

## **Appendix G: Environmental Management Programme (EMPr)**

# DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2006, as amended 2014

January 2022

Prepared by:  
Henwood Environmental Solutions

Prepared for:  
Tswalu Kalahari Reserve (PTY)  
LTD

**DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR PROPOSED DEVELOPMENT OF A NEW TENTED CAMP (TSWALU CAMP 3) ON THE FARM BRUWER 294 AND EXPANSION OF THE STAFF ACCOMMODATION ON THE FARM WITBERG 295, TSWALU KALAHARI RESERVE, NORTHERN CAPE.**

***VERSION 01***

H.E.S



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**SECTION A: LIST OF ABBREVIATIONS/DEFINITIONS**

- EMPr - Environmental Management Programme
- EIA - Environmental Impact Assessment
- EIR - Environmental Impact Report
- CLO - Community/Client Liaison Officer
- DARDLEA - Department of Agriculture, Rural Development, Land and Environmental Affairs
- DBAR - Draft Basic Assessment Report
- DWA - Department of Water Affairs
- DME - Department of Minerals and Energy
- SABS - South African Bureau of Standards
- SAHRA - South African Heritage Resources Agency
- ECO - Environmental Control Officer
- ROD - Record of Decision

*A person appointed by the project manager, developer, engineer or contractor to oversee compliance to the EMPr. This person can be an internal appointment or an external consultant / specialist depending on the authorities' requirements.*

**Project Manager / Engineer**  
 - Designated project manager / engineer for the construction project

**Proponent / Client / Developer**  
 - Person or company responsible for proposing the project

**Contractor**  
 - Person and/or company appointed to complete project

**SECTION B: DETAILS AND CREDENTIALS OF AUTHOR**

Steven Henwood, as an Independent Environmental Consultant and Impact Assessor, has been appointed by Tswalu Kalahari Reserve (PTY) LTD. to facilitate the Integrated Environmental Management (IEM) procedure, for the development of a New Tented Camp (Tswalu Camp 3) on the Farm Bruwer 294 and Expansion of the Staff Accommodation on the Farm Witberg 295, Tswalu Kalahari Reserve, Northern Cape.

<b>Environmental assessment practitioner:</b>	S.J. Henwood	
<b>Contact person:</b>	Mr. Steven Henwood	
<b>Postal address:</b>	Po box 12340 Steiltes, Nelspruit	
<b>Postal code:</b>	1213	<b>Cell:</b> 078 672 3645
<b>Telephone:</b>	078 672 3645	<b>Fax:</b>
<b>E-mail:</b>	<a href="mailto:shenwood@mweb.co.za">shenwood@mweb.co.za</a>	
<b>Qualifications &amp; relevant experience</b>	Nat. Dip. Nature Conservation	

Professional  
affiliation(s) (if  
any)

IAIASA

## SECTION C: BACKGROUND AND ACTIVITIES COVERED BY THE EMPr

Steven Henwood, as an Independent Environmental Consultant and Impact Assessor, has been appointed by Tswalu Kalahari Reserve (PTY) LTD. to facilitate the Integrated Environmental Management (IEM) procedure, for the proposed development of a New Tented Camp (Tswalu Camp 3) on the Farm Bruwer 294 and Expansion of the Staff Accommodation on the Farm Witberg 295, Tswalu Kalahari Reserve, Northern Cape.

This document forms part and is appended to the Basic Assessment (BA) Report and will be submitted to as part of the Final BAR to be approved by the Department Environment and Nature Conservation (Northern Cape),

The site is situated on The Farm Bruwer 294 and on the Farm Witberg 295, Tswalu Kalahari Reserve, Northern Cape (see the locality map as attached).

GPS Coordinates:

### Staff Accommodation Expansion

- 27° 11' 42.2254" S, 22° 28' 1.7125" E

### New Tented Camp

- 27° 12' 17.9654" S, 22° 30' 33.6776" E)

The Proposed Project will constitute the following:

Tswalu Kalahari Reserve (Pty) Ltd would like to develop a new tented camp (Tswalu Camp 3) as well as expand their existing staff accommodation. In this regard the following is envisaged:

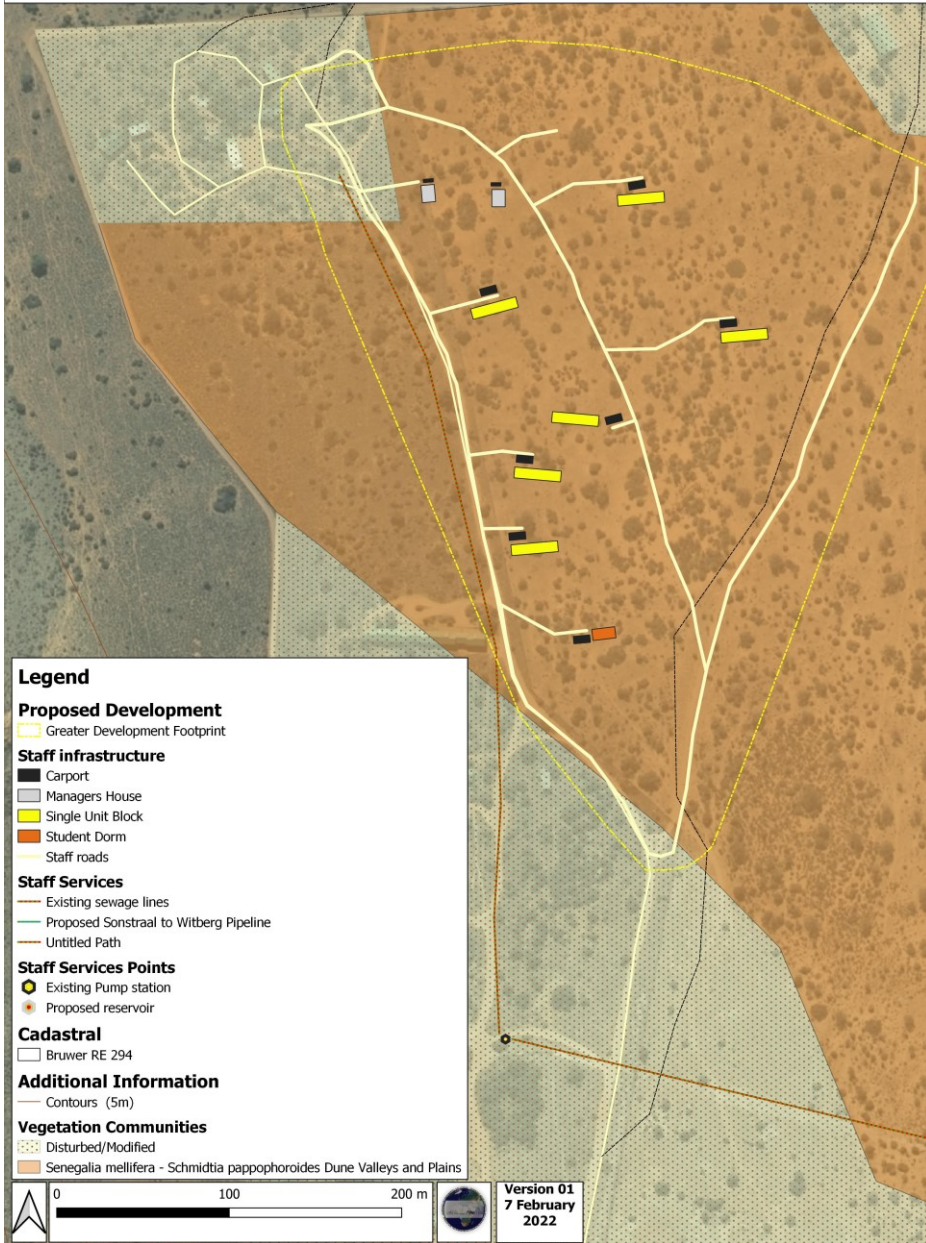
### New Camp

- 5 individual (one bedroom) and 3 two-bedroomed tented villas.
  - Each villa tent would have an entrance "outhouse" for storage and to accommodate a butler when tented villas occupied by guests .
  - Each villa will have a pool and firepit above ground.
  - Each villa will be located within a designated development area of 1960m<sup>2</sup>
- A back of house area developed within a designated 7880m<sup>2</sup>
  - Storerooms
  - Office space; and
  - A solar array

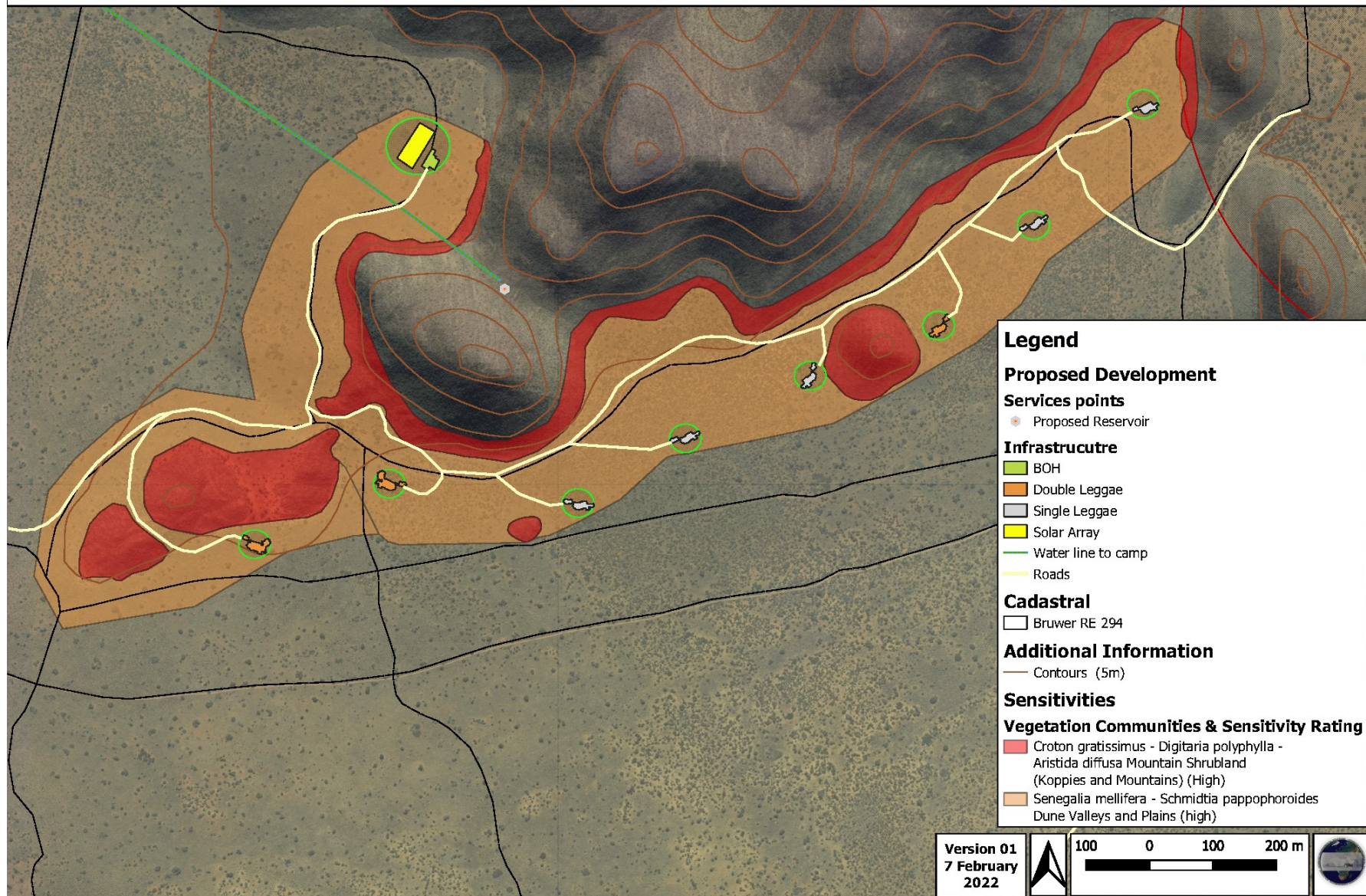
### Staff Accommodation Expansion

- 1 student dormitory block
  - 1 block consisting of 6 bedrooms (shared kitchen & lounge)
- 6 single blocks
  - bachelor units (2 double bed units & 4 single bed units)
- 3 managers houses
  - 2 Bedroom units

**Vegetation Communities - Proposed Expansion of staff accommodation on the Farm Witberg 295, Tswalu Kalahari Reserve, Northern Cape.**



**Layout and Sensitivity Map - Proposed New Tented Camp on the Farm Bruwer 294, Tswalu Kalahari Reserve, Northern Cape.**



**Figure 1 and 2: Combined Sensitivity and Layout Map**

## RECOMMENDED MANAGEMENT ACTIONS

A variety of mitigation measures have been identified that could mitigate the scale, intensity, duration or significance of the impacts. These measures, which have been informed by the various specialist studies conducted, are included in this DBAR.

## PUBLIC PARTICIPATION PROCESS

The Public Participation Process (PPP) was undertaken according to Regulation 54 of the EIA Regulations, 2014, and took into consideration the Public Participation 2010 Guideline Document (DEA, 2010).

The level of public participation was determined by taking into account the scale of the anticipated impacts of the proposed project, the sensitivity of the affected environment and the degree of controversy of the project, and the characteristics of the potentially affected parties. Based on the findings of the aforementioned consideration, there was no reason to elaborate on the minimum requirements of the public participation process outlined in the EIA Regulations, 2014 or use reasonable alternative methods for people desiring of but unable to participate in the process due to illiteracy, disability or any other disadvantage.

Potentially interested and affected parties were notified of the proposed application by –

- Placing an advertisement in the local Noordkaap Bulletin (English) on 26th August 2021. This advertisement served to advertise the proposed development and associated EIA

process while inviting all potential I&AP's to register as I&AP's

- Giving written notice to owners and occupiers of land adjacent to the Farms Bruwer 294 and Farm Witberg 295, as well as the Tswalu Management (APPENDIX E), and organs of state having jurisdiction in respect of the proposed activity. Consequently, a Background Information Document (BID) was prepared and distributed via email (APPENDIX E) to:
- Fixing a notice board at a place conspicuous to the public, specifically at Tswalu's Gate (APPENDIX E). There was no reasonable alternative site.
- Making a copy of the Draft BAR available for public and authority review from the 09 February 2022, so as to conduct the mandatory 30 day public participation process ('PPP') in terms of regulation 19(1)(a) of the EIA Regulations.

## SECTION D: ROLE PLAYERS

### 1 RESPONSIBILITIES OF THE ROLE PLAYERS

#### 1.1 Developer

The developer remains ultimately responsible for ensuring that the development is implemented according to the requirements of the EMPr. Although the developer appoints specific role players to perform functions on his/her behalf, this responsibility is delegated. The developer is responsible for ensuring that sufficient resources (time, financial, human, equipment, etc.) are available to the other



role players (e.g. the ECO, ELO and contractor) to efficiently perform their tasks in terms of the EMPr. The developer is liable for restoring the environment in the event of negligence leading to damage to the environment.

The developer must ensure that the EMPr is included in the tender documentation so that the contractor who is appointed is bound to the conditions of the EMPr. The developer must appoint an independent Environmental Control Officer (ECO) during the planning phase to oversee all the environmental aspects relating to the development.

Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement includes site preparation. The notice must include a date on which it is anticipated that the activity will commence, and must include the name and contact details of the appointed ECO.

Any changes to, or deviations from, the project description set out in the RoD must be approved, in writing, by the Department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder of the RoD to apply for further authorisation in terms of the regulations.

Where any of the applicant's contact details change, including the name of the responsible person, the physical or postal address and/or telephonic details, the applicant must notify the Department (DARDLEA) as soon as the new details become known to the applicant.

The holder of the authorisation (RoD) must submit an environmental compliance audit report to the Department within 30 days of completion of the construction phase. The environmental audit report must be compiled by an independent auditor, and must indicate the date of the audit, the name of the auditor and the outcome of the audit in terms of compliance with the conditions of the RoD as well as this EMPr.

The holder of the RoD is responsible for compliance with the provisions for Duty of Care and Remediation of Environmental Damage contained in Section 28 of the National Environmental Management Act, 1998 (Act 107 of 1998).

A copy of the Record of Decision must be kept at the property where the activity will be undertaken. The authorization must be produced to any authorised official of the department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorization who works or undertakes work at the property.

## **1.2 Contractor**

The contractor, as the developer's agent on site, is bound to the EMPr conditions through his/her contract with the developer, and is responsible for ensuring that she/he adheres to all the conditions of the EMPr. The contractor must thoroughly familiarise him/herself with the EMPr requirements before coming onto site and must request clarification on any aspect of these documents, should they be unclear. The contractor must ensure that he/she has provided sufficient budget for complying with all EMPr conditions at the tender stage. The contractor must comply with all orders (whether

verbal or written) given by the ECO, project manager or site engineer in terms of the EMPr.

### **1.3 Environmental Control Officer (ECO)**

The Environmental Control Officer (ECO) is appointed by the developer as an independent monitor of the implementation of the EMPr. He/she must form part of the project team, appointed prior to commencement of construction (including construction camp selection and site clearing) and be involved in all aspects of project planning that can influence environmental conditions on the site. Where possible, the ECO must attend relevant project meetings, conduct inspections to assess compliance with the EMPr and be responsible for providing feedback on potential environmental problems associated with the development. In addition, the ECO is responsible for:

- ❖ Liaison with relevant authorities;
- ❖ Liaison with contractors regarding environmental management; and
- ❖ Undertaking routine monitoring and appointing a competent person/institution to be responsible for specialist monitoring, if necessary.

The ECO has the right to enter the site and undertake monitoring and auditing at any time, subject to compliance with health and safety requirements applicable to the site (e.g. wearing of safety boots and protective head gear).

### **(a) Liaison with Authorities**

#### ***Department Environment and Nature Conservation (Northern Cape) (DARDLEA)***

The Authority is responsible for:

- Appraising the EMPr in the light of the Basic Assessment Report findings and other relevant information.
- Calling for modifications, extensions or further information if required.
- Issuing an Environmental Authorization on the Basic Assessment Report, which includes approval (or otherwise) of the EMPr.

The ECO will be responsible for liaising with the Department. The ECO must submit monthly environmental compliance reports to the authorities. These reports must contain information on the contractor and developer's levels of compliance with the EMPr; a description of all activities on site, problems identified, transgressions noted, and remedial action implemented. All reports must reflect the Department's reference number on the cover. The ECO is to suggest corrective action measures to eliminate the occurrence of the non-compliance incidents. In order to keep a record of any impacts, the ECO must keep on-site: An Environmental Site Diary (which needs to be kept up-to-date), copies of all reports submitted to the Department, a complaints register of all public complaints and the remedies applied to such complaints. The ECO must remain employed until all rehabilitation measures as well as site clean-up are completed, and the site is handed over to the applicant by the contractor for operation.

## **(b) Liaison with Contractors**

The ECO is responsible for informing the contractors of any decisions that are taken concerning environmental management during the construction phase. This would also include informing the contractors of the necessary corrective action to be taken.

### **1.4 The Authorities**

The Department (DARDLEA) retains the right to monitor and/or inspect the proposed project during both construction and operational phases.

## SECTION E: PLANNING AND DESIGN PHASE

<i>Issue/Activity</i>	<i>Action Required</i>	<i>Responsible person</i>	<i>Frequency</i>
<p>1. <u>All planning and design aspects of Tswalu Tented Camp and Staff Accommodation Expansion</u></p>	<p>1.1 a) Planning and design of all elements of the application to be in accordance with acceptable and approved standards as required by the relevant authorities.</p> <p>Planning and design to take cognisance of localised conditions and circumstances, particularly in terms of control of building operations, appropriate approved and registered contractors, access to the site, source of labour and transportation.</p>	Project planning team	Throughput planning phases, before construction commences
<p>2. <u>Contractual Issues</u></p>	<p>2.1 a) The appointed contractors will be contractually bound to these conditions as well as the provisions of the proposed EMPr. b) The appointed contractors will undertake an induction process with all staff and workers on site and issue a written schedule of rules and work conditions specific to the site</p>	Project planning team and contractor	As required
<p>3. <u>EMPr</u></p>	<p>3.1 a) An approved ECO must be appointed before any construction activities commence. It is recommended that for the initial commencement phase the ECO is on site once a week as a minimum, thereafter the frequency can be negotiated between the ECO and the contractor as required. This EMPr must be made binding to the main contractors as well as individual contractors and should be included in tender documentation for the construction contract. The contractors must also ensure that the construction crew is aware of the requirements set out in the EMPr for this development prior to commencing activities on site.</p>	Developer	<b>Prior to construction starting.</b>

<p><b>4.</b> <b><u>Site Preparation-</u></b></p> <p><i>Sound environmental principles need to be adopted in the preparation of the site.</i></p>	<p><b>4.1</b></p> <p>a) Erect a barrier demarcating the proposed site.</p> <p>b) A temporary boundary (rope) must be installed along the 2 meter stream buffer to prevent any movement into or through the watercourse.</p> <p>c) Clearly demarcate all material lay down areas.</p> <p>d) Ensure that perimeter marking is kept and maintained in good working order for the total duration of the construction project.</p> <p>e) The area outside of the development footprint (no development) needs to be appropriately demarcated and staff need to be instructed to only conduct approved activities within these areas (i.e. alien invasive species removal). The proposed barrier needs to be checked by the ECO for efficacy.</p> <p>f) Do not use the site for any other purpose other than for the proper carrying out of the Works under the Contract.</p> <p>g) Marking for surveying and other purposes must be done using pegs, beacons or rope and droppers.</p> <p>h) That all protected trees be identified before the development takes place to ensure that they are not damaged.</p> <p>i) An ECO needs to be appointed to oversee construction, including the identification and relocation of plants of conservation concern prior to clearing and site preparation.</p>	<p>Contractor/ECO</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>ECO</p> <p>Contractor/ECO</p> <p>Contractor</p> <p>Contractor</p> <p>ECO/Specialist</p> <p>Contractor</p>	<p><b>Once-off prior to construction starting</b></p> <p><b>Prior to construction and maintained Daily</b></p> <p><b>Once-off prior to construction starting</b> <b>Continuous</b></p> <p><b>Prior to construction commencing</b> <b>Prior to construction commencing</b></p> <p><b>Construction duration</b></p> <p><b>Continuous</b></p> <p><b>Once off prior to construction starting</b> <b>Once off at least 14 days prior to construction starting</b></p>
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	<p>j) The surveyor and contractor must clearly demarcate the centre or boundary of a servitude or footprint prior to clearing (for construction or surveying) so that the ECO can search for plants of conservation concern, mark them with danger tape and record protected plants that are going to be disturbed or destroyed. Searches also need to be carried out on temporary access roads and stockpile sites.</p>	Contractor/ECO	<b>Once off prior to construction starting</b>
	<p>k) The Developer must obtain a permit from the DARDLEA or a licence from the DWA, to disturb or destroy protected plants before any clearing takes place.</p>	Contractor/ECO	<b>When necessary</b>
	<p>l) The developer must allocate a sufficient budget for rescuing and nursing plants of conservation concern, including translocation or transplanting, training, supervision, labour, black bags, compost, watering, maintenance and a nursery.</p>	Contractor/ECO	<b>Once-off</b>
	<p>m) The ECO must induct, and train (at least 2 full days) the contractor's labourers and supervisor how to successfully translocate and transplant local plants.</p>	ECO	<b>Once-off, When necessary</b>
	<p>n) All plants of conservation concern, excluding large trees that exceed the capabilities of the contractor's excavator, must be either transplanted into a nursery, i.e. Aloe and bulbous sp. or translocated outside the working servitude, i.e. seedlings, saplings &amp; mature trees. Translocated trees will need to be watered. Rescued plants are to be used in landscaping and rehabilitation.</p>	Contractor/ECO	<b>When necessary</b>
	<p>o) The contractor may not dump cleared vegetation onto living plants unless it is on a site that has been searched for plants of conservation concern and approved by the ECO for stockpiling cleared vegetation.</p>	Contractor/ECO	<b>Construction duration</b>
	<p>p) All areas, other than the construction areas (camp, roads and defined servitudes or footprints) are "no-go" areas. Demarcate (&amp; maintain) walking &amp; working areas with danger tape.</p>	ECO/Contractor Contractor	<b>Prior to construction and Continuous</b>
	<p>q) Utilise the method of debushing most appropriate for the environment and species in question. Favour mechanical rather than chemical methods wherever possible.</p>	Contractor	<b>Continuous</b>

	r) No vegetation on neighbouring properties may be damaged or utilised	Contractor	<b>Continuous</b>
	s) Exotic (invasive) flora – to be removed from the site; a weed control program implemented and spread of exotic invasive species to be controlled	Contractor/ECO	<b>Continuous</b>
	t) Before any construction, borrowing and/or quarrying, the entire available topsoil layer (except in the area designated “no development”) has to be stripped. Ensure that it is stockpiled separately from subsoil and rocky material.	Contractor	<b>Once-off, prior to construction</b>
	u) In the absence of a recognisable topsoil layer, strip the upper most 300mm of soil.	Contractor	<b>Once-off</b>
	v) Co-ordinate excavation to limit unnecessarily prolonged exposure of stripped areas and stockpiles. Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area.	Contractor	<b>Once-off</b>
	w) Strip and stockpile herbaceous vegetation, overlying grass and other fine organic matter along with the topsoil.	Contractor	<b>Once-off, monitor regularly</b>
	x) Do not strip topsoil when it is wet.	Contractor	<b>Once-off, monitor regularly</b>
	y) Store stripped topsoil in an approved location and in an approved manner for later re-use in the rehabilitation process.	Contractor	<b>Once-off, monitor regularly</b>
	z) Establish marker pegs along the boundaries of working areas, access roads, haul roads before commencement of work.	Contractor	<b>Once-off, monitor regularly</b>

<p><b>5.</b> <b><u>Construction site</u></b> <i>Careful planning of the Construction site can ensure that time and costs associated with environmental management and rehabilitation are reduced.</i></p> <p><i>With regards to the establishment of the campsite, mitigation measures as detailed in the section to the right will only be applicable should the workforce of the appointed contractors stay overnight. This aspect will, therefore, have to be confirmed first, on site prior to commencement of any activities.</i></p>	<p><b>5.1</b> <b><i>Structures and accommodation</i></b></p> <p>a) Erect all temporary buildings and structures; including offices, workshops, and stores, within predetermined zones as per the approved site plan.</p> <p>b) Erect all temporary and permanent labour housing within predetermined zones off the construction site as per the approved site plan and / or relevant Sketch Plans.</p> <p>c) Ensure that essential services (including showers, appropriate sanitation and drinking water facilities) are provided for all housing and/or campsites.</p> <p>d) Maintain essential services in a functional state. These may not be overloaded. Defects and inadequacies must be rectified immediately.</p> <p>e) Scavenger and weatherproof bins will be provided in a suitable waste storage area for temporary storage. These bins will be emptied and transported to an appropriate facility once a week.</p> <p>f) Provide a designated place for food storage, preparation and consumption. Food storage must be separate from sleeping quarters and waste storage areas.</p> <p>g) Ensure that cooking facilities, as approved by the Project Manager is made available - preferably gas or electricity. Ensure regular checks of the mentioned facilities as per OSH Act and/or site safety plan by the relevant appointed personnel.</p> <p>h) Allow for household amenities, such as washing and drying of clothes, as well as areas for social interaction.</p> <p>i) The Contractor must attend to drainage of the camp site to avoid standing water and / or sheet erosion.</p> <p><b><i>Storage areas</i></b></p> <p>a) A suitable and safe area for storage of the construction material is to be provided: choice of location for storage areas</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor/ Project manager</p> <p>Contractor/ Project manager</p> <p>Contractor</p> <p>Contractor/ Project manager</p> <p>Contractor/ Project manager</p> <p>Contractor/ Project manager</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Initial set-up period</b></p> <p><b>Initial set-up period</b></p> <p><b>Initial set-up period</b></p> <p><b>Initial set-up period</b></p> <p><b>Continuous</b></p> <p><b>Initial set-up period</b></p> <p><b>Initial set-up period</b></p> <p><b>Initial set-up period</b></p> <p><b>Continuous</b></p> <p><b>Initial set-up period</b></p>
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	<p>itself will be via the south eastern corner. All deliveries would be routed on the official access route from the Incheni road.</p> <p>c) Runoff from roads must be managed to avoid erosion and pollution problems.</p>	Contractor	
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<p><b>6.</b> <b><u>Alien Invasive Species</u></b></p> <p><i>It is important at the outset of a project to establish a program for the eradication and control of alien invasive vegetation</i></p>	<p><b>6.1</b></p> <p>a. Areas such as watercourses, wetlands, riparian and pristine areas must be prioritised.</p>	Contractor / ECO	<p><b>Prior to site clearing and construction</b> <b>To be determined prior to site clearing</b> <b>Prior to site clearing</b>  <b>Prior to site clearing</b>  <b>Prior to site clearing</b>  <b>Prior to site clearing</b></p>
	<p>b. Alien vegetation need only be eradicated on sites where the entire site is not cleared.</p>	Contractor / ECO	
	<p>c. The ECO is responsible for the identification of alien invasive species. The specie-specific method of control and eradication should be implemented.</p>	ECO	
	<p>d. The ECO is responsible to provide the specific training required to implement the required control method. Only personnel who have been appropriately trained is allowed to engage in this activity.</p>	ECO	
	<p>e. All personnel tasked to engage in the process of alien invasive vegetation control needs to receive proper training in the following:</p> <ul style="list-style-type: none"> <li>- Methods and control measures.</li> <li>- Equipment and techniques</li> <li>- Types of herbicide (selective and non-selective)</li> <li>- Health and safety issues</li> <li>- Safety gear</li> </ul>	ECO / Contractor	
	<p>f. Prior to the actual eradication process the ECO or contractor must ensure the following:</p> <ul style="list-style-type: none"> <li>- All personnel have adequate training required</li> <li>- All personnel have essential safety equipment</li> <li>- Only identified alien species are targeted</li> <li>- Ensure correct application of herbicides</li> </ul>	ECO / Contractor	
	<p>g. Team supervisors must receive training in the following:</p> <ul style="list-style-type: none"> <li>- Herbicide awareness. Basic training on the mode of action of herbicides.</li> <li>- Operator safety. Handling of concentrates and spray</li> </ul>	ECO / Contractor	

	<p>mixtures, personal hygiene and protective clothing.</p> <ul style="list-style-type: none"> <li>- Safe storage of products at depots and operational sites and spray mixtures at operational sites.</li> <li>- Mixing. Handling of concentrates and mixing techniques.</li> <li>- Safety procedures to be observed during transportation of product spray mixtures, equipment and personnel.</li> <li>- Care and maintenance of application equipment, saws etc.</li> <li>- Record keeping in respect of quantities of product/spray mixtures used, area treated, person hours per area/operation, stock control</li> <li>- Planning. Advanced planning for follow-up operations, transportation, equipment and spares requirements, product procurement and availability. Team management</li> <li>- First aid. Actions to be taken in case of accidental contamination, suspected and actual poisoning, chronic poisoning, eye contamination and other physical injuries.</li> <li>- Health of operators. Persons unsuitable for use as application operators would include e.g. chronically ill, disabled, pregnant women. Awareness of possible allergic reactions. Wearing of protective apparel.</li> <li>- Managing major and minor spills, accident sites.</li> </ul> <p>h. Spill kits must be available on site in case of any accidental contamination or spillages.</p>	Contractor	<b>Initial set-up period</b>
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## SECTION F: CONSTRUCTION PHASE

<p><b>1.</b> <b><u>Maintenance of Construction site</u></b></p> <p><i>Conscientious maintenance of the Construction site can ensure that time and costs associated with environmental management and rehabilitation are reduced.</i></p>	<p><b>1.1</b> <b>Maintenance of Access</b></p> <p>a) Contractors should ensure that access roads are maintained in good condition by attending to potholes, corrugations and stormwater damage as soon as these develop.</p> <p>b) If necessary, staff must be employed to clean surfaced roads adjacent to construction sites where materials have been spilt.</p> <p><b>1.2</b> <b>Surfaces</b></p> <p>a) The Contractor must monitor and manage drainage of the camp site to avoid standing water and soil erosion.</p> <p>b) The construction site must be fenced off and demarcation of material lay down areas must precede all activities on site.</p> <p>c) Run-off from the camp site must not discharge into neighbouring properties or adjacent river/riparian belt.</p> <p><b>1.3</b> <b>Ablutions</b></p> <p>a) An adequate number of portable/ chemical toilets shall be supplied (1 toilet per 15 users is the norm). The use of septic tanks, soak ways or pit latrines is strictly prohibited.</p> <p>b) Do not locate any site toilet, sanitary convenience, within a horizontal distance of 100m of the identified river or riparian zone.</p> <p>c) The Contractor is to ensure that open areas or the surrounding bush are not being used as a toilet facility.</p> <p>d) Regular inspections shall be carried out to ensure toilets are kept in a hygienic state.</p> <p>e) Chemical toilets are to be cleaned regularly and effluent disposed of off-site at an approved municipal sewage system.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Weekly inspection</b></p> <p><b>When necessary</b></p> <p><b>Continuous</b></p> <p><b>Initial set-up period</b></p> <p><b>Initial set-up period</b></p> <p><b>Initial set-up period</b></p> <p><b>Initial set-up</b></p> <p><b>Weekly</b></p> <p><b>Weekly</b></p> <p><b>Weekly</b></p> <p><b>Once-off, monitor daily</b></p>
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	<p>f) Toilet paper shall be supplied to all toilets. Combine drinking water facilities with hand washing facilities near site toilets.</p> <p>g) Toilet facilities will be screened and put as far away from the neighbours and roads as possible</p>	<p>Contractor</p> <p>Contractor/ Project manager</p>	<p><b>Initial set-up period</b></p> <p><b>Once-off, monitor daily</b></p>
	<p><b>1.4</b> <b>Camp/site Waste Disposal</b></p> <p>a) Refuse generated from the campsite, construction area, storage area or any other area shall be collected and placed in suitable covered refuse bins on a daily basis. A litter patrol around the construction camp is to take place every day to collect any litter that may have been strewn around.</p> <p>b) Bins and/or skips should be emptied regularly, and waste should be disposed of at a registered landfill site.</p> <p>c) All refuse containers are to be covered at all times.</p>	<p>Contractor/ Project manager</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Weekly</b></p> <p><b>As required</b></p> <p><b>Daily</b></p>
	<p><b>1.5</b> <b>Provision of Water</b></p> <p>a) Sufficient potable water shall be provided for drinking, cooking and ablutions.</p> <p>b) Great care is to be taken that the water supply is not contaminated in any way.</p>	<p>Contractor</p> <p>Contractor</p>	<p><b>Initial set-up period</b></p> <p><b>Daily</b></p>
	<p><b>1.6</b> <b>Provision of Food preparation and eating areas</b></p> <p>a) Provide a designated place for food storage, preparation and consumption. Food storage must be separate from waste storage areas.</p> <p>b) Eating areas should be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness.</p> <p>c) All litter throughout the site should be picked up and placed in the bins provided</p> <p>d) Open fires should not be allowed. Fires for cooking should be limited to fireplaces designed for the purpose.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Daily</b></p> <p><b>Initial set-up period</b></p> <p><b>Initial set-up period</b></p> <p><b>Initial set-up period</b></p>

<p><b>2.</b> <b><u>Staff conduct</u></b></p>	<p><b>2.1</b> <b><i>Environmental Education and Awareness</i></b></p> <p>a) Ensure that all site personnel have a basic level of environmental awareness training.</p> <p>b) It is essential that construction personnel be made aware of the sensitivity of the “no development” zones (the pristine areas surrounding the site and river and its associated riparian zone) and that their movements be limited to the construction areas only, which needs to be enforced.</p> <p>c) It is the Contractor’s responsibility to provide the site foreman with no less that 1 hour’s environmental training and to ensure that the foreman has sufficient understanding to pass this information onto the construction staff.</p> <p>d) Translators are to be used where necessary.</p> <p>e) The need for a “clean site” policy also needs to be explained to the construction workers.</p> <p>f) The contractor must ensure that all staff are sensitised to the fact that accessing a neighbour’s property without permission constitutes trespassing and is punishable by law. Moreover the lodge management must develop a strict disciplinary processes for cases such as this.</p> <p>g) A mosquito spraying program should be implemented. Construction staff health must be closely monitored, and anyone displaying symptoms is immediately removed from the reserve and treated. Staff must receive in house training on treatment of stagnant water and best practice to reduce possible breeding sites.</p> <p><b>2.2</b> <b><i>Worker conduct on site</i></b></p> <p>a) A general regard for the social and ecological well-being of the site and adjacent areas (especially the untransformed areas), is expected of the site staff.</p> <p>b) Workers need to be made aware of the following general rules:</p>	<p>Project manager / ECO <b>Contractor / ECO</b></p> <p>Contractor</p> <p>Contractor Contractor</p> <p>Project manager /ECO</p> <p>Project manager/Contractor</p> <p>Project manager</p>	<p><b>During staff induction &amp; ongoing</b> <b>During staff induction, to be monitored continuously</b></p> <p><b>Prior to moving onsite</b></p> <p><b>Continuous</b> <b>Continuous</b></p> <p><b>During staff induction &amp; ongoing</b> <b>During staff induction &amp; monitored on an ongoing basis</b></p>
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	<p>i.) No alcohol / drugs to be present on site.</p> <p>ii.) No firearms allowed on site or in vehicles transporting staff to / from site, (unless used by security personnel).</p> <p>iii.) Prevent excessive noise.</p> <p>iv.) Prevent unsocial behaviour.</p> <p>v.) Bringing pets onto the site is forbidden</p> <p>vi.) No harvesting of firewood from the site or from the areas adjacent to it</p> <p>vii.) Construction staff are to make use of the facilities provided for them, as opposed to ad-hoc alternatives. (e.g.: fires for cooking; the use of surrounding bush as a toilet facility; are forbidden).</p> <p>viii.) Trespassing on private / commercial properties adjoining the site is forbidden</p> <p>ix.) Driving under the influence of alcohol is prohibited.</p> <p><b>2.3</b> <b>Fauna and Flora</b></p> <p>a) Capture/snaring of fauna is strictly prohibited</p> <p>b) Anyone found doing the above-mentioned will be prosecuted or disciplined</p> <p>c) Faunal species found should be translocated</p> <p>d) No vegetation on neighbouring properties (or in the untransformed “no development” zone) is to be used for firewood.</p> <p>e) Permits are required for removal, relocation and pruning of protected species (permits can be obtained from MPTA or DWA)</p>	<p>Contractor/ ECO Contractor</p> <p>ECO Contractor/ ECO</p> <p>Contractor/ ECO</p>	<p><b>Continuous</b> <b>As necessary</b></p> <p><b>As necessary</b> <b>Continuous</b></p> <p><b>As necessary</b></p>
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<p><b>3.</b> <b><u>Dust/Air pollution</u></b> <i>Main causes of air pollution are dust from vehicle movements and stockpiles, vehicle emissions and fires.</i></p>	<p><b>3.1</b></p> <p>a) Phasing of operations will avoid the exposure of soil and sand for prolonged periods.</p> <p>b) If necessary, the construction site shall be watered (or an appropriate alternative method used) to control possible dust fallout.</p> <p>c) Vehicles travelling to and from the construction site must adhere to speed limits (40 km/h) so as to avoid producing excessive dust.</p> <p>d) Vehicles and machinery are to be kept in good working order and to meet manufacturer's specifications for safety, fuel consumption etc.</p> <p>e) No fires are allowed on site unless first cleared with the ECO and Project Manager.</p> <p>f) Stockpiles may cause dust and so must be managed in accordance with the guidelines in Materials Management in section 8.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor / ECO</p> <p>Contractor</p>	<p><b>Monitor daily</b></p> <p><b>Monitor daily</b></p> <p><b>Continuous</b></p> <p><b>Weekly</b></p> <p><b>As necessary</b></p> <p><b>Daily</b></p>
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<p><b>4.</b> <b><u>Soil Erosion</u></b></p>	<p><b>4.1</b> <b><u>Topsoil stripping and stockpiling</u></b></p> <p>a) Once an area has been cleared of vegetation, the top layer (nominally 150mm) of soil should be removed and stockpiled in a designated area. Topsoil is to be handled twice only – once to strip and stockpile, and once to replace and level.</p> <p>b) Should there be a need to stockpile soil; those stockpiles must be covered in excessively windy conditions</p> <p>c) No stockpiles or construction materials may be stored or placed within any drainage line and its riparian zone on site or in close proximity to stormwater drains.</p> <p>d) Position topsoil stockpiles on the higher side of a disturbed area.</p> <p>e) Ensure that all topsoil is stored in such a way and in such a place that it will not cause the damming up of water, erosion gullies, or wash away itself.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Once-off, monitor regularly</b></p> <p><b>As required</b></p> <p><b>Once-off, monitor regularly</b></p> <p><b>Once-off, monitor regularly</b></p>
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	<p>f) Do not stockpile topsoil in heaps exceeding <b>2m</b> in height.</p> <p>g) Protect topsoil stockpiles from erosion.</p> <p>h) Fencing may not cause erosion and may not impede the flow of any watercourse or natural drainage. Fencing must be monitored throughout the construction phase, and any signs of erosion resulting from it must be remedied immediately.</p> <p>i) Remove exotic / invasive plants and broad leaf weeds that emerge on topsoil stockpiles</p> <p>j) Ensure that topsoil is at no time buried, mixed with spoil (excavated subsoil), rubble or building material, or subjected to compaction or contamination by vehicles or machinery. This will render the topsoil unsuitable for use during rehabilitation.</p> <p>k) The Contractor will be held liable for the replacement of any topsoil rendered unsuitable for use during rehabilitation, for reasons due to his negligence or mismanagement on site.</p>	<p>Contractor Contractor Contractor / ECO</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Once-off, monitor regularly</b> <b>Continuous</b></p> <p><b>Continuous</b></p> <p><b>Continuous</b></p> <p><b>Continuous</b></p>
	<p><b>4.2</b> <b><i>Exposed surfaces</i></b></p> <p>a) The time that stripped areas are exposed shall be minimised wherever possible.</p> <p>b) Top soiling and revegetation shall commence immediately after the completion of an activity and at an agreed distance behind any particular work front.</p> <p>c) Stormwater control (See 5) and wind screening should be undertaken to prevent soil loss from the site.</p> <p>d) Side tipping of spoil and excavated materials shall not be permitted – all spoil material shall be disposed of as directed by the contractor.</p> <p>e) Soils that become compacted through the activities of the development must be loosened to an appropriate depth to allow seed germination.</p> <p>f) Structures to prevent erosion must be built in areas that are prone to erosion (especially steep roads)</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Continuous</b></p> <p><b>Monitor regularly</b></p> <p><b>Monitor regularly</b></p> <p><b>As each activity is completed</b></p> <p><b>Continuous</b></p> <p><b>Continuous</b></p>

	<p><b>4.3</b> <b>Surface water management</b></p> <p>a) No water may be abstracted from any surface water body without necessary permission from DWA for the purpose of construction unless permitted in terms of the Contract.</p> <p>b) Monitor water consumption and ensure that all possible use is accounted for and areas of waste are identified (i.e. water used for surface wetting, for potable supply etc.).</p> <p>c) Repair identified leaks and address issues of water wastage as soon as these are identified.</p> <p>d) Where possible, recycle water on the construction site.</p> <p>e) Avoid over-wetting, saturation and unnecessary runoff during dust control activities and irrigation.</p> <p>f) Ensure that water abstraction points, if permitted, (i.e. from rivers, dams, etc.) do not degrade or erode as a result of leaking pipes, spills, muddy conditions or wash-aways. Rectify problems as soon as they arise.</p>	<p>Project manager</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>As required</b></p> <p><b>Where identified</b></p> <p><b>Prior to construction starting</b></p> <p><b>Monitor daily</b></p> <p><b>Whenever identified</b></p> <p><b>Whenever identified</b></p> <p><b>Monitor daily</b></p>
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<p><b>5.</b> <b><u>Stormwater</u></b> <i>Construction activities frequently result in diversions of natural water flow resulting in concentration of flow and an increase in the erosive potential of the water. Measures in this section are aimed at reducing the erosive potential of stormwater.</i></p>	<p><b>5.1</b> <b>General Principles</b></p> <p>a) Do not drain, fill or alter in any way, any river and riparian zone.</p> <p>b) Do not allow surface water or stormwater to be concentrated, or to flow down, cut or fill slopes without erosion protection measures being in place.</p> <p>c) Earth, stone and rubble is to be properly disposed of so as not to obstruct natural water pathways over the site. i.e.: these materials must not be placed in stormwater channels, drainage lines.</p> <p>d) Line stormwater channels with stone pitching along their length and at their points of discharge to prevent soil erosion. The point of discharge must be at a point where there is dense natural grass cover.</p> <p>e) Ensure that channels do not discharge straight down the contours. These must be aligned at such an angle to the contours that they have the least possible gradient.</p> <p>f) Locate any point of overland discharge at least 50m away from the drainage line. No surface stormwater generated as a result of the development may be directed directly into any watercourse.</p> <p>g) Surface water rich in sediments and other pollutants must be prevented from entering any watercourse, and all mechanisms for dissipating water energy must be implemented at the inception of the construction phase.</p>	<p><b>Project manager</b> <b>Contractor</b> <b>Contractor</b></p> <p><b>Contractor</b></p> <p>Contractor</p> <p><b>Contractor</b></p> <p><b>Contractor</b></p> <p>Contractor</p>	<p><b>Monitor weekly</b> <b>Monitor daily</b></p> <p><b>Continuous</b></p> <p><b>Continuous</b></p> <p><b>When the need arises</b></p> <p><b>Whenever the need arises</b></p> <p><b>Continuous.</b> <b>Prior to construction</b></p>
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<p><b>6.</b> <b><u>Water Quality (Surface and groundwater)</u></b></p> <p><i>Water quality is affected by the incorrect handling of substances and materials. Soil erosion and sediment is also detrimental to water quality. Mismanagement of polluted run-off from vehicle and plant washing and wind dispersal of dry materials into rivers and watercourses are detrimental to water quality.</i></p>	<p><b>6.1</b> <b><u>General Principles</u></b></p> <p>a) Mixing / decanting of all chemicals and hazardous substances must take place either on a tray or on an impermeable surface. Waste from these should then be disposed of to a suitable waste site.</p> <p>b) The storage and handling of fuel, lubricants and other chemicals must be in especially demarcated impervious and bunded areas</p> <p>c) Every effort should be made to ensure that any chemicals or hazardous substances do not contaminate the soil or groundwater on site. It is the holder of the RoD's responsibility to rectify any source of pollution from the development and to take appropriate measures to prevent any pollution of surface as well as groundwater.</p> <p>d) Care must be taken to ensure that run-off from vehicle or plant washing does not enter the ground water.</p> <p>e) All personal washing operations will take place at a location where wastewater can be disposed of in an acceptable manner. Facilities not feeding into a formal drain should ensure that biodegradable soaps are used. Wash water must pass through a French drain system before entering the environment.</p> <p>f) Dry chemical toilets must be made available at the construction camp and must be cleaned and serviced regularly. All chemical toilets must be placed above the 1:100 year flood line or at least 100 m away from any water course.</p> <p>g) Ensure that no stormwater is allowed to enter any drainage installation for the reception, conveyance, storage and / or treatment of sewage.</p> <p><b>h)</b> No natural watercourse is to be used for the cleaning of tools or any other apparatus. This includes for purposes of bathing, or the washing of clothes etc. All washing operations will take place at a location where wastewater can be disposed of in an acceptable manner.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor / Developer</p> <p>Contractor</p> <p><b>Contractor</b></p> <p><b>Contractor</b></p> <p><b>Contractor</b></p> <p><b>Contractor</b></p>	<p><b>Construction duration - Regular Monitoring.</b></p> <p><b>Prior to start of construction – monitor regularly Regular Monitoring.</b></p> <p><b>Regular Monitoring Regular Monitoring</b></p> <p><b>Regular Monitoring</b></p> <p><b>Regular Monitoring</b></p> <p><b>Whenever the need arises</b></p>
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	<p>i) The contractor must maintain good housekeeping practices that ensure that all work sites are kept tidy and litter free, ensuring no runoff of refuse into surrounding watercourses.</p> <p>j) No spills may be hosed down into a storm water drain or sewer, or into the surrounding natural environment. All contaminated soil is to be excavated to the depth of contaminant penetration, placed in 200 litre drums and removed to an appropriate landfill site.</p> <p>k) The ground under the servicing and refuelling areas must be protected against pollution caused by spills and/or tank overfills.</p> <p>l) In the event of a breakdown or emergency repair, any accidental spillage must be cleaned up or removed immediately.</p> <p>m) Ensure that water passing through vehicle wash bays and workshops pass through oil baffles / oil traps / oils separators before passing into conservancy tanks.</p> <p>n) Treat all oil sludge collected in the said traps, including sump liners, as hazardous waste</p> <p>o) Take special care during rainy periods to prevent the contents of sumps and drip trays from overflowing.</p> <p>p) If water will be sourced from the on-site boreholes, the water needs to be properly treated prior to human consumption. Untreated water can be used for all other activities such as washing of equipment, dust suppression, concrete mixing, compacting etc.</p> <p>q) Deflect any unpolluted water / runoff away from any dirty area</p> <p>r) Emergency contact numbers should be referred to in order to deal with spillages and contamination of aquatic environments.</p>	<p><b>Contractor</b></p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor Contractor</p>	<p><b>During rainy periods</b></p> <p><b>Regular monitoring</b></p> <p><b>Regular monitoring</b></p> <p><b>Whenever the need arises</b></p> <p><b>Regular Monitoring</b></p> <p><b>Regular Monitoring</b> <b>Regular Monitoring</b></p> <p><b>Regular Monitoring</b></p>
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<p><b>7.</b> <b><u>River Protection</u></b></p> <p><i>All requirements of the National Water Act, 1998 (Act 36 of 1998) must be complied with as prescribed by the Department of Water Affairs and Forestry (DWA).</i></p>	<p><b>7.1</b></p> <p>a) No construction activities or construction personnel will be allowed in the dry riverbed to the north of the camp.</p> <p>b) No activity such as construction camps, temporary housing, temporary ablution, stockpiling of topsoil, storing of equipment and material, disturbance of natural habitat, temporary access haul roads, impermeable surfacing, any other activity</p> <p>c) A temporary boundary (rope) must be installed along the drainage line 2 meter buffer to prevent any movement into this.</p> <p>d) It is further recommended that no roads be constructed through the drainage line and adjacent 2 meter buffer.</p> <p>e) No stormwater or runoff from the roads and camp site is allowed straight into the river without first slowing the flow and where possible filtering litter, etc.</p> <p>f) Alien vegetation should be removed from the river and riparian zone.</p> <p>g) An Emergency Preparedness Plan should detail potential risks and anticipate where and when incidents could occur, and what steps should be taken in the event that a spill occurs.</p>	<p><b>Contractor/ECO</b></p> <p><b>Contractor / ECO</b></p> <p><b>Contractor / ECO</b></p> <p><b>Contractor / ECO</b></p> <p><b>Contractor / ECO</b></p> <p><b>Contractor / ECO</b></p> <p><b>Contractor / ECO</b></p>	<p><b>Daily</b></p> <p><b>Continuous</b></p> <p><b>Initial site preparation</b></p> <p><b>Initial site preparation</b></p> <p><b>Weekly monitoring</b></p> <p><b>Initial site preparation</b></p> <p><b>Initial site preparation</b></p>
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<p><b>8.</b> <b><u>Fauna and Flora</u></b></p>	<p><b>8.1</b> <b><i>Plant harvesting - pressure on vegetation</i></b></p> <p>a) Prior to construction, the borders of the areas to be developed should be demarcated with danger tape in order to prohibit access by the construction team into ecologically sensitive vegetation communities. This danger tape must be removed once construction is completed.</p> <p>b) An Environmental Control Officer should be appointed during this phase and one of this person's roles during the construction phase should be monitoring of illegal plant harvesting.</p>	<p>Contractor / ECO</p> <p>Contractor / ECO</p>	<p><b>Initial site preparation</b></p> <p><b>Weekly monitoring</b></p>
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	<p>c) Construction teams must, as a contractual obligation, not be allowed to collect any medicinal plant resources from surrounding vegetation. However, collection of firewood from plantations of invasive exotics should be allowed.</p>	Contractor / ECO	<b>Initial site preparation</b>
	<p>d) The Environmental Control Officer should spend time in the ecologically sensitive habitats during construction and search for any evidence of harvesting of plant resources (bark removal, digging for tubers, etc).</p>	Contractor / ECO	<b>Weekly monitoring</b>
	<p><b>8.2</b> <b>Alien invasive plants</b></p>		
	<p>a) In order to comply with the Conservation of Agricultural Resources Act, all listed invasive exotic plants should be targeted and controlled.</p>	Contractor / ECO	<b>Initial site preparation</b> <b>Weekly monitoring</b>
	<p><b>8.3</b> <b>Solid waste management –</b></p>		
	<p>b) Building contractors should be made aware of the necessity to dump any building rubble at approved off-site facilities.</p>	Contractor / ECO	<b>Initial site preparation</b>
	<p>c) The Environmental Control Officer should search surrounding ecologically sensitive vegetation to check whether building contractors are dumping any building rubble on site, and if they are, then immediate steps must be taken to clean the area and prevent future dumping.</p>	Contractor / ECO	<b>Continuous</b>
	<p>d) Penalties should be levied on any contractor who does not comply.</p>	Contractor / ECO	<b>Initial site preparation</b>
	<p><b>8.4</b> <b>Fauna</b></p>		
	<p>a) Construction teams must, as a contractual obligation, not be allowed to enter surrounding untransformed vegetation.</p>	Contractor / ECO	<b>Weekly monitoring</b>
	<p>b) Any evidence of poaching must be followed up by the Environmental Control Officer, and where possible, perpetrators should be prosecuted under the relevant Nature Conservation Act</p>	Contractor / ECO	<b>Weekly monitoring</b>



	<p><b>8.5</b> <b>Soil erosion -</b></p> <p>a) All topsoil removed during clearing of roads and housing footprints should be stockpiled for later use such as landscaping gardens and / or rehabilitating disturbed areas. Stockpiling must not take place within any drainage lines.</p> <p>b) Any steep road surfaces should have water-traps and drainage furrows constructed in order to direct water off the road as quickly as possible</p> <p>c) Cut-off drains diverting storm water around the perimeter of the development should be professionally designed to handle expected run-off and prevent erosion</p> <p>d) Outflow from cut-off drains and storm water diversions should be attenuated sufficiently to prevent erosion of receiving environment</p>	<p>Contractor / ECO</p> <p>Contractor / ECO</p> <p>Contractor / ECO</p> <p>Contractor / ECO</p>	<p><b>Weekly monitoring</b></p>
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<p><b>9.</b> <b><u>Materials Management</u></b></p>	<p><b>9.1</b> <b><i>Borrow material</i></b> a) The use of gravel and / or sand from borrow / gravel pits must adhere to all applicable legislation in terms of authorisation and permits</p> <p><b>9.2</b> <b><i>Stockpiling</i></b> a) Stockpiles should not be situated such that they obstruct natural water pathways. b) Stockpiles should not exceed <b>2m</b> in height unless otherwise permitted by the Contractor (in consultation with the ECO). c) If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or cloth, depending on the duration of the project. d) Stockpiles may further be protected by the construction of berms or low brick walls around their bases. e) Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding.</p> <p><b>9.3</b> <b><i>Handling Hazardous Materials</i></b> a) All concrete mixing must take place on a designated, impermeable surface. b) No vehicles transporting concrete to the site may be washed on site. c) Lime and other powders must not be mixed during excessively windy conditions. d) All substances required for vehicle maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site. e) Hazardous substances / materials are to be transported in sealed containers or bags. f) Spraying of herbicides / pesticides should not take place under</p>	<p>Contractor / Engineer</p> <p>Contractor</p> <p>Contractor / ECO</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Prior to construction</b></p> <p><b>As necessary</b></p> <p><b>Monitor daily</b></p> <p><b>As necessary</b></p> <p><b>As necessary</b></p> <p><b>Monthly checks</b></p> <p><b>Continuous</b></p> <p><b>Continuous</b></p> <p><b>As necessary</b></p> <p><b>Continuous</b></p> <p><b>Continuous</b></p> <p><b>Initial set-up /</b></p>
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	<p>windy conditions and must comply with OSHA specs and other chemical handling laws.</p> <p>g) The emergency numbers should be consulted should any accidents / spillages of hazardous substances and / or materials take place. The Project Manager is to outline an emergency plan for dealing with accidents / spillages of hazardous materials. This statement must be handed to the Contractor.</p>	<p>Project manager and Contractor</p>	<p><b>As necessary</b></p> <p><b>Initial set-up/</b> <b>As necessary</b></p>
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<p><b>10.</b> <b><u>Waste Management</u></b></p> <p><i>Definition: "Refuse" refers to all construction waste (such as rubble, asphalt millings, cement bags, waste cement, timber, cans, other containers, wire and nails), household and office waste.</i></p>	<p><b>10.1</b> <b>General waste management</b></p> <p>a) Refuse must be placed in the designated skips / bins which must be regularly emptied. These should remain within demarcated areas and should be designed to prevent refuse from being blown out by wind.</p> <p>b) In addition to the waste facilities within the construction site, provision must be made for waste receptacles to be placed at intervals along the work front.</p> <p>c) Littering on site is forbidden and the site shall be cleared of litter at the end of each working day.</p> <p>d) Recycling is to be encouraged by providing separate receptacles for different types of waste and making sure that staff are aware of their uses.</p> <p><b>10.2</b> <b>Waste Disposal</b></p> <p><b>a) Solid</b></p> <p>i.) Where necessary, dedicate a storage area on site for the collection of construction waste.</p> <p>ii.) Unless otherwise specified by the Project Manager, remove stored domestic waste to the nearest registered solid waste disposal facility.</p> <p>iii.) Ensure that solid waste is transported properly, avoiding waste spills en-route.</p> <p>iv.) No solid waste may be burned on site</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Continuous</b></p> <p><b>Continuous</b></p> <p><b>Daily</b></p> <p><b>Continuous</b></p> <p><b>Before construction begins</b> <b>On a weekly basis</b></p>
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	<p><b>b) Liquid</b></p> <p>i.) Any chemical toilets used on site shall be cleaned regularly and waste disposed of by a registered waste contractor.</p> <p><b>c) Hazardous</b></p> <p>i.) Hazardous waste disposal must be carried out by an approved waste Contractor. Waybills for this should be provided.</p> <p>ii.) A sump (earth or other) must be created for concrete waste. This is to be de-sludged regularly and the cement waste is to be removed to a tip site as approved by the local municipality.</p> <p>iii.) Collect any hazardous waste in receptacles located on a drip tray on site pending disposal.</p> <p>iv.) Retain waste oils and batteries for recycling by the supplier wherever possible.</p> <p>v.) Regularly dispose of all hazardous waste not earmarked for reuse, recycling or resale at a registered hazardous waste disposal site.</p> <p>vi.) Contain chemical spills, and arrange for clean-up / control by the supplier, or by professional pollution control personnel.</p>	<p>Contractor</p> <p>Contractor</p>	<p><b>Continuous</b></p> <p><b>Monitor weekly</b></p> <p><b>Continuous</b></p> <p><b>Monitor weekly</b></p>
<p><b>11.</b> <b><u>Social Impacts</u></b></p> <p><i>Regular communication between the Contractor and Interested and Affected Parties (I&amp;AP's) – especially the relevant neighbours and downstream users is important for the duration of the contract.</i></p>	<p><b>11.1</b></p> <p>a) Wherever possible existing roads should be used to avoid the disturbance of additional land or natural veld. In this regard, Only the official access roads as defined by TKNR. Guest access to Tswalu will be via the road that runs from the Argyle Road to the camp. All deliveries would be routed on the official access route from the Incheni road.</p> <p>b) As standard policy all contractors staff must be sensitised to the fact that accessing a neighbour's property without permission constitutes trespassing and is punishable by law. Moreover the lodge and contractor must develop a strict disciplinary processes for cases such as this.</p> <p>c) Contractor's activities and movement of staff to be restricted</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Continuous</b></p> <p><b>Continuous</b></p> <p><b>Continuous</b></p> <p><b>Prior to construction</b></p> <p><b>Continuous</b></p>

	<p>to designated construction areas.</p> <p>d) Construction must be limited to normal working hours and hours outside of game drive time. (07h00 – 17h00).</p> <p>e) Should the construction staff be approached by members of the public or other stakeholders, they should assist them in locating the Contractor, or provide a number on which they may contact the Contractor.</p> <p>f) Appropriate notification signs must be erected to warn the public of the dangers of the construction site.</p> <p>g) The conduct of the construction staff when dealing with the public or other stakeholders shall be in a manner that is polite and courteous at all times.</p> <p>h) Disruption of access for local tenants of adjacent businesses must be minimised and must have the Engineer's/Project Manager's permission</p> <p>i) The Contractor is to inform neighbours in writing of disruptive activities at least 24 hours beforehand. This can take place by way approved of by the I&amp;AP's (especially the adjacent homes) and the Contractor.</p> <p>j) Any complaints received from the public during the construction period must be attended to as soon as possible and addressed to the satisfaction of all concerned.</p> <p>k) Contractor must take measures to discourage labourers from loitering.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Continuous</b></p> <p><b>At least 24 hours prior to the activity taking place</b></p> <p><b>As the need arises</b></p> <p><b>Continuous</b></p>
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<p><b>12.</b> <b><u>Crime, safety and security</u></b></p>	<p><b>12.1</b></p> <p>a) The implementation of adequate and appropriate fencing and/or barriers between the site and adjoining properties and developments must be undertaken, to ensure sensitivity to adjoining businesses and their properties, particularly during construction phases. The barriers once erected have to be checked and maintained.</p> <p>b) The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act No.85 of 1993) and the National Building Regulations.</p> <p>c) The contractor must supply his own security arrangements for the construction site.</p> <p>d) Ensure the contact details of the police or security company and ambulance services are available on the site.</p> <p>e) Ensure that the handling of equipment and materials is supervised and adequately instructed.</p> <p>f) Limit access to the construction site only to the workforce.</p> <p>g) Do not allow the movement of public within the development site by posting notices at the entrance gates.</p>	<p>Contractor / Project manager</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Once-off and monitored weekly</b></p> <p><b>Daily</b></p> <p><b>Once-off; continuous monitoring</b></p> <p><b>Continuous</b></p> <p><b>Daily</b></p> <p><b>Daily</b> <b>Weekly</b></p>
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<p><b>13.</b> <b><u>Noise Pollution</u></b></p>	<p><b>13.1</b></p> <p>a) Unless otherwise specified by the Project Manager, normal work hours will apply (i.e. from 07h00 to 17h00, Mondays to Saturdays).</p> <p>b) No loud music is permitted on site.</p> <p>c) Noise from labourers to be controlled</p> <p>d) Noise suppression should be applied to all construction equipment</p> <p>e) <b>If noise levels at the boundaries of the site exceed 7dB</b> above ambient levels, then the local health authorities are to be informed.</p> <p>f) Notify adjacent landowners of after-hours construction work and of any other activity that could cause a nuisance.</p> <p>g) Respond to community complaints with regard to noise generation, taking reasonable action to eliminate and/or minimise the impact.</p> <p>h) Where complaints cannot be addressed to the satisfaction of all parties, then the Contractor will, upon instruction by the Project Manager, provide an independent and registered Noise Monitor to undertake a survey of the noise output levels. Recommendations to reduce noise to legislated levels must be implemented.</p>	<p>Contractor/ Project Manager</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor/ Project manager</p>	<p><b>Continuous</b></p> <p><b>Continuous</b></p> <p><b>As necessary</b></p> <p><b>As necessary</b></p> <p><b>As necessary</b></p> <p><b>As necessary</b></p> <p><b>As necessary</b></p> <p><b>As necessary</b></p>
<p><b>14.</b> <b><u>Visual Impacts</u></b></p>	<p><b>14.1</b></p> <p>a) Rubble and litter must be removed every two weeks or more often as the need arises and be disposed of at a registered landfill.</p> <p>b) Lighting on the construction site should be pointed downwards and away from oncoming traffic.</p> <p>c) Cluster construction activities on site</p> <p>d) Cordon off construction site with shade cloth if necessary</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Bi-weekly or as necessary</b></p> <p><b>Continuous</b></p> <p><b>As necessary</b></p> <p><b>As necessary</b></p>

<p><b>15.</b> <b><u>Archaeological Artefacts</u></b></p>	<p><b>15.1</b></p> <p>a) Construction personnel must be sensitised to the requirements of the South African Heritage Resources Act (SAHRA).</p> <p>b) Should any material of cultural or archaeological significance be encountered during construction, all activities must cease immediately and SAHRA must be informed accordingly.</p> <p>c) Artefacts can only be moved once a permit is obtained from SAHRA.</p> <p>d) Should any activity be planned for the historical buildings on-site (those older than 60 years), the relevant permits and authorisation needs to be applied for according to SAHRA.</p>	<p>Contractor/ ECO</p> <p>Contractor/ ECO</p> <p>Specialist</p> <p>Contractor/ ECO</p>	<p><b>As necessary</b></p> <p><b>Prior to construction</b></p> <p><b>As necessary</b></p> <p><b>As necessary</b></p>
<p><b>16.</b> <b><u>Site Clean-up and rehabilitation</u></b></p>	<p><b>16.1</b></p> <p>a) All structures are to be removed from site.</p> <p>b) The area that previously housed the construction site is to be checked for spills of substances such as oil, paint etc. and these should be cleaned up.</p> <p>c) All hardened surfaces within the construction site area should be ripped, all imported materials removed, and the area shall be top soiled and regressed</p> <p>d) The Contractor must arrange the cancellation of all temporary services.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p><b>Project completion</b></p> <p><b>Project completion</b></p> <p><b>Project completion</b></p> <p><b>Project completion</b></p>
<p><b>17.</b> <b><u>Traffic</u></b></p>	<p><b>17.1</b></p> <p>a) Construction vehicles would have to make use of the Main access gate as well as the cutline running from this into the reserve. This road (and other smaller roads within the Reserve property are utilised by general public as well as by other lodges/shareholders for ingress and egress. It is important that any potential impacts associated with traffic generated by the project's construction traffic are minimised.</p>	<p>Contractor</p>	<p><b>Daily</b></p>



	b) Measures to mitigate impacts on traffic flow, and potential damage that heavy trucks may have on these roads during construction include ensuring that all regulations relating to traffic management are observed.	Contractor	<b>Daily</b>
	c) In addition to this construction vehicles must be made fully aware that the development is situated within a game reserve as well as be aware of the TKNR rules and regulations and the sensitive nature of this impact.	Contractor	<b>Daily</b>
	d) The following strategies should be implemented to minimise potential impacts from construction related traffic:	Contractor	<b>Daily</b>
	e) All heavy vehicles travelling to and from the site will follow dedicated heavy vehicle routes to avoid roads that are not suited to these vehicles.	Contractor	<b>Daily</b>
	f) Heavy vehicles will not be permitted to travel along these roads after more than 20 mm of rain and until the roads have dried satisfactorily.	Contractor	<b>Daily</b>
	g) Where practicable, truck deliveries will be restricted to daytime working hours and the gate times of the TKNR.	Contractor	<b>Daily</b>
	h) If possible, the transport of oversize loads will be restricted to non-peak periods to minimise traffic disruptions and will be provided with appropriate escorts and approvals from the TKNR Management, Roads Department and the Police.	Contractor	<b>Daily</b>
	i) Clear traffic signs and signals will be installed on-site to provide for safe traffic movement.	Contractor	<b>Daily</b>
	j) An on-site speed limit will be enforced.	Contractor	<b>Daily</b>

## SECTION G: OPERATIONAL PHASE

<p><b>1.</b> <b><u>Performance evaluation and record keeping</u></b></p> <p><i>To provide guidance during self-performance evaluations of the operation</i></p>	<p><b>1.1</b></p> <p>a) Compile a checklist applicable to the site and the needed permits from the aspect register and the legal requirements specified and ensure that it is completed once a year. The checklist should typically include all identified aspects (as provided in the above document).</p> <p>b) During this evaluation, specific attention should be given to the effectiveness of the EMPr's and other proposed mitigation measures.</p> <p>c) Ensure that all information obtained from changed process etc. is relayed to all the applicable documents</p>	<p>Land owner</p> <p>Land owner</p> <p>Land owner</p>	<p><b>Annually</b></p> <p><b>Annually</b></p> <p><b>When necessary</b></p>
<p><b>2.</b> <b><u>Eradication of alien floral species</u></b></p>	<p><b>2.1</b></p> <p>a) The use of alien invasive plants for landscaping is prohibited, and a long-term management plan for the eradication and control of existing alien invasive plants should be implemented.</p> <p>b) It is recommended that after the alien plant species are removed, the natural grass or indigenous vegetation from the area be allowed to cover the bare areas where the alien vegetation used to be.</p>	<p>Land owner</p> <p>Land owner</p>	<p><b>Once-off, regular monitoring</b></p> <p><b>Once-off, regular monitoring</b></p>
<p><b>3.</b> <b><u>Erosion</u></b></p>	<p><b>3.1</b></p> <p>a) The stormwater system, especially the discharge points, must be inspected and damaged areas must be repaired if required</p> <p>b) Litter blocking the stormwater system must be removed.</p> <p>c) Regular maintenance of the stormwater system must be undertaken. This should include removal of blockages, and monitoring of stability of stormwater structures to prevent any signs of erosion.</p>	<p>Land owner</p> <p>Land owner</p> <p>Land owner</p>	<p><b>Continuous, bi-annual monitoring</b></p> <p><b>Bi-weekly</b></p> <p><b>Bi-weekly, especially during rainy seasons</b></p>

<p><b>4.</b> <b><u>Water quality</u></b></p>	<p><b>4.1</b> a) Any damages to the sewage system must be repaired immediately b) The stormwater system, especially the discharge points, must be inspected and damaged areas must be repaired if required. c) Monitoring of the quality of the water should be done quarterly and sent to DWA.</p>	<p>Land owner Land owner Land owner/ Specialist  Land owner/ Specialist</p>	<p><b>Monitor regularly</b>  <b>Continuous, bi-annual monitoring</b>  <b>Quarterly</b></p>
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<p><b>5.</b> <b><u>Ecological Monitoring</u></b></p>	<p><b>5.1</b> a) Regular removal of alien species  b) Removal of any litter  c) Lodge Management should be permitted to use plants rescued during construction for landscaping their gardens. d) Activities in the “natural bush” and drainage areas must be strictly managed, no quad bikes, motorcycles and off-road vehicles may be permitted in these areas. e) Appropriate conservation measures must be developed and implemented in conjunction with the DARDLEA in the event of recording any threatened/near threatened species on the site.</p>	<p>Land owner / Specialist  Land owner Specialist Land owner/lodge staff  Land owner/lodge staff  Land owner/lodge staff</p>	<p><b>Continuous, bi-annual monitoring</b> <b>Continuous</b>  <b>Continuous</b>  <b>Continuous</b>  <b>Continuous</b></p>
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<p><b>6.</b> <b><u>Waste management</u></b></p>	<p><b>6.1</b></p> <p>a) Domestic waste must be disposed of by an approved method.</p> <p>b) Sufficient litterbins should be placed at strategic points.</p> <p>c) Hazardous waste must be disposed of at an official registered site, or be removed by registered waste contractors.</p> <p>d) Potentially hazardous materials include empty containers of pesticides, chemicals, and oil. Such containers must be disposed of at an appropriate landfill site, approved for the disposal of hazardous materials.</p>	<p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p>	<p><b>Once-off, monitor continuously</b></p> <p><b>Once-off, continuous</b></p> <p><b>Monitor continuously</b></p> <p><b>As required</b></p>
<p><b>7.</b> <b><u>Crime &amp; Safety</u></b></p>	<p><b>7.1</b></p> <p>a) Sufficient lighting (energy saving devices must be implemented) needs to be provided.</p>	<p>Land owner/lodge staff</p>	<p><b>Weekly</b></p>
<p><b>8.</b> <b><u>Visual</u></b></p>	<p><b>8.1</b></p> <p>a) In terms of screening, all existing vegetation on the periphery of the site is to be maintained as a visual buffer and in addition to this the structures to be built are to incorporate existing vegetation. The structures and their placement are to be informed by the existing vegetation.</p> <p>b) Where possible, supplement the vegetation buffer with appropriate tree and shrub species (i.e. those already characterising the visual landscape of the site) between the proposed development and possible sensitive receptors.</p> <p>c) In terms of all infrastructure, it is recommended the access road and all structures be planned so that the unnecessary clearing of vegetation is avoided. This implies making use of already disturbed sites rather than pristine areas wherever possible, and avoiding large tree specimens and dense established vegetation areas.</p> <p>d) Mitigation of lighting impacts includes the pro-active design, planning and specification lighting for Tswalu Tented Camp and Staff Accommodation Expansion by a</p>	<p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p>	



<p><b>10.</b> <b>Traffic</b></p>	<p><b>10.1</b></p> <p>a) Vehicles accessing the new camp would have to make use of the Main access gate as well as the cutline running from this into the reserve. This road (and other smaller roads within the Reserve property are utilised by general public as well as by other lodges/shareholders for ingress and egress. It is important that any potential impacts associated with traffic generated by the project's construction traffic are minimised.</p> <p>b) All heavy vehicles travelling to and from the site will follow dedicated heavy vehicle routes to avoid roads that are not suited to these vehicles.</p> <p>c) Heavy vehicles will not be permitted to travel along these roads after more than 20 mm of rain and until the roads have dried satisfactorily.</p> <p>d) Where practicable, truck deliveries will be restricted to daytime working hours and the gate times of the TKNR.</p> <p>e) If possible, the transport of oversize loads will be restricted to non-peak periods to minimise traffic disruptions and will be provided with appropriate escorts and approvals from the TPNR Management, Roads Department and the Police.</p> <p>f) Clear traffic signs and signals will be installed on-site to provide for safe traffic movement.</p> <p>g) An on-site speed limit will be enforced.</p>	<p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p> <p>Land owner/lodge staff</p>	
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