



BASIC ASSESSMENT REPORT

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS.

NOVEMBER 2019

(For official use only)	
Pre-application Reference Number (if applicable):	
EIA Application Reference Number:	
NEAS Reference Number:	
Exemption Reference Number (if applicable):	
Date BAR received by Department:	
Date BAR received by Directorate:	
Date BAR received by Case Officer:	

GENERAL PROJECT DESCRIPTION

(This must include an overview of the project including the Farm name/Portion/Erf number)

Sharples Environmental Services cc (SES) has been appointed by Zutari, on behalf of Hessequa Municipality, to undertake the Environmental Impact Assessment for the Proposed Expansion of the Melkhoutfontein Cemetery on Erf 566 and Portion 141/480, Hessequa Local Municipality.

The proposed site is situated eastbound in the town of Melkhoutfontein, that lies in the Hessequa Municipal area. The graveyard site can be accessed via an existing tarred road, Rooipitjie Road turn-off from the Melkhoutfontein access road, turning off the R305 road, approximately 5 kilometres from Stilbaai. Figure 1, shows the location of the study area in relation to Stilbaai, the R305 and the Goukou River.

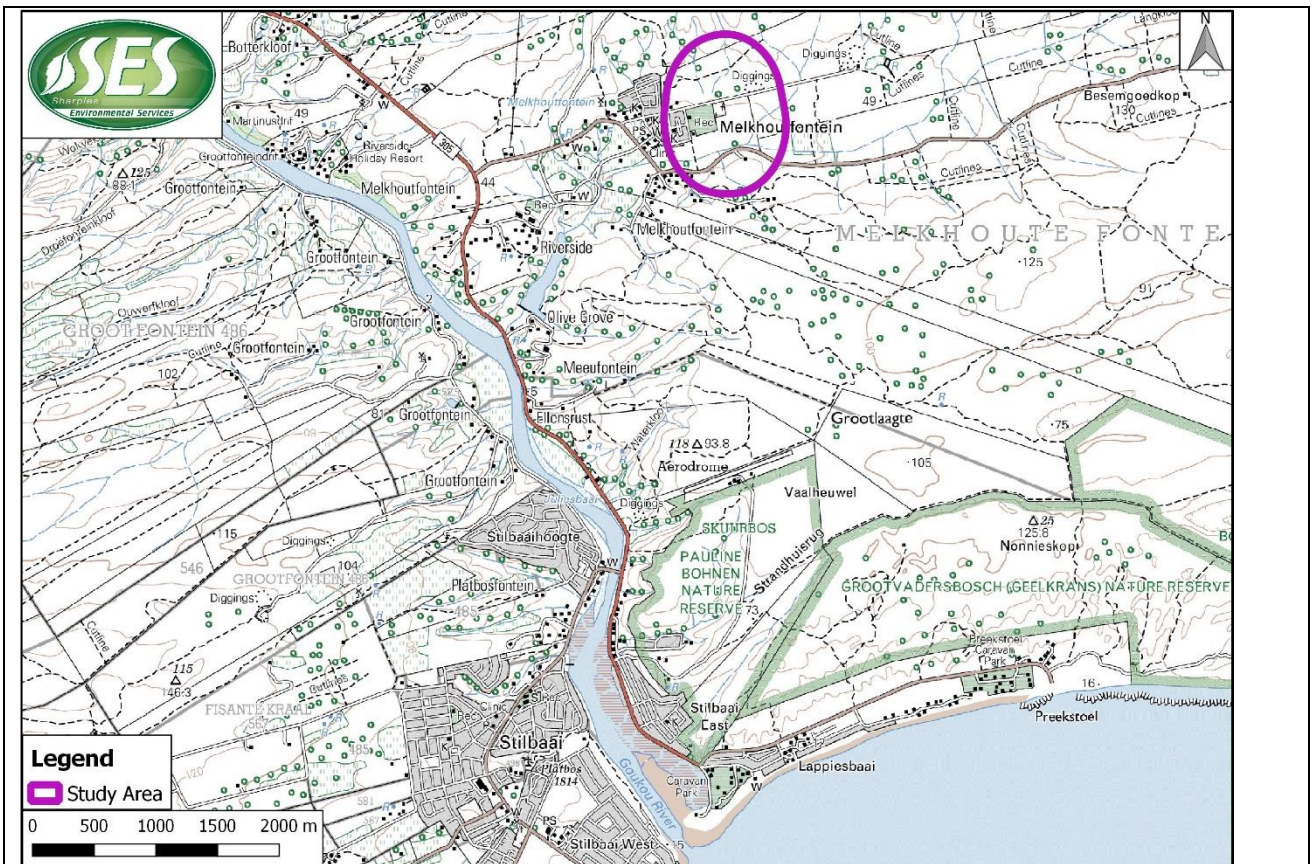


Figure 1: Locality Map

The existing walled cemetery is overlapping part of Erf 566 and part of Erf 141/480. It has been determined by the appointed engineers, that the existing cemetery has approximately 45 vacant burial plots available, which should allow for an estimated 18 months of cemetery life, at more or less 25 funerals per year.

The intention of the Hessequa Municipality is to extend the existing cemetery to the east and south on a vacant part of Portion 141/480 (approximate area 5,843.50m²) and to the south on a part of Erf 566 (approximate area 2,495.50 m²) – a total expansion of 8,339.00m². According to preliminary engineering investigations, the current expansion proposal will be adequate for the next 5 years.

Proposed Scope of Works:

- Demolish wall boundary (eastern and southern side of site) and erect new boundary wall around extension.
- Clear 8 339m² proposed extension on Erf 566 and Erf141/480 (combined).
- Extend existing access road, with gravel/asphalt finish.
- Implement stormwater management design specific to site.
- Rehabilitation with indigenous vegetation and rescued bulbs/cuttings from degraded fynbos.

Engineering Details:

A preliminary engineering report was undertaken on September 2018, by Element Consulting Engineers. Zutari is the current consulting engineers and have approved the original preliminary report.

Water Reticulation

The Melkhoutfontein Cemetery is being serviced by the existing municipal water mains supply, via a bulk water main (50mm diameter, FC), with internal reticulation (25mm diameter, uPVC), and taps situated within the site.

The proposal will include the extension of the existing water pipeline, and the placement of new taps, within the new extended area.

- Proposed Length: approximately 65m
- $\phi = 25 - 50\text{mm}$ connection
- Material: uPVC pipelines.
- Class 9 or 12, depending on pressure.
- No fire hydrants are proposed.

The possible peak time demand for the site is approximately 1kl/day at peak times only. The volume of municipal water can easily be decreased or supplemented with rainwater harvesting and tanks for storage at the proposed main gate building/toilets. Element Consulting Engineers have advised that rainwater be used for gardening purposes.

Sewer Reticulation

The existing cemetery does not have an existing ablution facility, however Element Consulting Engineers have advised that there is existing water reticulation located close to the cemetery, therefore an ablution facility can be accommodated at the main gate. As an alternative the Element Consulting Engineers have advised that waterless "Enviro Loo" type of toilets be utilized at the main entrance, which would require no water/sewer reticulation, and while installation is slightly expensive, it is a better alternative in terms of saving on water consumption and minimum maintenance.

Depending on type of ablution facilities agreed on by the Municipality, details are as follows:

1. "Enviro Loo"
 - It is recommended that at least 1, preferably 2 "Enviro Loo" toilets should be provided at the main gate, or
2. Ablution Building
 - Proposed 110mm diameters (minor lines);
 - Proposed 160mm diameters (main lines);
 - uPVC
 - Class 34
 - Proposed pre-casted ring manholes with concrete floor and pre-manufactured concrete lid where indicated.

Roads

The existing access road will be extended to incorporate the new extension of the site. The proposed details are as follows:

- Total Length: approximately $\pm 75\text{m}$
- Access road width: approximately 5m
- Internal road width: 4m
- Material (access road): Gravel/asphalt
- Minimum radii at entry bell mouth (Access road): 8m
- Minimum radii at entry bell mouth (Internal access roads): 5m
- Road design life of 20 years.
- Subgrade material CBR of 15-20.
- Subbase material CBR of minimum 45 (locally sourced).
- 50mm gravel surfacing, or alternatively 30mm asphalt surfacing.
- Minimum road grade of 0.45% and crossfall of 2%.
- Design speed of 20km/h on all roads including main access road.

Stormwater

This has been determined to be critical, due to the flat gradient of the site, that has the potential to result in ponding. It is proposed that an informal stormwater reticulation system will as such be

provided by a combination of surfaced roadways, v-channels and cut-off drains, limited inlet structures and concrete stormwater pipes where needed.

The formal internal storm water reticulation system will naturally drain towards, and discharge into the existing open veld or into the existing cemetery stormwater system, if any.

Solid Waste

It has been recommended that solid waste bins be established at the main gate, to be emptied by the municipality.

Electricity

It has been established that the electrical services end at the cemetery boundary. However, Element Consulting Engineers have reported that following minister officials have advised that spare capacity for small consumption areas exists. In the case of Melkhoutfontein Cemetery, electrical supply would only be used for the main gate, a light pole at the main gate and the toilets. It has been envisaged that solar panels with LED lights, will be sufficient to meet the predicted consumption of the cemetery.

EIA TRIGGERED ACTIVITIES

According to the National Environmental Management Act, 1998 (Act 107 of 1998), Environmental Impact Assessment Regulations, 2014 (as amended 07th April 2017), Listing Notice 1 of 2014, published under Government Notice No. 983, the following activities are applicable:

Table 1: Triggered Activities

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1	Describe the portion of the proposed development to which the applicable listed activity relates.
27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is	The proposed sites A and B are being addressed. Areas of sites are: Site A: 5843.79m ² Site B: 2495.50m ² Total area: 8339.29m ² = 0.834ha, therefore less than 1 hectare, indicating that this trigger is not applicable.
44	The expansion of cemeteries by 2 500 square metres or more.	The existing Melkhoutfontein Cemetery will be expanded by approximately 8,339.00m ² .
Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3	Describe the portion of the proposed development to which the applicable listed activity relates.
4	The development of a road wider than 4 metres with a reserve less than 13,5 metres. Western Cape i. Areas zoned for use as public open space or equivalent zoning; ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation; (bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or	The proposed development entails the extension of the existing gravel access road, wider than 4 meters, outside of an urban area (outer edge of designated urban edge, as per zoning, Appendix G), which contains some indigenous vegetation, as noted in the Botanical Assessment.

	<p>iii. Inside urban areas: (aa) Areas zoned for conservation use; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.</p>	
12	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>i. Western Cape ii. Within critical biodiversity areas identified in bioregional plans; iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.</p>	<p>The proposed development will entail the clearance of degraded fynbos species, approximately 0.23ha. The rest of the proposed area (0.6ha), is considered transformed and disturbed, with some central indigenous shrubs however the entire development is within a CBA area (0.834ha).</p>

Based on the latest Department of Environmental Affairs screening tool report, dated 22nd July 2020, the following sensitivities were detected on site:

Table 2: DEA Screening Tool Results

THEME	VERY HIGH	HIGH	MEDIUM	LOW
Agriculture Theme.			X	
Animal Species Theme.			X	
Aquatic Biodiversity Theme.	X			
Civil Aviation Theme.		X		
Palaeontology Theme.			X	
Plant Species Theme.			X	
Defence Theme.				X
Terrestrial Biodiversity Theme.	X			

A Biodiversity Survey, Terrestrial Biodiversity Impact Assessment, Freshwater Impact Assessment and Geohydrological Assessment was undertaken to address the sensitivities on site, and in accordance with the Guideline for Environmental Risk Assessment, Monitoring and Management of Cemeteries.

An Agricultural Compliance Statement will not be completed at present. A representative of the Hessequa Local Municipality has confirmed that the farm Melkhoute Fontein 141/480 is zoned as

"Agriculture Zone I" and Erf: RE/566 is zoned as "Undetermined Zone". However, according to the Spatial Proposal from Hessequa Local Municipality (April 2017) Erf 566 has been zoned as "oop ruimte" or open space. Due to the identification of degraded vegetation, and extensive disturbance, identified during the Biodiversity Survey, dominating the extent within which the expansion will take place, at present, an Agricultural Compliance Statement will not be undertaken. However, the Department of Agriculture will be included as an automatically registered I&AP for the pre-application public participation, and should there be a need for further investigation, as per their comment, an Agricultural Compliance Statement will be undertaken by a registered agricultural specialist.

The following was concluded from the studies that have been undertaken to date:

Freshwater Impact Assessment:

Sharples Environmental Services cc were appointed by Hessequa Municipality to conduct an independent specialist aquatic habitat impact assessment for the proposed expansion of the Melkhoutfontein Cemetery, to provide specialist input into the environmental authorisation process and fulfil water use authorisation requirements. All watercourses within the 500m radius study area of the proposed site were identified, delineated, investigated in field, and screened in accordance to their risk of being impacted upon. It was found that the wetland downslope of the site could potentially be impacted upon.

The direct and indirect impacts associated with the project were identified and grouped into four encapsulating impact categories. The impacts identified are:

- The disturbance of aquatic vegetation
- Sedimentation and erosion
- Water pollution
- Flow modification

The impacts associated with the project are assessed as being of Low significance. However, this may potentially be decreased to Very Low impact significance with the implementation of effective mitigation measures. The impacts are considered to be easily mitigated provided the mitigation measures and monitoring plan within this report are implemented and adhered to during the construction and operational phase of the project. Mitigation measures must focus on avoiding sensitive areas. The proposal is deemed acceptable from an aquatic habitat perspective. The applicant should apply for a General Authorisation from the Breede Gouritz Catchment Management to fulfil the water use requirements of the National Water Act (Act 36 of 1998).

Biodiversity Survey:

The site accommodates fynbos transitional between Albertinia Sand Fynbos and Canca Limestone Fynbos. About 1.22 ha of degraded fynbos will be directly affected by the project. The rest of the site has been transformed and has little botanical value. The degraded fynbos, however, still has value in contributing to the local biodiversity and as a potential source for plant material. Two Species of Conservation Concern were recorded here, namely *Aspalathus sanguinea* (two patches) and *Leucospermum praecox* (a single shrub just outside the footprint area).

Due to the affected vegetation still being reasonably well represented in the region, the impact on vegetation type per se is of a low to moderate concern. It is therefore recommended (from a biodiversity perspective) that the project be allowed to proceed, subject to a few mitigation measures. During construction, mitigation should focus on the protection of veld adjacent to the works areas, and maybe the rehabilitation of the disturbed areas afterwards. The following mitigation measures should be considered:

- In order to minimise disturbance of the adjacent vegetation, the construction area should be demarcated/fenced off prior to the start of construction activities. No disturbance or spoiling may occur outside this area.
- Consider search and rescue of bulbs and cuttings of succulents for use in the rehabilitation of disturbed areas outside the cemetery footprint.

- Implement alien control on and around the site as a long-term management requirement.

Geohydrological and Geotechnical Assessment

The study site has been classified as having a groundwater vulnerability classification of “high”. The contamination risk is considered to be “Medium-High”. Given the relatively shallow-water table and presence of down-gradient drainage channel and spring, strict mitigation measures and groundwater monitoring plan should be implemented.

The consequence associated with contamination is considered to be very high as there are numerous municipal supply sources within 250 m of the cemetery expansion area. The aquifer developed for Melkhoutfontein is of strategic importance and requires strict protection.

The cemetery expansion should only be allowed in the case that no abstraction takes place within 250 m of the cemetery. This affects the developed municipal sources, which has significant implications. Irrespective of whether the cemetery expansion occurs, the groundwater monitoring recommendations should be implemented for the current cemetery.

Should the cemetery expansion occur, the proposed expansion will need to conform to the standard industry mitigations measures for developing a cemetery in order to minimize contamination on site. GEOSS recommends the monitoring of the groundwater system on site.

ADDITIONAL APPLICATIONS

An application will be undertaken by the Hessequa Local Municipality, to rezone and subdivide the relevant erven.

IMPORTANT INFORMATION TO BE READ PRIOR TO COMPLETING THIS BASIC ASSESSMENT REPORT

1. **The purpose** of this template is to provide a format for the Basic Assessment report as set out in Appendix 1 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended) in order to ultimately obtain Environmental Authorisation.
2. The Environmental Impact Assessment ("EIA") Regulations is defined in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") hereinafter referred to as the "NEMA EIA Regulations".
3. The required information must be typed within the spaces provided in this Basic Assessment Report ("BAR"). The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided.
4. All applicable sections of this BAR must be completed.
5. Unless protected by law, all information contained in, and attached to this BAR, will become public information on receipt by the Competent Authority. If information is not submitted with this BAR due to such information being protected by law, the applicant and/or Environmental Assessment Practitioner ("EAP") must declare such non-disclosure and provide the reasons for believing that the information is protected.
6. This BAR is current as of **November 2019**. It is the responsibility of the Applicant/ EAP to ascertain whether subsequent versions of the BAR have been released by the Department. Visit this Department's website at <http://www.westerncape.gov.za/eadp> to check for the latest version of this BAR.
7. This BAR is the standard format, which must be used in all instances when preparing a BAR for Basic Assessment applications for an environmental authorisation in terms of the NEMA EIA Regulations when the Western Cape Government Department of Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority.
8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this BAR 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 BAR must be duly dated and originally signed by the Applicant, EAP (if applicable) and Specialist(s) and must be submitted to the Department at the details provided below.
10. The Department's latest Circulars pertaining to the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must be taken into account when completing this BAR.
11. Should a water use licence application be required in terms of the National Water Act, 1998 (Act No. 36 of 1998) ("NWA"), the "One Environmental System" is applicable, specifically in terms of the synchronisation of the consideration of the application in terms of the NEMA and the NWA. Refer to this Department's Circular EADP 0028/2014: One Environmental Management System.
12. Where Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA") is triggered, a copy of Heritage Western Cape's final comment must be attached to the BAR.
13. The Screening Tool developed by the National Department of Environmental Affairs must be used to generate a screening report. Please use the Screening Tool link <https://screening.environment.gov.za/screeningtool> to generate the Screening Tool Report. The screening tool report must be attached to this BAR.

14. Where this Department is also identified as the Licencing Authority to decide on applications under the National Environmental Management: Air Quality Act (Act No. 29 of 2004) ('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: 021-483-2728/2705 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 2888 and Fax: 021 483 4368) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

<p align="center">CAPE TOWN OFFICE: REGION 1 and REGION 2</p> <p>(Region 1: City of Cape Town, West Coast District) (Region 2: Cape Winelands District & Overberg District)</p>	<p align="center">GEORGE OFFICE: REGION 3</p> <p align="center">(Central Karoo District & Garden Route District)</p>
<p>BAR must be sent to the following details:</p> <p>Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1 or 2) Private Bag X 9086 Cape Town, 8000</p> <p>Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town</p> <p>Queries should be directed to the Directorate: Development Management (Region 1 and 2) at: Tel: (021) 483-5829 Fax (021) 483-4372</p>	<p>BAR must be sent to the following details:</p> <p>Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530</p> <p>Registry Office 4th Floor, York Park Building 93 York Street George</p> <p>Queries should be directed to the Directorate: Development Management (Region 3) at: Tel: (044) 805-8600 Fax (044) 805 8650</p>

MAPS

<p>Provide a location map (see below) as Appendix A1 to this BAR that shows the location of the proposed development and associated structures and infrastructure on the property.</p>	
<p>Locality Map:</p>	<p>The scale of the locality map must be at least 1:50 000. For linear activities or 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; and • a linear scale. <p>For 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>Where comment from the Western Cape Government: Transport and Public Works is required, a map illustrating the properties (owned by the Western Cape Government: Transport and Public Works) that will be affected by the proposed development must be included in the Report.</p>

Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.	
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 clearly 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. • On land where the property has not been defined, the co-ordinates of the area in which the proposed activity or development is proposed must be provided. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be clearly indicated on the site plan. • The position of each component of the proposed activity or development 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 proposed development must be clearly 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"> ○ Watercourses / Rivers / Wetlands ○ Flood lines (i.e., 1:100 year, 1:50 year and 1:10 year where applicable); ○ Coastal Risk Zones as delineated for the Western Cape by the Department of Environmental Affairs and Development Planning ("DEA&DP"); ○ Ridges; ○ Cultural and historical features/landscapes; ○ 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>
Site photographs	<p>Colour photographs of the site that shows the overall condition 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 to this BAR as Appendix C. 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.</p>
Biodiversity Overlay Map:	<p>A map of the relevant biodiversity information and conditions must be provided as an overlay map on the property/site plan. The Map must be attached to this BAR as Appendix D.</p>
Linear activities or development and multiple properties	<p>GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system.</p> <p>Where numerous properties/sites are involved (linear activities) you must attach a list of the Farm Name(s)/Portion(s)/Erf number(s) to this BAR as an Appendix.</p> <p>For linear activities that are longer than 500m, please provide a map with the co-ordinates taken every 100m along the route to this BAR as Appendix A3.</p>

ACRONYMS

DAFF:	Department of Forestry and Fisheries
DEA:	Department of Environmental Affairs
DEA& DP:	Department of Environmental Affairs and Development Planning
DHS:	Department of Human Settlement
DoA:	Department of Agriculture
DoH:	Department of Health
DWS:	Department of Water and Sanitation
EMPr:	Environmental Management Programme
HWC:	Heritage Western Cape
NFEPA:	National Freshwater Ecosystem Protection Assessment
NSBA:	National Spatial Biodiversity Assessment
TOR:	Terms of Reference

WCBSP:	Western Cape Biodiversity Spatial Plan
WCG:	Western Cape Government

ATTACHMENTS

Note: The Appendices must be attached to the BAR as per the list below. Please use a ✓ (tick) or a x (cross) to indicate whether the Appendix is attached to the BAR.

The following checklist of attachments must be completed.

APPENDIX			✓ (Tick) or x (cross)
Appendix A:	Maps		
	Appendix A1:	Locality Map	✓
	Appendix A2:	Coastal Risk Zones as delineated in terms of ICMA for the Western Cape by the Department of Environmental Affairs and Development Planning	X
	Appendix A3:	Map with the GPS co-ordinates for linear activities	X
Appendix B:	Appendix B1:	Site development plan(s)	✓
	Appendix B2	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;	X
Appendix C:	Photographs		✓
Appendix D:	Biodiversity overlay map		✓
Appendix E:	Permit(s) / license(s) / exemption notice, agreements, comments from State Department/Organs of state and service letters from the municipality.		
	Appendix E1:	Final comment/ROD from HWC	X
	Appendix E2:	Copy of comment from Cape Nature	X
	Appendix E3:	Final Comment from the DWS	X
	Appendix E4:	Comment from the DEA: Oceans and Coast	X
	Appendix E5:	Comment from the DAFF	X
	Appendix E6:	Comment from WCG: Transport and Public Works	X
	Appendix E7:	Comment from WCG: DoA	X

	Appendix E8:	Comment from WCG: DHS	X
	Appendix E9:	Comment from WCG: DoH	X
	Appendix E10:	Comment from DEA&DP: Pollution Management	X
	Appendix E11:	Comment from DEA&DP: Waste Management	X
	Appendix E12:	Comment from DEA&DP: Biodiversity	X
	Appendix E13:	Comment from DEA&DP: Air Quality	X
	Appendix E14:	Comment from DEA&DP: Coastal Management	X
	Appendix E15:	Comment from the local authority	X
	Appendix E16:	Confirmation of all services (water, electricity, sewage, solid waste management)	X
	Appendix E17:	Comment from the District Municipality	X
	Appendix E18:	Copy of an exemption notice	X
	Appendix E19	Pre-approval for the reclamation of land	X
	Appendix E20:	Proof of agreement/TOR of the specialist studies conducted.	X
	Appendix E21:	Proof of land use rights	X
	Appendix E22:	Proof of public participation agreement for linear activities	X
	Appendix E23:	Comment from HWC on Submission of NID	✓
	Appendix E24:	NID Submitted to HWC	✓
	Appendix E25:	Copy of General Authorization	✓
	Appendix E26:	Copy of Aquatic Risk Matrix	✓

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.	✓	
Appendix G:	Specialist Report(s)		
	Appendix G1	Biodiversity Survey	✓
	Appendix G2.1	Freshwater Habitat Impact Assessment	✓
	Appendix G2.2	Aquatic Risk Matrix_General Authorization	✓
	Appendix G3	Geohydrological and Geotechnical Assessment	✓
	Appendix G4	Terrestrial Biodiversity Sensitivity Study (Butterflies)	✓
Appendix H:	EMPr	✓	
Appendix I:	Screening tool report	✓	
Appendix J:	The impact and risk assessment for each alternative	X	
Appendix K:	Need and desirability for the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013)/DEA Integrated Environmental Management Guideline	X	
Appendix.....	Any other attachments must be included as subsequent appendices		
Appendix L	Engineering Report	✓	

SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE:		GEORGE OFFICE:
	REGION 1 (City of Cape Town, West Coast District)	REGION 2 (Cape Winelands District & Overberg District)	REGION 3 (Central Karoo District & Garden Route District)
Duplicate this section where there is more than one Proponent Name of Applicant/Proponent: Name of contact person for Applicant/Proponent (if other): Company/ Trading name/State Department/Organ of State: Company Registration Number: Postal address: Telephone: E-mail:	Hessequa Local Municipality		
	Ruschan Manho - Director: Technical Services		
	Hessequa Local Municipality		
	N/A		
	PO Box 29, Riversdale		
			Postal code: 6670
	+27 (0)28 713 7831		Cell: 071 005 8723
ruschan@hessequa.gov.za		Fax: +27 (0)86 4015 118	
Company of EAP: EAP name: Postal address: Telephone: E-mail: Qualifications: EAPASA registration no:	Sharples Environmental Services.cc		
	Ameesha Sanker		
	PO BOX 443, Milnerton		
	(021) 554 5195		(021) 554 5195
	ameesha@sesc.net		ameesha@sesc.net
	BSc (Hons) Environmental Management		
	Ameesha is not EAPASA registered, however her work will be reviewed by Betsy Ditcham, EAPASA Registration No: 1480		
Duplicate this section where there is more than one landowner Name of landowner: Name of contact person for landowner (if other): Postal address: Telephone: E-mail:	Hessequa Local Municipality		
	Ruschan Manho - Director: Technical Services		
	PO Box 29, Riversdale		
			Postal code: 6670
	+27 (0)28 713 7831		Cell: 071 005 8723
	ruschan@hessequa.gov.za		Fax: +27 (0)86 4015 118
Name of Person in control of the land: Name of contact person for person in control of the land: Postal address: Telephone: E-mail:	Hessequa Local Municipality		
	Ruschan Manho - Director: Technical Services		
	PO Box 29, Riversdale		
			Postal code: 6670
	+27 (0)28 713 7831		Cell: 071 005 8723
	ruschan@hessequa.gov.za		Fax: +27 (0)86 4015 118
Duplicate this section where there is more than one Municipal Jurisdiction Municipality in whose area of jurisdiction the proposed activity will fall: Contact person: Postal address: Telephone: E-mail:	Hessequa Local Municipality		
	Ruschan Manho - Director: Technical Services		
	PO Box 29, Riversdale		
			Postal code: 6670
	+27 (0)28 713 7831		Cell: 071 005 8723
	ruschan@hessequa.gov.za		Fax: +27 (0)86 4015 118

SECTION B: CONFIRMATION OF SPECIFIC PROJECT DETAILS AS INCLUDED IN THE APPLICATION FORM

1.	Is the proposed development (please tick):	New	Expansion	✓																		
2.	Is the proposed site(s) a brownfield of greenfield site? Please explain.																					
The proposed site is considered a Greenfield site as the proposed site is predominantly undeveloped but has significant disturbance.																						
3.	For Linear Activities or Developments																					
3.1.	Provide the Farm(s)/Farm Portion(s)/Erf number(s) for all routes:																					
<p>The proposed fence line will be extended further East and South into ERF 141/480, in which the existing cemetery is partially located, as well as further south into ERF 566.</p> <p>The existing gravel road will be extended further South, into ERF 566 and a small portion into ERF 141/480.</p>																						
3.2.	Development footprint of the proposed development for all alternatives.			m ²																		
<p>There are no alternatives for the fence line or the gravel road, as they are extensions of existing structures.</p> <p>Expansion of the fence line: approximately 364m Development footprint for proposed access road: approximately 322.5m² Development footprint for proposed internal road: approximately 265.04m²</p>																						
3.3.	Provide a description of the proposed development (e.g. for roads the length, width and width of the road reserve in the case of pipelines indicate the length and diameter) for all alternatives.																					
<p>The proposed extension of the existing access road and internal roads will entail the following details: Length: approximately ±75m Access road width: approximately 5m Internal road width: 4m Material (access road): Gravel/asphalt Minimum radii at entry bell mouth (Access road): 8m Minimum radii at entry bell mouth (Internal access roads): 5m</p> <p>The proposed extension of the existing fence line will entail the following details: Length: approximately 364m</p>																						
3.4.	Indicate how access to the proposed routes will be obtained for all alternatives.																					
Access to the proposed routes will be obtained via Rooipitjie Road, which forms the northern border of the site, and acts as the existing access point for the existing cemetery and access road.																						
3.5.	SG codes of the Farms/Farm Portions/Erf numbers for all alternatives	C	0	6	4	0	0	0	5	0	0	0	0	0	5	6	6	0	0	0	0	
	(ERF 566)	C	0	6	4	0	0	0	0	0	0	0	0	0	4	8	0	0	0	1	4	1
	SG codes of	C	0	6	4	0	0	0	0	0	0	0	0	0	4	8	0	0	0	1	4	1

SECTION C: LEGISLATION/POLICIES AND/OR GUIDELINES/PROTOCOLS

1. Exemption applied for in terms of the NEMA and the NEMA EIA Regulations

Has exemption been applied for in terms of the NEMA and the NEMA EIA Regulations. If yes, include a copy of the exemption notice in Appendix E18.	YES	NO
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2. Is the following legislation applicable to the proposed activity or development.

The National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) ("ICMA"). If yes, attach a copy of the comment from the relevant competent authority as Appendix E4 and the pre-approval for the reclamation of land as Appendix E19.	YES	NO
The National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA"). If yes, attach a copy of the comment from Heritage Western Cape as Appendix E1.	YES	NO
The National Water Act, 1998 (Act No. 36 of 1998) ("NWA"). If yes, attach a copy of the comment from the DWS as Appendix E3.	YES	NO
The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:AQA"). If yes, attach a copy of the comment from the relevant authorities as Appendix E13.	YES	NO
The National Environmental Management Waste Act (Act No. 59 of 2008) ("NEM:WA")	YES	NO
The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004 ("NEMBA").	YES	NO
The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) ("NEMPAA").	YES	NO
The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). If yes, attach comment from the relevant competent authority as Appendix E5.	YES	NO

3. Other legislation

List any other legislation that is applicable to the proposed activity or development.
<ul style="list-style-type: none"> Spatial Planning Land Use Management Act 16 of 2013

4. Policies

Explain which policies were considered and how the proposed activity or development complies and responds to these policies.
<p>The Provincial Spatial Development Framework (PSDF)</p> <p>The Provincial Spatial Development Framework (PSDF) released in 2014 for the Western Cape notes the policy framework that will be adopted by the province in order to take forward the province's spatial development agenda and fulfil the mandate ascribed to the PSDF by the Spatial Planning and Land Use Act 16 of 2013 (SPLUMA). The policy framework covers Provincial spatial planning's three interrelated themes, namely:</p> <ol style="list-style-type: none"> 1. Sustainable use of the Western Cape's spatial assets, 2. Opening-up opportunities in the Provincial space-economy, and 3. Developing integrated and sustainable settlements. <p>Each of these spatial themes contributes to the achievement of the Western Cape's strategic objectives.</p> <p>The third theme relates to the development of integrated and sustainable developments, in order to achieve this, the PSDF outlines objectives that are to be met. The two Objectives which align with the proposed expansion are;</p> <ol style="list-style-type: none"> 1. The protection and enhancement of the sense of place and settlement patterns. 2. Ensure effective and equitable social services and facilities. <p>Objective 1 outlines the need for the protection and enhancement of heritage and cultural resources which have indirect but strong links to its economic development mandate, especially with respect to skills retention in the knowledge economy. The expansion of the Melkhoutfontein cemetery protects the heritage and maintains the culture of the surrounding towns (Still Bay) by</p>

ensuring that a burial facility will be available within the area for those who call the area home. The opportunity to retain the remains of those who have passed within the town of which they and their descendants reside in allows for a unique link which protects the heritage and culture by ensuring that a legacy of sort remains within the area, thus maintaining the sense of place.

Objective 2 notes that in order to ensure that current and future developments take place in an integrated and sustainable manner, equitable and accessible distribution of social services and facilities across the Provincial landscape is required. The transformation of the Province's spatial environments is highly dependent on the improvement of adequate and appropriate facility provision. The current capacity of the Melkhoutfontein Cemetery indicates that the Cemetery will have no more space in approximately X months. This development is aligned with this objective as the provision of this service and facility will allow for the equitable use of the facility for the next decade for the population of the surrounding areas.

The Hessequa Spatial Development Framework (SDF)

The Hessequa Spatial Development Framework (SDF) notes various aspects that support the extension of the existing cemetery. The SDF places emphasis on the need to preserve the areas heritage by stating that the future vision for the town or settlement is based on a synthesis of various aspects, which include the heritage character, landscape character and environmental sensitivity. The proposed expansion of the Melkhoutfontein Cemetery will allow local residents to bury their loved ones with their ancestors and within the town from which they were born.

The SDF explains that the various strategies that have been drafted in order to drive development. Objective 2 of the outlined strategies is to promote the equal access to services and facilities. This objective is directly related to the expansion of the existing cemetery as the capacity of the existing cemetery has been depleted over time. In the near future, if the cemetery is not expanded, local residents will not be able to access this service or facility anymore as the cemetery would of reached its capacity, resulting in local individuals not having access to a local cemetery where their loved ones can be buried in their home town with their ancestors. By expanding the existing cemetery, the municipality will ensure that local individuals will have access to a cemetery in their area.

5. Guidelines

List the guidelines which have been considered relevant to the proposed activity or development and explain how they have influenced the development proposal.

Guidelines	Describe how the proposed development complies with and responds:
Guideline on Public Participation (2013)	Guideline considered in the undertaking of the public participation for the proposed development. All relevant provisions contained in the guideline were adhered to in the basic assessment process as appropriate, except where an exemption/ deviation has been granted by the Competent Authority.
Guideline on Alternatives (2013)	Guideline considered when identifying and evaluating possible alternatives for the proposed development. Alternatives that were considered in the impact assessment process are reported on in this Basic Assessment Report (see section E)
Guideline on Need and Desirability (2013)	Guideline considered during the assessment of the Need and Desirability of the proposed development project.
Guideline on Environmental Management Plans (2005)	Guideline considered in the compilation of the EMP attached to this Basic Assessment Report.

Guideline for the Review of Specialist Input into the EIA Process (2005)	Guideline considered during the review and integration of specialist input into this Basic Assessment Report
External Guideline: Generic Water Use Authorization Application Process (2007)	Guideline considered during the process of applying for the required water use authorization
Integrated Environmental Management Information Series 5: Impact Significance (2002)	Guideline considering during the identification and evaluation of potential impacts associated with the proposed development, and the reporting thereof in this Basic Assessment Report
Integrated Environmental Management Information Series 7: Cumulative Effects Assessment (2004)	Guideline considering during the assessment of the cumulative effect of the identified impacts.
Circular EADP 0028/2014: One Environmental Management System	Guideline regulating multiple environmental activities under NEMA, including mining related activities.
Guideline for determining the scope of specialist involvement in EIA processes, June 2005.	Guideline considered when determining the scope of specialist involvement for this assessment.
Guideline for involving biodiversity specialists in the EIA process, June 2005.	Guideline considered when determining the scope of specialist involvement for this assessment, pertaining to the botanical studies.
Environmental Risk Assessment, Monitoring and Management of Cemeteries	Guideline considered for assessment and recommended management of the cemetery.

6. Protocols

Explain how the proposed activity or development complies with the requirements of the protocols referred to in the NOI and/or application form

Taking into consideration the protocols, promulgated on the 09th of May 2020, the following is a summary of the development footprint environmental sensitivities identified by the DEA Screening Tool (see Appendix I). Only the highest environmental sensitivity is indicated.

Table 1: DEA Screening Tool Results

THEME	VERY HIGH	HIGH	MEDIUM	LOW
Agriculture Theme.			X	
Animal Species Theme.			X	
Aquatic Biodiversity Theme.	X			
Civil Aviation Theme.		X		
Palaeontology Theme.			X	
Plant Species Theme.			X	
Defence Theme.				X
Terrestrial Biodiversity Theme.	X			

Based on these results, the Screening tool recommended the following specialist assessments be conducted:

- **Agricultural Statement:**
An Agricultural statement will not be completed, as the site is vastly transformed and disturbed.
- **Landscape/Visual Impact Assessment:**
A Landscape/Visual Impact Assessment will not be undertaken, as the proposed development is an expansion of an existing cemetery, adjacent to the existing site, therefore it will compliment the existing land use, and not majorly influence the aesthetic of the site.
- **Terrestrial Biodiversity Impact Assessment:**
A study has been undertaken by Dave Edge and Associates regarding present butterfly species.
- **Palaeontology Impact Assessment:**
A Palaeontological Impact Assessment will NOT be completed as of yet, as advised by Jonathan Kaplan (ACRM), CRM Membership No. 84 in good standing, a Heritage practitioner (archaeologist), the proposed impact on heritage resources is predicted to be low. The NID will be submitted to Heritage Western Cape, and their comment will advise the way forward.
- **Aquatic Biodiversity Impact Assessment / Hydrology Assessment:**
The Freshwater Habitat Impact Assessment completed by Sharples Environmental Services (24th June 2020) includes an assessment of the hydrology.
- **Geotechnical Assessment:**
A study has been undertaken by GEOSS South Africa (Pty) Ltd.
- **Traffic Impact Assessment:**
The proposed development is an expansion of the existing cemetery and therefore there is no expected increase in traffic during the operational phase of the expansion.
- **Socio-Economic Assessment:**
A Socio-Economic Assessment will not be conducted as the proposed site is not close to or adjacent to settlements/residences, nor will the proposed expansion physically displace anyone.
- **Plant Species Assessment:**
The Botanical survey was completed by Mark Berry Environmental.
- **Animal Species Assessment:**
Was classified as a medium sensitivity. A study has been undertaken by Dave Edge and Associates regarding present butterfly species.

In response to these recommendations, the following studies were compiled for the proposed expansion:

- Fresh Water Habitat Impact Assessment - Sharples Environmental Services CC
- Biodiversity Survey - Mark Berry Environmental Consultants
- Geohydrological and Geotechnical Assessment- GEOSS South Africa (Pty) Ltd
- A Terrestrial Biodiversity Sensitivity Study (Butterflies) – Dave Edge & Associates.

SECTION D: APPLICABLE LISTED ACTIVITIES

List the applicable activities in terms of the NEMA EIA Regulations

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1	Describe the portion of the proposed development to which the applicable listed activity relates.
44	The expansion of cemeteries by 2 500 square metres or more.	The existing Melkhoutfontein Cemetery will be expanded by approximately 8,339.00m ² .

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3	Describe the portion of the proposed development to which the applicable listed activity relates.
4	<p>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>Western Cape</p> <p>i. Areas zoned for use as public open space or equivalent zoning;</p> <p>ii. Areas outside urban areas;</p> <p>(aa) Areas containing indigenous vegetation;</p> <p>(bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or</p> <p>iii. Inside urban areas:</p> <p>(aa) Areas zoned for conservation use; or</p> <p>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.</p>	<p>The proposed development entails the development of an internal gravel road, wider than 4 meters, outside of an urban area which contains indigenous vegetation, as noted in the Biodiversity Survey.</p>
12	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>i. Western Cape</p> <p>ii. Within critical biodiversity areas identified in bioregional plans;</p> <p>iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or</p> <p>v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.</p>	<p>The proposed development will entail the clearance of degraded fynbos species, approximately 0.23ha. The rest of the proposed area (0.6ha), is considered transformed and disturbed, with some central indigenous shrubs however the entire development is within a CBA area (0.834ha). Possibility of more than 300 square metres of indigenous vegetation being removed.</p>
<p>Note:</p> <ul style="list-style-type: none"> • The listed activities specified above must reconcile with activities applied for in the application form. The onus is on the Applicant to ensure that all applicable listed activities are included in the application. If a specific listed activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted. • Where additional listed activities have been identified, that have not been included in the application form, and amended application form must be submitted to the competent authority. 		

List the applicable waste management listed activities in terms of the NEM:WA **(Not applicable. The amendment to NEMWA through the National Environmental Management: Waste Amendment Act (2014) gives no direct mention of the management or disposal of the deceased, (Dippenaar *et al*, 2018)).**

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Category A	Describe the portion of the proposed development to which the applicable listed activity relates.

List the applicable listed activities in terms of the NEM:AQA (**Not applicable**)

Activity No(s):	Provide the relevant Listed Activity(ies)	Describe the portion of the proposed development to which the applicable listed activity relates.

SECTION E: PLANNING CONTEXT AND NEED AND DESIRABILITY

1.	Provide a description of the preferred alternative.
<p>The preferred and only alternative will be located to the East and South of the existing Melkhoutfontein Cemetery, located within ERF 141/480 and Erf 566, respectively. The preferred alternative will allow for the accommodation of approximately 928 additional burial plots, that will be sufficient for the next 5 years. The existing cemetery wall will be demolished on the Eastern and southern side and will be extended to encompass the expansion.</p> <p>Additional work will include the extension of the existing gravel access road, as well as the extension of the existing water line located to the west of the existing access road, toward the southern side of the site, and positioning of a tap closer to the expanded area.</p>	
2.	Explain how the proposed development is in line with the existing land use rights of the property as you have indicated in the NOI and application form? Include the proof of the existing land use rights granted in Appendix E21.
<p>The proposed development requires the Municipality to undertake an internally driven subdivision and possibly rezoning of erven in question.</p> <p>It has been established that proposed expansion site on Erf 566 is located inside of the urban edge, and the zoning is undetermined, while Portion 141/480 is zoned as Agricultural I, and is located outside of the urban edge. Therefore, the proposed development is not in-line with the current land use.</p>	
3.	Explain how potential conflict with respect to existing approvals for the proposed site (as indicated in the NOI/and or application form) and the proposed development have been resolved.
<p>There is no conflict with respect to existing approvals. As the General Authorization in terms of the National Water Act, 1998 (Act 36 of 1998), Section 21 (c) and (i) as of September 2020 (see Appendix F), was obtained in line with the proposed development.</p>	
4.	Explain how the proposed development will be in line with the following?
4.1	The Provincial Spatial Development Framework.
<p>The Provincial Spatial Development Framework (PSDF) released in 2014 for the Western Cape notes the policy framework that the will be adopted by the province in order to take forward the province's spatial development agenda and fulfil the mandate ascribed to the PSDF by the Spatial Planning and Land Use Act 16 of 2013 (SPLUMA). The policy framework covers Provincial spatial planning's three interrelated themes, namely:</p> <ol style="list-style-type: none"> 1. Sustainable use of the Western Cape's spatial assets, 2. Opening-up opportunities in the Provincial space-economy, and 3. Developing integrated and sustainable settlements. <p>Each of these spatial themes contributes to the achievement of the Western Cape's strategic objectives.</p> <p>The third theme relates to the development of integrated and sustainable developments, in order to achieve this, the PSDF outlines objectives that are to be met. The two Objectives which align with the proposed expansion are;</p> <ol style="list-style-type: none"> 1. The protection and enhancement of the sense of place and settlement patterns. 2. Ensure effective and equitable social services and facilities. 	

Objective 1

- outlines the need for the protection and enhancement of heritage and cultural resources which have indirect but strong links to its economic development mandate, especially with respect to skills retention in the knowledge economy. The expansion of the Melkhoutfontein cemetery protects the heritage and maintains the culture of the surrounding towns (Still Bay) by ensuring that a burial facility will be available within the area for those who call the area home. The opportunity to retain the remains of those who have passed within the town of which they and their descendants reside in allows for a unique link which protects the heritage and culture by ensuring that a legacy of sort remains within the area, thus maintaining the sense of place.

Objective 2

- notes that in order to ensure that current and future developments take place in an integrated and sustainable manner, equitable and accessible distribution of social services and facilities across the Provincial landscape is required. The transformation of the Province's spatial environments is highly dependent on the improvement of adequate and appropriate facility provision. The current capacity of the Melkhoutfontein Cemetery indicates that the Cemetery will have no more space in approximately 18 months. This development is aligned with this objective as the provision of this service and facility will allow for the equitable use of the facility for the next decade for the population of the surrounding areas.

4.2 | The Integrated Development Plan of the local municipality.

As included in the Hessequa Integrated Development Programme, 3rd Review and Amendment. One existing challenge experienced by the municipality is the management and expansion of historic and current cemeteries, related to the inclusion of cemeteries in the Urban Edge for management by Municipality. Furthermore, the Capital Expenditure Framework includes the extension of cemeteries by the Hessequa Municipality, between 2020 – 2021.

This supports that the proposed development is in line with the IDP of the local municipality.

4.3. | The Spatial Development Framework of the local municipality.

The Hessequa Spatial Development Framework (SDF) notes various aspects that support the extension of the existing cemetery. The SDF places emphasis on the need to preserve the areas heritage by stating that the future vision for the town or settlement is based on a synthesis of various aspects, which include the heritage character, landscape character and environmental sensitivity. The proposed expansion of the Melkhoutfontein Cemetery will allow local residents to bury their loved ones with their ancestors and within the town from which they were born.

The SDF explains that the various strategies that have been drafted in order to drive development. Objective 2 of the outlined strategies is to promote the equal access to services and facilities. This objective is directly related to the expansion of the existing cemetery as the capacity of the existing cemetery has been depleted over time. In the near future, if the cemetery is not expanded, local residents will not be able to access this service or facility anymore as the cemetery would of reached its capacity, resulting in local individuals not having access to a local cemetery where their loved ones can be buried in their home town with their ancestors. By expanding the existing cemetery, the municipality will ensure that local individuals will have access to a cemetery in their area.

4.4. | The Environmental Management Framework applicable to the area.

There is no Environmental Management Framework that has been adapted for this region.

5.	Explain how comments from the relevant authorities and/or specialist(s) with respect to biodiversity have influenced the proposed development.
This is the Pre-Application BAR - no comments have been received.	
6.	Explain how the Western Cape Biodiversity Spatial Plan (including the guidelines in the handbook) has influenced the proposed development.
<p>The site is dominated by Canca Limestone Fynbos and falls within a CBA1 Terrestrial environment, within the Hessequa Biodiversity Network. It forms part of an extensive biodiversity (CBA) corridor that runs in a west-east direction from the Duiwenhoksrivier (in the west) to the Gourits River (in the east) across the Goukou, linking several nature reserves along the way. Apart from providing a backbone to the local biodiversity network, the corridor serves as an important passage along which fauna can migrate across the lowlands.</p> <p>Reasons for the inclusion of the site and its surrounding area in the CBA network include the presence of threatened vegetation types, a FEPA river corridor and a climate adaption corridor. The non-perennial watercourse and associated wetlands to the south of the site have been mapped as an aquatic (river and wetland) CBA but does not fall within the proposed expansion area.</p> <p>It was found that the proposed expansion accommodates fynbos transitional between Albertinia Sand Fynbos and Canca Limestone Fynbos. Fynbos of a degraded nature will be directly affected by the project. The rest of the site has been transformed and has little botanical value. The degraded fynbos, however, still has value in contributing to the local biodiversity and as a potential source for plant material. Two Species of Conservation Concern were recorded here, namely <i>Aspalathus sanguinea</i> (two patches) and <i>Leucospermum praecox</i> (a single shrub just outside the footprint area).</p> <p>Due to the affected vegetation still being reasonably well represented in the region, the impact on vegetation type per se is of a low to moderate concern. Therefore, the expansion will proceed with appropriate mitigation measures will be implemented.</p>	
7.	Explain how the proposed development is in line with the intention/purpose of the relevant zones as defined in the ICMA.
The proposed development does not lie within coastal public property, the coastal protection zone, or coastal access land as defined in terms of the NEM: ICMA, 2008.	
8.	Explain whether the screening report has changed from the one submitted together with the application form. The screening report must be attached as Appendix I.
The screening tool has not changed.	
9.	Explain how the proposed development will optimise vacant land available within an urban area.
<p>The proposed development will be located on the vacant land surrounding the existing cemetery to the East and South, although it is not within the urban edge of Melkhoutfontein, existing development has been established to the west of the site. As this is municipal land, leaving the proposed site vacant will cost the municipality in maintenance costs. In addition, there could be risks of illegal land invasions, which can lead to unwanted issues for the municipality, as well as for the surrounding community, and can lead to uncontrolled land transformation resulting in environmental disturbance within a CBA area, as well as in close proximity to an identified NFEPA river and wetland system.</p> <p>This development will create additional cemetery plots, rather than creating a brand new cemetery location that may disturb or upset the community, as well as limit future development, as people do not favour residential developments in close proximity to cemeteries, therefore by expanding the existing cemetery, this particular land use, despite being a service to the community, is confined to one location, rather than transforming other areas that could be valuable for other land uses.</p>	

10.	Explain how the proposed development will optimise the use of existing resources and infrastructure.
<p>The proposed development will entail the expansion of an existing cemetery. The cemetery infrastructure, including the access road and the water reticulation, will still be utilized, and expanded, in order to accommodate the extension. This will save additional costs related to the establishment of a new site, that would require new infrastructure and resources.</p>	
11.	<p>Explain whether the necessary services are available and whether the local authority has confirmed sufficient, spare, unallocated service capacity. (Confirmation of all services must be included in Appendix E16). Engineers</p>
<p>No letter has been supplied as of yet.</p>	
12.	<p>In addition to the above, explain the need and desirability of the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013) or the DEA's Integrated Environmental Management Guideline on Need and Desirability. This may be attached to this BAR as Appendix K.</p>
<p>In addition to the above, the Department's guideline on Need and Desirability (March 2013) provides a strong base for the proposed development. The guideline references the New Growth Path (NGP) (2010) when referring to the strategic context for the consideration of need and desirability. It is important to understand how the proposed development falls within the strategic context in order to fully recognise the need and desirability.</p> <p>The NGP formulated various principles to guide "the transition to an environmentally sustainable low-carbon economy, moving from policy, to process, to action", the principles listed below highlight how need and desirability of the proposed development are aligned with the NGP in terms of the Department's guideline on Need and Desirability (March 2013):</p> <ul style="list-style-type: none"> • Just, ethical and sustainable: <p>The development does recognise the aspirations of South Africa as a developing country and remains mindful of cultural and historical requirements. By expanding the existing cemetery, provision is made for years to come, to accommodate the needs of the community in terms of laying their deceased to rest, in an appropriate location, that does not cause significantly negative impacts to the surrounding environment.</p> <ul style="list-style-type: none"> • Ecosystems protection: <p>Through this development, it is recognized that human wellbeing is dependent on the health of the planet. Therefore, multiple specialist reports have been undertaken in terms of botanical, freshwater, terrestrial biodiversity (butterfly) and geohydrology, in order to efficiently support the environmental status of the site, and fully inform the project.</p> <ul style="list-style-type: none"> • Full cost accounting: <p>The proposed expansion internalises both environmental and social costs in planning decisions, recognising that the need to secure environmental assets may be weighed against the social benefits accrued from their use.</p> <ul style="list-style-type: none"> • Managed transition: <p>The proposed development will build on existing processes and capacities to enable society to change in a structured and phased manner, by expanding on an existing cemetery that has been accepted and utilized by the community, this project will work to improve capacity of this site.</p> <ul style="list-style-type: none"> • Opportunity-focused. <p>This project will aim to combine sustainability, growth, competitiveness and employment creation, for South Africa to attain equality and prosperity, therefore labour and materials should be sourced from the local community, in order to create opportunity for local businesses and residents.</p>	

- Effective participation of social partners:

This project will enable the awareness of mutual responsibilities. Through the public participation process required in terms of the EIA process, this will allow for the engagement on differences, allowing for one to seek consensus and expect compromise through social dialogue.

- Accountability and transparency:

Undertaking the basic assessment process allows for accountability and transparency of the proposed development in an integrated manner, as the documents will be submitted for public participation, to any interested and affected party, and will be subject to comments, rejections and appeals, if necessary.

In the National Framework for Sustainable Development ("NFSD") (2008), it states that "The achievement of sustainable development is not a once-off occurrence and its objectives cannot be achieved by a single action or decision." As such, it is not expected that this proposed development will single handily achieve sustainable development, but it will contribute towards achieving sustainable development.

"The process to achieve sustainable development is an ongoing process that requires a particular set of values and attitudes in which economic, social and environmental assets that society has at its disposal, are managed in a manner that sustains human well-being without compromising the ability of future generations to meet their own need." The need and desirability of the proposed development is further emphasized as the proposed development forms part of the aforementioned ongoing process. The proposed development conceptualizes the particular set of values and attitudes in which economic, social and environmental assets are required to be managed in order to sustain human well-being without compromising the ability of future generations to meet their own needs and effectively achieve sustainable development. This is done by making provision for the much-needed additional burial sites, at an existing cemetery site, recognized and accepted by the community.

In the South African current state, developmental needs (community needs) must firstly be determined through the planning processes (IDP, SDF and EMF). The need may be at the local, regional or national level. The proposed development is aligned with the planning processes and endeavours to contribute towards efforts aimed at reducing the housing backlog which is facing South Africa on a local, regional and national level. The proposed development will form part of an ongoing process to achieve sustainable development.

The Department's guideline on Need and Desirability (March 2013) states it is necessary to turn to the principles contained in NEMA in order to define "need" that relates to the interests and needs of the broader public.

In this regard the NEMA principles specifically inter alia require that environmental management must:

- Place people and their needs at the forefront of its concern and equitably serve their interests;
- Be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option;
- Ensure that decisions take into account the interests, needs and values of all interested and affected parties; and
- Ensure that the environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.

The Need and Desirability of the proposed development in terms of the Department's guideline on Need and Desirability (March 2013) is further emphasised through its alignment with the NEMA principles. The alignment of the proposed development with the aforementioned principles are

evident as the proposed development aims to place people and their needs at the forefront by providing additional burial plots at an existing cemetery that is accepted by the community, in order for the cemetery to fully serve and meet the needs of the community in the years to come, that has potentially been expedited by the occurrence of the global pandemic, COVID-19, a virus that is foreseen to be the cause of many deaths in South Africa, in the coming months (Gonzalez, 2020).

Relative specialist reports have been completed to aid decision making and fully understand all elements of the environment on site. As the specialist reports provide an insight into the environmental elements, provisions have been made for stringent public participation phases in order to take into account the interests, needs and values of all interested and affected parties. NEMA makes it evident that proposed developments must ensure that the environment and its resources must serve the public interest while protecting the environment.

The proposed development will serve the public's social, cultural/traditional, economical and ecological needs equitably. The proposed development will strive to secure ecological integrity, while the construction phase of the project will create multiple job opportunities, although short-term, it will benefit the local community, particularly as it is encouraged that labour be sourced locally.

SECTION F: PUBLIC PARTICIPATION

The Public Participation Process ("PPP") must fulfil the requirements as outlined in the NEMA EIA Regulations and must be attached as Appendix F. Please note that if the NEM: WA and/or the NEM: AQA is applicable to the proposed development, an advertisement must be placed in at least two newspapers.

1. Exclusively for linear activities: Indicate what PPP was agreed to by the competent authority. Include proof of this agreement in Appendix E22.

This is not a linear activity.

2. Confirm that the PPP as indicated in the application form has been complied with. All the PPP must be included in Appendix F.

Not applicable at this stage, as this is the Pre-Application BAR Phase.

The following is proposed:

- An A2 notice board, will be fixed at the boundary, main entrance to the existing cemetery.
- 2 x A3 notice boards will be fixed at the corner of Roopitjie Road and Erica Crescent (next to the sports field and on the public notice board).
- An extensive I&AP database has been compiled, which identifies affected adjacent landowners, authorities, organs of state and other affected parties.
- Notification of the various I&AP's will be done via: email notification, direct telephonic calls, Whatsapp Broadcasts, site notices and advertisement, depending on existing contact details available. Letter-drops will be delivered to adjacent landowners, where possible.
- An advertisement will be placed in the Suid Kaap Forum, in Afrikaans.
- I&AP's who do not have access to email will be notified of the process via an sms or Whatsapp medium if appropriate.
- Information containing all relevant facts in respect of the application or proposed application will also be circulated in this way if appropriate.
- If we are made aware of any I&AP with illiteracy, disability or other disadvantage we will engage with such I&AP to ensure their issues are noted.

3. Confirm which of the State Departments and Organs of State indicated in the Notice of Intent/application form were consulted with.

ORGANS OF STATE	CONTACT PERSON	CONTACT DETAILS
DEADP: Development Region 3	Mr G Benjamin	Gavin.Benjamin@westerncape.gov.za
DEA&DP: Pollution Management	Arabel McClelland	Arabel.McClelland@westerncape.gov.za
CapeNature	Mr C Fordham	cfordham@capenature.co.za
	Ms M Simons	msimons@capenature.co.za
WESSA	Mr S Petoiffe	steban@barkly.co.za
Breede-Gouritz CMA	Mr C Abrahams	cabrahams@bgcma.co.za
Heritage Western Cape	Ms S Bernardt	Stephanie.bernardt@westerncape.gov.za
Hessequa Municipality: Municipal Manager	Mr Johan Jacobs	Tel: 028 713 8001 mm@hessequa.gov.za
Hessequa Municipality: Technical Department	Mr Rhuschan Manho	Tel: (028) 713 – 7860/7964 Email: rhuschan@hessequa.gov.za
Hessequa Municipality: Directorate: Development and Planning	Mr. H. Visser	Tel: 028 713 8000 Fax: 086 401 5118 info@hessequa.gov.za
South African Civil Aviation Authority	Ms E Shogola	ShogoleE@caa.co.za
Garden Route District Municipality Executive Manager: Community Services	Mr Clive Africa	Tel: 044 803 1300 info@gardenroute.gov.za
Garden Route District Municipality Executive Manager: Planning and Economic Development	Mr Lusanda Menze	Tel: 044 803 1300 info@gardenroute.gov.za
Garden Route District Municipality Executive Manager: Roads Services	Mr John Godfrey Daniels	Tel: 023 449 1000 info@gardenroute.gov.za
Garden Route District Municipality: Environmental Management, Climate Change and Mitigation	Dr. Nina Viljoen	Tel: 044 804 1318 nina@gardenroute.gov.za
Department of Agriculture	Mr C van der Walt	corvdw@eslenburg.com
Department of Forestry and Fisheries	Melanie Koen	MelanieKo@daff.gov.za
Department of Health	Mr J M Abrahams	Manie.Abrahams@westerncape.gov.za
WCG: Transport and Public Works	Mr J Prodehl	Juan.Prodehl@westerncape.gov.za
Eskom: Land Development	Mr O Peters	PetersOw@eskom.co.za
Ward Councillor - Ward 1	Mr Ben Smith	maycofin@hessequa.gov.za

4. If any of the State Departments and Organs of State were not consulted, indicate which and why.

The following Departments were not consulted, as the proposed development would have no relevance to their interests:

- DEA: Oceans and Coast
- DEA&DP: Coastal Management
 - The proposed development is not located on a coastal property and will not have an impact on a coastal environment.
- DEA&DP: Air Quality
 - No negligible impact is predicted on either air quality or waste.
- Department of Community Safety
- Department of Cultural Affairs and Sport
- Department of Human Settlements
- Department of Social Development
- Department of the Premier
- Provincial Treasury
- Western Cape Education Department

5. if any of the State Departments and Organs of State did not respond, indicate which.

Will be determined after the public participation concludes.

6. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated into the development proposal.

Will be determined after the public participation concludes.

Note:

A register of all the I&AP's notified, including the Organs of State, and all the registered I&APs must be included in Appendix F. The register must be maintained and made available to any person requesting access to the register in writing.

The EAP must notify I&AP's that all information submitted by I&AP's becomes public information.

Your attention is drawn to Regulation 40 (3) of the NEMA EIA Regulations which states that "*Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but **must** be provided with an opportunity to comment on such reports once an application has been submitted to the competent authority.*"

All the comments received from I&APs on the pre -application BAR (if applicable and the draft BAR must be recorded, responded to and included in the Comments and Responses Report and must be included in Appendix F.

All information obtained during the PPP (the minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded) and must be included in Appendix F.

Please note that proof of the PPP conducted must be included in Appendix F. In terms of the required "proof" the following is required:

- a site map showing where the site notice was displayed, 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 G: DESCRIPTION OF THE RECEIVING ENVIRONMENT

All specialist studies must be attached as Appendix G.

1. Groundwater

1.1.	Was a specialist study conducted?	YES	NO
1.2.	Provide the name and or company who conducted the specialist study.		
Prepared by: Charl Muller & Dale Barrow Company: GEOSS South Africa (Pty) Ltd			
1.3.	Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.		
<p>The site is directly underlain by the Wankoe Formation (calcarenite with aeolian cross-bedding and calcrete lenses). The Wankoe Formation is locally covered by light grey to pale-red sandy soil just south of the proposed cemetery site. The erosive action caused by the Goukou River and adjacent drainage channels towards the west and southwest of the site have exposed rocks of the De Hoopvlei Formation and Bokkeveld Group. The De Hoopvlei Formation is comprised of calcarenite with shells and conglomerate lenses. The Bokkeveld Group is comprised of shale and siltstone with occasional thin sandstone beds.</p> <p>The underlying aquifer at the site is classified by the Department of Water Affairs and Forestry (DWAf, 2002) as an intergranular aquifer with an average yield potential of 5.0 L/s.</p>			
1.4.	Indicate the depth of groundwater and explain how the depth of groundwater and type of aquifer (if present) has influenced your proposed development.		

The underlying aquifer at the site is classified by the Department of Water Affairs and Forestry (DWAF, 2002) as an intergranular aquifer with an average yield potential of 5.0 L/s. An intergranular aquifer refers to groundwater that is stored and flows through pore spaces between grains of sediment or weathered material.

Based on the DWAF (2002) mapping of the regional groundwater quality, as indicated by electrical conductivity (EC), is in the range of 70 – 300 mS/m for the area. This is considered to be “good to moderate” quality for water, with respect to drinking water standards. It is important to note that a small stream/drainage channel caused by the presence of a spring is located just south of the cemetery site. This flows towards the west into the Goukou River. Both the stream and river should be considered as a potential receptor for potential contamination.

The study site has been classified as having a groundwater vulnerability classification of “high”, with a contamination risk of “Medium-High”. Given the relatively shallow-water table and presence of down-gradient drainage channel and spring, strict mitigation measures and groundwater monitoring plan should be implemented.

The consequence associated with contamination is considered to be very high as there are numerous municipal supply sources within 250 m of the cemetery expansion area. The aquifer developed for Melkhoutfontein is of strategic importance and requires strict protection. Therefore, no abstraction should be allowed to take place within 250 m of the cemetery. This affects the developed municipal sources, which has significant implications.

Irrespective of whether the cemetery expansion occurs, the groundwater monitoring recommendations should be implemented for the current cemetery.

Should the cemetery expansion occur, the proposed expansion will need to conform to the standard industry mitigations measures for developing a cemetery in order to minimize contamination on site. GEOSS recommends the monitoring of the groundwater system on site, as specified in the Proposed Groundwater Monitoring Action Plan.

2. Surface water

2.1.	Was a specialist study conducted?	YES	NO
2.2.	Provide the name and/or company who conducted the specialist study.		
Specialist: Debbie Fordham Company: Sharples Environmental Services			
2.3.	Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.		

The site is located within quaternary catchment H90E of the Gouritz Water Management Area. The Goukou River is the largest river within this area and is located west of the site. The site is situated at an elevation of approximately 35 m above sea level and surface runoff flows in a southern direction (2% slope) towards a shallow valley bottom. The unnamed watercourse within the valley bottom flows in a westerly direction to join the Goukou River estuary. The lithology of the landscape consists mainly of calcified dune sand of the Bredasdorp Group, partly covered by younger sand and calcrete.

The national river data indicates a non-perennial river south of the site within the valley bottom and a tributary non perennial river line to the east of the site (see Figure 1). However, no river features were identified in the areas nearest to the site, along with no evidence of confined surface flows. These areas have lost definition in this reach and are disconnected from the surface drainage network.

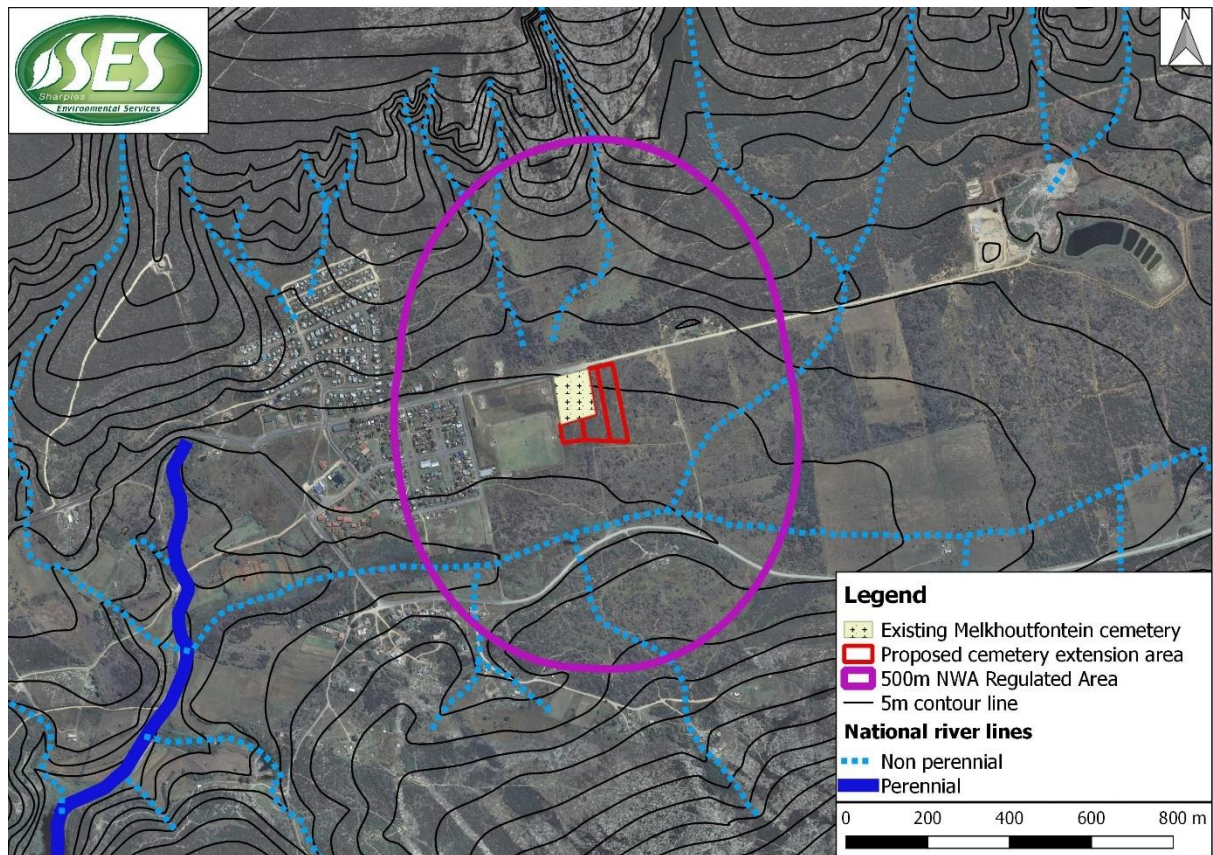
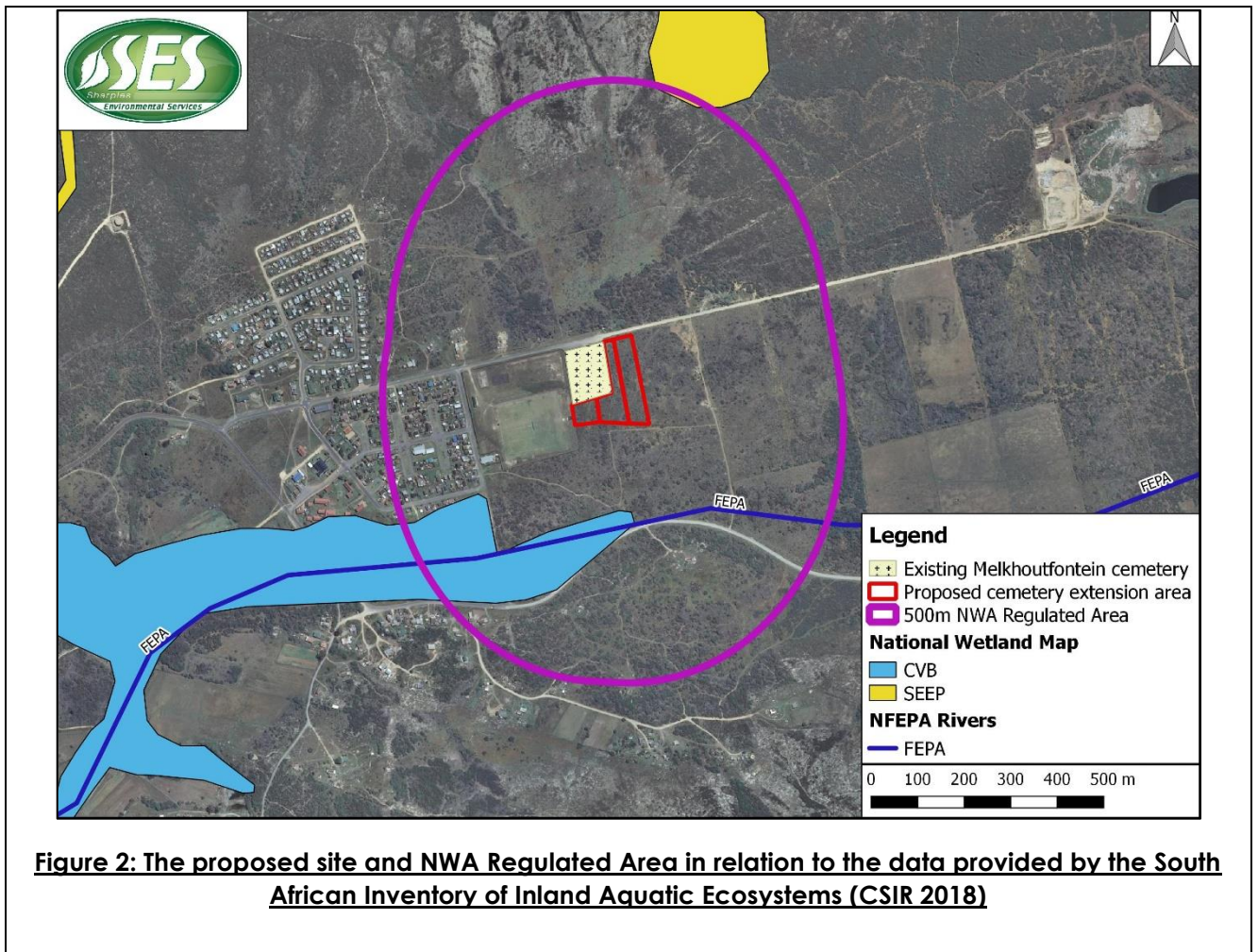


Figure 1: Map of the study area in relation to the drainage lines from the national river database.

According to the data provided by the South African Inventory of Inland Aquatic Ecosystems (SAIIAE 2018) there is no aquatic habitat within the proposed cemetery expansion site, and therefore is found to have minimal influence on the proposed development, and vice versa. The South African National Wetlands Map (NWM) identifies a channelled valley bottom wetland situated approximated 230 m downslope of the proposed new cemetery boundary, and a seep wetland located on the northern border of the study area (500m from the cemetery site). The wetland vegetation group is classified as Albany Thicket and is listed by the dataset as critically endangered and lacking protection.



3. Coastal Environment

3.1.	Was a specialist study conducted?	YES	NO
3.2.	Provide the name and/or company who conducted the specialist study.	No Specialist was appointed as the site is located more than 5 km's from any coastal property.	
3.3.	Explain how the relevant considerations of Section 63 of the ICMA were taken into account and explain how this influenced your proposed development.	ICMA is not applicable as the site is located more than 5km's from any coastal property.	
3.4.	Explain how estuary management plans (if applicable) has influenced the proposed development.	The estuary management plans are not applicable as the site is located more than 5km's from any coastal property.	
3.5.	Explain how the modelled coastal risk zones, the coastal protection zone, littoral active zone and estuarine functional zones, have influenced the proposed development.	None of these zones have influenced this project, as the site is located more than 5km's from any coastal property.	

4. Biodiversity

4.1.	Were specialist studies conducted?	YES	NO
4.2.	Provide the name and/or company who conducted the specialist studies.		

A Botanical Assessment Study, dated June 2020, was initiated by:
Specialist: Mark Berry (*Pr.Sci.Nat*) (reg. no. 400073/98) PhD in Botany
Company: Mark Berry Environmental Consultants

In addition, a Terrestrial Biodiversity Sensitivity Study (Butterflies), dated 20th of June 2020, initiated by:
Specialist: David Alan Edge
Company: Dave Edge and Associates

4.3.	Explain which systematic conservation planning and other biodiversity informants such as vegetation maps, NFEPA, NSBA etc. have been used and how has this influenced your proposed development.
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The CapeFarmMapper tool has been utilized, to inform this study. According to NFEPA the site is not affected by any watercourses, and does remain more than 32m's from any watercourse, but a fairly large NFEPA wetland system (channelled valley-bottom wetland) has been mapped about 200 m to the south of the site, which extends westwards towards the Goukou (see Figure 3). No watercourses or wetlands was found on or directly adjacent to the site during the site survey. Significant disturbance (earthmoving activities) was noted directly east of the site.

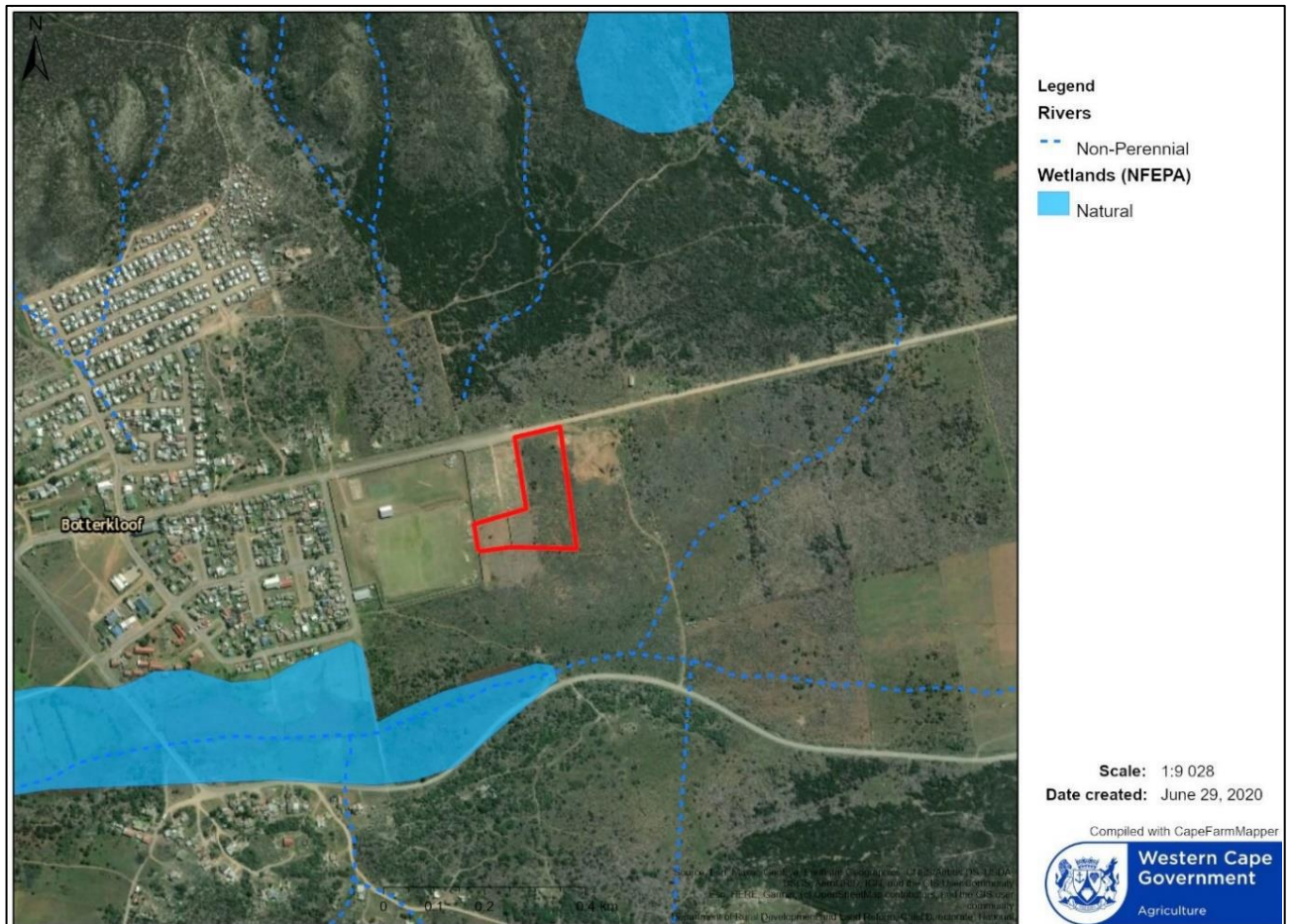


Figure 3: Surface hydrology of the study area (Extracted from the Biodiversity Survey, 2020) .

The site has been characterized by the presence of fynbos species, such as *Leucospermum praecox* and *Thamnochortus erectus*. The Vegetation Map of South Africa (Mucina & Rutherford 2006) classifies the vegetation on site as Canca Limestone Fynbos, listed as Least Threatened, (see Figure 4). Other major vegetation units found in the immediate area of the site include Albertinia Sand Fynbos, listed as vulnerable (on deep sands along the coast and further inland) and Southern Cape Valley Thicket, which is originally listed as Least Threatened but is proposed for a Vulnerable status in the more recent Western Cape Biodiversity Spatial Plan Handbook (Pool-Stanvliet et al. 2017), this is located along riverine areas, such as the Goukou and Gourits River (DEA 2011).

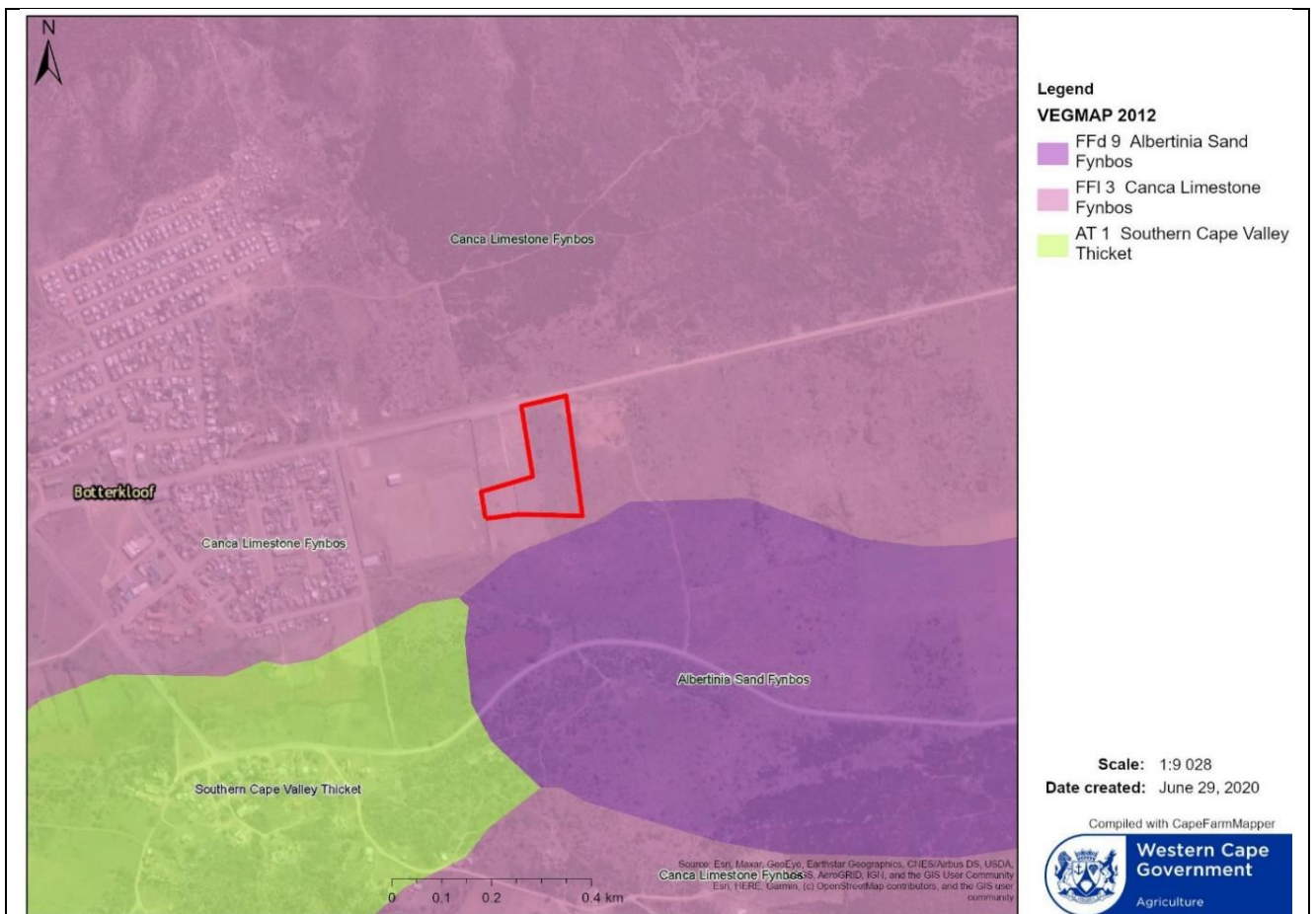


Figure 4: Identified vegetation type as per 2012 SA Vegetation Map.

Records of the SCCs were extracted from the LepiMap Virtual Museum database and summarised on a spreadsheet. Published data on these two taxa was referenced, principally Mecenero et al. (2013), to determine the vegetation types in which the SCCs occur, and Williams (2019) to determine larval host plants. The following SCC's were recorded close to the proposed site:

- *Aloeides thyra orientis*
- *Aloeides trimeni southeyae*
- *Chrysoritis brooksi tearei*
- *Lepidochrysops littoralis*
- *Thestor claassensi*
- *Trimenia malagrida maryae*

4.4. Explain how the objectives and management guidelines of the Biodiversity Spatial Plan have been used and how has this influenced your proposed development.

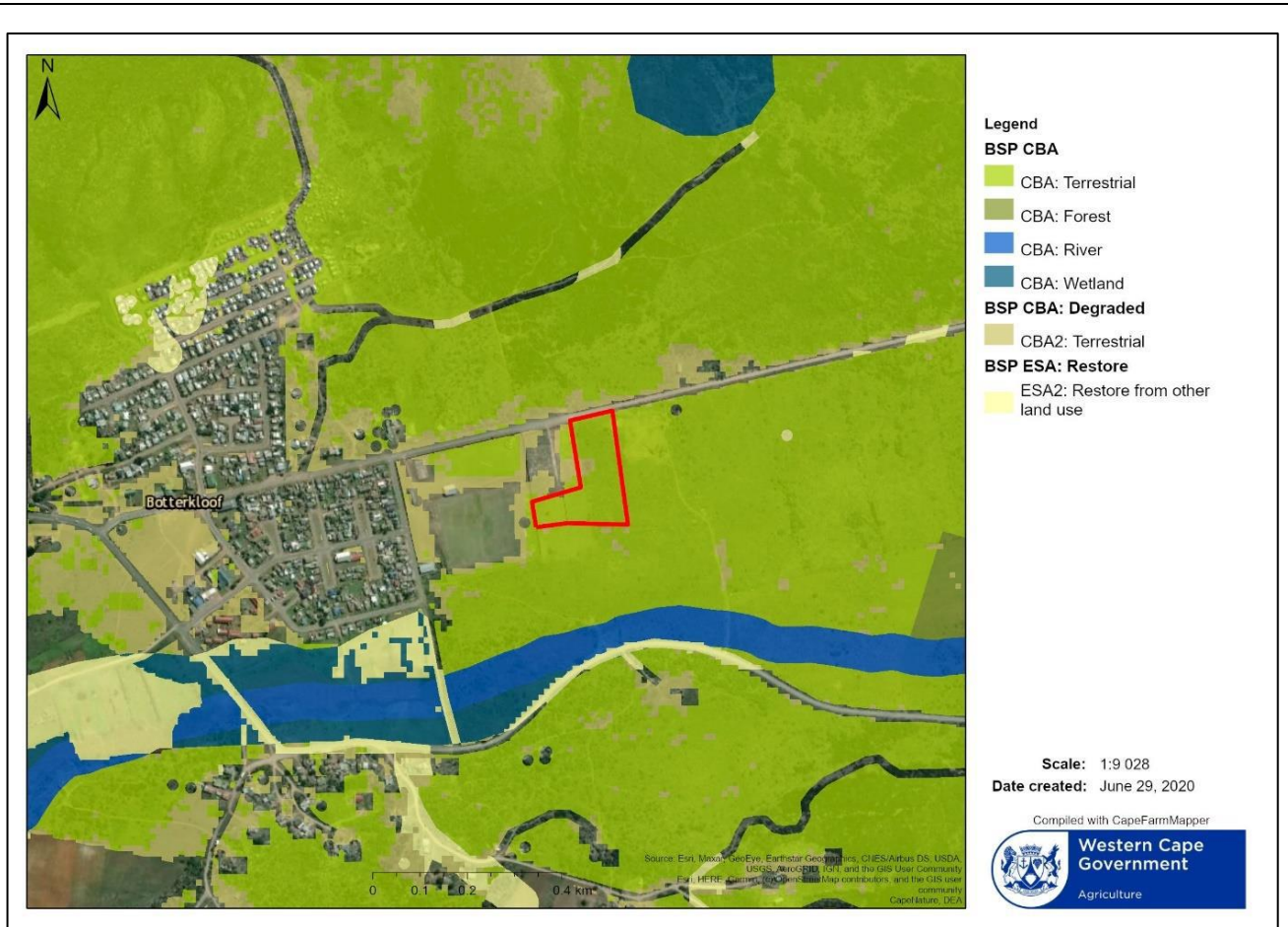


Figure 5: Biodiversity network map, with the site outlined in red.

Being well represented in the larger area, Canca Limestone Fynbos is currently not considered a threatened vegetation type. However, agricultural activities, alien plant infestation and coastal developments remain major threats for certain species restricted to this vegetation type. According to Mucina & Rutherford (2006), 86% of Canca Limestone Fynbos is still left. However, due to its poor conservation status its protection in the coastal areas remains a priority

The entire site, which falls inside the Hessequa Biodiversity Network, has been mapped as a terrestrial critical biodiversity area (CBA) (see Figure 5). It forms part of an extensive biodiversity (CBA) corridor that runs in a west-east direction from the Duiwenhoksrivier (in the west) to the Gourits River (in the east) across the Goukou, linking several nature reserves along the way. Apart from providing a backbone to the local biodiversity network, the corridor serves as an important passage along which fauna can migrate across the lowlands. Reasons for the inclusion of the site and its surrounding area in the CBA network include the presence of threatened vegetation types, a FEPA river corridor and a climate adaption corridor.

The non-perennial watercourse and associated wetlands to the south of the site have been mapped as an aquatic (river and wetland) CBA. The latter connects again with the Goukou River and its floodplain. CBA's are defined as areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure (Pool-Stanvliet et al. 2017). These sites are selected for meeting national targets for species, habitats and ecological processes (Pool-Stanvliet et al. 2017). Many of these areas support known occurrences of threatened plant species, and/or may be essential elements of designated ecological corridors. Loss of designated CBA's is therefore not recommended. ESA's, on the other hand, are supporting zones required to prevent the degradation of CBA's and Protected Areas.

4.5.	Explain what impact the proposed development will have on the site specific features and/or function of the Biodiversity Spatial Plan category and how has this influenced the proposed development.
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Figure 6: Biodiversity attributes of the site.

Due to the sandy substratum encountered on site and the presence of species characteristic to both Albertinia Sand Fynbos (e.g. *Leucospermum praecox* and *Thamnochortus erectus*) and Canca Limestone Fynbos (e.g. *Aspalathus sanguinea*), one can argue that the fynbos on site is transitional between the two types. However, the vegetation is degraded and species poor, with certain areas devoid of significant fynbos (see Figure 6)

The disturbance can be attributed to the presence of the adjacent cemetery, earthmoving activities on the eastern side and past agricultural activities. Structurally, it can be described as a low (± 0.8 m) closed (80-90%) small-leaved shrubland following Campbell's (1981) classification. A few scattered *Acacia cyclops* (rooikrans) and single *Leucospermum praecox* (>2 m) are prominent emergent species on site. The disturbed areas are covered by herbaceous weeds/shrubs and grasses.

Plant species located on site are listed below.

Indigenous shrub species recorded include:

- *Osteospermum moniliferum*,
- *Metalsia 38ruticos*,
- *Seriphium plumosum*,
- *Helichrysum patulum*,
- *Chrysocoma 38rutico* (dom),
- *Aspalathus sanguinea*,
- *Searsia glauca*,
- *S. laevigata*,
- *Olea europaea*,
- *Gymnosporia buxifolia*,
- *Leucospermum praecox*,

- *Muraltia spinosa*,
- *Gnidia squarrosa* (dom),
- *Passerina 39ruticose*,
- *Asparagus spp* (dom),
- *Rubia petiolaris*,
- *Chironia baccifera*,
- *Tetragonia 39ruticose*,
- *Solanum linnaeanum*,
- *Withania somnifera*.

Spreading succulents recorded include:

- *Carpobrotus edulis*,
- *Mesembryanthemum parviflorum*,
- *Conicosia pugioniformis*.

Asparagus asparagoides is the only scrambler encountered.

Hemicryptophytes and geophytes recorded include:

- *Thamnochortus erectus*,
- *Pelargonium triste*,
- *Brunsvigia orientalis*.

Signs of dekriet harvesting were observed on site. However, it should be noted that the survey was unfortunately too early for the normal suite of spring flowering bulbs.

4.6.	If your proposed development is located in a protected area, explain how the proposed development is in line with the protected area management plan.
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The proposed development is not located within a protected area.

4.7.	Explain how the presence of fauna on and adjacent to the proposed development has influenced your proposed development.
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According to the DEA Screening Tool, a number of potential butterfly species were potentially mapped within the proposed site. As a result of this, Dave Edge and Associates, had undertaken a desktop study and site visit to determine the presence of the species in question. The following was determined:

The specialist has advised that an additional site visit be undertaken during the butterfly's flight periods in early November to eliminate the possibility of any of the SCC's occurring on the site, as is supported in Terrestrial Biodiversity Sensitivity Study.

Table 2: Summary of potential fauna occurrence on site.

Name of Species	Vicinity to Site	Potential Impact on Species
<i>Aloeides thyra orientis</i> (EN)	The closest known occurrences to the development site are in the Pauline Bohne Nature Reserve less than 4 km away and north of the golf course in Still Bay West at 6.5 km away.	<ul style="list-style-type: none"> • It has been recorded in FFI 3 Canca Limestone Fynbos as well as in FFd 9 Albertinia Sand Fynbos. • It prefers sparsely vegetated ground with bare patches. • Potential to be found on site. • Medium potential impact.
<i>Aloeides trimenii southeyae</i> (EN)	The closest known occurrence to the development site is around 20 km away.	<ul style="list-style-type: none"> • It has been recorded Shale Renosterveld, Langeberg Sandstone Fynbos and Groot Brak Dune Strandveld. • Unlikely to be found on site. • Low potential impact.
<i>Chrysoritis brooksi tearei</i> (EN)	The closest known occurrences are at 5.2 km north of Still Bay West and at Skulpiesbaai 10 km away.	<ul style="list-style-type: none"> • Its recorded vegetation types are FFI 3 Canca Limestone Fynbos and FFd 9 Albertinia Sand Fynbos. • Potential to be found on site. • Medium potential impact.
<i>Lepidochrysops littoralis</i> (EN)	The closest records to the development site are less than 4 km away in the Pauline Bohne Nature Reserve.	<ul style="list-style-type: none"> • It is mostly found in FFI 3 Canca Limestone Fynbos, and prefers hilltops or higher ground. • Unlikely to be found on site. • Low potential impact.
<i>Thestor claassensi</i> (VU)	The closest records to the development site are about 3 km away near the Still Bay airstrip.	<ul style="list-style-type: none"> • It has only been recorded in FFI 3 Canca Limestone Fynbos, and prefers rocky areas where the limestone substrate is apparent. • Potential to be found on site. • Medium potential impact.
<i>Trimenia malagrida maryae</i> (EN)	It has not been recorded from the Still Bay area, with the closest record 37 km from the development site.	<ul style="list-style-type: none"> • It only occurs in Limestone Fynbos vegetation types FFI 1 (Agulhas), FFI 2 (De Hoop) and FFI 3 (Canca). • Unlikely to be found on site.

		<ul style="list-style-type: none"> • Low potential impact.
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The proposed development is an expansion of an existing, functioning cemetery site, located adjacent to the proposed site, this along with the disturbance noted in the biodiversity survey (see Figure 6), indicates that disturbance has already occurred in and around the proposed site, reducing the possibility of butterfly presence and therefore habitats.

It is unlikely that butterflies will occur in this area will be noted, and re-vegetation will occur utilizing healthy indigenous vegetation. The possibility of butterfly species will be noted in the EMPr and measures will be recommended to avoid contact with all fauna, should they be found on site, during construction.

5. Geographical Aspects

Explain whether any geographical aspects will be affected and how has this influenced the proposed activity or development.
<p>The study area (Melkhoutsfontein) is situated in the Western Cape on the outskirts of Still Bay with surrounding topography comprising of low relief, with an average elevation of 45 m above mean sea level (mamsl). The site is situated in the quaternary catchments, H90E, which has a General Authorisation abstraction volume of 275 m³/ha/yr.</p> <p>This topography is ideal for the proposed development.</p>

6. Heritage Resources

6.1.	Was a specialist study conducted?	YES	NO
6.2.	Provide the name and/or company who conducted the specialist study.	<p>Jonathan Kaplan (ACRM) CRM Membership No. 84 in good standing</p>	
6.3.	Explain how areas that contain sensitive heritage resources have influenced the proposed development.		

Three possible heritage resources were addressed by the heritage practitioner.

- Palaeontological resources – Fossils
 - The surficial soil on top of the calcrete capping the Wankoe Formation aeolianites, have shown recorded fossil land snails. It is rated to be of sensitivity.
 - The cemetery area is partly overlapped by colluvium and alluvium (Qg) along the drainage which is rated LOW.
 - Fossiliferous, shelly Pliocene marine deposits of the De Hoopvlei Fm. (VERY HIGH) underlie the Wankoe Fm. Aeolianites, followed by bedrock which is comprised of Bokkeveld Group mudstones/shales. However, it is unlikely that these deposits will be intersected in typical excavations.
 - Therefore, fossil potential is very limited, resulting in a low impact and furthermore it is unlikely that this bedrock will be intersected in typical excavations.

- Graves and burial grounds
 - The existing Melkhoutfontein cemetery covers a portion of the proposed expansion area.
 - Therefore, the potential impact is not applicable.

- Archaeological resources
 - Impact on Stone Age resources (stone tools) is likely to be very low.

As the proposed development entails the expansion of an existing cemetery, and archaeological and palaeontological resources are unlikely to be found on the site, it will therefore not influence the proposed development.

7. Historical and Cultural Aspects

Explain whether there are any culturally or historically significant elements as defined in Section 2 of the NHRA that will be affected and how has this influenced the proposed development.

There are no historical/culturally significant items/elements on site.

8. Socio/Economic Aspects

8.1. Describe the existing social and economic characteristics of the community in the vicinity of the proposed site.

According to the IDP, 3rd Review and Amendment, 2020 – 2022. Melkhoutfontein is a settlement within the Hessequa Local Municipality, with a medium growth potential, and a recorded socio-economic need as being very low to medium. The proposed site is located east of the Melkhoutfontein settlement, which consists predominantly of residential housing, and informal settlements, while the west of the site is undeveloped.

8.2. Explain the socio-economic value/contribution of the proposed development.

The proposed development will provide a service to a steadily growing population, creating a safe and designated area for people of various cultures, economic levels and beliefs, to respectfully lay their loved ones to rest, in an area that is in close to the community, and will be controlled and maintained by the local municipality.

The existing cemetery's capacity should allow for approximately 18 months of cemetery life, at more or less 25 funerals per year, however by undertaking the current expansion proposal, the site will provide sufficient burial space for the next 5 years.

This is further influenced by the occurrence of a global pandemic known as the Coronavirus or COVID-19, that has resulted in multiple deaths across the Western Cape province. While there is no way to accurately predict the potential number of lives that will be lost as a result of this pandemic, it has to be acknowledged that the expansion of the cemetery needs to be a priority in order to be efficiently support the needs of the Melkhoutsfontein community.

The proposed development will allow for the improvement of the existing infrastructure on site, through the proposed extension of the access road, additional parking area, and extension of the fence line to incorporate the new area. Through the clearance of vegetation, present invasive alien plant species will be removed, improving the condition of the site, through the utilization of indigenous plant cover.

During construction, labour may be sourced from the surrounding local community, resulting in job creation, and skills training/transfer. During the operational phase, the cemetery will need to be secured to prevent vandalism, the landscape will need to be maintained for many years to come, this results in further job creation, which does not require an extensive skillset, and can therefore enable members of the lower income groups to acquire work.

8.3.	Explain what social initiatives will be implemented by applicant to address the needs of the community and to uplift the area.
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The proposed development will provide a community service that is essential to every member of the community, as the loss of life can be unpredictable and difficult to plan for. The expansion of the cemetery will give the community peace of mind, to respectfully lay their deceased to rest, ensuring that cultural practices are respected.

8.4.	Explain whether the proposed development will impact on people's health and well-being (e.g. in terms of noise, odours, visual character and sense of place etc) and how has this influenced the proposed development.
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The proposed development will result in fairly limited noise and visual impacts, with a possibly low – medium significance of dust creation, depending on the weather conditions, and period of exposure.

However, these will not create a high level of or risk and will be temporary. The proposed site is surrounded by an existing road, the existing cemetery, a community sportsfield and open space, therefore there is limited potential for impacts upon residents and their homes.

During the operational phase the proposed development will be fenced, the area re-vegetated with indigenous vegetation and prepared as and when plots are required. The proposed development will impact upon the community's sense of place, due to the change of site from undeveloped to developed. It is considered to be of low impact, as it is the expansion of the existing cemetery, rather than the development of a new cemetery.

As the cemetery is being developed to serve the community's needs, by meeting the demand for additional burial space, the development will cater to the communities needs in a positive manner, and provide reassurance to the existing community, with regard to the provision of community services.

SECTION H: ALTERNATIVES, METHODOLOGY AND ASSESSMENT OF ALTERNATIVES

1. Details of the alternatives identified and considered

1.1.	Property and site alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred property and site alternative.	
<p>The preferred and only alternative site will be located within Erf 566 (approximately approximate area 2,495.50 m²) and Erf 141/480 (approximate area 5,843.50m²) resulting in a total expansion of 8,339.00m². The existing Melkhoutfontein Cemetery is located within both of these properties, and the proposed expansion will be further expanded into these two properties.</p> <p>The proposed properties are located to the East of the Melkhoutfontein community, adjacent to a sports field, is situated in the Western Cape on the outskirts of Still Bay with surrounding topography comprising of low relief, with an average elevation of 45 m above mean sea level (mamsl). The site is situated in the quaternary catchments, H90E, which has a General Authorisation abstraction volume of 275 m³/ha/yr.</p>	
Provide a description of any other property and site alternatives investigated.	
No other properties were considered.	
Provide a motivation for the preferred property and site alternative including the outcome of the site selectin matrix.	
<p>No other properties were considered, as the proposed development entails the expansion of the existing site. As the current cemetery is located on the outskirts of Melkhoutfontein, and there is unoccupied space within the existing properties, to the east and south of the existing cemetery, it is considered to be a good position for the proposed expansion.</p> <p>Furthermore, the area located to the south of the existing cemetery has been identified as disturbed, as per the Botanical Assessment, Figure 6. This would provide the opportunity to remove any alien invasive vegetation, and improve the land, through the re-ve</p>	
Provide a full description of the process followed to reach the preferred alternative within the site.	
No alternatives were considered. The local municipality owns the land and have initiated this development. Considering it is an expansion, it is ideal.	
Provide a detailed motivation if no property and site alternatives were considered.	
<p>No other properties were considered, as the proposed development entails the expansion of the existing site. As the current cemetery is located on the outskirts of Melkhoutfontein, and there is unoccupied space in the existing properties, to the east and south of the existing cemetery, it is considered to be a good position for the proposed expansion.</p>	
List the positive and negative impacts that the property and site alternatives will have on the environment.	
<p>Positive Impacts of the preferred site:</p> <ul style="list-style-type: none"> • Located away from residential development, on the outskirts of the Melkhoutfontein settlement. • Existing infrastructure will be utilized, where possible, and further expansion is proposed. • The properties that already being used for the existing cemetery, will support the expansion. • The proposed expansion will be undertaken within identified disturbed areas of the site. • The site is already disturbed due to anthropogenic activities and alien invasive species, the proposed development will assist in the clearance of this vegetation and will assist in prohibiting further disturbance. • As the site remains exposed to the east and south, should the site need to be expanded in the future, this will be possible. At present future development may be planned toward the east, which as further been disturbed by anthropogenic activities. • Degraded fynbos will be removed, and indigenous vegetation will be used for cover. 	

- Healthy bulbs and cuttings will be used for rehabilitation, from the existing cover.

Negative impacts of the preferred site:

- The site is located north of a wetland area.
- The entire site, which falls inside the Hessequa Biodiversity Network, has been mapped as a terrestrial critical biodiversity area (CBA).
- The corridor serves as an important passage along which fauna can migrate across the lowlands.

1.2. ~~Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.~~

~~Provide a description of the preferred activity alternative.~~

~~Provide a description of any other activity alternatives investigated.~~

~~Provide a motivation for the preferred activity alternative.~~

~~Provide a detailed motivation if no activity alternatives exist.~~

~~List the positive and negative impacts that the activity alternatives will have on the environment.~~

1.3. Design or layout alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts

Provide a description of the preferred design or layout alternative.

The preferred layout is within the existing erfs being utilized for the existing cemetery, these erfs include Erf 566 and Erf 141/480. The extension will proceed south, from the existing cemetery, further into Erf 566, to encompass an area of approximately 2495.50m² and proceed south and east of the existing site on Erf 141/480, to encompass an area of approximately 5843.79m².

Provide a description of any other design or layout alternatives investigated.

No alternatives have been explored.

Provide a motivation for the preferred design or layout alternative.

The preferred proposed design/layout is ideally located around the open extent of the existing Melkhoutfontein Cemetery. Utilizing disturbed and transformed portions of land, providing the opportunity to use this project to improve upon the quality of the land, via this project, by clearing and replanting indigenous cover, until the burial plots are required.

Provide a detailed motivation if no design or layout alternatives exist.

No alternative was considered as the cemetery exists and can only be expanded in certain ways, as it is already restricted to the north by the Rooipitjie Road, and to the west by an existing community sportsfield. Therefore, the areas vacant immediately to the east and south of the site, will allow for ideal expansion of the site, which has been considered for the preferred alternative. Furthermore, the land is owned by the local municipality, and will not require the removal of any housing/residents, and is ideally located away from existing residences.

List the positive and negative impacts that the design alternatives will have on the environment.

Preferred Proposed Alternative Layout

Positive Impacts on the Environment:

- Utilization of degraded/disturbed land.
- Clearance of degraded fynbos.
- Introduction of indigenous cover.
- Integrated stormwater management measures.

- Recovery of bulbs and shoots to be utilized on site.
- Alien invasive control measures adopted and can be implemented on a long-term basis.

Negative Impacts on the Environment:

- Soil compaction from movement of construction vehicles.
- Clearance of vegetation leading to bared soils.
- Dust creation and displacement.
- Alien invasive encroachment.
- Contaminated runoff.
- Erosion and sedimentation.

1.4. 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.

Provide a description of the preferred technology alternative:

Provide a description of any other technology alternatives investigated.

Provide a motivation for the preferred technology alternative.

Provide a detailed motivation if no alternatives exist.

List the positive and negative impacts that the technology alternatives will have on the environment.

1.5. Operational alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the preferred operational alternative.

Provide a description of any other operational alternatives investigated.

Provide a motivation for the preferred operational alternative.

Provide a detailed motivation if no alternatives exist.

List the positive and negative impacts that the operational alternatives will have on the environment.

1.6. The option of not implementing the activity (the 'No-Go' Option).

Provide an explanation as to why the 'No-Go' Option is not preferred.

The no-go activity will result in the continuation of the status quo, thereby allowing the various levels of existing disturbance, from earth moving activities, past agricultural activities and alien invasive encroachment to persist, within the terrestrial CBA, Hessequa Biodiversity Network

1.7. Provide an explanation as to whether any 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 other alternatives were explored, as the site is ideal for this development.

1.8. Provide a concluding statement indicating the preferred alternatives, including the preferred location of the activity.

The preferred and only properties, ie: Erf 566 and Erf 141/480, considered for the proposed expansion are ideal.

Due to the gentle gradient and uniform micro-topography of the site, as well as the high infiltration rates of the soils, and distance from the aquatic habitat, impacts are considered to be low. Furthermore, the cemetery site is ideally located away from residential settlements and will not proceed toward them. As areas utilized for this expansion are already considered disturbed, with degraded Fynbos, within an identified CBA corridor, the opportunity to improve on this area, through the implementation of this project, to improve the environmental state, as well as improve upon

existing community infrastructure/service in an efficient manner, makes the preferred proposed alternative an ideal development for this area.

2. "No-Go" areas

Explain what "no-go" area(s) have been identified during identification of the alternatives and provide the co-ordinates of the "no-go" area(s).

The wetland area identified to the south of the proposed site can be identified as a no-go area. It has been recommended in the Freshwater Impact Assessment that a 32m buffer be maintained from the wetland area. As the proposed site is located approximately 200m's north of the identified wetland, this buffer can be maintained.

3. Methodology to determine the significance ratings of the potential environmental impacts and risks associated with the alternatives.

Describe the methodology to be used in determining and ranking the nature, significance, consequences, extent, duration of the potential environmental impacts and risks associated with the proposed activity or development and alternatives, the degree to which the impact or risk can be reversed and the degree to which the impact and risk may cause irreplaceable loss of resources.

The assessment criteria utilized in this environmental impact assessment is based on, and adapted from, the *Guideline on Impact Significance, Integrated Environmental Management Information Series 5* (Department of Environmental Affairs and Tourism (DEAT), 2002) and the *Guideline 5: Assessment of Alternatives and Impacts in Support of the Environmental Impact Assessment Regulations* (DEAT, 2006).

Determination of Extent (Scale):

Site specific	On site or within 100 m of the site boundary.
Local	The impacted area includes the whole or a measurable portion of the site, but could affect the area surrounding the development, including the neighbouring properties and wider municipal area.
Regional	The impact would affect the broader region (e.g. neighbouring towns) beyond the boundaries of the adjacent properties.
National	The impact would affect the whole country (if applicable).

Determination of Duration:

Temporary	The impact will be limited to the construction phase.
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than 2 years.
Medium term	The impact will last up to the end of the construction phase, where after it will be entirely negated.
Long term	The impact will continue for the entire operational lifetime of the development but will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact that will be non-transitory. Such impacts are regarded to be irreversible, irrespective of what mitigation is applied.

Determination of Probability:

Improbable	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
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Probable	There is a possibility that the impact will occur to the extent that provisions must therefore be made.
Highly probable	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up to mitigate the activity before the activity commences.
Definite	The impact will take place regardless of any prevention plans.

Determination of Significance (without mitigation):

No significance	The impact is not substantial and does not require any mitigation action.
Low	The impact is of little importance but may require limited mitigation.
Medium	The impact is of sufficient importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
Medium-High	The impact is of high importance and is therefore considered to have a negative impact. Mitigation is required to manage the negative impacts to acceptable levels.
High	The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.
Very High	The impact is critical. Mitigation measures cannot reduce the impact to acceptable levels. As such the impact renders the proposal unacceptable.

Determination of Significance (with mitigation):

No significance	The impact will be mitigated to the point where it is regarded to be insubstantial.
Low	The impact will be mitigated to the point where it is of limited importance.
Medium	Notwithstanding the successful implementation of the mitigation measures, the impact will remain of significance. However, taken within the overall context of the project, such a persistent impact does not constitute a fatal flaw.
High	Mitigation of the impact is not possible on a cost-effective basis. The impact continues to be of great importance, and, taken within the overall context of the project, is considered to be a fatal flaw in the project proposal.

Determination of Reversibility:

Completely Reversible	The impact is reversible with implementation of minor mitigation measures
Partly Reversible	The impact is partly reversible but more intense mitigation measures

Barely Reversible	The impact is unlikely to be reversed even with intense mitigation measures
Irreversible	The impact is irreversible and no mitigation measures exist

Determination of Degree to which an Impact can be Mitigated:

Can be mitigated	The impact is reversible with implementation of minor mitigation measures
Can be partly mitigated	The impact is partly reversible but more intense mitigation measures
Can be barely mitigated	The impact is unlikely to be reversed even with intense mitigation measures
Not able to mitigate	The impact is irreversible and no mitigation measures exist

Determination of Loss of Resources:

No loss of resource	The impact will not result in the loss of any resources
Marginal loss of resource	The impact will result in marginal loss of resources
Significant loss of resources	The impact will result in significant loss of resources
Complete loss of resources	The impact will result in a complete loss of all resources

Determination of Degree to which an Impact can be avoided:

High	The impact is completely avoidable
Medium	The impact is avoidable with moderate mitigation
Low	The impact is difficult to avoid and will require significant mitigation
Unavoidable	The impact cannot be avoided

Determination of Degree to which an Impact can be managed:

High	The impact is completely manageable
Medium	The impact is manageable with moderate mitigation
Low	The impact is difficult to manage and will require significant mitigation
Unmanageable	The impact cannot be managed

Determination of Cumulative Impact:

Negligible	The impact would result in negligible to no cumulative effects
Low	The impact would result in insignificant cumulative effects
Medium	The impact would result in minor cumulative effects
High	The impact would result in significant cumulative effects

4. Assessment of each impact and risk identified for each alternative

Note: 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 may decide to include this section as Appendix J to this BAR

	PREFERRED ALTERNATIVE 1 LAYOUT	NO-GO ALTERNATIVE
PLANNING, DESIGN AND DEVELOPMENT PHASE		
Potential impact and risk:	<p>IMPACT ON VEGETATION & FAUNA TYPE, HABITAT AND SPECIES</p> <p>The site accommodates fynbos transitional between Albertinia Sand Fynbos and Canca Limestone Fynbos. About 1.22 ha of degraded fynbos will be directly affected by the project. Two Species of Conservation Concern were recorded here, namely <i>Aspalathus sanguinea</i> (two patches) and <i>Leucospermum praecox</i> (a single shrub just outside the footprint area).</p> <p>Exposed soils due to clearance of vegetation will result in potential erosion, and sedimentation downslope of site. Alien invasive species are highly likely to encroach on the disturbed area, and successfully thrive if not maintained over a long period of time.</p> <p>There is a possibility of the occurrence of six butterfly species of conservation concern. However, there is a low possibility that one or more of the other three SCCs species could occur on or near the site.</p> <p>No-Go Alternative: If the status quo persists, the area has been disturbed, allowing for the success of alien invasive species, which will continue, compromising the quality of the environment and biodiversity.</p>	
Nature of Impact:	Negative	Negative
Extent, duration and magnitude of impact:	Limited and permanent	Local, long-term and significant.
Consequence of impact or risk:	<ul style="list-style-type: none"> Loss of vegetation. Soil exposure to erosional events, leading to sedimentation. 	<ul style="list-style-type: none"> No construction activity, the status quo will persist.
Probability of occurrence:	High	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low - Medium	High
Degree to which the impact can be reversed:	Partly	Partly
Indirect impacts:	<ul style="list-style-type: none"> Dust creation, leading to nuisances for surrounding area. 	<ul style="list-style-type: none"> Alien invasive species persist. No improvement to an already disturbed and degraded environment.

	<ul style="list-style-type: none"> Soil disturbance caused by earthworks will provide ideal conditions for the establishment of invasive aliens 	
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Alien invasive establishment. 	<ul style="list-style-type: none"> Alien invasive species persist, and extend to healthy environment, compromising the quality.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (-)	Medium (-)
Degree to which the impact can be avoided:	Medium	Medium
Degree to which the impact can be managed:	Medium	Medium
Degree to which the impact can be mitigated:	Medium - High	Medium
Proposed mitigation:	<p>General</p> <ul style="list-style-type: none"> Demarcate/fence off the construction area. Contain disturbance to the demarcated construction area. Utilize only already disturbed/transformed areas should be used for the accommodation of construction plant, construction material, offices, etc. during the construction phase. <p>Vegetation</p> <ul style="list-style-type: none"> Consider search and rescue of bulbs and cuttings of succulents for use in the rehabilitation of disturbed areas. Re-introduction of selected indigenous plant species. Control the establishment of alien invasive species on and around the site, as a long-term management requirement. Veld protection must be a priority, adjacent to the works areas, and maybe the rehabilitation of the disturbed areas afterwards. <p>Faunal Management</p>	<p>General:</p> <ul style="list-style-type: none"> In terms of Section 28, of the National Environmental Management Act, 1998 (Act 107 of 1998), Duty of Care, the landowner is responsible for the clearance of any potential pollution or harm to the environment. This includes waste dumped on site and alien invasive species success within the site. Utilize indigenous vegetation to re-vegetate the disturbed area, once the waste an alien species are removed. On-going alien invasive control measures should be implemented.

	<ul style="list-style-type: none"> • Appoint a suitably qualified Lepidopterist to undertake a site visit as per the specified period, to establish the presence of the remaining butterfly species of concern. • Ensure that if necessary, the Lepidopterist recommends a buffer zone to be adopted prior to commencement of construction activities. • Construction activities should be planned to commence after the aforementioned site visit, and to conclude before the next potential butterfly flight period in early November. • Labour should be advised: <ul style="list-style-type: none"> - All fauna, including butterflies, should not be harmed during construction. - Fauna should be avoided, and if removal is required due to a potential for harm, professional assistance should be sought. 	
Residual impacts:		<ul style="list-style-type: none"> • As the site is exposed, alien invasive species may persist.
Cumulative impacts post mitigation:	<ul style="list-style-type: none"> • Alien invasive encroachment over a long term basis, along disturbed portions or along the edge of the development. 	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low (-)	Low - Medium
Potential impact and risk:	<p>AQUATIC IMPACT: DISTURBANCE OF AQUATIC VEGETATION</p> <p>There is potential for disturbance of vegetation during construction from machinery, vehicles and workers. The movement of topsoil and incorrectly placed stockpiles could bury aquatic habitat and increase sedimentation rates. Due to construction, alien invasive species may encroach further into any disturbed areas and outcompete indigenous vegetation thereby reducing aquatic biodiversity. However, proper site management as per the EMP will avoid these impacts.</p>	
Nature of Impact:	Negative	

Extent, duration and magnitude of impact:	Local, short-term and minor	Not applicable, as the status quo will persist, and the watercourse is located approximately 200m's away, there will be no potential impact.
Consequence of impact or risk:	<ul style="list-style-type: none"> Loss/disturbance of aquatic vegetation. 	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	No	
Degree to which the impact can be reversed:	Partly	
Indirect impacts:	<ul style="list-style-type: none"> Burial of aquatic species. 	
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Alien invasive encroachment into aquatic habitat. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low (-)	
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Medium	
Proposed mitigation:	<p>Planning</p> <ul style="list-style-type: none"> Standard management measures should be implemented to ensure that any on-going activities do not result in a decline in water resource quality. <p>Monitoring</p> <ul style="list-style-type: none"> The ECO must monitor the compliance of the Contractors and instruct the Contractors where necessary. A monitoring programme should be in place, to ensure compliance with the EMPr throughout the construction phase. <p>No – Go Areas</p> <ul style="list-style-type: none"> There may be no intrusion into the valley. 	

	<ul style="list-style-type: none"> • The furthest distance between activities and the wetland must be maintained (the proposed cemetery boundary is more than 200 m away from the wetland). • At the least, an aquatic impact buffer zone of 32m should be applied. • Outside the working corridor, all watercourses are to be considered no go areas and a 32 m construction buffer must be adhered to. Any unnecessary intrusion into these areas is prohibited. <p>Stockpiling</p> <ul style="list-style-type: none"> • Designated areas for stockpiling of raw materials must be identified before material is brought onto site. • Stockpiles should not be placed in vegetated areas that will not be cleared. • No stockpiling is to occur within any 100m of water resources. • All stockpiling areas must be approved by the ECO before stockpiling occurs. <p>Erosion and Stormwater Control</p> <ul style="list-style-type: none"> • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. <p>Environmental Inductions/Awareness Training</p> <ul style="list-style-type: none"> • Staff environmental inductions must take place prior to construction commencing and any subcontractors utilised must be inducted before starting work onsite. 	
Residual impacts:		

Cumulative impacts post mitigation:	<ul style="list-style-type: none"> Encroachment of alien vegetation, if the site is not managed. 	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Potential impact and risk:	<p>AQUATIC IMPACT: EROSION & SEDIMENTATION</p> <p>Vegetation clearing and exposure of bare soils upslope of freshwater habitat during construction will decrease the soil binding capacity and cohesion of the soils and thus increase the risk of erosion and sedimentation downslope. This activity may cause the burying of aquatic habitat. Ineffective site stormwater management, particularly in periods of high runoff, can lead to soil erosion from confined flows. Formation of rills and gullies from increased concentrated runoff. This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface. Soil compaction resulting in reduced infiltration and increased surface runoff together with the artificial creation of preferential flow paths due to construction activities, will result in increased quantities of flow entering the systems. However, the magnitude of these activities is very small.</p>	
Nature of Impact:	Negative	Not applicable, as the status quo will persist, and the watercourse is located approximately 200m's away, there will be no potential impact.
Extent, duration and magnitude of impact:	Local, short-term and low	
Consequence of impact or risk:	<ul style="list-style-type: none"> Clearance of vegetation. Exposure of soils upslope of freshwater habitat. Soil compaction. 	
Probability of occurrence:	Probable	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Partly	
Indirect impacts:	<ul style="list-style-type: none"> Decrease the soil binding capacity and cohesion of the soils. Potential burial of aquatic habitat. Ineffective site stormwater management, particularly in periods of high runoff, can lead to soil erosion from confined flows. Artificial creation of preferential flow paths 	
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Increase the risk of erosion and sedimentation downslope. Formation of rills and gullies. 	

	<ul style="list-style-type: none"> • Increased particle carrying capacity of the water flowing over the surface. • Reduced infiltration and increased surface runoff. • Increased quantities of flow entering the systems. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	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>Planning</p> <ul style="list-style-type: none"> • Standard management measures should be implemented to ensure that any on-going activities do not result in a decline in water resource quality. <p>Monitoring</p> <ul style="list-style-type: none"> • The ECO must monitor the compliance of the Contractors and instruct the Contractors where necessary. • A monitoring programme should be in place, to ensure compliance with the EMPr throughout the construction phase. • Should extensive damage occur to any aquatic system, where rehabilitation is required, a suitably qualified aquatic specialist must audit the site. • Monitoring for non-compliance must be done on a daily basis by the contractors. <p>No – Go Areas</p> <ul style="list-style-type: none"> • There may be no intrusion into the valley. • The furthest distance between activities and the wetland must be maintained (the proposed 	

	<p>cemetery boundary is more than 200 m away from the wetland).</p> <ul style="list-style-type: none"> • At the least, an aquatic impact buffer zone of 32m should be applied. • Outside the working corridor, all watercourses are to be considered no go areas and a 32 m construction buffer must be adhered to. Any unnecessary intrusion into these areas is prohibited. <p>Stockpiling</p> <ul style="list-style-type: none"> • Designated areas for stockpiling of raw materials must be identified before material is brought onto site. • Stockpiles should not be placed in vegetated areas that will not be cleared. • No stockpiling is to occur within any 100m of water resources. All stockpiling areas must be approved by the ECO before stockpiling occurs. <p>Erosion and Stormwater Control</p> <ul style="list-style-type: none"> • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. • No increase in sediments should be allowed to reach the wetland area. <p>Environmental Inductions/Awareness Training</p> <ul style="list-style-type: none"> • Staff environmental inductions must take place prior to construction commencing and any subcontractors utilised must be inducted before starting work onsite. • Identifying the buffer zone, the watercourse, the working corridor and all activities required to safeguard the surrounding environment. 	
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Residual impacts:		
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Potential impact and risk:	<p>AQUATIC IMPACT: WATER POLLUTION</p> <p>During construction there are a number of potential pollution inputs into the soils and watercourse (such as hydrocarbons and raw cement). These pollutants alter the water quality parameters such as turbidity, nutrient levels, chemical oxygen demand and pH. These alternations impact the species composition of the systems, especially species sensitive to minor changes in these parameters. Sudden drastic changes in water quality can also have chronic effects on aquatic biota in general and result in localised extinctions. Hydrocarbons including petrol/diesel and oils/grease/lubricants associated with construction activities (machinery, maintenance, storage, handling) may potentially enter the system by means of surface runoff or through dumping by construction workers. The incorrect positioning and maintenance of the portable chemical toilets and use of the surrounding environment as ablution facilities may result in sewage and chemicals entering the system. However, the site is approximately 200 m away from aquatic habitat so this impact is highly unlikely to occur.</p>	
Nature of Impact:	Negative	Not applicable, as the status quo will persist, and the watercourse is located approximately 200m's away, there will be no potential impact.
Extent, duration and magnitude of impact:	Regional, short-term and minor	
Consequence of impact or risk:	<ul style="list-style-type: none"> Contamination to the watercourse and soils. 	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Partly	
Indirect impacts:		
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	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>Planning</p> <ul style="list-style-type: none"> • Standard management measures should be implemented to ensure that any on-going activities do not result in a decline in water resource quality. • Consideration should also be given to the rehabilitation of watercourses where feasible. <p>Monitoring</p> <ul style="list-style-type: none"> • The ECO must monitor the compliance of the Contractors and instruct the Contractors where necessary. • A monitoring programme should be in place, to ensure compliance with the EMPr throughout the construction phase. • Should extensive damage occur to any aquatic system, where rehabilitation is required, a suitably qualified aquatic specialist must audit the site. • Monitoring for non-compliance must be done on a daily basis by the contractors. <p>Chemical Toilets</p> <ul style="list-style-type: none"> • Position toilets toward the northern portion of the site. • Ensure that the chemical toilets are serviced weekly, by a registered company. • Ensure that following every service, disposal slips are obtained from the registered company to record each service and removal of waste. • Disposal slips should be filed in the environmental file. <p>No – Go Areas</p> <ul style="list-style-type: none"> • There may be no intrusion into the valley. 	

	<ul style="list-style-type: none"> • The furthest distance between activities and the wetland must be maintained (the proposed cemetery boundary is more than 200 m away from the wetland). • At the least, an aquatic impact buffer zone of 32m should be applied. • Outside the working corridor, all watercourses are to be considered no go areas and a 32 m construction buffer must be adhered to. Any unnecessary intrusion into these areas is prohibited. <p>Erosion and Stormwater Control</p> <ul style="list-style-type: none"> • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. • No increase in sediments should be allowed to reach the wetland area. <p>Environmental Inductions/Awareness Training</p> <ul style="list-style-type: none"> • Staff environmental inductions must take place prior to construction commencing and any subcontractors utilised must be inducted before starting work onsite. <p>Waste Management</p> <ul style="list-style-type: none"> • The solid domestic waste must be removed and disposed of offsite. • All post-construction building material and waste must be cleared in accordance with the EMPr. • Alien/ invasive species should not be stockpiled, they should be removed from site and dumped at an approved/registered site, which should be confirmed by the ECO. 	
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Residual impacts:		
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Potential impact and risk:	<p>AQUATIC IMPACT: FLOW MODIFICATION Land clearing and earth works upslope will reduce infiltration rates and increase the surface runoff volume and velocity. Such changes in surface roughness and runoff rates may lead to some rill and gully erosion. Altered water inputs from upslope disturbances as well as modified water distribution and retention patterns may affect the hydrological integrity of water resource. However, the likelihood of this small disturbance activity resulting in any significant hydrological changes is small.</p>	
Nature of Impact:	Negative	<p>Not applicable, as the status quo will persist, and the watercourse is located approximately 200m's away, there will be no potential impact.</p>
Extent, duration and magnitude of impact:	Local, short-term and small scale	
Consequence of impact or risk:	<ul style="list-style-type: none"> Alteration to surface roughness and runoff rates. 	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Partly	
Indirect impacts:	<ul style="list-style-type: none"> Rills and gully erosion (minor) 	
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Altered water inputs from upslope disturbances as well as modified water distribution and retention patterns may affect the hydrological integrity of water resource. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Medium	
Proposed mitigation:		

Residual impacts:	<p>Planning</p> <ul style="list-style-type: none"> • Standard management measures should be implemented to ensure that any on-going activities do not result in a decline in water resource quality. • Consideration should also be given to the rehabilitation of watercourses where feasible. • Commence with rehabilitation immediately. <p>Monitoring</p> <ul style="list-style-type: none"> • The ECO must monitor the compliance of the Contractors and instruct the Contractors where necessary. • A monitoring programme should be in place, to ensure compliance with the EMPr throughout the construction phase. • Should extensive damage occur to any aquatic system, where rehabilitation is required, a suitably qualified aquatic specialist must audit the site. • Monitoring for non-compliance must be done on a daily basis by the contractors. <p>No – Go Areas</p> <ul style="list-style-type: none"> • The furthest distance between activities and the wetland must be maintained (the proposed cemetery boundary is more than 200 m away from the wetland). • The aquatic impact buffer zone of 32m's should be applied. <p>Stockpiling</p> <ul style="list-style-type: none"> • Designated areas for stockpiling of raw materials must be identified before material is brought onto site. 	
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	<ul style="list-style-type: none"> • Stockpiles should not be placed in vegetated areas that will not be cleared. • No stockpiling is to occur within any 100m of water resources. All stockpiling areas must be approved by the ECO before stockpiling occurs. <p>Erosion and Stormwater Control</p> <ul style="list-style-type: none"> • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. • No increase in sediments should be allowed to reach the wetland area. • Ensure that the soils are not excessively compacted. • Any evidence of rill/gully formation should be tended to immediately. <p>Environmental Inductions/Awareness Training</p> <ul style="list-style-type: none"> • Staff environmental inductions must take place prior to construction commencing and any subcontractors utilised must be inducted before starting work onsite. 	
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Potential impact and risk:	<p>SOCIAL IMPACT: SENSE OF PLACE (NOISE & DUST)</p> <p>Considering that the expansion is located to the south of the existing cemetery, and the site is not surrounded by any residential housing, but rather a sports field to the west, and Rooipitjie Road to the north, along with existing disturbance and degradation of the site.</p>	

	<p>Minimal disturbance is predicted in terms of noise and alteration of sense of place, as this is an expansion of an existing and accepted cemetery site, located away from residential housing.</p> <p>Dust created from construction activities related to the movement of vehicles on the gravel road, clearance of vegetation, exposed soils and establishment of the caretaker/ablution facility, has the potential to impact upon the surrounding area. Dispersal can impact upon Rooipitjie Road, the adjacent sportsfield, open area, and may contribute to disturbance to surrounding fauna.</p> <p>Furthermore, this may create issues for the existing northern portion of the cemetery, as dust creation can disturb visitors, as well as settle onto existing grave stones.</p>	
Nature of Impact:	Negative	Not applicable, as the site will remain as it is. No development will occur.
Extent, duration and magnitude of impact:	Local, short-term and minor	
Consequence of impact or risk:	<ul style="list-style-type: none"> General construction nuisances i.e. dust, noise, odour, etc. will impact on the sense of place, although mainly temporary in nature. 	
Probability of occurrence:	Probable	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Partly	
Indirect impacts:	None	
Cumulative impact prior to mitigation:	Negligible	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low - Medium	
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Medium	
Proposed mitigation:	<p>Dust Mitigation</p> <ul style="list-style-type: none"> Land clearing and earthmoving activities should not be undertaken during strong winds, where possible. 	

	<ul style="list-style-type: none">• Cleared areas should be provided with suitable cover as soon as possible, and not left exposed for extended periods of time.• Stockpiles of topsoil, spoil material and other material that may generate dust must be protected from wind erosion (e.g. covered with netting, tarpaulin or other appropriate measures. (Note that topsoil should not be covered with tarpaulin as this may kill the seedbank).• The location of stockpiles must take into account, the prevailing wind direction, and should be situated so as to have the least possible dust impact to surrounding road-users and other land-users.• Speed limits must be enforced in all areas, including public roads and private property to limit the levels of dust pollution.• The speed limit should be set at 20-40km/h.• Dust must be suppressed on access roads and the construction site during dry periods by the regular application of non-potable water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that will not result in the generation of excessive run off.• Dust suppression measures such as the wetting down of sand heaps as well as exposed areas around the site must be implemented especially on windy days.• The use of straw worked into the sandy areas may also help and the ECO must advise when this is necessary.• If dust appears to be a continuous problem the option of using shade cloth to cover open areas	
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may be necessary or the erecting of shade netting above the fenced off area may need to be explored.

- Work on site must be well-planned and should proceed efficiently so as to minimise the handling of dust generating material.
- Material loads should be properly covered during transportation.
- Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. i.e. dust fall in residential areas may not exceed 600mg/m²/day, measured using reference method ASTM D1739;
- A Complaints Register must be available at the site office for inspection by the ECO of dust complaints that may have been received.
- The appointed Environmental Control Officer (ECO) must undertake a site inspection once per week, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP.

Noise Mitigation:

- A complaints register will be opened.
- Excavations and earth-moving activities must be restricted to normal construction working hours (7:30 – 17:30) as far as possible.
- Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance.

	<ul style="list-style-type: none"> • Vehicles and equipment must be kept in good working condition. If deemed necessary, machinery and equipment should be fitted with mufflers/ exhaust silencers. No unnecessary disturbances should be allowed to emanate from the construction site. • Workers should be educated on how to control noise-generating activities that have the potential to become disturbances, particularly over an extended period of time. • Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate. • Affected parties must be informed of the excessive noise factors. • The noise management and monitoring measures prescribed in the EMPr must be adhered to. 	
Residual impacts:	None	
Cumulative impacts post mitigation:	Low	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
Potential impact and risk:	<p>SOCIAL IMPACT: VISUAL</p> <p>The site will undergo transformation from undeveloped to developed, although clearance of the existing vegetation will form the greater portion of this transformation.</p> <p>No-Go Alternative: There is existing evidence of disturbance to the south and east of the existing site, due to excavation activities, and past agricultural activities, that has left behind degraded fynbos. This site can be subject to further disturbance due to anthropogenic activities, such as waste dumping, illegal land invasions, etc. if it remains exposed and vacant.</p>	
Nature of Impact:	Negative	Negative

Extent, duration and magnitude of impact:	Local and temporary.	Local and long-term
Consequence of impact or risk:	<ul style="list-style-type: none"> Change of visual aesthetics, due to construction disturbance. 	<ul style="list-style-type: none"> Disturbance and degraded nature of site will persist.
Probability of occurrence:	Definite	Probable
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource.	Probable
Degree to which the impact can be reversed:	Irreversible	Partly
Indirect impacts:	None	<ul style="list-style-type: none"> Excavated material to the east has the potential to be dispersed into the surrounding area. Anthropogenic activities including illegal land invasions, and waste disposal, may become a problem.
Cumulative impact prior to mitigation:	None	<ul style="list-style-type: none"> Alien invasive species can flourish in this area.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium
Degree to which the impact can be avoided:	Unavoidable	Medium
Degree to which the impact can be managed:	Low - Medium	Medium
Degree to which the impact can be mitigated:	Can be partly mitigated	Medium
Proposed mitigation:	<p>General:</p> <ul style="list-style-type: none"> The site camp, toilets, storage facilities, stockpiles, waste bins, and any other temporary structures on site, should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Utilize shade cloth, or other suitable material, along the fence perimeter of the site camp and construction site. 	<p>General:</p> <ul style="list-style-type: none"> In terms of Section 28, of the National Environmental Management Act, 1998 (Act 107 of 1998), Duty of Care, the landowner is responsible for the clearance of any potential pollution or harm to the environment. This includes waste dumped on site and alien invasive species success within the site. Utilize indigenous vegetation to re-vegetate the disturbed area, once the waste an alien species are removed.

	<ul style="list-style-type: none"> • Work on site must be well-planned and well-managed so that work proceeds quickly and efficiently, thus minimizing the disturbance time. • Special attention should be given to the screening of highly reflective material. • Use of lighting (if required) should take into account surrounding residents and land users and should present little or no nuisance. Downward facing, spill-off type lighting is recommended. 	<ul style="list-style-type: none"> • On-going alien invasive control should be implemented.
Residual impacts:	None.	None
Cumulative impacts post mitigation:	None	None
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low-Medium.	Low-Medium.
Potential impact and risk:	<p>SOCIO-ECONOMIC IMPACTS – CREATION OF MULTIPLE JOB OPPORTUNITIES & CAPITAL EXPENDITURE</p> <p>Creation of temporary job opportunities for skilled and unskilled labour, with potential for skills transfer, for members of the local community. Goods, materials and services, should be sourced from local businesses.</p> <p>No-Go Alternative: The clearance of vegetation and waste, along with the on-going management of alien invasive species, will require labour (unskilled), however this will be vastly less than the number required for the preferred alternative, and far less frequent.</p>	
Nature of Impact:	Positive	Positive
Extent, duration and magnitude of impact:	Local and medium - term.	Local and temporary
Consequence of impact or risk:	<ul style="list-style-type: none"> • Labourers (unskilled), will be able to earn a living. • Labourers (unskilled) can improve/build their skills. • Improved quality of life for these labourers, by establishing an income. 	<ul style="list-style-type: none"> • Labourers (unskilled), will be able to earn a living. • Labourers (unskilled) can improve/build their skills. • Improved quality of life for these labourers, by establishing an income.
Probability of occurrence:	Definite	Probable

Degree to which the impact may cause irreplaceable loss of resources:	No loss of a resources	Low
Degree to which the impact can be reversed:	Irreversible	Irreversible
Indirect impacts:	<ul style="list-style-type: none"> Income generated by labourer will benefit their families/households, by improving the quality of their lives. There may be opportunities to transfer skills from more experienced workers to less experienced workers. Local community/shops will benefit, as labour purchases goods through income generated, from local suppliers. 	<ul style="list-style-type: none"> Income generated by labour will benefit their families/households, by improving the quality of their lives. The skills the labour develops on site, may assist them in undertaking other work. Local community/shops will benefit, as labour purchases goods through income generated, from local suppliers.
Cumulative impact prior to mitigation:	Medium (+)	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	High (+)	Low (+)
Degree to which the impact can be avoided:	Unavoidable	Unavoidable
Degree to which the impact can be managed:	Not applicable	Not applicable
Degree to which the impact can be mitigated:	No mitigation proposed, as it is a positive impact.	No mitigation proposed, as it is a positive impact.
Proposed mitigation:	<ul style="list-style-type: none"> Positive, therefore no mitigation necessary. It should be noted that this impact will benefit the local community, and address the issue of unemployment within the Western Cape, and country of South Africa, particularly for unskilled labourers, although temporary. 	<ul style="list-style-type: none"> Positive, therefore no mitigation necessary.
Residual impacts:	<ul style="list-style-type: none"> Labour that previously lacked construction skills and experience, who were hired for this project, will now be able to utilize this for future developments. 	<ul style="list-style-type: none"> Labour that previously lacked construction skills and experience, who were hired for this project, will now be able to utilize this for future developments.
Cumulative impacts post mitigation:		

Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	High (+)	Low (+)
Potential impact and risk:	<p>SOCIAL IMPACT: TRAFFIC & ACCESS</p> <p>Rooipitjie Road is located to the north of the existing cemetery and forms the existing and main access into both the proposed and existing cemetery. The access road is intended to be extended, and additional parking will be created to the south of the proposed extended site. As Rooipitjie Road is the only formal access road to the site, as well as access and exit into and from Melkhoutsfontein settlement, the possibility of traffic impacts are likely, particularly accommodating visitors to the existing cemetery, during construction.</p> <p>Construction vehicles can slow traffic, as they exit and enter the site. There is a potential for incidents to occur, during movement, particularly if there are visitors entering and exiting the existing northern portion of the cemetery, during construction, although this is low. While there may not be many vehicles considering the scope of this project, there may be heavy machinery required.</p>	
Nature of Impact:	Negative	Not applicable, as no development will take place, the status quo will persist.
Extent, duration and magnitude of impact:	Local, short-term and minor – medium scale	
Consequence of impact or risk:	<ul style="list-style-type: none"> • The adjacent Rooipitjie Road will experience minor traffic disruptions during construction, due to the movement of construction vehicles accessing the site. • Construction vehicle movement, with loads, may cause damage to the existing gravel road in the cemetery. 	
Probability of occurrence:	High	
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource.	
Degree to which the impact can be reversed:	Barely	
Indirect impacts:	<ul style="list-style-type: none"> • Accidents may occur due to impatient or negligent drivers. • Congestion and delays. 	

Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> • Potential damage to the roads that can damage visitor's vehicles, resulting in potential complaints and financial claims (Low). • Possible complaints from public traversing this road, daily. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low - Medium	
Degree to which the impact can be avoided:	Low	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	<p>General:</p> <ul style="list-style-type: none"> • All construction vehicles need to adhere to traffic laws. The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. As far as possible care should be taken to ensure that the local traffic flow pattern is not significantly disrupted. • All vehicle operators need to be educated in terms of "best-practice" operations to minimise unnecessary traffic congestion or dangers. Construction vehicles should therefore, not unnecessarily obstruct the access point or traffic lanes used to access the site. Construction vehicles also need to consider the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles. • Adequate signage, that is both informative and cautionary to passing traffic (motorists and 	

pedestrians), warning them of the construction activities must be suitably located in the area where the construction is occurring and must be easily visible by all road users. Signage needs to be clearly visible and needs to include, among others, the following:

- Identifying working area as a construction site;
 - Cautioning against relevant construction activities;
 - Prohibiting access to construction site;
 - Clearly specifying possible detour routes and/or delay periods;
 - Possible indications of time frames attached to the construction activities, and;
 - Details of responsible contractors and engineers are working on the site.
- If needed, appropriate traffic management measures and/ or points men (traffic marshals) should be utilized to assist vehicles entering/ exiting the site, particularly where vehicles must cross the path of oncoming traffic.
 - Speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users.
 - The Contractor must ensure that any large or abnormal loads (including hazardous materials), that must be transported to/ from the site are routed appropriately, and that appropriate safety precautions are taken.
 - Truck drivers, transporting construction material or vehicles must be briefed on the appropriate route, and speed limits etc. The driver should be experienced at transporting large loads.

	<ul style="list-style-type: none"> Ensure any damage done by vehicle movement is identified, and reinstated as soon as possible. 	
Residual impacts:	None.	
Cumulative impacts post mitigation:	Negligible.	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low.	
Potential impact and risk:	<p>Presence of Heritage Resources</p> <p>It has been established that the Heritage Practitioner has explored the presence of palaeontological and archaeological resources on the site, including fossils and stone tools, respectively. It was determined that both resources are highly unlikely to be found on site and impacted upon by the proposed development. Regardless, care should be taken by the labour to always be alert to any accidental findings on site.</p> <p>In addition, the presence of burial grounds and graves were noted, which is clearly not applicable, as this is an expansion of the existing cemetery.</p>	
Nature of Impact:	Negative	Not applicable, as the status quo will persist, and no development will be undertaken that may result in the findings of the palaeontological/archaeological resources.
Extent and duration of impact:	Local & short term	
Consequence of impact or risk:	<ul style="list-style-type: none"> Evidence of stone tools /fossil remains. Damage to or loss of resources. 	
Probability of occurrence:	Highly unlikely	
Degree to which the impact may cause irreplaceable loss of resources:	High	
Degree to which the impact can be reversed:	Irreversible	
Indirect impacts:		
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
Degree to which the impact can be avoided:	Medium – High	
Degree to which the impact can be managed:	Medium – High	

Degree to which the impact can be mitigated:	Medium - High	
Proposed mitigation:	It has already been determined that it is highly unlikely that any heritage resource will be impacted upon/ found on site. However, care should be taken to: <ul style="list-style-type: none"> • Inform the labour of the possibility of heritage resources being present. • Advise the labour of how to identify it. • Advise the labour that if resources are found on site, work in that area should cease, and the appointed ECO should be informed, as well as the relevant authority (Heritage Western Cape). 	
Residual impacts:		
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
	PREFERRED ALTERNATIVE 1 LAYOUT	NO-GO ALTERNATIVE
OPERATIONAL PHASE		
Potential impact and risk:	AQUATIC IMPACT: DISTURBANCE OF AQUATIC VEGETATION There is less direct risk to aquatic habitat during the operational phase as it will have been transformed already during construction and the cemetery boundary is to be walled. The project may promote the establishment of disturbance-tolerant biota, including colonization by invasive alien species, weeds and pioneer plants if there is any ongoing disturbance near the riparian zone. Although this impact is initiated during the construction phase it is likely to persist into the operational phase. If the No Go zone is adhered to, and it should be as a wall is planned around the cemetery, and stormwater is managed, there will be no disturbance upon the river habitat.	
Nature of Impact:	Negative	Not applicable, as the status quo will persist, and no development will be undertaken, therefore no impact is predicted on the wetland or watercourse located approximately 200m's away.
Extent and duration of impact:	Site only, short-term and small scale	
Consequence of impact or risk:	<ul style="list-style-type: none"> • Establishment of disturbance tolerant biota. 	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	Low	

Degree to which the impact can be reversed:	Partly	
Indirect impacts:		
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Persistence of colonization by invasive alien species, weeds and pioneer plants. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Medium	
Proposed mitigation:	<p>General</p> <ul style="list-style-type: none"> Should accidental disturbance take place close to or within the watercourse, guidelines for rehabilitation of aquatic habitats are provided. The plan must promote the re-establishment of the ecological functioning of any area disturbed by construction activities. Also consult WET-RehabEvaluate, WET-RehabMethods (Cowden and Kotze, 2009), and the river rehabilitation manual developed by Day et al. 2016, for further information. <p>Alien Invasive Control</p> <ul style="list-style-type: none"> The establishment and infestation of alien invasive plant species must be prevented, managed and eradicated in the areas impacted upon by the project. <p>Maintenance</p> <ul style="list-style-type: none"> Maintenance must ensure that no solid waste is left on site that can be washed down or blown into the aquatic habitat. 	

	<p>No-Go Areas</p> <ul style="list-style-type: none"> The encroachment of any further infrastructure or vehicles into the aquatic buffer area must be prevented. 	
Residual impacts:	None	
Cumulative impacts post mitigation:	None	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Potential impact and risk:	<p>AQUATIC IMPACT: EROSION & SEDIMENTATION</p> <p>Where soil erosion problems initiated during the construction phase are not timeously and adequately addressed, these can persist into the operational phase of the development project and continue to have a negative impact on wetland. The creation of preferential flow paths, if not mitigated against, will result in erosion in the catchment and the river systems. As graves are dug, there may be sedimentation downslope, due to soil disturbance. With proper site management these impacts will be completely avoided.</p>	
Nature of Impact:	Negative	<p>Not applicable, as the status quo will persist, and no development will be undertaken, therefore no impact is predicted on the wetland or watercourse located approximately 200m's away.</p> <p>Proposed Retirement Village on Portion 3 Of The Farm Kraaibosch 195, George</p>
Extent, duration and magnitude of impact:	Local, permanent and minor	
Consequence of impact or risk:	<ul style="list-style-type: none"> Preferential flow paths (minimal). Erosion downslope (minimal). 	
Probability of occurrence:	Probable	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Partly	
Indirect impacts:	<ul style="list-style-type: none"> Sedimentation downslope. 	
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Erosion in the river system and catchment. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
Degree to which the impact can be avoided:	Medium	

Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Medium	
Proposed mitigation:	<p>General</p> <ul style="list-style-type: none"> Should accidental disturbance take place close to or within the watercourse, guidelines for rehabilitation of aquatic habitats are provided. The plan must promote the re-establishment of the ecological functioning of any area disturbed by construction activities. Also consult WET-RehabEvaluate, WET-RehabMethods (Cowden and Kotze, 2009), and the river rehabilitation manual developed by Day et al. 2016, for further information. <p>No-Go Areas</p> <ul style="list-style-type: none"> The encroachment of any further infrastructure or vehicles into the aquatic buffer area must be prevented. <p>Stormwater Control Measures</p> <ul style="list-style-type: none"> The volume and velocity of any stormwater runoff must be reduced through discharging the surface flow at multiple locations, preventing erosion. Potential for ponding on site, should be avoided. 	
Residual impacts:	None	
Cumulative impacts post mitigation:	None	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Potential impact and risk:	<p>AQUATIC IMPACT: WATER POLLUTION</p> <p>The burial of coffins may pose an environmental risk since the metals that are used in coffin-making may corrode or degrade into harmful toxins. These may leach into the surrounding soils and groundwater. As this wetland receives</p>	

	the majority of its water inputs from the groundwater it may be impacted if the groundwater is contaminated by items buried in the cemetery. Also, during maintenance of the structures there could be water pollution impacts similar to those encountered in the construction phase.	
Nature of Impact:	Negative	Not applicable, as the status quo will persist, and no development will be undertaken, therefore no impact is predicted on the wetland or watercourse located approximately 200m's away.
Extent, duration and magnitude of impact:	Local, permanent and minor	
Consequence of impact or risk:	<ul style="list-style-type: none"> Contamination of groundwater. 	
Probability of occurrence:	Probable	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Barely	
Indirect impacts:	<ul style="list-style-type: none"> Contamination of wetland. 	
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
Degree to which the impact can be avoided:	Low	
Degree to which the impact can be managed:	Low	
Degree to which the impact can be mitigated:	Low	
Proposed mitigation:	<p>Monitoring</p> <ul style="list-style-type: none"> Boreholes should be established on site. Groundwater monitoring programme should be established and should be applied on site. 	
Residual impacts:		
Cumulative impacts post mitigation:	<ul style="list-style-type: none"> Monitoring of groundwater quality and therefore wetland water quality. 	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
Potential impact and risk:	AQUATIC IMPACT: FLOW MODIFICATION	

	One has to ensure that surface flows are slowed and enter the valley in a diffuse pattern. This will be easy to accomplish due to the gentle gradient and uniform micro-topography of the site, as well as the high infiltration rates of the soils. If the buffer area is not altered and remains vegetated, and the stormwater runoff is managed, the impacts can be avoided and the hydrological regime will not be modified.	
Nature of Impact:	Negative	Not applicable, as the status quo will persist, and no development will be undertaken, therefore no impact is predicted on the wetland or watercourse located approximately 200m's away.
Extent, duration and magnitude of impact:	Local, permanent and small	
Consequence of impact or risk:	<ul style="list-style-type: none"> Alteration to surface flow. 	
Probability of occurrence:	Highly probable	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Partly	
Indirect impacts:		
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Alteration to the buffer zone. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Degree to which the impact can be avoided:	Low	
Degree to which the impact can be managed:	Low	
Degree to which the impact can be mitigated:	Low	
Proposed mitigation:	<p>General</p> <ul style="list-style-type: none"> Ensure that the soils are not extensively compacted after construction. Ensure the aquatic buffer zone is observed throughout construction. Stormwater management measures should be observed on site and integrated into development planning. Potential for ponding on site, should be avoided. The site should be re-vegetated with indigenous vegetation and should show successful growth. 	

Residual impacts:	None	
Cumulative impacts post mitigation:	None	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low (-)	
Potential impact and risk:	<p>IMPACT ON THE BIODIVERSITY NETWORK, CBA'S, ETC.</p> <p>Due to the degraded state of the site and its position next to an existing cemetery and residential area, the impact on the biodiversity (CBA) network is of a lesser concern. The aquatic CBA, located 200 m away, will also not be directly affected.</p> <p>The extensive CBA network around the site extending eastwards should also remain unaffected. A slight erosion of the network is however noted.</p>	
Nature of Impact:	Negative	Negative
Extent, duration and magnitude of impact:	Limited to site and surroundings - Permanent	Limited to site and surroundings – Long-term
Consequence of impact or risk:	<ul style="list-style-type: none"> Reoccurrence of alien invasive species. 	<ul style="list-style-type: none"> Alien invasive species persist.
Probability of occurrence:	High	High
Degree to which the impact may cause irreplaceable loss of resources:	Low - medium	Medium
Degree to which the impact can be reversed:	Medium – High	Medium
Indirect impacts:		
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Uncontrolled spread of alien invasive species, into the eastern portion of the site. 	<ul style="list-style-type: none"> Uncontrolled spread of alien invasive species to surrounding areas. Further loss of any species of concern. Degradation of the environment.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low - Medium (-)	Medium (-)
Degree to which the impact can be avoided:	Medium – High	Medium – High
Degree to which the impact can be managed:	Medium – High	Medium – High
Degree to which the impact can be mitigated:	Medium – High	Medium – High

Proposed mitigation:	<p>General</p> <ul style="list-style-type: none"> Rehabilitate the areas disturbed during construction phase. <p>Vegetation</p> <ul style="list-style-type: none"> Control alien invasive species as a long-term management requirement. Utilize bulbs and cuttings of succulents for use in the rehabilitation of disturbed areas, and ensure the rehabilitation is successful, prior to leaving site. <p>Waste Management</p> <ul style="list-style-type: none"> Prohibit further waste dumping in the area. Ensure all waste is removed from site. 	<p>General:</p> <ul style="list-style-type: none"> In terms of Section 28, of the National Environmental Management Act, 1998 (Act 107 of 1998), Duty of Care, the landowner is responsible for the clearance of any potential pollution or harm to the environment. This includes waste dumped on site and alien invasive species success within the site. Utilize indigenous vegetation to re-vegetate the disturbed area, once the waste and alien species are removed. On-going alien invasive control should be implemented. Prohibit further waste dumping on site.
Residual impacts:	None	None
Cumulative impacts post mitigation:	None	None
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low (-)	Low - Medium (-)
Potential impact and risk:	<p>CONTAMINATION OF GROUNDWATER: DECOMPOSITION OF HUMAN REMAINS</p> <p>Cemetery sites require groundwater monitoring during operational phase, due to the various potential sources of contamination that are introduced with each new burial. These contaminants have the potential to infect people through contact with contaminated soil/groundwater via ingestion or physical contact.</p> <p>Contaminants take the form of various organic, inorganic substances and metals, occurring from the decomposition of the bodies producing leachate, as decomposition occurs in different stages, resulting in various compositions of water, protein, fat, carbohydrates and other minerals, with inorganic chemical weathering of remaining bone, teeth and cartilage occurring last (Dippenaar, et al., 2018).</p>	
Nature of Impact:	Negative	No development will be undertaken. Consideration should be given to establishing a borehole as recommended by the GEOSS Specialists, in order to monitor the groundwater quality, as the cemetery remains.
Extent and duration of impact:	Local and short term.	
Consequence of impact or risk:	Increased nutrient and inorganic parameter concentrations in groundwater, and proximal drainage channel and Goukou River	

Probability of occurrence:	High	
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:		
Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
Degree to which the impact can be avoided:	Low	
Degree to which the impact can be managed:	Low	
Degree to which the impact can be mitigated:	Low	
Proposed mitigation:	<p>General:</p> <ul style="list-style-type: none"> • Ensure burial occurs above water table depth to enable natural attenuation in the vadose zone. Harmful bacteria, viruses and pathogens tend to die off during final stages of decomposition and therefore tend not persist in the environment. • Limit groundwater use immediately downgradient of the site. • Monitoring boreholes are required (minimum of 1 down-gradient) in order to detect any potential contamination as quickly as possible. Potentially use BH4 as down-gradient monitoring point. 	
Residual impacts:	<ul style="list-style-type: none"> • Identification of any potential contaminants. • Results for record keeping purposes, should there be any reported cases of contamination downstream. 	
Cumulative impacts post mitigation:	Low	
Significance rating of impact post mitigation	Low (-)	

(e.g. Low, Medium, Medium-High, High, or Very-High)		
Potential impact and risk:	<p>CONTAMINATION OF GROUNDWATER: METAL CORROSION</p> <p>Addition of paints and varnishes to the environment and corrosion of metals. Common contaminants found at cemeteries include metals from the ornamental hinges on coffins, jewellery and other nutrients (Dippenaar, et al., 2018). As per experiments noted in Dippenaar, et al., 2018, it has been established that metals tend to mobilise fairly soon and will remain mobile at later times. It has been determined that leachate from sands are more enriched, however clays are more corrosive to metals, but leaching is retarded. The corrosion of metal is further influenced by environmental control including low pH, unsaturated conditions, fine-textured soils, and warmer temperatures.</p>	
Nature of Impact:	Negative	No development will be undertaken. Consideration should be given to establishing a borehole as recommended by the GEOSS Specialists, in order to monitor the groundwater quality, as the cemetery remains.
Extent and duration of impact:	Local and short term.	
Consequence of impact or risk:	Contaminated groundwater, proximal drainage channel and Goukou River.	
Probability of occurrence:	High	
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:		
Cumulative impact prior to mitigation:	Medium-high	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium - High	
Degree to which the impact can be avoided:	Low - Medium	
Degree to which the impact can be managed:	Low - Medium	
Degree to which the impact can be mitigated:	Medium	
Proposed mitigation:	<p>General</p> <ul style="list-style-type: none"> • Standardise coffin size with ordinary dimensions. • Coffin materials should primarily consist of wood or biodegradable materials. 	

	<ul style="list-style-type: none"> Refrain from using excessive ornamental metals, plastics, paints varnishes, etc. All jewellery, dentures, pacemakers, watches, batteries, excessive cosmetics, and other such materials should be removed prior to burial. Limit groundwater use immediately downgradient of the site. Monitoring boreholes are required (minimum of 1 down-gradient) in order to detect any potential contamination as quickly as possible. Potentially use BH4 as down-gradient monitoring point. 	
Residual impacts:	<ul style="list-style-type: none"> Identification of any potential contaminants. Results must be kept for record keeping purposes, should there be any reported cases of contamination downstream. 	
Cumulative impacts post mitigation:	Medium	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium – High (-)	
Potential impact and risk:		
Potential impact and risk:	<p>CONTAMINATION OF GROUNDWATER: COMPOUNDS USED DURING EMBALMING</p> <p>Formaldehyde is one such chemical that is typical used in the embalming process, in preparation of the body for burial. This chemical poses a health risk due to its' carcinogenic properties, and therefore should be addressed, as it has been established that approximately 1.5 litres of formaldehyde is required for a 70 kg body (Anat, 1993; Karmakar, 2010).</p>	
Nature of Impact:	Negative	No development will be undertaken. Consideration should be given to establishing a borehole as recommended by the GEOSS Specialists, in order to monitor the groundwater quality, as the cemetery remains.
Extent and duration of impact:	Local and short term.	
Consequence of impact or risk:	Contaminated groundwater and proximal drainage channel.	
Probability of occurrence:	Low	
Degree to which the impact may cause irreplaceable loss of resources:	Minimal loss of resources	

Degree to which the impact can be reversed:	Reversible		
Indirect impacts:			
Cumulative impact prior to mitigation:	Low		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low		
Degree to which the impact can be avoided:	Not required.		
Degree to which the impact can be managed:	Not required		
Degree to which the impact can be mitigated:	Not required		
Proposed mitigation:	<p>General</p> <ul style="list-style-type: none"> • When formaldehyde comes into contact with water it tends to breakdown into methanol, amino acids and several other chemicals and therefore does not persist in the environment. (World Health Organisation, 2002). • Limit groundwater use immediately downgradient of the site. • Monitoring boreholes are required (minimum of 1 down-gradient) in order to detect any potential contamination as quickly as possible. Potentially use BH4 as down-gradient monitoring point. 		
Residual impacts:	<ul style="list-style-type: none"> • Identification of any potential contaminants. • Results must be kept for record keeping purposes, should there be any reported cases of contamination downstream. 		
Cumulative impacts post mitigation:	Low		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low (-)		
Potential impact and risk:	SOCIO-ECONOMIC IMPACTS: JOB CREATION & LOCAL REVENUE		

	<p>The operation of the cemetery will provide temporary employment for the undertaking of maintenance (on-going removal of alien invasive species, monitoring of boreholes, etc.) and security, it will however not create permanent long-term job opportunities.</p> <p>No-go alternative: The clearing of alien invasive species should be undertaken. This will create temporary employment, it will provide an opportunity for transfer and growth of skills, for unskilled labourers are used.</p>	
Nature of Impact:	Positive	Positive
Extent, duration and magnitude of impact:	Local and medium-term	Local and temporary
Consequence of impact or risk:	<ul style="list-style-type: none"> • Temporary employment available to few members of the local community. • Employees have the opportunity to earn wages that will contribute to their quality of life. 	<ul style="list-style-type: none"> • Temporary employment available to few members of the local community. • Labour has the opportunity to earn wages that will contribute to their quality of life.
Probability of occurrence:	Probable	Probable
Degree to which the impact may cause irreplaceable loss of resources:	Low	Low
Degree to which the impact can be reversed:	Irreversible	Irreversible
Indirect impacts:		
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> • Positive impact, no mitigation required. <p>General</p> <ul style="list-style-type: none"> • Unskilled labourers can be used. • Labour will earn a living to improve the lives, health and safety of their family members and households. • Employees are able to afford to educate their children. • Employees are able to provide food and shelter for themselves and their families. • Employment created with the development will have a positive influence on members in the community previously unemployed. Employees will source goods from the local community, contributing to the local economy. 	<ul style="list-style-type: none"> • Positive impact, no mitigation required. <p>General</p> <ul style="list-style-type: none"> • Unskilled labourers can be used. • Labour can earn a living to improve the lives, health and safety of their family members and households. • Labour will have an opportunity to help their families. • Employment created with the development will have a positive influence on members in the community previously unemployed. • Labour can source goods from the local community, contributing to the local economy.

	<ul style="list-style-type: none"> Maintenance of the site leads to a healthy environment and will be appreciated by the community, as this is a community facility, where people lay their loved ones to rest. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	Low (+)
Degree to which the impact can be avoided:	Not applicable, it remains a positive impact, that will benefit the surrounding community and the local economy.	Not applicable, it remains a positive impact, that will benefit the surrounding community and the local economy.
Degree to which the impact can be managed:		
Degree to which the impact can be mitigated:		
Proposed mitigation:		
Residual impacts:		
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	Low (+)
Potential impact and risk:	<p>SOCIAL IMPACT: VANDALISM AND SECURITY</p> <p>Change of site from undeveloped to developed, attracts loiterers and people with nefarious intentions. It is common for functioning cemeteries to be subject to occurrences of vandalism of infrastructure and gravestones, especially groundwater monitoring borehole equipment, and its visitors at risk of robberies, and other criminal acts, due to lack of security and the vast sizes of the sites. This can lead to community members feeling a sense of fear and unease while visiting cemeteries, leading to poor upkeep of grave sites.</p>	
Nature of Impact:	Negative	Not applicable, as the development will not take place, the site will remain as per the status quo.
Extent, duration and magnitude of impact:	Site only and long-term	
Consequence of impact or risk:	<ul style="list-style-type: none"> Possible criminal activity. Visitors hesitate to visit cemetery. Caretaker can be at risk. 	
Probability of occurrence:	Highly probable	

Degree to which the impact may cause irreplaceable loss of resources:	Possible Loss of Resources.	
Degree to which the impact can be reversed:	Irreversible	
Indirect impacts:	<ul style="list-style-type: none"> Community feels unease at visiting a place that should be seen as a communal area. Costs associated with vandalized tombstones and other disturbances. 	
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Site deterioration, as lack of visitors can result in poor upkeep of the gravesites, and lack of interest from the community. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (-)	
Degree to which the impact can be avoided:	Probable	
Degree to which the impact can be managed:	Probable	
Degree to which the impact can be mitigated:	Can be partly mitigated.	
Proposed mitigation:	<p>General</p> <ul style="list-style-type: none"> Erect signage detailing prohibited activities. Consideration should be given to appointing security at the cemetery, this would contribute to job creation. Ensure the fence is maintained, any detection of vandalism should be reported immediately. The caretaker/security should have the contact information for emergency services, and enforcement, as well as the means to report any suspicious activities. Consider fitting boreholes established for water monitoring, with borehole monitoring caps, to secure them while on site. 	
Residual impacts:	None	

Cumulative impacts post mitigation:	Low	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low - Medium	
Potential impact and risk:	<p>SOCIO-ECONOMIC IMPACTS: PROVISION OF ADDITIONAL GRAVE SITES</p> <p>The Hessequa Local Municipality has identified , that the existing cemetery has approximately 45 vacant burial plots available, which should allow for an estimated 18 months of cemetery life, at more or less 25 funerals per year. Through this expansion, the Melkhoutfontein cemetery capacity will be sufficient to support the needs of the community for the next 5 years'.</p>	
Nature of Impact:	Positive	<ul style="list-style-type: none"> No additional grave sites will be established if the no-go alternative is applied.
Extent, duration and magnitude of impact:	Positive	
Consequence of impact or risk:	<ul style="list-style-type: none"> Meeting the demand for additional grave sites, ensuring the local municipality is able to sustain the foreseen demand, to support its residents' needs. Utilizing space in an appropriate manner, by extending the cemetery into this disturbed, vacant portions of the two Erf portions that are already utilized for this purpose . 	
Probability of occurrence:	<ul style="list-style-type: none"> Definite 	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Irreversible	
Indirect impacts:		
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> Utilizing degraded/disturbed areas efficiently and providing improved conditions by re-vegetating the site with indigenous vegetation. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	High (+)	
Degree to which the impact can be avoided:	Unavoidable	

Degree to which the impact can be managed:	Unmanageable.	
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	
Proposed mitigation:	<ul style="list-style-type: none"> • Positive. • No mitigation required. • The proposed development represents an enhancement measure on its own. 	
Residual impacts:	<ul style="list-style-type: none"> • Meeting the need for community services within the municipality. • Promoting the Melkhoutfontein area. • Promoting economic growth and interest for the municipality, as basic community services are available. 	
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	High (+)	
Potential impact and risk:	<p>SOCIAL IMPACT: VISUAL</p> <p>There will be a change from an undeveloped, to a developed site. Alteration of the site will support a positive visual impact, as the site will be cleared of alien invasive species and infrastructure will be extended. Opportunity to remove waste from site.</p> <p>No-Go Alternative: If the site is cleared of waste and alien invasive species earlier, maintenance will be minimal.</p>	
Nature of Impact:	Positive	In terms of Section 28 of the National Environmental Management Act, 1998 (Act 107 of 1998), Duty of Care, the site must be maintained by the landowner, and all possible sources of pollution of harm, should be removed including alien invasive species.
Extent, duration and magnitude of impact:	Local and permanent.	
Consequence of impact or risk:	Change in sense of place	
Probability of occurrence:	Definite	
Degree to which the impact may cause irreplaceable loss of resources:	No irreplaceable loss of resources.	
Degree to which the impact can be reversed:	Irreversible	

Indirect impacts:	Change in sense of place.	
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> • Low. • The current character of the site will change, but as it links with the existing residential character of the surrounding area (existing cemetery), it is considered low. 	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+) no mitigation required.	
Degree to which the impact can be avoided:	Unavoidable	
Degree to which the impact can be managed:	Unmanageable.	
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	
Proposed mitigation:	<ul style="list-style-type: none"> • Positive. • No mitigation required. 	
Residual impacts:	<ul style="list-style-type: none"> • None 	
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+) no mitigation required.	
Potential impact and risk:	<p>TRAFFIC IMPACT: Traffic along Rooipitjie Road will be reduced, once construction concludes. The existing access road will be extended to allow access to the proposed site. Additional parking area has been allocated on site.</p> <p>While the accommodation of additional parking will improve within the site. There remains one access in and out of the site, which may cause difficulty if there are multiple funerals/visitors, however this is yet to be verified as an issue.</p>	
Nature of Impact:	Positive	Not applicable, as no development will take place.
Extent, duration and magnitude of impact:	Local and long-term	
Consequence of impact or risk:	<ul style="list-style-type: none"> • Improved parking and increased parking. • Additional infrastructure. 	
Probability of occurrence:	Definite	

Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Irreversible	
Indirect impacts:	<ul style="list-style-type: none"> Improved conditions for visitors. 	
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	
Degree to which the impact can be avoided:	Not applicable, as this is an enhancement.	
Degree to which the impact can be managed:		
Degree to which the impact can be mitigated:		
Proposed mitigation:	<ul style="list-style-type: none"> Positive impact. Speed breakers should be considered along Rooipitjie Road, as this remains the only access and entry into the cemetery site, and entrance/exit into Melkhoutsfontein settlement, residential properties and sportsfield where it is common for unsupervised kid to be found playing, etc. 	
Residual impacts:	None	
Cumulative impacts post mitigation:	None	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	

SECTION I: FINDINGS, IMPACT MANAGEMENT AND MITIGATION MEASURES

1. Provide a summary of the findings and impact management measures identified by all Specialist and an indication of how these findings and recommendations have influenced the proposed development.

Botanical Impact Assessment

Specialist: Mark Berry

Summary of Findings

The site accommodates fynbos transitional between Albertinia Sand Fynbos and Canca Limestone Fynbos. About 1.22 ha of degraded fynbos will be directly affected by the project. The rest of the site has been transformed and has little botanical value. The degraded fynbos, however, still has value in contributing to the local biodiversity and as a potential source for plant material. Two Species of Conservation Concern were recorded here, namely *Aspalathus sanguinea* (two patches) and *Leucospermum praecox* (a single shrub just outside the footprint area).

Due to the affected vegetation still being reasonably well represented in the region, the impact on vegetation type per se is of a low to moderate concern. It is therefore recommended (from a biodiversity perspective) that the project be allowed to proceed, subject to a few mitigation measures.

Summary of Impacts

- Impact on vegetation type, habitat and species.
- Impact on the biodiversity network, CBA's, etc.

Summary of Management Measures:

Pre - Construction:

- Identify the working area and demarcate prior to commencement of construction activity.
- If necessary, identify and utilize only already disturbed/transformed areas should be used for the accommodation of construction plant, construction material, offices, etc. during the construction phase, as per Figure 7:

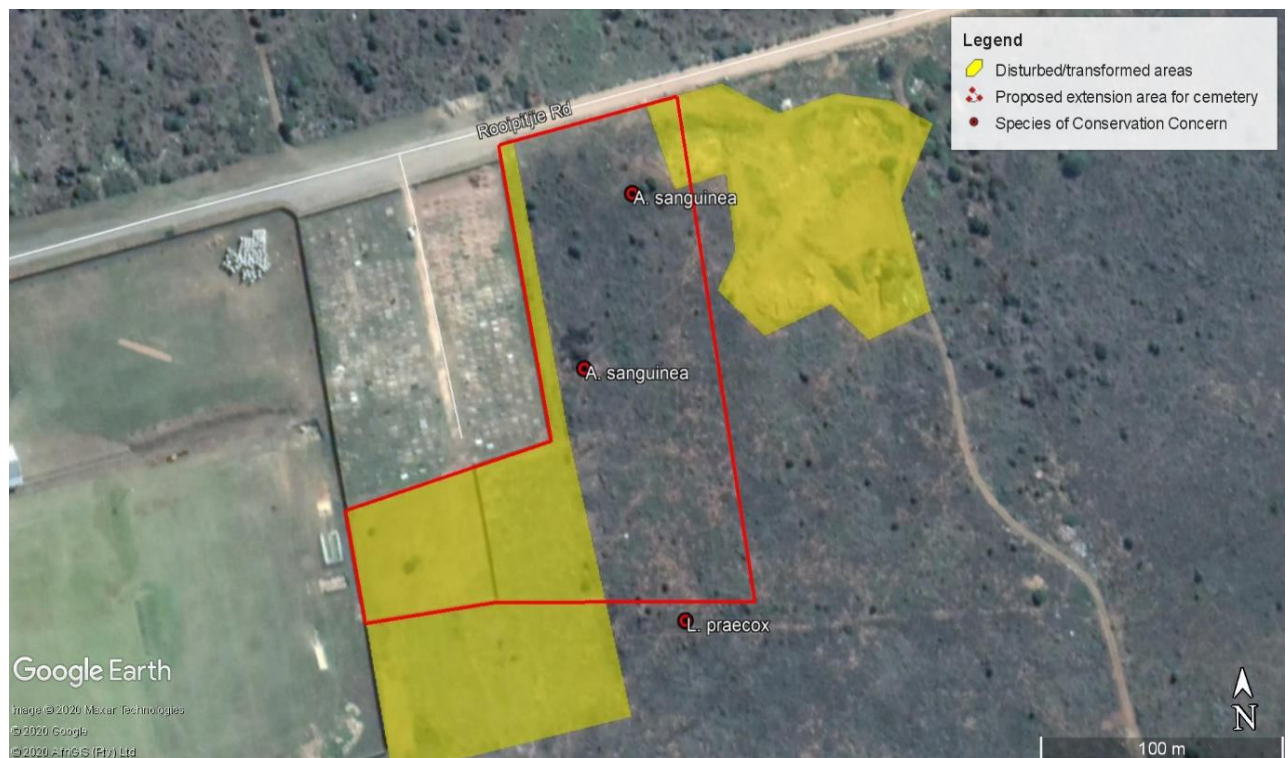


Figure 7: Biodiversity attributes of the site.

Construction:

- Maintain demarcation throughout project.
- No disturbance or spoiling may occur outside this demarcated area.
- Re-introduction of selected indigenous plant species.
- Control the establishment of alien invasive species on and around the site, as a long-term management requirement.
- Veld protection must be a priority, adjacent to the works areas, and maybe the rehabilitation of the disturbed areas afterwards. Clear all waste within the working corridor, while clearance takes place, and dispose of appropriately.

Rehabilitation:

- Rehabilitate the all areas disturbed during construction phase.
- Do not remove demarcation, until there is evidence of successful rehabilitation.
- Control alien invasive species as a long-term management requirement.
- Prohibit further waste dumping in the area.
- Utilize bulbs and cuttings of succulents for use in the rehabilitation of disturbed areas, and ensure the rehabilitation is successful.

Influence on Proposed Development

The proposed development can be successful through the implementation of recommended mitigation measures, therefore this will form a part of the EMP, and will be enforced by the appointed ECO, during construction.

Biodiversity Impact Assessment

Specialist: Dave Edge

Summary of Findings

The proposed cemetery development area at Melkhoutfontein was rated as being of "Medium" sensitivity because of the possibility of the occurrence of six butterfly species of conservation concern. This investigation has revealed that three of these SCCs could not possibly occur on the site, ie:

- *Aloeides trimenii southeyae* (EN)
- *Lepidochrysops littoralis* (EN)
- *Trimenia malagrida maryae* (EN)

However, there is a low possibility that one or more of the other three SCCs species could occur on or near the site. It is recommended that another site visit be made during the butterfly's flight periods in early November to eliminate this possibility.

Summary of Impacts

None.

Recommended Management Measures

None.

Influence on Proposed Development

The proposed development is unlikely to cause disturbance to any identified butterfly species, however it may be essential that another site visit be made during the butterfly's flight periods in early November to eliminate this possibility.

Freshwater Impact Assessment

Specialist: Debbie Fordham

Summary of Findings

It has been determined that the wetland downslope of the site could potentially be impacted upon. The direct and indirect impacts associated with the project were identified and grouped into four encapsulating impact categories. The impacts identified are:

- The disturbance of aquatic vegetation

- Sedimentation and erosion
- Water pollution
- Flow modification

The impacts associated with the project are assessed as being of Low significance. However, this may potentially be decreased to Very Low impact significance with the implementation of effective mitigation measures. The impacts are considered to be easily mitigated provided the mitigation measures and monitoring plan within this report are implemented and adhered to during the construction and operational phase of the project. Mitigation measures must focus on avoiding sensitive areas. The proposal is deemed acceptable from an aquatic habitat perspective. The applicant should apply for a General Authorisation from the Breede Gouritz Catchment Management to fulfil the water use requirements of the National Water Act (Act 36 of 1998).

Summary of Impacts

- The disturbance of aquatic vegetation
- Sedimentation and erosion
- Water pollution
- Flow modification

Impact Management Measures

Planning Phase

- The mitigation measures detailed within this report must be taken into consideration during financial planning of the construction phase of the development.
- This to ensure that sufficient funds are available to implement all the measures required to maintain the current PES score of the watercourse impacted upon.
- Attend to issues/concerns to ensure that no deterioration to the water resource takes place.
- Standard management measures should be implemented to ensure that any on-going activities do not result in a decline in water resource quality.
- Consideration should also be given to the rehabilitation of watercourses where feasible.

Monitoring

- Monitoring of the development activities is essential to ensure the mitigation measures are implemented.
- Compliance with the mitigation recommendations must be audited by a suitably qualified independent Environmental Control Officer with an appropriately timed audit report.
- Should extensive damage occur to any aquatic system, where rehabilitation is required, a suitably qualified aquatic specialist must audit the site.
- Monitoring for non-compliance must be done on a daily basis by the contractors.
- Photographic records of all incidents and non-compliances must be retained. This is to ensure that the impacts on the aquatic habitat are adequately managed and mitigated against and the successful rehabilitation of any disturbed areas within any system occurs.

No – Go Areas

- There may be no intrusion into the valley.
- The furthest distance between activities and the wetland must be maintained (the proposed cemetery boundary is more than 200 m away from the wetland).
- At the least, an aquatic impact buffer zone of 32m should be applied. This buffer is a zone of vegetated land designed and managed so that sediment and pollutant transport carried from source areas via diffuse surface runoff is reduced to acceptable levels (Macfarlane and Bredin 2016).

Construction Phase

Working Corridor

- Outside the working corridor, all watercourses are to be considered no go areas and a 32 m construction buffer must be adhered to. Any unnecessary intrusion into these areas is prohibited.

Monitoring

- The ECO must monitor the compliance of the Contractors and instruct the Contractors where necessary.
- A monitoring programme should be in place, to ensure compliance with the EMPr throughout the construction phase.

Stockpiling

- Designated areas for stockpiling of raw materials must be identified before material is brought onto site.
- Stockpiles should not be placed in vegetated areas that will not be cleared.
- No stockpiling is to occur within any 100m of water resources. All stockpiling areas must be approved by the ECO before stockpiling occurs.

Erosion and Stormwater Control

- Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles.
- No increase in sediments should be allowed to reach the wetland area.

Environmental Inductions/Awareness Training

- Staff environmental inductions must take place prior to construction commencing and any subcontractors utilised must be inducted before starting work onsite.

Post-construction/ Rehabilitation Phase

Should accidental disturbance take place close to or within the watercourse, guidelines for rehabilitation of aquatic habitats are provided. The plan must promote the re-establishment of the ecological functioning of any area disturbed by construction activities. Also consult WET-RehabEvaluate, WET-RehabMethods (Cowden and Kotze, 2009), and the river rehabilitation manual developed by Day et al. 2016, for further information. Rehabilitation guidelines include:

Alien Invasive Species Control

- The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project).
- Only the establishment of indigenous vegetation cover should be used to filter run-off before it enters the freshwater habitat.
- It is the contractor's responsibility to continuously monitor the area for alien species during the contract and establishment period which if present should be removed.
- Alien invasive species within the construction corridor must be removed. Alien invasive species that are likely to encroach are Acacia species, such as Rooikrans.
- Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas.
- Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use, for the necessity, type proposed to be used, effectiveness and impacts of the product on aquatic biota.
- Removal of vegetation must only be when essential for the continuation of the project. Do not allow any disturbance to the adjoining natural vegetation cover or soils.

Stormwater Control Measures

- Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised.
- Deactivate any erosion headcuts/rills/gullies that may have developed.

- A monitoring programme should be in place, not only to ensure compliance with the EMPr throughout the construction phase, but also to monitor any post-construction environmental issues and impacts during the vegetation establishment phase.

Waste Management

- The solid domestic waste must be removed and disposed of offsite.
- All post-construction building material and waste must be cleared in accordance with the EMPr.
- Alien/ invasive species should not be stockpiled, they should be removed from site and dumped at an approved/registered site, which should be confirmed by the ECO.

Operational Phase

Alien Invasive Control

- The establishment and infestation of alien invasive plant species must be prevented, managed and eradicated in the areas impacted upon by the project.

Maintenance

- Maintenance must ensure that no solid waste is left on site that can be washed down or blown into the aquatic habitat.

No-Go Areas

- The encroachment of any further infrastructure or vehicles into the aquatic buffer area must be prevented.

Stormwater Control Measures

- The volume and velocity of any stormwater runoff must be reduced through discharging the surface flow at multiple locations, preventing erosion.

Influence on Proposed Development

The following is noted:

- The proposed site is located approximately 200m's, upslope from the identified wetland area,
- The gradient of the slope is considered gentle, and the site exhibits a uniform micro-topography,
- The soils exhibit high infiltration rates.

As long as the buffer area is maintained and the mitigation measures are implemented particularly pertaining to confining the construction activity and runoff to the working area, there will be minimal to no impact on the aquatic environment.

Heritage Impact Assessment

Specialist: Jonathan Kaplan (ACRM) CRM Membership No. 84 in good standing

Summary of Findings:

The proposed development is an expansion of an existing cemetery site, indicating that one such possible heritage resource includes graves and burial grounds (eg: ancestral graves, graves of victims of conflict, historical graves & cemeteries), due to the presence of the existing Melkhoutfontein cemetery, and therefore the proposed impact on the heritage resource is not applicable.

It has been determined that there is a possibility of archaeological resources, possibly a few stone tools, however it was determined that this is unlikely.

It has been determined that there are surficial soils on site, which are rated as having Low sensitivity. The nature of the excavations (i. e. interment) is also unlikely to penetrate the more significant, but weathered and deformed De Hoopvlei Fm. and Bokkeveld Group mudstones, which may contain fossils.

Therefore the consulting heritage specialist had recommended that no heritage impact assessment be undertaken, due to the proposed low impact on potential heritage resources.

Summary of Impacts

- Archaeological resources: Stone tools - Impact on Stone Age resources likely to be very low.
- Palaeontological resources: Fossils
- Burial grounds: Existing Melkhoutsfontein Cemetery.

Impact Management Measures

- None recommended.

Influence on Proposed Development

Development will continue as planned, however labour will be advised of potential resources, and will be educated as to how to conduct themselves, should a resource (stone tool or fossil or human remains, be found where clearance has been planned).

2. List the impact management measures that were identified by all Specialist that will be included in the EMPr

Botanical Impact Assessment

Working Area

- Identify the working area and demarcate prior to commencement of construction activity.
- If necessary, identify and utilize only already disturbed/transformed areas should be used for the accommodation of construction plant, construction material, offices, etc. during the construction phase, as per Figure 7:
- Maintain demarcation throughout project.
- No disturbance or spoiling may occur outside this demarcated area.

Clearance and Management of Vegetation

- Ensure the adjacent veld remains intact.
- Utilize bulbs and cuttings of succulents for use in the rehabilitation of disturbed areas, and ensure the rehabilitation is successful.

Waste Management

- Clear all waste within the working corridor, while clearance takes place, and dispose of appropriately.
- Prohibit further waste dumping in the area.

Rehabilitation

- Re-introduction of selected indigenous plant species.
- Rehabilitate the all areas disturbed during construction phase.
- Do not remove demarcation, until there is evidence of successful rehabilitation.

Alien Invasive Control

- The establishment of alien invasive species on and around the site, as a long-term management requirement.

Aquatic Impact Assessment

Planning

- The mitigation measures detailed within this report must be taken into consideration during financial planning of the construction phase of the development.
- This to ensure that sufficient funds are available to implement all the measures required to maintain the current PES score of the watercourse impacted upon.
- Attend to issues/concerns to ensure that no deterioration to the water resource takes place.

- Standard management measures should be implemented to ensure that any on-going activities do not result in a decline in water resource quality.
- Consideration should also be given to the rehabilitation of watercourses where feasible.

Monitoring

- Monitoring of the development activities is essential to ensure the mitigation measures are implemented.
- A suitably qualified independent Environmental Control Officer should be appointed to monitor and report on site compliance, with an appropriately timed audit report.
- Should extensive damage occur to any aquatic system, where rehabilitation is required, a suitably qualified aquatic specialist must audit the site.
- Monitoring for non-compliance must be done on a daily basis by the contractors.
- Photographic records of all incidents and non-compliances must be retained. This is to ensure that the impacts on the aquatic habitat are adequately managed and mitigated against and the successful rehabilitation of any disturbed areas within any system occurs.

No – Go Areas

- There may be no intrusion into the valley.
- The furthest distance between activities and the wetland must be maintained (the proposed cemetery boundary is more than 200 m away from the wetland).
- At the least, an aquatic impact buffer zone of 32m should be applied. This buffer is a zone of vegetated land designed and managed so that sediment and pollutant transport carried from source areas via diffuse surface runoff is reduced to acceptable levels (Macfarlane and Bredin 2016).

Construction Phase

Working Corridor

- Outside the working corridor, all watercourses are to be considered no go areas and a 32 m construction buffer must be adhered to. Any unnecessary intrusion into these areas is prohibited.

Monitoring

- The ECO must monitor the compliance of the Contractors and instruct the Contractors where necessary.
- A monitoring programme should be in place, to ensure compliance with the EMPr throughout the construction phase.

Stockpiling

- Designated areas for stockpiling of raw materials must be identified before material is brought onto site.
- Stockpiles should not be placed in vegetated areas that will not be cleared.
- No stockpiling is to occur within any 100m of water resources. All stockpiling areas must be approved by the ECO before stockpiling occurs.

Erosion and Stormwater Control

- Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles.
- No increase in sediments should be allowed to reach the wetland area.

Environmental Inductions/Awareness Training

- Staff environmental inductions must take place prior to construction commencing and any subcontractors utilised must be inducted before starting work onsite.

Post-construction/ Rehabilitation Phase

Should accidental disturbance take place close to or within the watercourse, guidelines for rehabilitation of aquatic habitats are provided. The plan must promote the re-establishment of the ecological functioning of any area disturbed by construction activities. Also consult WET-RehabEvaluate, WET-RehabMethods (Cowden and Kotze, 2009), and the river rehabilitation manual developed by Day et al. 2016, for further information. Rehabilitation guidelines include:

Alien Invasive Species Control

- The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project).
- Only the establishment of indigenous vegetation cover should be used to filter run-off before it enters the freshwater habitat.
- It is the contractor's responsibility to continuously monitor the area for alien species during the contract and establishment period which if present should be removed.
- Alien invasive species within the construction corridor must be removed. Alien invasive species that are likely to encroach are Acacia species, such as Rooikrans.
- Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas.
- Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use, for the necessity, type proposed to be used, effectiveness and impacts of the product on aquatic biota.
- Removal of vegetation must only be when essential for the continuation of the project. Do not allow any disturbance to the adjoining natural vegetation cover or soils.

Stormwater Control Measures

- Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised.
- Deactivate any erosion headcuts/rills/gullies that may have developed.
- A monitoring programme should be in place, not only to ensure compliance with the EMPr throughout the construction phase, but also to monitor any post-construction environmental issues and impacts during the vegetation establishment phase.

Waste Management

- The solid domestic waste must be removed and disposed of offsite.
- All post-construction building material and waste must be cleared in accordance with the EMPr.
- Alien/ invasive species should not be stockpiled, they should be removed from site and dumped at an approved/registered site, which should be confirmed by the ECO.

Operational Phase

Alien Invasive Control

- The establishment and infestation of alien invasive plant species must be prevented, managed and eradicated in the areas impacted upon by the project.

Maintenance

- Maintenance must ensure that no solid waste is left on site that can be washed down or blown into the aquatic habitat.

No-Go Areas

- The encroachment of any further infrastructure or vehicles into the aquatic buffer area must be prevented.

Stormwater Control Measures

- The volume and velocity of any stormwater runoff must be reduced through discharging the surface flow at multiple locations, preventing erosion.

Geohydrological and Geotechnical Study

Ensure that:

- The groundwater should not be used for potable consumption within 250 m of the existing or expanded cemetery.
- Irrespective of whether the expansion takes place or not, groundwater monitoring should be initiated on site. Additionally, relevant mitigation measures and best practice procedures must be employed to minimize contamination of the subsurface, as per mitigation tables.
- Pz_2, BH4 and SPR01 should be considered as potential groundwater monitoring points.

Note that these recommendations are based on GEOSS's opinion and the final decision on the necessary groundwater monitoring requirements resides with the regulatory authorities.

The Proposed Groundwater Monitoring Action Plan should be implemented, this includes:

- Consideration should be given to implementing Pz_2 and two sources of groundwater (BH4 and SPR01) be utilised for regular monitoring. Providing for monitoring of the groundwater quality and groundwater levels across the site.
- The water levels and the groundwater quality should be monitored quarterly, so as to determine seasonal fluctuation.
- The development of a groundwater monitoring programme will be important for assessing any impacts of the site on groundwater and the environment.
- It is recommended that groundwater monitoring be undertaken at the proposed site in accordance with guidelines set out in the publication by DWAF (1998). The various aspects of the monitoring are presented in below:
 - Groundwater levels
 - Groundwater level measurements are recommended for the monitoring borehole at the study site.
 - A dip meter can be used to measure the water level below the top of the borehole collar/casing height (mbch).
 - The height of the collar/casing height must then also be measured (m).
 - The water level (metres below ground level (mbgl)) can then be calculated by subtracting the collar/casing height from the water level (mbch).
 - The value must be recorded along with the date and time of measurement.
 - Sampling process
 - The monitoring borehole should be assessed to determine whether it is a low or high yielding borehole before sampling.
 - Should the monitoring borehole be of low yield and unable to pump with a conventional pump (until field parameters stabilize and a sample collected), a bailer (grab) sample can be collected.
 - It is preferable to use a low volume sampling pump in most monitoring boreholes (known as a bladder pump).
 - For a high yielding borehole, it is recommended that the pump be installed either half a meter above the bottom of the borehole or at the highest yielding fracture depth.
 - The groundwater should be pumped into a flow-through cell, an EC and pH probe should be placed into the flow-through cell and be pumped until field chemistry parameters stabilise prior to sampling.
 - Sample Collection, Preservation and Submission
 - Sample bottles must be labelled with the borehole name, site name and date.
 - At the time of sampling field, chemistry parameters must be measured and recorded.

- These include electrical conductivity (EC), oxidation reduction potential (ORP), pH, temperature and dissolved oxygen (DO).
- Samples must be taken in their correct sampling container and preserved in the correct manner prior to submission to an accredited laboratory for the analysis parameters.
- The sample method and preservation must be discussed with the laboratory prior to sampling.
- Sampling frequency and parameter analysis
 - In order to best understand and monitor the site, it is recommended that quarterly water level measurements be taken (to determine seasonal fluctuation).
 - It is however, considered adequate for boreholes to be sampled bi-annually. Table 3 indicates the potential parameters for ongoing monitoring.

Table 3: Source-based selection of groundwater quality monitoring variables.

Source Activity Category	Cemetery Parameter
Inorganic	pH, EC, K, Cl, NO ₃ , NH ₄ , P, Na, Ca, HCO ₃
Metals	Fe, Mn, Ti, Cr, Cd, Pb, Ni
Organic (and indicator analysis)	BOD, COD, total coliforms, E coli.

3. List the specialist investigations and the impact management measures that will **not** be implemented and provide an explanation as to why these measures will not be implemented.

Placement of monitoring boreholes will be confirmed.

4. Explain how the proposed development will impact the surrounding communities.

Proposed Preferred Alternative 1 Layout

Potential Negative Impacts

- Potential groundwater contamination, particularly due to metal corrosion.
- Traffic may be affected during construction phase, particularly to the West of the site, along Rooipitjje Road, however it will be radically reduced during operational phase, and accessibility within the cemetery will be improved.
- If there is a lack of security and maintenance, there may be an increase in occurrences of loitering, vandalism and criminal activity.

Potential Positive Impacts

- The existing cemetery capacity will be increased.
- The current expansion proposal will provide sufficient burial space for the next 5 years.
- Social rights and/or religious customs are respected, as some people believe that burials are the only way to lay their deceased to rest.
- The community will have a secure and well-maintained area to lay their deceased to rest, as well as visit.
- The cemetery does not encroach upon the residential developments, as it remains on the outskirts, with immediate surroundings being open space, a road, and a sportsfield.
- The development will attract temporary employment during construction, and fewer long-term employment during operational phase, for locals, in order to maintain the expanded area.
- The development will encourage the municipality to address their existing infrastructure, as well as address their responsibility to implement monitoring infrastructure.

5.	Explain how the risk of climate change may influence the proposed activity or development and how has the potential impacts of climate change been considered and addressed.
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Table 4: Climate change impacts, and their consideration in the proposed development.

According to the Western Cape Department of Environmental Affairs and Development Planning, climate change will affect the Western Cape in the following ways:	How has the potential climate change impacts been integrated in proposed development.
Higher average annual temperature	<ul style="list-style-type: none"> Daily assessment of weather conditions should be completed during construction stage, to ensure conditions are viable for labourers to be working outside (ie: temperatures are not excessive). Potable water should be available for consumption during construction, to keep labourers hydrated.
Higher maximum temperatures	
More hot days and more heat waves	
Higher minimum temperatures	
Fewer cold days and frost days	
Reduced average rainfall in the Western Cape, particularly the western parts	<ul style="list-style-type: none"> Vegetation used for landscaping of the cemetery should be indigenous and drought tolerant.
Rising sea levels	<ul style="list-style-type: none"> The development is situated approximately 5km's from the coastline.
Increased fire risks	<ul style="list-style-type: none"> Restrictions should be established to limit fire hazards, ie, smoking, open fires, etc. This can be applied throughout the operational phase. During construction fires should be strictly prohibited, smoking should be discouraged on site, if it is allowed, there should be a designated area, with an appropriate bin to contain discarded cigarettes, with an appropriately heavy cover.
Increase in the frequency and intensity of extreme weather events, including floods, droughts, and storm surges	<ul style="list-style-type: none"> It is recognized that the effects of climate change as a result of alternating extreme weather events, are a very real impact upon this development, and long-term resilience planning is required. This should be considered in the stormwater recommendations and mitigation measures.

6.	Explain whether there are any conflicting recommendations between the specialists. If so, explain how these have been addressed and resolved.
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There have been no conflicting recommendations.

7.	Explain how the findings and recommendations of the different specialist studies have been integrated to inform the most appropriate mitigation measures that should be implemented to manage the potential impacts of the proposed activity or development.
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The findings and recommendations have been integrated into the impact tables (Section F, of this document), and the EMPr, so as to guide the various phases of the project.

8.	Explain how the mitigation hierarchy has been applied to arrive at the best practicable environmental option.
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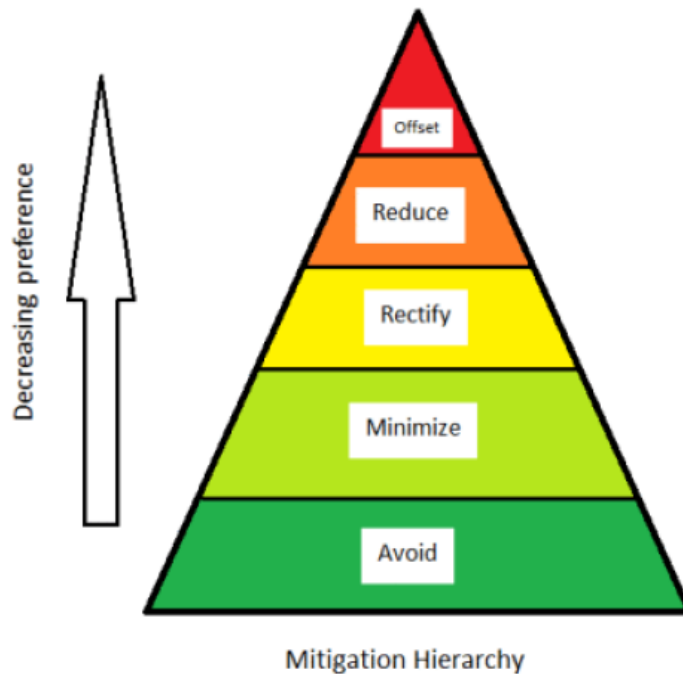


Figure 8: The Mitigation Hierarchy

This hierarchy was considered while determining the best practicable environmental option for the proposed development. Activities related to the proposed development have been considered. Where possible activities have been avoided, therefore all activities included in the proposal of this development are essential for the successful implementation and operation of this development.

Therefore, mitigation measures for the proposed development activities, have been established to firstly minimize and rectify, where possible or radically reduce the predicted impacts, through the inclusion of additional mitigation measures, as further detailed in the EMPr.

No offsets are required for the proposed development.

SECTION J: GENERAL

1. Environmental Impact Statement

1.1.	Provide a summary of the key findings of the EIA.
<p>The key findings of the EIA indicate that the proposed development, can have a positive socio-economic and environmental impact in terms of:</p> <ul style="list-style-type: none"> - Creating employment, predominantly in a temporary manner, for the surrounding community. - The addition of 928 burial spaces, which will increase the capacity of the site. - The vegetation intended to be disturbed is degraded and species poor, with certain areas devoid of significant fynbos - Providing an opportunity to clear the existing alien invasive vegetation and degraded vegetation, found to dominate the site. - Minimal impact is predicted to occur within the aquatic habitat. - It is proposed that an informal stormwater reticulation system will as such be provided by a combination of surfaced roadways, v-channels and cut-off drains, limited inlet structures and concrete stormwater pipes where needed. - As the site has a flat gradient, the site will be adequately landscaped to avoid occurrences of ponding, etc. - Allowing for the re-establishment of indigenous vegetation, and the utilization of disturbed areas. 	

- The implementation of a borehole, as recommended will supply data on the conditions of the groundwater, and receiving wetland water quality, that can be utilized for future planning.

While negative impacts, have been found, efficient mitigation can reduce the impact significance on the environment. These impacts include:

- The consequence associated with contamination is considered to be very high as there are numerous municipal supply sources within 250 m of the cemetery expansion area. The aquifer developed for Melkhoutfontein is of strategic importance and requires strict protection.
- Disturbance to vegetation and CBA's/ ESA's, of a terrestrial and aquatic nature, although this has been found to be of low concern.
- Presence of potential terrestrial butterfly species.
- Alteration of sense of place, visual impacts and dust creation.
- Traffic.
- Vandalism/theft.

All the noted positive impacts are predicted to be the outcome upon an otherwise disturbed and neglected portion of land with degraded fynbos, that may have been exposed to further disturbance, from past agricultural activities, earth-moving activities, alien invasive species, or potential land invasions, should the current situation persist.

Through the implementation of appropriate stormwater techniques and measures, monitoring boreholes, 28m aquatic buffer zone, other recommendations and mitigation measures from the various specialists and EAP, the impacts can be minimized and controlled.

The specialists consulted and the EAP agree that the preferred proposed alternative development is acceptable, as long as the recommendations are implemented, specifically pertaining to groundwater monitoring. Furthermore, the developers appointed Contractor should be strictly monitored for compliance with the agreed upon permits/EMPr and EA conditions, by an independent Environmental Control Officer.

1.2. Provide a map that that superimposes the preferred activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. (Attach map to this BAR as Appendix B2)

1.3. Provide a summary of the positive and negative impacts and risks that the proposed activity or development and alternatives will have on the environment and community.

Table 5: Summary of Positive and Negative Impacts – Construction Phase

CONSTRUCTION PHASE IMPACTS				
IMPACT	PREFERRED ALTERNATIVE 1: LAYOUT		NO-GO ALTERNATIVE	
	IMPACT SIGNIFICANCE BEFORE MITIGATION	IMPACT SIGNIFICANCE AFTER MITIGATION	IMPACT SIGNIFICANCE BEFORE MITIGATION	IMPACT SIGNIFICANCE AFTER MITIGATION
Aquatic: Disturbance/Loss of Aquatic Vegetation and Habitat	Low (-)	Very Low (-)	Not applicable.	
Aquatic: Sedimentation and Erosion	Low (-)	Very Low (-)	Not applicable.	

Aquatic: Water Pollution	Low (-)	Very Low (-)		
Aquatic: Flow Modification	Very Low (-)	Very Low (-)		
Impact on Vegetation & Fauna Type, Habitat and Species	Medium (-)	Low (-)	Medium (-)	Low - Medium (-)
Presence of Heritage Resources	Low (-)	Low (-)	Not applicable.	
Social Impact: Sense of Place (Noise & Dust)	Low - Medium (-)	Low (-)		
Traffic and Access	Low - Medium (-)	Low (-)		
Social Impact: Visual	Medium (-)	Low - Medium (-)	Medium (-)	Low - Medium (-)
Socio-Economic Impacts – Creation of Multiple Job Opportunities & Capital Expenditure	High (+)		Low (-)	

Table 6: Summary of Positive and Negative Impacts – Operational Phase

OPERATIONAL PHASE IMPACTS				
IMPACT	PREFERRED ALTERNATIVE 1: LAYOUT		NO-GO ALTERNATIVE	
	IMPACT SIGNIFICANCE BEFORE MITIGATION	IMPACT SIGNIFICANCE AFTER MITIGATION	IMPACT SIGNIFICANCE BEFORE MITIGATION	IMPACT SIGNIFICANCE AFTER MITIGATION
Aquatic: Disturbance Aquatic Vegetation and Habitat	Very Low (-)	Very Low (-)	Not applicable.	
Aquatic: Sedimentation and Erosion	Low (-)	Very Low (-)		
Aquatic: Water Pollution	Low (-)	Low (-)		
Aquatic: Flow Modification	Very Low (-)	Very Low (-)		
Impact on the Biodiversity Network, CBA's, Etc.	Low - Medium (-)	Low (-)	Medium (-)	Low - Medium (-)
Contamination of Groundwater: Decomposition of Human Remains	Low (-)	Low (-)		

Contamination of Groundwater: Metal Corrosion	Medium – High (-)	Medium – High (-)	Not applicable.
Contamination of Groundwater: Compounds Used During Embalming	Low (-)	Low (-)	
Social Impact: Vandalism and Security	Medium (-)	Low - Medium (-)	
Traffic	Medium (+)		
Visual	Medium (+)		
Socio-Economic Impacts: Provision of Additional Grave Sites	High (+)		
Socio-Economic Impacts – Creation of Multiple Job Opportunities & Capital Expenditure	Medium (+)	Low (-)	

2. Recommendation of the Environmental Assessment Practitioner (“EAP”)

2.1.	Provide Impact management outcomes (based on the assessment and where applicable, specialist assessments) for the proposed activity or development for inclusion in the EMPr
<p>Objective: Presence and Management of Butterfly Species</p> <p>Impacts to Avoid:</p> <ul style="list-style-type: none"> - Disturbance to butterfly species. - Displacement or harm to butterfly species. - Destruction of butterfly habitat. <p>Impact Management Actions:</p> <ul style="list-style-type: none"> - Appoint a suitably qualified Lepidopterist to undertake a site visit to establish the presence of the remaining butterfly species of concern. - Ensure that if necessary, the Lepidopterist recommends a buffer zone to be adopted prior to commencement of construction activities. - Construction activity should be planned to commence after the aforementioned site visit, and to conclude before the next potential butterfly flight period. - Labour should be advised: <ul style="list-style-type: none"> • All fauna, including butterflies, should not be harmed during construction. • Fauna should be avoided, and if removal is required due to a potential for harm, professional assistance should be sought. <p>Objective: Prevent impacts to the aquatic habitat</p> <p>Impacts to avoid:</p> <ul style="list-style-type: none"> - Encroachment into the aquatic habitat. - Contamination of the watercourse/wetland. - Runoff with excessive amounts of sediment and contaminated soil entering the aquatic area. - Concentrated runoff toward the aquatic area. <p>Impact Management Actions:</p>	

- Implement stormwater management techniques and measures in accordance with the recommended stormwater plans as per the Engineers report.
- Cleared areas and any other area susceptible to erosion must be provided with a suitable cover as soon as possible and/or stabilised via the implementation of appropriate erosion control measures i.e. silt fences.
- Bund stockpiles, and locate stockpiles away from the edge of the slope.
- Re-establish vegetation and implement slope stabilization measures and berms, as soon as possible.
- The appropriate measures must be selected by the contractor in consultation with the ECO.
- Only the minimum area required to accommodate construction may be cleared of vegetation, to limit unnecessary exposure of surfaces.
- All disturbed areas must be rehabilitated after construction to the satisfaction of the Environmental Control Officer
- Implement a monitoring borehole in order to detect any potential contamination as quickly as possible.
- Consider fitting borehole/s established for water monitoring, with borehole monitoring caps, to secure them while on site.
- Maintain the 32m aquatic buffer zone.

Objective: Impact on Vegetation Type, Habitat and Species

Impact to avoid:

- Construction disturbance extending beyond the proposed working area, into the adjacent veld.
- Loss of good quality vegetation.
- Loss/disturbance to fauna.
- Soil erosion and sedimentation.

Impact Management Actions:

- Identify the working area and demarcate prior to commencement of construction activity, thereafter, maintain until successful rehabilitation is observed.
- If necessary, identify and utilize only already disturbed/transformed areas should be used for the accommodation of construction plant, construction material, offices, etc. during the construction phase.
- No disturbance or spoiling may occur outside this demarcated area.
- Re-introduction of selected indigenous plant species.
- Control the establishment of alien invasive species on and around the site, as a long-term management requirement.
- Veld protection must be a priority, adjacent to the works areas, and maybe the rehabilitation of the disturbed areas afterwards.
- Clear all waste within the working corridor, while clearance takes place, and dispose of appropriately.
- Rehabilitate the all areas disturbed during construction phase.
- Prohibit further waste dumping in the area.
- Utilize bulbs and cuttings of succulents for use in the rehabilitation of disturbed areas, and ensure the rehabilitation is successful.

Objective: Presence of Heritage Resources

Impact to avoid:

- Loss/disturbance to heritage resources.
- Soil erosion and sedimentation.

Impact Management Actions:

- Inform the labour of the possibility of heritage resources being present.

- Advise the labour of how to identify it.
- Advise the labour that if resources are found on site, work in that area should cease, and the appointed ECO should be informed, as well as the relevant authority (Heritage Western Cape).

Objective: Groundwater Contamination

Impacts to avoid:

- Contamination of groundwater by decomposition of human remains.
- Contamination of groundwater by metal corrosion.
- Contamination of groundwater by compounds used during embalming.

Impact Management Actions:

- The groundwater should not be used for potable consumption within 250 m of the existing or expanded cemetery.
- Irrespective of whether the expansion takes place or not, groundwater monitoring should be initiated on site. Additionally, relevant mitigation measures and best practice procedures must be employed to minimize contamination of the subsurface, as per mitigation tables.
- Pz_2, BH4 and SPR01 should be considered as potential groundwater monitoring points.

Note that these recommendations are based on GEOSS's opinion and the final decision on the necessary groundwater monitoring requirements resides with the regulatory authorities.

The Proposed Groundwater Monitoring Action Plan should be implemented, this includes:

- Consideration should be given to implementing Pz_2 and two sources of groundwater (BH4 and SPR01) be utilised for regular monitoring. Providing for monitoring of the groundwater quality and groundwater levels across the site.
- The water levels and the groundwater quality should be monitored quarterly, so as to determine seasonal fluctuation.
- The development of a groundwater monitoring programme will be important for assessing any impacts of the site on groundwater and the environment.
- It is recommended that groundwater monitoring be undertaken at the proposed site in accordance with guidelines set out in the publication by DWAF (1998). The various aspects of the monitoring are presented in below:
 - Groundwater levels
- Groundwater level measurements are recommended for the monitoring borehole at the study site.
- A dip meter can be used to measure the water level below the top of the borehole collar/casing height (mbch).
- The height of the collar/casing height must then also be measured (m).
- The water level (metres below ground level (mbgl)) can then be calculated by subtracting the collar/casing height from the water level (mbch).
- The value must be recorded along with the date and time of measurement.
- Sampling process
- The monitoring borehole should be assessed to determine whether it is a low or high yielding borehole before sampling.
- Should the monitoring borehole be of low yield and unable to pump with a conventional pump (until field parameters stabilize and a sample collected), a bailer (grab) sample can be collected.
- It is preferable to use a low volume sampling pump in most monitoring boreholes (known as a bladder pump).
- For a high yielding borehole, it is recommended that the pump be installed either half a meter above the bottom of the borehole or at the highest yielding fracture depth.

- The groundwater should be pumped into a flow-through cell, an EC and pH probe should be placed into the flow-through cell and be pumped until field chemistry parameters stabilise prior to sampling.
- Sample Collection, Preservation and Submission
- Sample bottles must be labelled with the borehole name, site name and date.
- At the time of sampling field, chemistry parameters must be measured and recorded.
- These include electrical conductivity (EC), oxidation reduction potential (ORP), pH, temperature and dissolved oxygen (DO).
- Samples must be taken in their correct sampling container and preserved in the correct manner prior to submission to an accredited laboratory for the analysis parameters.
- The sample method and preservation must be discussed with the laboratory prior to sampling.
- Sampling frequency and parameter analysis
- In order to best understand and monitor the site, it is recommended that quarterly water level measurements be taken (to determine seasonal fluctuation).
- It is however, considered adequate for boreholes to be sampled bi-annually. Table 7 indicates the potential parameters for ongoing monitoring.

Table 7: Source-based selection of groundwater quality monitoring variables.

Source Activity	Cemetery
Category	Parameter
Inorganic	pH, EC, K, Cl, NO ₃ , NH ₄ , P, Na, Ca, HCO ₃
Metals	Fe, Mn, Ti, Cr, Cd, Pb, Ni
Organic (and indicator analysis)	BOD, COD, total coliforms, E coli.

2.2. Provide a description of any aspects that were conditional to the findings of the assessment either by the EAP or specialist that must be included as conditions of the authorisation.

Recommended Conditions of the Authorization should include:

Terrestrial Biodiversity

- Appoint a suitably qualified Lepidopterist to undertake a site visit to establish the presence of the remaining butterfly species of concern.
- Ensure that if necessary, the Lepidopterist recommends a buffer zone to be adopted prior to commencement of construction activities.

Aquatic

- Maintain the 32m aquatic buffer.

Botanical

- Implement alien control on and around the site as a long-term management requirement.

Groundwater

- The groundwater should not be used for potable consumption within 250 m of the existing or expanded cemetery.
- Groundwater monitoring should be initiated on site.
- All relevant mitigation measures and best practice procedures must be employed to minimize contamination of the subsurface, as per impact mitigation tables.

- The proposed expansion must conform to the standard industry mitigations measures for developing a cemetery in order to minimize contamination on site. GEOSS recommends the monitoring of the groundwater system on site, as specified in the Proposed Groundwater Monitoring Action Plan.
- Pz_2, BH4 and SPR01 should be considered as potential groundwater monitoring points, as per Figure 9 and Table 8 below:

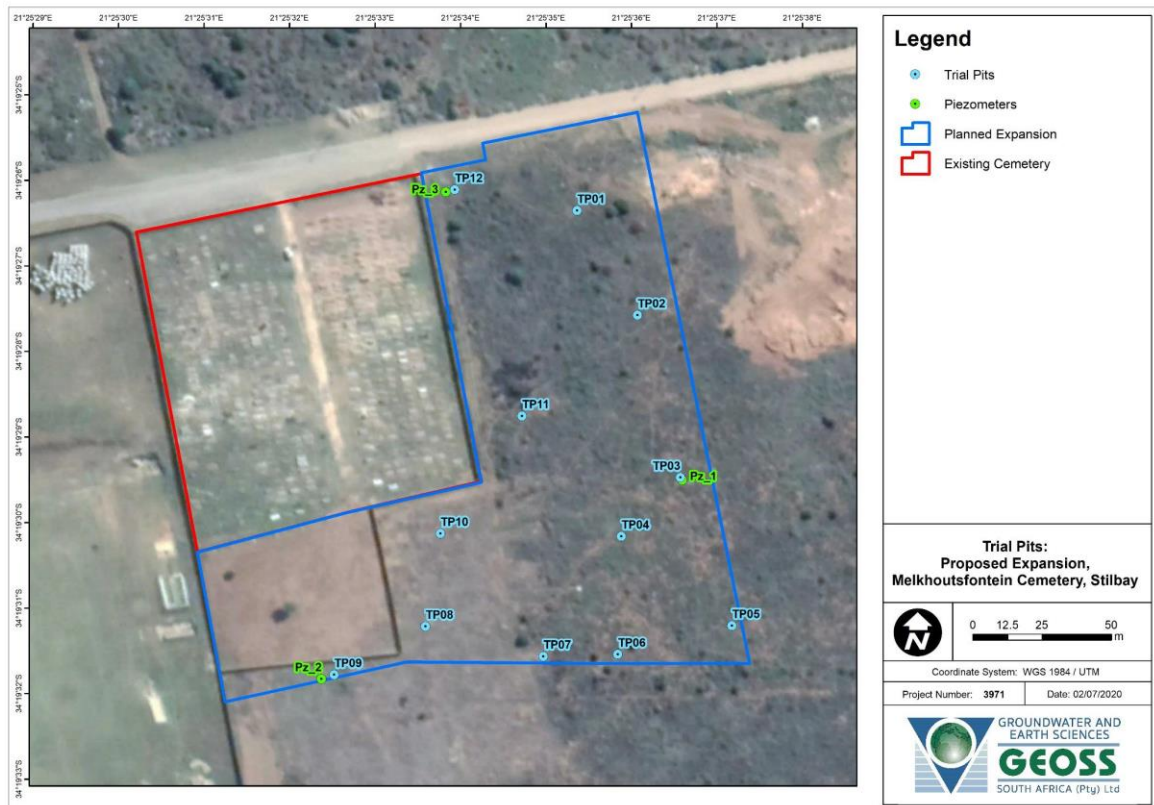


Figure 9: Aerial view of Trial Pits and Piezometer locations.

Table 8: Coordinates of recommended monitoring points.

RECOMMENDED POTENTIAL MONITORING POINT AS PER GEOSS REPORT	LATITUDE	LONGITUDE
Pz_2	-34.323927	21.426064
BH (Recommended as per impact Decomposition of Human Remains)	-34.32699	21.42646
SPR01	-34.32721	21.426467

2.3. Provide a reasoned opinion as to whether the proposed activity or development should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be included in the authorisation.

The proposed development should be authorised for the following reasons:

Biophysical Reasoning:

- Approximately 1.22 ha of degraded fynbos will be directly affected by the project, while the rest of the site has been notably transformed and has little botanical value.

- The degraded fynbos can be used as a potential source for plant material, and degraded areas utilized for storage and other construction related requirements.
- Despite the area being classified as CBA, the site is degraded and located next to a residential area, the biodiversity (CBA) network is proven to be of lesser concern.
- The proposed extension will be located approximately 200m's north of a fairly large NFEPA wetland system (channelled valley-bottom wetland), which extends westwards towards the Goukou River.
- A 32m buffer has been advised, from the watercourse, providing efficient protection to the aquatic habitat.
- Informal stormwater designs are planned for the site, in order to avoid ponding (as gradient of the site is flat).
- A risk matrix will be undertaken as specified in the Government Notice R509 of 2016 for section 21 (c) and (i) water uses (impeding or diverting flow or changing the bed, banks or characteristics of a watercourse) as defined under the NWA (1998). Should the Risk Matrix determine the project to have Low risk upon freshwater habitat then authorisation via General Authorisation (GA) with the BGCMA is possible.

Socio-Economic Reasoning:

- The expansion will result in the provision of approximately 928 additional burial spaces, which will allow for efficient increased capacity at Melkhoutfontein Cemetery.
- Based on the current state of affairs in terms of the existing pandemic plaguing South Africa, that has resulted in multiple deaths, the need for cemeteries with efficient capacity, has been further influenced.
- As this is an expansion the cemetery is existing and has been functioning successfully to date. This indicates that the expansion will most likely operate successfully. In addition, existing infrastructure such as the access road and fence line, can be utilized, reducing the costs related to new infrastructure, on a new site. Through the extension of this access road, fence line and the additional parking areas, the infrastructure will better accommodate future capacity of visitors.
- The construction phase will provide temporary job opportunities, that can benefit locals of an unskilled and skilled nature, providing an opportunity for skills transfer.
- Element Consulting Engineers have advised that a Wall of Remembrance be established on site, for the housing of cremation remains.

Conditions recommended to be included in the authorisation include:

Terrestrial Biodiversity

- Appoint a suitably qualified Lepidopterist to undertake a site visit to establish the presence of the remaining butterfly species of concern.
- Ensure that if necessary, the Lepidopterist recommends a buffer zone to be adopted prior to commencement of construction activities.

Aquatic

- Maintain the 32m aquatic buffer.

Botanical

- Implement alien control on and around the site as a long-term management requirement.

Groundwater

- The groundwater should not be used for potable consumption within 250 m of the existing or expanded cemetery.
- Groundwater monitoring should be initiated on site.
- All relevant mitigation measures and best practice procedures must be employed to minimize contamination of the subsurface, as per impact mitigation tables.

- The proposed expansion must conform to the standard industry mitigations measures for developing a cemetery in order to minimize contamination on site. GEOSS recommends the monitoring of the groundwater system on site, as specified in the Proposed Groundwater Monitoring Action Plan.
- Pz_2, BH4 and SPR01 should be considered as potential groundwater monitoring points, as per Figure 9 and Table 8.

2.4. Provide a description of any assumptions, uncertainties and gaps in knowledge that relate to the assessment and mitigation measures proposed.

FRESHWATER IMPACT REPORT

- The location of the proposed development was extrapolated from data provided by the client.
- No alternatives were provided for assessment.
- Aquatic ecosystems vary both temporally and spatially. Once-off surveys such as this are therefore likely to miss certain ecological information due to seasonality, thus limiting accuracy and confidence.
- Infield soil and vegetation sampling was only undertaken within a specific focal area around the proposed development, while the remaining watercourses were delineated at a desktop level with limited accuracy.
- No detailed assessment of aquatic fauna/biota was undertaken.
- The vegetation information provided is based on observation not formal vegetation plots. As such species documented in this report should be considered as a list of dominant and/or indicator wetland/riparian species and only provide a very general indication of the composition of the riverine vegetation communities.
- The assessment of impacts and recommendation of mitigation measures was informed by the site-specific ecological concerns arising from the field survey and based on the assessor's working knowledge and experience with similar development projects. The degree of confidence is considered high.
- The study does not include flood line determination.

BOTANICAL IMPACT REPORT

- Since fieldwork was carried out during winter (June), flowering plants that only flower at other times of the year (e.g. autumn and spring), such as certain bulbs, may have been missed.
- The overall confidence in the completeness and accuracy of the botanical findings is however considered to be good and no follow-up survey is considered necessary to aid decision making.

GEOSS REPORT

- A limitation experienced during this investigation was during the hydrocensus.
 - Not all groundwater users could be located or visited due to a large number of the dwellings, plots and farms being gated.
 - Additionally, not all groundwater users display the relevant signage to indicate groundwater use.
 - It is therefore assumed that the number of groundwater users is in fact greater than are currently represented in this report.
 - Available data was sourced from relevant groundwater databases and sources. The Aquifer vulnerability, yield and quality data is predominantly accurate albeit mapped at a regional scale.
- A further limitation was the temporal nature of the site visit.
 - The field work was undertaken on a single day in June 2020 and does not account for the temporal variability of the water table.

- While this is not expected to impact the risk assessment for the site, the seasonal fluctuation of water levels will only be known once groundwater monitoring is initiated on the site.

2.5. The period for which the EA is required, the date the activity will be concluded and when the post construction monitoring requirements should be finalised.

- The period for which the EA is required = 5 years
- The date the activity will be concluded = 10 years
- When the post construction monitoring requirements should be finalised = 10 years

3. Water

Since the Western Cape is a water scarce area explain what measures will be implemented to avoid the use of potable water during the development and operational phase and what measures will be implemented to reduce your water demand, save water and measures to reuse or recycle water.

Development, Design and Construction.

- Using buckets of water to clean tools and machinery, rather than running water to preserve water.
- Capture rainwater for utilization on site.
- Ensure that fire safety regulations and requirements are incorporated into the development (Water pressures, fire hoses and fire hydrants).
- On-going clearance of alien invasive vegetation, that grow faster, and use more water than indigenous vegetation.
- Establish indigenous vegetation, as much as possible.

Operation

- Reduce water pressure.
- Eliminate leaks by conducting annual checks of pipes and tap.
- Rainwater harvesting and storage tanks should be considered.
- Utilize greywater where possible.

4. Waste

Explain what measures have been taken to reduce, reuse or recycle waste.

The EMPr has encouraged waste management through the various phases of the project.

Construction Phase:

- An integrated waste management approach (AVOID first, then REDUCE, then REUSE, then RECYCLE, then DISPOSAL) must be adopted.
- Adequate waste receptacles, bins and skips should be available for the collection and removal of waste.
- Individual recycling bins for the various categories (paper, glass, plastic, etc.) must be provided, labelled and have a designated area on site, close to access points (for easy removal), away from any natural areas, and should have appropriately weighted lids, to prevent the wind from toppling the bins, resulting in waste dispersal.
- These bins must be emptied on a weekly basis and dropped off at a collection point for recycling by recycling companies, if possible, obtain a slip as proof of this, and have this filed in the Environmental File.
- Infographics and educational notices to create awareness around sustainable waste management should be provided.
- Environmental awareness training will be conducted for all site workers to create awareness.

- Any solid waste intended for disposal must be disposed of at a landfill licensed in terms of section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) or the National Environmental Management: Waste Act (Act No. 59 of 2008).
- Alien invasive species removed from within the working corridor must be removed immediately and should not be stockpiled on site.

Operational Phase:

- Appropriate waste receptacles should be established, for permanent use during operational phase.
- As advised by the Element Consulting Engineers, rubbish bins should be placed at the main entrance of the site, for collection by the municipality.
- Separation of waste, in separate, labelled waste receptacles, should be encouraged.
- Littering should be prohibited, signage should be established, indicating this, as well as any other restrictions for operation of the cemetery.
- Element Consulting Engineers have advised that the waterless “Enviro Loo” toilets be utilized on site, to be positioned at the entrance of the cemetery (no specific location identified as per the layout plan). Benefits of this system include:
 - Odourless.
 - Minimum maintenance and servicing costs.
 - Non-polluting zero discharge system.
 - Long term sustainable solution – life span in excess of 50 years
 - Once off capital investment.
 - Conserves water resources.
 - No chemicals used.
 - Permanent installation, no relocation.
 - No expensive reticulation and sewage treatment plant required.

5. Energy Efficiency

8.1. Explain what design measures have been taken to ensure that the development proposal will be energy efficient.

- As construction is predominantly limited to the clearance of the site, expanding the existing access road and fence line, energy efficient design measures are fairly limited.
- Element Consulting Engineers, have proposed the utilization of solar panels with LED lights for the lighting at toilets and entrance of site.

SECTION K: DECLARATIONS

DECLARATION OF THE APPLICANT

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

I, Ruschan Manho, ID number 8010075098088 in my personal capacity or duly authorised thereto hereby declare/affirm that all the information submitted or to be submitted as part of this application form is true and correct, and that:

- I am fully aware of my responsibilities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), the Environmental Impact Assessment ("EIA") Regulations, and any relevant Specific Environmental Management Act and that failure to comply with these requirements may constitute an offence in terms of relevant environmental legislation;
- I am aware of my general duty of care in terms of Section 28 of the NEMA;
- I am aware that it is an offence in terms of Section 24F of the NEMA should I commence with a listed activity prior to obtaining an Environmental Authorisation;
- I appointed the Environmental Assessment Practitioner ("EAP") (if not exempted from this requirement) which:
 - meets all the requirements in terms of Regulation 13 of the NEMA EIA Regulations; or
 - meets all the requirements other than the requirement to be independent in terms of Regulation 13 of the NEMA EIA Regulations, but a review EAP has been appointed who does meet all the requirements of Regulation 13 of the NEMA EIA Regulations;
- I will provide the EAP and any specialist, where applicable, and the Competent Authority with access to all information at my disposal that is relevant to the application;
- I will be responsible for the costs incurred in complying with the NEMA EIA Regulations and other environmental legislation including but not limited to –
 - costs incurred for the appointment of the EAP or any legitimately person contracted by the EAP;
 - costs in respect of any fee prescribed by the Minister or MEC in respect of the NEMA EIA Regulations;
 - Legitimate costs in respect of specialist(s) reviews; and
 - the provision of security to ensure compliance with applicable management and mitigation measures;
- I am responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority, hereby indemnify, the government of the Republic, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which I or the EAP is responsible in terms of the NEMA EIA Regulations and any Specific Environmental Management Act.

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

Signature of the Applicant:

Date:

Name of company (if applicable):

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

I Ameesha Sanker EAPASA Registration number (None) as the appointed EAP hereby declare/affirm the correctness of the:

- Information provided in this BAR and any other documents/reports submitted in support of this BAR;
- The inclusion of comments and inputs from stakeholders and I&APs;
- The inclusion of inputs and recommendations from the specialist reports where relevant; and
- Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties, and that:
- 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 activity or application and that there are no circumstances that may compromise my objectivity; or
 - am not independent, but another EAP that meets the general requirements set out in Regulation 13 of NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review EAP must be submitted);
- In terms of the remainder of the general requirements for an EAP, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- I have disclosed, to the Applicant, the specialist (if any), the Competent Authority and registered interested and affected parties, all material information that have or may have the potential to influence the decision of the Competent Authority or the objectivity of any report, plan or document prepared or to be prepared as part of this application;
- I have ensured that information containing all relevant facts in respect of the application was distributed or was made available to registered interested and affected parties and that participation will be facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments;
- I have ensured that the comments of all interested and affected parties were considered, recorded, responded to and submitted to the Competent Authority in respect of this application;
- I have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, where relevant;
- I have kept a register of all interested and affected parties that participated in the public participation process; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations;


Signature of the EAP:

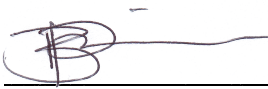
20th October 2020
Date:

Sharples Environmental Services.cc
Name of company (if applicable):

DECLARATION OF THE REVIEW EAP

I Betsy-Jane Ditcham....., EAPASA Registration number 1480..... as the appointed Review EAP hereby declare/affirm that:

- I have reviewed all the work produced by the EAP;
- I have reviewed the correctness of the information provided as part of this Report;
- I meet all of the general requirements of EAPs as set out in Regulation 13 of the NEMA EIA Regulations;
- I have 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
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.



20/10/2020

Signature of the EAP:

Date:

Sharples Environmental Services cc

Name of company (if applicable):