

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
REPORT (EIR)
FOR IZOTSHA MULTICULTURAL CREMATORIUM
WITHIN IZOTSHA MEMORIAL PARK,
UGU DISTRICT**

Prepared in terms of EIA regulations 2014, as amended

DC21/0001/2019

**PREPARED FOR APPLICANT:
RAY NKONYENI MUNICIPALITY**



Prepared by:



Isolendalo Environmental Consulting

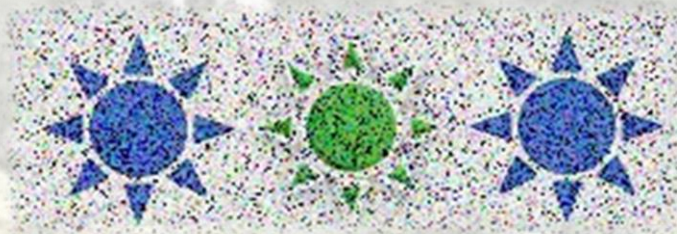
**19 Valley Road
Margate
4275**

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DATE	08 May 2019		

REFERENCE NUMBERS AND DUE DATES

EAP DOCUMENT REFERENCE	UGU-001DEIR
COMPETENT AUTHORITY REFERENCE FILE	DC21/0001/2019
NATIONAL ENVIRONMENTAL AUTHORIZATION SYSTEM	KZN/EIA/0001056/2019
FINAL DRAFT EIR DEADLINE (COMMENTING)	29 August 2019

COMPETENT AUTHORITY DEADLINE FOR FINAL EIR	30 August 2019
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EXECUTIVE SUMMARY:

RAY NKONYENI LOCAL MUNICIPALITY has, through their processes, identified the need to develop a crematorium facility within an existing site, Izotsha Memorial Park which is currently a gravesite. This crematorium will be a multi-cultural facility which will benefit communities of various cultures and race groups within the jurisdiction of the UGU District Municipality area and beyond. Due to this the Municipality has identified the existing Izotsha Memorial Park as the best possible site as there is an existing gravesite and is largely accessible to all community members within the greater UGU District Municipality and surrounds. As reflected in this document, in order for this activity to be undertaken there are various processes that has to be followed in order to comply with relevant legislation. As such an Environmental Impact Assessment (EIA) is required to be undertaken in order to examine the impacts associated with this proposed development.

Due to the magnitude and activities that this proposed activity triggers (in terms of EIA Regulations, 2014) as amended, a full scoping and EIA process will be undertaken in accordance with the stipulated provisions indicated in Government Notice R 982 of the Environmental Impact Assessment (EIA) Regulations of 2014, as amended. There are a number of impacts, both environmental and social, that may result from the construction and operation of the proposed project. These impacts have been identified, assessed and ranked according to their significance during the Plan of Scoping which has been approved by the Department of Economic Development, Tourism and Environmental Affairs. The draft Environmental impact assessment report will aim to identify, assess and rank the impacts the activity will have on the development footprint through the lifetime of the project, identify suitable measures to avoid, manage or mitigate identified impacts and identify residual risks that need to be managed and monitored.

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SECTION A

1. PROJECT SETTINGS

1.1 ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP):

Trading name (if any):	Isolendalo Environmental Consulting		
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1.2 EAP EDUCATIONAL QUALIFICATIONS AND CV, AND EAP PROFESSIONAL TEAM

Name & Surname	QUALIFICATION	Professional affiliation(s)	EXPERIENCE
Mr. WB Nogobela	B. Hons Environmental Science	IAIASA 3333	15 Years
Ms. Simone Bridglal	BSoc. Geography and Environmental Management	//	4 years

2. APPLICANT DETAILS

2.1 PROJECT APPLICANT

Trading name (if any):	Ray Nkonyeni Municipality		
Contact person:	Mr. M Mbili		
Physical address:	10 Connor Street, Port Shepstone		
Postal address:	P.O Box 05, Port Shepstone		
Postal code:	4240	Cell:	//
Telephone:	039 6882020	Fax:	//
E-mail:	mm@mm.gov.za		

3. SPECIALIST QUALIFICATIONS, PROFESSIONAL AFFILIATIONS AND CREDENTIALS

Name of specialist	Field of Expertise	Section/s /Annexures	Title of specialist report/ s as attached
The Biodiversity Company.	Wetland and aquatic assessments and delineation studies	Annexure F	Wetland Assessment for the proposed Izotsha Multi-cultural Crematorium
The Biodiversity Company	Ecological and biodiversity assessments	Annexure F	Ecological Assessment for the proposed Izotsha Multi-cultural Crematorium
Umoya NILU Consulting	Atmospheric impact assessments	Annexure F	Atmospheric Impact Report for Izotsha Crematorium

SECTION B

PROJECT DETAILS, DESCRIPTION, ACTIVITIES TRIGGERED AND LEGISLATIVE FRAMEWORK

1. PROJECT TITLE & SITE DESCRIPTION:

Project Title:

Proposed Izotsha Multi-cultural Crematorium

Site Description:

Izotsha Multicultural Crematorium is proposed within the Izotsha Memorial Park, situated in Shelly Beach in the Ray Nkonyeni Municipality, KwaZulu-Natal. This area is approximately 300 m from the Izotsha Road to the east and 400 m away from the R61. The current zoning of the site is zoned as cemetery due to the existing memorial park and the area surrounding the site consists of natural coastal vegetation.

With the aid of the appointed Engineers of the project, PGA Consulting Engineers, Ray Nkonyeni Municipality has resolved to utilize the available space which is within Izotsha Memorial to be investigated for possible accommodation of the proposed facility. However, the site has environmental constraints, primarily of which being the site's sensitivity within the ecological and biodiversity aspects. Although the site identified land is laden mainly with approximately 19 gum trees, there has been a wetland identified within 32 meters of the proposed crematorium development, and as such, environmental authorisation is sort in order to construct the proposed development. The site layout plan attached demonstrates the location and physical environmental attributes around the identified site.

Four wetland types were identified within the project area, namely a hillslope seep (HGM 1), an unchanneled valley bottom system (HGM 2), a channeled valley bottom (HGM 3), and a depression (Dam) (HGM 4). The overall wetland health for all HGM units were determined to be Moderately Modified (C). The depressions (Dams) were not assessed as these were not natural systems and the wetland health cannot be determined. The HGM units all showed an overall Moderate-Low level of service. With flood attenuation being the only service rated as Moderate-High for HGM 3 and HGM 4. The dams and channeled valley bottom were found to provide some protection from flood events. The Ecological Importance & Sensitivity was calculated to have a Moderate (C) level of importance for all HGM units.

Although the wetlands were not associated with NFEPA wetlands or protected natural habitats, the wetland falls within part of an endangered vegetation unit. The Hydrological Functionality was calculated to have a Moderate (C) level of importance for all HGM units, although the wetland's hydrology has been impacted upon, the wetland maintains a water source for downstream areas and the modifications increase the wetland's ability to protect against flood and erosion. The Direct Human Benefits were rated as having a Low (D) level of importance. Conservative buffer zones of 15m (Post-mitigation) were suggested for the construction and operational phases of the development. Wetland plants are classified as hydrophytic which refers to their adaptation to survive in highly saturated soils. The identified wetland plant species included *Cyperus congestus*, *Pycreus spp.*, and *Imperata cylindric*. The soils within the project area was dominated by sandy profiles of the Fernwood, Villafontes, and Longlands soil forms. The vegetation component for the HGM units range from Moderately Modified (C) to Largely Modified (D). Alien invasive species were the main impact on these HGM units along with the dammed areas.

2. PROJECT DESCRIPTION:

Ray Nkonyeni Municipality (RNM) is proposing to construct a new crematorium facility at the existing Izotsha Memorial Park of which the total development footprint is 7154.3 square meters. The Crematorium facility will include the incineration machinery and associated infrastructure as listed below;

- 2 Halls
- 1 Antechamber
- 1 Administrative Block
- 1 Ablution Block
- 1 Remembrance Garden
- 44 Parking Bays

The Multi-Cultural Crematorium will be located within the Izotsha Memorial Park in Ward 19 of the Ray Nkonyeni Local Municipality under the UGU District area in Kwa-Zulu Natal. The reasoning behind the development of the new crematorium located at the grave site is due to numerous reasons, the primary being the dire need for crematoria facilities for community members within the South Coast of KwaZulu-Natal. The existing crematoria facilities around KZN are operating at capacity and due to this, many are experiencing mechanical breakdowns. In addition to this, the Port Shepstone crematorium which serviced the South Coast experienced a fire that resulted in irreparable damage to its facility in February of 2018. This was the second blaze that gutted the facility within a 3 year span. The cause of the fire has remained unknown however the subsequent strain placed on members of the public, requiring crematoria facilities has been significant. This has resulted in many

community members who utilise crematoriums for last rites being sent out of town to make use of facilities in Durban and surroundings. The entire process is wrought with delays in funeral planning as well as conducting funeral services as dates have to be juggled in order to acquire a booking with crematoriums outside Port Shepstone as there is no other facility in the area to absorb the strain. In addition to this, there is increased financial strain to family members as bodies are to be stored in mortuary facilities for extended periods of time equalling extended costs.

The site proposed is currently used as a grave site and as such the proposed additions are within the existing zoning of the site. The existing RNM Town Planning Scheme of the site is as follows:

- * Cremation of deceased bodies, and
- * Place of worship

The facility will require essential bulk services as follows:

- * Water Borne Sewerage system
- * Water supply (existing connection through UGU)
- * Electricity (existing connection through ESKOM)

It is understood that there is a sewer line in close proximity to the proposed development which the applicant intends on connecting to. This will proceed with legal consent from the authority which is UGU to determine the capacity in relation to the output of the new facility and infrastructure.

3. LEGISLATIVE FRAMEWORK AND AUTHORITY:

Regulation	Authority	Relevancy in the Proposal
1. South African Constitution Act (Act No.107 of 1998)	South Africa	<p>The constitution Act largely focuses on the protection of Environmental and property rights within the Republic of South Africa. Section 24 in the Bill of Rights of the Constitution States that:</p> <p>Everyone has the right-</p> <ul style="list-style-type: none"> ➤ To an Environment that is not harmful to their health and well-being. ➤ To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures.

		This Act is applicable to this application since the proposed project falls within the boundaries of South Africa and a need for protection of the Environment during construction and post-construction is vital.
2. National Environmental Management Act (Act No 107 of 1998 [NEMA]) and EIA Regulations 2014 (as amended)	Department of Environmental Affairs (DEA)	The objective of this Act is to provide for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state; and to provide for matters connected therewith. There are Listed EIA Activities triggered by the proposed activity, as such these listed activities are deemed to include activities that have an impact on the social and environmental state of the area.
3. National Environmental Management Biodiversity Act (Act 10 of 2004)	Department of Environmental Affairs	The main objective of this Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of South African National Biodiversity Institute. The Biodiversity Act is applicable because during the implementation of this project the Applicant must consider the protection and management of local Biodiversity.
4. National Environmental Management: Air Quality (Act 39 of 2004)	Department of Environmental Affairs	The Air Quality Act provides for the regulation of air quality by providing for national norms and standards for the regulation of air quality monitoring; management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto. It focuses on the adverse impacts of air pollution on the ambient environment and sets standards for pollutant levels in ambient air. At the same time, it sets emission standards to minimise the amount of pollution that enters the environment. The proposed development will produce emissions into the atmosphere as a result of the gas being burnt to sustain the cremator which will impact ambient air quality.

5. National Water Act (Act No 36 of 1998).	Department of Water and Sanitation.	To provide for fundamental reform of the law relating to water resources; to repeal certain laws; and to provide for matters connected therewith. This Act is Applicable to this project since the proposed development entails a construction within a watercourse.
6. National Waste Management Act (Act No. 64 of 2014)	Department of Environmental Affairs.	This Act is there to reform the law regulating waste management in order, to protect health and the Environment by providing reasonable measures for the prevention of pollution and ecological degradation. The Act is applicable because waste management is vital during the construction and operational phase.

4.1. LISTED ACTIVITIES TRIGGERED IN TERMS OF EIA REGULATIONS, 2014 (as amended):

ACTIVITY TRIGGERED	LISTING NOTICE	ADMISSIBLE TO THE PROPOSED
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Activity 12

The development of buildings exceeding 100 square meters where such development occurs;
(a) within a watercourse

Listing Notice 1:
GNR 983
(December 2014,
as
amended)

The development is expected to input hardened surfaces (a portion of the parking bays and fencing) within the identified hillslope seeps identified on site by the wetland assessment which is defined as a watercourse.

<p>Activity 19</p> <p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 100 cubic metres from (i) a watercourse;</p>	<p>Listing Notice 1: GNR 983 (December 2014 as amended)</p>	<p>There will be the moving of 100 cubic meters of soil from within the watercourse (hillslope seep) found on site during the construction period. Excavation will be done within a watercourse during construction and as such this activity is triggered. A portion of the parking bays as well as accommodating for the <i>clearvue</i> fencing will result in the removal and/ movement of 100 cubic meters of soil, sand and stones from within the watercourse on site.</p>
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<p>Activity 6</p> <p>The Cremation of human remains, companion animals (pets) and the incineration of veterinary waste.</p>	<p>Listing Notice 2: R 325 of EIA Regulations, (December 2014 as amended)</p>	<p>The Ray Nkonyeni Municipality proposes the installation of a new JTA BA2 cremator, with a recommended load capacity of a 150 kg/h human body and a maximum load capacity of 200 kg/h which will be used to cremate human remains. It is expected that a minimum of 1 and a maximum of 11 cremations will be conducted on a daily basis. The cremator and all associated infrastructure will be utilised solely for the cremation of human remains.</p>
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5. SITE LOCATION (21 DIGIT SG CODE)

The developer is proposing the development at the existing Izotsha Memorial Park. The proposed site is in Izotsha on the South Coast of KZN and is an urban area. The closest urban town is Shelly Beach, and this lies at a distance of 1.7 km away via Izotsha Road. The coordinates of the study area are tabulated below and the 21-digit code. Also, figure 2 & 3 illustrates the location of the study area.

5.1. SITE COORDINATES

Proposed Izotsha Multicultural Crematorium

Site Coordinates

Latitude /Longitude	Degrees	Minutes	Seconds
South	30	47	30.45
East	30	24	05.93

5.2. SITE LOCATION: 21 DIGIT SURVEYOR GENERAL OF THE PROJECT STUDY AREA

Farm Name: Shelly Beach

N	O	E	T	0	3	9	4	0	0	0	0	0	4	9	4	0	0	0	1	2
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5.3. SITE CADASTRAL MAPS (TOPOGRAPHICAL, ENVIRONMENTAL MAPS ETC.)

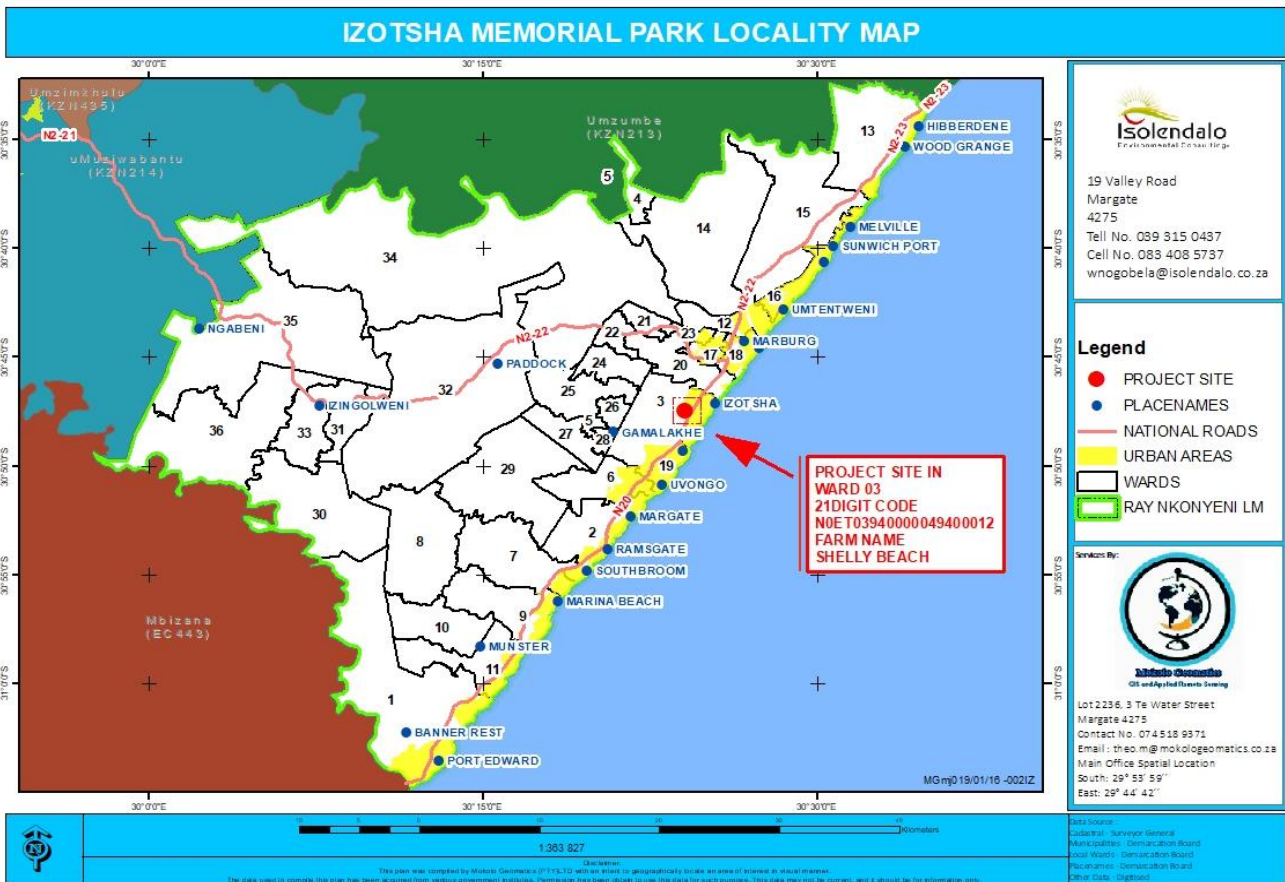


FIGURE 1: SITE LOCALITY MAP

5.4. BIOLOGICAL AND PHYSICAL CONDITIONS

BIOLOGICAL, PHYSICAL, SOCIAL, ECONOMIC, HERITAGE AND CULTURAL ASPECTS

5.4.1. Climatic Conditions – Average Temperatures etc

This region is characterised by summer rainfall, even though rainfall in the winter months are not uncommon. This region is frost-free and has high humidity. The mean maximum temperatures for this region are 32.6°C, whereas the mean minimum temperatures for this region is 5.7 °C in January and July respectively (Mucina & Rutherford, 2006)

5.4.2. Vegetation & Biodiversity and Critical Biodiversity Areas

The project area is situated across one vegetation type; KwaZulu Natal Coastal Belt Grassland, according to Mucina & Rutherford (2006). The proposed project area was superimposed on the terrestrial ecosystem threat status of which it was found that the project area falls within one ecosystem, which is listed as Critically Endangered. Ecosystem protection level tells us whether ecosystems are adequately protected or under protected. Ecosystem types are categorized as not protected, poorly protected, moderately protected or well protected, based on the proportion of each ecosystem type that occurs within a protected area recognized in the Protected Areas Act (Driver et al., 2011). The project area was also superimposed on the ecosystem protection level map to assess the protection status of terrestrial ecosystems associated with the development however based on this, the terrestrial ecosystems associated with the proposed development are rated as not protected. Formally protected areas refer to areas protected either by national or provincial legislation. Based on the SANBI (2010) Protected Areas Map and the National Protected Areas Expansion Strategy (NPAES) the project area does not overlap any formally protected areas. Based on the above information and the location of the proposed development, the project area is not expected to have an impact on any formally protected areas. The closest formally protected area is the Skyline Nature Reserve which is 3.7 km south-west of the project area. Based on biodiversity assessment conducted it is concluded that the proposed development is likely to impact an area designated as CBA: Irreplaceable. The main project area intersects with a CBA: Irreplaceable, predominantly the north-west and western portions.

5.5. SOCIO-ECONOMIC CONDITIONS OF THE AREA

UGU district is a favourite tourist destination which includes the well-established coastal towns of Port Shepstone, Pennington, Margate and Scottburgh. The main features of the economy are tourism and agriculture with some manufacturing centred around Port Shepstone. Commercial agriculture in the district produces one-fifth of all bananas consumed in South Africa, as well as vegetables, sugarcane, tea, coffee and macadamia nuts.

5.5.1. Population/Demographic Analysis

Ray Nkonyeni Local Municipality forms part of UGU District Municipality. According to the last available consensus statistics of 2014 the provincial population is spread over 93 378 kilometre (km²) land area which translates to an estimated population density¹ of 111.7 people per km². UGU contributes approximately 731 156 or 7 per cent of the total provincial population. Within UGU District, Ray Nkonyeni Municipality is the most populated municipality with 265 131 inhabitants and thus contributing an estimated 36.3 per cent of the total population in the district

5.5.2. Employment rate

In terms of employment rate, the total number employed people in KZN was estimated at 2 376 551 in 2013. Compared to other provinces, KZN suffered the largest decrease (61 000) in the job losses during quarter 3 of 2014 (Stats SA, 2014). The year-on-year jobs decreased by 150 000 in the third quarter of 2014. The total number of those employed in UGU was estimated employment at 130 252 and thus contributing 5.5 per cent to the total provincial number. About those half of those employed in the district were in Ray Nkonyeni Municipality.

5.5.3. Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R10 million
What is the expected yearly income that will be generated by or as a result of the activity?	R 1 million
Will the activity contribute to service infrastructure?	YES
Is the activity a public amenity?	YES
How many new employment opportunities will be created in the development phase of the activity?	±30
What is the expected value of the employment opportunities during the development phase?	R2 million
What percentage of this will accrue to previously disadvantaged individuals?	80%
How many permanent new employment opportunities will be created during the operational phase of the activity?	± 10
What is the expected current value of the employment opportunities during the first 10 years?	R5million
What percentage of this will accrue to previously disadvantaged individuals?	65%

5.6. HERITAGE AND CULTURAL ASPECTS

According to the observations, there are graves identified within the boundaries of the study area and as such this Draft Impact assessment report will be submitted to AMAFA for comment and further instruction.

5.7. ACCESS TO SITE (DIRECTIONS)

Take the exit onto N2 toward Port Shepstone

107 km

Continue onto R61

Partial toll road

6.0 km

Take exit 39 toward Izotsha/Shelly Beach

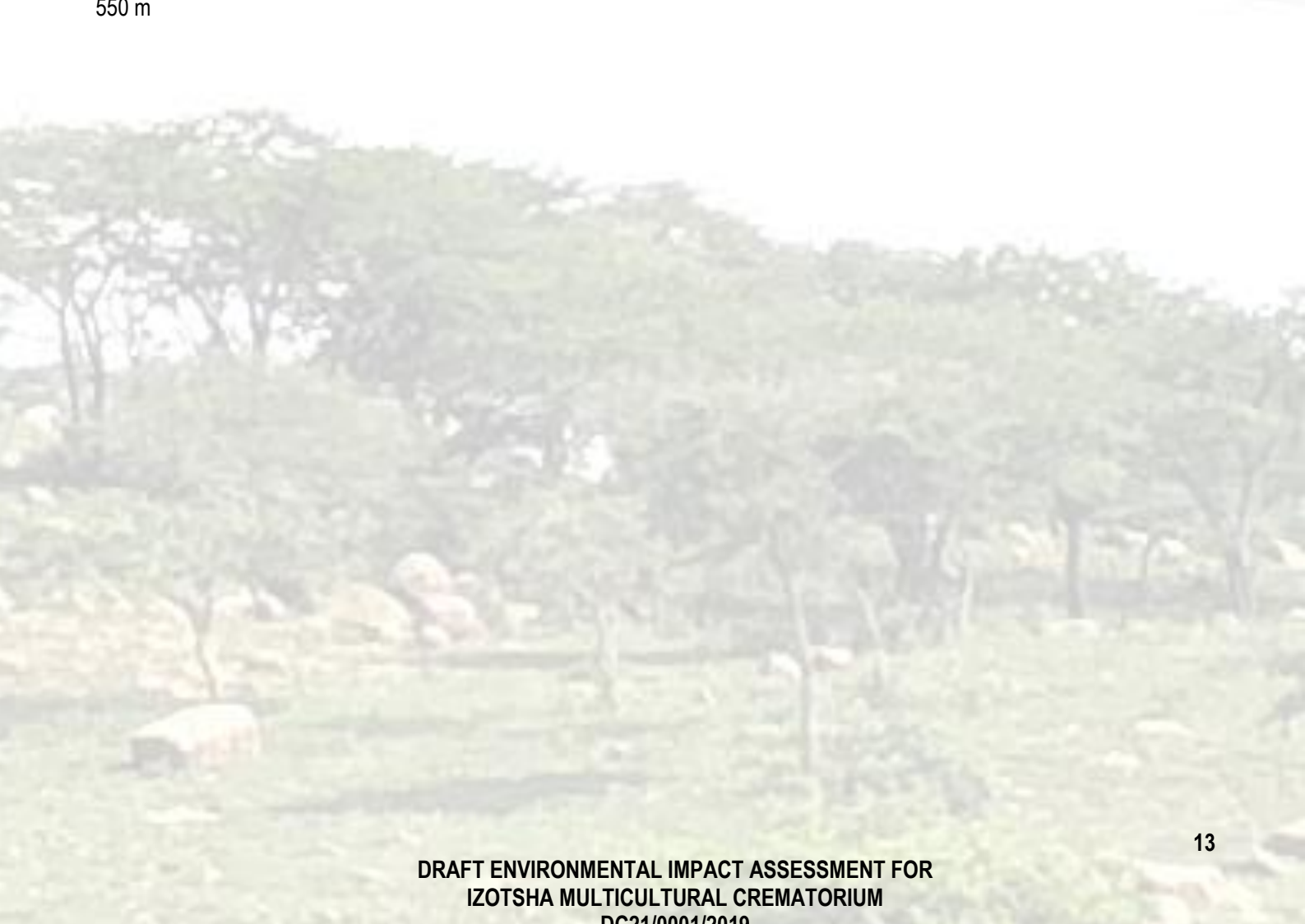
550 m

Turn right onto Izotsha Rd

450 m

Turn right onto Junction Rd

550 m



6. NEEDS AND DESIRABILITY

6.1. MOTIVATION OF ACTIVITY (NEEDS AND DESIRABILITY) OF PREFERRED OPTION

<p>Does the community/area need the project and the associated land use concerned (is it a societal priority)?</p>	<p>YES</p> <p>Community members of various religious faiths urgently require the crematoria facilities as many are forced to travel to Durban to utilise crematorium facilities after the Port Shepstone crematorium was gutted by fires in 2017. Many religious leaders in the community have expressed an urgent need for a crematorium with improved facilities that is able to cater to the ever-increasing need for cremation within UGU District.</p>
<p>Are the necessary services available together with adequate unallocated municipal capacity (at the time of application), or must additional capacity be created to cater for the project?</p>	<p>YES</p> <p>The development will require municipal water and sanitation services of which service level agreements will need to be provided by the applicant to ensure that the additional capacity is available.</p>
<p>Is this project provided for in the infrastructure planning of the municipality and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?</p>	<p>YES .</p> <p>The developer is the local Ray Nkonyeni Municipality. The development forms a major part of the infrastructural planning and the municipality has managed to obtain the funding from the provincial Department of Human Settlements for all construction processes.</p>
<p>Is this project part of a national programme to address an issue of national concern or importance</p>	<p>NO.</p> <p>It is not an issue of national importance however it has been an issue of contention within the local and provincial</p>

	legislature and as a result funding for the development has been obtained from a provincial level
Do location factors favour this land use at the chosen site?	YES The site is currently a gravesite.
Will the development proposal impact on sensitive natural areas?	YES Some impacts are anticipated during the construction phase of the project due to a portion of the development falling within a wetland as well as ambient air emissions from the cremator; however, these can readily be mitigated through the implementation of the Environmental Management Program (EMP) for the development. A wetland and ecological specialist have provided the remedial measures and recommendations for the upkeep of the wetland/watercourses located on site.
Will the development cause large scale impact on people's health and well-being in terms of noise, odours, visual character etc .?	NO. There is expected to be noise and dust during the construction phase but no severe impacts on personal well-being are anticipated. The construction phase will be fast-tracked to ensure the minor impacts faced, are short-lived and the crematorium is speedily established. There is anticipated air emissions that will be generated by the burning of human remains however there is no anticipated impact on human health or wellbeing.
Is the development the best practicable environmental option for this land/site?	YES. The site is zoned as gravesite.

<p>What will the benefits be to society in general and to the local communities?</p>	<p>The development is largely favoured by the community as it will reduce the costs of travelling out of the district for cremation facilities. It will lessen the financial burden placed on families due to extended waiting periods in mortuaries as crematoriums in Durban and surrounding areas are more often than not, operating at capacity. Cremation reduces the body to cremated remains within a matter of hours whereas traditional burial follows the process of slow and natural decomposition. The development will further reduce the pressure on land space as burial space has been placed under severe strain within recent years and this a problem that's experienced on a national level. Burial places a greater strain on the natural environment than cremation.</p>
<p>Is the development permitted in terms of the property's existing land use rights?</p>	<p>YES.</p>
<p>Describe how the general objectives of Integrated Environmental Management as set out in Section 23 of the NEMA have been considered.</p>	<p>The general objective of Integrated Environmental Management (Section 23, NEMA 1998) as amended, is listed below with a description of how the proposed project and associated Basic Assessment process has taken these objectives into account:</p> <p><u>Promote the integration of the principles of environmental management set out in section 23 into the making of all decisions which may have a significant effect on the environment:</u></p> <p>The Draft EIR, through its identification and assessment of positive and negative impacts on the environment and the incorporation of mitigation measures to manage these impacts, will facilitate responsible decision making by the relevant authorities.</p>

Identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 23 of NEMA:

In terms of the draft EIR process for the proposed activity, all potential impacts associated with the proposed development were identified and adequately assessed. Suitable mitigation measures were recommended to reduce the significance of the impacts.

Ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them:

Through inputs from the EAP and specialists during the draft EIR process, sufficient information has been made available to ensure that all effects to the surrounding environment have been adequately considered and incorporated into this report for decision making. The wetland and ecological assessment by the Biodiversity Company has provided mitigation measures which have been incorporated in the draft EIR and the draft EMPr.

Ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment:

All public participation requirements in terms of the EIA Regulation Government Notice: R982 will be met during the

course of the EIA process. A comment and response report will be compiled and included as part of the Final EIR. Section C of the report highlight the public participation undertaken during thus far in the EIA process.

6.2. MOTIVATION OF THE PREFERRED SITE

6.2.1. Location Alternative

This is the only available site to the client. The preferred location alternative has been selected as it is the only land parcel suitable in terms of adequate size and current land use. The site is bound on one side by an existing gravesite and flanked by an existing administration building which is to remain on site and not be demolished. The site is adequately zoned as gravesite and will remain so. The property was selected specifically for a crematorium considering the current land use on the site, accessibility to major transport routes i.e. the N2, and close proximity to existing urban service centres within nearby Shelly beach town, Port Shepstone and Margate. The close proximity to these urban towns will reduce the need to travel out of the municipal jurisdiction for cremation facilities which is the current status quo. Therefore, no alternative locations have been considered in this assessment.

6.2.2 Activity Alternative

Considering the current land uses surrounding the property, limited options are available in terms of development. No other activity can be considered on this land parcel as it is currently zoned as Gravesite 01.

6.2.3 Site Layout Alternative

Considering the current land uses surrounding the property, limited options are available in terms of development. The only other site layout considered was the repair and refurbishment of the Port Shepstone Crematorium which was gutted by a blaze in 2017. However, it was determined that the preferred site alternative will be a brand new crematorium development within the existing Izotsha Memorial Park and will integrate with the surrounding land uses, taking into account the areas sustainability for the future. The new crematorium is also much larger in size and in excess of 7000 square meters which the preferred site can accommodate and which the Port Shepstone site cannot. Furthermore, this site is already zoned as gravesite.

The preferred site layout which was finalised in October 2018 is the most recent and shows the layout of the crematorium, the proposed cremator, driveways, parking bays and ablution facilities. The landscape outside of the project area, but within the 500m

regulated area is relatively steep with channelled and unchanneled valley bottom wetlands it was determined that the land was suitable for development in excess of 7000 square meters. There are impacts associated with the construction phase i.e. clearing of areas for infrastructure, digging works, soil stockpile management and operation of equipment and machinery. Notable expected risks include the potential for erosion and increased sedimentation of the wetland. All the risks during the construction phase of the project were determined to be low risk, after mitigation measures were applied. There are impacts on ambient air associated with the operational phase due to the cremator requiring fuel for the cremation process.

6.2.4 Scheduling Alternatives

Due to the proposed development occurring in an urban area with other businesses within a 2km radius, the noise factor must be taken into consideration. According to municipal by-laws, construction work in urban areas may occur during Monday to Saturday from 7h00 to 18h00. However, activities that generate excessive noise such as drilling should be avoided during early and late hours of the day.

6.2.5 No-Go Alternative

The No-Go Alternative is to retain the entire site for conservation of its natural biogeography and not develop the site as a crematorium. As such the societal benefit to the local community would not be realised. This includes access to a facility that is in great demand, employment, training, and local economic development during construction and during operation. Furthermore, the contribution to improving the area's biodiversity will not occur as the property will not be monitored and maintained regularly, hence invasion of alien species of plants into the wetland on the property will persist. In addition, the vegetation of the wetland was rated to be in a seriously modified state as a result of the decreased vegetation cover on the slopes, replacement of wetland vegetation with sugar cane and the occurrence of alien invasive plant species within the wetland area which the potential to displace indigenous vegetation over time leading to eventual loss of the wetland biodiversity.

6.2.6 Technology Alternative

Alternative:

Alternative A1 (preferred activity alternative)

Total Area to be developed (cremator and associated infrastructure)

Size of the activity:

7154.3m ²
7154.3m ²

7. WASTE, EFFLUENT, EMISSION, NOISE MANAGEMENT ENERGY EFFICIENCY AND WATER USE

7.1. SOLID WASTE MANAGEMENT

Solid waste to be produced during the construction phase will generally be construction waste such as rubble. Such waste will be collected by the Contractor, stored in dust bins with lids and thus disposed of at Oatlands Landfill site. Waste generation during operational phase will be limited to the ash generated from cremating the human remains which will be given to family members to be disposed off at their discretion. No disposal of human remains stemming from the cremation will occur onsite.

7.2. LIQUID EFFLUENT

Chemical toilet(s) will be provided on site for construction workers during the construction phase. Such toilets will be provided by an appointed company which will also provide for the servicing of the toilets. Cleanliness of ablution facilities during construction will be monitored by a qualified ECO. Liquid effluent during occupation will be channelled using the UGU municipal sanitation services.

7.3. EMISSIONS INTO THE ATMOSPHERE

A new JTA BA2 cremator is proposed, equipped with 2 gas burners. The primary chamber will operate between 750 and 900 °C while the secondary chamber will operate between 800 and 1 100 °C. Using gas fuel, the cremator will have a maximum power output of 830 kW. The normal gas usage, in this case liquid petroleum gas (LPG), will be approximately 3 840 l/day. The project has made provision for 2 x 20 000 litre gas storage tanks which will likely be installed underground due to the explosive/combustible nature of LPG. The cremators will be equipped with stacks with a diameter of 600 mm and a height of 11.4 m to ensure effective dispersion of pollutants produced during the cremation process.

Stack emission testing is generally considered to be the most accurate method for estimating emissions, as it entails the direct measurement of pollutant concentrations. In the absence of emission testing data, the alternate method is to use an activity number (in this case, the number of bodies cremated in a certain period) and apply appropriate emission factors to estimate emissions. This section describes the methodology used to estimate emission rates of particulates (PM10 and PM2.5), NO_x, SO₂ and CO resulting from emissions from the proposed new cremator with a recommended load capacity of a 150 kg/h human body and a maximum load capacity of 200 kg/h. The primary pollutants from the cremation of human remains are particulate matter, oxides of nitrogen (NO_x), sulphur dioxide (SO₂), carbon monoxide (CO), volatile organic compounds (VOC), mercury, other heavy metals organics and some persistent organic pollutants (POPs). Of these, only particulates (PM10 and PM2.5), NO_x, SO₂ and CO will be considered in this assessment since these pollutants are classified as priority pollutants in South Africa for which ambient air quality standards are in place. The emission rates of these pollutants depend on the design of the cremator,

combustion temperature, fuel retention time, duct design, duct temperature and any control device. In the case of the crematorium, the activity is the number of cremations per year. Emissions increase with an increase in the number of bodies cremated. The municipality estimates that one body a day or seven a week will be cremated when the crematorium reaches its operational peak level.

Pollutant	Emission Factor	Unit
SO ₂	0.113	kg/body
NO _x	0.825	kg/body
CO	0.140	kg/body
PM ₁₀	0.0347	kg/body
PM _{2.5}	0.0347	kg/body
Pb	0.0300	mg/body
Hg	0.0015	mg/body

Table: Key pollutants emitted from crematorium.

The Atmospheric Impact Report attached in Annexure F provides in explicit detail the typical emissions anticipated during the operational phase of the crematorium, the magnitude and quantities of the emissions per body cremated and the key pollutants emitted from the crematorium.

In terms of the construction phase of the development there are negligible atmospheric emissions anticipated and dust generated during construction will be suppressed through use of tankers carrying water from off-site.

7.4. GENERATION OF NOISE

Noise to be generated during the construction phase will mainly be from construction vehicles, construction works and workers. All works on the site must be limited to during working hours during the week, generally from 07:30am to 04:30pm. The community will be notified of construction activities through the use of signage. Noise during the operational phase is negligible as the cremation technology itself does not emit significant noise and will not provide a disturbance to surrounding enterprises or people.

7.5. ENERGY EFFICIENCY

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

Energy efficient lighting will be used
--

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

Alternative energy sources will include the use of generators should there be a need to utilise it during construction phase.

7.6. WATER USE

The proposed activity being situated in a watercourse will require a water use license application. Department of Water and Sanitation will be provided with this Draft EIR to comment on the way forward.

7.7 AIR EMISSION LICENCE (AEL)

UGU District Municipality representative, Miss A Hlongwa who attended the pre-application meeting has indicated that the development, due to the primary nature of a crematorium releasing smoke, pollutants and various emissions into the atmosphere, an AEL is required. She further indicated that an air quality assessment report would need to be completed, of which it has been included as Annexure F of this Draft EIR.

SECTION C

PUBLIC PARTICIPATION AND KEY STAKEHOLDER ENGAGEMENT PROCESS

1. DETAILED DESCRIPTION OF PROCESS FOLLOWED IN RESPECT TO PREFERRED ALTERNATIVE WITHIN THE SITE:

1.1. DETAILS OF ALTERNATIVES CONSIDERED:

Information regarding public participation;

- ✓ Placement of Newspaper advertisement will be placed through the local South Coast Herald
- ✓ Placement of A3 site notices will be placed at selected public venues within the boundaries of the study area;
- ✓ Draft EIR is to be circulated to all stakeholders.

1.2. PUBLIC PARTICIPATION PROCESS

1.2.1. Advertisement

Newspaper article will be published in the South Coast Herald newspaper to notify the public about the proposed development and also, to allow general public to register as interested and affected parties. The commenting period will be open from the 31 July to the 29 August 2019 so as to allow ample time for the public to provide their input on the proposed development.

1.2.2. Site Notices

Site notices will be put up at the proposed site entrance.

1.2.3. Alternative Engagement with Community (if deemed Necessary)

No public engagement has been conducted at this stage

1.2.4. Attendance Register

Not Applicable.

1.2.5. Minutes of Public Meeting

Not Applicable. There were no public meetings held for this project.

1.3. PROOF OF STAKEHOLDER ENGAGEMENT

All relevant stakeholders (Including Department of Economic Development, Tourism & Environmental Affairs, KZN Department of Water and Sanitation, Ezemvelo Wildlife KZN, UGU District Municipality, Department of Agriculture Forestry and Fisheries, AMAFA and KZN Department of Transport) were supplied with the Draft EIR for commenting and all comments will be submitted to the competent authority for decision making in the Final Impact Assessment Report. All stakeholders are given a period of 30 days to comment on the document and raise their concerns about the proposed development as per the EIA Regulations 2014 (As Amended).

1.4. ISSUES RAISED BY IAP'S

This will be presented in the Final Impact Assessment Report.

SECTION D

ENVIRONMENTAL IMPACT ASSESSMENT OF ALTERNATIVE SITE IDENTIFIED AND ASSESSED

The assessment of impacts must adhere to the requirements in the EIA Regulations, 2014 as amended and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACT ASSESSMENT METHODOLOGY.

PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK IMPACTS

The process undertaken to identify, assess and rank and ranking the impacts the activity will impose on the preferred location was developed with the guidance of Appendix 1, Section 3 (Basic Assessment Process). The process therefore considers the provisions of the EIA regulations promulgated in terms of the NEMA (Act no. 107 of 1998) and relevant legislation.

METHODOLOGY (Matrix Risk):

Nature

The nature of the impact is herewith classified as either direct, indirect or cumulative.

- **Direct impacts:** impacts usually caused from activities carried out on site that can only be monitored to be carried out within certain confines but cannot at all be avoided, i.e. clearing of vegetation to mark a road reserve in an area populated with vegetation.
- **Indirect impacts:** secondary impacts resulting from direct impacts, i.e. erosion resulting from destabilised soils due to clearing of vegetation.
- **Cumulative impacts:** impacts which could result during the life cycle of the project as a result of one or two impacts that are usually unnoticed as single elements of such.

Intensity/ Magnitude

Encompasses three required (as per impact rating guide lines noted) aspects of identified impacts namely; the degree to which impacts can be reversed, the degree to which impacts may cause irreversible effects and the degree to which an impact can be mitigated. The impacts identified may be associated with the natural, social and cultural functions of the environment

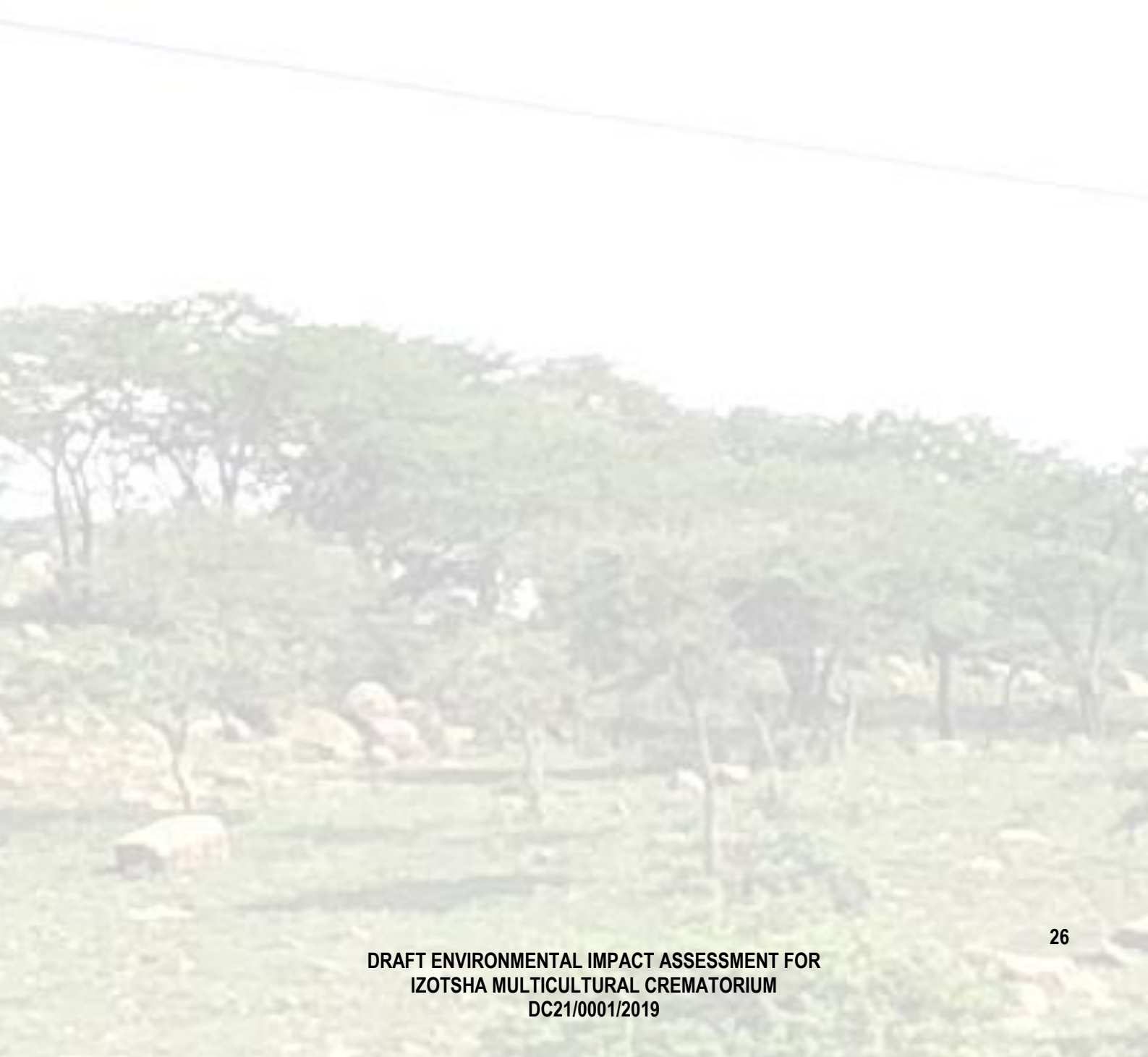


Table 1: Rating Scale for Intensity of the Impact

Intensity of the Impact	Rating
Low (Impacts are reversible, mitigatable and replaceable by discontinued of the source of impact with no need to implement further mitigation measures)	1
Moderate (impacts are reversible, mitigatable and replaceable though moderate change the environment is identified with a loss of natural habitats. The natural habitat remains predominantly intact. Impacts can be restored by natural factors within 3-6 months)	2
High (The change in ecosystem processes and loss of natural habitat and biota is great, some remaining natural habitat features are still recognizable. Mitigation measures must be implemented within provided time frame by the ECO.)	3
Very High (The modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota. A rehabilitation plan must be drawn to reverse this impact, the consultation of relevant stake holders may be required.)	4

Probability of Impacts

Table 2: Rating Scale for Probability of Impact

Probability of the Impact	Rating
Improbable (No chance of occurring)	1
Probable < 50% chance of occurring	2
High Probability 50 % ≥ 90 % chance of occurring	3
Definite > 90 % chance of occurring	4

Duration

Herewith the duration of the impact refers to the period into which the impact will be experienced i.e. short, medium and long term.

Table 3: Rating Scale for Duration the Impact

Duration of the Impact	Rating
Immediate < 1 year	1
Short 1>5 Years	2
Medium 5 ≥ 10 Years	3

Long > 10 Years	4
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Extent

The extent is associated with the geographic extent of the impact, whereby if the occurrence of the impact will either have local, regional, National and globally negative impacts.

Table 4: Rating Scale for Extent of the Impact

<i>Extent of the Impact</i>	<i>Rating</i>
Site Specific	1
Local 1 km ≥ 5 km	2

Regional 5 > 10 km from site	3
National/ Internally/Globally \geq 10 from site	4

Significance

Table 5: Rating Scale for significance of the impact of the Impact

Significance of the Impact	Consequence of Significance	Rating
Very Low	The impact is unimportant, and it requires not the mitigation. As such, the impact is regarded as acceptable for the proposed development.	<5
Low	The impact is very minor and may require limited mitigation. It may be regarded as accepted in light of the proposed mitigation.	$5 \geq 10$

Medium (Medium-written black because of the colour barrier)	The impact is clearly effective but moderate and can be mitigated/ avoided by the implementation of proper mitigation measures.	10≥20
Moderate	The impact is clearly effective, failure to mitigate could lead to the entire project unacceptable.	20≥30
High	There are slim chances of mitigation measures.	30≥40
Very High	The impact is relatively high and there is no possible mitigation measure for this impact. As such, social, cultural and Economic activities of the community are disrupted.	>40

1.1. METHODOLOGY (MATRIX RISK)

The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives was developed with the guidance of Appendix 1, Section 3 (Basic Assessment Process). The process therefore takes into account the provisions of the EIA regulations promulgated in terms of the NEMA (Act no. 107 of 1998) and relevant legislation.

1.2. PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK IMPACTS

The process undertaken to identify, assess and rank and ranking the impacts the activity will impose on the preferred location was developed with the guidance of Appendix 1, Section 5 (Environmental Impact assessment). The process therefore takes into account the provisions of the EIA regulations promulgated in terms of the NEMA (Act no. 107 of 1998) and relevant legislation.

1.3. AN ASSESSMENT OF EACH IDENTIFIED POTENTIAL SIGNIFICANT IMPACT AND RISK

Table 6: Risk assessment matrix

Impact	Before /	Probability	Duration	Extent	Intensity	Significance = [(Magnitude+Extent+Duration) x Probability]	Result Comment
Clearing of wetland vegetation	Impact before mitigation	2	4	2	3	= (3+2+4) x 2 S= 18	Vegetation will be removed from the wetland to make way for the parking bays and the fencing. The vegetation component for the wetland was rated to be in a seriously modified state as a result of the decreased vegetation cover on the slopes and the occurrence of alien invasive plant species within the wetland are all factors that show that the overall impact of vegetation clearing is low. Having applied the provided mitigation measures the occurrence of the impact will not change, however occurrence will be confined to necessary areas, hence, the change in the difference with the rating.
	Impact after mitigation	4	2	1	1	= (4+1+1+1) x 1 S= 7	
Lack of safety and security	Impact before mitigation	3	1	1	2	= (4+4+3) x 4 S = 44	The public has been and will still be involved in the project so that there is fellowship between the project personnel and the community, this helps minimise any riots, theft and lawsuits. Provided that the mitigation measures are not implemented, fellowship may be threatened leading to disruption to the project and posing harm to the project personnel. A firm working relationship between the ECO, Safety Officer, Resident engineer, CLO and Project Managers will have to be maintained to ensure that the community works hand-in-hand with project personnel in order for the project to prevail.
	Impact after mitigation	1	1	1	1	= (1+1+1) x 1 S = 3	

Pollution of ambient air	Impact before mitigation	4	4	3	3	= (4+3+3) X 4 S = 40	Emissions of CO are estimated at 562.10 kg/y for the maximum design scenario and a low 52.12 kg/y for the actual scenario. SO ₂ emissions are estimated at 453.70 kg/y for the maximum design scenario and a low 42.07 kg/y for the actual scenario. For PM ₁₀ and PM _{2.5} , emissions are estimated at 139.32 kg/y for the maximum design scenario and 12.92 kg/y for the actual scenario. Emissions of Pb are estimated at a low 120.45 kg/y for the maximum design scenario and an even lower 11.17 kg/y for the actual scenario. Emissions of Hg are estimated at a very low 6.02 kg/y for the maximum design scenario and an even lower 0.56 kg/y for the actual scenario. The estimated emissions are generally low, especially for the actual or normal operation scenario and in comparison with emissions from large point sources such as refineries, power stations and pulp and paper plants
	Impact after mitigation	4	4	3	3	= (4+3+3) x 4 S = 40	
Pollution on wetland	Impact before mitigation	4	3	1	4	= (4+3+1) x 4 S= 32	Wetland systems are able to self-rehabilitate over time considering the contaminating agent is removed and the mitigation measures within this document, the EMP and the wetland assessment are considered and monitored, the impacts after mitigation are foreseen to be minimal. Further to this the wetland found on site has been found to be largely modified due to the impact of Alien invasive species on these HGM units along with the dammed areas.
	Impact after mitigation	2	2	1	2	= (2+2+1) x 2 S= 10	
Erosion (bare soils)	Impact before mitigation	3	3	2	3	= (3+2+3) x 3 S= 24	Simple revegetation of the bare ground with deep rooted plants can help mend this impact. The soil can be watered mean while the plants are growing to avoid soil

	Impact after mitigation	1	1	1	1	$= (1+1+1) \times 1$ $S = 3$	revision by wind. Areas requiring gabions will be identified with the ECO and those should be installed accordingly. Hardened surfaces must be excavated. Erosion mitigation must be applied and monitored as per recommendation within this application document.
Noise	Impact before mitigation	3	1	2	1	$= (1+2+1) \times 3$ $S = 12$	The noise levels associated with the project applied for are not deemed too high, especially if mitigation measures are applied; even so, noise anticipated is inevitable but can only be controlled and monitored to control it in case of unnecessary noise. Noise generated must emerge from construction vehicles and be limited to construction hours. (7:30am to 4:30pm). The cremator is not expected to emit loud noise or provide a disturbance.
	Impact after mitigation	1	1	1	1	$= (1+1+1) \times 1$ $S = 3$	
Traffic	Impact before mitigation	2	1	1	2	$= (2+1+1) \times 2$ $S = 8$	Traffic flow may increase however it is not expected to be a significant change in traffic to the traffic received by the existing Izotsha memorial park. Traffic will enter through the existing entrance and the proposed 44 parking bays are deemed to be sufficient for the increase in vehicles that may occur. Traffic congestion within the memorial park is not envisioned due to the cremator having the potential to cremate one body at a time and thereafter the family members are expected to leave thus enabling the next family to arrive.
	Impact after mitigation	1	1	1	1	$= (1+1+1) \times 1$ $S = 3$	
Dust	Impact before mitigation	4	1	2	1	$= (1+2+1) \times 4$	Without mitigation measures dust will Dust suppression measures will be implemented with monitoring of the appointed ECO/ SHE officer. Mitigation include, but are not

						S = 16	limited to; regular wetting of the road, stockpiled soils to be covered and /or wettened, controlling speed limits along the road, blasting is not envisioned and must not be engaged without notifying the ECO, grass clearing must be limited to areas of construction, etc.
	Impact after mitigation	2	1	1	1	= (1+1+1) x 2 S= 5	
Storm water	Impact before mitigation	4	4	2	2	= (4+4+2) x 4 S=40	The frequency in stormwater is not an aspect that can be controlled by anyone as it is entirely determined by the frequency and intensity of rainfall. However, the project engineers have issued a stormwater management plan which will aid reducing the impacts that stormwater can cause such as flooding.
	Impact after mitigation	4	4	2	2	= (4+4+2) x 4 S=40	
Operation of machinery/ vehicles within wetland	Impact before mitigation	4	1	1	4	= (4+1+1) x 4 S=24	There will be Increase in sediment inputs & turbidity, alterations to flow volumes and patterns of flows as per the wetland assessment however the impact will not endure for the lifetime of the project. This will be limited entirely to the construction period and once the project is completed this impact will cease and due to the self-rehabilitating and regulation nature of the watercourse this impact will not have a lasting impact.
	Impact after mitigation	1	1	1	1	= (1+1+1) x1 S=1	

Organic pollutants from chemical ablution facilities	Impact before mitigation	2	1	1	2	= (2+1+1) x2 S=8	The use of chemical toilet facilities will be limited to the construction period, after which sewer and sanitation facilities will be supplied through the local municipal services. Therefore, this impact is considered to be very low. In addition to this the chemical toilets will be provided and serviced by a registered company to ensure that risk of this impact occurring remains low.
	Impact after mitigation	1	1	1	1	=(1+1+1) x1S=3	

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

2.1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the planning and design phase:

Alternative S1 (preferred alternative)

Direct impacts:

There are no anticipated significant impacts identified during this phase. Impacts would be negligible and associated with investigation of site to determine potential impacts associated with construction and operation of the proposed development.

As such the preferred site entails environmental degradation as it has a potential to disturb the wetland on site. The chosen design of the crematorium is pertinent to the terrain and status quo of the sites and takes into account the constraints of the topography and also the wetland on site. The surrounding areas of the wetland must be viewed to ascertain the best and environmentally sound preferred site. It must be viable in terms of socio, economic and environmental impacts and also in terms of the terrain and constraints associated thereto.

Identification of disturbed areas for the construction camp must be undertaken. Also, identification of the areas within the watercourse where construction activities occur must be restricted to those areas only so as to ensure minimal degradation to the environment.

.Indirect impacts:

Loss of capital already invested in project by the developer by means of engineering, structural and environmental costs should it not be authorised.

Cumulative impacts:

Loss of capital already invested in project should it not be authorised.

No-go alternative (compulsory)

Direct impacts:

Not anticipated as this is the only site available to the client

Indirect impacts:

There are no impacts identified during the planning and design phase

Cumulative impacts:

No significant impacts identified during the planning and design stages

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1

The preferred alternative is designed so as to take into account the terrain and environmental constraints of the site. Disturbed areas within the footprint can be used for the movement of construction vehicles. All disturbed areas post construction will be rehabilitated.

b. Process, technology, layout or other alternatives

List the impacts associated with any process, technology, layout or other alternatives that are likely to occur during the planning and design phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:

The layout proposed incorporates the environmental constraints of the site. The design of the crematorium is such that it will have minimal impacts to its environment and those impacts will be mitigated for. The impacts anticipated during this phase will be mitigated for.

Erosion control measures will be applied and will form part of the EMPr.

Indirect impacts:

Employment opportunities during the construction and the potential for permanent employment during the operational phase.

Cumulative impacts:

The development will be maintained by the Ray Nkonyeni Municipality as it is municipal owned.

No-go alternative (compulsory)

Direct impacts:

Rejection of the proposed development will result in a loss of capital invested already.

People will be forced to travel out of the municipality for cremation facilities.

Indirect impacts:

N/A

Cumulative impacts:

This development will reduce the pressure on land for burial that is the current status quo.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1:

The layout and design have taken into account the terrain of the site. The environmental constraints have also been accounted for and the location is the best for the development proposed.

2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the construction phase:

Alternative S1 (preferred site)

Direct impacts:

- Possibility of water contamination with oils from the machines during construction, however, this will be monitored strictly by the ECO to ensure that measures are in place to prevent any contamination.
- Erosion control measures to avoid or minimize soil erosion must be put in place.
- Grassland vegetation will be removed to allow access to the development site.

- Less riparian vegetation may exacerbate fluctuations in the water temperature and reduce the concentration of oxygen by reducing shade.
- Construction related incidents such as spillages of fuel.

Indirect impacts:

- Noise from construction workers and working machines, to be addressed to the community by the CLO and only to be limited to accepted working hours.
- Waste material to be kept within working site, within waste bins and disposed of to the nearest dumping site.

Cumulative impacts:

- Reduced risk of further damages and degradation to environment.
- Uncontrolled runoff and erosion from sites.
- Proper rehabilitation measures to be used to prevent degradation of the areas affected by construction.

No-go alternative (compulsory)

Direct Impacts:

- No proposed development will imply that the status quo remains.

Indirect impacts:

- Effect on the wetland as the result of working outside demarcated site area.

Cumulative impacts:

- Development as a whole will remain stunted.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1

- Erosion can be minimized by ensuring that construction activities are confined to disturbed areas of the river banks.
- It is imperative that the construction occur during the dry season to lessen the impacts.
- The physical characteristics of the wetland will not be significantly altered except for the removal/movement of soil which is intended to be backfilled.
- Fluvial processes of the wetland and stream are crucial to the distribution of vital gases, nutrients and small organisms so the flow of the stream to downstream users must not be stopped.

- Vegetation removed for construction will be replaced post construction phase.
- The planning and design for the proposed development has taken into account the receiving environment in ensuring the preservation and protection of the ecosystem and/or biodiversity features.
- Rehabilitation strategy of the site especially areas not to be affected by the development.
- Proper storm water management plan to address the issue of storm water and how it is going to be disposed or and managed.
- Close monitoring of the site by qualified Environmental Control Officer to ensure that the proposed development has a minimal impact on the receiving environment.
- Use of soft engineering solutions in connection with surfacing of the arrears not developed for vehicle parking. This will allow percolation and seepage of water into the ground without being contaminated with any oils or other negative effects.
- Evaluation of designs and provide recommendations to limit and reduce environmental, social and economic impacts associated with the proposed activities.
- The disturbed areas must be planted with deep rooted vegetation to stabilize the soil.
- To avoid soil and water contamination in cases where the machine being used are faulty, the contractor will have to make sure of the following:
 - Provision of drip trays all the time onsite.
 - Placing of generators over the drip tray.
 - Avoid soil erosion by ensuring that rehabilitation/landscaping in all areas where construction is taking place.
 - Provision of waste bins to avoid pollution by means of waste.
 - Use of chemical abluion facilities to avoid water pollution.

b. Process, technology, layout or other alternatives

List of the impacts associated with process, technology, layout or other alternatives that are likely to occur during the construction phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:

- The noise, vehicle and people movement might be considered a priority and have to be managed accordingly.

- Pollution of immediate area surrounding the site will take place, this being in the form of construction rubble, dust and material stockpiles.
- Litter created by workers/ contractors would be required to be managed.
- Excavation activities with removal of vegetation and exposure of soils.

Indirect impacts:

- Litter through the property as temporal storage for building material such as building sand, bricks etc.
- These might lead indirectly into air pollution or dust.
- Traffic interference by means of construction vehicles parking their cars in the road side might be of nuisance to the public. This will be controlled and managed by the site manager or contractor.
- Increased strain on natural resources.
- Continued employment for contractors completing work within the surrounding area.

Cumulative impacts:

- Establishment costs increased.
- Reduced risk to criminal activity.
- Improved socio-economic benefits for the community for crematorium facilities.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1:

- The design must take into account the dynamics of the wetland

2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the operational phase:

Alternative S1 (preferred alternative)

Direct impacts:

- Water contamination as a result of road use by vehicles, which are not roadworthy, that leaks oils, which could be washed down to the stream during rainy days.

Indirect impacts:

- None

Cumulative impacts:

- Increased chances of diseases relating to water contamination as the result of oil leaks into the stream/wetland

No-go alternative (compulsory)

Direct impacts:

- Degradation of receiving environment due to poor management and/ or care taken during construction and which affects the functionality or operation of the wetland.
- The community will remain without access to crematorium facility within the municipality and be forced to continue to travel far distances to utilise crematorium facilities out of the municipality.

Indirect impacts:

- Economic loss for applicants.
- Increase on pressure on land for increased burials

Cumulative impacts:

- Increased financial costs to remedy environmental and social impacts
- No opportunity of employment opportunities

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1

- Awareness campaign during construction by Environmental Control Officer of the site by raising awareness of the risk of working in close proximity and / in a wetland.
- Monitoring the rehabilitated area to ensure that vegetation grows, and the area rehabilitated is compact and cannot any stage collapse.

- Ongoing maintenance of the development

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the operational phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:

- The layout and design must be complied with.

Indirect impacts:

- Not anticipated during this phase.

Cumulative impacts:

- Not anticipated during this phase.

No-go alternative (compulsory)

Direct impacts:

- Not anticipated during this phase.

Indirect impacts:

- Not anticipated during this phase.

Cumulative impacts:

- Not anticipated during this phase.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1

- Ongoing maintenance

2.4. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING OR CLOSURE PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the decommissioning or closure phase:

Alternative S1 (preferred alternative)

Direct impacts:

- Closure or decommissioning is not envisaged due to this being a permanent municipal infrastructure.

Indirect impacts:

- The community will remain without crematorium facilities

No-go alternative (compulsory)

Direct impacts:

- Decommissioning of the crematorium will render the status quo to remain

Indirect impacts:

- Not applicable.

Cumulative impacts:

- Not applicable.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the decommissioning or closure phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative)

Direct impacts:

- Community will remain without cremation facilities.

Indirect impacts:

- Development potential will be reduced.

Cumulative impacts:

- Status quo will remain

No-go alternative (compulsory)

Direct impacts:

- Not applicable.

Indirect impacts:

- Not applicable.

Cumulative impacts:

- Not applicable.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1

- Ensure the crematorium is suitably managed.

4. SUMMARY FINDINGS AND IMPACT MANAGEMENT BY SPECIALIST REPORT (APPENDIX 6)

4.1 GEOTECHNICAL ASSESSMENT

No geotechnical investigation conducted at this stage.

4.2 WETLAND ASSESSMENT

Wetland Assessment was conducted by the Biodiversity company, an onsite assessment was done in November 2018 by an ecologist where the wetland area in the project area was delineated and assessed. The survey was conducted during the wet season.

The Ecological Importance & Sensitivity and Hydrological Functionality was calculated to have a Moderate (C) level of importance for all the assessed wetlands. The EIS was determined to be moderate as there were no signs of ecologically important taxa within the wetlands and none had been recorded within the area. The wetland was not associated with NFEPA wetlands or protected natural habitats, furthermore the large modification to the wetland habitat reduced the ecological importance of the wetland. The Hydrological Functionality was determined to be moderate although the wetland's hydrology has been impacted upon, the wetland channel maintains a water source for downstream areas.

Buffer Zones (Pre-mitigation)	
Construction Phase	26m
Operational Phase	20m

Buffer Requirement (post mitigation)	
Construction Phase	15m
Operational Phase	15m

A conservative buffer zone was suggested of 15 m for the construction and operation phases respectively, this buffer is calculated assuming mitigation measures are applied. The buffer zone will not be applicable for areas of the project that traverse wetland areas, however, for all secondary activities such as lay down yards, storage areas and camp sites, the buffer zone must be implemented.

Mitigation measures for construction activities within a wetland is provided as follows:

- Adhere to the buffer zone and work outside of this buffer. No development or activities must take place in the buffer zone and wetland areas;
- Construction must take place during the dry season (April-September). If construction will be over a prolonged period, ensure that clearing, excavation and foundations are laid down in the dry season to reduce the erosion potential of the exposed surfaces;
- Temporary storm water management systems must be in place and preferential runoff channels be filled with aggregate and/or logs (branches included) to dissipate flows, limiting erosion and sedimentation;
- Silt traps and sediment trapping berms must be in place around the construction site to minimise sedimentation of the wetland
- The footprint area of the must be kept a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas;
- The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly;
- The storm water management plan must be implemented;
- Residents should be educated and informed of how to dispose of waste including hydrocarbon waste;
- Stormwater infrastructure should be maintained regularly;
- All chemicals and toxicants to be used for the construction must be stored outside the buffer area and in a bunded area

- All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site unless there is an emergency such as a spill (in this instance revert to EMP emergency measures for spills);
- Adequate sanitary facilities and ablutions must be provided for all personnel throughout the construction site. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation);
- All removed soil and material must not be stockpiled within the watercourse and buffer. stockpiles must be protected from erosion, stored on flat areas where run-off will be minimized, and be surrounded by bunds;
- No dumping of construction material on-site may take place;
- All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported; and
- Alien Invasive species management plan needs to be developed

Further mitigation measures can be seen on the Wetland Assessment Report attached herewith as annexure F and on the Environmental Programme attached as annexure E.

4.3 ECOLOGICAL ASSESSMENT

A wet season terrestrial biodiversity survey was conducted on the 31th of October 2018 by the Biodiversity Company. The survey primarily focused on the development footprint area, referred to as the project area herein. Furthermore, the identification and description of any sensitive receptors were recorded across the project area, and the manner in which these sensitive receptors may be affected by the activity was also investigated

The project area falls within the Indian Ocean Coastal Belt Biome. This region occurs as an almost 800 km long coastal strip between the South African border with Mozambique as far south as the mouth of the Great Kei River. This high-level vegetation unit comprises a dominant forest cover interrupted by edaphically or hydrologically controlled areas of grassland, with at least a significant part of the belt being open to dense savanna vegetation, interspersed with many areas of forest and grassland. The overwhelmingly large extent of transformation of the coastal belt outside the existing strips and patches of embedded forest represents significant loss of evidence of its prior condition.

The proposed construction may result in loss and disturbance of habitats and displacement of fauna and flora. The removal of natural vegetation to accommodate infrastructure and operations will reduce the habitat available for fauna species and may displace (or reduce) animal populations.

Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors such as rivers, streams and drainage lines, or other locally important features.

The project area provides possible habitat and shelter to several endemic and protected mammal, reptile and bird species. Although it is assumed that the majority of fauna species will move to different areas as a result of disturbance, many protected and endemic fauna species have very specific habitat requirements, and the complete destruction of their habitats will result in displacement to less optimal habitats, or ultimately lead to their complete demise. This will result in a decline in species numbers which may ultimately affect the conservation status of specific species on global, national and provincial scales.

The potential impacts associated with the various project stages are discussed below.

Construction Phase

Potential impacts on faunal communities include:

- Displacement of flora and faunal communities (including threatened or protected species) due to habitat loss, disturbance and/or direct mortalities; and
- Continued encroachment and displacement of an indigenous and endangered vegetation community by alien invasive plant species.

Operational Phase

The following potential impacts were considered on terrestrial vegetation communities:

- Continued encroachment and displacement of an indigenous and Endangered vegetation community by alien invasive plant species; and
- Potential pollutant and water runoff into the surrounding environment, causing erosion and loss of species.

Potential impacts on faunal communities include:

- Continued displacement and fragmentation of the faunal community (including threatened or protected species) due to ongoing anthropogenic disturbances and habitat degradation (litter, road mortalities and/or poaching).

5. ENVIRONMENTAL IMPACT STATEMENT

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

Issue	Nature of Impact	Pre-mitigation Severity	Post Mitigation Measure Severity
Pollution	Negative	Low	Negligible
Removal of Vegetation	Negative	Low	Re-vegetation of grass along the watercourse.
Noise	Negative	Moderate	Low. However, construction activities ought to occur between 7H30 and 17H00.
Air Quality	Negative	Low	Low
Occupational Health and Safety	Negative	High	Low
Injury Risk	Negative	High	Low
Soil and Water Contamination	Negative	Moderate	Drip trays must be utilized correctly to avoid any spillages.
Soil Erosion	Negative	Low	Low
Creation of Employment Opportunities	Positive	Moderate	Moderate

SECTION E

CONSTRUCTION METHOD STATEMENT, REHABILITATION AND CLOSURE

1. CONTRACTORS GENERIC METHOD STATEMENT

A detailed method statement is attached herewith as appendix H in Additional information section.

2. REHABILITATION

The following steps are to be implemented for rehabilitation;

- i. Soil
 - Inspection of soil stockpiles to check degradation or pollution (these are stockpiles that have been created from areas where soil has been stripped).
- ii. Vegetation Conservation
 - The occurrence of protected plant species will need to be determined before vegetation is removed and the required permits must be obtained.
 - At the site, currently there is no recurrence of protected plant species.
- iii. Re - vegetation
 - The rehabilitated of areas need to be stabilised with vegetation, mainly grasses at first. Long-term post-closure rehabilitation will allow the re-vegetation of the grasses, bushes and trees.
- iv. Air Quality
 - Revegetation will assist with bringing air quality up to acceptable standards once operations have ceased.
 - After care of the area
- v. Erosion monitoring will take place.
- vi. Removal of alien plants.

3. CLOSURE AND DECOMMISSIONING

Decommissioning is not envisaged. However, should decommission occurs the following environmental management measures must be done:

- i. All cleared areas are to be rehabilitated with indigenous vegetation suitable to the cleared area. After the rehabilitation there must be no signs of erosion.

-
- ii. All visible alien plants must be removed from disturbed sites and the disturbed site must be rehabilitated.
 - iii. Solid waste, concrete waste and rubble material are to be collected and disposed of through a registered landfill site.
 - iv. Indigenous grass, to match the existing vegetation as far as possible. An erosion controls procedure must be established to ensure that the tracks are rehabilitated to satisfaction and that erosion does not become a problem.

CONCLUSION

Although the proposed development is located within a watercourse and there are environmental impacts associated with the construction of the proposed development, the project is largely feasible. However, these impacts will be monitored by a qualified ECO therefore will be minimal and negligible. On the other hand, the proposed development will have positive impacts such as job creation and therefore play a vital role in socio-economic aspect of the area.

EAP RECOMMENDATIONS

- Environmental Management Programme (EMPr) must be developed and adhered to during construction, post construction and operational phase of the proposed development.
- Appointment of Environmental Control Officer (ECO) for the duration of construction of the project.
- ECO to review proposed project scope against Environmental Authorisation by DEDTEA.

The following to be monitored by ECO during construction and post construction:

- Environmental scan of the site prior any excavations in preparation for construction.
- Induction to all construction personnel on contents of EMPr and environmental authorisation and compliance and penalties associated there to.
- Advice the contractor's areas suitable for contractor's temporal mobile site offices.
- Advice on what to do with waste being produced on site by allowing such waste to be disposed of at a registered landfill site.
- Control of dust especially in areas that are in close proximity to residential areas.
- Cleaning of spillages immediately'
- Demarcation of sites for no go areas.

- Demarcation of construction sites and prevent public access to these areas.
- Implement fines as part of the contract for unlawful activities.
- Monitor complaints, investigate and implement rectifying measures.
- Monitor areas for pollution and degradation.
- Rehabilitation of any damage to sensitive areas, including potential erosion from construction activities.
- Implement a process to capture and address public recommendations, complaints and or requests.
- Monthly audit report to be produced.
- Implement the specialist mitigation measures for working within the wetland.

EAP UNDERTAKING AND DECLARATION

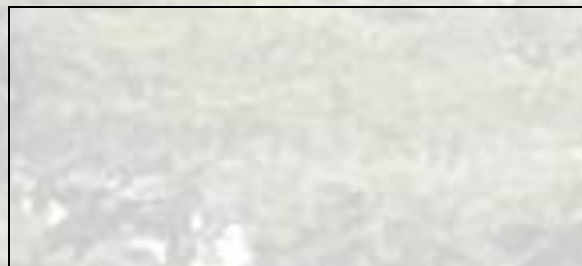
I,.....hereby approve that the drafted report as in terms of EIA Regulations, 2014 as prescribed in terms of S22(2) in relation to conduct and eligibility, hereby acknowledge that the information hereby presented as in terms prescribed in the said regulations is at all cost correct and is aligned to proposed development as per proposal by the applicant (often referred to as client). The presentation presented in this document is by no means compromise the site physical aspect of the environmental features so to make the proposed development approvable. However, our assessment is based on true ground assessment and literature review, and practical consultation with all stakeholders as prescribed in the process procedure as in Chapter 6, S40 (1) (2) and or S41.

The Competent Authority (CA) has by law vested interest in the protection of the environmental aspect hence the decision is always based on the provided information and if all has been aligned to EIA Regulations, 2014 inclusive of other relevant legislation as contained in the latter pages of this document.

Signed at _____ on _____ of _____ 20_____

Signature: _____ Capacity: _____

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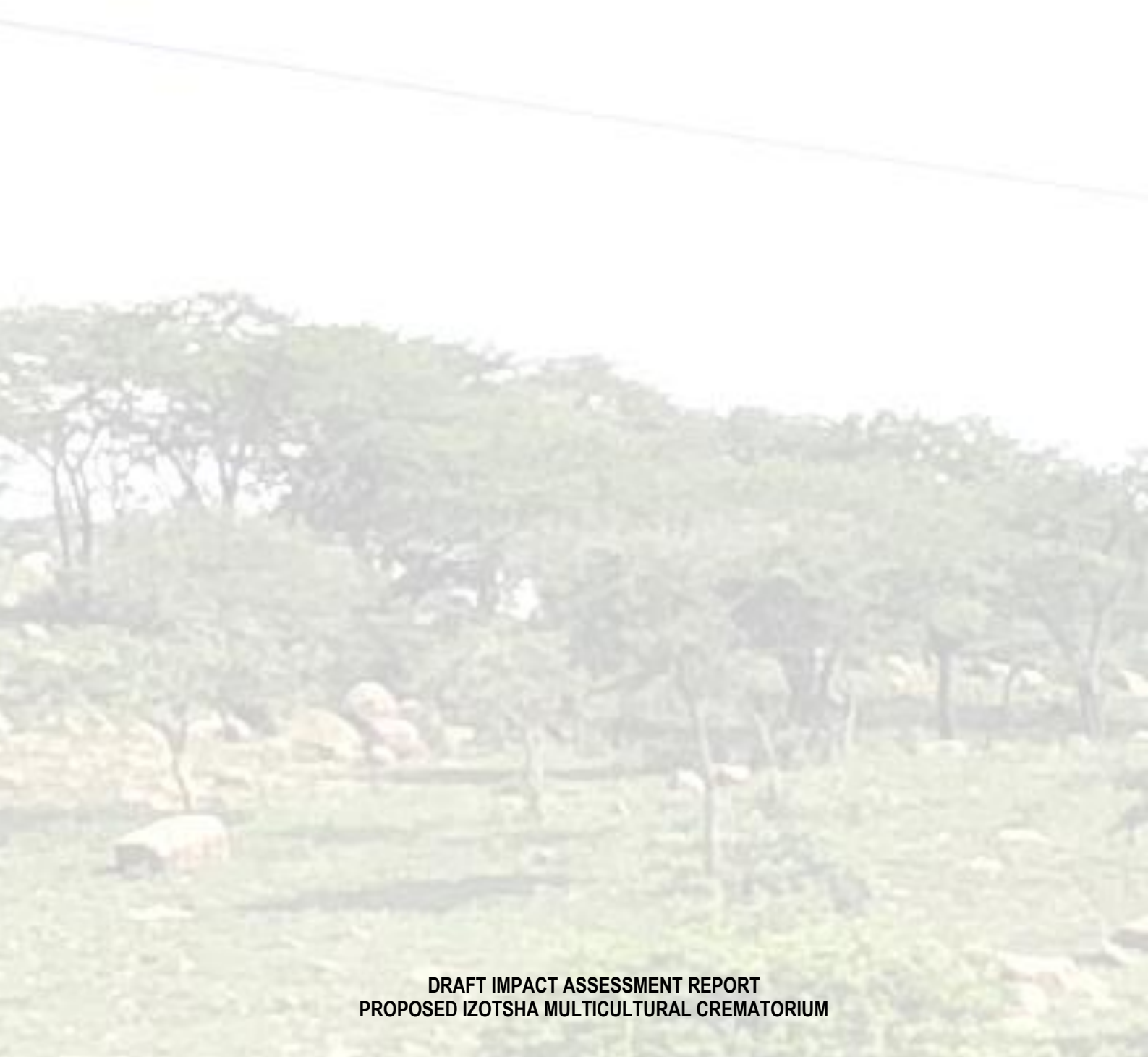
SECTION F

APPENDICES



ANNEXURE A

SITE LOCALITY MAP – 1: 50 000 SCALE



ANNEXURE B

SITE PHOTOS



ANNEXURE C

FACILITY DRAWINGS



ANNEXURE D

PUBLIC PARTICIPATION PROCESS



ANNEXURE E

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

ANNEXURE F

SPECIALISTS STUDIES

ANNEXURE G

CURRICULUM VITAE OF AN EAP & SPECIALISTS

ANNEXURE H

ADDITIONAL INFORMATION

