



Anglo Platinum

Draft EMP

Locality: Mogalakwena Mine

Departmental Ref No: 12/1/9/2-W21

SHANGONI
Management Services (Pty) Ltd



DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

Anglo American

EMP

Locality: Mogalakwena Mine

Departmental Ref No: 12/1/9/2-W21

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PROJECT DETAILS

Limpopo Department of Economic Development, Environment
and Tourism (LEDET)

Reference No.: 12/1/9/2-W21

Project Title: Proposed Fuel Depot for Mogalakwena Platinum Mine

Project Number: ANG-MOG-16-09-11

Compiled by: Ms. Lizette Crous

Date: 20 May 2013

Location: Mogalakwena Mine near Mokopane

Technical Reviewer: Mr. Lourens de Villiers



Signature



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REFERENCES

Indiana Small Business Guide to Environmental, Safety and Health Regulations. Chapter 4. Storage Tank Regulations.

SANS 10089-1, 2008. The petroleum industry Part 1: Storage and distribution of petroleum products in above-ground bulk installations.



1. Introduction

Mogalakwena Platinum Mine is part of the Anglo American Group. The mine is located approximately 30km north-west of the town of Mokopane (formerly Potgietersrus). The mining right covers a total area of 137km².

The mine's current infrastructure consists of four open pits namely:

- Sandsloot;
- Zwartfontein (pit near which the project site is located);
- Mogalakwena Central; and
- Mogalakwena North.

The mining method is opencast mining with a current depth that varies between 90 and 240 metres. The life of mine extends beyond the year 2060 and the current LoM plan consist of an ore reserve of approximately 67.74 E million ounces as well as mineral resources of 195 E million ounces.

The mine would like to establish a permanent diesel depot on site that will include the following:

- A secondary containment area with four (4) diesel storage tanks, each with a capacity of 58 000L (combined capacity of 232 000L);
- A tank containing OHC 10W oil with a total capacity of 26000L;
- A tank containing OEC 15W40 motor oil with a total capacity of 26000L;
- A tank containing TELLUS 46 oil with a total capacity of 10 000L;
- A tank containing ODT 30 oil with a total capacity of 10 000L;
- Transfer pumps;
- A wash bay;
- A bulk loading and offloading area;
- An interceptor separator for the recovery of oil;
- Service bay area 1. This will be the field service bay;
- Service bay area 2;
- The services workshop will have an APEX top roof structure and a lower steel roof structure, with U/S IBR cladding. A spoon drain will be installed that will lead to the sand trap; and
- A green building with a store area.



This Environmental Management Programme (EMP) document describes mitigation measures that need to be implemented during the pre-construction-, construction-, operational-, and decommissioning- phases of the proposed project.

The EMP is applicable to the entire fuel and oil storage depot area to ensure environmental control for all aspects of the project is implemented throughout the project area. The responsibility for the implementation of this EMP on site is the responsibility of the appointed facility manager, but must be enforced by Mr. Mick Angliss and the Environmental Control Officer (ECO).

The EMP should also be viewed as a dynamic document. Methods should be updated and improved during implementation, as site conditions become clearer and material or methods improve. The EMP attempts to provide the most practicable methods to promote sound environmental management during the lifespan of the project.

The environmental management programme (EMP) should be kept on file in the office. The mitigation measures indicated in this Environmental Management Programme must be implemented by all the site workers and contractors.



2. Environmental Assessment Practitioner

Name of firm	Shangoni Management Services (Pty) Ltd.	
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Telephone No.	(012) 807 7036	
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Team of Environmental Assessment Practitioners on project		
Name	Qualifications	Responsibility
Mr. H.L. de Villiers	Bsc. (Hons) (PU for CHE) MSc.(UP)	EIA Project Leader and Co-ordinator
Ms. Lizette Crous	Post Graduate Certificate Environmental Management (University of London)	EAP

Detailed CV's for the project team are appended.

3. Site Documentation

The following documentation must be available at the construction site office at all times:

- A copy of the Environmental Impact Assessment Report.
- A copy of the Environmental Management Programme (EMP).
- A copy of the Environmental Authorisation.

4. Legislation

4.1 Laws of general application

- Constitution of the RSA, 1996 (Act No 108 of 1996);
- National Environmental Management Act, 1998 (Act No 107 of 1998);
- Environment Conservation Act, 1989 (Act No 73 of 1989);
- Promotion of Access to Information Act, 2000 (Act No 2 of 2000);
- Protected Disclosures Act, 2000 (Act No 26 of 2000).



4.2 Atmospheric emissions

- Atmospheric Pollution Prevention Act, 1965 (Act No 45 of 1965);
- National Building Regulations and Building Standards Act, 1977 (Act No 103 of 1977);
- Environment Conservation Act, 1989 (Act No 73 of 1989) – Noise Control Regulations in terms of Section 25 of the Environment Conservation Act, 1989;
- National Environmental Management Act, 1998 (Act No 107 of 1998).

4.3 Water Management

- National Water Act, 1998 (Act No 36 of 1998).

4.4 Hazardous Chemicals and Substances

- Hazardous Substances Act, 1973 (Act no. 15 of 1973);
- National Road Traffic Act, 1996 (Act no. 83 of 1986) – GN R225 of 17 March 2000 – National Road Traffic Regulations, 2000;
- Occupational Health and Safety Act, 1993 (Act No 85 of 1983) – GN 1179 of 25 August 1995 – Regulations for Hazardous Chemical Substances (HCS).

4.5 Waste Management

- National Environmental Management: Waste Act (NEMWA) No 59, of 2008;
- Environment Conservation Act, 1989 (Act No 73 of 1989);
- National Road Traffic Act, 1996 (Act No 93 of 1996) – GN R225 of 17 March 2000 – National Road Traffic Regulations;
- Hazardous Substances Act, 1973 (Act No 15 of 1973);
- Occupational Health and Safety Act, 1993 (Act No 85 of 1993) – GN 1179 of 25 August 1995 – Hazardous Chemical Substance Regulations.

4.6 Planning of new activities

- Development Facilitation Act, 1995 (Act No 67 of 1995);
- National Environmental Management Act, 1998 (Act No 107 of 1998).

4.7 Biodiversity

- National Environmental Management Biodiversity Act, 2004 (Act No 10 of 2004);
- Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983);
- National Veld and forest fire Act, 1998 (Act No 101 of 1998);



- Agricultural Pest Act, 1983 (Act No 36 of 1983) – GN R276 of 5 March 2004;
- Fencing Act, 1963 (Act No 31 of 1963);
- National Forest and Fire Laws Amendment Act (Act No 12 of 2001).

4.8 Land and Soil Management

- National Environmental Management Act, 1998 (Act No 107 of 1998);
- Environment Conservation Act, 1989 (Act No 73 of 1989).

4.9 Heritage Resources

- National Heritage Resources Act No 25 of 1999 (Act No 25 of 1999).

4.10 Protected areas

- National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003).

4.11 Mining

- Mineral and Petroleum Resources Development Amendment Act, 2008 (Act No 49 of 2008).

During the course of the development, the developer and contractors must comply with all other relevant legislation (including the bylaws of the local municipality).



5. Environmental Management Programme

Refer to the tables below for the EMP. In the tables below, responsibility is assigned to the relevant parties, keeping in mind that Anglo American is ultimately still responsible for ensuring implementation of the EMP. The EMP must be updated should any significant changes occur to the operations at the fuel depot.

5.1. Preferred Site

5.1.1 Planning and design phase

Table 1: EMP - Planning and design phase

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance	Timeframes	Responsible Party
Design and planning of the proposed fuel depot.	Inadequate planning and design.	Impacts on the environment that could potentially have been avoided.	To effectively plan and design the fuel depot taking the onsite environment into consideration.	<ul style="list-style-type: none"> Site selection for the proposed fuel depot must include consideration of the following: <ul style="list-style-type: none"> The slope of the ground in relation to risk areas, such as residential areas. Access to and from the proposed site. The location of nearby drainage systems. Available water supplies. Fire protection services and their reaction times. Security and general service facilities in the area. Population densities of the surrounding areas. Future expansions (if applicable). General housekeeping practices at the mine. The depth of the water table (if this is above the first impermeable layer) and the measurement date. Soil types down to the first impermeable layer and the reduced level of the impermeable layer over the site. The location of boreholes, artisan wells and aquifers within 500m of the site. An analysis must be done for hydrogen sulphide and hydrocarbons in the water. <p>The above listed information must be recorded before the construction at the site commences and should be used for future monitoring purposes.</p>	Anglo American must verify that the indicated factors have been considered during site selection for the proposed fuel depot.	Complete prior to construction phase.	<ul style="list-style-type: none"> Engineer Soil specialist Geohydrologist

5.1.2 Pre-Construction and Construction Phase

Table 2: EMP - Pre-Construction and Construction Phase

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
Site clearance, removal and relocation of existing temporary fuel depot facilities (e.g. fuel tanks), and construction activities.	Lack of environmental knowledge amongst workers and contractors.	Harm to the environment due to workers or contractors being unaware of how their activities may impact the environment or due to unauthorised access to the site.	To prevent harm to the environment through the actions of uneducated workers or contractors.	<ul style="list-style-type: none"> Before any construction takes place the proposed area for the fuel depot will be pegged out. All construction activities will be limited to these areas in order to reduce the footprint of the proposed activity. Construction areas should be fenced off or barricaded prior to and during construction. Site clearing is to be limited to only the area necessary for carrying out the specified works. The contractor is to draw up a plan for submission to the ECO and the site manager indicating the locations of construction infrastructure including the site-camp, equipment cleaning pits, toilets, stores, site office, and "no-go" areas. The "no-go" areas are to be demarcated with a wire and danger-tape temporary barrier fence attached to planted posts (wooden or metal) at a minimum. This can be in the form of two strands of wire 500mm apart on droppers of 3m spacing, with danger tape zigzagged between the wires. The contractor is to ensure that all employees, including sub-contractors and their employees, attend on-site Environmental Awareness Training prior to commencing work on site. Employees, including sub-contractors, must be trained to operate specific equipment. Follow-up Environmental Awareness Training may be required from time to time as new subcontractors or crews commence work or for specific activities that may potentially impact the environment, or if work is being undertaken in sensitive environments. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				<ul style="list-style-type: none"> The contractor is to maintain accurate records of any training undertaken. Training is to cover all aspects of the EMP, procedures to be followed, the sensitivity of the site and importance of adhering to “no-go” areas. The ECO shall monitor the contractor’s compliance with the requirement to provide sufficient environmental awareness training to all site staff. Environmental signage is to be displayed on the site including – “no smoking”, “fire hazards”, etc. Emergency numbers are to be clearly displayed. Construction workers must adhere to Health, Safety and Environmental procedures at the mine. All construction workers shall be issued with ID badges and clearly identifiable uniforms. All construction workers shall be transported to and from site on a daily basis. Workers shall remain on the site at all times during the work day and no one will be allowed to leave site by foot, not even during break times. Night watchmen are to be provided with adequate cooking and heating facilities (no open fires), a suitable method of disposing of wastewater, and access to communication equipment. Access to fuel and other equipment stores is to be strictly controlled. 			
Stockpiling of subsoil.	Incorrect subsoil stockpiling.	Erosion of stockpiles and cleared areas.	To ensure proper stockpiling and prevent the erosion of cleared areas.	<ul style="list-style-type: none"> Subsoil must be stockpiled in a designated area or areas. The contractor is to ensure that all reasonable measures are taken to limit erosion and sedimentation from construction activities. Erosion protection measures include cut-off drains and/or berms. Removed subsoil and rocks must be used for rehabilitation once the construction has been completed. This could include infilling and leveling of the ground. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor
The transformation of the current temporary fuel depot into a permanent facility.	Construction practices that create a fire risk.	Fire and/or explosion of flammable substances.	To prevent the occurrence of fires and/or explosions.	<ul style="list-style-type: none"> Fire-fighting equipment must be available at the construction site. Flammable materials are to comply with standard fire safety regulations. Equipment is to be maintained in good working order to the satisfaction of local fire authorities. Smoking is prohibited at the construction site. Notices are to be prominently displayed prohibiting smoking in this area. Welding, flame cutting and other hot work may not occur in close proximity to any fuel or oil tanks and may only be undertaken in places where the necessary safety precautions are in place (i.e. with a fire extinguisher immediately accessible). Fuels and flammable materials are to be handled in a safety conscious manner. All fuels and flammable materials are to be stored safely and clearly labeled. Safety signage including “No Smoking”, “No Open Flames”, “No Naked Lights” and “Danger”, and product identification signs, are to be clearly displayed on fuel stores and tanks. All liquid fuels (petrol and diesel) are to be stored in tanks or containers with lids and drip trays. Storage areas for fuels and flammable materials are to comply with standard fire safety regulations. All personnel handling fuels and hazardous materials are to be issued with the appropriate Personal Protective Equipment (PPE). <p>Removal/relocation of the temporary diesel depot</p> <ul style="list-style-type: none"> Should gas-freeing be undertaken once the storage tanks have been emptied, all possible sources of ignition must be removed from the area and persons must keep clear of the bund- and downwind- areas. Gas-freeing operations must be supervised by a designated person. The following gas-freeing method is proposed for above-ground horizontal tanks: <ul style="list-style-type: none"> The tanks must be drained as far as possible. All pipelines must be disconnected and blanketed off. All apertures must be fully opened. The manhole covers must be removed and water must be used as a flushing medium. Ventilation can be assisted through mechanical means or a wind-sail. <p>Installation of the fuel depot</p> <ul style="list-style-type: none"> Fire-fighting equipment must be installed and painted red (A11 signal red or A14 poppy red). Water requirements must be calculated based on a full risk assessment conducted by an engineer. Fire-fighting equipment should include fire extinguishers at regular intervals in the field service bay and refuelling area. At the diesel and oil storage tanks, a fire fighting system must be installed. This could include water lines and a sprinkler system above the storage tanks. Fire-fighting equipment must be accessible from 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager



Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				<p>different directions and must be clearly marked using reflective materials to enable visibility at night.</p> <ul style="list-style-type: none"> The storage tanks must be installed with minimum safety distances and levels of protection as stipulated in SANS 10089-1:2008 and must be arranged so that firefighting can be carried out effectively with mobile and stationary fire-fighting equipment. Access roads or corridors to fire-fighting equipment must be unobstructed. The minimum distance between a tank and the toe of the inside bund wall should be at least 1.5m. All tanks must have approved emergency venting that will relieve excessive internal pressure in the event of fire exposure. The venting capacity shall be in accordance with an approved standard, such as API Std 2000. 			
The storage, mixing and disposal of cement and concrete.	Concrete and cement spillages.	Water- and/or soil- pollution.	To prevent the contamination of soil and water as a result of concrete and cement used on site.	<ul style="list-style-type: none"> Dry cement must be removed from the soil surface to prevent an impermeable layer forming on top of the soil. The cement must be disposed of together with any building rubble. Ready-mix trucks are not permitted to clean chutes on site. Cleaning into foundations or a dedicated cleaning pit is permitted. Both used and unused cement bags are to be stored in weatherproof containers so as not to be affected by rain or runoff. Contaminated soil resulting from concrete or cement spills, including residue produced by the washing of cavities, is to be removed immediately after the spillage has occurred and placed on the appropriate rubble stockpile. Runoff from the washing out of wall cavities is to be contained by excavations or berms around the foundations. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor
The cleaning of vehicles, equipment and construction areas.	Contaminated wash water runoff.	Soil-, surface water- and/or ground water-contamination.	To prevent the contamination of the soil and ground water as a result of polluted wash water.	<ul style="list-style-type: none"> Washing or cleaning of equipment is to take place within designated areas. A dedicated cleaning area is to be installed to facilitate washing of all cement and painting equipment. The cleaning area could be a plastic lined cleaning pit or dedicated plastic or metal drums, located as close as possible to a water point or within reach of a hose no longer than 10m. No wastewater may be disposed of on site, onto the soil or into any water body. Soil contaminated with hazardous substances, fuel or oil shall be treated as hazardous waste and removed from site. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor
Construction activities.	Flow of storm water runoff through the construction site.	Storm water contamination.	To prevent the contamination of storm water flowing through the construction site.	<ul style="list-style-type: none"> Storm water must be diverted around areas of potential pollution, such as fuel storage areas. Storm water measures must be inspected on a regular basis in order to ensure that the structures are functional and not causing soil erosion. The storm water drainage system must be maintained (free-draining) and not contaminated by other waste sources. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Generation, storage and disposal of hazardous waste.	Poor waste management.	Pollution of soil-, surface water- and/or ground water.	To prevent soil- and/or ground water-contamination due to hazardous substances.	<ul style="list-style-type: none"> Equipment and vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site. Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. Drip trays are to be inspected daily for leaks and effectiveness and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. Oil and diesel spills are considered hazardous. Disposal of such contaminants should be done by following the recommended steps. Appropriate equipment to deal with fire or pollution incidents is to be readily available on site. This includes fire extinguishers, spill kits for hydrocarbon spills, drip trays for plant or machinery leaks, drums or containers for contaminated water and drip trays for minor hydrocarbon spills. Soil contaminated with hazardous substances, fuel or oil shall be treated as hazardous waste and removed from site. Obtain and keep on file safe disposal certificates for waste disposed off site. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Production, storage and disposal of general waste and building rubble.	Poor waste management.	Pollution of soil-, surface water- and/or ground-water.	To prevent soil- and/or ground water-contamination due to general waste produced.	<ul style="list-style-type: none"> A construction refuse collection structure shall be erected on commencement of construction work within the boundaries of the site. The minimum requirement is as follows: <ul style="list-style-type: none"> 4 ready-fence panels (3m x 1.8m) covered with shade cloth or hessian, one panel being movable to provide access. The structure shall have a roof (ready fence panel, or similar) to contain waste materials in windy conditions. The floor shall be lined with HDPE plastic to prevent ground contamination from leachate such as cement powder residue or empty chemical or paint containers. Alternatively, refuse skips can be used but must have closing lids to ensure the containment of waste. Refuse bins shall be provided for domestic waste (such as lunch litter) and placed in designated eating areas 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				<p>and any other areas where deemed necessary to control littering.</p> <ul style="list-style-type: none"> Refuse bins are not to overflow and are to be emptied regularly. No littering is permitted on site. Building rubble is to be kept separate from other construction waste. Rubble is to be kept clean of brick ties, plastics, papers and cement bags at all times. Rubble stockpiles and refuse structures shall be positioned to permit easy access by removal trucks. Accumulation of large stockpiles of rubble and waste is not permitted. Waste is to be removed at regular intervals. All waste is to be disposed of at approved landfill sites. No burning or burying of waste is permitted. The contractor shall delegate a specific waste management job description to an individual or team if directed by the ECO. 			
Construction activities (e.g. excavations), vehicles travelling on site, relocation of fuel storage tanks, the use of generators and the re-fuelling of construction vehicles.	Release of emissions and generation of dust.	<ul style="list-style-type: none"> Air pollution. Nuisance. 	To limit the generation of emissions, dust and nuisance.	<ul style="list-style-type: none"> Generators must be switched off when not in use. Traffic speed signs need to be erected to reduce speeding onsite. Dust suppression must be practiced on an ongoing basis. Regular maintenance of vehicles to address wear of tires and breaks. Optimal engine combustion will allow for 'cleaner' exhaust emissions. After re-fuelling construction vehicles, the fuel caps must be replaced as soon as possible. A complaints register must be kept on site. The complaints register must record the following: date when complaint was received, name of person who reported the complaint and when and how the concern was addressed. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Increased traffic frequency on road infrastructure.	Wear of access roads and insufficient vehicle inspections.	Accidents on access roads, unpermitted transport of materials and loss of materials being transported on the access roads to the mine.	To minimise the impact of an increase in traffic on access roads to the mine.	<ul style="list-style-type: none"> Ensure that all construction vehicles using access roads are roadworthy. All loads are to be securely fastened when being transported. All vehicles are to adhere to the tonnage limitation and acquire a permit as required. All speed limits and other traffic regulations on the public roadways must be adhered to. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Transport contractor
Utilisation of water.	Inefficient and/or redundant use of a valuable resource.	Wastage of water and depletion of water resource.	To prevent the wastage of a natural resource.	<ul style="list-style-type: none"> Leaking water taps and hosepipes must be repaired immediately. Running water taps and hosepipes must not be left unattended. Unused water standpipes are to be buried to prevent damage and resultant water leaks. Taps are to be attached to secured supports and used in preference to standpipes with no valve mechanism to open and close water supply. All hose and tap connections are to be fitted with correct and appropriate plumbing fittings. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Installation and use of ablution facilities.	Unsanitary conditions on site.	Soil-, surface water- and ground- water contamination.	To prevent the contamination of the soil, surface water and groundwater.	<ul style="list-style-type: none"> Sufficient ablution facilities shall be provided – minimum of 1 toilet per 15 workers. Plumbed facilities are preferred. Chemical facilities are to be serviced regularly. Toilets should have properly closing doors and supplied with toilet paper. The location of toilets is to be approved by the ECO prior to site establishment, but shall be located within 100m of any work point. Chemical toilets are to be serviced weekly. The contractor is to ensure that no spillage occurs and that the contents are removed from site according to approved methods. Chemical toilets are to be emptied prior to temporary site closure for a period longer than 7 days. Only the use of ablution facilities will be permitted onsite. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Removal and/or relocation of	Hydrocarbon, lubricant and anti-freeze spills.	Soil-, surface water- and groundwater-	To prevent or minimise soil- and water-	<ul style="list-style-type: none"> Proper handling, storage and disposal of hazardous chemicals. All fuels and flammable materials are to be handled safely, stored safely and clearly labelled. Drip trays must be used to collect spillage from equipment, vehicles and plant. These should be emptied 	ECO to verify implementation of mitigation measures	During the construction phase. Must	<ul style="list-style-type: none"> Engineer Construction contractor

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
existing fuel, lubricant and anti-freeze tanks. Installation of new fuel and oil storage tanks. Storage and handling of hazardous chemicals, including fuel.		pollution.	contamination.	<p>regularly into secondary containers.</p> <ul style="list-style-type: none"> Vehicles should regularly be inspected for leaks and should be immediately repaired. Fuels and flammable materials are to be handled in a safety conscious manner. If refueling on site or from drums, the ground must be protected and proper dispensing equipment is to be used i.e. hand pumps and funnels. Drums may not be tipped to dispense fuel. All fuels and flammable materials are to be stored safely and clearly labelled. Safety signage including “No Smoking”, “No Naked Lights” and “Danger”, and product identification signs, are to be clearly displayed on fuel stores and tanks. All liquid fuels (petrol and diesel) are to be stored in tanks or containers with lids and drip trays. Fuel and flammable materials are to be kept under lock and key at all times and are to be stored at a central, easily accessible location. All personnel handling fuels and hazardous materials are to be issued with the appropriate Personal Protective Equipment (PPE). <p>Removal/relocation of the temporary diesel depot</p> <ul style="list-style-type: none"> Care must be taken when emptying diesel, lubrication and anti-freeze tanks so that no spillages occur. Drip trays must be used where practical. When moving tanks, care must be taken to prevent damage to the tanks that could result in spillages. Empty tanks must be stored on impermeable surfaces, such as concrete foundations, and may not be stored on bare soil. <p>Installation of the new diesel depot</p> <ul style="list-style-type: none"> The diesel and oil storage tanks must be placed on impermeable foundations (e.g. concrete) that are designed to ensure that the tanks settle evenly and that corrosion is minimized where the tanks come into contact with the foundations. The tanks must be securely supported on a structure with a 4h fire rating and must have corrosion protection. Tanks must be adequately vented. Vent properties must be in accordance with SANS 10089-1:2008. All tanks must have approved emergency venting that will relieve excessive internal pressure in the event of fire exposure. The venting capacity shall be in accordance with an approved standard, such as API Std 2000. All tanks must be labelled to show their composition and tank capacity. Bund walls must be labelled to show their capacity. The tanks must be contained within an impermeable bund area capable of containing a volume not less than the greatest amount of product that can be released from the largest tank. The capacity of the bund area must be calculated after the volume of the other tanks below the bund wall (excluding the largest tank), has been deducted. Bund walls must be designed by a person qualified in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000). Bund wall heights should not exceed 1.8m. Water drains within the bund area must lead to an interceptor separator and sand trap. The field service bay, workshop and re-fuelling area must have impermeable floors, that are resistant to damage from petrol, oil and fire, and dirty water collection facilities. These must be connected to an interceptor separator and sand trap. The floors must be graded, cubed or diked to contain spills. When constructing impermeable surfaces at the field service bay, workshop and re-fuelling area, the weight of the vehicles that will travel over the surfaces must be taken into consideration. Diesel and oil transfer areas (loading and unloading) must be covered with concrete or a similar impermeable surface. All pipes, pipe fittings and valves must have been fabricated to an approved code and have a safety factor that is adequate for the fuel depot. Only steel valves may be used within the bund area. Pipelines must be supported by bridges, gantries or similar structures. Pipelines should be protected against corrosion, where necessary. Pipelines should be colour coded based on their contents. Outer coverings for hoses must be resistant to contact with petroleum products and abrasion. 	proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	be completed by the end of the construction phase.	<ul style="list-style-type: none"> Facility manager
Construction activities.	Generation of noise.	Disturbance or nuisance to adjacent land users/owners.	Minimise noise generation from construction activities.	<ul style="list-style-type: none"> The site workers and contractors will adhere to the requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). Regular maintenance of vehicles and equipment. All plant and machinery are to be fitted with adequate silencers. Working procedures should be structured so as to avoid the unnecessary generation of noise. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly	During the construction phase. Must be completed by the end of	<ul style="list-style-type: none"> Construction contractor Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				<ul style="list-style-type: none"> No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. If work is to be undertaken outside of normal work hours permission must be obtained from the ECO and the site manager. No noisy work is to be conducted over the weekends or on religious public holidays. A complaints register must be kept on site. The complaints register must record the following: date when complaint was received, name of person who reported the complaint and when and how the concern was addressed. 	compliance reports to competent authority.	the construction phase.	
The use of resources such as electricity, oil, grease, fuel and construction materials.	Inefficient or redundant usage of resources.	Wastage of valuable resources.	To prevent the unnecessary wastage of resources.	<ul style="list-style-type: none"> Regular maintenance and inspection of equipment to prevent leaks. Optimisation of processes to reduce electricity consumption. Regular site inspection by supervisors. Proper environmental training and awareness. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager

5.1.3 Operational Phase

Table 3: EMP - Operational Phase

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
Operation of the fuel depot and wash bay.	Spillages and leakages of fuel, oil and/or motor oil.	Soil-, surface water- and/or groundwater contamination.	To prevent spillages and leakages that can result in soil-, surface water- and ground water contamination.	<ul style="list-style-type: none"> Fuel and oil storage tanks must undergo yearly integrity assessments. Current water (surface and groundwater) monitoring programmes must include monitoring to verify whether any groundwater pollution is taking place as a result of the fuel depot. The parameters to monitor must be determined by a geohydrologist. Hoses must be subjected to pressure-tests on a yearly basis and records of this must be kept on file. The pressure-tests should be conducted at 1.5 times the maximum working pressures. Spill kits must be available at the depot and must be used as soon as a spill is noticed. Effluent, detergents and contaminated water from the wash bay must be contained and channeled to the interceptor separator. Limited access to chemical storage areas. Chemicals are to be properly labeled and handled in a safety conscious manner. <p>Loading and unloading of fuel and oil from the storage tanks</p> <ul style="list-style-type: none"> Vehicles may not be left unattended. Vehicles must be left in gear and prevented from unintentionally moving forwards or backwards. Vehicle engines must be switched off prior to loading or unloading. Vehicles may only be restarted after all caps, valves, cocks and covers have been closed and secured. No internal combustion engines, besides those designed for transporting, handling and pumping flammable materials) may be closer than 15m during loading and unloading of class I or II products. Splash loading or filling is not allowed. 	<ul style="list-style-type: none"> Groundwater quality monitoring. Recording of results. Records must be kept on site. Records must be compared to identify trends. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager Geohydrologist
Operation of the fuel depot.	Generation of dust and release of emissions from vehicles and storage tanks.	Increased air and nuisance.	To minimise the nuisance due to dust and to limit the release of emissions.	<ul style="list-style-type: none"> Traffic speed signs need to be erected to control speeding onsite. Dust suppression must be practiced on site on a continual basis. Regular maintenance of vehicles to address wear of tires and breaks. Optimal engine combustion will allow for 'cleaner' exhaust emissions. Empty containers must be closed to limit the release of emissions. Storage tanks must be closed as soon as possible after loading. When vehicles have been re-fuelled, fuel caps must be replaced as soon as possible. A complaints register must be kept on site. The complaints register must record the following: date when complaint was received, name of person who reported the complaint and when and how the concern was addressed. 	<ul style="list-style-type: none"> Complaints register must be checked daily and complaints addressed as soon as possible. Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
					addressed.		
Operation of the fuel depot.	Operational activities that create a fire risk.	Fire and/or explosions.	To prevent the occurrence of fires and/or explosions.	<ul style="list-style-type: none"> • Fire-fighting equipment must be serviced as stipulated in SANS 1475-1. • Fire fighting hoses must be inspected annually and records kept on file. Defective hoses must immediately be replaced. • The tone and volume of the fire alarm must be such that it is clearly distinguishable from background noise and audible, under prevailing wind conditions, at the site perimeter. • A site layout plan must be drawn up and displayed at the depot. The plan must indicate the following, amongst others: location of storage tanks and their contents, pipelines and valves, fire-fighting equipment and access routes. • Detailed information regarding the depot (layout plans, list of fire-fighting equipment present, etc.) must be conveyed to the local fire authorities. A joint action plan in case of a fire or other emergency must be agreed upon. • Emergency plans must be prepared for the fuel depot. The plans must be in accordance with the regulations for major hazard installations as stipulated in the OHS Act, 1993. • Emergency numbers must be clearly displayed at the depot, near a telephone. • Fire fighting systems and equipment must be inspected annually by a competent person and records thereof kept on file. • A fire practice, in conjunction with the local fire authority, must be undertaken annually. • Good housekeeping must be maintained. This includes the storage of flammable materials, such as oil-soaked soil or rags, in designated, closed containers away from the diesel and oil storage tanks. • No combustible materials may be stored within the bunded areas. • Access roads or corridors to fire-fighting equipment may not be obstructed. • Before re-filling of diesel and oil tanks, a continuous path (bond) must be in place. • Smoking is not permitted during loading or unloading of diesel and oil or in the vicinity of the storage tanks. • Welding, cutting or other spark-producing activities are not permitted within the fuel depot without an authorized hot-work permit and may only be conducted more than 15m from the storage tanks. • Workers must be specifically trained for work at the fuel depot. This training must include the correct fire fighting procedures and records of all training must be kept on file. Training must also be provided on the correct loading and offloading procedures. • Fire drills must be conducted regularly and records kept on file. • Designated areas must be used for cooking and smoking. 	<ul style="list-style-type: none"> • Regular site inspection. • Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> • Facility manager
Storm water management.	Incorrect storm water management.	Contamination of storm water flowing through the depot.	To prevent the contamination of storm water flowing through the depot.	<ul style="list-style-type: none"> • Storm water must be diverted away from areas where it could be contaminated. • The storm water drainage system must be maintained (free-draining) and not contaminated by other waste sources. • Storm water measures must be inspected on a regular basis in order to ensure that the structures are functional and not causing soil erosion. 	<ul style="list-style-type: none"> • Regular site inspection. • Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> • Facility manager
Operation of the fuel depot.	Generation of additional noise and light. Increased visibility of the mine due to the additional fuel depot infrastructure.	<ul style="list-style-type: none"> • Noise and light pollution. • Visual impact on neighbours of the mine. 	To minimise nuisance due to increased noise and light pollution at the fuel depot.	<ul style="list-style-type: none"> • Adequate lighting must be provided at the fuel depot at night. Lights must as far as possible be angled inwards to the fuel depot and not to the exterior of the site (especially not to the north-west, west, and south-west). • Ensure that machinery and equipment is in proper working condition, fitted with silencing equipment if necessary. • Keep equipment in good repair and attend to loose or rattling covers, worn bearings and broken equipment. • Vehicle drivers must be informed about proper driving practices. Unnecessary idling, hooting or revving of engines must be avoided. • Equipment and vehicles should be selected and maintained to minimise noise levels. • Personnel must be provided with the relevant PPE. • A complaints register must be kept on site. The complaints register must record the following: date when complaint was received, name of person who reported the complaint and when and how the concern was addressed. 	<ul style="list-style-type: none"> • Complaints register must be checked daily and complaints addressed as soon as possible. • Regular site inspection. • Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> • Facility manager
Generation, storage and removal of	Incorrect waste management.	Pollution of soil-, surface water- and/or ground	To prevent soil-, surface- and/or ground water-	<ul style="list-style-type: none"> • Waste drums, with closing lids, must be provided at the fuel depot. The drums must be colour coded or clearly labelled for the different waste types. • Waste drums must be stored within a bunded area on an impermeable surface. • Procedures must be drawn up for the correct handling, storage and disposal of waste. 	<ul style="list-style-type: none"> • Regular site inspection. • Internal audits against this EMP must be 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> • Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
general and hazardous waste.		water.	contamination.	<ul style="list-style-type: none"> Employees must be trained to ensure that proper waste separation is carried out when placing waste in waste drums. Littering on site is not permitted. Waste must be removed to larger storage skips on a regular basis before the drums become full. General and hazardous waste must be removed and disposed of by a licensed contractor at regular intervals before storage skips overflow. Obtain and keep on file safe disposal certificates for waste disposed off site. 	conducted every 6 months and records kept on site. Shortcomings must immediately be addressed.		
Operation of the fuel depot.	Inefficient or redundant use of resources.	Wastage of valuable resources.	To prevent the unnecessary wastage of resources.	<ul style="list-style-type: none"> Resources such as water and electricity must be used efficiently. Proper environmental training and awareness. Methods to conserve resources should be conveyed to workers. Water must be re-used wherever possible. Regular maintenance and inspection of equipment, such as water pipes, to prevent leaks. High pressure hoses should be used, if possible, at the wash bay to conserve water. Lights and electrical appliances/equipment must be switched off when not in use. Leaking taps and hose pipes must immediately be repaired. Running water taps and hosepipes are not to be left unattended. Regular site inspection by supervisors and monitoring of resource consumption. Implementation of technologies that can reduce resource consumption. Processes should be designed to save electricity and water where possible. 	<ul style="list-style-type: none"> Regular site inspection and monitoring of resource consumption. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager
Ablution facilities on site (toilets, septic tank and soak away).	Unsanitary conditions on site.	Soil and groundwater contamination.	To ensure the effective operation of the septic tank system, thereby preventing contamination of the environment.	<ul style="list-style-type: none"> The septic tank system should be maintained as indicated by the supply company. The ground above the septic tank system must be regularly inspected for any rise of sewage water to the surface. This could indicate a blocked or broken pipe leading to the soak away. Ablution facilities should be maintained to prevent or minimize blockage and leakages. Should toilets become blocked or run slowly, this should be reported and the cause investigated. This could be due to a blocked or broken pipe leading from the toilets to the septic tank system. Create employee awareness about proper use of ablution facilities and the importance of proper hygiene. No cigarette butts, fats, oils, paper towels etc. may be disposed of into toilets or wash basins. Toilets should have properly closing doors and supplied with toilet paper. Movement of heavy vehicles above the septic tank system must be avoided as this may crack pipes. Pump out the septic tank as indicated by the supply company. 	<ul style="list-style-type: none"> Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager
Employees not working at the fuel depot.	Employees not working with the correct equipment and/or not competent for the work.	Worker injuries and/or fatalities.	To ensure that employees conduct their work in a safe manner.	<ul style="list-style-type: none"> Personnel must be provided with the required PPE when working at the fuel depot. Personnel must receive appropriate training before commencing work at the site. Casual workers must also receive training before commencing work. Proof of all training must be kept on file. Personnel must be competent to undertake their work and must conduct all work in a responsible manner. All mine (SHE) procedures must be followed. A well stocked first aid box must be available at all times. 	<ul style="list-style-type: none"> Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager
Maintenance and repairs at the fuel depot.	Incorrect maintenance practices.	Fires or injuries to employees.	To enable safe and effective maintenance at the fuel depot.	<ul style="list-style-type: none"> Repairs or alternations may not be undertaken whilst any equipment is in use, such as when a tank is being loaded or unloaded. Notices should be issued to relevant parties at the mine when maintenance is being scheduled. Hot work or similar hazardous work may not be undertaken inside of storage tanks before they have been inspected, a gas-free certificate has been issued, all pipelines have been disconnected and the relevant authorities have been notified. Confined-space entry permits must also first be obtained. In cases where a gas-free certificate has not been issued, workers may only enter the storage tanks when wearing a breathing apparatus. An observer must be present outside of the tank at all times and must immediately assist or summon assistance should the person inside of the tank collapse. Electrical equipment must be isolated and locked out before any repairs commence. This must be verified by an accredited person. Warning notices must be affixed or hung onto circuit breakers and/or switches to prevent accidental switching-on during repairs. An accredited person must certify that the apparatus is electrically and mechanically sound before it is brought back into use. Records of repairs must be kept on file. Maintenance and repairs must be supervised by a responsible staff member or members. 	<ul style="list-style-type: none"> Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager



5.1.4 Rehabilitation Phase

Table 4: EMP - Rehabilitation Phase

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance	Timeframes	Responsible Party
Landscaping, replacement and levelling of subsoil.	Incorrect replacement and levelling of subsoil.	Soil erosion as a result of soil compaction.	To avoid soil compaction.	<ul style="list-style-type: none"> • Replacement and rehabilitation should be progressive during the project and not left until the end. • Implementation of effective and sustainable rehabilitation and remediation practices. • Disturbed areas must be cleared of any building rubble or other debris. • Subsoil must be used to fill in excavations around the depot. • All weeds must be removed prior to soil replacement. • Compaction must be minimised by using the correct equipment. Excessively heavy vehicles should not be used to replace the soil. A dozer must be used instead of a grader. • Soils should ideally only be moved when dry. • Remaining subsoil must be used for rehabilitation in other areas of the mine. 	Regular site inspection by facility manager to determine whether soil erosion is occurring	Before completion of the construction phase.	<ul style="list-style-type: none"> • Construction contractor



5.1.5 Closure Phase

Should the mine close, the fuel depot will also need to be decommissioned. The expected life of the mine is 50+ years. Should the facility need to be closed, a closure plan will be drafted that will be send to LEDET and DMR for approval. The closure of the facility will only commence once approval of the closure plan has been received.



5.2 Alternative Site

5.2.1 Planning and design phase

Table 5: EMP - Planning and design phase

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance	Timeframes	Responsible Party
Design and planning of the proposed fuel depot.	Inadequate planning and design.	Impacts on the environment that could potentially have been avoided.	To effectively plan and design the fuel depot taking the onsite environment into consideration.	<ul style="list-style-type: none"> Site selection for the proposed fuel depot must include consideration of the following: <ul style="list-style-type: none"> The slope of the ground in relation to risk areas, such as residential areas. Access to and from the proposed site. The location of nearby drainage systems. Available water supplies. Fire protection services and their reaction times. Security and general service facilities in the area. Population densities of the surrounding areas. Future expansions (if applicable). General housekeeping practices at the mine. The depth of the water table (if this is above the first impermeable layer) and the measurement date. Soil types down to the first impermeable layer and the reduced level of the impermeable layer over the site. The location of boreholes, artisan wells and aquifers within 500m of the site. An analysis must be done for hydrogen sulphide and hydrocarbons in the water. <p>The above listed information must be recorded before the construction at the site commences and should be used for future monitoring purposes.</p>	Anglo American must verify that the indicated factors have been considered during site selection for the proposed fuel depot.	Complete prior to construction phase	<ul style="list-style-type: none"> Engineer Soil specialist Geohydrologist

5.2.2 Pre-Construction and Construction Phase

Table 6: EMP - Pre-Construction and Construction Phase

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
Site clearance, removal and relocation of existing temporary fuel depot facilities (e.g. fuel tanks), and construction activities.	Lack of environmental knowledge amongst workers and contractors.	Harm to the environment due to workers or contractors being unaware of how their activities may impact the environment or due to unauthorised access to the site.	To prevent harm to the environment through the actions of uneducated workers or contractors.	<ul style="list-style-type: none"> Before any construction takes place the proposed area for the fuel depot will be pegged out. All construction activities will be limited to these areas in order to reduce the footprint of the proposed activity. Construction areas should be fenced off or barricaded prior to and during construction. Site clearing is to be limited to only the area necessary for carrying out the specified works. The contractor is to draw up a plan for submission to the ECO and the site manager indicating the locations of construction infrastructure including the site-camp, equipment cleaning pits, toilets, stores, site office, and “no-go” areas. The “no-go” areas are to be demarcated with a wire and danger-tape temporary barrier fence attached to planted posts (wooden or metal) at a minimum. This can be in the form of two strands of wire 500mm apart on droppers of 3m spacing, with danger tape zigzagged between the wires. The contractor is to ensure that all employees, including sub-contractors and their employees, attend on-site Environmental Awareness Training prior to commencing work on site. Employees, including sub-contractors, must be trained to operate specific equipment. Follow-up Environmental Awareness Training may be required from time to time as new subcontractors or crews commence work or for specific activities that may potentially impact the environment, or if work is being undertaken in sensitive environments. The contractor is to maintain accurate records of any training undertaken. Training is to cover all aspects of the EMP, procedures to be followed, the sensitivity of the site and importance of adhering to “no-go” areas. The ECO shall monitor the contractor’s compliance with the requirement to provide sufficient environmental awareness training to all site staff. Environmental signage is to be displayed on the site including – “no smoking”, “fire hazards”, etc. Emergency numbers are to be clearly displayed. Construction workers must adhere to Health, Safety and Environmental procedures at the mine. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				<ul style="list-style-type: none"> All construction workers shall be issued with ID badges and clearly identifiable uniforms. All construction workers shall be transported to and from site on a daily basis. Workers shall remain on the site at all times during the work day and no one will be allowed to leave site by foot, not even during break times. Night watchmen are to be provided with adequate cooking and heating facilities (no open fires), a suitable method of disposing of wastewater, and access to communication equipment. Access to fuel and other equipment stores is to be strictly controlled. 			
Stockpiling of topsoil, subsoil and cleared vegetation.	Incorrect stockpiling practices.	Loss of valuable topsoil, erosion of stockpiles and cleared areas.	To ensure proper stockpiling and prevent the erosion of cleared areas.	<ul style="list-style-type: none"> Vegetation must be removed and stockpiled. No burning of vegetation is permitted. Cleared vegetation must either be re-planted elsewhere, used at a composting facility or removed to a landfill site. Topsoil must be removed and stockpiled in a designated area for future rehabilitation purposes. Topsoil must be stockpiled separately from subsoil. Subsoil must be stockpiled in a designated area or areas. The contractor is to ensure that all reasonable measures are taken to limit erosion and sedimentation from construction activities. Erosion protection measures include cut-off drains and/or berms. Removed subsoil and rocks must be used to rehabilitate the areas around the fuel depot once construction has been completed. This includes infilling and leveling of the ground. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor
Construction activities.	Construction practices that create a fire risk.	Fire and/or explosion of flammable substances.	To prevent the occurrence of fires and/or explosions.	<ul style="list-style-type: none"> Fire-fighting equipment must be available at the construction site. Flammable materials are to comply with standard fire safety regulations. Equipment is to be maintained in good working order to the satisfaction of local fire authorities. Smoking is prohibited at the construction site. Notices are to be prominently displayed prohibiting smoking in this area. Welding, flame cutting and other hot work may not occur in close proximity to any fuel or oil tanks and may only be undertaken in places where the necessary safety precautions are in place (i.e. with a fire extinguisher immediately accessible). Fuels and flammable materials are to be handled in a safety conscious manner. All fuels and flammable materials are to be stored safely and clearly labeled. Safety signage including “No Smoking”, “No Open Flames”, “No Naked Lights” and “Danger”, and product identification signs, are to be clearly displayed on fuel stores and tanks. All liquid fuels (petrol and diesel) are to be stored in tanks or containers with lids and drip trays. Storage areas for fuels and flammable materials are to comply with standard fire safety regulations. All personnel handling fuels and hazardous materials are to be issued with the appropriate Personal Protective Equipment (PPE). <p>Removal/relocation of the temporary diesel depot</p> <ul style="list-style-type: none"> Should gas-freeing be undertaken once the storage tanks have been emptied, all possible sources of ignition must be removed from the area and persons must keep clear of the bund- and downwind- areas. Gas-freeing operations must be supervised by a designated person. The following gas-freeing method is proposed for above-ground horizontal tanks: <ul style="list-style-type: none"> The tanks must be drained as far as possible. All pipelines must be disconnected and blanketed off. All apertures must be fully opened. The manhole covers must be removed and water must be used as a flushing medium. Ventilation can be assisted through mechanical means or a wind-sail. <p>Installation of the fuel depot</p> <ul style="list-style-type: none"> Fire-fighting equipment must be installed and painted red (A11 signal red or A14 poppy red). Water requirements must be calculated based on a full risk assessment conducted by an engineer. Fire-fighting equipment should include fire extinguishers at regular intervals in the field service bay and re-fuelling area. At the diesel and oil storage tanks, a fire fighting system must be installed. This could include water lines and a sprinkler system above the storage tanks. Fire-fighting equipment must be accessible from different directions and must be clearly marked using reflective materials to enable visibility at night. The storage tanks must be installed with minimum safety distances and levels of protection as stipulated in SANS 10089-1:2008 and must be arranged so that firefighting can be carried out effectively with mobile and stationary fire-fighting equipment. Access roads or corridors to fire-fighting equipment must be unobstructed. The minimum distance between a tank and the toe of the inside bund wall should be at least 1.5m. All tanks must have a form of approved emergency venting that will relieve excessive internal pressure in the 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				event of fire exposure. The venting capacity shall be in accordance with an approved standard, such as API Std 2000.			
The storage, mixing and disposal of cement and concrete.	Concrete and cement spillages.	Water- and/or soil- pollution.	To prevent the contamination of soil and water.	<ul style="list-style-type: none"> Dry cement must be removed from the soil surface to prevent an impermeable layer forming on top of the soil. The cement must be disposed of together with any building rubble. Ready-mix trucks are not permitted to clean chutes on site. Cleaning into foundations or a dedicated cleaning pit is permitted. Both used and unused cement bags are to be stored in weatherproof containers so as not to be affected by rain or runoff. Contaminated soil resulting from concrete or cement spills, including residue produced by the washing of cavities, is to be removed immediately after the spillage has occurred and placed on the appropriate rubble stockpile. Runoff from the washing out of wall cavities is to be contained by excavations or berms around the foundations. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor
The cleaning of vehicles, equipment and construction areas.	Contaminated wash water runoff.	Soil-, surface water- and/or ground water-contamination.	To prevent the contamination of the soil and ground water as a result of polluted wash water.	<ul style="list-style-type: none"> Washing or cleaning of equipment is to take place within designated areas. A dedicated cleaning area is to be installed to facilitate washing of all cement and painting equipment. The cleaning area could be a plastic lined cleaning pit or dedicated plastic or metal drums, located as close as possible to a water point or within reach of a hose no longer than 10m. No wastewater may be disposed of on site, onto the soil or into any water body. Soil contaminated with hazardous substances, fuel or oil shall be treated as hazardous waste and removed from site. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor
Construction activities.	Flow of storm water runoff through the construction site.	Storm water contamination.	To prevent the contamination of storm water flowing through the construction site.	<ul style="list-style-type: none"> Storm water must be diverted around areas of potential pollution, such as fuel storage areas. Storm water measures must be inspected on a regular basis in order to ensure that the structures are functional and not causing soil erosion. The storm water drainage system must be maintained (free-draining) and not contaminated by other waste sources. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Generation, storage and disposal of hazardous waste.	Poor waste management.	Pollution of soil-, surface water- and/or ground water.	To prevent soil- and/or ground water-contamination.	<ul style="list-style-type: none"> Equipment and vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site. Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. Drip trays are to be inspected daily for leaks and effectiveness and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. Oil and diesel spills are considered hazardous. Disposal of such contaminants should be done by following the recommended steps. Appropriate equipment to deal with fire or pollution incidents is to be readily available on site. This includes fire extinguishers, spill kits for hydrocarbon spills, drip trays for plant or machinery leaks, drums or containers for contaminated water and drip trays for minor hydrocarbon spills. Soil contaminated with hazardous substances, fuel or oil shall be treated as hazardous waste and removed from site. Obtain and keep on file safe disposal certificates for waste disposed off site. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Production, storage and disposal of general waste and building rubble.	Poor waste management.	Pollution of soil-, surface water- and/or ground-water.	To prevent soil- and/or ground water-contamination.	<ul style="list-style-type: none"> A construction refuse collection structure shall be erected on commencement of construction work within the boundaries of the site. The minimum requirement is as follows: <ul style="list-style-type: none"> 4 ready-fence panels (3m x 1.8m) covered with shade cloth or hessian, one panel being movable to provide access. The structure shall have a roof (ready fence panel, or similar) to contain waste materials in windy conditions. The floor shall be lined with HDPE plastic to prevent ground contamination from leachate such as cement powder residue or empty chemical or paint containers. Alternatively, refuse skips can be used but need to have closing lids to ensure the containment of waste. Refuse bins shall be provided for domestic waste (such as lunch litter) and placed in designated eating areas and any other areas where deemed necessary to control littering. Refuse bins are not to overflow and are to be emptied regularly. No littering is permitted on site. Building rubble is to be kept separate from other construction waste. Rubble is to be kept clean of brick ties, plastics, papers and cement bags at all times. Rubble stockpiles and refuse structures shall be positioned to permit easy access by removal trucks. Accumulation of large stockpiles of rubble and waste is not permitted. Waste is to be removed at regular 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				intervals. <ul style="list-style-type: none"> All waste is to be disposed of at approved landfill sites, no burning or burying is permitted. The contractor shall delegate a specific waste management job description to an individual or team if directed by the ECO. 			
Construction activities (e.g. excavations), vehicles travelling on site, relocation of fuel storage tanks, the use of generators and the re-fuelling of construction vehicles.	Release of emissions and generation of dust.	<ul style="list-style-type: none"> Air pollution. Nuisance. 	To limit the generation of emissions, dust and nuisance.	<ul style="list-style-type: none"> Generators must be switched off when not in use. Traffic speed signs need to be erected to reduce speeding onsite. Dust suppression must be practiced on an ongoing basis. Regular maintenance of vehicles to address wear of tires and breaks. Optimal engine combustion will allow for 'cleaner' exhaust emissions. After re-fuelling construction vehicles, the fuel caps must be replaced as soon as possible. A complaints register must be kept on site. The complaints register must record the following: date when complaint was received, name of person who reported the complaint and when and how the concern was addressed. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Increased traffic frequency on road infrastructure.	Wear of access roads and insufficient vehicle inspections.	Accidents on access roads, unpermitted transport of materials and loss of materials being transported on the access roads to the mine.	To minimise the impact of an increase in traffic on access roads to the mine.	<ul style="list-style-type: none"> Ensure that all construction vehicles using access roads are roadworthy. All loads are to be securely fastened when being transported. All vehicles are to adhere to the tonnage limitation and acquire a permit as required. All speed limits and other traffic regulations on the public roadways must be adhered to. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Transport contractor
Utilisation of water.	Inefficient and/or redundant use of a valuable resource.	Wastage of water and depletion of water resource.	To prevent the wastage of a natural resource.	<ul style="list-style-type: none"> Leaking water taps and hosepipes must be repaired immediately. Running water taps and hosepipes must not be left unattended. Unused water standpipes are to be buried to prevent damage and resultant water leaks. Taps are to be attached to secured supports and used in preference to standpipes with no valve mechanism to open and close water supply. All hose and tap connections are to be fitted with correct and appropriate plumbing fittings. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Installation and use of ablution facilities.	Unsanitary conditions on site.	Soil-, surface water- and ground- water contamination.	To prevent the contamination of the soil, surface water and groundwater.	<ul style="list-style-type: none"> Sufficient ablution facilities shall be provided – minimum of 1 toilet per 15 workers. Plumbed facilities are preferred. Chemical facilities are to be serviced regularly. Toilets should have properly closing doors and supplied with toilet paper. The location of toilets is to be approved by the ECO prior to site establishment, but shall be located within 100m of any work point. Chemical toilets are to be serviced weekly. The contractor is to ensure that no spillage occurs and that the contents are removed from site according to approved methods. Chemical toilets are to be emptied prior to temporary site closure for a period longer than 7 days. Only the use of ablution facilities will be permitted onsite. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager
Removal and/or relocation of existing fuel, lubricant and anti-freeze tanks. Installation of	Hydrocarbon, lubricant and anti-freeze spills.	Soil-, surface water- and groundwater-pollution.	To prevent or minimise soil- and water-contamination.	<ul style="list-style-type: none"> Proper handling, storage and disposal of hazardous chemicals. All fuels and flammable materials are to be handled safely, stored safely and clearly labelled. Drip trays must be used to collect spillage from equipment, vehicles and plant. These should be emptied regularly into secondary containers. Vehicles should regularly be inspected for leaks and should be immediately repaired. Fuels and flammable materials are to be handled in a safety conscious manner. If refueling on site or from drums, the ground must be protected and proper dispensing equipment is to be used i.e. hand pumps and funnels. Drums may not be tipped to dispense fuel. All fuels and flammable materials are to be stored safely and clearly labeled. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Engineer Construction contractor Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
new fuel and oil storage tanks. Storage and handling of hazardous chemicals, including fuel.				<ul style="list-style-type: none"> Safety signage including “No Smoking”, “No Naked Lights” and “Danger”, and product identification signs, are to be clearly displayed on fuel stores and tanks. All liquid fuels (petrol and diesel) are to be stored in tanks or containers with lids and drip trays. Fuel and flammable materials are to be kept under lock and key at all times and are to be stored at a central, easily accessible location. All personnel handling fuels and hazardous materials are to be issued with the appropriate Personal Protective Equipment (PPE). <p>Removal/relocation of the temporary diesel depot</p> <ul style="list-style-type: none"> Care must be taken when emptying diesel, lubrication and anti-freeze tanks so that no spillages occur. Drip trays must be used where practical. When moving tanks, care must be taken to prevent damage to the tanks that could result in spillages. Empty tanks must be stored on impermeable surfaces, such as concrete foundations, and may not be stored on bare soil. <p>Installation of the new diesel depot</p> <ul style="list-style-type: none"> The diesel and oil storage tanks must be placed on impermeable foundations (e.g. concrete) that are designed to ensure that the tanks settle evenly and that corrosion is minimized where the tanks come into contact with the foundations. The tanks must be securely supported on a structure with a 4h fire rating and must have corrosion protection. Tanks must be adequately vented. Vent properties must be in accordance with SANS 10089-1:2008. All tanks must have approved emergency venting that will relieve excessive internal pressure in the event of fire exposure. The venting capacity shall be in accordance with an approved standard, such as API Std 2000. All tanks must be labelled to show their composition and tank capacity. Bund walls must be labelled to show their capacity. The tanks must be contained within an impermeable bund area capable of containing a volume not less than the greatest amount of product that can be released from the largest tank. The capacity of the bund area must be calculated after the volume of the other tanks below the bund wall (excluding the largest tank), has been deducted. Bund walls must be designed by a person qualified in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000). Bund wall heights should not exceed 1.8m. Water drains within the bund area must lead to an interceptor separator and sand trap. The field service bay, workshop and re-fuelling area must have impermeable floors that are resistant to damage from petrol, oil and fire; and dirty water collection facilities. These must be connected to an interceptor separator and sand trap. The floors must be graded, cubed or diked to contain spills. When constructing impermeable surfaces at the field service bay, workshop and re-fuelling area, the weight of the vehicles that will travel over the surfaces must be taken into consideration. Diesel and oil transfer areas (loading and unloading) must be covered with concrete or a similar impermeable surface. All pipes, pipe fittings and valves must have been fabricated to an approved code and have a safety factor that is adequate for the fuel depot. Only steel valves may be used within the bund area. Pipelines must be supported by bridges, gantries or similar structures. Pipelines should be protected against corrosion, where necessary. Pipelines should be colour coded based on their contents. Outer coverings for hoses must be resistant to contact with petroleum products and abrasion. 			
Construction activities.	Generation of noise.	Disturbance or nuisance to adjacent land users/owners.	Minimise noise generation from construction activities.	<ul style="list-style-type: none"> The site workers and contractors will adhere to the requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). Regular maintenance of vehicles and equipment. All plant and machinery are to be fitted with adequate silencers. Working procedures should be structured so as to avoid the unnecessary generation of noise. No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. If work is to be undertaken outside of normal work hours permission must be obtained from the ECO and the site manager. No noisy work is to be conducted over the weekends or on religious public holidays. A complaints register must be kept on site. The complaints register must record the following: date when 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager



Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				complaint was received, name of person who reported the complaint and when and how the concern was addressed.			
The use of resources such as electricity, oil, grease, fuel and construction materials.	Inefficient or redundant usage of resources.	Wastage of valuable resources.	To prevent the unnecessary wastage of resources.	<ul style="list-style-type: none"> Regular maintenance and inspection of equipment to prevent leaks. Optimisation of processes to reduce electricity consumption. Regular site inspection by supervisors. Proper environmental training and awareness. 	ECO to verify implementation of mitigation measures proposed in this EMP. ECO to submit quarterly compliance reports to competent authority.	During the construction phase. Must be completed by the end of the construction phase.	<ul style="list-style-type: none"> Construction contractor Facility manager

5.2.3 Operational Phase

Table 7: EMP - Operational Phase

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
Operation of the fuel depot and wash bay.	Spillages and leakages of fuel, oil and/or motor oil	Soil-, surface water- and/or groundwater contamination	To prevent spillages and leakages that can result in soil-, surface water- and ground water contamination.	<ul style="list-style-type: none"> Fuel and oil storage tanks must undergo yearly integrity assessments. Current water (surface and groundwater) monitoring programmes must include monitoring to verify whether any groundwater pollution is taking place as a result of the fuel depot. The parameters to monitor must be determined by a geohydrologist. Hoses must be subjected to pressure-tests on a yearly basis and records of this must be kept on file. The pressure-tests should be conducted at 1.5 times the maximum working pressures. Spill kits must be available at the depot and must be used as soon as a spill is noticed. Effluent, detergents and contaminated water from the wash bay must be contained and channeled to the interceptor separator. Limited access to chemical storage areas. Chemicals are to be properly labeled and handled in a safety conscious manner. <p>Loading and unloading of fuel and oil from the tanks</p> <ul style="list-style-type: none"> Vehicles may not be left unattended. Vehicles must be left in gear and prevented from unintentionally moving forwards or backwards. Vehicle engines must be switched off prior to loading or unloading. Vehicles may only be restarted after all caps, valves, cocks and covers have been closed and secured. No internal combustion engines, besides those designed for transporting, handling and pumping flammable materials) may be closer than 15m during loading and unloading of class I or II products. Splash loading or filling is not allowed. 	<ul style="list-style-type: none"> Groundwater quality monitoring. Recording of results. Records must be kept on site. Records must be compared to identify trends. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager Geohydrologist
Operation of the fuel depot.	Generation of dust and release of emissions from vehicles and storage tanks.	Nuisance due to dust and increased air pollution.	To minimise the nuisance due to dust and to limit the release of emissions.	<ul style="list-style-type: none"> Traffic speed signs need to be erected to control speeding onsite. Dust suppression must be practiced on site on a continual basis. Regular maintenance of vehicles to address wear of tires and breaks. Optimal engine combustion will allow for 'cleaner' exhaust emissions. Empty containers must be closed to limit the release of emissions. Storage tanks must be closed as soon as possible after loading. When vehicles have been re-fuelled, fuel caps must be replaced as soon as possible. A complaints register must be kept on site. The complaints register must record the following: date when complaint was received, name of person who reported the complaint and when and how the concern was addressed. 	<ul style="list-style-type: none"> Complaints register must be checked daily and complaints addressed as soon as possible. Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager
Operation of the fuel depot.	Operational activities that create a fire risk.	Fire and/or explosions.	To prevent the occurrence of fires and/or explosions.	<ul style="list-style-type: none"> Fire-fighting equipment must be serviced as stipulated in SANS 1475-1. Fire fighting hoses must be inspected annually and records kept on file. Defective hoses must immediately be replaced. The tone and volume of the fire alarm must be such that it is clearly distinguishable from background noise and audible, under prevailing wind conditions, at the site perimeter. 	<ul style="list-style-type: none"> Regular site inspection. Internal audits against this EMP must be conducted every 6 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				<ul style="list-style-type: none"> A site layout plan must be drawn up and displayed at the depot. The plan must indicate the following, amongst others: location of tanks and their contents, pipelines and valves, fire-fighting equipment and access routes. Detailed information regarding the depot (layout plans, list of fire-fighting equipment present, etc.) must be conveyed to the local fire authorities. A joint action plan in case of a fire or other emergency must be agreed upon. Emergency plans must be prepared for the fuel depot. The plans must be in accordance with the regulations for major hazard installations as stipulated in the OHS Act, 1993. Emergency numbers must be clearly displayed at the depot, near a telephone. Fire fighting systems and equipment must be inspected annually by a competent person and records thereof kept on file. A fire practice, in conjunction with the local fire authority, must be undertaken annually. Good housekeeping must be maintained. This includes the storage of flammable materials, such as oil-soaked soil or rags, in designated, closed containers away from the diesel and oil storage tanks. Vegetation around the fuel depot must be kept short and a fire break must be maintained. No combustible materials may be stored within the bunded areas. Access roads or corridors to fire-fighting equipment may not be obstructed. Before re-filling of diesel and oil tanks, a continuous path (bond) must be in place. Smoking is not permitted during loading or unloading of diesel and oil or in the vicinity of the storage tanks. Welding, cutting or other spark-producing activities are not permitted within the fuel depot without an authorized hot-work permit and may only be conducted more than 15m from the storage tanks. Workers must be specifically trained for work at the fuel depot. This training must include the correct fire fighting procedures and records of all training must be kept on file. Training must also be provided on the correct loading and offloading procedures. Fire drills must be conducted regularly and records kept on file. Designated areas must be used for cooking and smoking. 	months and records kept on site. Shortcomings must immediately be addressed.		
Storm water management.	Incorrect storm water management.	Contamination of storm water flowing through the depot.	To prevent the contamination of storm water flowing through the depot.	<ul style="list-style-type: none"> Storm water must be diverted away from areas where it could be contaminated. The storm water drainage system must be maintained (free-draining) and not contaminated by other waste sources. Storm water measures must be inspected on a regular basis in order to ensure that the structures are functional and not causing soil erosion. 	<ul style="list-style-type: none"> Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager
Operation of the fuel depot.	Generation of additional noise and light. Increased visibility of the mine due to the additional fuel depot infrastructure.	<ul style="list-style-type: none"> Noise and light pollution Visual impact on neighbours of the mine. 	To minimise nuisance due to increased noise and light pollution at the fuel depot.	<ul style="list-style-type: none"> Adequate lighting must be provided at the fuel depot at night. Lights must as far as possible be angled inwards to the fuel depot and not to the exterior of the site (especially not to the north-west, west, and south-west). Ensure that machinery and equipment is in proper working condition, fitted with silencing equipment if necessary. Keep equipment in good repair and attend to loose or rattling covers, worn bearings and broken equipment. Vehicle drivers must be informed about proper driving practices. Unnecessary idling, hooting or revving of engines must be avoided. Equipment and vehicles should be selected and maintained to minimise noise levels. Personnel must be provided with the relevant PPE. A complaints register must be kept on site. The complaints register must record the following: date when complaint was received, name of person who reported the complaint and when and how the concern was addressed. 	<ul style="list-style-type: none"> Complaints register must be checked daily and complaints addressed as soon as possible. Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager
Generation, storage and removal of general and hazardous waste.	Incorrect waste management.	Pollution of soil-, surface water- and/or ground water.	To prevent soil-, surface- and/or ground water-contamination due to general and hazardous waste produced.	<ul style="list-style-type: none"> Waste drums, with closing lids, must be provided at the fuel depot. The drums must be colour coded or clearly labelled for the different waste types. Waste drums must be stored within a bunded area on an impermeable surface. Procedures must be drawn up for the correct handling, storage and disposal of waste. Employees must be trained to ensure that proper waste separation is carried out when placing waste in waste drums. Littering on site is not permitted. Waste must be removed to larger storage skips on a regular basis before the drums become full. General and hazardous waste must be removed and disposed of by a licensed contractor at regular intervals before storage skips overflow. 	<ul style="list-style-type: none"> Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
				<ul style="list-style-type: none"> Obtain and keep on file safe disposal certificates for waste disposed off site. 			
Operation of the fuel depot.	Inefficient or redundant use of resources.	Wastage of valuable resources.	To prevent the unnecessary wastage of resources.	<ul style="list-style-type: none"> Resources such as water and electricity must be used efficiently. Proper environmental training and awareness. Methods to conserve resources should be conveyed to workers. Water must be re-used wherever possible. Regular maintenance and inspection of equipment, such as water pipes, to prevent leaks. High pressure hoses should be used, if possible, at the wash bay to conserve water. Lights and electrical appliances/equipment must be switched off when not in use. Leaking taps and hose pipes are to be repaired immediately. Running water taps and hosepipes are not to be left unattended. Regular site inspection by supervisors and monitoring of resource consumption. Implementation of technologies that can reduce resource consumption. Processes should be designed to save electricity and water where possible. 	<ul style="list-style-type: none"> Regular site inspection and monitoring of resource consumption. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager
Ablution facilities on site (toilets, septic tank and soak away).	Unsanitary conditions on site.	Soil and groundwater contamination.	To ensure the effective operation of the septic tank system, thereby preventing contamination of the environment.	<ul style="list-style-type: none"> The septic tank system should be maintained as indicated by the supply company. The ground above the septic tank system must be regularly inspected for any rise of sewage water to the surface. This could indicate a blocked or broken pipe leading to the soak away. Ablution facilities should be maintained to prevent or minimize blockage and leakages. Should toilets become blocked or run slowly, this should be reported and the cause investigated. This could be due to a blocked or broken pipe leading from the toilets to the septic tank system. Create employee awareness about proper use of ablution facilities and the importance of proper hygiene. No cigarette butts, fats, oils, paper towels etc. may be disposed of into toilets or wash basins. Toilets should have properly closing doors and supplied with toilet paper. Movement of heavy vehicles above the septic tank system must be avoided as this may crack pipes. Pump out the septic tank as indicated by the supply company. 	<ul style="list-style-type: none"> Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager
Employees working at the fuel depot.	Employees not working with the correct equipment and/or not competent for the work.	Worker injuries and/or fatalities.	To ensure that employees conduct their work in a safe manner.	<ul style="list-style-type: none"> Personnel must be provided with the required PPE when working at the fuel depot. Personnel must receive appropriate training before commencing work at the site. Casual workers must also receive training before commencing work at the site. Proof of all training must be kept on file. Personnel must be competent to undertake their work and must conduct all work in a responsible manner. All mine (SHE) procedures must be followed. A well stocked first aid box must be available at all times. 	<ul style="list-style-type: none"> Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager
Maintenance and repairs at the fuel depot.	Incorrect maintenance practices.	Fires or injuries to employees.	To enable safe and effective maintenance at the fuel depot.	<ul style="list-style-type: none"> Repairs or alternations may not be undertaken whilst any equipment is in use, such as when a tank is being loaded or unloaded. Notices should be issued to relevant parties at the mine when maintenance is being scheduled. Hot work or similar hazardous work may not be undertaken inside of storage tanks before they have been inspected, a gas-free certificate has been issued, all pipelines have been disconnected and the relevant authorities have been notified. Confined-space entry permits must also first be obtained. In cases where a gas-free certificate has not been issued, workers may only enter the storage tanks when wearing a breathing apparatus. An observer must be present outside of the tank at all times and must immediately assist or summon assistance should the person inside of the tank collapse. Electrical equipment must be isolated and locked out before any repairs commence. This must be verified by an accredited person. Warning notices must be affixed or hung onto circuit breakers and/or switches to prevent accidental switching-on during repairs. An accredited person must certify that the apparatus is electrically and mechanically sound before it is brought back into use. Records of repairs must be kept on file. Maintenance and repairs must be supervised by a responsible staff member or members. 	<ul style="list-style-type: none"> Regular site inspection. Internal audits against this EMP must be conducted every 6 months and records kept on site. Shortcomings must immediately be addressed. 	Ongoing for the life of the fuel depot.	<ul style="list-style-type: none"> Facility manager

5.2.4 Rehabilitation Phase

Table 8: EMP - Rehabilitation Phase

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance	Timeframes	Responsible Party
Landscaping,	Incorrect	Soil erosion as a	To avoid soil	<ul style="list-style-type: none"> Replacement and rehabilitation should be progressive during the project and not left until the end. 	Regular site inspection by	Before	<ul style="list-style-type: none"> Construction

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance	Timeframes	Responsible Party
replacement and levelling of subsoil.	replacement and levelling of subsoil.	result of soil compaction.	compaction.	<ul style="list-style-type: none"> • Implementation of effective and sustainable rehabilitation and remediation practices. • Disturbed areas must be cleared of any building rubble or other debris. • Subsoil must be used to fill in excavations around the depot. • All weeds must be removed prior to soil replacement. • Compaction must be minimised by using the correct equipment. Excessively heavy vehicles should not be used to replace the soil. A dozer must be used instead of a grader. • Soils should ideally only be moved when dry. • Remaining subsoil must be used for rehabilitation in other areas of the mine. 	facility manager to determine whether soil erosion is occurring	completion of the construction phase.	contractor



5.2.5 Closure Phase

Should the mine close, the fuel depot will also need to be decommissioned. The expected life of the mine is 50+ years. Should the facility need to be closed, a closure plan will be drafted that will be sent to LEDET and DMR for approval. The closure of the facility will only commence once approval of the closure plan has been received.

6. Environmental awareness plan

The following environmental awareness training plan must be implemented by Anglo American in order to inform their employees and contractors of the environmental risk that may result from their work. The training plan must be conducted as part of the induction process for all new employees (including contractors) that will work at the fuel depot. Proof of all training provided must be kept on site.

The general environmental awareness training plan is called the “SHE match” training program. The training program focuses on the following aspects:

1. Explaining clearly what the environment is and what the environment consist of namely: air, water, soil, fauna, flora and people.
2. Once participants have grasped the description of what the environment entails, the training focuses on the potential impacts that the construction and operational activities may have on each one of these environmental components. This is done by making use of the aspect register, where each one of the environmental aspects and associated impacts has been identified.
3. To ensure that the training is effective, visual aids are used. Photos are taken of actual and potential impacts occurring on site and in some cases role-play is used to illustrate a potential impact.
4. The participants are then exposed to a poster that reflects the various environmental components. The various photos taken are posted on the poster on a rotational basis and the participants indicate (based on the visual component) what environmental component was or could have been affected by the activities portrayed on the photo.
5. By doing this the participants visualize the action as well as the potential consequence (environmental impact) of their action.
6. This General awareness training must be done before construction commences and also when new employees start work. The training should be done every two years during the operational phase. The poster is posted in the communal area where the impacts are visualized and the photos rotated on a monthly basis.

