



## **ENVIRONMENTAL MANAGEMENT PROGRAMME**

**FOR**

### **ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED HEIDELBERG CEMETERY EXPANSION, HEIDELBERG, SEDIBENG, GAUTENG PROVINCE**

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**Compiled By:** Marvin Lobeko, Environmental Scientist  
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**Declaration:**

I hereby declare:

1. I have no vested interest (present or prospective) in the project that is the subject of this report as well as its attachments. I have no personal interest with respect to the parties involved in this project.
2. I have no bias with regard to this project or towards the various stakeholders involved in this project.
3. I have not received, nor have I been offered, any significant form of inappropriate reward for compiling this report.



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**Quality Control:**

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# ENVIRONMENTAL MANAGEMENT PROGRAMME

## BASIC ASSESSMENT REPORT FOR THE PROPOSED HEIDELBERG CEMETERY EXPANSION, HEIDELBERG, SEDIBENG, GAUTENG PROVINCE

### 1. INTRODUCTION

Marang Environmental and Associates (Pty) Ltd (hereafter referred to as “Marang”) was appointed as the independent Environmental Assessment Practitioner (EAP) by Lesedi Local Municipality (hereafter referred to as “LLM”) to facilitate the Basic Assessment (BA) process for the proposed Heidelberg cemetery expansion.

The proposed cemetery expansion triggers activity 44 and 27 of Listing Notice 1 and Activity 12 of Listing Notice 3, of the EIA Regulations of 2014, as amended 7 April 2017 which requires Environmental Authorisation as per activity thus also require an Environmental Authorisation (EA).

As part of the BA process, an Environmental Management Programme (EMPr) must be compiled for the activity and should be seen as an extension to the Basic Assessment (BA) Report in terms of Section 23(1) of the EIA Regulations of 2014, promulgated in terms of Chapter 5 of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), which came into effect on 8 December 2014, and as amended on 7 April 2017. In addition, LLM have the responsibility to comply with the provisions for duty of care and remediation of environmental damage as contained in Section 28 of NEMA.

#### **Project Applicant:**

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#### **Designated EAP:**

Mr Marvin Lobeko (Environmental Scientist)  
B.Sc. (Hons) Geography (Univ. of Johannesburg)

Marvin is an Environmental Scientist within Marang and has experience in the environmental management field, and has been involved in various basic assessments, air emissions licences, EA implementation programmes, section 24G applications, waste licences and environmental impact assessments.

#### **Technical Project Manager:**

Ms Claire Taylor (Senior EAP)  
B.Sc. (Hons) Environmental Modelling and Monitoring (UNISA)

Ms Claire Taylor has been working in the Environmental Management field for 16 years. During this time, she has carried out numerous EIAs (including Basic Assessments, Exemptions, full EIAs, & EMPrs) Environmental Compliance Audits, Section 24G Reporting, Waste Management Licences, Tier

1 and Tier 2 Contamination Assessments, Remedial Action Plans and Sustainable Development plans and reporting. During the process of carrying out the abovementioned work, Ms Taylor has been required to conduct public participation meetings and reviewed numerous scientific reports and related them to possible environmental impacts of activities.

## 2. PROJECT DESCRIPTION

### 2.1. Project Background

The Heidelberg cemetery is located on Portion 5 of Langlaagte 186IR, Heidelberg, Sedibeng District Municipality. The active Cemetery is reaching its full capacity. According to burial records there are currently 1200 gravesites. The average rate of burials per year is 95, however the average for the last three years is 75. The lifespan of the of the existing cemetery is estimated to be less than one year.

*Land availability for cemeteries in an increasingly urgent matter. Therefore, the Lesedi Local Municipality is proposing to extend the existing Heidelberg Cemetery onto the remaining of the cemetery property (Portion 5 of Langlaagte 186IR). This property is approximately 10 ha and will thus provide sufficient cemetery space for a number of decades.*

The project area, which is 10 hectares (ha) in extent, comprises mostly undeveloped land within a region characterised by medium- and high-density residential areas to the south as well as undeveloped land to the north, within a semi-rural setting. Prominent natural features in the vicinity of project area include a ridge system located to the north of the project area. It is proposed that the project area will be cleared in a phased approach, (as the need for burial plots becomes apparent) until the cemetery reaches capacity in a number of decades.

### 2.2. Triggered Listed Activities

The listed activities triggered by the proposed cemetery expansion at the Heidelberg cemetery include Listed Activity 44 and 27 of the 2014 EIA Regulations Listing Notice 1 (as amended) and Listed Activity 12 of the 2014 EIA Regulations Listing Notice 3 (as amended), as prescribed by the NEMA, 1998 (Act No. 107 of 1998) (NEMA), as amended. In terms of these Regulations, a BA is required for the proposed cemetery based on the triggered activities listed in (**Table 2.2-1 & Table 2.2-2**) below.

**Table 2.2-1:** Listed Activities in terms of GN R. 983, as amended, triggered by the proposed Heidelberg Cemetery expansion.

Listed activity as described in Listing Notice 1 of GN R. 983, as amended	Description of project activity that may trigger the listed activity
<u>Listed Activity 44:</u> The expansion of cemeteries of 2 500 square metres or more	The cemetery expansion will exceed 2 500 square metres.
<u>Listed Activity 27:</u> The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-  (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan	10ha will be cleared for the proposed cemetery expansion. Although the clearance will happen in a phased approach over a number of years/decades.

**Table 2.2-2:** Listed Activities in terms of GN R. 985, as amended, triggered by the proposed Heidelberg Cemetery expansion.

Listed activity as described in Listing Notice 3 of GN R. 985, as amended	Description of project activity that may trigger the listed activity
---------------------------------------------------------------------------	----------------------------------------------------------------------

Listed Activity 12:

**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, within:**

c. Gauteng

i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004

ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or

iii. 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

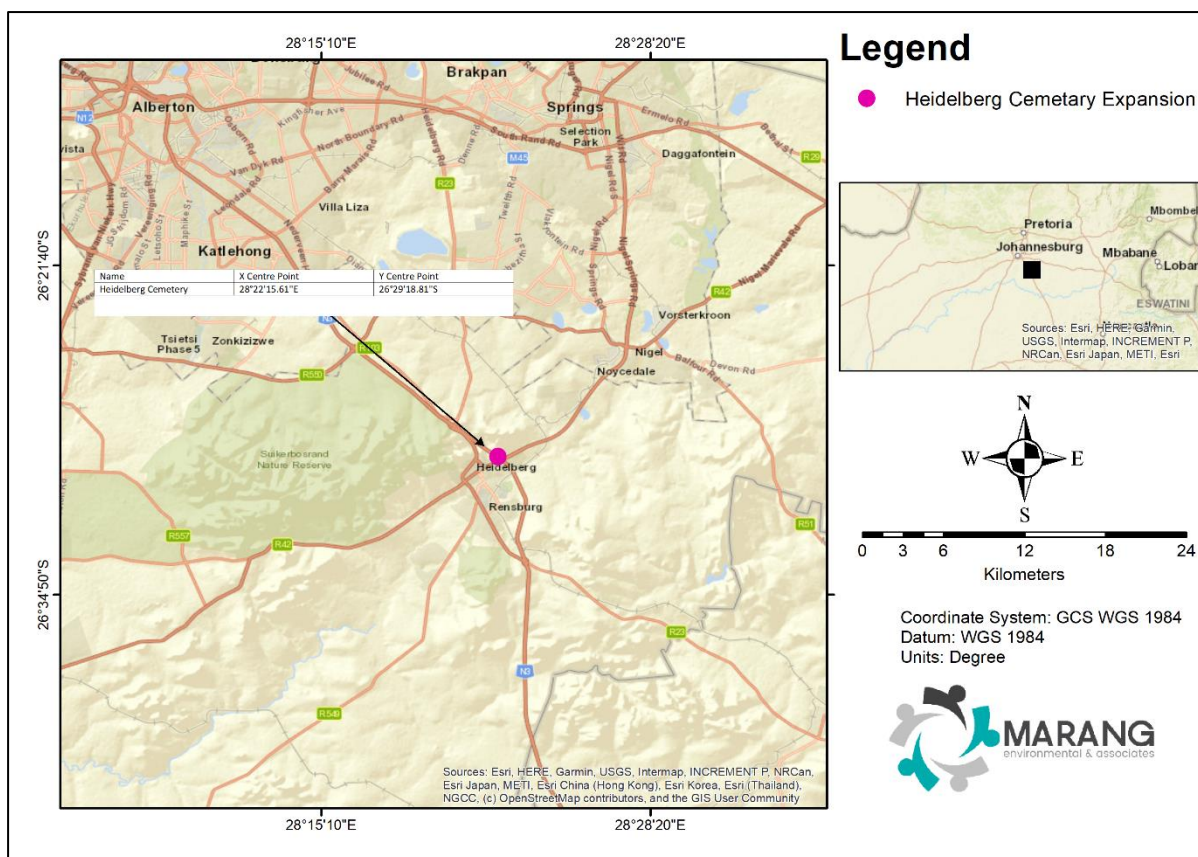
i

The project area is located within a CBA: Important area, within the Critically Endangered (CR) Blesbokspruit Highveld Grassland Threatened Ecosystem, within a 200m Class 1 Ridge buffer and within areas indicated as remnant vegetation in terms of the NBA (2018). The majority of the project area is located within the Soweto Highveld Grassland vegetation type which is indicated to be Endangered (EN) in terms of the national vegetation classification (Mucina & Rutherford, 2006) and Vulnerable (VU) in terms of the NBA (2018).

## 2.3. Locality

The project area is located immediately to the east of the N3 roadway and to the southwest of the existing Heidelberg Cemetery. The project area, which is 10 hectares in extent, comprises mostly undeveloped land within a region characterised by medium - and high-density residential areas to the south as well as undeveloped land to the north, within a semi-rural setting. Prominent natural features in the vicinity of project area include a ridge system located to the north of the project area.

A map showing the locality of the existing cemetery and the proposed cemetery expansion, is provided below.



**Figure 2.3-1** LLM Heidelberg Cemetery locality map.

**Table 2.3-3:** 21-digit Surveyor General code of the Proposed Heidelberg Cemetery expansion site.

C	0	1	6	0	0	3	4	0	0	0	3	4	1	0	3	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

**Table 2.3-4:** Coordinates of the proposed Heidelberg cemetery expansion.

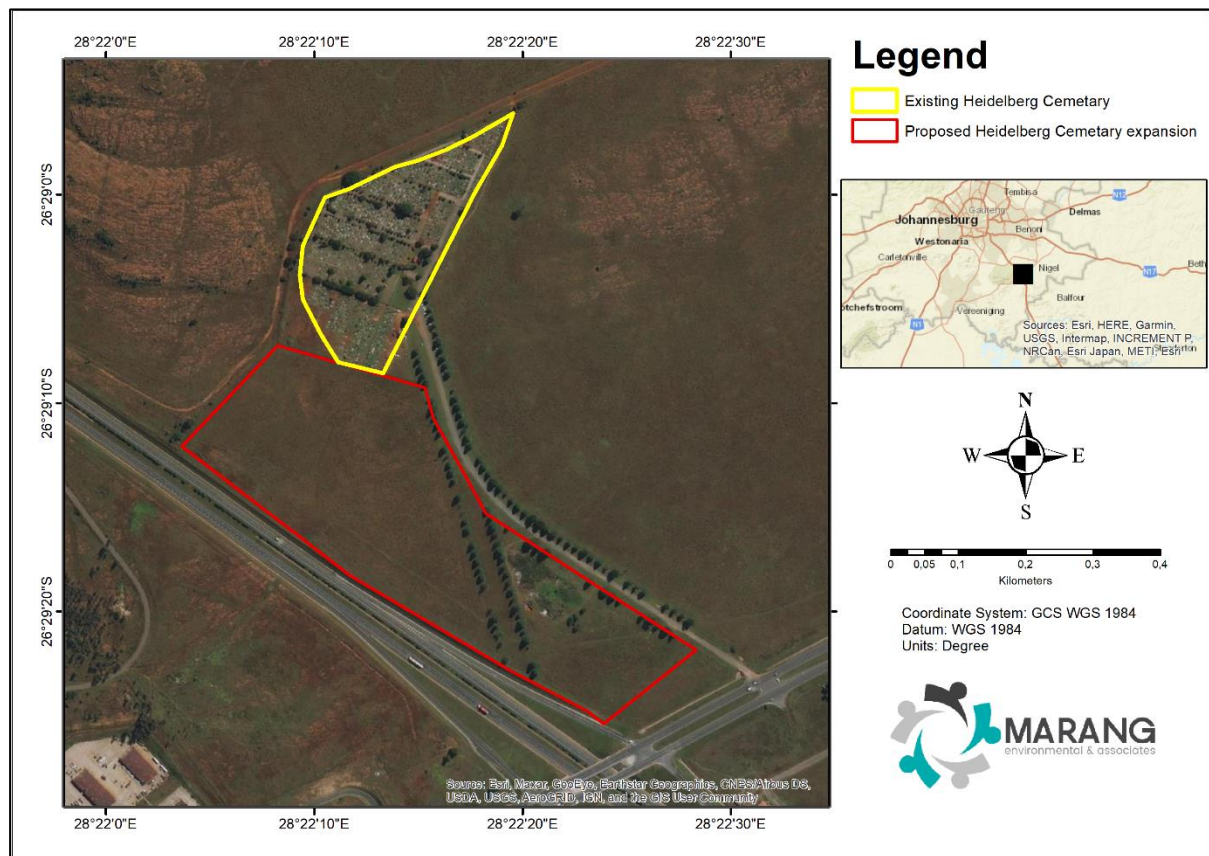
Corner	Latitude	Longitude
<b>Centre Point</b>	26° 29' 18.81"S	28° 22' 15.61"E
<b>Corner 1</b>	26°29'7.10"S	28°22'8.21"E
<b>Corner 2</b>	26°29'11.61"S	28°22'4.20"E
<b>Corner 3</b>	26°29'19.00"S	28°22'14.90"E
<b>Corner 4</b>	26°29'23.80"S	28°22'23.50"E
<b>Corner 5</b>	26°29'21.50"S	28°22'26.60"E
<b>Corner 6</b>	26°29'17.00"S	28°22'19.50"E
<b>Corner 7</b>	26°29'9.02"S	28°22'15.00"E
<b>Corner 8</b>	26°29'7.10"S	28°22'8.21"E

## 2.4. Site Description

The proposed site consists of undeveloped land covered in both undisturbed and disturbed habitat. The gradient is generally flat (<2%) sloping in a south-easterly direction. The geology consists predominantly of medium to coarse grained sandstone with sandstone bedrock observed in the north western section of the site. The water table is generally lower than 4.5 mbgl, however a perched water table may exist



on eastern to south-eastern section of the proposed site. The soil permeability is considered as low, which makes it suitable-ideal for cemetery activities. There are no groundwater users within a 2 km radius of the site. There are no water bodies within 500 m of the site, although a small dam was identified at approximately 520 m west, and thus not down gradient, of the site.



**Figure 2.4-2: LLM Heidelberg Cemetery Site Layout.**

### 3. IMPACT ASSESSMENT

The Basic Assessment (BA) conducted for the proposed development identified the key impacts expected to be imposed by the activity. The identified impacts were assessed as to their significance rating. Referring to

**Table 3-1** below, it is evident that although the proposed development will impart some negative impacts, the majority of the impacts will be of low significance post mitigation. The successful implementation of mitigation measures significantly reduces the effect of these impacts.

The proposed development will also have a positive impact through the through the fulfilment of cultural requirements and social responsibility for the management of the deceased of the region.

**Table 3-1:** Summary of Significance of Environmental Impacts.

<i><b>Assessed Impact</b></i>	<i><b>Rating before Mitigation</b></i>	<i><b>Rating Post-Mitigation</b></i>
<i>Soil erosion</i>	<i>Medium</i>	<i>Low</i>
<i>Soil contamination</i>	<i>Medium</i>	<i>Medium</i>
<i>Loss of agricultural land capability</i>	<i>Medium</i>	<i>Low</i>
<i>Biodiversity</i>	<i>Medium</i>	<i>Low</i>
<i>Surface and Groundwater</i>	<i>Medium</i>	<i>Low</i>
<i>Heritage</i>	<i>Medium</i>	<i>Low</i>
<i>Waste</i>	<i>Medium</i>	<i>Medium</i>
<i>Socio-economic</i>	<i>Medium (positive)</i>	<i>N/A</i>

This EMPr aims to provide the mitigations required, as well as monitoring and reporting objectives in order to achieve the lowest significance of individual and cumulative impacts, thus ensuring the proposed cemetery expansion will achieve the desired environmental management outcomes.

#### **4. OBJECTIVES OF AN EMPr**

The EMPr has been compiled to provide recommendations and guidelines according to which compliance monitoring can be done during the operational phase as well as to ensure that all relevant factors are considered to ensure for environmentally responsible development. The purpose of the EMPr is to provide specifications for "good environmental practice" for application.

This EMPr will inform all relevant parties and all other staff employed by LLM at the cemetery as to their duties in the fulfilment of the legal requirements for the operation and maintenance of the facility with particular reference to the prevention and mitigation of anticipated potential environmental impacts.

All parties should note that obligations imposed by the EMPr will become legally binding once the environmental authorisation is granted by the relevant environmental permitting authority (GDARD).

The objectives of an EMPr are to:

- Ensure compliance with provincial, national and/or international regulatory authority stipulations and guidelines;
- Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMPr-related activities is consistent with the significance of project impacts;
- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events;
- Provide feedback for continual improvement in environmental performance;

- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project / development;
- Identify measures that could optimize beneficial impacts;
- Create management structures that addresses the concerns and complaints of I&APs with regards to the proposed development;
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity;
- Ensure that safety recommendations are complied with; and
- Specify time periods, where appropriate, within which the measures contemplated in the final EMPr must be implemented.

The EMPr seeks to highlight the following:

- Avoid impacts as a result of not performing certain actions;
- Minimise impacts by limiting aspects of an action;
- Rectify impacts through rehabilitation, restoration, etc of the affected environment;
- Compensate for impacts by providing substitute resources or environments;
- Minimise impacts by optimising processes, structural elements and other design features;
- Provide on-going monitoring and management of environmental impacts of a development and documenting of any transgressions /good performances; and
- The EMPr is a binding document that all parties involved in the project must be made aware of.

## 5. DEVELOPMENT PHASES

Cemeteries are unique in terms of activity phases as they do not fit the traditional Construction, Operation and Decommissioning model. The phases are interlinked to a point where they cannot be clearly delineated. Activities at the proposed cemetery expansion will include grave excavating and grave and facility maintenance. These activities constitute the main function/operation of a cemetery and thus fall within the ambit of operational activities. Therefore, there is no “construction phase” in the traditional sense. A cemetery essentially only has an operational phase, which would encompass the stipulated activities. These activities will be taking place throughout the life of the cemetery and are thus viewed as cemetery functioning/operation. Furthermore, there is no decommissioning phase as a cemetery will remain as such in perpetuity. Active burials will be taking place at the same time as maintenance of existing grave sites, up until the cemetery reaches capacity. At this point, only maintenance will continue in perpetuity. The cemetery cannot change land-use and must remain open and accessible to the public to pay their respects to the deceased. The cemetery will then become a heritage site and thus remain as such in perpetuity or until such time as legislation is altered.

As such, this EMP has been divided into the phases that are applicable to the operation of a cemetery, which excludes the construction and decommissioning phases.

### 5.1. Planning and Design

The planning and design phase involve decisions on the design and layout of the cemetery. As graves are excavated on an as needed basis, the planning phase is essential in determining the areas most suitable for grave placement in line with recommendations of the various specialist reports. The most effectual layout and efficient infrastructure must be determined to ensure impacts of the cemetery expansion will be minimised.

## **5.2. Construction Phase**

As described above, the cemetery does not have a construction phase as excavation of graves falls under the operational phase and will occur over until the cemetery reaches capacity.

## **5.3. Operational Phase**

The impacts imparted upon the environment during the Operational Phase of the project generally take place over time and may be considered as significant. However, the successful implementation of the mitigation measures as detailed in this EMPr will reduce the possibility of such impacts occurring, as well as presenting corrective actions should such impacts take place.

## **5.4. Decommissioning Phase**

As described above, the cemetery cannot be decommissioned and will remain a cemetery in perpetuity. The maintenance of the cemetery will thus fall under the operational phase.

# **6. RESPONSIBLE ENTITIES**

LLM must ensure that employees and all subcontractors onsite are familiar with the requirements of this EMPr and conditions stipulated in the associated BA Impact report. LLM should implement a management system to review and ensure compliance to these documents. LLM should appoint relevant people to monitor the site and submit regular reports regarding the environmental compliance of the facility. Additionally, monitoring reports should be sent to the relevant authorities as per the requirements of the environmental documents.

The facility shall comply with the emergency preparedness and accident-reporting requirements, as required by the Occupational Health and Safety Act, 1993 (Act No 85 of 1993), NEMA, National Environmental Management: Waste Act 59, 2008 (NEM: WA), NEM:AQA, the National Water Act, 1998 (Act No 36 of 1998) as amended and/or any other relevant legislation.

## **6.1. Applicant**

LLM will be responsible for the appointment of the various Contractors, as well as the services of an Environmental Control Officer (ECO) to manage the Operational Phase of the project. LLM must ensure that all mitigation measures presented in this EMPr are implemented on site, together with the required forms of monitoring. LLM will, in terms of the National Environmental Management Act, be responsible for all possible contamination on site, its investigation, as well as subsequent remediation.

## **6.2. Site Operator/Manager**

The Site Operator/Manager acts as a representative of LLM and will be responsible for the efficient management of the facility. This would include the implementation of the EMPr where relevant. The Site Operator/Manager will also be required to communicate any incidents, problems or concerns to the LLM.

## **6.3. Environmental Control Officer (ECO)**

The ECO will be responsible for ensuring compliance with the contents of the EMPr, liaison with Contractors and LLM, as well as the Relevant Authority where required. The ECO must also be responsible for the compilation of environmental audit reports as and when required by the Relevant Authority.

## 6.4. Contractor(s)

The Contractor(s), as required, will receive the work order for the relevant activities needed during the Operation of the Heidelberg cemetery from LLM. The Contractor(s) is/are required to comply with the relevant sections of the EMPr together with the assistance and input of the appointed ECO.

## 6.5. Emergency and Incident Preparedness

Emergency procedures for the facility must be compiled and adhered to ensure that there will be an appropriate response to unexpected or accidental actions or incidents that will cause environmental impacts, throughout the operational phase. Such unexpected or accidental actions or incidents include, *inter alia*:

- Accidental fires;
- Accidental spillage of hazardous substances (from excavation equipment for example);
- Specific environmental and ecosystem effects from accidental releases or incidents.

In terms of Section 30(1) of NEMA, an incident means *an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed*. Should there be any occurrence of an incident or emergency, the emergency incident report in terms of section 30(5) of the NEMA, must be compiled. In line with section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996), “serious” is taken to be a measure of the impact of an incident where such an incident has had, could have had, is having, or will have a negative impact on human health or well-being.

## 7. ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMPr was compiled in terms of section 24N of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended. The methodology employed was that of the Significance Assessment Methodology, which highlights impacts requiring mitigation in order to reduce the probable negative impacts upon the receiving environment.

Impacts identified are based upon previous Consultant experience with similar development design, activity processes and the nature of the receiving environment. Impacts are further contemplated in terms of what could possibly be released to the environment during normal facility operation and whether these could be prevented or minimised through successful mitigation.

## 7.1. Environmental Management Programme – Planning and Design Phases

Potential Impact	Objectives	Mitigation intended	Monitoring		Responsible Party(ies)
			Type and Records	Frequency	
Environmental Authorisation	Notify registered interested and affected parties of Environmental authorisation	<ul style="list-style-type: none"> <li>Notify I&amp;APs within 14 days and provide information on appeal process</li> </ul>	<ul style="list-style-type: none"> <li>Proof of notification</li> <li>Details of the ECO must be recorded as well as written acceptance of the position and responsibilities.</li> </ul>	<ul style="list-style-type: none"> <li>Once off</li> </ul>	<ul style="list-style-type: none"> <li>Appointed EAP</li> </ul>
	Ensure an understanding of the environmental authorisation and the conditions therein to plan for successful implementation.	<ul style="list-style-type: none"> <li>Note all conditions of the relevant environmental authorisation (EA).</li> <li>Make provisions, both planning and financial, to ensure that mitigations included in the EA and EMPr implemented.</li> <li>Develop internal audit checklists that will aid the appointed site ECO in ensuring compliance with the relevant conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Audit checklists</li> </ul>	<ul style="list-style-type: none"> <li>Once off</li> <li>Auditing throughout the operation phase</li> </ul>	<ul style="list-style-type: none"> <li>LLM, ECO</li> </ul>
Legal Compliance	Ensure compliance with relevant legislation, including applicable standards and regulations compliance.	<ul style="list-style-type: none"> <li>Ensure all relevant legal requirements have been met</li> <li>All necessary permits must be obtained from the relevant authorities</li> <li>All activities on site must be as per the relevant SANS Standards, as well as local building regulations, including but not limited to the following: <ul style="list-style-type: none"> <li>SANS 1186 -1 (2003): Symbolic safety signs Part 1: Standard signs and general requirements.</li> <li>SANS 10142 - 1 (2003): The wiring of premises Part 1: Low-voltage installations.</li> <li>Occupational Health and Safety Act (Act 85 of 1993).</li> </ul> </li> <li>Appointment of certified professionals for installations and maintenance</li> <li>Appointment of specialists when required.</li> </ul>	<ul style="list-style-type: none"> <li>Relevant permits.</li> </ul>	<ul style="list-style-type: none"> <li>Throughout the life-cycle of the project</li> <li>Prior to appointment of any contractors</li> </ul>	<ul style="list-style-type: none"> <li>LLM, Contractor(s)</li> </ul>
EMP Compliance	Ensure EMPr implementation and compliance, as well as Environmental monitoring and control of all the identified environmental aspects of the project.	<ul style="list-style-type: none"> <li>The contents of this EMPr must be communicated to the relevant Contractor(s), as well as the Site Operator/Manager/Owner.</li> <li>The applicant must appoint an independent Environmental Control Officer (ECO) for external auditing.</li> </ul>	<ul style="list-style-type: none"> <li>EMPr to be signed off by contractors and ECO</li> </ul>	<ul style="list-style-type: none"> <li>Once off</li> </ul>	<ul style="list-style-type: none"> <li>Contractor(s), ECO</li> </ul>

Potential Impact	Objectives	Mitigation intended	Monitoring		Responsible Party(ies)
			Type and Records	Frequency	
Health and Safety	Ensure the health and safety of all persons on site.	<ul style="list-style-type: none"> <li>All Applicant Standard Operating Procedures and Safety Codes must be clarified and applied.</li> <li>Emergency response plan must be developed for the site and training thereon provided.</li> </ul>	<ul style="list-style-type: none"> <li>Emergency response plan</li> <li>Method statements</li> <li>Standard operating procedures</li> </ul>	<ul style="list-style-type: none"> <li>once off</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>LLM</li> </ul>
Resource usage	To reduce the cumulative impacts associated with resource usage such as water and energy, and ensure the lowest carbon footprint possible.	<ul style="list-style-type: none"> <li>Investigate the use of solar produced electricity to supplement the electricity requirements of the proposed cemetery expansion .</li> <li>Investigate and implement water saving strategies.</li> <li>Provide employee environmental awareness training.</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate most recent legislation</li> </ul>	<ul style="list-style-type: none"> <li>Continuously throughout the life cycle of the project</li> </ul>	<ul style="list-style-type: none"> <li>LLM, Environmental consultant,</li> </ul>
Socio-economic	To ensure the socio-economic benefits of the project are maximised for the surrounding community.	<ul style="list-style-type: none"> <li>Look to sourcing labour (unskilled) from the surrounding community and informal settlements.</li> </ul>	<ul style="list-style-type: none"> <li>Recruitment records</li> </ul>	<ul style="list-style-type: none"> <li>Continuous through all project phases</li> </ul>	<ul style="list-style-type: none"> <li>LLM Contractor(s),</li> </ul>



## 7.2. Environmental Management Programme – Operational Phase

Potential Impacts	Objectives	Mitigation intended	Monitoring		Responsible Person
			Type and Records	Frequency	
Surface and groundwater contamination	To prevent the potential impacts of site preparation related to burial activities upon the quality of the surface and groundwater resources.	<ul style="list-style-type: none"> <li>The recommendations of the Geotechnical Assessment must be adhered to in order to minimise any groundwater and surface water contamination.</li> <li>Any recommendations by DWS must also be adhered to.</li> <li>Burials must be in accordance with Chapter 5 of the National Health Act (Act 61 of 2003) – Regulations Relating to the Management of Human Remains (GNR 363 of 2013)</li> <li>All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is absolutely essential.</li> <li>Retain as much indigenous vegetation as possible and revegetate graves as soon as possible.</li> <li>All exposed soils and temporary stockpiles must be protected for the duration of the burial processes in order to prevent erosion and sedimentation of surface water resources. Graves should be closed up as soon as possible.</li> <li>Burial site planning should be done according to the areas most suitable for burials. I.e: <ul style="list-style-type: none"> <li>the northern portion of the site is not to be utilised due to the presence of bedrock, and thus an increased risk of groundwater contamination.</li> <li>The western portion is considered as suitable for cemetery and thus expansion activities should be focused in this area first.</li> <li>The eastern portion of the site identified in the geotechnical report as marginal due to a potential perched water table, should be investigated during the rainy season to establish the exact depth to the water table, prior to utilising the area for burials.</li> </ul> </li> <li>Excavations must cease should the water seepage be noted, as these areas would be unsuitable for burial. Further investigations would need to be done.</li> <li>Should any water contamination be suspected off site, an independent geohydrologist should be utilised to investigate potential contamination and indicated measures of remediation.</li> </ul>	<ul style="list-style-type: none"> <li>Visual monitoring and record keeping.</li> <li>Additional studies for marginal areas</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing during the activity</li> <li>Once off prior to utilising marginal areas for burials</li> </ul>	<ul style="list-style-type: none"> <li>Contractor(s), LLM, ECO</li> </ul>

Potential Impacts	Objectives	Mitigation intended	Monitoring		Responsible Person
			Type and Records	Frequency	
Heritage	To protect heritage resources during site preparation related to burial activities and the continued maintenance of the cemetery	<p>Mitigation measures for HCEM 1 – Old Road Alignment</p> <ul style="list-style-type: none"> <li>The road alignment should be retained and re-used as a road in the design and establishment of the proposed new cemetery extension; and</li> <li>The lane of trees associated with the road alignment should also be preserved. However, if the decision is made by the cemetery authority to replace these exotic trees with indigenous ones, it would also be acceptable.</li> </ul> <p>Mitigation measures for HCEM 2 – Public Memorial to the Concentration Camps</p> <ul style="list-style-type: none"> <li>The memorial should be retained and avoided in the design and establishment of the proposed new cemetery extension</li> <li>The memorial must be included in the monitoring activities proposed during construction; and</li> <li>The municipality must ensure the maintenance and preservation of the memorial into the future.</li> </ul> <p>Mitigation measures for HCEM 3 – Graves and Monument associated with the Boer war</p> <ul style="list-style-type: none"> <li>Further desktop research must be undertaken to establish exactly where the graves were identified in 1999. This must be augmented by consultation with the Heidelberg Historical Association and a site visit to confirm the presence of the graves on site. Once the position of the known graves has been confirmed, an assessment must be undertaken on the risk of the proposed development on the identified graves and</li> <li>If feasible, the Proponent should consider having a qualified and experienced archaeologist on standby during the grave excavations. This action will be to assist on the possible of uncovering of sub-surface graves or other cultural/heritage objects and advice the Proponent accordingly.</li> <li>Regardless of the feasibility of the above, training must be given to cemetery staff and particularly grave excavation personnel, in the identification and management of potential unmarked graves.</li> <li>Identified graves or any archaeological significant objects on the site should not be disturbed, but are to be reported to the project Environmental officer or National Heritage Council offices</li> </ul>	<ul style="list-style-type: none"> <li>Visual monitoring and record keeping</li> <li>Training records</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing during the activity</li> <li>As required</li> </ul>	<ul style="list-style-type: none"> <li>Contractor(s), LLM, ECO, burial staff</li> </ul>

Potential Impacts	Objectives	Mitigation intended	Monitoring		Responsible Person
Soil erosion and sedimentation	To prevent instances of soil erosion or increased run-off during burial site preparations.	<ul style="list-style-type: none"> <li>No large-scale clearing of vegetation is to take place, only that which is necessary for excavating of graves.</li> <li>Temporary soil stockpiles to be protected with hessian sheeting or a similar product to prevent windblown sedimentation / erosion;</li> <li>Exposed soils should be covered when possible, to avoid soil run off during rainfall events.</li> <li>Bare soils within the access roads can be regularly dampened with water to suppress dust during the construction phase, especially when strong wind conditions are predicted according to the local weather forecast.</li> <li>Gravesites should be re-vegetated with an indigenous grass mix, if necessary, to re-establish a protective cover, to minimise soil erosion and dust emission.</li> </ul>	<ul style="list-style-type: none"> <li>Visual monitoring and record keeping</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> </ul>	<ul style="list-style-type: none"> <li>ECO, Heidelberg Cemetery Site Manager and burial staff</li> </ul>
Potential soil contamination	To prevent or minimise the contamination of soils as a result of burial activities and body decomposition.	<ul style="list-style-type: none"> <li>Regular maintenance of vehicles and equipment used for excavation or maintenance activities is to take place and records are to be kept;</li> <li>Ablution facilities are to be regularly maintained and records are to be kept.</li> <li>Bodies must be interred within a casket and buried sufficiently deep so as to prevent impacting/contamination of surface soils.</li> <li>Burials must be in accordance with Chapter 5 of the National Health Act (Act 61 of 2003) – Regulations Relating to the Management of Human Remains (GNR 363 of 2013).</li> <li>Should any soil contamination be suspected off site, an independent geohydrologist should be utilised to investigate potential contamination and indicated measures of remediation.</li> </ul>	<ul style="list-style-type: none"> <li>Visual monitoring and record keeping</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing</li> </ul>	<ul style="list-style-type: none"> <li>Heidelberg Cemetery Site Manager</li> </ul>

Biodiversity	<p>To ensure minimal loss of habitat and related floral and faunal species (including species of conservation concern – SCC's) during the clearing of sites for burial areas.</p>	<ul style="list-style-type: none"> <li>• The 200 m ridge buffer zone in the norther section of the site must be considered a no-go zone for burial activities. No site clearing may take place in this zone in order to protect the biodiversity of the ridge.</li> <li>• Cemetery employees should be given training on the identification of Species of Conservation Concern (SCC) for both fauna and flora, as well as awareness training on the importance of biodiversity and the protected ridge in particular.</li> <li>• Walkdowns of the burial areas are to be undertaken prior to vegetation clearing activities in order to assess the site for any possible SCCs within the study area. Should any species be present, a suitable specialist should be consulted with further mitigation requirements.</li> <li>• Any fauna directly threatened by the burial activities should be removed to a safe location by a suitably qualified person;</li> <li>• Vegetation clearing should be kept minimal and only area to be used for burials should be cleared;</li> <li>• It is recommended that site clearing takes place in a phased manner, so as to ensure that as far as possible faunal species can naturally disperse out of the area ahead of clearing activities;</li> <li>• Edge effects of burial (clearing) activities need to be actively managed to minimise further impacts to the receiving environment, with specific consideration to erosion control and alien floral species management;</li> <li>• Vehicles must only travel on designated roadways to limit the ecological impact of the proposed development activities;</li> <li>• No uncontrolled fires whatsoever should be allowed</li> <li>• Re-vegetation of cleared area must take place as soon as possible and encourage natural vegetation cover.</li> <li>• Alien ornamentals must be eradicated from the project area through the life of the cemetery.</li> </ul>	<ul style="list-style-type: none"> <li>• Visual monitoring and record keeping</li> <li>• Records should be kept in terms of staff training (both initial and refresher).</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing</li> <li>• Biennially</li> </ul>	<ul style="list-style-type: none"> <li>• Heidelberg Cemetery Site Manager, ECO, LLM</li> </ul>
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Potential Impacts	Objectives	Mitigation intended	Monitoring		Responsible Person
			Type and Records	Frequency	
Solid Waste Generation & Storage	To ensure that all waste (general and hazardous) generated during this phase is disposed of in the correct manner.	<ul style="list-style-type: none"> <li>Non-hazardous solid waste generated from the normal operation of the site should be disposed of in the correct manner at a registered general waste disposal site. Such waste can be collected by the Municipality as part of its regular service or removed by a reputable contractor.</li> <li>Appropriately labelled waste receptacles should be available throughout the site according to waste types in terms of Section 26 of the NEM: WA</li> <li>General waste should be separated into recyclable and non-recyclable waste in order to reduce solid waste entering the landfills.</li> <li>Waste containers must be of sufficient strength and structural integrity to ensure that it is unlikely to burst or leak in its ordinary use.</li> <li>Waste containers must be covered to prevent rainwater from coming into contact with the waste.</li> <li>Overburden from grave excavation must be re-used on site or taken to the local landfill site to be used as cover material. This waste should be stockpiled within a bermed/bunded area prior to disposal, in order to prevent run off during rainfall events. If possible, this stockpile should also be covered or lightly sprayed to prevent dust. The stockpile should be moved as soon as a full load is available.</li> <li>It is not anticipated that the site should generate any hazardous waste, however in the event of hazardous contamination of waste, the NEM: WA should be consulted for guidance on the storage and handling of such waste.</li> <li>The site should be regularly inspected for litter to ensure all waste is correctly disposed of and does not impact on the biodiversity and visual appearance of the area.</li> </ul>	<ul style="list-style-type: none"> <li>Visual monitoring for litter and waste receptacles.</li> </ul>	<ul style="list-style-type: none"> <li>Daily</li> </ul>	Heidelberg Cemetery Site Manager
			<ul style="list-style-type: none"> <li>General waste must be disposed of at a registered waste disposal site by an approved waste disposal contractor. Waste disposal certificates must be kept available.</li> </ul>	<ul style="list-style-type: none"> <li>As required</li> </ul>	<ul style="list-style-type: none"> <li>Heidelberg Cemetery Site Manager, Contractor(s)</li> </ul>

Potential Impacts	Objectives	Mitigation intended	Monitoring		Responsible Person
			Type and Records	Frequency	
Soil and land capability	To ensure that soils are protected and that soils available for agricultural purposes remain intact. It should be noted that the site is relatively small (in terms are agriculture) and is not planned as an agricultural property.	<ul style="list-style-type: none"> <li>No rubble or waste should be buried on site.</li> <li>Care should be taken to preserve top soils during excavations and backfilling.</li> <li>Mitigations for soil contamination and soil erosion indicated in the BA report and this EMPr should be adhered to in order to preserve the soil capability as well.</li> <li>Investigate multiuse of the land, such as grazing and cemetery activities.</li> </ul>	<ul style="list-style-type: none"> <li>Visual and record keeping of incidents involving the loss of top soils.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing during operation.</li> </ul>	<ul style="list-style-type: none"> <li>Heidelberg Cemetery Site Manager</li> </ul>
Socio economic	Ensure that the local community members benefit from the project with an accessible, safe place to mourn the dead.	<ul style="list-style-type: none"> <li>It is recommended to utilise local labour available from the nearby settlements when labour is required.</li> <li>The cemetery management should ensure adequate security is in place for visitors to feel secure and protected.</li> <li>Security is to prevent loitering and vandalism of grave sites.</li> <li>The cemetery must be open at accessible times (including weekends) in order for mourners to have sufficient opportunities to visit graves.</li> </ul>	<ul style="list-style-type: none"> <li>Recruitment records</li> <li>Visiting hours</li> <li>Security checks</li> </ul>	<ul style="list-style-type: none"> <li>Continuous throughout project lifecycle</li> </ul>	<ul style="list-style-type: none"> <li>Heidelberg Cemetery Site Manager</li> </ul>

## 8. PROPOSED MANAGEMENT AND REPORTING CALENDAR PLAN

### 8.1. Environmental Management Calendar

Conditions	Conducted	Send Documents to Authority	Authority Details	Responsible Person	Checklist	Completed
<b>MONITORING AND AUDITING</b>						

The following table is a proposed management calendar to be used during operational phase of the site.

Conditions		Conducted	Send Documents to Authority?	Responsible Person	Monthly Checklist												Completed
					J	F	M	A	M	J	J	A	S	O	N	D	
REGISTERS AND COMPLAINTS																	
Complaints Register	All complaints resulting from the operation of the facility and actions taken to remediate the incidents must be recorded in this register.	Monthly	Only send to GADRD & Lesedi Local Municipality when complaints have been made. Otherwise, File and Keep on site.	Environmental & Safety Officer													
Incident Reporting	All incidents resulting from the operation of the facility and actions taken to remediate the incidents must be recorded in this register in terms of section 30(5) of the National Environmental Management Act (Act No. 107 of 1998).	Monthly	Only send to GDARD & Lesedi Local Municipality, when incidents have occurred. Otherwise, File and Keep on site.														
Waste Register/ Waste Management Checklists	Records in terms of volume, source and the nature of all waste received, recovered and transferred.	Monthly	Do not send. File and Keep on site.	Environmental & Safety Officer													
Emergency Response Plan	Details of any emergency incidence regarding the operation of the facility that occurred during the period under review.	Monthly	Only send to GDARD & LLM when incidents have occurred. Otherwise, File and Keep on site.	Environmental & Safety Officer													
EMPr	Check compliance to the recommendations of the plants' environmental management programme.	Monthly	Only send to GDARD when incidents have occurred. Otherwise, File and Keep on site.	Environmental & Safety Officer													

### 8.2. Environmental Compliance Plan

It is recommended that LLM have the appointed internal ECO conduct quarterly internal audits, and employ an external auditor annually, to effectively track and report on their compliance.

## **9. ENVIRONMENTAL AWARENESS PLAN**

Section 1(1)(m) of Appendix 4 of the EIA Regulations, as amended, requires that an environmental awareness plan describing the manner in which the company intends to inform his or her employees of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment. In recognition of the need to protect our environment, environmental management should not only be seen as a legal obligation but also as a moral obligation.

The Environmental Awareness Plan is intended to create the required awareness and culture with personnel and contractors/service providers on environmental safety and health issues associated with the activities. By utilising the EMPr for the activity, the environmental awareness plan is able to communicate environmental risks to personnel, contractors, etc. and thus will aid in reducing/avoiding pollution and/or environmental degradation.

### **9.1. Policy on Environmental Awareness**

This Environmental Awareness Plan must serve as the basis for the induction of all new employees (as well as contractors pending the nature of their work on site) on matters as described herein and read in conjunction with the EMPr. The Plan will also be used to hone awareness of all employees on a continuous basis.

Specific environmental awareness performance criteria will also form part of the job descriptions of employees, to ensure diligence and full responsibility at all levels of the organisational work force.

### **9.2. Implementation of Environmental Awareness**

General environmental awareness will be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This will ensure that environmental accidents are minimised and environmental compliance maximised.

Environmental awareness will be fostered in the following manner:

- Induction course for all workers on site, before commencing work on site.
- Refresher courses as and when required
- Daily toolbox talks at the start of each day with all workers coming on site, where workers can be alerted to particular environmental concerns associated with their tasks for that day or the area/habitat in which they are working.
- Displaying of information posters and other environmental awareness material in the general assembly points.

### **9.3. Training and Awareness**

The Site Manager must always take responsibility for the management of their staff and subcontractors on the project site during the operation and decommissioning phases and supervise them closely. The onus is on LLM to make sure that all their staff and subcontractors fully comprehend the contents of the EMPr. The applicant, site manager and/or contractors shall organise environmental awareness training programmes, which should, be targeted at the two levels of employment: management and labour.

Employees also should understand the potential consequences of not following EMPr requirements (such as spills, releases, and fines or other penalties). Training should be tailored to the different needs of various levels or functions in the organization. However, training is just one element of establishing competence, which is typically based on a combination of education, training, and experience. For certain jobs (particularly tasks that can cause significant environmental impacts), you should establish criteria to measure the competence of individuals performing those tasks. Training is needed both in technical work and for general awareness on the part of all employees.



The following are some examples of areas where training is needed:

- Legal requirements;
- Ability to recognize new problems;
- Technical skills needed to solve problems;
- Procedures to implement operational controls;
- Any new procedures or needs related to significant environmental aspects;
- Waste registers;
- Incident Reporting;
- Complaints register;
- Environmental Authorisations (EA);
- National Environmental Management Act (NEMA);
- Biodiversity and the National Environmental Management Biodiversity Act (NEM:BA)
- Soils – the identification and preservation thereof
- Awareness of the company's environmental policy.

## 9.4. Training of Facility Employees

All facility employees must receive basic training in environmental awareness, including the storage and handling of hazardous substances and facility materials, minimisation of disturbance to sensitive areas, management of waste, and prevention of water pollution. They must also be appraised of the EMP's requirements. Environmental awareness training programmes need to be formulated for these levels and must comprise:

- A record of all names, positions and duties of staff to be trained;
- A framework for the training programmes;
- A summarised version of the training course(s); and
- An agenda for the delivery of the training courses.

Such programmes will set out the training requirements, which will include:

- Acceptable behaviour with regard to flora and fauna on site;
- Management and minimising of waste, including waste separation;
- Maintenance of equipment to prevent the accidental discharge or spill of fuel, oil, lubricants and other chemicals;
- Responsible handling of chemicals and spills;
- Environmental emergency procedures and incident reporting; and
- General code of conduct towards I&APs.

The ECO must be requested to provide additional training (in a first language) on-site regarding environmental aspects that are unclear to the facility personnel. A translator may be required and requested to assist in this additional training.

When should training take place?

- When there are new or any changes to the relevant environmental legislation;
- When there is a new or any changes to the facility's environmental management aspects, objectives and targets, or processes;
- When there has been any identified non-compliance to the environmental management requirements or unacceptable performance is recorded;
- When a new employee is hired;

Go through the action steps listed below and use **Tool 9-1** to help you identify, plan for, and track the training needed to assist in developing and putting your environmental management in place.

- Identify all job functions that affect the environment. Small companies may wish to identify individuals. Identify who is responsible for employee health and safety.
- Identify the training and type of training these people currently receive that relates to environmental and health and safety concerns.
- Training can be in the form of tool-box talks as well as external training programmes.

**Tool 9.4-1.** Training, awareness and competence worksheet.

Questions	Answers
Do we have an existing process for environmental training?  If so, does that process need to be revised? In what way(s)?	
What types of training do we provide now (e.g., new employee orientation, contractor training, safety training)?  How would environmental-related training fit with our existing training program?	
Who is responsible for training now? Who else might need to be involved within our organization?	
How do we determine training needs now? (List methods used.) Are these processes effective?	
Who is responsible for ensuring that employees receive appropriate training? How do we track training to ensure we are on target?	
How do we evaluate training effectiveness? (List methods used, such as course evaluation, post-training testing, behaviour observation).	
How do we establish competency, where needed? (List methods used, such as professional certifications).	
What are the key job functions and activities where we need to ensure environmental competency?	
Our next step on training, awareness & competence is to ...	

**Tool 9.4-2.** Example Training-Needs Analysis Form.

Jobs Affecting the environment	Training Needs	How Often\ Length	Type of Training	Completion Date	Who is responsible
Contact person				Date Completed	

**Example 9.4-1.** Sample Training Needs Analysis Form.

Jobs Affecting the environment	Training Needs	How Often\ Length	Type of Training	Completion Date	Who is responsible
Staff EH&S Person	Environmental Policy	Once/Two hrs.	Tool box talk	—	—
Production Employees	Emergency Preparedness & Response	Once/Two hrs.	Tool box talk	—	—
Contact person				Date Completed	

## 10. CONCLUSION

The Environmental Management Programme for the proposed Heidelberg Cemetery Expansion, Heidelberg, Sedibeng, Gauteng Province must be supplied to all responsible entities and made binding to ensure strict compliance and prevent possible impacts upon the receiving environment as well as injury to those present on site. The EMPr must further be available on site during all phases of the project. Transgressions of the EMPr should not be treated lightly and the responsibility of transgression rectification falls with the Applicant, Contractor(s), LLM Site Manager and ECO. All environmental incidents and the handling thereof should be noted by the Site Manager during the Construction Phase and Operational Phase by the Environmental Control Officer.

Furthermore, on approval, this EMPr essentially becomes an extension of the EA. It must be noted that any transgressions to the EA and/or this EMPr may be met with fines as contemplated in Section 49B of the NEMA. A person convicted of an offence in terms of section 49A(1)(i), (j) or (k) is liable to a fine not exceeding R5 million or to imprisonment for a period not exceeding 5 years, and in the case of a second or subsequent conviction to a fine not exceeding R10 million or to imprisonment for a period not exceeding 10 years, and in both instances to both such fine and such imprisonment.