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EIA DM 0115 /08
ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR THE

BRIDGE CITY LOWER PLATFORM
DEVELOPMENT

WITHIN THE

KWAMASHU /NTUZUMA/ PHOENIX AREA
ADJACENT TO
THE KWAMASHU HIGHWAY (MR 93)

JUNE 2012

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1. INTRODUCTION

1.1. BACKGROUND TO THE DEVELOPMENT

The overall Bridge City development is a large urban development project being undertaken as a joint venture agreement between eThekweni Municipality and Tongaat Hulett Developments (Pty) Ltd. The Bridge City Lower Platform development is an approximately 18ha portion of this overall development, for which an environmental authorization dated 6th April 2011 has been obtained from the KwaZulu-Natal Department of Agriculture, Environmental Affairs and Rural Development (DAEARD) after an EIA process (EIA DM/0115/08). This EIA process followed the Basic Assessment procedure.

The environmental authorization granted is to permit the development of the approximately 18ha site, known as the Bridge City Lower Platform, comprised of various portions of the Farm Melkhoute Kraal No. 789 near Phoenix Durban. The great majority of the site is already leveled and there are existing public roads, services and developments in the form of some infrastructure and light industrial factories on a small portion of the leveled platform that already exists on the site.

There is an approximately 1.44 hectare portion of the site at its extreme eastern end where infilling of the existing ground level was originally calculated that it will be required to be infilled to raise it above the 1 : 100 floodline in this portion of the site. This area has been assessed by a specialist as having no vegetation of value on it, and it is heavily invaded by alien invasive plants. Some dumping of soil has already occurred in this area from previous activities not related to this application.

It is the intention to develop the site fully for commercial, retail and light industrial use, in a similar manner that will occur in the overall Bridge City development, and in terms of the approved town master programme for the area that has been formulated by the above two joint venture partners.

The site falls within the service envelope of the eThekweni Municipality that is servicing the existing developments on the site, in the form of connections to the waterborne sewage system, and water and electricity connections and the removal of solid waste by the municipality's Solid Waste Department. These services for sewage, solid waste disposal, water supply and electricity would therefore be provided to the new developments on the site as well. On completion of the development the public areas such as roads and their associated services (sewer, water and electricity) will revert to the ownership and management of the eThekweni Municipality. Individual sites will be sold off to final purchasers.

1.2. BACKGROUND TO THIS AMENDED EMPr

A draft Environmental Management Programme (EMPr) October 2010 was included within the appendices of the draft and final Basic Assessment Reports, which were submitted during the EIA process to the DAEARD, the latter report of

which was accepted by this Department prior to the granting of the environmental authorization.

Within this environmental authorization, condition of authorization 1.13 prescribes that the Draft Environmental Management Programme dated October 2010 must be amended by an Environmental Assessment Practitioner (EAP) in consultation with the holder of the environmental authorization and other members of the professional team for the development to include the following :

1.13.1. The conditions of the Environmental Authorization : These conditions are included are included within the relevant sections of this EMPr and its appendices.

1.13.2. The requirements of Regulation 33 of the EIA Regulations, GNR 543, June 2010 : This is provided in the following section 1.3. below.

13.3. The mitigation measures proposed in the EIA report prepared by Messrs Guy Nicolson Consulting cc dated October 2010, provided it does not conflict with conditions contained within the environmental authorization. These conditions are provided below within the relevant sections of this EMPr.

1.13.4. The conclusion and recommendations emanating from the specialist studies, provided it does not conflict with the conditions contained in the environmental authorization : These recommendations are included in the relevant sections of this EMPr and its appendices.

1.13.5. A copy of the environmental authorization :

This requirement has been met, with a copy of this Environmental Authorization is included within Appendix 1.

This amended EMPr is required to be submitted to the Assistant Manager, Compliance Monitoring and Enforcement Component : eThekweni District Office of the DAEARD, of the postal address Private Bag X54321 Durban 4000, for their approval prior to the commencement of construction.

This requirement has been met, with the Amended EMPr having been submitted to for their approval by courier on the 6th July 2012.

1.3. COMPLIANCE WITH REQUIREMENTS OF REGULATION 33 OF THE EIA REGULATIONS GNR 543 OF JUNE 2010

Condition of authorization 1.13.2. prescribes that the requirements of Regulation 33 of the EIA regulations GNR 543 June 2010 must be incorporated into the EMPr. Regulation 33 requires that the details of the person who prepared the EMPr and the expertise of that person be included within it.

Guy Nicolson of Guy Nicolson Consulting cc prepared this EMPr. His relevant academic qualifications are BSc. BSc. Hons (Ecology) and MSc. (Environmental Planning) and he is professionally registered as an

environmental scientist with the South African Council of Natural Scientific Professions and the South African Institute of Ecologists and Environmental Scientist. He has practiced since an environmental consultant since 1985, and has a wide range of experience in this field, including the formulation and implementation of environmental management programmes.

In regard to the other requirements as to the contents of an EMPr, the rest of regulation 33 has been reviewed, and all those requirements within it applicable to the formulation of this EMPr have been incorporated into the relevant sections within this EMPr.

1.4. THE PURPOSE OF THIS ENVIRONMENTAL MANAGEMENT PROGRAMME

A Construction Environmental Management Programme (EMPr) is a practical and achievable plan of management to ensure that any negative environmental impacts are minimized and any possible environmental benefits are maximized during the design and construction phase of a development. This EMPr therefore provides practical guidelines for environmental management to ensure all works undertaken by the developer, engineer/s, contractor/s and sub – contractor/s have minimal impact on the environment, and are in accordance with all relevant legislation, policies and norms and standards.

The mitigation measures specified within this programme provide these guidelines, to be implemented during the construction process. The necessary compliance inspection and reporting procedures and the various role players and their responsibilities are also contained within this EMPr..

1.5. RESPONSIBILITY FOR IMPLEMENTATION OF EMPr

The responsibility for the implementation of this EMPr will be the applicant, Tongaat Hulett Developments (Pty) Ltd, who are also the project managers for the Bridge City development. The applicant is responsible for the conditions laid out in this environmental authorization until such time as the land is transferred to other developers and / or private purchasers.

It is therefore the responsibility of the applicant to ensure that all measures contained within this EMP are properly implemented.

It is also a requirement that a copy of this EMPr be is kept on site in an “Environmental File”. This file must also be used to store any additional documentation prescribed below in the implementation of the EMPr. For example, proof of the disposal of waste to a licensed waste disposal site proof of the obtaining of source materials such as sand and stone, from an accredited source.

In terms of condition of authorization 1.25, there will be the appointment of an independent Environmental Control Officer (ECO) by the Department of Agriculture and Environmental Affairs and Rural Development (DAEARD) to

monitor, audit and report on the implementation of the measures contained within the EMP to DAEA.

It is also to be noted that, as required in condition 1.22. the applicant must ensure that each purchaser of a property within the site is given a copy of this EMPr at the time of the signing of the Deed of Sale or rental agreements. The purchasers must be made aware of the developable areas on site and the legal implications should this condition not be adhered to. The purchaser must sign an acknowledgement and acceptance of the contents of the EMPr. These documents must be kept on site and made available on request.

1.6. MONITORING OF THIS EMPr

Monitoring of the implementation of this EMPr is prescribed in the environmental authorization granted by DAEARD in the relevant conditions of authorization as follows :

1.25. An independent environmental control officer (ECO) must be appointed at the developer's cost to monitor the implementation of the EMPr on a monthly basis. This requirement has been met with Guy Nicolson Consulting having been appointed as the ECO.

1.26. Upon appointment the ECO his / her details must be communicated in writing to the Assistant Manager :CME Component of the eThekweni District Office : This requirement has been met with a letter to this effect dated 6 July 2012 having sent by courier on this date to Assistant Manager, Compliance Monitoring Enforcement. eThekweni Regional Office of the DAEARD.

If there is a change in the appointment of the ECO during the construction process, it is a requirement that developer notify the Assistant Manager :CME in the manner prescribed within conditions 1.27 and 1.28 of the environmental authorization.

The responsibilities of the ECO are set out in condition of authorization 1.29 to include the following :

- Performing all tasks assigned to the ECO in the EMPr.
- Keeping records of all activities on site, problems identified and transgressions noted.
- Assisting the environmental authorization holder in ensuring / enforcing implementation of the approved EMPr, and;
- Providing guidance / advice that ensures implementation of appropriate environmental management measures and adherence with environmental measures and adherence with environmental legislation / regulations.

1.7. RECORDING AND REPORTING TO THE DEPARTMENT

As prescribed in condition of authorization 1.30, the holder of the environmental authorization must submit monthly environmental audit reports during the

construction phase, and a post construction audit report within sixty (60) days once construction is completed.

The reports must be addressed to the Assistant Manager : CME Component, eThekweni District Office. In terms of the requirements of condition 1.30, the environmental audit report must :

1. Be prepared by an independent environmental auditor (may be the ECO).
2. Include, but not limited to, any adverse changes made to the environment, including the implementation of mitigation measures.
3. Include copies of approvals granted by other authorities that are relevant to the development.
4. Recommend changes that must be included in the EMPr for case where unmitigated impacts have been discovered.
5. Be submitted as a hard copy (unless otherwise agreed in writing by the Assistant Manager : CME)
6. Identify actual impacts that have occurred, versus those predicted, including an evaluation of the success of mitigatory measures implemented.
7. Evaluate compliance with the environmental authorization and requirements of the approved EMPr for the reporting period.
8. Include supporting documentation needed to confirm compliance with the environmental authorization for the reporting period.
9. Include measures to be implemented to attend to any non-compliances or degradation noted; and
10. Report back on measures already implemented to attend to non-compliance or degradation noted.

1.8. COMMISSIONING THE ACTIVITY AND RELATED REQUIREMENTS AND APPROVALS THAT ARE REQUIRED BEFORE CONSTRUCTION MAY BE COMMENCED WITH

The following requirements related to various conditions of authorization referred to below which are contained within the environmental authorization that are required to be met before construction may be commenced with :

CONFIRMATION OF SERVICES

As required within condition 1.16. written confirmation of service agreements i.e. water, electricity and sewage must be obtained prior to any construction related activities on the site. A copy of the service agreements must be appended to the EMPr :

This requirement has been met, with the necessary confirmation documentation contained within appendix 9.

PROVIDING WRITTEN NOTICE OF COMMENCEMENT OF CONSTRUCTION

As required within condition 1.32. a written notice must be given to DAEARD within fourteen (14) days prior to the commencement of construction. This notice must include the site preparation activities as well as the anticipated date

of commencement and must cite the reference number of the application, i.e. DM/0115/08 :

This requirement has been met, with the letter advising construction activities having been sent by courier on the 6th July 2012.

COMPLIANCE WITH THE APPROVED DEVELOPMENT PLAN

As required within condition 1.36. the development must comply substantially with the layout plan prepared by Messrs Iyer Urban Design Studio Drawing No. 2010/11/LP ver.06 dated November 2010, which must be approved by eThekweni Municipality prior to the commencement of construction. A copy of the approved plans must be appended to the EMPr : This requirement has been met, with the municipality's approval of the development plan and the plan included in appendix 8

PROOF OF GEOTECHNICAL SUITABILITY

As required within condition 1.37. the construction activities can only proceed once the site is found to be geotechnically suitable by a competent geotechnical professional. Proof that the site is suitable for the proposed development must be attached to the EMPr.

This requirement has been met, with the site specific geotechnical report contained within appendix 10.

LOCATION OF THE CONSTRUCTION CAMPS

As required in condition 1.39.2. the location of the construction camp must be negotiated and agreed upon by the eThekweni Municipality, the applicant, the contractor and the ECO for the project.

This negotiated and agreed upon plan of the construction site camp is included in Appendix 11.

APPROVAL OF THE STORM WATER MANAGEMENT PLAN

As required within condition 1.43.1. The stormwater Management Plan (SMP) prepared by Messrs Stemele Bosch Africa (Pty) Ltd dated April 2009 must be submitted to the Department of Water Affairs (DWA) and the eThekweni Municipality Coastal and Storm Water Catchment Management for review, comment and approval prior to the commencement of the activity. The SWMP must be amended to incorporate the comments related to the following conditions :

1.43.2. The approved SWMP must be appended to the EMPr.

This requirement is met, with the approved SWMP included as appendix 5

1.43.3. The SMP must be updated as and when required and to the satisfaction of DWA and the eThekweni Municipality : Coastal and Storm Water Management. This requirement has been met, with the letters from these two organization contained within appendix 6.

1.43.4. Storm water management must be implemented / undertaken prior to the commencement of major earthworks.

1.43.5. The stormwater from developed areas must not cause soil saturation, erosion and the sloughing of areas.

1.43.6. Any wastewater, i.e. water containing waste generated during the construction and operational phases must not be discharged into the natural environment. Measures to contain the wastewater and to safely dispose of it must be implemented.

1.43.7. Wastewater and the sewage network system must be kept separate from stormwater.

1.43.8. After construction the site must be contoured to ensure free flow of run off and to prevent ponding of water.

SPILL CONTINGENCY PLAN

As required within condition 1.45 a spill contingency plan must be compiled for the construction and operational period and must include the actions prescribed within conditions 1.45.1 to 1.45.7.

This spill contingency plan has been compiled in accordance with these requirements, and is included within this EMPr as appendix 2.

INDIGENOUS LANDSCAPING PLAN

It is required within condition 1.50 an appropriate indigenous landscaping plan and vegetation rehabilitation plan for the areas of the site below the 1 : 100 year floodline after earthworks must be developed and submitted to the eThekweni Municipality Environmental Planning and Climate Protection Department and Ezemvelo KZN Wildlife for approval prior to the commencement of construction.

However, as demonstrated in the Storm Water Management Plan of Appendix 5, when the more detailed storm water management plan that none of the site, including its embankments, falls within the 1 : 100 floodline, therefore this requirement cannot be met, as it is not possible to do so.

ACCEPTANCE OF THE OFFSET AGREEMENT

As required in condition 1.51. the construction activities can only commence once the offset agreement for the development within the 1 : 100 floodline of the Piesang River has been accepted in writing by both the eThekweni Municipality : Environmental Planning and Climate Protection Department and the applicant.

This requirement has been met and the Offset Acceptance Agreement is contained within appendix 7

1.9. THE STRUCTURE AND CONTENT OF THIS EMPr

There are four sections to this EMPr, each dealing with a particular environmental management component associated with the construction project, as follows :

Section A : Site establishment and preliminary activities

Section B : Management of construction activities and workforce.

Section C : Post construction site closure activities.

Section E : Operational phase of the activity.

APPENDICES :

The following appendices are included at the end of this EMPr.

1. The Environmental Authorization.
2. The Spill Contingency Plan
3. Complaints Register and Incidents Report Register
4. List of hazardous substances which will occur on the site (Appendix cover sheet provided, list to be provided by contractor).
5. Approved Stormwater Management Plan
6. Letters of approval of Stormwater Management Plan
7. Confirmation of Offset Agreement with eThekwini Municipality
8. Confirmation of Planning Approval from the eThekwini Municipality
9. Confirmation of the supply of services by the eThekwini Municipality
10. Site specific Geotechnical Report
11. Negotiated location of the construction site camp.

SECTION A : SITE ESTABLISHMENT AND PRELIMINARY ACTIVITIES

A.1. LOCATION OF SERVICES AND PUBLIC PROTECTION

A.1.1. LOCATION OF SERVICES

1. The location of all underground services and servitudes must be identified and confirmed prior commencing construction in any particular area of the site.
2. All existing drainage lines inside the current development area and not yet handed over to the eThekweni Municipality are to be maintained by the developer in accordance with approved municipal practices.

A.1.2. PROTECTION OF PUBLIC FROM CONSTRUCTION.

1. Before the commencement of construction the construction area must be ;
 - a. Cordoned off from the public to keep them clear of the site.
 - b. Be clearly demarcated, and all construction work must be kept within the demarcated areas.
2. Adequate and proper signage must be erected on the construction site and the roads adjacent to the construction site to warn both pedestrians and motorists of the construction.

A.2. SETTING UP OF CONSTRUCTION CAMP

A.2.1. LAYOUT

1. The choice of the location of the construction site requires the approval of the eThekweni Municipality, the applicant, contractor and the ECO.
2. The construction camp must be easily accessible, but situated away from any adjacent developed properties and at least 50m away from any watercourses, wetlands or drainage lines.
3. The construction camp will be comprised of, or nearby other existing facilities must provide the following requirements needed during construction :
 - site office
 - ablution facilities
 - designated first aid area
 - staff toilet and ablution facilities.
 - storage areas
 - refueling area (if required)
 - maintenance area (if required)
4. Adequate parking must be provided for staff and visitors.
5. The contractor must attend to drainage of the camp site to avoid standing water and / or sheet erosion.

A.2.2. ABLUTIONS

1. Where and when water borne sewerage is not available, temporary chemical toilets must be provided for site staff.
2. The construction of “long drop” toilets is forbidden.
3. Under no circumstances may open areas of the site or its surroundings be used as toilets.

A.2.3. PROVISION OF CAMP WASTE DISPOSAL

1. Bins and / or skips shall be provided at convenient intervals for disposal of waste within the construction camps.
2. Bins should have inner liner bags for efficient control and safe disposal of wastes.
3. Recycling and the provision of separate waste receptacles for different types of waste should be encourage.

A.3. ESTABLISHING STORAGE AREAS

A.3.1. GENERAL SUBSTANCES AND MATERIALS

1. Choice of location of storage areas must take into account prevailing winds, and general on site topography.
2. Storage areas must be designated, demarcated and fenced if necessary.
3. Storage areas should be secure so as to minimize the risk of crime. They should be safe from access by children and animals.
4. Fire prevention facilities should be present at storage areas.

A.3.2. HAZARDOUS SUBSTANCES AND MATERIALS

1. Hazardous substances are defined as materials that are potentially poisonous, flammable, carcinogenic or toxic. Some examples of hazardous substances are :
 - diesel, petroleum, oil, bituminous products
 - cement
 - solvent based paints
 - lubricants
 - explosives
 - drilling fluids
 - hydraulic fluids
 - pesticides
 - LPG

2. Hazardous substances must be stored in the construction camp under lock and key.
3. Chemical storage areas must be protected by bunded areas of a volume equal to 150% of the volume of the container storing the substance. Bunded areas must be constructed of concrete blocks waterproofed in a manner accepted by the ECO.
4. Fuel and oil storage tanks and drums, including internal installations and waste oil tanks, must be situated on an impermeable base within an oil-tight bund. Any oils, fuels and spilled substances must be removed weekly and recycled or disposed of at a hazardous waste facility.
5. Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.
6. Fuel tanks must meet the relevant specifications and be elevated so that leaks may be easily detected.
7. Staff dealing with hazardous materials must be aware of the existence of storage of hazardous storage areas, and the proper handling of all hazardous substances.
8. All procedures and equipment must be used in accordance with the Occupational Health and Safety Act (OHSA) of South Africa, Act 85 of 1993. This applies to the all aspects concerning hazardous substances, and all other construction activities on site.

A.4. MATERIAL MANAGEMENT AND SOURCING

1. Contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay etc.) and submit these to the ECO and applicant prior to commencement of any work.
2. Where possible, a signed document from a supplier of natural material should be obtained confirming that they have been obtained in a sustainable manner in compliance with the relevant legislation.
3. Where materials are mined / borrowed, proof must be provided on request of authorization to utilize these materials from the landowner / mineral rights owner and / or the Department of Mineral and Energy Affairs.

A.5. WORKER CONDUCT ON SITE

A general regard for the social and ecological well – being of the site and adjacent areas is expected of the site staff. The contractor and his staff must attend an environmental awareness training course presented by the ECO, prior to construction commencing. This environmental awareness course should cover the following key aspects :

- Basic awareness and understanding of the key environmental features of the works site and environs.
 - Understanding the importance of, and reasons why, the environment must be protected.
 - Ways to minimize environmental impacts.
 - Requirements of the Environmental Authorization granted and the relevant measures contained within this EMP, to include the following :
1. No alcohol / drugs to be present on site.
 2. No firearms allowed on site or in vehicles transporting staff to and from site, unless used by security personnel.
 3. No excessive noise or unsocial behaviour.
 4. Bringing pets onto the site is forbidden.
 5. No harvesting of firewood from any surroundings of the site.
 6. Construction staff are to make use of the facilities provided for them, as opposed to ad hoc alternatives (e.g. fires for cooking, the use of surrounding areas for toilets, or for dumping their rubbish).
 7. No trespassing on private / commercial properties adjoining the site.
 8. No driving under the influence of alcohol is permitted.
 9. Other than pre – approved security staff, no workers shall be permitted to live on the site.
 10. No poaching, collecting of programmets or any other natural material on site or the surroundings, such as the local riverine areas.
 11. The application of a “clean site” policy to be explained and applied to the workers.
 12. No entry into, dumping, spilling, storing, collection of materials from or any other impacts permitted in the riverine area of the Piesang River that borders the site

A.6. WATER QUALITY CONCERNS

1. As prescribed above concerning hazardous substances, storage areas that contain hazardous substances must be bunded with an approved impermeable liner.
2. Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimize pollution risk and reduced bunding capacity.
3. A designated bunded area is to be set aside for vehicle washing and maintenance. Materials caught in this bunded area must be disposed of to a suitable waste site, or as directed by the engineer.
4. Provision should be made during set up for all polluted run off to be treated to the specifications set in the appropriate regulations controlled by the Department of Water Affairs and Forestry before they are released into any natural water courses.

A.7. SETTING UP WASTE MANAGEMENT PROCEDURES

1. The excavation and use of rubbish pits on the site is not permitted.
2. Burning of waste is forbidden.

A.8. NOISE IMPACTS

1. Construction vehicles are to be fitted with standard silencers prior the beginning of construction, and silencers must operate effectively at all times.
2. Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc.) will be used as per operating instructions and maintained properly during operations.

A.9. VISUAL IMPACTS

1. Storage facilities, elevated tanks, and other temporary structures should be located such that they have as little visual impact on local residents as possible.
2. Special attention should be given to the screening of any highly reflective materials on site.

A.10. CULTURAL ENVIRONMENT

1. Prior to the commencement of construction, all staff need to know what possible archaeological or historical objects of value may look like, and to notify the engineer should such an item be uncovered.

2. Amafa-aKwaZulu-Natali (Amafa) must be informed in any sites of archaeological and cultural significance are discovered during the course of development. All construction work must cease and construction work can only resume with Amafa's written approval.

A.11. SECURITY AND SCREENING

1. Potentially hazardous areas such as trenches are to be demarcated and clearly marked by hazard tapes. Where considered necessary by the project manager, potentially hazardous trenches should be barricaded off with boards and / or balustrades to prevent local people and / or their animals from falling in.
2. Any lighting on site is to be set out to provide maximum security and to enable easier policing of the site, without creating a visual nuisance to local residences or businesses.
3. Material stockpiles or stacks, such as pipes, must be stable and well – secured to avoid collapse and possible injury to workers / local residents.
4. Flammable materials should be stored as far as possible from adjacent residences / businesses.
5. Fire fighting equipment should be present on the site as per OHS&A.
6. Obstruction to driver's line of sight due to stockpiles and stacked materials must be avoided, especially at intersections and sharp corners.
7. All interested and affected parties, such as nearby residents and businesses, should be notified in advance (24 hours) of any potential risks associated with the construction site and activities on it. Examples of these activities are :
 - stringing powerlines
 - blasting
 - earthworks / earthmoving machinery on steep slopes above houses or infrastructure
 - risk to residents along haulage roads / access routes.

A.12. THE PLANNING AND IMPLEMENTATION OF TEMPORARY ACCESS ROUTES AND HAULAGE ROADS

The following conditions apply if temporary access roads and haulage roads are required to and on the site ;

1. The routes of the temporary haulage roads must be pre-determined, be negotiated and agreed upon by the applicant, the eThekweni Municipality : Environmental Planning and Climate Protection Department, the contractor and the ECO.
2. The temporary haulage roads must not interfere with underground services structures, local residents and servitudes.

3. The temporary haulage roads must be located outside of sensitive areas.
4. The temporary haulage roads must be located in areas that are already impacted upon by construction of the existing platform, or where there are alien invasive plants.
5. The temporary haulage roads must follow natural contours of the site to reduce stormwater run off.
6. Adequate stormwater control measures must be implemented along the temporary haulage roads to prevent erosion.
7. The temporary haulage roads must be clearly marked and rehabilitation must follow immediately upon completion of construction.

A.13. RIVER RESERVE AREA PROTECTION DURING THE CONSTRUCTION PROCESS

A.13.1. FENCING OFF AND PROTECTION OF THE RIVER RESERVE AREA

1. Before any other construction activities are commenced a 1.8m bonnox wire fence will be erected along the upper edge of the entire length of the platform bordering on the riverine area of the Piesang River.
2. There will be no placing of earth or any earth moving activities within the riverine area at any stage of the construction process.
3. There will be no storage, spillage, dumping, littering or the placing of any materials of any sort within the riverine area.
4. No workers are permitted to enter the riverine area without the permission of the project manager and ECO. Such permission will only be given for such reasons as to remove litter blown into this areas, or any silt that is washed in.

A.13.2. STORM WATER PROTECTION OF THE RIVERINE AREA

1. Over and above the “standard” storm water management and erosion protection measures prescribed within section B above, there will be special measures applied to ensure that storm water run off from the construction area into the riverine area is not associated with soil erosion and siltation.

To achieve this the measures to be applied, as prescribed by the project engineer, will include :

- a. The use of sandbags to contain, direct and attenuate storm water run off.
- b. The use of silt fences on all embankments in the vicinity of the river reserve to trap silt on these embankments

- c. Cut off scour check drains to prevent the concentration of flow and scouring actions of concentrated run off leading to the river reserve area
 - d. As rapid as possible grassing of the embankments and any disturbed parts of the furrow area where this is appropriate.
2. The storm water management measures will be inspected after any rainfall events to ascertain their efficiency by the project engineer, and any improvements and repairs made as required.

SECTION B : MANAGEMENT OF CONSTRUCTION ACTIVITIES AND WORKFORCE DURING THE CONSTRUCTION PROCESS

B.1. ACCESS TO SITE

1. Contractors should ensure that access roads are maintained in good condition by attending to potholes, corrugations, and stormwater damage as soon as these develop.
2. If necessary, staff must be employed to clean surfaced roads that are affected by the construction process.
3. Cognizance of vehicle weight / dimensions must be taken when using access constructed out of certain materials, e.g. on roads or other paved surfaces .

B.2. MAINTENANCE OF CONSTRUCTION CAMP

1. The contractor must monitor and manage drainage of the camp site to avoid standing water and soil erosion.
2. Run off from the camp site must not discharge into neighbouring properties.
3. Chemical toilets are to be maintained in a clean state and should be moved if required to ensure that they adequately service the work areas.
4. The contractor is to ensure that open areas in the surroundings are not being used as a toilet facility.
5. The contractor shall ensure that all litter is collected from the work and camp areas regularly, so that it does not ever overflow the litter areas.
6. Bins / skips should be emptied regularly, and waste should be disposed of at a registered landfill site. Waybills for such disposals are to be kept by the contractor, and shown on request to the engineer.
7. A registered chemical waste company is to be used to remove waste from chemicals toilets on site.
8. Eating areas should be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness.
9. All litter throughout the site should be picked up and placed in the bins provided.
10. The contractor shall ensure that his camp and working areas are kept clean and tidy at all times.

B.3. WORKER CONDUCT ON SITE

1. The contractor must monitor the performance of construction workers to ensure that their behaviour in terms of environmental, health and safety and hygiene meet the standards that have been explained to them.

B.4. MATERIAL MANAGEMENT

1. Stockpiles should not be situated such that they obstruct natural water pathways.
2. Stockpiles should not exceed 2m in height, unless otherwise permitted by the engineer.
3. If stockpiles are exposed to windy conditions or heavy rain, or are likely to be on the site for an extended period of time, they should be covered either by vegetation or sheeting, depending on the duration and scale involved.
4. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding.
5. All concrete mixing must take place on a designated impermeable surface.
6. No vehicles transporting concrete to the site must be washed on the site.
7. No vehicles transporting, placing or compacting asphalt or any other bituminous product may be washed on the site.
8. Lime and other powders must not be mixed during excessively windy conditions.
9. All substances required for vehicle maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site.
10. Hazardous substances / materials are to be transported in sealed containers or bags.
11. Spraying of herbicides / pesticides should not take place under windy conditions, and must comply with OHSAs specs and other chemical handling laws.
12. Emergency numbers should be kept on site and consulted should any accidents, spillages or hazardous substances and / or materials take place. The contractor is to outline a method statement for the dealing with accidents / spillages or hazardous materials.

B.5. ON – SITE WASTE MANAGEMENT

1. Refuse must be placed in designated skips / bins which must be regularly emptied. These should remain within demarcated areas and should be designed to prevent refuse from being blown out by wind.
2. In addition to the waste facilities within the construction camp, when appropriate, provision must be made for waste receptacles to be placed at intervals along the work front.
3. Littering is forbidden, and the site shall be cleared of all litter at the end of each working day.
4. Recycling is to be encouraged by providing separate receptacles for different types of waste, and making sure that staff are aware of their uses.
5. Construction rubble shall be disposed of in pre – agreed, demarcated spoil dumps that have been approved by the engineer, or to approved waste disposal site.
6. Hazardous waste disposal must be carried out by an approved waste contractor. Waybills must be made available on request to prove the use of approved waste disposal sites.
7. A sump (earth or other) must be created for concrete waste. This is to be de – sludged regularly and the cement waste is to be removed to an approved waste disposal site.
8. Under no circumstances may any waste of any sort be disposed of into the river floodway area bordering the site.
9. No waste material of any kind may be buried (for the sole purpose of final disposal) or burnt.
10. The contractor responsible for the removal of the waste must supply the applicant with a certificate indicating safe disposal. Within 14 days of its issue, a copy of the safe disposal certificates must be forwarded to the Assistant Manager, CME Component of the eThekweni Regional Office of DAEARD.

B.6. POTENTIAL SOCIAL IMPACTS, NOISE AND BLASTING

1. Contractor's activities and movement of staff is to be restricted to the designated construction areas.
2. Should construction staff be approached by members of the public or other stakeholders, they should assist them in locating the engineer or contractor, or provide a telephone number by which they can be contacted.
3. The conduct of the construction staff shall at all times be polite and courteous when dealing with the public.

4. Disruption of access for local residents must be minimized, and must have the project manager's permission.
5. The contractor is to inform neighbours in writing of disruptive activities at least 24 hours beforehand. This can take place by way of leaflets placed in the postboxes giving the project manager's and contractor's details, or other methods approved by the project manager.
6. Lighting on the construction site should be pointed downwards, and away from traffic and any nearby residences or offices.
7. The site must be kept clean to minimize the visual impact of the site.
8. If screening is to be used, this must be moved and re – erected as required as work progresses.
9. Machinery and vehicles are to be kept in good working order for the duration of the project, to minimize noise and fumes to neighbours.
10. Notice of particularly noisy activities must be given to residents / businesses adjacent to the construction site. Examples of these include :
 - Noise generated by jackhammers.
 - Blasting
 - Drilling
 - Dewatering pumps.
11. Blast events must be controlled as required by The relevant legislation, and undertaken by a professional team. Blast mats are to be used to reduce fly rock and subsequent dust in section of the site that are in close proximity to other land uses and water courses.
12. Noisy activities must be restricted to the times given in the Project Specification or the General Condition of Contract.

B.7. STORM WATER MANAGEMENT AND SOIL EROSION

1. The measures appropriate to the construction process which are contained within the final, approved Stormwater management plan prepared by Stemele Bosch Africa (Pty) Ltd must be fully adhered to during the construction process.
2. The measures to be employed where considered necessary and appropriate should include :
 - a. The use of sandbags to contain soil and channel or detain water flow.
 - b. The use of silt fences and hessian sheets.
 - c. The reduction of open, exposed areas where potential soil erosion could occur to the absolute minimum necessary to permit the construction process.
 - d. The revegetation of areas disturbed by appropriate covering vegetation as soon as possible.

- e. The prevention of the unnecessary removal of vegetation, especially on steep areas.

B.8. DUST PREVENTION

1. The generation of dust from the site must be kept to an absolute minimum by applying all reasonable and appropriate measures, including :
 - The suppression of dust during dry periods by the regular application of water or a biodegradable soil stabilization agent in such quantities that will not result in runoff and erosion, or muddied areas.
 - The reduction of any speed on vehicles driving on the site.
2. Vehicles transporting sand or finer grained materials must be covered to prevent dangers / nuisance to other road users.

SECTION D : POST CONSTRUCTION ACTIVITIES AND DECOMMISSIONING

D.1. CONSTRUCTION CAMP

1. All structures comprising the construction camp are to be removed from the site.
2. The area that previously housed the construction camp is to be checked for spills or substances such as oil, paint, diesel etc., and these should be cleaned up.
3. All hardened surfaces within the construction camp areas should be ripped, all imported material removed and, if it not in an area to be paved, should be topsoiled and regrassed or covered with ground cover in the manner prescribed in the Landscaping Programme for the development.
4. The temporary fence between the road reserve and the River Reserve area will be removed.
5. The contractor shall arrange for the cancellation of any temporary services.

D.2. LAND REHABILITATION

1. All undeveloped earth surfaces hardened due to construction activities are to be ripped and imported material thereon removed.
2. All rubble is to be removed from the site to an approved disposal site. Burying of rubble on site is not permitted.
3. All surfaces are to be checked for waste products from activities such as concreting or asphaltting and cleared in a manner approved by the engineer.
4. All repairs to municipal road surfaces and pavements must be fully and properly repaired to the satisfaction the municipality.
5. Any alien vegetation on the site is to be removed from the site.

D.4. MATERIAL AND INFRASTRUCTURE

1. Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the applicant of ECO.
2. All residual stockpiles must be removed to spoil or spread on the site as directed by the project manager.
3. All leftover building materials must be returned to the depot or removed from the site.
4. The contractor must repair any damage that the construction works has caused to neighbouring properties.

D.5. GENERAL

1. All areas where services were installed are to be rehabilitated to the satisfaction of the applicant and ECO.
2. A meeting is to be held on the site between the contractor and applicant to approve all remediation activities, and to ensure that the site has been restored to a condition approved by the applicant , ECO.

SECTION E : OPERATION OF THE ACTIVITY

The following design and related activities must occur during the operational phase of the development :

1. All exterior lighting must be directed towards the development. Every effort must be taken to minimize the overspill of lighting from the site.
2. The portion of the site within the 1 : 100 year floodplain of the Piesang River, and any other vegetated areas on the rest of the site as well, must be managed appropriately and invasive alien vegetation must be removed from this area.
3. The individual industries and any other enterprises on the site must adhere to the relevant environmental legislation. Should the developer require assistance in determining whether an activity requires environmental authorization, then they must, in writing, contact the Assistant Manager : Impact Assessment Component : eThekweni Regional office of DAEARD.
4. Should the developer require assistance in determining whether an activity requires a waste license, then the applicant must, in writing, contact the Assistant Manager: Pollution and Waste Management of the eThekweni Regional Office of the DAERD.
5. Any form of waste material generated during the operational phase must be disposed of at a facility registered in terms of section 20 (b) of the National Environmental Management (Waste Act, Act No. 59 of 2008, if it cannot be re-used or recycled on or off the site. No waste material of any kind may be buried (for the sole purpose of final disposal) or burnt.
6. Following the completion of the works and the handover of the public elements the development to the municipality, it will be the responsibility of the municipality to maintain the stormwater system in a safe and responsible manner. Guidelines are provided the Stemele Bosch Africa (Pty) Ltd approved storm water management plan to be applied during the ongoing maintenance of the stormwater management system during the operational phase.

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