the development proposal produce waste that will be treated and/or disposed of at another facility other than into a municipal waste stream?	YES	NO
If yes, has this facility confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? Provide written confirmation from the facility.	YES	NO
Does the facility have an operating license? (If yes, please attach a copy of the licence.)	YES	NO
Facility name:		
Contact person:		
Cell:	Postal address:	
Telephone:	Postal code:	
Fax:	E-mail:	

Describe the measures that will be taken to reduce, reuse or recycle waste:

All organic waste and mortalities will be composted at the licensed onsite compost facility.

(b) Emissions into the atmosphere

Will the development proposal produce emissions that will be released into the atmosphere?	YES	NO
If yes, does this require approval in terms of relevant legislation?	YES	NO
If yes, what is the approximate volume(s) of emissions released into the atmosphere?	Emissions of A cow does on overage release ± 50 kg of Methane per year	kg
Describe the emissions in terms of type and concentration and how these will be avoided/managed/treated/mitigated:		
A cow does on overage release between 70 and 120 kg of Methane per year. The calves will produce approximately 50kg per animal per year with a total of 97 750 kg of methane produced per year by the facility ² .		

3. WATER USE

(a) Indicate the source(s) of water for the development proposal by highlighting the appropriate box(es).

Municipal	Water board	Groundwater	River, Stream, Dam or Lake	Other	The project will not use water
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Note: Provide proof of assurance of water supply (e.g. Letter of confirmation from the municipality / water user associations, yield of borehole)

(b) If water is to be extracted from a groundwater source, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	2 916	m ³
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(c) Does the development proposal require a water use permit / license from DWS?	YES	NO
If yes, please submit the necessary application to the DWS and attach proof thereof to this application as an Appendix.		

Water Use Authorization for the:
Section 21 (c): impeding or diverting the flow of water in a watercourse, for the infrastructure within 100m from the water course and 500m from a wetland. The biodegradable industrial wastewater storage dam will be within 100m from the non-perennial water course.
(d) Describe the measures that will be taken to reduce water demand, and measures to reuse or recycle water:
Rain water will be harvested and captured from the roofs.

4. POWER SUPPLY

(a) Describe the source of power e.g. municipality / Eskom / renewable energy source.

ESKOM

(b) If power supply is not available, where will power be sourced?

NA

5. ENERGY EFFICIENCY

(a) Describe the design measures, if any, that have been taken to ensure that the development proposal will be energy efficient:

Energy efficient lighting will be used in the facility.

(b) Describe how alternative energy sources have been taken into account or been built into the design of the project, if any:

² <https://timeforchange.org/are-cows-cause-of-global-warming-meat-methane-CO2>

NA. Not required.

6. TRANSPORT, TRAFFIC AND ACCESS

Describe the impacts in terms of transport, traffic and access.

Existing access roads will be used. The facility is accessed of the of the R315 (Malmesbury to Darling) road.

7. NUISANCE FACTOR (NOISE, ODOUR, etc.)

Describe the potential nuisance factor or impacts in terms of noise and odours.

A cow does on overage release between 70 and 120 kg of **Methane** per year. The calves will produce approximately 50kg per animal per year with a total of 97 750 kg of methane produced per year by the facility³. The noise impacts for the facility on the surrounding land uses will be low and of no significance.

Note: Include impacts that the surrounding environment will have on the proposed development.

8. OTHER

POTENTIAL VISUAL IMPACTS

Nature of impact:

Visual impact of infrastructure and services establishment.

Discussion:

The construction activities for the proposed developments and decommissioning will have a temporary visual impact on the landscape.

Cumulative impacts:

Construction activities on construction site.

Mitigation:

Proposed construction activities must be limited to development footprint site. Construction camp must be neatly fenced and construction site must be neat and tidy.

Criteria	Preferred Layout Alternative		Alternative Layout Alternative		No-Go Alternative	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	1	1	1	1	Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	1	1	1	1		
Magnitude	2	2	2	2		
Probability	2	2	2	2		
Significance	8- Low	8- Low	8- Low	8- Low		
Status	Not significant	Not significant	Not significant	Not significant		
Reversibility	0% reversibility – once the visual features are destroyed, it cannot be recovered.					
Irreplaceable loss of resources	3- Yes, completely irreplaceable					
Can impacts be mitigated?	1-Yes					

³ <https://timeforchange.org/are-cows-cause-of-global-warming-meat-methane-CO2>

SECTION G: IMPACT ASSESSMENT, IMPACT AVOIDANCE, MANAGEMENT, MITIGATION AND MONITORING MEASURES

1. METHODOLOGY USED IN DETERMINING AND RANKING ENVIRONMENTAL IMPACTS AND RISKS ASSOCIATED WITH THE ALTERNATIVES

- (a) Describe the **methodology** used in determining and ranking the nature, significance consequences, extent, duration and probability of potential environmental impacts and risks associated with the proposed development and alternatives.

The assessment criteria were developed based on the Department of Environmental Affairs Integrated Environmental Management Series guideline documents.			
Criteria	Description		
Nature	A description of what causes the effect, what will be affected, and how it will be affected.		
	Type	Score	Description
Extent (E)	None (No)	1	Footprint
	Site (S)	2	On site or within 100 m of the site
	Local (L)	3	Within a 20 km radius of the centre of the site
	Regional (R)	4	Beyond a 20 km radius of the site
	National (Na)	5	Crossing provincial boundaries or on a national / land wide scale
Duration (D)	Short term (S)	1	0 – 1 years
	Short to medium (S-M)	2	2 – 5 years
	Medium term (M)	3	5 – 15 years
	Long term (L)	4	> 15 years
	Permanent (P)	5	Will not cease
Magnitude (M)	Small (S)	0	will have no effect on the environment
	Minor (Mi)	2	will not result in an impact on processes
	Low (L)	4	will cause a slight impact on processes
	Moderate (Mo)	6	processes continuing but in a modified way
	High (H)	8	processes are altered to the extent that they temporarily cease
	Very high (VH)	10	Results in complete destruction of patterns and permanent cessation of processes.
Probability (P) The likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned	Very improbable (VP)	1	probably will not happen
	Improbable (I)	2	some possibility, but low likelihood
	Probable (P)	3	distinct possibility
	Highly probable (HP)	4	most likely
	Definite (D)	5	impact will occur regardless of any prevention measures
Significance (S)	Determined through a synthesis of the characteristics described above: S = (E+D+M) x P Significance can be assessed as low, medium or high		
Low: < 30 points:	The impact would not have a direct influence on the decision to develop in the area		
Medium: 30 – 60 points:	The impact could influence the decision to develop in the area unless it is effectively mitigated		
High: < 60 points:	The impact must have an influence on the decision process to develop in the area		
No significance	When no impact will occur or the impact will not affect the environment		
Status	Positive (+)		Negative (-)
The degree to	Completely	90-	The impact can be mostly to completely reverse with

which the impact can be reversed	reversible (R)	100%	the implementation of the correct mitigation and rehabilitation measures.
	Partly reversible (PR)	6-89%	The impact can be partly reversed providing that mitigation measures as stipulated in the EMP are implemented and rehabilitation measures are undertaken
	Irreversible (IR)	0-5%	The impact cannot be reversed, regardless of the mitigation or rehabilitation measures taking place
The degree to which the impact may cause irreplaceable loss of resources	Resource will not be lost (R)	1	The resource will not be lost or destroyed provided that mitigation and rehabilitation measures as stipulated in the EMP are implemented
	Resource may be partly destroyed (PR)	2	Partial loss or destruction of the resources will occur even though all management and mitigation measures as stipulated in the EMP are implemented
	Resource cannot be replaced (IR)	3	The resource cannot be replaced no matter which management or mitigation measures are implemented.
The degree to which the impact can be mitigated	Completely mitigatable (CM)	1	The impact can be completely mitigated providing that all management and mitigation measures as stipulated in the EMP are implemented
	Partly mitigatable (PM)	2	The impact cannot be completely mitigated even though all management and mitigation measures as stipulated in the EMP are implemented. Implementation of these measures will provide a measure of mitigatibility
	Un-mitigatable (UM)	3	The impact cannot be mitigated no matter which management or mitigation measures are implemented.

(b) Please describe any gaps in knowledge.

EAP is only knowledgeable with regards to the environmental impacts, biodiversity and ecosystems aspects.

(c) Please describe the underlying assumptions.

In undertaking the investigation and compiling this report, the following has been assumed:

- The information provided by the client is accurate and unbiased;
- The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the development; and
- Should the proposed project be authorised, the applicant will incorporate the recommendations and mitigation measures outlined in this BAR, the EMP and the EA into the detailed design and construction contract specifications and operational management system for the proposed project.

(d) Please describe the uncertainties.

None at this stage.

(e) Describe adequacy of the assessment methods used.

Based on the EAP's assessment information was provided to address the concerns and assess the impacts of the proposed development on the environment. Information as provided by the applicant and as collected by the EAP during site surveys etc. has been used to inform the current development proposals.

2. IDENTIFICATION, ASSESSMENT AND RANKING OF IMPACTS TO REACH THE PROPOSED ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE WITHIN THE SITE

Note: In this section the focus is on the identified issues, impacts and risks that influenced the identification of the alternatives. This includes how aspects of the receiving environment have influenced the selection.

(a) List the identified impacts and risks for each alternative.

<p>Alternative 1: Preferred</p>	<p>Potential negative impacts that may arise from the proposed construction phase include ecological effects due to:</p> <ul style="list-style-type: none"> • generation and disposal of waste; and • spillage of hazardous substances. <p>Possible environmental impacts caused during the operational phase that are likely to impact on estuarine communities include the effects of:</p> <ul style="list-style-type: none"> • generation and disposal of waste; and, • Odours. <p>The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance.</p> <p>Construction phase:</p> <ul style="list-style-type: none"> • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures); • Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures); • Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures); • Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures); • Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures); • Increased jobs - (No impact before mitigation and positive impact with mitigation measures); • Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures); • The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures); <p>Operational phase:</p> <ul style="list-style-type: none"> • Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures); • Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures); • Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures); • Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures); • Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures); • Increased jobs - (No impact before mitigation and positive impact with mitigation measures); • Increased traffic due to the operation activities requiring various vehicles to
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	<p>come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);</p> <ul style="list-style-type: none"> • The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures); <p>Decommissioning phase:</p> <ul style="list-style-type: none"> • Similar to impacts associated with construction phase.
<p>Alternative 2: Alternative</p>	<p>Potential negative impacts that may arise from the proposed construction phase include ecological effects due to:</p> <ul style="list-style-type: none"> • generation and disposal of waste; and • spillage of hazardous substances. <p>Possible environmental impacts caused during the operational phase that are likely to impact on estuarine communities include the effects of:</p> <ul style="list-style-type: none"> • generation and disposal of waste; and, • Odours. <p>The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance.</p> <p>Construction phase:</p> <ul style="list-style-type: none"> • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures); • Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures); • Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures); • Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures); • Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures); • Increased jobs - (No impact before mitigation and positive impact with mitigation measures); • Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures); • The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures); <p>Operational phase:</p> <ul style="list-style-type: none"> • Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures); • Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures); • Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures); • Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures); • Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures); • Increased jobs - (No impact before mitigation and positive impact with mitigation measures);

	<ul style="list-style-type: none"> Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures); The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures); <p>Decommissioning phase:</p> <ul style="list-style-type: none"> Similar to impacts associated with construction phase.
No-go Alternative:	The No-Go option will result in the site remaining as is presently.

(b) Describe the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed; may cause irreplaceable loss of resources; and can be avoided, managed or mitigated.

The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. (The EAP has to select the relevant impacts identified in blue in the table below for each alternative and repeat the table for each impact and risk).

Alternative 1 : Preferred Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Construction activities can affect the underlying geological layers on site to some extent.
Nature of impact:	Disturbance to subsurface geological layers
Extent and duration of impact:	Extent 1 (footprint) & Duration 2 (two to five years)
Consequence of impact or risk:	Construction and excavation activities can affect the underlying geological layers on site to some extent.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surrounding subsurface geological layers
Cumulative impact prior to mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Demarcation and work within demarcated areas only.
Residual impacts:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
OPERATIONAL PHASE	
Potential impact and risk:	Operation activities can affect the underlying geological layers on site to some extent.
Nature of impact:	Disturbance to subsurface geological layers
Extent and duration of impact:	Extent 1 (footprint) & Duration 2 (two to five years)
Consequence of impact or risk:	Manure and urine storage and handling can affect the underlying geological layers on site to some extent.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surrounding subsurface geological layers
Cumulative impact prior to mitigation:	It is not anticipated that the impact will be high.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 - High

Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Storage dam will be lined with on site clay and the ground water quality from the borehole will be monitored and analysed quarterly to detect any possible contamination. All urine and manure will be handled in a sealed infrastructure and no spillages or overflow may occur. 50m buffer between the facilities and non-perennial water course is maintained.
Residual impacts:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 - Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	
Nature of impact:	Disturbance to subsurface geological layers
Extent and duration of impact:	Extent 1 (footprint) & Duration 2 (two to five years)
Consequence of impact or risk:	Construction and excavation activities can affect the underlying geological layers on site to some extent.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surrounding subsurface geological layers
Cumulative impact prior to mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Demarcation and work within demarcated areas only.
Residual impacts:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low

Alternative 2 : Alternative Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Construction activities can affect the underlying geological layers on site to some extent.
Nature of impact:	Disturbance to subsurface geological layers
Extent and duration of impact:	Extent 1 (footprint) & Duration 2 (two to five years)
Consequence of impact or risk:	Construction and excavation activities can affect the underlying geological layers on site to some extent.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surrounding subsurface geological layers
Cumulative impact prior to mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
Degree to which the impact can be avoided:	High

Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Demarcation and work within demarcated areas only.
Residual impacts:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
OPERATIONAL PHASE	
Potential impact and risk:	Operation activities can affect the underlying geological layers on site to some extent.
Nature of impact:	Disturbance to subsurface geological layers
Extent and duration of impact:	Extent 1 (footprint) & Duration 2 (two to five years)
Consequence of impact or risk:	Manure and urine storage and handling can affect the underlying geological layers on site to some extent.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surrounding subsurface geological layers
Cumulative impact prior to mitigation:	It is not anticipated that the impact will be high.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 - High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Storage dam will be lined with onsite clay and the ground water quality from the borehole will be monitored and analysed quarterly to detect any possible contamination. All urine and manure will be handled in a sealed infrastructure and no spillages or overflow may occur. 32m buffer between the facilities and non-perennial water course is maintained.
Residual impacts:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 - Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	
Nature of impact:	Disturbance to subsurface geological layers
Extent and duration of impact:	Extent 1 (footprint) & Duration 2 (two to five years)
Consequence of impact or risk:	Construction and excavation activities can affect the underlying geological layers on site to some extent.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surrounding subsurface geological layers
Cumulative impact prior to mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Demarcation and work within demarcated areas only.
Residual impacts:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures

	will not be sacrificed.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low

Alternative 1 : Preferred Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Soil erosion and dust
Nature of impact:	<p>Construction activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.</p> <p>Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.</p> <p>Soil erosion can occur due to wind (wind erosion causes dust pollution). Dust impacts on neighbouring farms</p>
Extent and duration of impact:	Extent 1 (footprint) & Duration 5 (permanent)
Consequence of impact or risk:	Construction and excavation activities can result in erosion and dust.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surface area can result in erosion and dust generation
Cumulative impact prior to mitigation:	Exposing soil may lead to erosion and dust generation if not mitigated. The facility is situated in the middle of the property away from neighbours and it is anticipated that dust will not cause a nuisance to neighbours as a result of the activity.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Control access to roads and other areas to avoid disturbance of areas outside the development footprint.</p> <p>Undertake dust suppression as needed.</p> <p>Personnel should be restricted to the camp site and immediate construction areas only.</p> <p>Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.</p> <p>Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.</p> <p>Adress and manage any complaints that may be received from neighbours.</p>
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
OPERATIONAL PHASE	
Potential impact and risk:	Soil erosion and dust
Nature of impact:	<p>Operational activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.</p> <p>Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is</p>

	<p>unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.</p> <p>Soil erosion can occur due to wind (wind erosion causes dust pollution).</p>
Extent and duration of impact:	Extent 1 (footprint) & Duration 5 (permanent)
Consequence of impact or risk:	Ploughing, Construction and excavation activities can result in erosion and dust.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surface area can result in erosion and dust generation
Cumulative impact prior to mitigation:	Exposing soil may lead to erosion and dust generation if not mitigated. The facility is situated in the middle of the property away from neighbours and it is anticipated that dust will not cause a nuisance to neighbours as a result of the activity.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Control access to roads and other areas to avoid disturbance of areas outside the development footprint.</p> <p>Undertake dust suppression as needed.</p> <p>Personnel should be restricted to the camp site and immediate areas only.</p> <p>Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.</p> <p>Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.</p> <p>Deal and manage possible neighbours complaints once received.</p>
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Soil erosion and dust
Nature of impact:	<p>Construction activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.</p> <p>Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.</p> <p>Soil erosion can occur due to wind (wind erosion causes dust pollution).</p>
Extent and duration of impact:	Extent 1 (footprint) & Duration 5 (permanent)
Consequence of impact or risk:	Construction and excavation activities can result in erosion and dust.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surface area can result in erosion and dust generation
Cumulative impact prior to mitigation:	Exposing soil may lead to erosion and dust generation if not mitigated. The facility is situated in the middle of the property away from neighbours and it is anticipated that dust will not cause a nuisance to neighbours as a result of the activity.
Significance rating of impact prior to mitigation	16 - Low

(e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Control access to roads and other areas to avoid disturbance of areas outside the development footprint. Undertake dust suppression as needed. Personnel should be restricted to the camp site and immediate construction areas only. Undertake storm water management measures as required, with special attention to storm water management that may be required upslope. Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low

Alternative 2 : Alternative Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Soil erosion and dust
Nature of impact:	Construction activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result. Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction. Soil erosion can occur due to wind (wind erosion causes dust pollution).
Extent and duration of impact:	Extent 1 (footprint) & Duration 5 (permanent)
Consequence of impact or risk:	Construction and excavation activities can result in erosion and dust.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surface area can result in erosion and dust generation
Cumulative impact prior to mitigation:	Exposing soil may lead to erosion and dust generation if not mitigated. The facility is situated in the middle of the property away from neighbours and it is anticipated that dust will not cause a nuisance to neighbours as a result of the activity.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Control access to roads and other areas to avoid disturbance of areas outside the development footprint. Undertake dust suppression as needed. Personnel should be restricted to the camp site and immediate construction areas only. Undertake storm water management measures as required, with special attention to storm water management that may be required upslope. Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.

Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
OPERATIONAL PHASE	
Potential impact and risk:	Soil erosion and dust
Nature of impact:	<p>Operational activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.</p> <p>Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.</p> <p>Soil erosion can occur due to wind (wind erosion causes dust pollution).</p>
Extent and duration of impact:	Extent 1 (footprint) & Duration 5 (permanent)
Consequence of impact or risk:	Ploughing, Construction and excavation activities can result in erosion and dust.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surface area can result in erosion and dust generation
Cumulative impact prior to mitigation:	Exposing soil may lead to erosion and dust generation if not mitigated. The facility is situated in the middle of the property away from neighbours and it is anticipated that dust will not cause a nuisance to neighbours as a result of the activity.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Control access to roads and other areas to avoid disturbance of areas outside the development footprint.</p> <p>Undertake dust suppression as needed.</p> <p>Personnel should be restricted to the camp site and immediate areas only.</p> <p>Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.</p> <p>Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.</p>
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Soil erosion and dust
Nature of impact:	<p>Construction activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.</p> <p>Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.</p> <p>Soil erosion can occur due to wind (wind erosion causes dust pollution).</p>
Extent and duration of impact:	Extent 1 (footprint) & Duration 5 (permanent)
Consequence of impact or risk:	Construction and excavation activities can result in erosion and dust.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)

Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Disturbance to surface area can result in erosion and dust generation
Cumulative impact prior to mitigation:	Exposing soil may lead to erosion and dust generation if not mitigated.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Control access to roads and other areas to avoid disturbance of areas outside the development footprint. Undertake dust suppression as needed. Personnel should be restricted to the camp site and immediate construction areas only. Undertake storm water management measures as required, with special attention to storm water management that may be required upslope. Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low

Alternative 1 : Preferred Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Impact of construction activities on surface and underground water pollution
Nature of impact:	Diesel and oil spills affecting ground and surface water.
Extent and duration of impact:	Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)
Consequence of impact or risk:	Possible pollution of surface and ground water.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 - High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 - Low
OPERATIONAL PHASE	
Potential impact and risk:	Impact of construction activities on surface and underground water pollution
Nature of impact:	Diesel and oil spills affecting ground and surface water.
Extent and duration of impact:	Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)
Consequence of impact or risk:	Possible pollution of surface and ground water.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources

Cumulative impact prior to mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 - High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 - Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Impact of construction activities on surface and underground water pollution
Nature of impact:	Diesel and oil spills affecting ground and surface water.
Extent and duration of impact:	Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)
Consequence of impact or risk:	Possible pollution of surface and ground water.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 - High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 - Low

Alternative 2 : Alternative layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Impact of construction activities on surface and underground water pollution
Nature of impact:	Diesel and oil spills affecting ground and surface water.
Extent and duration of impact:	Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)
Consequence of impact or risk:	Possible pollution of surface and ground water.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 - High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 - Low

OPERATIONAL PHASE	
Potential impact and risk:	Impact of construction activities on surface and underground water pollution
Nature of impact:	Diesel and oil spills affecting ground and surface water. Disposal of biodegradable wastewater.
Extent and duration of impact:	Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)
Consequence of impact or risk:	Possible pollution of surface and ground water.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 – High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 – Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Impact of construction activities on surface and underground water pollution
Nature of impact:	Diesel and oil spills affecting ground and surface water.
Extent and duration of impact:	Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)
Consequence of impact or risk:	Possible pollution of surface and ground water.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 – High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Diesel and oil spills affecting ground and surface water quality.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 – Low

Alternative 1 : Preferred Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Impact on drainage line / groundwater resources
Nature of impact:	Natural drainage on site is expected to follow the topography, draining downslope towards the Groen River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the groundwater regime.
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (will not cease)
Consequence of impact or risk:	Possible contamination of groundwater resources.

Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Possible contamination of water resources.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures outlined in EMP, attached as Appendix H, shall be adhered to. Buffer of 50m between the non-perennial water course and development was included in the design.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Possible contamination of groundwater resources.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
OPERATIONAL PHASE	
Potential impact and risk:	Impact on drainage line / groundwater resources
Nature of impact:	Natural drainage on site is expected to follow the topography, draining downslope towards the Groen River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the groundwater regime.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 5 (will not cease)
Consequence of impact or risk:	Possible contamination of water resources.
Probability of occurrence:	4 (most likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Possible contamination of water resources.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 – High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Management and monitoring the irrigation of biodegradable waste water and control seepage into the water courses by preventing over irrigation and irrigation into the 100m buffer areas. A 50m buffer area was included in the design of the facility.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Possible contamination of water resources.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 – Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Impact on drainage line / groundwater resources
Nature of impact:	Natural drainage on site is expected to follow the topography, draining downslope towards the Groen River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the groundwater regime.
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (will not cease)
Consequence of impact or risk:	Possible contamination of groundwater resources.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause	High

irreplaceable loss of resources:	
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Possible contamination of water resources.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures outlined in EMP, attached as Appendix H, shall be adhered to. Buffer of 50m between the non-perennial water course and development was included in the design.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Possible contamination of groundwater resources.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low

Alternative 2 : Alternative Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Impact on drainage line / groundwater resources
Nature of impact:	Natural drainage on site is expected to follow the topography, draining downslope towards the Groen River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the groundwater regime.
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (will not cease)
Consequence of impact or risk:	Possible contamination of groundwater resources.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Possible contamination of water resources.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures outlined in EMP, attached as Appendix H, shall be adhered to. Buffer of 32m between the non-perennial water course and development was included in the design.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Possible contamination of groundwater resources.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
OPERATIONAL PHASE	
Potential impact and risk:	Impact on drainage line / groundwater resources
Nature of impact:	Natural drainage on site is expected to follow the topography, draining downslope towards the Groen River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the groundwater regime.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 5 (will not cease)
Consequence of impact or risk:	Possible contamination of water resources.
Probability of occurrence:	4 (most likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High

Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Possible contamination of water resources.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	64 – High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Management and monitoring the irrigation of biodegradable waste water and control seepage into the water courses by preventing over irrigation and irrigation into the 100m buffer areas.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Possible contamination of water resources.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	28 – Low

DECOMMISSIONING AND CLOSURE PHASE

Potential impact and risk:	Impact on drainage line / groundwater resources
Nature of impact:	Natural drainage on site is expected to follow the topography, draining downslope towards the Groen River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the groundwater regime.
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (will not cease)
Consequence of impact or risk:	Possible contamination of groundwater resources.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of water resources
Cumulative impact prior to mitigation:	Possible contamination of water resources.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Mitigation measures outlined in EMP, attached as Appendix H, shall be adhered to.
Residual impacts:	It is not anticipated that the impact will be high if the mitigation measures are adhered to.
Cumulative impact post mitigation:	Possible contamination of groundwater resources.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low

Alternative 1 : Preferred Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Impact on surrounding and municipal planning policies and guidelines.
Nature of impact:	The site is already operated and developed as a cattle housing.
Extent and duration of impact:	Extent 1 (Footprint) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Possible impact on surrounding and municipal planning policies and guidelines.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact prior to mitigation:	Impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low

Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.
Residual impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact post mitigation:	Possible impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
OPERATIONAL PHASE	
Potential impact and risk:	Impact on surrounding and municipal planning policies and guidelines.
Nature of impact:	The site is already operated and developed as a cattle housing.
Extent and duration of impact:	Extent 1 (Footprint) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Possible impact on surrounding and municipal planning policies and guidelines.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact prior to mitigation:	Impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.
Residual impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact post mitigation:	Possible impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Impact on surrounding and municipal planning policies and guidelines.
Nature of impact:	The site is already operated and developed as a cattle housing.
Extent and duration of impact:	Extent 1 (Footprint) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Possible impact on surrounding and municipal planning policies and guidelines.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact prior to mitigation:	Impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.
Residual impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact post mitigation:	Possible impact on surrounding and municipal planning policies and

	guidelines.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low

Alternative 2 : Alternative Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Impact on surrounding and municipal planning policies and guidelines.
Nature of impact:	The site is already operated and developed as a cattle housing.
Extent and duration of impact:	Extent 1 (Footprint) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Possible impact on surrounding and municipal planning policies and guidelines.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact prior to mitigation:	Impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.
Residual impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact post mitigation:	Possible impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
OPERATIONAL PHASE	
Potential impact and risk:	Impact on surrounding and municipal planning policies and guidelines.
Nature of impact:	The site is already operated and developed as a cattle housing.
Extent and duration of impact:	Extent 1 (Footprint) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Possible impact on surrounding and municipal planning policies and guidelines.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact prior to mitigation:	Impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.
Residual impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact post mitigation:	Possible impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Impact on surrounding and municipal planning policies and guidelines.
Nature of impact:	The site is already operated and developed as a cattle housing.

Extent and duration of impact:	Extent 1 (Footprint) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Possible impact on surrounding and municipal planning policies and guidelines.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact prior to mitigation:	Impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.
Residual impacts:	Impact on surrounding and municipal planning policies and guidelines.
Cumulative impact post mitigation:	Possible impact on surrounding and municipal planning policies and guidelines.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low

Alternative 1 : Preferred Layout	Socio-Economic Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Increased jobs
Nature of impact:	Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and “others (work force and job seekers)” may be employed from outside the community.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Influx of contract workers due to lack of skills. Influx of job seekers due to jobs created. Littering.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact prior to mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference. The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.
Residual impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact post mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
OPERATIONAL PHASE	
Potential impact and risk:	Increased jobs
Nature of impact:	Operational jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and “others (work force and job seekers)” may be employed from outside the community.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Influx of contract workers due to lack of skills. Influx of job seekers due to jobs created.

	Littering.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact prior to mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference. The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.
Residual impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact post mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Increased jobs
Nature of impact:	Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and “others (work force and job seekers)” may be employed from outside the community.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Influx of contract workers due to lack of skills. Influx of job seekers due to jobs created. Littering.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact prior to mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference. The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.
Residual impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact post mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)

Alternative 2 : Alternative Layout	Socio-Economic Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Increased jobs
Nature of impact:	Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and “others (work force and job seekers)” may be employed from outside the community.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Influx of contract workers due to lack of skills. Influx of job seekers due to jobs created. Littering.

Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact prior to mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference. The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.
Residual impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact post mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
OPERATIONAL PHASE	
Potential impact and risk:	Increased jobs
Nature of impact:	Operational jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and “others (work force and job seekers)” may be employed from outside the community.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Influx of contract workers due to lack of skills. Influx of job seekers due to jobs created. Littering.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact prior to mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference. The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.
Residual impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact post mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Increased jobs
Nature of impact:	Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and “others (work force and job seekers)” may be employed from outside the community.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)
Consequence of impact or risk:	Influx of contract workers due to lack of skills. Influx of job seekers due to jobs created. Littering.
Probability of occurrence:	4 (most likely)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Loss of significantly impacted upon job opportunities.

Cumulative impact prior to mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference. The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.
Residual impacts:	Loss of significantly impacted upon job opportunities.
Cumulative impact post mitigation:	Loss of significantly impacted upon job opportunities.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low (positive)

Alternative 1 : Preferred Layout	Socio-Economic Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Traffic Impacts
Nature of impact:	The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 2 (2 – 5 years)
Consequence of impact or risk:	The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.
Cumulative impact prior to mitigation:	The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Avoid peak traffic hours (07h00 – 08h00 and 17h00 – 18h00) as far as possible
Residual impacts:	The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.
Cumulative impact post mitigation:	The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
OPERATIONAL PHASE	
Potential impact and risk:	Traffic Impacts
Nature of impact:	Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 5 (Will not cease)
Consequence of impact or risk:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes.
Cumulative impact prior to mitigation:	The increase in traffic volumes at certain times of day will add to the

	existing traffic volumes.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	None
Residual impacts:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes.
Cumulative impact post mitigation:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra trips generated as a result of the expansion.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Traffic Impacts
Nature of impact:	The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 2 (2 – 5 years)
Consequence of impact or risk:	The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra trips generated as a result of the expansion.
Cumulative impact prior to mitigation:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra trips generated as a result of the expansion.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Avoid peak traffic hours (07h00 – 08h00 and 17h00 – 18h00) as far as possible
Residual impacts:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra trips generated as a result of the expansion.
Cumulative impact post mitigation:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra trips generated as a result of the expansion.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low

Alternative 2 : Alternative Layout	Socio-Economic Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Traffic Impacts
Nature of impact:	The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 2 (2 – 5 years)
Consequence of impact or risk:	The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High

Degree to which the impact can be reversed:	High
Indirect impacts:	The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.
Cumulative impact prior to mitigation:	The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Avoid peak traffic hours (07h00 – 08h00 and 17h00 – 18h00) as far as possible
Residual impacts:	The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.
Cumulative impact post mitigation:	The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
OPERATIONAL PHASE	
Potential impact and risk:	Traffic Impacts
Nature of impact:	Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 5 (Will not cease)
Consequence of impact or risk:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes.
Cumulative impact prior to mitigation:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	None
Residual impacts:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes.
Cumulative impact post mitigation:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra trips generated as a result of the expansion.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Traffic Impacts
Nature of impact:	The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.
Extent and duration of impact:	Extent 2 (On site or within 100 m of the site) & Duration 2 (2 – 5 years)
Consequence of impact or risk:	The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra

	trips generated as a result of the expansion.
Cumulative impact prior to mitigation:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra trips generated as a result of the expansion.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Avoid peak traffic hours (07h00 – 08h00 and 17h00 – 18h00) as far as possible
Residual impacts:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra trips generated as a result of the expansion.
Cumulative impact post mitigation:	The increase in traffic volumes at certain times of day will add to the existing traffic volumes. The current road infrastructure and maintenance schedule will be sufficient to accommodate the extra trips generated as a result of the expansion.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low

Alternative 1 : Preferred Layout	Cultural-Historical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	The potential impact of the proposed development on archaeological, paleontological and heritage remains.
Nature of impact:	The potential impact of the proposed development on archaeological, paleontological and heritage remains
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (Will not cease)
Consequence of impact or risk:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Cumulative impact prior to mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.
Residual impacts:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Cumulative impact post mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
OPERATIONAL PHASE	
Potential impact and risk:	The potential impact of the proposed development on archaeological, paleontological and heritage remains.
Nature of impact:	The potential impact of the proposed development on archaeological, paleontological and heritage remains
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (Will not cease)
Consequence of impact or risk:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.

Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Cumulative impact prior to mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.
Residual impacts:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Cumulative impact post mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	The potential impact of the proposed development on archaeological, paleontological and heritage remains.
Nature of impact:	The potential impact of the proposed development on archaeological, paleontological and heritage remains
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (Will not cease)
Consequence of impact or risk:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Cumulative impact prior to mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.
Residual impacts:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Cumulative impact post mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Alternative 2 : Alternative Layout	Cultural-Historical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	The potential impact of the proposed development on archaeological, paleontological and heritage remains.

Nature of impact:	The potential impact of the proposed development on archaeological, paleontological and heritage remains
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (Will not cease)
Consequence of impact or risk:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Cumulative impact prior to mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.
Residual impacts:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Cumulative impact post mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
OPERATIONAL PHASE	
Potential impact and risk:	The potential impact of the proposed development on archaeological, paleontological and heritage remains.
Nature of impact:	The potential impact of the proposed development on archaeological, paleontological and heritage remains
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (Will not cease)
Consequence of impact or risk:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Cumulative impact prior to mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.
Residual impacts:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Cumulative impact post mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low

DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	The potential impact of the proposed development on archaeological, paleontological and heritage remains.
Nature of impact:	The potential impact of the proposed development on archaeological, paleontological and heritage remains
Extent and duration of impact:	Extent 1 (Footprint) & Duration 5 (Will not cease)
Consequence of impact or risk:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Probability of occurrence:	2 (some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.
Cumulative impact prior to mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 – Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.
Residual impacts:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Cumulative impact post mitigation:	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 – Low

Alternative 1 : Preferred Layout	Geographical and Physical Impacts
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Noise impacts
Nature of impact:	Construction activities will cause a noise impacts. This disturbance, unless carefully managed, could spread as a result. These noise impacts can cause a nuisance to neighbours
Extent and duration of impact:	Extent 1 (footprint) & Duration 5 (permanent)
Consequence of impact or risk:	Construction and excavation activities can result noise generation.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Nuisances as a result of high noise levels.
Cumulative impact prior to mitigation:	Construction activities will lead to increase noise impacts.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted. Machinery and vehicles should be regularly maintained to prevent excessive noise. All machinery and work activities must adhere to the requirements of the noise regulations.
Residual impacts:	The standard below will be used to measure noise levels and impacts. Table 2 of SANS 10103:2004 <i>The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication</i> where the daytime, equivalent continuous

	rating level is given as 70 dBA for Rural Districts.
Cumulative impact post mitigation:	It is not anticipated that the impact will be low if the mitigation measures are adhered to.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
OPERATIONAL PHASE	
Potential impact and risk:	Noise impacts
Nature of impact:	Operational activities will cause a noise impacts. This disturbance, unless carefully managed, could spread as a result. These noise impacts can cause a nuisance to neighbours
Extent and duration of impact:	Extent 1 (footprint) & Duration 5 (permanent)
Consequence of impact or risk:	Operational activities can result noise generation.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Nuisances as a result of high noise levels.
Cumulative impact prior to mitigation:	Operational activities will lead to increase noise impacts.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted. Machinery and vehicles should be regularly maintained to prevent excessive noise. All machinery and work activities must adhere to the requirements of the noise regulations.
Residual impacts:	The standard below will be used to measure noise levels and impacts. Table 2 of SANS 10103:2004 <i>The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication</i> where the daytime, equivalent continuous rating level is given as 70 dBA for Rural Districts.
Cumulative impact post mitigation:	It is not anticipated that the impact will be low if the mitigation measures are adhered to.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	Noise impacts
Nature of impact:	Construction activities will cause a noise impacts. This disturbance, unless carefully managed, could spread as a result. These noise impacts can cause a nuisance to neighbours
Extent and duration of impact:	Extent 1 (footprint) & Duration 5 (permanent)
Consequence of impact or risk:	Construction and excavation activities can result noise generation.
Probability of occurrence:	2 (Improbable: some possibility, but low likelihood)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Nuisances as a result of high noise levels.
Cumulative impact prior to mitigation:	Construction activities will lead to increase noise impacts.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	16 - Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted. Machinery and vehicles should be regularly maintained to prevent excessive noise. All machinery and work activities must adhere to the requirements of the noise regulations.
Residual impacts:	The standard below will be used to measure noise levels and impacts. Table 2 of SANS 10103:2004 <i>The measurement and rating of environmental noise with respect to land use, health, annoyance and</i>

	to speech communication where the daytime, equivalent continuous rating level is given as 70 dBA for Rural Districts.
Cumulative impact post mitigation:	It is not anticipated that the impact will be low if the mitigation measures are adhered to.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	8 - Low

(c) Provide a summary of the site selection matrix.

No site selection matrix was undertaken. No site alternatives have been proposed for this project as the purpose of this application is for the expansion of the existing cattle housing infrastructure.

(d) Outcome of the site selection matrix.

Not Applicable.

3. SPECIALIST INPUTS/STUDIES, FINDINGS AND RECOMMENDATIONS

Note: Specialist inputs/studies must be attached to this report as **Appendix G** and must comply with the content requirements set out in Appendix 6 of the EIA Regulations, 2014 (as amended). Also take into account the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014, any subsequent Circulars, and guidelines available on the Department's website (<http://www.westerncape.gov.za/eadp>).

Provide a summary of the findings and impact management measures identified in any specialist report and an indication of how these findings and recommendations have been included in the BAR.

None at this stage. All the impacts was assessed and mitigation and management measures included directly into the BAR report.

4. ENVIRONMENTAL IMPACT STATEMENT

Provide an environmental impact statement of the following:

(i) A summary of the key findings of the EIA.

The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance.

Construction phase:

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures);
- Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise - (Low impact before mitigation and low impact with mitigation measures)

Operational phase:

- Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures);
- Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);

- Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise - (Low impact before mitigation and low impact with mitigation measures)

Decommissioning phase:

Similar to impacts associated with construction phase.

(ii) Has a map of appropriate scale been provided, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers?	YES	NO
(iii) A summary of the positive and negative impacts that the proposed development and alternatives will cause in the environment and community.		

The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance.

Construction phase:

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures);
- Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise - (Low impact before mitigation and low impact with mitigation measures)

Operational phase:

- Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures);
- Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);

- Noise - (Low impact before mitigation and low impact with mitigation measures)

Decommissioning phase:

Similar to impacts associated with construction phase.

5. IMPACT MANAGEMENT, MITIGATION AND MONITORING MEASURES

- (a) Based on the assessment, describe the impact management, mitigation and monitoring measures as well as the impact management objectives and impact management outcomes included in the EMP. The EMP must be attached to this report as Appendix H.

The key mitigation measure is impact avoidance. Where adverse impacts cannot reasonably be prevented, construction and operations should be managed through the effective implementation of the EMP with a strong emphasis on post-construction rehabilitation and operational management and monitoring. Please refer to the EMP for more details on the mitigation and management measures.

- (b) Describe any provisions for the adherence to requirements that are prescribed in a Specific Environmental Management Act relevant to the listed activity or specified activity in question.

The Water Use Authorization must be authorized and the conditions of this authorization must be adhered to.

- (c) Describe the ability of the applicant to implement the management, mitigation and monitoring measures.

The applicant is the operator of the existing cattle housing and does have the financial means to implement the conditions of the EA and Water Use Authorization together with the management, mitigation and management measures included in the EMP.

- (d) Provide the details of any financial provisions for the management of negative environmental impacts, rehabilitation and closure of the proposed development.

None at this stage.

- (e) Describe any assumptions, uncertainties, and gaps in knowledge which relate to the impact management, mitigation and monitoring measures proposed.

EAP is only knowledgeable with regards to the environmental impacts, biodiversity and ecosystems aspects.

In undertaking the investigation and compiling this report, the following has been assumed:

- The information provided by the client is accurate and unbiased;
- The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the development; and
- Should the proposed project be authorised, the applicant will incorporate the recommendations and mitigation measures outlined in this BAR, the EMP and the EA into the detailed design and construction contract specifications and operational management system for the proposed project.

SECTION H: RECOMMENDATIONS OF THE EAP AND SPECIALISTS

- (a) In my view as the appointed EAP, the information contained in this BAR and the documentation attached hereto is sufficient to make a decision in respect of the listed activity(ies) applied for.

YES	NO
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- (b) If the documentation attached hereto is sufficient to make a decision, please indicate below whether, in your opinion, the listed activity(ies) should or should not be authorised:

Listed activity(ies) should be authorised:

YES	NO
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Provide reasons for your opinion

Ten potential environmental impacts were assessed for this report, ranging from habitat loss to operational effects. Under the construction phase, 2 was rated having high impacts before mitigation that is reduced to low after mitigation and the others all were rated having a low impact.

In the Operational Phase, three of the ten impacts identified was rated having a high impact rating before mitigation that is reduced to low with the implementation of mitigation measures. Mitigation measures, both best practise and essential, include informing all staff about the suitable disposal of waste; reduce, reuse, recycle; the intentional disposal of any substance into the environment must be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately; an environmental management and control plan (including procedures for remediation) should be implemented; all fuel and oil must be stored with adequate spill protection, and no leaking vehicles are to be permitted on site; to use bunding where possible, minimise top-soil run-off as much as possible and collect and dispose of polluted soil at appropriate bio-remediation sites; to use dust suppression techniques all dust generating surfaces and to enforce strict construction and private vehicle speed limits; and the immediate rehabilitation of any areas disturbed as a result of construction activities. Based on the impacts assessed in this report, it is recommended that the proposed development proceed with the implementation of strict environmentally responsible practices as outlined in the recommended mitigation measures.

(c) Provide a description of any aspects that were conditional to the findings of the assessment by the EAP and Specialists which are to be included as conditions of authorisation.

The monitoring and management requirements that will be captured in the Water Use Authorization issued by the Department of Water and Sanitation to protect the surrounding area as well as the consent use conditions issued by Swartland Municipality in terms of the land use change application must be adhered to.

(d) If you are of the opinion that the activity should be authorised, please provide any conditions, including mitigation measures that should in your view be considered for inclusion in an environmental authorisation.

Recommended that the EA prescribe that:

- Should any heritage artefacts be exposed during construction that all activities be stopped, and Heritage Western Cape contacted pre any further action being permitted.
- The project implementation process should be subject to standard Environmental Management Programme prescripts and conditions under supervision of a competent and diligent ECO, during its construction and decommissioning phases. That the facility be audited on yearly bases by an external environmental auditor during operations.

(e) Please indicate the recommended periods in terms of the following periods that should be specified in the environmental authorisation:

i.	the period within which commencement must occur;	3 Years
ii.	the period for which the environmental authorisation is granted and the date on which the development proposal will have been concluded, where the environmental authorisation does not include operational aspects;	10 Years
iii.	the period for which the portion of the environmental authorisation that deals with non-operational aspects is granted; and	10 Years
iv.	the period for which the portion of the environmental authorisation that deals with operational aspects is granted.	NA

SECTION I: APPENDICES

The following appendices must be attached to this report:

APPENDIX		Confirm that Appendix is attached
Appendix A:	Locality map	Yes
Appendix B:	Site development plan(s)	Yes
	A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;	Yes
Appendix C:	Photographs	Yes
Appendix D:	Biodiversity overlay map	Yes
Appendix E:	Permit(s) / license(s) from any other Organ of State, including service letters from the municipality.	Yes
	Appendix E1: Copy of comment from HWC.	Yes
Appendix F:	Public participation information: including a copy of the register of I&APs, the comments and responses report, proof of notices, advertisements and any other public participation information as is required in Section C above.	Yes
Appendix G:	Specialist Report(s)	Yes
Appendix H :	EMPr	Yes
Appendix I:	Additional information related to listed waste management activities (if applicable)	Yes
Appendix J:	If applicable, description of the impact assessment process followed to reach the proposed preferred alternative within the site.	No
Appendix K:	Any Other (if applicable).	No

SECTION J: DECLARATIONS

THE APPLICANT

Note: Duplicate this section where there is more than one applicant.

I, in my personal capacity or duly authorised thereto, hereby declare/affirm all the information submitted as part of this Report is true and correct, and that I –

- am aware of and understand the content of this report;
- am fully aware of my responsibilities in terms of the NEMA, the EIA Regulations in terms of the NEMA (Government Notice No. R. 982, refers) (as amended) and any relevant specific environmental management Act and that failure to fulfil these requirements may constitute an offence in terms of relevant environmental legislation;
- have provided the EAP and Specialist, Review EAP (if applicable), and Review Specialist (if applicable), and the Competent Authority with access to all information at my disposal that is relevant to the application;
- will be responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority;
- will be responsible for the costs incurred in complying with the conditions that may be attached to any decision(s) issued by the Competent Authority;

Note: If acting in a representative capacity, a certified copy of the resolution or power of attorney must be attached.

Signature of the Applicant:

Name of Organisation:

Date:

THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, as the appointed EAP hereby declare/affirm:

- the correctness of the information provided as part of this Report;
- that all the comments and inputs from stakeholders and I&APs have been included in this Report;
- that all the inputs and recommendations from the specialist reports, if specialist reports were produced, have been included in this Report;
- any information provided by me to I&APs and any responses by me to the comments or inputs made by I&APs;
- that I have maintained my independence throughout this EIA process, or if not independent, that the review EAP has reviewed my work (Note: a declaration by the review EAP must be submitted);
- that I have throughout this EIA process met all of the general requirements of EAPs as set out in Regulation 13;
- I have throughout this EIA process disclosed to the applicant, the specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application;
- have ensured that information containing all relevant facts in respect of the application was distributed or was made available to I&APs and that participation by I&APs was facilitated in such a manner that all I&APs were provided with a reasonable opportunity to participate and to provide comments;
- have ensured that the comments of all I&APs were considered, recorded and submitted to the Department in respect of the application;
- have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, if specialist inputs and recommendations were produced;
- have kept a register of all I&APs that participated during the PPP; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the EAP: _____

Name of Company: _____

Date: _____

THE REVIEW ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, as the appointed Review EAP hereby declare/affirm:

- that I have reviewed all the work produced by the EAP;
- the correctness of the information provided as part of this Report;
- that I have, throughout this EIA process met all of the general requirements of EAPs as set out in Regulation 13;
- I have, throughout this EIA process disclosed to the applicant, the EAP, the specialist (if any), the review specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the
Review EAP:

Name of Company:

Date:

THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I :

- in terms of the general requirement to be independent:
 - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
 - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Specialist:

Name of Company:

Date:

THE REVIEW SPECIALIST

I, as the appointed Review Specialist hereby declare/affirm:

- that I have reviewed all the work produced by the Specialist(s);
- the correctness of the specialist information provided as part of this Report;
- that I have, throughout this EIA process met all of the general requirements of specialists as set out in Regulation 13;
- I have, throughout this EIA process disclosed to the applicant, the EAP, the review EAP (if applicable), the Specialist(s), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of Review Specialist: _____

Name of Company: _____

Date: _____