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**Sakata Seed**  
**Seed Sorting & Packing Warehouse**

**ENVIRONMENTAL  
MANAGEMENT PROGRAMME**

**2013**

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*Please see attached site plan in Appendix C*

## PURPOSE OF THE EMPR

The main purpose of an Environmental Management Programme (EMPr) is to prevent avoidable damage and/or minimise or mitigate unavoidable environmental damage associated with any planning, construction, maintenance or demolition work where there is a risk of environmental damage.

The EMPr forms part of the contractual obligations to which all developers/ contractors/ employees involved in planning, construction, maintenance, or demolition work must be committed.

This EMPr:

- identifies project activities that could cause environmental damage (risks) and provides a summary of actions required;
- identifies persons responsible for ensuring compliance with the EMPr and provides their contact information;
- provides standard procedures to avoid, minimise and mitigate the identified negative environmental impacts and to enhance the positive impact of the project on the environment;
- provides site and project specific rules and actions required, including a site plan/s showing:
  - areas where construction, maintenance or demolition work may be carried out;
  - areas where any material or waste may be stored;
  - allowed access routes, parking and turning areas for construction or construction related vehicles;
- forms a written record of procedures, responsibilities, requirements and rules for contractor/s, their staff and any other person who must comply with the EMPr;
- provides a monitoring and auditing programme to track and record compliance and identify and respond to any potential or actual negative environmental impacts; and
- provides a monitoring programme to record any mitigation measures that are implemented;

## ROLES & RESPONSIBILITIES - CONTRACT

ROLE	PERSON, POSITION, COMPANY	DATE	SIGNATURE
<i>Construction Project Manager</i>	_____		
<i>Project Proponent</i>	_____		
<i>Environmental Control Officer ("ECO")</i>	_____		
<i>Contractor</i>	_____		
<i>Contractor</i>	_____		
<i>Contractor</i>	_____		
<i>Contractor</i>	_____		

All parties signing here agree to be bound by the requirements of this EMPr document, and to fulfil the obligations of their role as set out below.

Telephone (cel)	telephone (office)	email address	ROLE
			<i>Construction Project Manager</i>
			<i>Project Proponent</i>
			<i>Environmental Control Officer ("ECO")</i>
			<i>Contractor</i>
			<i>Contractor</i>
			<i>Contractor</i>
			<i>Contractor</i>

## ROLES & RESPONSIBILITIES – CONTRACTUAL OBLIGATIONS

As the land owner and Project Proponent, Sakata Seeds Pty (Ltd) must take final responsibility for implementation of this EMPr and its requirements including any environmental rehabilitation that may be needed. *This is mandated by Section 28 (Duty of Care and Remediation of Damage) of the National Environmental Management Act, (Act No. 107 of 1998).*

### Project Proponent (PP)

The implementation of the EMPr during the construction and operational phases is the responsibility of the project proponent.

The project proponent must appoint a contractor who will be responsible for the construction contract, including the co-ordination and implementation of the EMPr on site during the construction phase.

In terms of this EMPr, the project proponent is required to:

- Designate a Construction Project Manager to take day to day responsibility for the implementation of the development, and in particular this EMPr, on behalf of the company.
- Ensure that the proposed principal contractor has the necessary competencies and resources to carry out the work safely.
- Provide the principal contractor with the Construction EMPr as well as any other relevant sections of the EMPr document, when requesting the contractor to budget for the proposed work.
- Ensure that the potential contractor has made provision for the cost of implementing the EMPr.
- Ensure that the Construction EMPr in its entirety is implemented by the Contractor and any Sub-Contractors.
- Appoint an independent Environmental Control Officer (ECO) to monitor the implementation of the EMPr during construction.
- Ensure the manager appointed for the operational phase has the necessary competencies and resources to implement the EMPr.

### Construction Project Manager (PM)

Sakata Seeds must designate a Construction Project Manager to take day to day responsibility for implementation of the project as a whole, including this EMPr and to ensure that all parties fulfil their obligations in terms of this EMPr.



The Construction Project Manager is responsible for ensuring that an ECO is employed, and accepts responsibility for the duration of the project before any on-site work may begin.

## Environmental Control Officer (ECO)

The ECO must be appointed by the Project Proponent prior to commencement of operations.

The ECO must monitor, audit and record compliance with the EMPr by all parties on site. The ECO must upon appointment draw up a detailed EMPr Audit Checklist, which must be completed at site establishment and at each monthly site visit, and keep *ad hoc* records of any and all incidents or events on site with significant environmental impact. Significant impacts must be recorded photographically with enough supporting information to locate the image on the site. All records must be dated and accurately catalogued. As the ECO will not be on site on a full time basis, the ECO will work closely with the Contractor/Site Supervisor/Environmental Health and Safety Officer. The ECO shall also draw up a quick daily checklist that will be of assistance to the Contractor in ensuring that key elements of the EMPr are effectively implemented on a day to day basis.

The ECO must immediately communicate any significant contraventions of this EMPr, or undesirable environmental impacts to the Construction Project Manager. The ECO has the authority to recommend the stopping of works or any portion of construction related activity to the Project Proponent if in his/her opinion:

- any activity is in contravention of the requirements of this EMPr;
- any activity is in contravention of relevant environmental legislation/permits/authorisations applicable to the site and/or activity/ies, or;
- the activity has caused or will imminently cause significant damage and/or harm to the environment.

If urgent action is required to prevent environmental damage as a result of contravention of the requirements of this EMPr, the ECO has the authority to issue a written instruction to the Contractor, or any person on site to stop works or any portion of construction related activity required to prevent such damage.

The ECO may recommend to the Project Proponent and Contractor that any employee(s) consistently not adhering to the requirements of this EMPr be removed from the site. Alternatively, the ECO may recommend that all work on site be suspended until the matter is remedied.

Should it be deemed necessary and if all attempts to remedy a critical situation have failed, the ECO may report the contravention of this EMPr to the Department of Environmental Affairs: Compliance.

## The Contractor (CO)

The Contractor will be appointed by the Project Proponent who will ensure that the Contractor is aware of his obligations in terms of this EMPr during the contract negotiation phase. The Contractor's obligations in terms of this EMPr are as follows:

- The Contractor shall take full responsibility for protecting the natural environment and eliminating or minimising the negative impacts of construction on the environment during construction. The Contractor shall prevent or limit the occurrence of accidents which may cause damage to the environment, prevent or limit the consequences of such accidents.
- The Contractor will assume full responsibility for the on-site actions of all of its sub-Contractors, employees, suppliers and agents.
- The Contractor will fully adhere to the conditions of this EMPr and ensure that all sub-Contractors, employees, suppliers and agents are fully aware of this EMPr, its requirements and the consequences of any breach of the requirements of this EMPr.
- The Contractor will complete a rapid daily environmental checklist provided to him by the ECO to monitor and aid in the effective implementation of the EMPr.
- The Contractor will report any deviation from the requirements of this EMPr and any pollution or environmental contaminant spill events to the Construction Project Manager and the ECO. An environmental incidence record will be completed in this event.
- The Contractor agrees to work stoppage and/or payment of penalties as required by this EMPr and directed by the Project Proponent.
- The Contractors agrees to bear full costs for any work stoppage resulting from contravention of the requirements of this EMPr and/or the full costs of remedying environmental damage resulting from their or their sub-contractors or employee's contravention of the requirements of this EMPr.
- The requirements of this EMPr apply to all areas under the Contractor's control, including but not limited to the working area, the construction camp and offices, all access/ haul routes.
- Ensure that all employees under his or her control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences and thereafter at such times as may be determined by the risk assessment.
- Prohibit any employee or person to enter any site unless he or she has undergone health and safety induction training pertaining to the hazards on this site.
- Hold toolbox talks on at least a weekly basis. A toolbox talk is a five- to ten-minute session with workers just prior to starting work for the day, which emphasises and reinforces a safety-conscious attitude. Toolbox talks also give workers and the supervisor a chance to talk about safety problems likely to be encountered, as well as potential solutions to those problems.
- Issue a "Stop Work" order when conditions arise that pose an imminent danger to personnel, environment or equipment.
- Should the Contractor not be on site on a full time basis, he/she must appoint a suitably qualified individual (Site Supervisor and/or Environmental Health and Safety Officer) to represent him on site and fulfil the above responsibilities in his absence.

## ENFORCEMENT DURING CONSTRUCTION

### Compliance

Environmental management is concerned not only with the final results of the Contractor's operations to carry out the works but also with the control of how those operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operations required to complete the works.

It is thus required that the Contractor shall comply with the environmental requirements on an ongoing basis. Moreover, the Contractor and his subcontractors shall not direct any person to undertake any activities which would place such a person in contravention of this specification.

### Non Compliance

Where the Contractor and/or Project Construction Manager are aware of acts of non-compliance, these must be reported to the ECO for further action (if any). Where the ECO identifies or is made aware of acts of non-compliance, all such allegations must be recorded in written format, together with the findings of the investigation on an incident form and must be communicated to the Construction Project Manager and the Contractor. These records must be kept on file.

All actions to remediate acts of non-compliance must be identified by the ECO in consultation with a suitable specialist (if required). Once the required actions have been identified, these must be communicated to the Contractor in order that he can undertake them. The instruction to remediate must come from the ECO.

If the Contractor is not able to remediate the problems, then a third party who is capable of carrying out the required actions may at the discretion of the ECO be brought in or contracted to do so. In the case of more serious transgressions, required actions shall be accompanied by a detailed statement of costs. The initial statement can be based on approximate costs, but the estimates must be replaced by actual costs once these are established.

The party responsible for the act of non-compliance shall be financially responsible for the remediation of any damage to the environment.

The Project Construction Manager, Contractor and ECO shall work together to ensure that the EMP is implemented as effectively as possible without the need to enforce fines and penalties as per the sections below. This will require a spirit of cooperation as well as timely communication on matters of concern. To this end it is suggested that at least monthly (or more often if preferred by the parties) site visits by the ECO shall also provide an opportunity for the parties to assess the implementation of the

EMPr up until that point, agree on areas requiring improvement if necessary, discuss the works contemplated for the following month, identifying possible risks and challenges and agreeing on how best to deal with these.

During the mobilisation phase, the parties should agree on suitable and effective communication protocols that should remain in effect for the duration of the works.

## **Cost of Non-Compliance**

Where significant environmental damage occurs as a result of the failure of the Contractor to comply with the requirements of this specification, the requisite remediation shall be effected to the satisfaction of the ECO and at the cost of the Contractor.

Compliance with this Specification will be assessed as part of the certification of each Payment Certificate. Payment for specific items related to environmental compliance will be withheld if it can be shown that the Contractor has failed to comply with his obligations for said items. Should the Contractor fail entirely to provide or fulfil for a period of time all or part of the continuing services, obligations and liabilities required of him in respect of this specification, the amount, or part of the amount for the item, which fairly reflects such failure, will be omitted and the contract price reduced accordingly.

## **Removal From Site and Suspension of Works**

The Construction Project Manager and/or ECO may instruct the Contractor to remove from site any person who in their opinion is guilty of misconduct, or is incompetent, negligent or constitutes an undesirable presence on site. The Contractor shall ensure that within 24 hours of such instruction, the employee has no further connection with the Contract. Labour contracts between the Contractor (including sub-contractors) and his employees must include this provision and conditions for such.

All equipment must be in good working order and accordingly the ECO may order that any equipment not complying with this specification be removed from site. Where the Construction Project Manager deems the Contractor to be in breach of any of the requirements of this specification, he may order the Contractor to suspend the progress of the works or any part thereof.

## **Fines**

The following fines and penalties are in place for transgressions listed below. They will be issued after due procedure has been followed and only in severe cases and after repeated non-compliance. The ECO shall be the judge as to what constitutes a transgression in terms of this document. After receiving three fines a disciplinary hearing should be conducted and removal from site should be considered. The graveness of the transgression is justified by each specific penalty.

Fines may be issued per incident at the suggestion and discretion of the ECO. Such fines will be issued in addition to any remedial costs incurred as a result of noncompliance with the EMPr. The Construction Project Manager will inform the Contractor of the contravention and the amount of the fine, and will deduct the amount from monies due under the Contract.

- Any person intruding into neighbouring properties. R 1,000.
- Any persons, vehicles, plant, or object related to the Contractors operations within the designated boundaries of a “no-go” area. R2,000
- Any vehicle guilty of reckless driving on and in the vicinity of the site, including excessive speeds. R500
- Any vehicle being driven and items of plant or materials being parked or stored outside the demarcated boundaries of the site. R1,000
- Persons repeatedly walking outside the demarcated boundaries of the site. R1,000
- Persistent and un-repaired spilling of hazardous materials and materials causing pollution. R3,000
- Persistent littering on site. R500
- Individuals repeatedly not making use of the designated toilet facilities. R200
- Disposal of waste other than agreed on in the waste management plan. R5,000
- Deliberate lighting of illegal fires on site. R2,000
- For each subsequent similar offence the fine may, at the discretion of the Construction Project Manager, be doubled in value to a maximum value of R10,000.

## Penalties

Where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the environmental specifications, he shall be liable to pay a penalty fine over and above any other contractual consequence.

The Contractor is deemed NOT to have complied with this Specification if:

- within the boundaries of the site, site extensions and haul/access roads there is evidence of contravention of the Specification;
- environmental damage due to negligence;
- Safety of Contractor personnel and public being compromised due to negligence;
- the Contractor fails to comply with corrective or other instructions issued by the ECO within a specific time;
- the Contractor fails to respond adequately to complaints from the public; and
- Payment of any fines in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

The ECO will be responsible for a report on the non-repairable damage and / or non-compliance with visual and other evidence as well as issuing the penalty to the contractor with the report attached. A copy must be handed to the parties to this EMP.

The following penalties are suggested for transgressions:

- Actions leading to erosion: A penalty equivalent in value to the cost of rehabilitation plus 20%.
- Oil spills: A penalty equivalent in value to the cost of clean-up operation plus R1,000.
- Damage to indigenous vegetation: A penalty equivalent in value to the cost of restoration plus R1,000.
- Significant damage to sensitive environments: A penalty equivalent in value to the cost of restoration operation plus 20%.
- Damage to natural fauna: The cost of replacing the animal (including capture and transport) as well as a penalty to a maximum of R1,000 for damages to any natural occurring animal.
- Accident due to safety negligence: A penalty to a maximum of R20,000 for injuries to personnel or public.

## DOCUMENTATION

### EMPr Checklist

A comprehensive EMPr Audit Checklist as well as a daily rapid checklist must be drawn up by the ECO upon appointment. The EMPr Audit Checklist must be completed by the ECO at each site visit and catalogued as the main record of implementation of and compliance with this EMPr. Hardcopy versions of all *ad hoc* written or photographic records of significant environmental incidents should be filed by date with completed EMPr Audit Checklists. Significant impacts must be recorded photographically with enough supporting information to locate the image on the site.

### Environmental Register

An environmental register must be kept on-site at all times as well as being freely accessible to all project team members. In the event of any environmental incidents, the Environmental Register must be completed by the most senior person on site. The register will provide a record of all actual environmental incidents that occur as a result of the on-site activity. This may include information related to such aspects as spillages, dust generation, complaints from neighbours and any other environmental incidents that may be noteworthy. It must also contain information relating to action taken/mitigation measures employed. The ECO must establish such a register including incident reporting forms.

### Contractual Obligations

It is understood that all contract documentation related to the construction, operation and decommissioning (if required) of the proposed development will include the conditions of this EMPr. It is important to note that the contractual obligations must include the recording of any complaints on the project in the environmental register. It is the responsibility of the ECO to keep an accurate audit trail showing compliance with the EMPr.

ISSUE	RESPONSIBILITY
<b>PLANNING &amp; PRE-CONSTRUCTION</b>	
<b>Environmental Awareness Training</b>	
<p>The Contractor shall ensure that all of his employees, and those of his Sub-Contractor's, attend Environmental Awareness Training. The Environmental Awareness Training shall be structured to ensure that attendees:</p> <ul style="list-style-type: none"> <li>• Acquire a basic understanding of the key environmental features within the working area and its immediate environs;</li> <li>• Become familiar with the environmental controls contained within this EMPr;</li> <li>• Include social and community aspects related to the project; and</li> <li>• Are made aware of any other environmental matters as deemed necessary by the ECO.</li> </ul>	CO; ECO
<p>This course should take place before the commencement of site establishment. Provision should also be made for refreshers courses to be undertaken during the course of the contract as and if required.</p>	CO; ECO
<p>The Contractor may choose to put up information posters for the information of his employees, depicting actions to be taken to ensure compliance with aspects of this EMP.</p>	CO; ECO
<b>Induction Training</b>	
<p>The purpose of induction training is to sensitise personnel, subcontractors and occasional visitors to all hazards anticipated on this project, as well as to inform them of both the environmental and social responsibilities and the required safety and mitigation measures. The Contractor must ensure that all personnel and subcontractors receive induction training prior to commencing work on site. No person will work on this project, or enter or be allowed to remain on the premises unless they have received and acknowledged in writing that they have received, understood and accept the conditions detailed in the induction programme.</p>	CO; ECO



A comprehensive list of all induction training given must be kept in the health and safety file and reported on to the ECO.	CO; ECO
<b>Sourcing Construction Materials</b>	
Only timber from FSC certified sources may be used for construction purposes. This should be CCA treated and creosote should not be used.	PCM; CO
Any stone or sand to be sourced from legal permitted quarries or sources.	PCM; CO
All building materials that are to be used must be environmentally friendly to the extent possible, inert and/or non-toxic with consideration given to the embedded energy factor.	PCM; CO
<b>Water and Drainage</b>	
Water savings devices can reduce tap and toilet water-use by between 20 and 60%. Suitable fittings should therefore be included in the design of infrastructure. Low flush or dual flush cisterns and aerated taps are therefore recommended. Where possible the re-use or recycling of water should be implemented.	PCM
Ensure adequate provision is made in the planning phase for storm water management.	PCM
<b>Visual and Aesthetic Considerations</b>	
The building is to be sited to be as visually unobtrusive as possible, taking advantage of the site's topography.	PCM
Colours and finishes to be carefully chosen to blend with the receiving environment to the greatest extent possible and non-reflective materials are to be used.	PCM
Provision should be made for the planting of trees to screen the development, indigenous trees only to be used.	
Any external lighting of the warehouse to be kept to the minimum necessary required for security purposes with the aim of reducing any light pollution to the greatest possible extent.	

## HEALTH & SAFETY - CONSTRUCTION

### Electrical safety

The following general procedures apply with regard to electrical safety, whether from mains or generator:

- All employees working with or in the vicinity of electrical equipment or electrical connections must receive appropriate training.
- Electrical dangers must be observed and improper electrical conditions must be notified to all project personnel.

CO

All personnel must be protected from the following electrical hazards:

- Exposed live electrical parts
- Ungrounded electrical equipment (double insulated tools are acceptable)
- Unprotected electrical cords
- Equipment not protected by ground fault circuit interrupter

CO

Daily tests and inspections must be made on the following equipment to ensure it is safe, free from defects, and functioning properly:

- Lighting and illumination equipment
- Power and Electrical Equipment
- Ground Fault Circuit Interrupters
- Portable electric tools and cords
- Extension cords

CO

Ensure that all project personnel are instructed to inspect power tools prior to each use to ensure tools are in proper operating

CO

condition.	
All equipment found to be defective must be removed immediately for repair or replacement.	CO
Equipment failure must be prevented by proper maintenance and inspection of all electrical equipment and other equipment/tools coming into contact with electric equipment/sources.	CO
<p>Treatment for electric shock involves the following:</p> <ul style="list-style-type: none"> <li>• Switch off the current. If this is not possible, free the victim by using an object that is non-conductive, long, clean and dry – e.g. a piece of wood or rubber, or a piece of cloth such as a jacket.</li> <li>• Stand on non-conductive material such as a dry piece of wood when carrying out this effort. Do not touch the victim before the current is turned off.</li> <li>• If the victim is not breathing, start artificial respiration, send for help and call a doctor. Continue artificial respiration until the doctor or ambulance arrives.</li> </ul>	CO
<b>Scaffolding and Working at Heights</b>	
All employees working at heights must receive appropriate training.	CO
Each employee on a working/walking surface two metres or more above a lower level must be protected from falling by a guardrail system, a safety net system or personal fall arrest system. Where a guardrail system is employed, and a controlled access zone has been established for leading edge work, the control line may be used in lieu of a guardrail system along the edge that parallels the edge.	CO
Guardrails must be constructed at all floors or roof openings if these openings cannot be covered well, and rails must be constructed at all elevator shafts or stairwells.	CO

<ul style="list-style-type: none"> <li>• The following procedures apply with regard to ladders: <ul style="list-style-type: none"> <li>• All personnel must be instructed on the proper use of ladders, slope of ladders, height above elevation levels and conditions of ladders. Compliance must be carefully observed;</li> <li>• Ladders must be properly inspected to make sure that broken rungs or missing steps and improperly secured ladder are not encountered;</li> <li>• Improper ladders used (e.g. using metal ladders for electrical work) and poorly constructed self-made ladders is not permitted;</li> <li>• If ladders are defective in any way they must be discarded and removed from the site.</li> <li>• Ladders must be tied off to prevent displacement.</li> <li>• Ladders must extend 50cm above the landing area.</li> </ul> </li> </ul>	CO
<ul style="list-style-type: none"> <li>• With regard to scaffolding, the following procedures must be followed: <ul style="list-style-type: none"> <li>• Personnel must be properly instructed on the use of scaffolds and guardrails;</li> <li>• Scaffolds must be properly erected and guarded; and they must be fully planked, equipped with guardrails, and set on sound rigid footing;</li> <li>• All scaffolds must be designed by competent and qualified person, and constructed and loaded in accordance with that design;</li> <li>• Each employee who works on the scaffold or is involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold must be trained by the Site Supervisor to recognize the hazards associated with the type of scaffold in use and to understand the procedures to control or minimise those hazards.</li> </ul> </li> </ul>	CO

<b>Noise and Vibration</b>	
<p>Excessive exposure to loud noise can cause permanent damage to one's hearing. Noise at work can cause stress, making it difficult to sleep. Noise that is continuous at a level of 85-90 decibels (dB(A)) or more is injurious to hearing, but such noise levels are not anticipated in this regard due to the nature of the development. However, there are several steps that can be taken on site to reduce noise:</p> <ul style="list-style-type: none"> <li>• Check that exhaust outlets are fitted with silencers or mufflers, and do not keep machinery running unnecessarily.</li> <li>• Keep compressor motor covers closed when they are running.</li> <li>• Check that machinery panels are secured and do not rattle.</li> <li>• Appropriate earmuffs or ear plugs must be worn by persons work with or near a noisy machine. These must fit properly and be comfortable.</li> </ul>	CO
<b>Protective Clothing and Equipment</b>	
The Contractor must supply the necessary Personnel Protective Equipment (PPE) free of charge, maintain it in an effective working order and in a clean condition, and ensure that it is available in sufficient quantities as required.	CO
Any employee who is required to use personal protective equipment or clothing must be thoroughly instructed in its proper use, maintenance and limitations.	CO
Employees must sign acknowledgement of receipt of the items that they will use, also confirming by the signature that they will use them as prescribed and have received the necessary training in the use and care of the items.	CO
<b>Hazardous Materials</b>	
The following are examples of materials that can cause severe health hazards over long-term exposure. The stipulations regarding hazardous chemicals outlined above also apply to these materials.	CO

<p>Cement mixes are a well-known cause of skin disease. The following precautions should be taken:</p> <ul style="list-style-type: none"> <li>• Avoid breathing in cement dust, as well as dust created by the surface treatment of hardened concrete which may contain high silica content, by wearing suitable respiratory protective equipment.</li> <li>• Protect the skin from contact by wearing long-sleeved clothing and full-length trousers, with rubber boots and gloves when required.</li> <li>• Protect the eyes; if any cement gets into the eyes, rinse them immediately with plenty of warm water.</li> <li>• Immediately wash off any dust or freshly mixed cement that gets on to the skin.</li> <li>• Clean off clothing and boots after work.</li> </ul>	CO
<p>Inorganic lead is found in many construction products, e.g. electricity cables, pipes, gutters and old lead sheet roofs. Organic lead is added to motor fuels, and storage tanks will be heavily contaminated. Excessive lead absorption causes constipation, abdominal pain, anaemia, weak muscles and kidney damage. It can also affect the brain, causing impaired intellect, strange behaviour, fits and coma. In the absence of national standards for lead, the World Health Organisations standards can be applied. Workers who work with lead in any form must take the following precautions:</p> <ul style="list-style-type: none"> <li>• Wash hands regularly, and always before eating; there is a higher risk if one smokes with lead on one's hands.</li> <li>• Use the protective clothing and respiratory protective equipment which should be provided whenever lead levels exceed control limits as set in the Occupational Health and Safety Act.</li> <li>• Wear work clothing on the job and store "street" clothing where it cannot be contaminated by work clothing.</li> </ul>	CO
<b>Tool Use</b>	

<p>Examples of hand tools include shovels, axes, crowbars, chisels, screwdrivers, hammers and wrenches. The following precautions should be taken when working with hand tools:</p> <ul style="list-style-type: none"> <li>• Select the correct weight, size and tool for the job.</li> <li>• Tools should be kept free of grease and dirt, and moving and adjustable parts should be well oiled.</li> <li>• Cutting edges should be kept sharp for accurate working and to avoid the need for unnecessary pressure.</li> <li>• For work on or near electrical apparatus, only properly insulated tools should be used.</li> <li>• Tools should be properly stored in boxes, racks, holders or pocket belts and should not be left so that they can fall, roll or be tripped over; cutting edges should be sheathed.</li> </ul>	CO
<p>When using power-driven construction tools and machinery, regular checks must be undertaken to ensure that:</p> <ul style="list-style-type: none"> <li>• All protective devices and safety measures supplied with the machine are in position, adjusted and working.</li> <li>• The machine appears to be safe to use even for an inattentive worker.</li> <li>• Safety devices are strong enough to withstand wear from ordinary use.</li> <li>• Safety devices do not prevent efficient use of the machine</li> </ul>	CO

<p>The following precautions must be followed during electric arc welding:</p> <ul style="list-style-type: none"> <li>• The welder and anyone assisting should wear suitable protective goggles or use a face mask or shield to protect the eyes and face from invisible ultraviolet and infrared rays given off by the welding arc.</li> <li>• The welder should wear protective gloves long enough to protect wrists and forearms against heat, sparks, molten metal and radiation. Leather is a good insulator.</li> <li>• The work area should be screened off with sturdy opaque or translucent materials so that other workers cannot see the arc.</li> <li>• The work piece should be well earthed, and all equipment should be earthed and insulated.</li> <li>• Precautions should be taken against starting fires from sparks from the work area.</li> <li>• The following precautions must be followed during gas welding:</li> <li>• The cylinders should be stored separately since any mixture from gas leakages could be highly explosive. They should be kept away from any source of heat and shielded from direct sunlight.</li> <li>• Flashback arresters should be fitted to the cylinder regulators and non-return valves fitted in the hose connectors at the torch end.</li> </ul>	CO
<b>Drug- and Alcohol-Free Workplace</b>	
<p>The unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace. A single violation of such prohibition must result in the offending individual being removed from the job-site and/or reporting to the civil authorities for criminal prosecution.</p>	CO
<p>Consumption of alcohol at the job-site, or reporting for work while under the influence of alcohol, is likewise an offence. A single violation shall result in the offending individual being removed from the job-site. All employees must abide by the rules of this programme.</p>	CO
<p>NB. No personal firearms shall be permitted on Site.</p>	CO



## CONSTRUCTION

### Protection of Flora and Fauna

The Contractor shall protect fauna living within or in proximity to the site and shall ensure that trapping, poisoning and/ or shooting of animals is strictly prohibited. Should this specification be contravened, stipulated fines will be applied and offenders will be removed from site.

CO

No domestic pets or livestock are permitted on site.

CO

The Contractor shall ensure that the working area is kept clean, tidy and free of rubbish that would attract any animal pest species.

CO

The Contractor's employees shall be prohibited from collecting firewood from the surrounding areas, and no fires will be allowed on site.

CO

### Aliens

Special care must be taken to prevent bringing in materials contaminated with seed of Invasive Alien Plants (IAPs/weeds) and construction vehicles should be thoroughly washed down before being loaded and/or brought on site.

CO

Contractors shall not import construction materials such as sand, gravel or fill contaminated with seed of Invasive Alien Plants, or quarried from areas surrounded by Invasive Alien plant species

CO

### Heritage

Should any new archaeological artefacts or evidence be discovered at any stage during construction or operation then the ECO, relevant authorities and experts must be alerted immediately and all necessary measures must be taken not to damage these, including halting construction.

CO

### Prevention and Control of Fires

The Contractor shall take adequate precautions to ensure that the fire hazard on and near the site is reduced to a minimum. No fires are allowed on site. The Contractor shall ensure that there is basic fire-fighting equipment available on Site at all times, and any fires that occur shall be reported to the ECO immediately. Construction workers must be trained to use the fire fighting equipment.	CO
Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include any workshop and fuel storage areas, any areas where the vegetation or other material is such as to make likely the rapid spread of an initial flame and any other areas not designated as smoking areas. The designated eating area shall include provision for a smoking area.	CO
<b>Access, Working Hours and Working Areas</b>	
Access to the site should be in accordance with Sakata Seeds rules and requirements.	CO
Construction activities may only take place between 07h00 and 17h00.	CO
All Contractors, subcontractors and staff shall be identified by clothing with company logos and be in possession of valid SA identity documents.	CO
Large construction and delivery vehicles may not turn onto or off of the R512 from and to the site before 09h00 or after 16h00.	CO
Construction staff must be accommodated off site.	CO
Access routes must be demarcated by danger tape on steel posts or temporary fencing.	CO
All vehicles and access to the site must remain within demarcated access routes and working areas on site.	CO
No new roads or tracks may be created except where such routes are specifically noted in this EMP.	CO
The Contractor shall ensure that access to the site and associated infrastructure and equipment is off-limits to the public at all times during construction. It is the responsibility of the Contractor to control access to the site by providing security staff to man all entrances. Any person without an access card must be signed in. All employees will be issued with suitable identification cards in order to access the Site. All persons accessing the site must undergo environmental, health and safety induction before	CO

they are allowed on site.	
<b>Restriction of Working Areas</b>	
Construction activities shall be strictly confined to the demarcated working areas to prevent any disturbance to or contamination of the surrounds by construction activities. The working areas and 'no-go' areas must be demarcated by danger tape and/or fencing on site.	CO
Working areas are the only areas that may be used by the Contractor who shall ensure that all plant/machinery, vehicles, staff, materials and waste remain within the boundaries of the working area and designated access roads or tracks.	CO
Additional areas shall only be made available by amendment of this EMPr by the Construction Project Manager and/or ECO if required.	CO; PM; ECO
<b>Demarcation of Working Areas</b>	
The ECO must determine and delineate construction, storage and "no-go" areas on site. The areas outside of the defined working area as well as any other areas identified by the ECO or in this EMPr shall be regarded as "no go" areas. These areas must be shown on a map appended to this EMPr and duplicated and displayed in the Site Office.	ECO; CO
The boundaries of the construction servitude, as well as the storage, stockpiling, laydown and assembly areas shall be demarcated. Construction and storage areas must also be demarcated on site using steel posts and danger tape durable enough to last for the entire construction project, or temporary fencing.	ECO; CO
All unattended open excavations shall be adequately fenced or demarcated.	CO
The Construction Contractor shall ensure that the construction team, machinery and equipment stay within the working areas and do not encroach on "no-go" areas.	CO
All staff, vehicles and construction materials are restricted to the designated working area.	CO
Contractors may not store any construction material on the sides of the access road, or among the natural vegetation or next to	CO

the existing access road.	
Once construction within an area has been completed and the area has been rehabilitated, it shall be considered a “no go” area.	CO
<b>Stockpiling and Stockpile Areas</b>	
Plant and materials shall be stored within the demarcated construction camp or batching areas. Where this is not feasible, the ECO will identify additional sites for stockpiling within the working area.	CO; ECO
Soil, sand and gravel stockpiles shall be convex in shape, shall be no higher than 2m and shall be located so as to cause minimal disturbance. Stockpiles shall be so placed to occupy minimum width compatible with the natural angle of repose of material, and measures shall be taken to prevent the material from being spread over too wide a surface.	CO
The Contractor shall ensure that no stockpiles cause the damming of water or run off, or is itself washed away.	CO
The Contractor shall ensure that material is not stockpiled within 75m of any water bodies. Stockpiles shall not obstruct any stormwater or drainage paths.	CO
<b>Storage of Construction Materials</b>	
New construction material will be stored in demarcated areas on site.	CO
The Contractor must ensure that all staff, contractors and subcontractors are aware of and keep material within these designated storage areas.	CO
<p>The Contractor must provide a method statement of the construction activities to the ECO indicating:</p> <ul style="list-style-type: none"> <li>the type and quantity of material to be stored;</li> <li>whether any oil contaminated/containing equipment will be stored; and</li> <li>how (including what type of vehicles will be required) it will be deliver the material on site at the necessary storage area.</li> <li>Whether there is any risk of spill or runoff of any building materials or chemicals and how this is to be mitigated.</li> </ul>	CO

## Use of Cement

The Contractor is advised that cement and concrete are highly hazardous to the natural environment because of the high pH levels of the material, and the chemicals contained therein. The following shall apply:

- Prevent cement pollution - ensure that soil and water is not contaminated with cement
- Concrete and cement must only be mixed on existing sealed and bunded areas, though concrete will generally be dispensed from a mixer truck directly to where it needs to be poured. Concrete may not be mixed or stored directly on the ground under any circumstances.
- The visible remains of the batch and concrete, either solid, or from washings, shall be physically removed immediately and disposed of as hazardous waste at a registered landfill site that accepts hazardous waste.
- Washing of equipment shall be done in a container to prevent any runoff of contaminated washing water. Extreme care must be taken to limit the amount of water contaminated by washing equipment to the minimum required. Water from concrete washing must either be re-used in concrete mixes or must be stored in drums, then removed from the site and disposed of at a licensed municipal dump site.
- No equipment shall be washed where it may cause environmental contamination.

CO

Contaminated Water Management	
<p>Pollution could result from the release, accidental or otherwise, of contaminated runoff from construction camps, discharge of contaminated water, chemicals, oils, fuels, sewage, runoff from stockpiles, solid waste, litter, etc. Accordingly, the Contractor shall establish a contaminated water management system to address the prevention of pollution as well as suitable methods for the disposal of contaminated water. In this regard:</p> <ul style="list-style-type: none"> <li>• Appropriate pollution control facilities necessary to prevent discharge of water containing polluting matter or visible suspended materials into the ground or into watercourses or water bodies shall be designed and implemented;</li> <li>• Runoff from any cement or materials mixing areas shall be strictly controlled, and contaminated water shall be collected, stored and either treated or disposed of off-site, at a location approved by the ECO.</li> </ul>	CO

## Oil Management

An important potential environmental impact is oil spills from any oil filled equipment and machinery that may occur during transportation or storage of decommissioned and new construction material/ equipment. The following conditions shall apply:

- Vehicles must be checked for oil leaks prior to going on site.
- Care should be taken to prevent any potential oil spillage during upgrading activities.
- All vehicles and equipment shall be kept in good working order. Leaking equipment shall be repaired immediately or removed from Site. Where practical, all maintenance of equipment and vehicles on Site shall be performed in a workshop. The workshop shall have a smooth impermeable (concrete) floor. The floor shall be bunded and sloped towards an oil separator to contain any spillages.
- The Contractor shall ensure that in his workshop and at other equipment maintenance facilities, including those areas where the Contractor carries out emergency equipment maintenance, there is no contamination of the soil or vegetation.
- When carrying out emergency equipment servicing outside a workshop area, portable drip trays shall be used to collect the waste oil and other lubricants. Drip trays shall also be provided in construction areas for stationary equipment and for "parked" equipment. Drip trays shall be inspected and emptied daily. Drip trays shall be closely monitored during rain events to ensure that they do not overflow. Where practical, the Contractor shall ensure that equipment is covered so that rainwater is excluded from the drip trays. Oil from the drip trays shall be stored in externally clean drums in a bunded area as required for fuel storage. These shall be removed on a regular basis to an oil-recycling centre.
- Sufficient measures should be put in place to ensure that any potential oil spills are mitigated.
- The oil spill kit should be available on site at all times during the construction activities;
- Oil containment facilities should be provided for any oil filled equipment onsite;
- All oil spills must be reported to the ECO within 24 hours via an incident report.
- In the event of oil spill please refer to the Standard for Oil spill Clean-up and Rehabilitation.

CO

<b>Waste Management</b>	
Waste refers to all solid waste, including domestic waste, hazardous waste and construction debris.	CO
No waste materials or liquids, including contaminated waste water may be disposed of on site, neither in the designated working area/s, nor any no-go areas.	CO
Secure waste bins may be placed around the site for use during the working day. These should be emptied daily into the central waste storage skip.	CO
Waste may be temporarily stored on site in a central waste area that is weatherproof, and which the ECO has approved. Any exceptions shall be negotiated with the ECO and kept on file in writing.	CO; ECO
General waste must be disposed of at a registered landfill site.	CO
All hazardous waste must be disposed of at a registered hazardous waste disposal site and certificates of safe disposal must be obtained.	CO
No waste is to be buried or burnt or otherwise disposed of anywhere but in a registered waste disposal site.	CO
The Contractor shall provide temporary ablution facilities (i.e. chemical toilets) at a location indicated by the ECO	CO
Defecating or urinating anywhere other than in the provided toilet facilities is strictly prohibited.	CO
<b>Emergency Procedures</b>	
Telephone numbers of emergency services, including the local fire fighting service, shall be posted conspicuously in the Contractor's office.	CO
The Contractor shall develop emergency procedures that will enable rapid and effective response to all types of environmental emergencies. The procedures to be followed in case of an emergency must be communicated to all construction workers to	CO



ensure that all staff know what to do in case of an emergency.	
The Contractor shall advise the PM as one starts and shall not wait until he can no longer control it. The Contractor shall ensure that his employees are aware of the procedure to be followed in the event of a fire.	CO
The Contractor shall ensure that his employees are aware of the emergency procedure(s) to be followed for dealing with spills and leaks, which shall include notifying the PM and ECO. The Contractor shall ensure that the necessary materials and equipment for dealing with spills and leaks is available on site at all times. Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the ECO.	CO; ECO
In the event of a spill, the source of the spillage shall be isolated, and the spillage contained. The area shall be cordoned off and secured. The Contractor shall maintain spill kits on site at all times and shall ensure that there is always an adequate supply of absorbent material available in the spill kits to absorb/ breakdown. The quantity of such materials shall be able to handle at least 200ℓ of spillage.	CO
Should this specification be contravened then stipulated fines will be applied.	CO
<b>Plant and Materials Handling, Use and Storage</b>	
The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with this EMPr.	CO
The Contractor shall ensure that these delivery drivers stand-by during off-loading, and that this is done by the Contractor's staff.	CO
Plant and materials shall be appropriately secured to ensure safe passage between destinations. Loads that pose a risk of dust generation or spillage during transit, including but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to secure transported plant and materials properly.	CO
All manufactured and/ or imported plant and material shall be stored within the Contractor's camp at designated areas.	CO
<b>Hazardous Substances</b>	

<p>The storage and disposal of hazardous chemical substances and their waste must comply with the specifications of the Occupational Health and Safety Act. All hydrocarbons, including petrol, diesel, engine oil, hydraulic oil, shutter oil and curing compound, pose a risk of causing water and soil contamination and accordingly shall be regarded as potential hazardous substances from an environmental perspective. Specific requirements in this regard are outlined below:</p> <ul style="list-style-type: none"> <li>• Fuel may be stored on site in an area approved by the ECO. The fuel storage area shall be located in a portion of the construction camp where it is unlikely to pose a significant risk in terms of water pollution or traffic safety. The Contractor shall ensure that diesel is stored in appropriate storage tanks or in bowsters. The tanks/ bowsters shall be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining shall extend to the crest of the bund and the volume inside the bund shall be 130% of the total capacity of all the storage tanks/ bowsters (110% statutory requirement plus an allowance for rainfall). The floor of the bund shall be sloped, draining to an oil separator.</li> <li>• Provision shall be made for refuelling at the fuel storage area, ensuring that the areas where vehicles park while being refuelled and all space between the storage tanks and the vehicles are covered with an impermeable layer that protects the soil and does not allow any fuel spill to run off onto the ground.</li> <li>• If fuel is dispensed from 200 ℓ drums, only empty externally clean drums may be stored on the bare ground. All empty externally dirty drums shall be stored on an area where the ground has been protected. The proper dispensing equipment shall be used, and the drum shall not be tipped in order to dispense fuel. The dispensing mechanism of the fuel/ oil storage drum shall be stored in a waterproof container when not in use.</li> <li>• The Contractor shall prevent unauthorised access into the fuel storage area. No smoking shall be allowed within the vicinity of the fuel storage area. The Contractor shall ensure that there is adequate fire-fighting equipment at the fuel stores.</li> <li>• All refuelling must take place at the established refuelling facility attached to the fuel storage area. Provision shall be made for refuelling at the fuel storage area, ensuring that the areas where vehicles park while being refuelled and all space between the storage tanks and the vehicles are covered with an impermeable layer that protects the soil and does not allow any fuel spill to run off onto the ground. The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb, breakdown and encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle at least 200ℓ of hydrocarbon liquid spill.</li> <li>• The Contractor shall ensure that engine oil, hydraulic oil, shutter oil and curing compound containers that are in use are stored within a bunded area consisting of a smooth impermeable base (250µm plastic) with an earth bund. The fuel bund may be used for this purpose as long as the capacity of the bund remains 130% of all of the fuel storage tanks/ bowsters it</li> </ul>	CO
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<p>contains. The unopened oil and curing compound containers shall be inspected regularly to ensure that no leakage occurs. When oil/ curing compound is dispensed, the proper dispensing equipment shall be used, and the storage container shall not be tipped in order to dispense the oil/ curing compound. The dispensing mechanism of the oil/ curing compound storage container shall be stored in a waterproof container when not in use.</p> <ul style="list-style-type: none"> <li>Oil/ curing compound shall be used in moderation and shall be applied under controlled conditions using appropriate equipment. The Contractor shall take all reasonable precautions to prevent accidental and incidental spillage during the application of these compounds. In the event of an oil/ curing compound spill, the source of the spillage shall be isolated, and the spillage contained. The Contractor shall clean up the spill, either by removing the contaminated soil or by the application of absorbent material in the event of a larger spill. Treatment and remediation of the spill area.</li> </ul>	
<h3>Soil Conservation</h3>	
<p>It is important that adequate measures are taken to prevent water runoff from concentrating in any one area, to prevent the compaction of soil through excessive heavy vehicle passage over it, and to prevent the destruction of protective vegetation.</p>	CO
<p>Where water flows around an obstruction, steps must be taken to break the flow of water and spread it out into the receiving area so that erosion channels do not form.</p>	CO
<p>It is recommended that all soil excavated during trenching be stockpiled in layers and protected by berms. It is also imperative that the topsoil layer be retained and re-used.</p>	CO
<p>Trench areas must be raised to accommodate the bulking factor and subsidence.</p>	CO
<p>Construction during the rainy season should be carefully controlled or avoided if possible.</p>	CO
<h3>Social Considerations</h3>	
<p>Contractor to ensure training and ongoing monitoring of issues relating to basic construction health and safety, environmental hygiene, legal health and safety requirements, material and chemical hazards and safety, personnel protective clothing and equipment, vehicles and mobile equipment, electrical safety, excavations and working at height, drug and alcohol free workplace, HIV/Aids awareness and prevention.</p>	CO

<b>Safety and First Aid</b>	
A full First Aid Kit must be available on site at all times.	CO
Procedures for dealing with any accidents must be according to all relevant Occupational Health and Safety Regulations.	CO
<b>Aesthetic and Visual</b>	
The site should be managed so as to minimise any visual disturbance it might cause.	CO
<b>POST CONSTRUCTION</b>	
<b>Final Site Clearance</b>	
The site is to be completely cleared of all construction materials and rubble to the satisfaction of the Project Construction Manager and ECO, who are all to sign off on it.	CO;ECO
<b>Site rehabilitation</b>	
Site rehabilitation must be completed immediately after construction activities or by an alternative date agreed to by the ECO.	CO; ECO
All construction equipment, materials and wastes must be removed from the site upon completion.	CO
<b>OPERATIONAL PHASE</b>	
<b>Maintenance, Monitoring and Record Keeping</b>	
The Project Proponent should establish an effective monitoring and record keeping system for the duration of the operational phase. The purpose of this is to ensure the effective management and maintenance of the camp structures and infrastructure, and to ensure the effective implementation of this Operational EMP as required by the law in order to ensure the ongoing sustainability of operations.	PP

No matter how well infrastructure is designed or how good the equipment is, it will fail if it is not properly operated and maintained. The secret of successful maintenance lies in two main points: planned preventative maintenance and keeping good records. Preventive maintenance involves systematic and periodic maintenance procedures for all major components in the system. It should minimise breakdowns, and will increase efficiency and prolong the life of the system. It is a continuous planned procedure, which initiates preventative action before serious problems or breakdowns occur.	PP
For each element of the infrastructure or works there are certain regular checks and services which should be performed and the supplier or manufacturer's manuals should always be consulted for maintenance guidelines. Accurate and full records of all aspects of the construction, operation and maintenance of all works are vitally important.	PP
There should be a full set of the final, "as built" drawings on the structures and infrastructure showing the layout, size, shape, and details of all components of, particularly for buried items such as pipelines. When problems occur or modifications are planned, the drawings will be a most valuable source of information. They should be kept up to date by marking up all changes, i.e. omissions and additions to the works components.	PP
Maintenance records are of vital importance and details of any maintenance carried out in any component of the works should be entered in the maintenance log sheets.	PP
A large, page-a-day diary can serve as a daily log and any information which does not logically fit in some other record must be entered in the diary. Typical examples might include peculiar circumstances and problems encountered.	PP
Daily, weekly and monthly checklists should be designed to assist in the effective implementation of this EMP and other routine maintenance that is required. Once the necessary systems are established and their implementation becomes a habit, time and costs will be saved in the long run and potential problems will be minimised and avoided.	PP
<b>Access, Working Hours and Working Areas</b>	
Access to the site should be in accordance with Sakata Seeds rules and requirements.	CO
Large transport and delivery vehicles may not turn onto or off of the R512 from and to the site before 09h00 or after 16h00.	CO

Sewage Management	
The sewage system must be properly maintained at all times with regular checks for blockages or leaks of any sort and to ensure that outflow meets DWA General Standards for Discharge at all times.	PP

<b>Waste Management</b>	
All waste is to be separated at source.	PP
All waste containers will be housed in the service areas and will be fenced, covered and secured. The service area will have a concrete floor to ensure that it can be suitably maintained (hosed down and drained) and that no ground seepage will occur.	PP
Glass will be stored on site in suitable containers until there is sufficient to be transported for recycling.	PP
Rinsed tins, cans and foil will be stored on site in suitable containers until there is sufficient to be transported for recycling.	PP
Plastics will be stored on site in suitable containers until there is sufficient to be transported for recycling.	PP
Paper and cardboard may be stored on site in suitable containers until there is sufficient to be transported for recycling.	PP
Waste food will be separated and stored in suitable containers for collection (for example, by a local pig farmer) on a regular basis. Alternately, it may be disposed of at the permitted waste site.	PP
Any waste that cannot be recycled or sold must be disposed of at a permitted waste site.	PP
A register must be kept of any hazardous waste, including diesel, used oil, and this should be stored in a suitable, secured and bunded area before being sent for recycling or disposal at a registered hazardous waste disposal facility..	PP
All waste will be transported to the registered landfill site in Tshikudu on a regular basis (at least weekly).	PP
<b>Water Use Management</b>	
Water conservation, recycling and storm water management will have been incorporated during the design phase. The efficacy of these measures should be assessed, and where necessary, improvements should be made.	PP
The borehole pumps to be used for water abstraction should be enclosed by low bund walls. These bund walls are required to	PP

intercept fuel and oil leakage and prevent spillage and contamination of soil and surface and ground waters.	
Water storage tanks must be appropriately located and screened to reduce visual impact if necessary. A solar powered electrified strand may be required to ensure no damage to animals.	PP
High quality, robust plumbing systems should be installed in all areas, including staff areas.	PP
Water abstraction and use should be carefully monitored, recorded and evaluated with a view to ensuring the sustainability of the supply and ensuring that there are no adverse ecological impacts. A geohydrologist may need to be consulted from time to time in order to ensure the sustainable use and effective management of the groundwater in the area.	PP
Water should be tested regularly to ensure that it meets SANS 241:2006 Edition 6.1 South African National Standards for drinking water and that no unanticipated contamination of the water supply is taking place for any reason or that water quality is deteriorating due to over-consumption.	PP
Water abstraction and use should be carefully monitored with water meters, recorded and evaluated with a view to ensuring the sustainability of the supply and ensuring that there are no adverse ecological impacts.	PP
<b>Energy Management</b>	
The use of renewable energy sources is preferable to the use of the diesel generator.	PP
Energy conservation measures to be practised wherever possible.	PP
<b>Light Pollution</b>	
Lighting needs to be carefully positioned, shielded and subdued with limited exterior lighting.	PP



<b>Visual Impact Management</b>	
All buildings must be maintained in good repair.	PP
Indigenous trees to be maintained as a visual screen around the warehouse.	
They should remain 'finished' in unobtrusive colours and surfaces that blend into the environment. Care must be taken to ensure that roofs are non-reflective and so far as possible glass is shielded or non-reflective.	PP
<b>Maintenance and Cleaning Materials</b>	
Only environmentally friendly wood oil is to be used for treating timber.	PP
Non-toxic environmentally friendly products to be used for maintenance work around the lodge.	PP
As far as possible, organic biodegradable products are to be used for cleaning purposes and for supplying guests with (shampoo, soap, etc).	PP
<b>Emergency Management</b>	
The development is not considered to constitute an undue fire hazard. All normal safety precautions will be taken during the operational phase and all SABS regulations will be followed. Fire fighting equipment will be available and easily accessible as required and will be satisfactorily maintained, as per SABS regulations with a connection to the water reservoir.	PP

## Hazardous substances

The storage and disposal of hazardous chemical substances and their waste must comply with the specifications of the Occupational Health and Safety Act. All hydrocarbons, including petrol, diesel, engine oil, hydraulic oil, shutter oil and curing compound, pose a risk of causing water and soil contamination and accordingly shall be regarded as potential hazardous substances from an environmental perspective. Specific requirements in this regard are outlined below:

- Fuel may be stored on site in appropriate storage tanks or in bowzers. The tanks/ bowzers shall be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining shall extend to the crest of the bund and the volume inside the bund shall be 130% of the total capacity of all the storage tanks/ bowzers (110% statutory requirement plus an allowance for rainfall). The floor of the bund shall be sloped, draining to an oil separator.
- Provision shall be made for refuelling at the fuel storage area, ensuring that the areas where vehicles park while being refuelled and all space between the storage tanks and the vehicles are covered with an impermeable layer that protects the soil and does not allow any fuel spill to run off onto the ground.
- If oil is dispensed from 200 l drums, only empty externally clean drums may be stored on the bare ground. All empty externally dirty drums shall be stored on an area where the ground has been protected. The proper dispensing equipment shall be used, and the drum shall not be tipped in order to dispense fuel. The dispensing mechanism of the oil storage drum shall be stored in a waterproof container when not in use.
- No smoking shall be allowed within the vicinity of the fuel storage area and the Operator shall ensure that there is adequate fire-fighting equipment at the fuel stores.
- All refuelling must take place at the established refuelling facility attached to the fuel storage area. Provision shall be made for refuelling at the fuel storage area, ensuring that the areas where vehicles park while being refuelled and all space between the storage tanks and the vehicles are covered with an impermeable layer that protects the soil and does not allow any fuel spill to run off onto the ground. The Operator shall ensure that there is always a supply of absorbent material readily available to absorb, breakdown and encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle at least 200l of hydrocarbon liquid spill.
- Should their acquisition and use be required, hazardous substances (including fuel stored in drums, oils, paints, pesticides, herbicides, batteries) should be stored on a concrete base and shall be covered by a roof to prevent exposure to heat and/or

PP

<p>direct sunlight and rain. A register should be kept of all stocks moving into and out of the store. The concrete base used to store hazardous substances should be surrounded by a bund wall that can contain 130% of the contents of the substances stored on that base.</p> <ul style="list-style-type: none"> <li>• Areas designated for storage of hazardous chemicals shall be isolated from other activities and should be clearly marked with appropriate symbolic safety signs.</li> <li>• The hazardous substances facility shall be fenced to prevent access by the public, non-designated staff and wildlife.</li> </ul>	
<b>Noise Pollution</b>	
Visitors will be asked to respect the nature of the site and the needs of other visitors through maintaining the peace at all times and not engaging in rowdy behavior.	PP
<b>DECOMMISSIONING PHASE</b>	
<b>General</b>	
All relevant pre-construction, construction and post-construction guidelines will apply to the decommissioning and closure phase.	PP

## ANNEXURE 1: NATIONAL ENVIRONMENTAL MANAGEMENT ACT PRINCIPLES

The NEMA Principles states that sustainable development requires the consideration of all relevant factors including the following:

- *Disturbance of ecosystems and loss of biological diversity must be prevented, or, where they cannot be altogether avoided, must be minimised and remedied;*
- *Pollution and degradation of the environment must be avoided, or, where they cannot be altogether avoided, must be minimised and remedied;*
- *Disturbance of landscapes and sites that constitute the nation's cultural heritage must be avoided, or where it cannot be altogether avoided, must be minimised and remedied;*
- *Waste must be avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise dispose of in a responsible manner;*
- *Use and exploitation of non-renewable natural resources must be responsible and equitable, and take into account the consequences of the depletion of the resource;*
- *Development, use and exploitation of renewable resources and the ecosystems of which they are part must not exceed the level beyond which their integrity is jeopardised;*
- *A risk-averse and cautious approach must be applied, that takes into account the limits of current knowledge about the consequences of decisions and actions; and*
- *Negative impacts on the environment and on people's environmental rights must be anticipated and prevented, and where they cannot be altogether prevented, must be minimised and remedied.*