

## ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan detailed below is not project specific. Once the full extent of the site has been ascertained, this statement will be revised, in association with the project ECO, to comply with the requirements of the site. The requirements of the Health & Safety plan are to be read in conjunction with this plan.

- Fencing
  - Fencing of the camp site shall be suitably secured to prohibit access to unauthorised personnel and livestock. Provision will be made for double lockable vehicle access gates and a separate gate for pedestrian use.
  - Fences will be constructed around heritage resources and any other identified sensitive areas to prevent unauthorised access to these areas.
  - Fencing will be kept neat at all times and be maintained on an as-and-when required basis by the contractor.
  - Should the fencing be removed temporarily for the execution of work, the contractor will reinstate it as soon as is possible. Until reinstatement, the contractor will provide temporary demarcation of the area as well provide an individual to ensure no access to the demarcated areas.
  - Breaches in the fence will be repaired immediately or demarcated and controlled until such time as they can be reinstated.
  
- Site Buildings / Construction Camp
  - The planning, positioning and design of the construction camp will be carried out to ensure minimal impact to the surrounding environment.
  - The site camp will be positioned to ensure no activities are carried out in environmentally sensitive areas such as wetlands or sensitive vegetation types. The camp will be positioned within an existing disturbed area as far as is possible.
  - On award of the contract, the contractor, in association with the projects ECO, will identify a lay down area for the contractor's site camp.
  - Site buildings will be container or prefabricated type structures. No permanent structures will be constructed.
  - On removal of the site camp, all temporary platforms and slabs will be removed to a commercial dump site.
  - No fires will be permitted within the Construction Camp. Suitable fire fighting equipment will be provided and maintained on site during the construction period.
  
- Personnel Education
  - Prior to any personnel being allowed access to the site, an induction will be conducted, ensuring all personnel are aware of and understand the

requirements of the Environmental Management Plan and the Health and Safety Plan.

- Should it be necessary, personnel will be trained on any aspects of Environmental management ie: Treatment of oil spills etc.
- The contractor will, at all times, ensure that his staff complies with the requirements of the Environmental Management Plan and that, on a regular basis, in conjunction with the Toolbox talks required under Health and Safety, be reminded of his obligations and the requirements.
- Sanitation
  - Sufficient chemical latrines will be provided in strategic positions on the site, for all staff.
  - A minimum of one toilet per twenty people will be provided, and serviced twice weekly.
  - Sufficient wash hand basins will be provided at the site camp.
  - A constant supply of fresh potable water will be made available, at all times, during construction for human consumption.
- Storage of Waste
  - Storage of Construction waste will be limited to within the boundaries of the site and within areas approved by the ECO.
  - Prior to completion of the project, the contractor will ensure that all waste is removed from site to a registered waste disposal site.
  - All waste generated by staff and sub-contractors will be disposed of in refuse bins. These bins will be cleared on a weekly basis and the waste disposed of at a registered waste disposal site.
- Vehicle and Plant Parking Area
  - All vehicles and plant will be allocated a dedicated parking area within the fenced off camp site. Provision will be made for drip trays which will be placed under all vehicles when not in use for extended periods.
  - No Vehicles or plant will be allowed to park outside the designated parking area for extended periods.
- Service Area and Wash Bay
  - All vehicles and plant will be well maintained to ensure that there are no oil or fuel leakages.
  - A dished concrete service area will be provided for any servicing and washing of plant and vehicles.
  - Drip trays will be available and be utilised during servicing of vehicles and plant.
  - Spillages on the concrete service area will be channeled into a sump where the contaminants can be removed for disposal at a register hazardous waste site by a registered waste removal contractor.
  - All necessary records and documentation of any hazardous waste removed from the site will be maintained and available for scrutiny by the ECO.
  - Any soil contaminated by oil, fuel or chemicals will be removed to a registered Hazardous Waste Disposal Site and replaced with suitable approved soil.

- The contractor will educate workers on the appropriate methods to prevent and limit spillage of hazardous materials and the treatment of any accidental spillages.
  - All spillage of oil or fuel, onto concrete service area, will be controlled by use of an acceptable absorbent material such as Drizit. The contractor will ensure this material is readily available, should a spill occur.
  - The servicing of plant and vehicles on the site will be kept to a minimum and when necessary, will only be allowed within the demarcated areas and under authorisation of the Contractor's site agent.
- Fuel Storage Areas
    - Above ground diesel tanks will be provided. A suitable bund wall will be constructed around the tanks, capable of containing 110% of the capacity of the diesel tanks, in the event of a spill. Drainage from the fuel storage areas will be treated to remove oil and fuel and the contaminants disposed of at a registered hazardous waste site.
    - No underground fuel storage will be permitted on the site.
    - The requirements of the Health & Safety plan are to be taken into account when providing fuel storage tanks on site.
- Aggregate and Material storage
    - All construction materials will be stored within the fenced off camp area as far as possible. Only materials intended for use during the same day will be allowed to be stored on the site.
    - Aggregates will be suitably banded to ensure minimal wash away and cross contamination in periods of high rainfall.
- Clearing and Grubbing
    - The contractor will, at all times, carefully consider the type of machinery that is appropriate for the task to be undertaken to ensure minimal damage to the environment.
    - The topsoil will be cleared of woody vegetation prior to ripping and removing. Indigenous vegetation specifically identified by the ECO will be carefully removed and maintained.
    - The topsoil is generally regarded as the top 150mm of the soil profile but can vary.
    - Topsoil will be handled twice only. Once when clearing and stockpiling and once during rehabilitation.
    - The topsoil, including the grass cover, will be lightly ripped before removal. This is to ensure that organic plant material and seeds are included in the stripping process.
    - The topsoil will be stockpiled in an area away from proposed construction activity to ensure minimal contamination of the topsoil. Stockpiles will not exceed 2.5m in height and side slopes will not be steeper than 1 vertical to 2.5 horizontal to ensure minimal wash-away during periods of excessive rainfall.
    - No vehicles will be allowed access onto the stockpile areas unless for the specific purpose of removing and placement of topsoil.
    - Stockpiles will not be allowed to be contaminated with fuels, garbage or any other material which may inhibit later growth of vegetation.

- Natural vegetation will be disturbed as little as possible. Special attention will be paid to preserve trees and plants that do not fall within the scope of the works and if necessary, these must be demarcated to ensure no access.
- Indigenous plants and wild animals will, under no circumstances be harmed or damaged. The ECO may identify Indigenous plants that are not to be destroyed. Should the contractor be instructed to remove these plants, due care will be taken to remove the plants with as much of the root structure as is possible and maintain these in a secure area until completion of the works.
- Initial Earthworks and Platforms
  - The contractor will, at all times during construction, make necessary provision for storm-water control to minimise erosion resulting from construction activities.
  - During construction, the contractor will protect areas susceptible to erosion by means of temporary and/or permanent drainage works.
  - Measures to reduce erosion could include for cut off trenches, berms and the construction of platforms to minimal gradients thereby reducing the velocity of run-off.
  - Under no circumstances will work be carried out that may cause disturbance to any river embankment. Any work to be carried out in these areas is to be performed under instruction and supervision of the ECO.
- Dust Control
  - At all times during construction, the contractor will adopt necessary methods to reduce the generation of dust. Dust control by means of water-spraying is the suggested method for this site and quantities sprayed will be controlled to reduce run off and possible erosion.
  - Speed limits will be enforced at all times to reduce the levels of dust pollution to the surrounding properties.
  - Spoil and stockpile areas will be planned and positioned as best as possible to reduce the exposure to wind erosion and will not be positioned directly alongside existing structures or properties.
  - An appropriate freeboard will be maintained at all times on trucks hauling material on public roads and if necessary, suitable tarpaulins will be used to cover the material while in transit.
- Access Roads and Accommodation of Traffic
  - The contractor will make use of existing roads as far as is possible. Temporary access roads may be constructed after negotiation with the ECO and affected land owners.
  - Temporary access roads shall be decommissioned on completion and rehabilitated using stockpiled topsoil.
  - Removal and maintenance of topsoil will be done as specified under "Clearing and Grubbing"
  - During construction of any temporary access roads, the contractor will make necessary provision for erosion and stormwater control.

- Spoil Material
  - As far as is practicable, all suitable excavated materials will be used in the construction of the works.
  - Should it be necessary, all unsuitable and surplus material shall be removed from site and spoilt at a site negotiated by the contractor and accepted by the ECO. Here it will be spread and leveled and necessary precautions taken to reduce erosion, obstructions to water courses and dust nuisance. (In terms of this project, it is a requirement that this material be removed from site and disposed at a commercial dump site.)
  
- Topsoil Placement and Re-vegetation
  - Topsoil, to a depth of 75mm, will be placed over all areas that have been disturbed by the construction activities and at the instruction of the ECO.
  - Topsoil placement will be carried out as soon as possible after completion of a portion of the works to promote growth which will reduce the possibility of erosion.
  - No vehicles will be permitted to travel over any portion of the site that has been covered with topsoil.
  - Immediately after placing of topsoil, should it be required in terms of the contract, grassing of the slopes will be carried out. Grass mix will be as instructed by the ECO.
  - Should it so be required, the grassed areas will be watered on a regular basis until sufficient growth has occurred.
  
- Site Clean Up and Rehabilitation
  - On completion of the contract, the contractor will ensure that all building materials and rubble generated from construction activities will be removed from the site.
  - All temporary building are to be removed and the site camp area be cleared, cleaned and rehabilitated to the satisfaction of the ECO, prior to re-vegetation, if required.