

Western Cape Provincial Administration: Public Works and Transport

**DRAFT CONSTRUCTION ENVIRONMENTAL
MANAGEMENT PROGRAMME:**

**UPGRADE OF THE TRUNK ROAD 25 / MAIN
ROAD 25, MALMESBURY**

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CLIENT

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1 INTRODUCTION

1.1 BACKGROUND

The Western Cape Provincial Administration: Public Works and Transport proposes the upgrade of the Trunk Road 25 / Main Road 25 located east of Malmesbury. The proposed upgrade will be approximately 4 km in length and 12.6 metres wide within the 30 metre road reserve. The TR25/MR25 links Malmesbury to towns such as Paarl, Riebeeck Kasteel and Riebeeck Wes.

KV3 Engineers' Environmental and Waste Management Division has been appointed to compile the Construction Environmental Management Programme (EMP) for the proposed project.

The proposed upgrade is subject to an activity will be subject to an Environmental Basic Assessment process in terms of the Environmental Impact Assessment Regulations as it has been listed in the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

1.2 SCOPE

The aim of the EMP is to ensure that proper controls are in place to address the environmental impacts of the proposed construction of the TR25/MR25, Malmesbury and to set out methods by which the contractor's control must be in place cover the construction period of the project as well as the limited time after contract completion defined by the General Conditions of Contract, and the project specifications, as the defects liability period (maintenance period).

The provisions of the EMP are binding on the Contractor during the life of the contract. In the event that any conflict occurs between the terms of the EMP and the project specifications, or Record of Decision, the terms herein shall be subordinate.

The EMP is a dynamic document subject to similar influences and changes as are wrought by variations to the provisions of the project specification. Any substantial changes must be submitted to the relevant authorities in writing for approval.

1.3 OBJECTIVES OF THE EMP

This EMP serves to highlight specific requirements that must be monitored during the project and the document must therefore be seen as a guideline in minimising the potential negative environmental impact of the proposed upgrading. The EMP has the following goals:

- Identification of construction activities that could have a negative impact on the environment;
- Detailing the mitigation measures and specifications with which the Contractor must comply in order to minimise the extent of negative environmental impacts during construction by providing procedures for their implementation;

- Defines corrective actions that must be taken in the event of non-compliance; and
- Prevent long-term environmental degradation.

1.4 LEGAL REQUIREMENTS

Construction must be according to the best industry practices, as identified in the project documents. This EMP, which forms an integral part of the Contract Documents, informs the Contractor as to his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of negative environmental impact caused by construction activities associated with the project.

The Contractor must note that obligations imposed by the EMP are legally binding in terms of environmental statutory legislation. In event that any rights and obligations contained in this document contradicts those specified in the standard or project specifications, then the latter will prevail.

Statutory and other applicable legislation

It is expected that the Contractor is conversant with all environmental legislation pertaining to the project. In addition the Contractor must also take cognisance of Provincial and Local Government Ordinances, which may be applicable to the project.

1.5 DEFINITIONS

The following definitions are applicable to this EMP.

“Alien vegetation “ – Alien vegetation is defined as undesirable plant growth which include, but not be limited to all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien shall be those plant species that show the potential to occupy in number, any area within the defined construction area.

“Construction Activity” - Any action taken by the Contractor, sub-contractors, suppliers or personnel during the construction process.

“Environment” – as defined by the National Environmental Management Act, Act No. 107 of 1998, means the surroundings within which humans exist and are made up of -

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

“Environmental Aspects” - Those components of a project’s activities, products and services that are likely to interact with the environment.

“Environmental Impact” - The degree of change to the environment, whether desirable or undesirable, that will result from the effect of a Construction Activity within the limits that define the construction site. An Impact may be the direct or indirect consequence of a Construction Activity.

“Solid waste” - All solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. lunch packs, plastic packets and wrappers).

2 ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND RESPONSIBILITIES

The aim is primarily, to identify each environmental aspect of the proposed project and plan the activity in such a way that negative environmental impacts are prevented from happening. In the event of an accident, the Contractor must immediately apply approved measures that will limit and contain the magnitude, duration and intensity of the impact.

The Contractor must demonstrate that he/she is capable of carrying out any repair and reinstatement of the damaged environment. General good construction practice will play an important role in avoiding the occurrence of an environmental impact.

Listed below are some environmental impacts associated with the proposed development that could adversely alter the environment:

- Site establishment;
- Vegetation removal;
- Soil erosion;
- Solid waste generation and disposal thereof;
- Hazardous waste generation and disposal thereof;
- Water supply and discharge;
- Storm water discharge;
- Pollution of atmosphere, soil or water;
- Spillages; and
- Dust generation.

2.1 ENVIRONMENTAL MANAGEMENT OF THE CONSTRUCTION PHASE

2.1.1 Site establishment

There will be no camp site, only a site office for the duration of the construction period.

Before construction commences, the Contractor must submit to the Engineer for his approval, detailed plans of the layout of the site office and impact mitigation measures the Contractor proposes to put in place. The layout must detail the locality of the waste facilities for refuse, sewage, workshop and hazardous material storage.

2.1.1.1 Ablution Facilities

Ablution facilities have the potential to cause pollution of water sources if not managed correctly. Proper management will ensure a safe and hygienic environment for construction workers.

The Contractor is responsible to provide chemical toilets for the construction workers. These must be positioned within walking distance from wherever the employees are busy with the construction work, and must be done in consultation with the Engineer. Performing ablutions anywhere other than in toilets is strictly prohibited. The toilets must be locked and be secured to prevent it from blowing over. The Contractor is entirely responsible for enforcing proper use and maintenance and servicing of ablution facilities to ensure that it is maintained in a clean and sanitary condition to the satisfaction of the Engineer, local authorities and legal requirements.

2.1.1.2 Eating Areas

Eating areas have the potential to cause litter through food leftovers and lunchboxes, which in turn has the potential to attract vermin. The Contractor must designate specific eating areas for the employees within the area demarcated for road construction. The Contractor must provide scavenger proof and weather proof litter drums or suitable containers within this area to ensure that waste generated is disposed of in a suitable manner. The drums or containers must be emptied on a daily basis.

2.1.1.3 Site Clearance

The Contractor must submit a plan for construction and site clearance to the Engineer for approval before any construction/disturbance may commence. This plan must contain a photographic record and land reference of the areas to be disturbed. All construction activities including stockpiling of construction material must be strictly confined to this demarcated area.

2.1.1.4 Bitumen

Over spray of bitumen products outside the road surface and onto roadside vegetation of the surrounding environment shall be prevented using the method approved by the Engineers.

When heating bitumen products, the Contractor shall take cognisance of appropriate fire control. Heating of bitumen products shall only be undertaken using LPG or similar zero emission fuels and appropriate fire fighting equipment shall be readily available.

Stone chip/gravel excess shall not be left on road / paved areas verges. This shall be swept / rakes onto piles and removed to an area approved by the Engineer.

Water quality from runoff from new /fresh bitumen surfaces will be monitored visually by the Engineer and remedial actions taken where necessary by the Contractor.

2.1.2 Vegetation Management

The Contractor is responsible to inform his staff of the need to be vigilant against any practice that will have a harmful effect on the natural vegetation. The natural vegetation encountered on the site is to be conserved and left undisturbed, and no vegetation is allowed to be plucked or collected without authorisation from the relevant authority.

No blanket clearing of vegetation is to take place on site, i.e. the entire development must not be cleared at once but in stages as areas become needed for construction. Only trees and shrubs directly affected by the construction works may be felled or cleared.

2.1.2.1 Exotic Plant Material

The Contractor must be held responsible for the removal of all exotic vegetation on the site. All exotic plant material which currently occurs on the site must be removed and that which colonises disturbed ground is to be systematically removed and destroyed prior to it attaining the seed formation stage. This includes service roads, stockpile areas, and wherever material generated for or from road construction has been stored temporarily. This responsibility extends for the duration of the defects liability period. Care must be taken to avoid the spread of seeds of alien vegetation.

2.1.3 Water Management

All runoff from batching areas must be strictly controlled. Cement contaminated water must be collected and disposed of at a registered waste disposal site. Cement and/or concrete mixing must be positioned away from drainage lines, and measures to ensure that no polluted water enters the wetland.

Water must be used sparingly on site during the construction phase and where possible wastewater must be recycled.

2.1.4 **Soil Management**

2.1.4.1 Topsoil

Topsoil is considered to be the natural soil covering, including all vegetation and organic matter, and the depth of the topsoil layer may vary at each site. Topsoil must be removed from all areas where physical disturbance of the surface will occur, including storage areas, and must be stored and adequately protected. The Contractor must ensure that no, or minimal topsoil is lost due to erosion, either by wind or water.

Excavated topsoil must be used during rehabilitation. Areas to be top soiled and grassed must be systematically done to allow for quick cover and reduction in the chance of heavy topsoil losses due to unusual weather patterns. The Contractor's programme must clearly indicate the proposed rate of progress of the application of topsoil and grassing. The Contractor must be held responsible for the replacement for any unnecessary loss of topsoil due to his failure to work according to the progress plan approved by the Engineer. Weeds appearing on the stockpiled topsoil must be removed by hand.

2.1.4.2 Subsoil

The subsoil is the layer of soil immediately beneath the topsoil. It must be removed, to a depth as instructed by the Engineer, and stored separately from the topsoil if not used for road construction. The soil must be replaced in the excavation in the original order it was removed for rehabilitation purposes.

2.1.5 **Stock Piling**

The Contractor must plan his activities so that excavated materials can be transported direct to and placed at the point where it is to be used. However, should temporary stockpiling become necessary, the areas for the stockpiling of excavated and imported material must be indicated and demarcated on the site plan submitted to the Engineer for his approval, together with the Contractor's proposed measures for prevention, containment and rehabilitation against environmental damage. The areas chosen for stockpiling must have no naturally occurring indigenous vegetation that may be damaged during operations. Care must be taken to preserve all vegetation in the immediate area of these temporary stockpiles.

Stockpiles must be shaped and sited in such a way that they do not interfere with the flow of water to cause damming or erosion, or itself be eroded by the action of water.

Stockpiles must not exceed a height of 2m, and if they are to be left for longer than 2 weeks, must be analysed, and if necessary, upgraded before replacement. All stockpiles must be maintained throughout the contract period and the Contractor must at all times ensure that they are:

- Positioned and sloped to create the least visual impact;
- Constructed and maintained so as to avoid erosion of material and contamination of surrounding environment; and
- Kept free of all exotic plant material.

After the stockpiled material has been removed, the site must be rehabilitated to its original condition. No foreign material generated or deposited during construction must remain on site. Areas affected by stockpiling must be landscaped, top soiled, vegetated and maintained by the Contractor until clearance from the Engineer is received. In all cases, the Engineer must approve the areas for stockpiling and disposal of construction rubble before any operation commences.

2.1.6 **Erosion**

During construction, the Contractor must protect areas susceptible to erosion by employing necessary temporary and permanent drainage works as soon as possible and by taking other measures necessary to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other areas. The Contractor must submit to the Engineer for his approval, methods which he intends to employ to prevent or limit soil erosion during construction, as well as erosion control methods following construction.

2.1.7 **Dust**

The Contractor must submit, to the Engineer, dust minimisation strategies during the construction period. Dust that may be generated during construction from stockpiled, excavated material must be minimised until such time that this material has been utilised during the rehabilitation process or that it can be removed and disposed of. Water used for this purpose must be used in quantities that will not result in the generation of run-off.

2.1.8 **Solid Waste Management**

The Contractor must submit methods for waste minimisation and waste management before construction commences. No littering by construction workers is allowed and all workers must be instructed to dispose of waste in a proper manner.

No waste from construction or otherwise, may be disposed of on site. In this regard, the Contractor must place adequate litter drums or other suitable containers on site to ensure that waste generated on site is disposed of in a suitable manner. These bins must be kept closed at all times and must be weatherproof and scavenger proof. Waste must be collected on a weekly basis and must be stored at the site office prior to removal off-site. This central collection area must have appropriate storage containers (closed, weatherproof and lined with plastic). The waste from this central collection area must be disposed of at a registered waste disposal site. Waste must be removed from site on a weekly basis. Waste must not be burnt or buried on site or in the surrounding area. Where possible, appropriate material must be reused or recycled.

2.1.9 **Hazardous Waste**

Hazardous waste, such as bitumen, tar and oils, must be disposed of at a registered waste disposal site. Special care must be taken to avoid spillage of hazardous waste, in order to avoid water soluble phenols from entering the ground or contaminated water. Under no circumstances must the spillage of hazardous substances on the site be allowed.

Contaminated soil must be excavated to a depth of 20 mm and be disposed of in containers at a registered waste disposal site.

2.1.9.1 **Storage Facilities**

Before storage facilities for hazardous substances can be erected, the Contractor must furnish the Engineer with details of the preventive measures he proposes to employ in order mitigate against pollution of the surrounding environment from leaks or spillage. This plan must also indicate the emergency procedures in the event of misuse or spillage that will have a negative impact. Hazard signs indicating the nature of the stored material must be displayed on the storage facility.

2.1.10 **Cement/Concrete Batching**

Cement and concrete are regarded as hazardous to the environment due to the high pH of the material and the chemicals it contains. It is therefore essential that spillages onto the soil surface are prevented. In this regard, no cement and/or concrete mixing must take place on soil surface. Cement mixers must be placed on large mixing trays, underlain by an impermeable plastic layer to prevent accidental spills from coming into contact with the soil.

2.1.11 **Generators/Fuel Supply and Storage**

Generators and fuel supply needed during construction must be placed on trays, which rest on clean sand. No more than 200 litres of fuel must be stored on site at any given time. The Contractor must ensure that all liquid fuels (petrol and diesel) as well as oils and lubricants stored in a secure area on site and are kept in tanks with lids, which are kept firmly shut.

Contractor must keep fuel under lock and key at all times. Once construction has been completed, the containers must be removed from the site and disposed of at a registered waste disposal site.

2.1.12 **Vehicle and Equipment Maintenance and Storage**

All vehicles and equipment must be kept in good working order and leaking equipment must be repaired immediately or removed from the site. Equipment and vehicles must be stored within the demarcated areas.

2.1.13 **Spoil Sites**

The Contractor must obtain written approval from the Engineer before any spoil site is used. The use of approved spoil sites for the disposal of hazardous waste must be prohibited at all times.

2.1.14 **Spillages**

The Contractor is responsible for all spill treatment, and must submit to the Engineer for his approval, a plan for spillage management. The Contractor must report incidents of hazardous waste spillages to the Engineer who must assess the situation and act as required in order to rectify the situation. In all cases, the immediate response must be to contain the spill.

The nature and magnitude of spillages must be recorded in a designated register, as well as the action taken to mitigate its effects and the results of the actions. Areas cleared of hazardous waste must be re-vegetated according the

2.1.15 **Noise Control**

The Contractor must endeavour to keep noise generating activities to a minimum. Construction activities must adhere to the relevant by-laws and regulations must be adhered to.

2.2 **REHABILITATION**

The Contractor is liable to rehabilitate any disturbed areas and must submit methods for rehabilitation of the construction site to the Engineer for his approval. The construction

site must be top soiled and re-vegetated with indigenous plant species. Rehabilitation must occur in a progressive manner, i.e. re-vegetation of disturbed sites must be undertaken as soon as construction activities at each individual site have been completed.

Vegetation planted at the site must be indigenous and in accordance with instruction issued by the Engineer.

2.3 **RECORD KEEPING**

The Engineer must continuously monitor the Contractor's adherence to the approved impact prevention procedures and must issue to the Contractor a notice of non-compliance whenever transgressions are observed. The nature and magnitude of non-compliances must be documented in a designated register, as well as the action taken to discontinue the non-conformance, the action taken to mitigate its effects and the results of the actions. The non-conformance must be documented and reported to the Engineer in the monthly report.

2.4 **COMPLIANCE AND PENALTIES**

The Contractor must act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment must be recorded in a dedicated register and the response noted with the date and action taken. This record must be made available upon request. Any avoidable non-compliance with the above-mentioned measures must be considered sufficient ground for the imposition of a penalty. The value of the penalty must not be less than the payment that would have been due to the Contractor for the day's production of the relevant item of work that gave cause for the infringement. The imposition of such a penalty must not preclude the relevant Provincial or National Authority from applying an additional penalty in accordance with its statutory powers. Any non-compliance with the agreed procedures of the EMP is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause must be reported to the relevant authority for them to deal with the transgression, as it deems fit.