# ENVIRONMENTAL MANAGEMENT PROGRAMME

Ihlokozi Rural Housing Development

Wards 6 and 8

Ubuhlebezwe Local Municipality

KwaZulu-Natal

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#### **EXECUTIVE SUMMARY**

It is proposed to build approximately 2600 houses in Ihlokozi (the project area) of Ward 6 and 8 of the Ubuhlebezwe Local Municipality. This project is an insitu upgrade project and as such the new structures will be built within existing iMizi.

Since the above development is not regarded by the Department of Economic Development. Tourism and Environmental Affairs (EDTEA) as a listed activity in terms of section 21 of the Environment Conservation Act (ECA) (No. 73 of 1989), only section 28 (1), (2) and (3)(a) to (f) of the National Environmental Management Act (NEMA) (No. 107 of 1998) must be followed, which addresses Duty of Care and Remediation of Environmental Damage.

It is envisaged that biophysical and socio-economic environmental impacts will be minimal, due to the fact that the area is already extensively settled and thus modified, and that houses will be built within the area of existing homesteads. It is proposed to build approximately 2600 houses in Ihlokozi (the project area) of Ward 6 and 8 of the Ubuhlebezwe Local Municipality. This project is an insitu upgrade project and as such the new structures will be built within existing iMizi.

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It is envisaged that biophysical and socio-economic environmental impacts will be minimal, due to the fact that the area is already extensively settled and thus modified, and that houses will be built within the area of existing homesteads.

This EMP will address all the environmental impacts which are likely to be encountered during the pre-construction, construction and ongoing management phases of the project and will supply mitigation measures in order to minimize or prevent these impacts.

This document must be made available to the prospective contractors and the successful bidder must be bond to the terms of this EMP

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#### ABBREVIATIONS & LEGISLATION

Atmospheric Pollution Prevention Act: (Act 45 of 1965)

DWS: Department of Water and Sanitation

ECA: Environment Conservation Act: Act 73 of 1989, Section: 20(1) and (6)

ECO: Environmental Control Officer

EDTEA: Department of Economic Development, Tourism and Environmental Affairs

EMP: Environmental Management Programme

Health and Safety Act: Act No. 85 of 1993

Hazardous Substances Act: Act No. 15 of 1973

NEMA: National Environmental Management Act: Act 107 of 1998, Section: 28(1),

(2), (3)(a) to (f)

NWA: National Water Act: Act 36 of 1998, Sections: 19 and 20

Noise Control Regulations: (regulation 154 of 10 January 1992)

MSDS: Material Safety Data Sheets

OHS: Occupational Health and Safety Act 85 of 1993

RE: Resident Engineer

#### 1. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMP)

This EMP will outline the mitigation, monitoring, institutional arrangements and rehabilitation measures to be taken during the construction, rehabilitation and post-construction phases of the development. The EMP forms a short- to long-term environmental management document for the development to ensure prevention or minimization of impacts.

In terms of the EMP and other environmental legislation, the Developer must appoint a suitably qualified and experienced environmental consultant to the position of the Environmental Control Officer (ECO) for the duration of the contract and the completion of rehabilitation. In this project the RE could undertake the role of the ECO.

Monitoring forms an important part of the environmental process and has four main purposes:

- 1.1 Ensuring adherence to the EMP, its recommendations and controls and the environmental issues outlined therein for adherence and implementation by the Developer, the contractors and the professional team.
- 1.2 As a feedback mechanism to have a "hands on" approach to the environmental issues identified and to assess the effectiveness of the mitigation measures. Reporting of transgressions or infringements are to be recorded in a site instruction / occurrence book. The Resident Engineer (RE) and the ECO are to be informed of any entries or infringements forthwith.
- 1.3 The RE, who is normally in charge of the project, must then ensure compliance with the EMP, and to resolve any unforeseen environmental issues which may arise. The appointed site representative will report to the RE on any infringements encountered or environmental issues discovered.

- 1.4 It will be conditional that all contractors and subcontractors receive a copy of the EMP and sign to the effect that they have received the document, will abide by its contents and that they have conveyed the contents and conditions thereof to their staff.
- 1.5 Monitoring of the environmental issues should begin at the pre-construction phase and continue through the rehabilitation phase until after the project has been completed.
- 1.6 The EDTEA has a Compliance and Monitoring section who are entitled to inspect the site at any time and who have the powers to impose penalties for non-compliance with the conditions of the EMP.

#### 2. EMP FOR IHLOKOZI PROJECT

#### 2.1 **Pre-Construction Phase**

The contents of the EMP will be discussed at professional team meetings in order to understand the environmental content of the document and the requirements of the EDTEA. Items from the EMP are to be incorporated into any tender / contract documents by way of specific clauses that convey the impact and mitigation required. These clauses are to be agreed between the responsible professional members of the team and the environmental consultant. Penalties for non-compliance must be agreed upon by all parties, including the contractors and sub-contractors.

#### 2.1.1 Responsibilities and General Matters

Miscellaneous environmental matters and the relationships between the Contractor, ECO and the other members of the professional team are outlined in this section.

#### 2.1.2 The Contractor

The EMP is to be signed by the Developer and the Contractor (the acknowledgement form will be supplied to both) as a legally binding agreement to ensure adherence to the requirements of the EMP. Copies of the signed acknowledgement are to be forwarded to the ECO.

#### 2.1.3 The Environmental Control Officer (ECO)

- 2.1.3.1 As EDTEA did not stipulate that the Developer appoint an independent and suitably experienced ECO for the purpose of ensuring that the environmental conditions of the EMP are implemented by the Contractor, the RE may take on that role himself but should appoint someone from the contractor's team who is permanently onsite to be responsible for daily environment matters (and reporting of said matters to the RE), and that the environmental guidelines of the EMP are observed and adhered to.
- 2.1.3.2 Other environmental site-related issues will be monitored and reported on by the ECO as and when they may arise.
- 2.1.3.3 The ECO is to have access to the site at all times, for the purpose of inspections to ensure that the environmental conditions of the EMP are being implemented and adhered to.
- 2.1.3.4 The ECO shall report on the environmental aspects of the contract to the RE (if applicable) or the responsible person at agreed intervals. The environmental aspects shall form a separate heading in the site minutes; they shall be reported on and recorded at each site meeting.
- 2.1.3.5 The Contractor shall have access to the ECO via the RE for advice on the environmental aspects of the contract, and for environmental inspections at specific phases of the project. Any deviations or variations in the

environmental conditions shall be reported to the RE and where applicable, entered in the Site Instruction Book by the RE on behalf of the ECO.

- 2.1.3.6 The ECO shall periodically, or when considered necessary, submit environmental audit reports to the EDTEA: Compliance Monitoring and Enforcement Component. This is not stipulated in the EDTEA letter but may be appropriate.
- 2.1.3.7 The ECO will make environmental audit reports available to Community members on request.

#### 2.1.4 **Penalties**

- 2.1.4.1 The ECO shall record any environmental contraventions and prepare a report and recommendations prior to submitting it to the person responsible person for implementation.
- 2.1.4.2 The responsible person and ECO shall agree on specific environmental clauses and the accompanying penalties per transgression / occasion for inclusion in the contract document. In addition, a maximum cumulative penalty shall form part of the contract for the duration of the contract, and shall include the rehabilitation and retention periods.

#### 2.2 Construction Phase: Specific Controls

Specific Environmental Controls and mitigations are outlined in this section.

#### 2.2.1 The Construction Camp

The construction camp must consist of easily moveable storage facilities such as converted Marine Containers, it must be fenced with a lockable gate.

- 2.2.1.1 The choice of site for the camp must be determined in consultation with the ECO, and take into account local residents and environmentally sensitive areas.
- 2.2.1.2 The size of the camp should be the minimum required to operate efficiently.
- 2.2.1.3 Adequate parking for construction vehicles, staff parking and visitors must be provided.
- 2.2.1.4 The contractor must attend to drainage for the camp, to prevent both standing water and soil erosion.
- 2.2.1.5 Security lighting, where provided, must be directed inward and not cause nuisance to the adjacent residences, businesses and road uses.
- 2.2.1.6 The containers must be used as storage facilities for tools, machinery, equipment, cement and other building materials and hazardous substances. The latter items will be stored under cover in this facility at all times other than when being used. They will be returned to the facility at the end of each day.
- 2.2.1.7 Adequate provisions for sanitation must be provided prior to construction commencing. All human excrement and waste must be contained and removed off-site and acceptably disposed of at a Sewerage Treatment Works. A specific washing area for labourers and staff must be provided in the form of a lined and bunded area. Wash water collected in a drum / sump from this area must be discharged to the nearest Sewerage Effluent Treatment Works.
- 2.2.1.8 All building and construction sites must be maintained in a clean and tidy state by way of "Good Housekeeping". It must be ensured that sanitation systems, waste water management and containment, storage of materials, equipment and hazardous substances, solid waste management and

management of building products are in accordance with the requirements of this EMP so as to minimize spillages and pollution. One specific person must be made responsible for all of the above by the Contractor, who will be answerable to the developer and ECO with regard to these management requirements.

- 2.2.1.9 The ECO or developer must maintain a complaints register, and any interested party may record their comments therein. The register must include the contact details of the complainant, date, time and location, nature of the complaint and any measures taken to address the complaint. This register must be available for review at all times.
- 2.2.1.10 Any activity that may disrupt or pose a risk to neighbours or local businesses e.g. trucks blocking access roads, blasting etc must be preceded by notice being given to all potentially affected parties at least 24 hours in advance.

#### 2.2.2 **Solid Waste Management**

- 2.2.2.1 Compliance with section 20(1) and (6) of the ECA and sections 19 and 20 of the National Water Act (NWA) (Act 36 of 1998) is necessary with regard to the management of solid waste.
- 2.2.2.2 Bins or 200 litre drums must be provided at easily accessible localities for all typical household wastes, as well as construction waste, such as cement slurry and spoil, contaminated soil, building rubble, wood, metal, containers and other materials. Bins / drums must be kept under cover in the construction camp over night or during wet weather.
- 2.2.2.3 Drummed waste must be disposed of at the closest suitable landfill site when drums are nearly full. Overfilling of drums, causing overflows, must be prevented.
- 2.2.2.4 No rubbish may be buried, dumped or burnt on the site or other land.

2.2.2.5 Recycling should be encouraged, and such materials separated from non-recyclable materials for separate disposal.

### 2.2.3 Storage and Use of Hazardous Substances (including Spill Contingency)

- 2.2.3.1 The requirements of the Hazardous Substances Act (Act 15 of 1973) and sections 19 and 20 of the NWA must be complied with.
- 2.2.3.2 Material Safety Data Sheets (MSDS) must be readily available on site for all hazardous substances.
- 2.2.3.3 People residing or working adjacent to the site where hazardous substances are stored must be notified of such.
- 2.2.3.4 All storage areas containing hazardous substances must be clearly signed and secured, and well away from any environmentally sensitive areas.
- 2.2.3.5 Fuels, oils, hydraulic fluids, paints, cement and other hazardous materials and substances must be stored in the container at all times so that they are protected from rain and storm water.
- 2.2.3.6 Containers must be placed on blocks to prevent ingress of storm water and must be internally bunded so that spillages are contained.
- 2.2.3.7 Dispensing of the above products must be managed responsibly within the container, so that spills can be cleaned up with a suitable absorbent material. This material should be stored in a drum for later disposal at a hazardous waste landfill site. Any dispensing of products outside the container is to be avoided, but if this is necessary it must be carried out in a plastic lined and bunded area. The same procedures as outlined above would apply if spills occur.

- 2.2.3.8 Staff dealing with the above materials must be aware of their potential impacts and follow the appropriate safety measures, including the wearing of appropriate protective clothing.
- 2.2.3.9 The transport of hazardous materials should be limited and such materials must be transported in sealed containers.
- 2.2.3.10 All construction equipment and machinery must be maintained in such a manner that they are free of oil, fuel and hydraulic fluid leaks. All equipment, including spades and buckets, must be cleaned in a designated, lined and bunded area, from which wash water can be stored for later transport and disposal at the Sewerage Effluent Treatment Works.
- 2.2.3.11 All mechanical equipment and machinery must have drip trays of sufficient dimension to collect any fuel, engine or hydraulic oil that may leak or spill from the equipment while parked in the construction camp over night.
- 2.2.3.12 In-field servicing is to be discouraged but where it is unavoidable, the necessary precautions against spillages are to be implemented.
- 2.2.3.13 Should soil become contaminated with hazardous substances, it must be removed and stored in a drum under cover, for later disposal at a hazardous waste landfill.
- 2.2.3.14 Should severe spills of hazardous substances occur, the ECO must be informed immediately so that the relevant authorities (amongst others DWS, Ezemvelo Wildlife, Ihlokozi municipality, EDTEA) can be informed and the clean up implemented.
- 2.2.3.15 Records of the disposal of contaminated soils and effluent must be available for scrutiny by the ECO and environmental authorities at all times.

#### 2.2.4 Earthworks and Soil

- 2.2.4.1 The top 15 60 cms of topsoil must be stripped off from all areas in which construction is to take place or areas where temporary access roads are to be established, and stockpiled for later use in rehabilitation.
- 2.2.4.2 Such stockpiles should be on relatively flat ground, not on environmentally sensitive ground, away from watercourses, protected from erosion and kept free of alien vegetation.
- 2.2.4.3 Excess soils at the edges of roads and other soil not required in the immediate vicinity for trench filling etc, should be removed to high-lying, flat areas where it should be spread out into mounds with gentle slopes. All slopes must be protected against erosion using bioengineering and other techniques.
- 2.2.4.4 Regarding trenches for water pipes, these should be excavated, the pipes laid and the trench back filled in one continuous operation, ensuring "same day" closure. No work must stand open or unprotected over weekends.
- 2.2.4.5 Any potential hazardous areas such as open trenches must be clearly marked at all times.
- 2.2.4.6 No materials including soil should be pushed into a drainage line that might constrict the flow of, or pollute the water.
- 2.2.4.7 Any excavations near sensitive areas, including steep slopes and drainage lines should protected with curtains or bunds.
- 2.2.4.8 Dust suppressing should be considered if large areas are to be left uncovered for period of time during construction such as the new access road.
- 2.2.4.9 Should any items of historical, cultural or archaeological value be uncovered, AMAFA Heritage KZN must be contacted immediately (ph 033 3946543).

#### 2.2.5 **Use Of Building Materials**

- 2.2.5.1 Contractors shall prepare a source statement indicating the source of all construction materials (including topsoil, sands, gravels, crushed stone, asphalt, clay liners etc), and submit these to the ECO for approval prior to commencement of work.
- 2.2.5.2 Documentary proof must be provided that all borrowed or quarried materials were obtained from a registered quarry.
- 2.2.5.3 Should the contractor wish to open a borrow pit or use an existing one within the area, all legal authorization must be obtained from the Department of Minerals and Energy and EDTEA.

#### 2.2.6 **Vegetation And Fauna**

- 2.2.6.1 The removal of indigenous trees, bushes or plants must be kept to a minimum during construction and where necessary the ECO informed prior to removal.
- 2.2.6.2 Where practical a relocation programme for indigenous trees and plants should be implemented.
- 2.2.6.3 An appropriate programme of alien invasive vegetation control should be implemented, during the project and continued thereafter by the development itself.
- 2.2.6.4 Clearing of vegetation for the construction process should be undertaken just in front of the work front, to minimize the risk of erosion, and rehabilitated as quickly as possible thereafter.

- 2.2.6.5 Only the bare minimum of vegetation should be removed for the construction of each individual building and the whole site MUST not be stripped
- 2.2.6.6 The use of machinery to remove the vegetation, dig trenches etc should be kept to a minimum, and hand methods used where at all possible

#### 2.2.7 Water Resources

- 2.2.7.1 Care must be taken to minimize runoff from areas stripped of vegetation and the ensuing transport of silt into streams, bunding or curtaining to be used as required.
- 2.2.7.2 It is essential that the mitigation measures relating to pollution control, such as storm water management, the lining and bunding of areas where pollution could occur and the storage and dispensing of hazardous substances etc., as outlined in this report, are adhered to.

#### 2.2.8 Cultural Resources

2.2.8.1 Sites of cultural significance to the local community in the area must be respected.

#### 2.2.9 Servicing And Management Of Vehicles, Equipment And Machinery

- 2.2.9.1 Vehicle and equipment parking/storage area must be appropriately surfaced such that oil, fuel and other fluid leaks do not pollute the soil or water resources.
- 2.2.9.2 Vehicles must be refueled at an established refueling station outside of the project area.
- 2.2.9.3 A minimum quantity of fuels and oils may be stored under cover in the container on site for machinery used in construction. The inside of the

container should be bunded to allow for spillages, which must be cleaned up as soon as they occur.

- 2.2.9.4 In the event of mechanical breakdowns on site, suitable precautions must be taken to prevent spillages of oils and other petroleum products onto the ground. To this end, drip trays must be used under these circumstances as well as for parked and overnight vehicles, to ensure adherence to the containment of all petroleum products. All collected spilled petroleum products, oil and damaged parts must be removed from the site and recycled or disposed of at a hazardous landfill site.
- 2.2.9.5 Vehicles and equipment may only be washed in the surfaced vehicle parking area.
- 2.2.9.6 All vehicles and equipment used on site must be operated by appropriately trained and/or licensed individuals in compliance with all safety measures laid out in the OHS Act.

#### 2.2.10 Work Areas And Access Routes

- 2.2.10.1 All containers, machinery, equipment and building products must be kept within the fenced area of the construction camp.
- 2.2.10.2 Any temporary access roads must be established under the supervision of the ECO, constructed with the minimum disturbance to the environment and rehabilitated back to the pre-existing state as soon as possible after they are no longer required.

#### 2.2.11 **Cement Mixing**

2.2.11.1 Cement and sand must only be mixed at designated areas, which must be lined and bunded to prevent cement slurry from escaping out of the area.

- 2.2.11.2 Mixing must be carried out on wooden boards to prevent puncturing or damage to the liner and contamination of the soil, leading to ground water pollution.
- 2.2.11.3 At the end of each day, cement spoil, slurry and rubble must be collected and placed in drums for later disposal.

#### 2.2.12 The Management Of Water, Storm Water And Sediment

- 2.2.12.1 The developer is to get authorization to abstract water from any natural source, for use in the construction phase, from DWS.
- 2.2.12.2 Storm water must be well controlled during construction, to prevent erosion and sediment transport. The types and position of bunds used is important in this regard.
- 2.2.12.3 Trapped sediment resulting from the containment of storm water or cement slurry must be drummed for later disposal.
- 2.2.12.4 No silt, soil fines, cement, grout, asphalt, petroleum products, domestic waste or any other waste products must be allowed to disperse into the surrounding areas adjacent to construction sites.

#### 2.2.13 Management Of Health And Safety

- 2.2.13.1 The Requirements of the Health and Safety Act (Act No. 85 of 1993) must be complied with.
- 2.2.13.2 A proper first-aid kit must be kept on site. First-aid must be administered by a competent person who is delegated to perform the task.
- 2.2.13.3 At least two fire extinguishers must be kept at the construction camp at easily accessible localities. Regular inspections of these extinguishers, as

- prescribed by the relevant legislation, is to be carried out. All staff must be aware of the procedures to be followed in the event of a fire.
- 2.2.13.4 A list of emergency phone numbers must be clearly displayed at the camp and material storage areas at all times.
- 2.2.13.5 The provision of ablution and sanitation facilities for staff is essential (refer to 2.2.1.7). All facilities must be maintained in a hygienic condition. Pollution prevention mechanisms associated with ablution and sanitation facilities are also essential.

#### 2.2.14 Behavior Of Construction Staff

- 2.2.14.1 Staff must be warned against unacceptable behaviour and lack of respect for the environment, property, persons, fauna or flora.
- 2.2.14.2 No hunting activities are allowed in the area.
- 2.2.14.3 The harvesting of firewood, medicinal plants, tree bark, flowers or other natural materials is not allowed.
- 2.2.14.4 Littering on site is forbidden; all rubbish must be placed in the bins provided.
- 2.2.14.5 Only the toilets supplied may be used for that purpose, the use of the surrounding bush is not allowed.
- 2.2.14.6 Staff may not use the natural water sources to bath, wash clothes or for any other construction purpose.
- 2.2.14.7 Prior to commencement of construction all workers must be informed with regard to possible historical and archaeological objects that they may find, and be told to report the finding of such to the site manager immediately.

2.2.14.8 Staff must not enter the areas surrounding the graves and wetland (fenced off) unless there is no other option and then only for the purpose of the project

#### 2.2.15 **Management Of Air Pollutants**

- 2.2.15.1 The requirements of the Atmospheric Pollution Prevention Act (Act 45 of 1965) must be complied with.
- 2.2.15.2 All vehicles and machinery must be kept in good working order by regular maintenance. Any vehicle or machinery that emits smoke during operations is to be serviced or repaired to reduce the emission.
- 2.2.15.3 Dust resulting from excavations, bare areas, heavy vehicles traveling on dirt roads and construction work, is to be controlled by spraying the areas with water. This should include areas where the soil is spread to form landscaped features. Dust control is a particularly sensitive issue during windy conditions or during particularly dry periods.

#### 2.2.16 Management Of Noise

- 2.2.16.1 All machinery and vehicles must comply with the Noise Control Regulations of the ECA (Regulation 154 of 10 January 1992).
- 2.2.16.2 Activities resulting in high noise levels must be confined to daylight hours, Mondays to Saturdays and acceptable hours of operation must be strictly enforced.
- 2.2.16.3 The noise control by-laws of the local Municipality must be adhered to.

#### 2.3 Post Construction Phase - Rehabilitation

#### 2.3.1 The Construction Camp

- 2.3.1.1 On completion of the project, all storage facilities, gates, fences, ablution facilities, liners, bund materials, foreign debris, wastes, tailings, building rubble, wood and any other foreign matter associated with the construction site / area and all wastes must be acceptably disposed of at the closest suitable landfill site.
- 2.3.1.2 Any soil within the construction camp contaminated with petroleum or any other products must be uplifted and disposed of at a hazardous landfill site.
- 2.3.1.3 The entire area of the construction camp must them be scarified, fertilized with 2:3:2 and seeded with indigenous grasses, if it is not to be developed as a site.
- 2.3.1.4 All temporary services such as water and power supply must be removed.

#### 2.3.2 Landscaping, Re-vegetation and Erosion Prevention

The rehabilitation of construction areas has been mentioned briefly throughout this report. It must be emphasized that rehabilitation must be on-going throughout the project so that by the end of the construction phase rehabilitation is complete.

- 2.3.2.1 All bare areas must be contoured and landscaped to reduce the erosion potential and excess soil removed to high, flat ground where gently sloping mounds must be created in the form of landscaped features.
- 2.3.2.2 All bare areas must be scarified, fertilized with 2:3:2 and seeded with indigenous grasses.
- 2.3.2.3 Rehabilitated areas should be watered regularly until sufficient vegetation is established and kept clear of weeds.

- 2.3.2.4 The contractor must not leave any foreign materials on site; all such matter should either be removed, recycled or disposed of in an appropriate waste disposal site.
- 2.3.2.5 Of particular concern is that the contractor check that all watercourses are free from obstruction by building rubble, spoil material or waste.

#### 2.3.3 Access Roads

Damage to access roads, such as the creation of tyre channels and potholes, must be repaired immediately after the project. It is envisaged that the latter problems could be rectified by grading the affected areas.

#### 3. SIGNING OF THE EMP

**DEVELOPER:** 

The approved EMP is to be signed by the Developer, the Contractor and his key personnel on site. All the Contractor's employees, especially the machine & equipment operators, are to be made aware of the conditions as contained in the EMP and the Contractual Conditions relating to the environment, as contained in the contract document. A copy of the document is to be available on site at all times.

#### 4. SPECIMEN OF ACKNOWLEDGEMENT FORM

Record of signatures for the acknowledgement of being aware of and committed to complying with the content and conditions of the Environmental Management Programme and the environmental conditions as contained in the civil and other construction contract documents.

#### For the development of Ihlokozi project

Signed:	Date:	
CONTRACTOR:		
Signed:	Date:	

## Annexure A Letter issued by the Department of Economic Development, Tourism and Environmental Affairs