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ENVIRONMENTAL MANAGEMENT PROGRAMME FOR A PROPOSED DEVELOPMENT OF A 54M HIGH LATTICE MAST WITH A 16MX 16M BASE STATION IN THE MAGANGANGOZI RURAL AREA IN BERGVILLE, WITHIN OKHAHLAMBA LOCAL MUNICIPALITY

A PROJECT OF HUAWEI SA (PTY) LTD

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TERMS AND ABBREVIATIONS

- DWS** - Department of Water and Sanitation
- EMPR** - Environmental Management Programme
- ECO** - Environmental Control Officer

1. INTRODUCTION

Huawei Technologies of South Africa proposed Development of a 54M high Lattice Mast with a 16X16 Base Station in the Magangangozi Rural Area in Bergville, within Okhahlamba Local Municipality. Huawei Technologies of South Africa proposed development of a 54M high Lattice Mast with a 16X16 Base Station in the Magangangozi Rural Area in Bergville, within Okhahlamba Local Municipality. The proposed development will comprise of a 54M high Lattice Mast with a 16X16 Base Station with an approximate 2.4M network cabinet. It is proposed that a 2x 500mm concrete strips will be built to access the site which will be 530m long. The structure will have palisade fence, battery cabinets which will be situated on a precast and a generator space. The distance to the main power supply is 400m. The development site is within 6 km of the boundaries of Cathedral Peak, a World Heritage site, but the distance between the site and the physical Cathedral Peak is 19 km. The project area is located within the 10 km buffer zone of the Ukhahlamba Drakensberg Park. Within this context, the buffer is regarded as an area extending 10 kilometres from the proclaimed boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively. The land use of the surrounding proposed site is a mosaic of rural land which is situated 200 m from the proposed development with subsistence agriculture. The infrastructure that exists in the project area and surrounds is Secondary roads, Telephone lines, and Rural homesteads. The site is located on top of a hill in a rural settlement. The soil is compacted and slightly sandy with shale exposed closer to the bottom of the hill. The ground is covered with grasses and ferns. Most of the vegetation is native, but grass cover is low with a dense under footing. The project area is situated within the sub-escarpment grassland bioregion of the grassland biome. The scale of the mast (54 m high with a footprint of 256 m²) is thus very limited, low impact at most. This is especially due to the topography of the area with various foothills between the site and the WHS. The site also lies close to a rural village which may experience some low negative visual impact. The latter however needs to be weighed up against the positive impacts due to the accessibility of cell phone signal. Houses from the nearby village are only to be found to the south west of the proposed site. Thus impact will be limited in only one direction as far as people are concerned. This impact will be approximately 1 km as the rolling hills in the landscape would prevent the mast from being seen from further away.

2. BACKGROUND

2.1 Objectives of the EMPr

The objective of this document is to:

- Encourage good management practices through planning and commitment to environmental issues;
- Define how the management of the environment is reported and performance evaluated;
- Provide rational and practical environmental guidelines to:
- Minimise disturbance of the natural environment;
- Prevent or minimise all forms of pollution;
- Protect indigenous flora and fauna;
- Prevent soil erosion and facilitate re-vegetation of affected areas;
- Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment; and
- Adopt the best practical means available to prevent or minimise adverse environmental impacts.
- Develop waste management practices based on prevention, minimisation, recycling, treatment or disposal of waste;
- Describe all monitoring procedures required to identify impacts on the environment; and
- Train Employees and contractors with regard to their environmental obligations.

2.1. Sensitive Area's

This project has the potential to address issues such as erosion, sedimentation and alien invasive vegetation. Potential impacts that will be a result of the Lattice Mast construction is as follows:

- Construction activities and vehicles could cause spillages of lubricants, fuels and construction material that could then be transported to the systems, impacting on the soil, storm water quality and potentially the functioning of the systems; and

The construction will have a minimum negative impact on the environment provided sensitive areas are respected and correct construction procedures are followed. **The primary sensitive areas relating to this particular construction are the soil, homestead nearby and the world heritage site.** The secondary sensitive areas are the fauna and flora species. The footprint created by the construction activities must be kept to a minimum wherever possible so that the soil and vegetation are not negatively impacted.

3. LEGISLATION REQUIREMENTS

This EMPr, which forms an integral part of the contract documents, informs the contractor as to his / her duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The contractor must note that obligations imposed by the EMPr are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter will prevail.

It is expected that the contractor is conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which will be applicable to the contract. Some of the environmental legislation applicable to the construction include, but are not limited to, the following legislation:

- 2014 EIA Regulations under NEMA
- National Environmental Management Act (No 107 of 1998 (as amended))
- National Environmental Management: Biodiversity Act (No 10 of 2002)
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA)
- The Constitution of the Republic of South Africa, Act 108 of 1996
- The National Heritage Resources Act, Act 25 of 1999
- Occupational Health and Safety Act, act 85 of 1993
- Civil Aviation Act, 2009 (Act No.13 of 2009) South African Civil Aviation Authority
- Spatial Planning and Land Use Management Act, Act 16 of 2013(Approval in terms of town planning schemes and/or National Building Regulations
- National Health Act 61 of 2003
- Environmental Conservation Act 1989 (act no. 73 of 1989)

4. FUNCTIONS AND RESPONSIBILITIES

Formal responsibilities are necessary to ensure that key procedures are executed. Specific responsibilities of the Project Proponent, Project Manager, Site Manager and Contractor/Operator are as detailed below.

4.1 The Project Proponent / Project Manager

- Ensure that the Site Manager and the Contractor/Operator are aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regard to the environment;
- Ensure that all stipulations within the EMPr are communicated and adhered to by Site Manager and the Contractor/Operator;
- Monitor the implementation of the EMPR throughout the project by means of site visits and meetings; and
- Order the removal of any person(s) and/or equipment in contravention of the specifications of the EMPR.

The Project Manager must be fully conversant with the Basic Assessment Report (BAR) for the project, the EMPr for the project, as well as all applicable environmental legislation.

4.2 The Site Manager

- Be fully conversant with the BAR;
- Be fully conversant with the EMPr;
- Be fully conversant with all environmental legislation and ensure compliance
- Have overall responsibility for the implementation of the EMPr;
- Liaise with the Project Manager and Contractor/Operator on matters concerning the environment;
- Prevent actions that will harm or will cause harm to the environment, and take steps to prevent pollution on the site;
- Implement remedial measures in the event of pollution incidents or environmental impacts;
- Monitor and verify that environmental impacts are kept to a minimum;

4.3 The Contractor

- Be fully conversant with the BAR;
- Be fully conversant with the EMPr;
- Be fully conversant with all environmental legislation and ensure compliance
- Ensure that all the environmental specifications contained within this EMPR are adhered on the site;
- Regularly liaise with the Site Manger on matters relating to the environment; and
- Confine activities to the demarcated construction site.

The above responsibilities listed for the Contractor will also apply to any appointed sub-consultants.

4.4 The Environmental Control Officer (ECO) will:

- Be fully conversant with the BAR;
- Be fully conversant with the EMPr;
- Be fully conversant with all environmental legislation and ensure compliance
- Ensure that all the environmental specifications contained within this EMPR are adhered on the site;
- liaise with the Site Manger on matters relating to the environment; and
- Compile monthly reports as to the progress of the construction phases and report to all parties involved (Site Manager, Project Proponent).

5. ENVIRONMENTAL MANAGEMENT PROGRAMME

This section indicates the actions required to either prevent and/or minimise the potential impacts on the environmental that is associated with the construction activity.

5.1 Environmental Aspect

This section highlights the various aspects associated with the project i.e. the Contractor's activities that will interact with the environment. These aspects are required according the EMPr guidelines stipulated by EDTEA.

Environmental Measures and Action Plans

This section indicates the actions required to either prevent and/or minimise the potential impacts on the environmental that is associated with construction activity.

RESPONSIBILITY

This section indicates the party responsible for implementing the environmental measures and action plans laid out in the EMPr.

Priority

This section indicates when the actions for that specific aspect must be implemented and/or monitor.

Environmental Management Programme for a proposed Development of a 54M High Lattice Mast with a 16M X 16M Base Station in the Magangangozi Rural Area in Bergville, within Okhahlamba Local Municipality

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Table 1: EMPr for Planning Phase

ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
<p>Environmental Awareness, Roles and Responsibilities for Environmental Management</p>	<p>Appointed Contractor The overall responsibility for the environmental management and cost associated with the implementation of the EMP lies with the appointed Contractor.</p> <p>The Contractor must ensure that all permanent and temporary staff, sub-contractors and suppliers adhere to the EMP.</p> <p>The Contractor must appoint a senior staff member directly involved in the construction activities as the Environmental Control Officer (ECO).</p> <p>Environmental Control Officer (ECO) The nomination of the ECO must be given, in writing, at least fourteen days before the start of any work, clearly setting out reasons for the nomination, and with sufficient detail to enable the Contractor to make a decision. The contractor will, within seven days of receiving the request, approve, reject or call for more information on the nomination. Once a nominated representative of the contractor has been approved he/she will be the ECO and will be the responsible person for ensuring: In terms of section 2(h) and (j) of the National Environmental Management Act (No. 107 of 1998), the Contractor has the responsibility to ensure all personnel involved in the project are aware of, and familiar with, the EMPr, the key environmental issues and consequences of non-compliance to the EMPr.</p>	<p>Client/ Contractor</p>
<p>Environmental Training and Induction</p>	<p>The EMP forms part of the formal site induction for all contractors, sub-contractors and casual labourers, preferably in their native language. The induction training will, as a minimum, include the following:</p> <ul style="list-style-type: none"> - the importance of conformance with all environmental policies; - the environmental impacts, actual or potential, of their work activities; - the environmental benefits of improved personal performance; - their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Consultant's environmental management systems, including emergency preparedness and response requirements; and - The mitigation measures required to be implemented when carrying out their work activities. <p>All contractors, sub-contractors and casual labourers must acknowledge their understanding of the EMP and environmental responsibilities by signing an induction attendance record.</p>	<p>Contractor</p>
<p>Site Establishment</p>	<p>The site selected for the construction Camp, must ensure potential impacts on the biophysical environment are kept to a minimum.</p> <p>The area to be disturbed for the developments of the construction Camp is to be kept to a minimum, only big enough to carry out the necessary activities.</p>	<p>Client Contractor</p>

Environmental Management Programme for a proposed Development of a 6AM High Lattice Mast with a 16M X 16M Base Station in the Magangangozi Rural Area in Bergville, within Okhahlamba Local Municipality

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
Sanitation	<p>The size of the construction camp must be minimized (especially where natural vegetation or grassland has had to be cleared for its construction)</p> <p>Any slopes where seepage activity develops will require the provision of suitable subsoil drainage controls as integral aspects of the proposed development.</p> <p>The construction Camp must be defined and fenced off and limited to authorised Contractors only. All activities must remain confined to the construction Camp.</p> <p>Vegetation removed for the site establishment is to be kept to a minimum. No trees are to be removed, if possible, with the exception of alien weeds and invader plants.</p> <p>If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the contractor will require that the soil be analysed and any deleterious effects on the soil arising from the construction be corrected and the area be seeded with a vegetation seed mix to his or her specification.</p> <p>Photographs of the construction Camp, before and during the construction and after rehabilitation, must be taken at selected fixed points and kept on record for the information of the construction.</p> <p>The site access route must be selected based on the minimum number of bushes or trees that are felled and existing fence lines must be followed as far as possible.</p> <p>Adequate drainage and erosion protection in the form of cut-off berms or trenches must be provided around the sites and where necessary.</p> <p>The liberation of dust into the surrounding environment must be effectively controlled by the use of water spraying and/or other dust-allaying agents. The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.</p> <p>The vehicle maintenance yard and secured storage area will be above the 1 in 5 year flood level mark within the boundaries of the construction Camp.</p> <p>The area chosen for these purposes must be the minimum required and involve the least disturbance to trees and plant life. Topsoil must be handled as described below.</p> <p>The storage area must be securely fenced and all hazardous substances such as fuel, oils, chemicals, etc., must be stored therein.</p> <p>The location of both the vehicle maintenance yard and the storage areas are to be indicated on the layout plan determined by the Contractor.</p> <p>The Contractor must prepare a method statement and plans for the storage of hazardous substances and emergency procedure.</p> <p>All waste water generated at the proposed construction must be disposed of in a suitable manner so as not to cause any surface pollution or health hazard.</p>	Contractor
Wastewater		Contractor

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
Soil Erosion	<p>Soil erosion on site must be prevented at all times, i.e. pre, during and post construction activities. Suitable erosion control measures must be implemented in areas sensitive to erosion. These measures could include:</p> <ul style="list-style-type: none"> ■ The prompt rehabilitation of exposed soil areas with indigenous vegetation to ensure that soil is protected from the elements (during rehabilitation phase). ■ The removal of vegetation, only as it becomes necessary for work to proceed. ■ Preventing the unnecessary removal of vegetation especially on steep areas. Taking necessary precautions in terms of design and construction and earthworks, cuts and fills must be taken. <p>Constant cognisance of the inherent high erosion risk potential of all soils and sites on the property must be taken and appropriate control and preventative measure put in place.</p> <p>Stockpiles of the granite resource must not be kept within the delineated stockpiling zone.</p>	Contractor
Employment	<p>It is recommended that (where possible) only people from the local communities in and around area are employed.</p>	Contractor
Archaeological Sites	<p>1) In terms of the South African Resources Act (Act 25 of 1989) Section 35 (4) no person will, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or Palaeontological site or material. 2) Section 34 (1) of this act states that no person will alter or demolish any structure or part of a structure, which is older than 60 years without a permit, issued by the relevant provincial resources authority</p> <p>If an artefact on site is uncovered, work in the vicinity must be stopped</p> <p>The Amafa Akwazulu Natal is to be contacted and client is to appoint an archaeological consultant.</p> <p>Work will only resume once clearance is given in writing by the archaeologist.</p>	Landscapes& contractor.

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
<p>Health and Safety.</p> <p>Traffic and Transport</p>	<p>The development site within 6km of the boundaries of the Cathedral Peak, a World Heritage site, but the distance between site and the physical Cathedral Peak is 19km. The scale of the mast (54m high with a footprint of 256m²) is thus very limited, low impact at the most. This is especially due to the topography of the area with various foothills between the site and the WHS.</p> <p>The site also lies close to a rural village which may experience some low negative visual impact. The latter however needs to be weighed up against the positive impacts due to the accessibility of cell phone signal. Houses from the nearby village are only to be found to the south west of the proposed site. Thus, impact will be limited in only one direction as far as people are concerned. This impact will be approximately 1km as the rolling hills in the landscape would prevent the mast from being seen from further away.</p> <p>The development may thus continue.</p> <p>This may continue after receiving the necessary comments from the KwaZulu-Natal Provincial Heritage Resources Authority (AMAFHA) and implementing their decision. It should be noted that the subterranean presence of archaeological and/or historical sites, features or Artefacts is always a distinct possibility. It may only become known later. Therefore, operating controls and monitoring should be introduced, aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.</p> <p>Members of the public adjacent to the construction area must be notified of construction activities in order to limit unnecessary disturbance or interference</p> <p>Dedicated pathways for pedestrians must be developed to ensure safe passage around construction activities.</p> <p>Construction activities must be undertaken according to during daylight working hours between the hours of 07:00 – 17:00 on weekdays and 07:30 – 13:00 on Saturdays. No construction will be allowed on Sundays.</p> <p>A safety officer is to be appointed who will continuously monitor safety conditions during construction activities.</p> <p>Construction vehicles must avoid public roads during peak hours.</p> <p>The dangers associated with entry and exit points for the construction camp must be given special consideration.</p> <p>All construction workers handling chemical or hazardous substances must be trained in the use of such substances and the environmental, health and safety consequences of incidents.</p> <p>To avoid the occurrence of any incidents, the contractor will ensure that the entire workforces that will be responsible for the construction are trained on the construction of the facility.</p>	<p>Contractor</p> <p>Contractor</p>

Environmental Management Programme for a proposed Development of a 5AM High Lattice Mast with a 16M X 16M Base Station in the Magangangozi Rural Area in Bergville, within Okhahlamba Local Municipality

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
<p>Environmental Training and Induction</p>	<p>Provide evidence to the ECO that the EMP is being implemented and adhered to (either through inspections sheets or audit reports). In terms of section 2(h) and (i) of the National Environmental Management Act (No. 107 of 1998), the Contractor has the responsibility to ensure all personnel involved in the project are aware of, and familiar with, the EMP, the key environmental issues and consequences of non-compliance to the EMP. The EMP forms part of the formal site induction for all contractors, sub-contractors and casual labourers, preferably in their native language. The induction training will, as a minimum, include the following:</p> <ul style="list-style-type: none"> - the importance of conformance with all environmental policies; - the environmental impacts, actual or potential, of their work activities; - the environmental benefits of improved personal performance; - their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Consultant's environmental management systems, including emergency preparedness and response requirements; and <p>-The mitigation measures required to be implemented when carrying out their work activities. - The potential consequences of departure from specified operating procedures. An Environmental Awareness programme shall be implemented for all site personnel describing the key environmental issues and potential impacts thereof.</p>	<p>Contractor Contractor</p>
<p>Environmental Awareness</p>	<p>ECO</p>	<p>ECO</p>
<p>Fires</p>	<p>Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a fire-break must be cleared around the perimeter of the Construction Camp. No open fires or uncontrolled fires will be permitted on site. Fire fighting measures such as fire extinguishers must be located on site. The workforce must be made aware of fire prevention and fire fighting measures.</p>	<p>Contractor</p>
<p>Sanitation</p>	<p>Lighting and noise disturbance or any other form of disturbance that may have an effect on the landowner/tenant/persons lawfully living in the vicinity must be kept to a minimum. Chemical toilet facilities or other approved toilet facilities such as a septic drain must available to be used during construction. All effluent water from the Construction Camp washing facility must be disposed of in a properly constructed french drain, Adequate drainage and erosion protection in the form of cut-off berms or trenches must be provided around the sites and where necessary.</p>	<p>Contractor</p>

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
Visual Impact	<ul style="list-style-type: none"> ▪ Shade cloth or similar materials should be used to shroud the site from Main Road and neighboring residents, to minimise the visual impact of the site. ▪ Where possible, vegetation should be left in place to screen the site from neighbouring land users. An evaluation of the visual impact of the construction activities must be undertaken by the ECO throughout the construction phase, and mitigation options implemented through the site engineer or contractor. <p>Visual Impacts</p> <ol style="list-style-type: none"> a) Lighting on the construction site should be pointed downwards and away from oncoming traffic and nearby houses. b) The site must be kept clean to minimise the visual impact of the site. <ul style="list-style-type: none"> ▪ If screening is being used, this must be moved and re-erected as the work front progresses. <p><u>Criminal activity in the locality of the construction site.</u></p>	Client
Safety and Security	<ol style="list-style-type: none"> a) Such a confined site within a residential / commercial area should be fenced and manned to control the access of persons to the site. b) Potentially hazardous areas such as trenches are to be demarcated and clearly marked. <p><u>Lighting</u></p> <p>Lighting on site is to be set out to provide maximum security and to enable policing of the site, without creating a visual nuisance to local residents or businesses.</p> <p>Risks Associated with Materials on Site</p> <ol style="list-style-type: none"> a) Material stockpiles or stacks, such as pipes must be stable and well secured to avoid collapse and possible injury to site workers / local residents. b) Flammable materials should be stored as far as possible from adjacent residents / businesses. c) Fire fighting equipment should be present on site at all times. d) Obstruction to drivers' line of site due to stockpiles and stacked materials must be avoided, especially at intersections and sharp corners. e) No materials are to be stored in unstable or high risk areas such as in floodplains or on steep slopes. f) All IAPs should be notified in advance of any known potential risks associated with the construction site and the activities on it. <p>All relevant Health and Safety legislation as required in South Africa should be strictly adhered to, including but not limited to the Occupational Health and Safety Act, 1993 (No. 85 of 1993);</p> <p>Site Manager to ensure compliance with clients' Health and Safety / Emergency Plans / Procedures / Manuals; and</p>	Contractor
Health and safety		Site Manager

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
	<p>The site should be fitted with the required health and safety warning and information signage that is required and suitable for such installations.</p> <p>a) The stormwater drainage network system must be kept separate from the waste water (water containing waste) system. b) It is vitally important that storm water management is properly managed on site both during and after construction. c) The Stormwater Management Plan must be approved prior to construction commencing. d) After construction, the site should be contoured to ensure free flow of runoff and to prevent ponding of water.</p>	Contractor
Storage area	<p>The storage area must be securely fenced and all hazardous substances such as fuel, oils, chemicals, etc., must be stored therein. Drip trays, a thin concrete slab or a facility with PVC lining, must be installed in such storage areas with a view to prevent soil and water pollution.</p>	Contractor
Vehicle maintenance	<p>The location of both the vehicle maintenance yard and the storage areas are to be indicated on the layout plan determined by the Contractor.</p> <p>No vehicle may be extensively repaired in any place other than in the maintenance yard.</p> <p>The maintenance of vehicles and equipment used for any purpose during the construction will take place only in the maintenance yard area within the construction camp.</p> <p>Equipment used for excavations and construction must be adequately maintained so that during constructions there is no spillage of oil, diesel, fuel, or hydraulic fluid on the ground</p> <p>Machinery or equipment used on site must not constitute a pollution hazard in respect of the above substances. The Constructor must order such equipment to be repaired or withdrawn from use if they consider the equipment or machinery to be polluting and irreparable.</p> <p>Suitably covered receptacles must be available at all times and conveniently placed for the disposal of waste. All used oils, grease or hydraulic fluids must be placed therein and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.</p> <p>Provide proper warning signage to make people aware of the activities within the designated areas.</p>	Contractor
Spills	<p>Should a pollution incident occur on site the ECO must:</p> <ul style="list-style-type: none"> ■ Implement reasonable measures immediately to contain and minimise the impacts of the incident; ■ Notify all persons whose health may be affected by the incident; ■ Undertake clean up procedures immediately; ■ Notify the Contractor of the incident immediately who will advise the employee as to the measures that should be implemented; ■ Record the incident in the Environmental Incident Register; and ■ Implement measures to prevent similar incidents from occurring in the future. <p>Spills should be cleaned up immediately to the satisfaction of the Contractor by removing the spillage together with the polluted soil and by disposing of it at a recognised facility.</p>	Contractor

Environmental Management Programme for a proposed Development of a 64M High Lattice Mast with a 16M X 16M Base Station in the Magangangozi Rural Area in Bergville, within Okhahlamba Local Municipality

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
	<p>Soil and construction material stockpiles are to be bermed to prevent leachate and polluted run-off water from leaving the Construction Camp.</p> <p>Concrete mixing must be confined to as few areas as possible and ad hoc mixing is to be avoided. Areas where concrete was mixed must be cleaned up after use. Concrete mixing is to be undertaken on an impervious surface and any run-off contained.</p> <p>Where hydrocarbon leaks are identified associated with trucks and equipment, drip trays should be placed</p> <p>The project infrastructure footprint and associated area of disturbance should be minimised as far as practically possible.</p> <p>Any oil containers and chemical product containers used during equipment servicing should be disposed of into a designated bin and be disposed off-site to a hazardous waste landfill site.</p> <p>Should fuel products be kept on site for refuelling, these products should be contained within a bunded area that would contain the spillage should the tank fail;</p> <p>A spill kit such as Spillsorb or hydrocarbon sorbent materials should be kept on site and be readily available to address any hydrocarbon releases if they occur;</p> <p>Equipment used for excavations and construction must be adequately maintained so that during constructions there is no spillage of oil, diesel, fuel, or hydraulic fluid on the ground</p>	
Security	<p>A security officer should be on duty at the Construction Camp after hours and over weekends, in order to prevent unauthorised people from entering and tampering with equipment and materials.</p>	Contractor
General Waste	<p>General waste produced on site includes:</p> <ul style="list-style-type: none"> ■ Office waste (e.g. food, waste, paper, plastic); ■ constructional waste (clean steel, wood, glass); and ■ General domestic waste (food, cardboard, paper, bottles, tins). <p>An adequate number of general waste receptacles must be arranged around the Construction Camp, on site to collect all domestic refuse, and to minimise littering.</p> <p>Bins should be clearly marked and lined for efficient control and safe disposal of waste.</p> <p>Different waste bins, for different waste streams must be provided to ensure correct waste separation.</p> <p>General waste produced on site is to be collected in skips for disposal at the local municipal waste site. Hazardous waste in not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site.</p> <p>No general waste is to be disposed of at the spoil area.</p> <p>Under no circumstances is waste to be burnt or buried on site.</p> <p>Waste bins should be cleaned out on a regular basis to prevent any windblown waste and/or visual disturbance.</p> <p>All general waste must be removed from the construction areas on a daily basis and disposed of in suitable waste receptacles at the Construction Camp.</p>	Contractor

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
	<p>In the event of a spill, hazardous material may be generated. Such material must be disposed of at a suitable licensed waste disposal facility, with chain of custody documentation supplied as proof of end recipient;</p> <p>Suitable, leak-proof drums for the disposal of oils and greases should be positioned at areas where such materials are likely to be generated.</p> <p>Any spillages and leakages must be reported</p> <p>Suitably covered receptacles must be available at all times and conveniently placed for the disposal of waste. All used oils, grease or hydraulic fluids must be placed therein and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.</p> <p>All spills should be cleaned up immediately to the satisfaction of the Contractor by removing the spillage together with the polluted soil and by disposing of them at a recognised facility.</p> <p>Material Safety Data Sheets (MSDS) for onsite chemicals, hydrocarbon materials and / or waste and hazardous substances must be readily available. MSDS's should include information pertaining to environmental impacts and measures to minimise and mitigate against any potential environmental impacts which may result from a spill.</p> <p>The Contractor should prepare a method statement and plans for the storage of hazardous substances and emergency procedure.</p> <p>Provide proper warning signage to make people aware of the activities within the designated areas.</p> <p>In the event of rain, water collected within these containment facilities, can be released if not contaminated. If the contents of containment facilities are contaminated the material should be removed and disposed of as hazardous waste.</p> <p>In the case of a spill of hydrocarbons, chemicals or bituminous material in the Construction camp or on the construction site, the spill should be contained and the material together with any contaminated soil collected and disposed of as hazardous waste.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p>
<p>Industrial waste Wastewater</p>	<p>The industrial waste must be stored in skips and taken to a hazardous landfill site. Safe disposal certificates must be provided for this.</p> <p>All waste water generated at the proposed Development must be disposed off in a suitable manner so as not to cause any surface or sub surface water pollution or health hazard. Waste water including cement-contaminated water shall not enter any water course and shall be managed by the site manager to ensure that the existing water resources on and off site are not polluted by activities emanating from the above development.</p>	<p>Contractor</p> <p>Contractor</p>
<p>Topsoil</p>	<p>Topsoil removed from roadsides and Construction Camps must be stockpiled in a designated area. This area must be established in accordance with pollution control measures set out in this EMP.</p> <p>Topsoil must be kept separate from overburden and must not be used for building or maintenance of access roads</p> <p>The developer must exercise suitable precautions with the storage, handling and transport of all materials that could adversely affect the environment. If pollution of any surface or groundwater occurs, it shall immediately be reported to this Department and appropriate mitigation measures must be employed.</p>	<p>Contractor</p>
<p>Spill</p>	<p>Litter and general waste is to be removed from the soil and spoiling before stockpiling.</p> <p>Spoil sites will be shaped to fit the natural topography.</p>	<p>Contractor</p>

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
Soil Erosion	<p>Spoil sites must receive a minimum of 75mm topsoil and be grassed with the recommended seed mixture.</p> <p>Removal polluted topsoil should be transported to a licensed landfill site.</p> <p>Soil erosion on site must be prevented at all times, i.e. pre, during and post construction activities. Suitable erosion control measures must be implemented in areas sensitive to erosion such as edges of slopes. These measures could include:</p> <ul style="list-style-type: none"> ▪ The suitable use of sand bags or Hessian sheets. ▪ The prompt rehabilitation of exposed soil areas with indigenous vegetation to ensure that soil is protected from the elements. ▪ The removal of vegetation, only as it becomes necessary for work to proceed. ▪ Preventing the unnecessary removal of vegetation especially on steep areas. Taking necessary precautions in terms of design and construction and earthworks, cuts and fills must be taken. <p>Constant cognisance of the inherent high erosion risk potential of all soils and sites on the property should be taken and appropriate control and preventative measure put in place.</p> <p>The stockpiling of soil or any other materials shall not be allowed near a watercourse or water body to prevent pollution or impediment to surface runoff. The developer must control and establish suitable mitigation measures to prevent the erosion of the stockpiles.</p>	Contractor
Surface water	<p>The construction zone should be demarcated and the activities that should be implemented to minimise the area of soil disturbance and the potential for mobilisation of sediments from bare areas include:</p> <ul style="list-style-type: none"> ▪ Earth dikes and diversions to direct all storm flows from disturbed areas into silt traps; ▪ Soil stabilisation practises, such as sediment blankets and mulching, introduced onsite; <p>The flow direction of any surface water run-off must be established prior to disturbing any area.</p> <p>Attenuation and retention facilities (e.g. paddocks/attenuation ponds) need to be designed and implemented to regulate runoff in terms of retention, attenuation and percolation thus ensuring that post flow conditions closely reflect the pre-development hydrological conditions. These facilities should be sized and placed in such a manner so as not to impact general runoff conditions. The design of these facilities needs to be based on the outcomes as set out in the hydrological assessment.</p> <p>Dirty water originating from the construction camp and on the construction site is to be contained and disposed of correctly, to prevent the contamination of soil.</p> <p>The construction camp must have adequate drainage and the development of areas of standing water must be prevented.</p> <p>Washing of vehicles, equipment, machinery or materials is prohibited at the construction camp or on the construction site, unless done in a contained area that has a suitable impervious floor and is designed for this purpose.</p> <p>Bathing or washing of clothes, equipment or machinery within any watercourse is prohibited.</p> <p>As part of the site development plan and pollution prevention, a stormwater retention pond should therefore be provided to collect run-off from the site and if possible, the pollutants be separated and good quality water be re-used.</p>	Contractor

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
<p>Storm water Management</p>	<p>Erosion and loss of soil must be prevented by minimising the construction areas exposed to surface water run-off. Bare areas are to be rehabilitated as soon as the areas become available or after use. A storm water management plan/system has been drawn up and must be implemented to ensure proper management of storm water on the site during and after construction. All surface spillages must be contained on-site to an appropriate oil/water separator system/ sump of sufficient capacity; The oil interceptor system should be inspected on a monthly basis to ensure its correct function, and emptied when required by the site operator. The product removed from the separator should be disposed of at a suitable waste disposal site with the chain of custody document kept on site for record purposes. No fuels/ oils must be allowed to discharge directly into storm water pipes or drains and sewage manholes/pipes; Litter blocking the storm water system must be removed The storm water and sewer system must be inspected and damaged areas repaired if necessary. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed. The use of high velocity stormwater pipelines should be avoided in favour of open, high friction, semi- permeable channels wherever feasible. A number of smaller stormwater outfall points should be constructed rather than a few large outfall points.</p>	<p>Contractor Site Manager. Contractor</p>
<p>Dust</p>	<p>Un-channelled Flow</p> <p>a) During construction un-channelled flow must be controlled to avoid soil erosion. Where large areas of soil are left exposed, rows of straw / hay or bundles of cut vegetation should be dug into the soil along contours to slow surface wash and capture eroded soil. The spacing between rows will be dependent on slope. b) Where surface runoff is concentrated (e.g. along exposed tracks), flow should be slowed by contouring with hay bales or banded vegetation generated during on site clearance, or by inserting water directing 'speed' humps (or berms), along the track to channel water into small detention ponds or areas protected with hay bales for flow reduction and sediment capture. All waste oils, greases, fuels, chemicals etc. should be collected and disposed of in an appropriate manner off site. The contents of grease traps or other waste oil, grease and/ or fuel disposal/ storage containers should under no circumstances be emptied and dumped to the surrounding area. Waste Manifests must be provided to the Site Manager as proof of safe disposal/end destination. Stockpiles may become sources of wind generated dust. These must be covered during windy periods or watered. Areas under construction may become sources of wind generated dust and dust suppression techniques must be implemented when necessary. Construction vehicles should be covered in order to minimise dust entrainment. No burning of waste, such as plastic bags, cement bags and litter, is permitted on site.</p>	<p>Contractor</p>

ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
	<p>A complaints register should be provided to report any excessive dust incidents.</p> <p>a) Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust.</p> <p>b) Access and other cleared surfaces must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust.</p> <p>The liberation of dust into the surrounding environment must be effectively controlled by the use of water spraying and/or other dust-allowing agents. The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.</p>	
<p>Noise</p>	<p>Construction activities should be undertaken according to during daylight working hours between the hours of 07:00 – 17:00 on weekdays and 07:30 – 13:00 on Saturdays. No construction will be allowed on Sundays.</p> <p>Construction vehicles and equipment generating excessive noise should be fitted with appropriate noise abatement measures.</p> <p>Construction workers must be provided with the appropriate PPE i.e. ear plugs</p> <p>A complaints register should be provided to report any excessive noise.</p> <p>Truck traffic should be routed away from noise sensitive areas, where possible</p> <p>With regard to unavoidable very noisy construction activities in the vicinity of noise sensitive areas, the contractor and the ECO should liaise with local residents on how best to minimise impact, and the local population should be kept informed of the nature and duration of intended activities.</p> <p>a) Construction vehicles are to be fitted with standard silencers prior to the beginning of construction.</p> <p>b) Equipment that is fitted with noise reduction facilities will be used as per operating instructions and maintained properly during site constructions.</p> <p>Visual Impacts</p> <p>a) Storage facilities, elevated tanks and other temporary structures on site should be located such that they have as little visual impact on local residents as possible.</p> <p>b) Special attention should be given to the screening of highly reflective materials on site.</p>	<p>Contractor</p>
<p>Fauna and flora</p>	<p>The extent of the area disturbed should be kept to the minimum required to successfully implement the construction activities, thus minimising the destruction of any fauna and flora.</p> <p>An appointed ECO will be on site during the construction period to ensure that sensitive areas are not encroached on.</p> <p>No natural vegetation is to be collected for use as firewood.</p> <p>No animals are to be disturbed unnecessarily and no animals are allowed to be shot, trapped or caught for any reason.</p> <p>Protected trees may not be removed or cut without a permit from the Department of Water and sanitation (DWS).</p> <p>Invasive species and weeds must be removed and disposed of in accordance with existing legislation on a regular basis.</p>	<p>Contractor</p>

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
	<p>The removal of indigenous/endemic shrubs and small trees should be kept to a minimum and only be removed if absolutely necessary.</p> <p>Fires for cooking must be kept within designated areas at the construction camp. All fires are to be contained.</p> <p>Workers are to be provided with firewood for cooking and are not permitted to cut down any vegetation for this purpose.</p> <p>The cutting of vegetation should be done considering the potential for subsequent risk of contaminant infiltration or spills into surface water / erosion.</p> <p>Site rehabilitation should aim to restore vegetation as far as is feasible</p> <p>If an artefact on site is uncovered, work in the immediate vicinity must be stopped immediately.</p> <p>The contractor must take reasonable precautions to prevent any person from removing or damaging any such object and must immediately, upon discovery thereof, inform the Construction Engineer of such discovery.</p> <p>The National Monuments Council is to be contacted who will appoint an archaeological consultant.</p> <p>AMAFSA must be notified in the event of graves and/or archaeological sites being discovered on the proposed development site during the construction phase.</p> <p>Work may only resume once clearance is given in writing by the archaeologist.</p> <p>Members of the public adjacent to the construction area should be notified of construction activities in order to limit unnecessary disturbance or interference</p> <p>Dedicated pathways for pedestrians should be developed to ensure safe passage around construction activities.</p> <p>Construction activities should be undertaken according to during daylight working hours between the hours of 07:00 – 17:00 on weekdays and 07:30 – 13:00 on Saturdays. No construction will be allowed on Sundays.</p> <p>A safety officer is to be appointed who will continuously monitor safety conditions during construction activities.</p> <p>Construction vehicles must avoid public roads during peak hours.</p> <p>The dangers associated with entry and exit points for the construction camp should be given special consideration.</p> <p>All construction workers handling chemical or hazardous substances must be trained in the use of such substances and the environmental, health and safety consequences of incidents.</p>	Contractor
<p>Archaeological Sites</p>		Contractor
<p>Safety</p>		Contractor
<p>Traffic and Transport</p>	<p>Construction routes must be clearly defined</p> <p>The construction trucks routes and times of construction should be carefully planned.</p> <p>Vehicles and equipment shall be serviced regularly to avoid the contamination of soil from oil and hydraulic fluid leaks etc.</p> <p>Servicing must be done off-site.</p>	Contractor

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
<p>Social</p>	<p>Ensuring large vehicles and machinery only access the site outside peak commuting hours (e.g. 7-8 am and 4-5 pm), or as appropriate;</p> <p>Road signage to ensure motorists are aware of construction activities</p> <p>Point or flag men to assist truck drivers to access or exit the site safely and warn motorists. An evaluation of the potential traffic impacts of the construction activities must be undertaken by the Environmental Control Officer (ECO) throughout the construction phase, and mitigation options implemented through the site engineer or contractor.</p> <p>Complaints received from the community and other I&AP's must be registered and recorded by the ECO and also brought to the attention of the Contractor. Both parties will respond accordingly. The following information must be recorded in the case of any complaint/incident:</p> <ul style="list-style-type: none"> - Time, date and nature of complaint; - Response and investigation undertaken; and - Actions taken and by whom. <p>All complaints will be investigated and a response is to be given to the complainant within 7 days of receipt.</p> <p>Public Participation</p> <p>a) During the set up phase of the project, the Contractor needs to make contact with those people that are interested or affected by the development (I&AP's).</p> <p>IAPs can be identified as those who either: - live close by the site; work close to the site; will have their services / infrastructure affected by the project; have a general interest in the project; and, the Councillor for the ward in which the construction is taking place.</p> <p>Disruption of Infrastructure and Services</p> <p>a) Contractors activities and movement of staff to be restricted to designated construction areas.</p> <p>b) Should the 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 number on which they may contact the Engineer or Contractor.</p> <p>c) The conduct of the construction staff when dealing with the public or stakeholders shall be in a manner that is polite and courteous at all times. Failure to adhere to this requirement may result in the removal of staff from the site by the Engineer.</p> <p>d) Disruption of access for local residents must be minimised and must have the consent of the Engineer.</p> <p>e) The Contractor is to inform neighbours in writing of disruptive activities at least 24 hrs beforehand. This can take place by way of leaflets placed in the post boxes giving the Engineers and Contractor's details or other method approved by the Engineer.</p> <p>Contractors should use labour intensive construction methods where possible. Local labourers should be used for such methods.</p>	<p>Contractor</p>

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
	<p>Due to the concentration of a workforce in the area over the construction period, the contractor shall implement an HIV/AIDS Awareness Programme on site. The contractor shall appoint an HIV/AIDS Awareness Officer for the duration of the construction period. Activities for HIV/AIDS awareness and prevention will be broad based, targeting both individuals and groups. They may consist of:</p> <ul style="list-style-type: none"> ▪ Information posters in public places both on and off site (eating places, bars, guest houses, etc); ▪ Peer educators (reference people) drawn from the local labour force and trained in HIV/AIDS issues for discussions with colleagues (estimate 1 per 30 employees); ▪ Small focus group discussions and information covering key issues should be held; ▪ Inclusion of HIV/AIDS activities at site meetings and other discussions; and ▪ Voluntary Counselling and Testing (VCT). <p>Education will cover:</p> <ul style="list-style-type: none"> ▪ Stigma and discrimination issues; ▪ Preventative behaviours including partner reduction, condom use, and awareness and importance of treatment of STDs; ▪ Skills including negotiating safer sex, correct condom use, purchase without embarrassment; ▪ Referral to local health centres and services available. 	
<p>Environmental Monitoring</p>	<p>Environmental monitoring will be undertaken by the ECO as prescribed by Environmental authorisation</p> <p>This monitoring will be undertaken in order to ensure compliance with all aspects or requirements of the EMP.</p> <p>The results of the monthly assessments will be made available to EDTEA upon request.</p> <p>The ECO is to inspect and monitor on and off-site constructions and to implement the necessary actions to ensure compliance with the EMP.</p> <p>The ECO should report and discuss any difficulties with the implementation of the EMP with the Environmental Consultant.</p> <p>The ECO and Environmental Consultant should review and modify the EMP on an annual basis or as required.</p>	<p>ECO</p>
<p>Complaints register and environmental incident book</p>	<p>Complaints received from the community and other I&AP's must be registered and recorded by the ECO and also brought to the attention of the contractor. Both parties will respond accordingly. The following information must be recorded in the case of any complaint/incident:</p> <ul style="list-style-type: none"> ▪ Time, date and nature of complaint; ▪ Response and investigation undertaken; and ▪ Corrective and preventative actions taken and by whom. <p>All complaints received will be investigated and a response is to be given to the complainant within 7 days.</p>	<p>ECO</p>

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
	<p>All environmental incidents occurring on the site will need to be recorded in an Environmental Incident Book. The following information must be provided:</p> <ul style="list-style-type: none"> ▪ Time, date and nature of complaint; ▪ Response and investigation undertaken; and ▪ Corrective and preventative actions taken and by whom. 	
	<p>To avoid the occurrence of any incidents, the contractor will ensure that the entire workforces that will be responsible for the construction are trained on the construction of the facility.</p> <p>The ECO will ensure that all the emergency procedures relevant to the above mentioned incidents are developed and the workforce is trained on these procedures to ensure that correct actions are followed during emergency situations.</p> <p>The list of the emergency telephone numbers will be maintained on site.</p> <p>All incidents and emergencies must be addressed in line with the Emergency Response Plan for the site.</p> <p>All incidents (fires, explosions, spillages, leakages, crimes) must be reported immediately to the client</p> <p>Record(s) of incidents should be maintained and communicated to client</p>	<p>Contractor</p> <p>ECO</p> <p>Site Manager. Contractor</p>

<p>Water Quality</p>	<p>Prevention of Water Pollution</p> <ul style="list-style-type: none"> a) Mixing / decanting of all chemicals and hazardous substances must take place either on a tray or on an impermeable surface. Waste from these should then be disposed of to a suitable waste site. b) Every effort should be made to ensure that any chemicals or hazardous substances do not contaminate the soils or ground water on site. c) Care must be taken to ensure that run-off from vehicle or plant washing does not enter the ground water. e) The filler point and dispensing (i.e. offloading) area must be hard surfaced to prevent infiltration. All surface water from these areas must be directed through an oil/water separator before being discharged into the onsite conservancy system. All uncontaminated stormwater must be channelled directly through the stormwater system. f) No mixed concrete should be directly deposited on the ground without a mixing tray and any concrete spilled out of the demarcated area should be removed immediately to avoid impacting on the freshwater ecosystems, other than within a clearly demarcated building/development footprint. g) No concrete mixing machinery should be washed onsite. The concrete wash water contains high levels of chromium, which has the potential to contaminate ground and surface water. h) Ensure minimal or no disturbance outside of the development footprint area during construction, and all material arising from the development must be prohibited from entering the freshwater habitats. i) No hazardous chemicals used and/or spilled during the construction process must enter the groundwater. If such a spill occurs during and/or on completion of the construction, a hazardous spill protocol must be implemented and the affected area cleaned up immediately. 	
<p>Socio Economic Impact The proposed development will supply employment opportunities to locals and this will supply them with skills development.</p>	<p>Development will require minor unskilled labour employees thereby expanding employment opportunities and uplifting the rural community. This will provide for the creation of employment opportunities for local people in the area. Staff that will be employed by the client will be trained for their jobs and are thereby provided skill for future employment</p>	<p>Client</p>

<p>Materials Management</p>	<p>Stockpile Management</p> <ul style="list-style-type: none"> a) Stockpiles should not be situated such that they obstruct natural water pathways. b) Stockpiles should not exceed 2m in height. c) If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or cloth (short timeframe), depending on the duration of the project. d) Stockpiles may further be protected by the construction of berms or low brick walls around their bases. e) Stockpiles should be kept clear of weeds and alien invasive vegetation growth by regular weeding. <p>Handling of Hazardous Materials</p> <ul style="list-style-type: none"> a) All concrete mixing must take place on a designated, impermeable surface. b) No vehicles transporting concrete to the site may be washed on site. c) No vehicles transporting, placing or compacting asphalt or any other bituminous product may be washed on site. d) Lime and other powders must not be mixed during excessively windy conditions. e) All substances required for vehicle maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site. f) Hazardous substances / materials are to be transported in sealed containers or bags. g) Spraying of herbicides / pesticides should not take place under windy conditions and must comply with OHSA specs and other chemical handling laws. 	
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TABLE 3: EMP FOR OPERATIONAL PHASE

ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
<p>Archaeological Sites</p>	<p>The development site within 6km of the boundaries of the Cathedral Peak, a World Heritage site, but the distance between site and the physical Cathedral Peak is 19km. The scale of the mast (54m high with a footprint of 256m²) is thus very limited, low impact at the most. This is especially due to the topography of the area with various foothills between the site and the WHS.</p> <p>The site also lies close to a rural village which may experience some low negative visual impact. The latter however needs to be weighed up against the positive impacts due to the accessibility of cell phone signal. Houses from the nearby village are only to be found to the south west of the proposed site. Thus, impact will be limited in only one direction as far as people are concerned. This impact will be approximately 1km as the rolling hills in the landscape would prevent the mast from being seen from further away. This may continue after receiving the necessary comments from the KwaZulu-Natal Provincial Heritage Resources Authority (AMAFRA) and implementing their decision.</p> <p>It should be noted that the subterranean presence of archaeological and/or historical sites, features or Artifacts is always a distinct possibility. It may only become known later. Therefore, operating controls and monitoring should be introduced, aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.</p>	<p>site manager & Contractor</p>
<p>Noise Impacts</p>	<p>using low noise equipment and installations reducing sound radiating surfaces e.g. use mesh guards instead of plate metal; vibration isolation e.g. of operators' cabins; using sound absorbing linings e.g. in vehicle cabs and engine cover linings; exhaust silencers e.g. on pneumatic drill rigs and vehicle engines;; using noise refuges for employees e.g. a cabin at the control console of crushing and maintenance e.g. replace defective silencers and repair broken windows in vehicle etc.</p>	<p>Contractor</p>

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
<p>Biodiversity</p>	<p>The impacts associated with the proposed development activities will have a significant impact on the local environment and ecological processes. Careful consideration must be afforded each of the recommendations provided herein. All of the terrestrial ecosystems associated with the development are rated as poorly protected; Based on the South African National Biodiversity Institute's Protected Areas Map and the National Protected Areas Expansion Strategy (NPAES) the project area does not overlap with any formally or informally protected area; Based on the Plants of Southern Africa (BODATSA-POSA, 2019) database, 377 plant species are expected to occur in the broader landscape. None were regarded as of conservation concern. An alien invasive plant management programme in compliance of section 75 of the Act must be implemented to prevent encroachment of IAPs within the development footprint.</p> <p>The use of indigenous vegetation to landscape disturbed areas within the development will provide some habitat for fauna.</p> <p>Planting some indigenous trees in suitable places around the mast will provide additional habitat and shelter for the indigenous birds and terrestrial fauna that will frequent this area.</p> <p>No animals are to be disturbed unnecessarily and no</p> <p>Animals are allowed to be shot, trapped or caught for any reason. No animals are to be disturbed unnecessarily and no animals are allowed to be shot, trapped or caught for any reason.</p>	<p>Contactoer/Client</p>
<p>Visual Impacts</p>	<p>Lattice Mast Development activities that, without mitigation, will give rise to visual impacts. The following temporary activities are included. Presence of storage and stockpile areas, Movements of Lattice Mast development machinery in the magangangozi Village etc. Visual impact is greatest in natural and residential areas where tall structures are obtrusive. Visual sensitivity can be determined by a number of factors in combination, such as prominent Lights must be screened in such a way as to prevent light pollution. Antenna support structure and equipment room should be suitably painted (dark matt green is usually appropriate). Otherwise the antenna support structure should be painted a suitable colour (dark matt green is usually appropriate). Sites in visually exposed positions with poor screening mitigate using a mixture of fast and slow growing indigenous trees that are suitable for the area should be planted around the base station site to lessen its long-term visual impact</p>	<p>Contractor</p>

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ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
Public health-	<p>Lattice Mast Development constructions can have Radio Frequency (RF) Exposure as base stations receive and transmit electromagnetic signals .Therefore Erect the masts away from densely populated and residential areas. Cellular network planning must be effective so that the erection of cellular masts in densely populated population areas can be limited. Radio-frequency radiation is classified as non-ionizing radiation because the energy it carries is too low to cause ionization. Radio Frequency (RF) Exposure- base stations receive and transmit electromagnetic signals. Concerns have been raised about their effect on Human health due to emissions of radio frequency radiation, over both the short and long terms. The nearest household are situated 183m away from the proposed mast, therefore minimal health impacts are anticipated</p>	Client

TABLE 4: EMP FOR CLOSURE PHASE

ENVIRONMENTAL ASPECTS	ENVIRONMENTAL MEASURES AND ACTION PLANS	AREA APPLICABLE
Closure	<p>Where a Construction Camp has been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface must be ripped and vegetated.</p> <p>The site must be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.</p> <p>If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the contractor will require that the soil be analysed and any deleterious effects on the soil arising from the construction be corrected and the area be seeded with a vegetation seed mix to his or her specification.</p> <p>Photographs of the construction Camp, before and during the construction and after rehabilitation, must be taken at selected fixed points and kept on record for the information of the construction.</p> <p>All buildings, structures or objects in the vehicle maintenance yard and secured storage areas must be dealt with removed according to the relevant legislated procedures.</p> <p>Spoil sites will be shaped to fit the natural topography.</p> <p>Spoil sites must receive a minimum of 75mm topsoil and be grassed with the recommended seed mixture.</p> <p>Removal of polluted topsoil must be transported to a licensed landfill site.</p> <p>All machinery and construction personnel must access the construction sites via the existing road.</p> <p>With regard to unavoidable very noisy construction activities in the vicinity of noise sensitive areas, the contractor and the ECO must liaise with local residents on how best to minimise impact, and the local population must be kept informed of the nature and duration of intended activities.</p>	Contractor
Rehabilitation	<p>All remaining construction infrastructure, building rubble and waste are to be removed from the site.</p> <p>All disturbed surfaces compacted by construction and construction activities including the ablutions and loading areas must be ripped to a minimum depth of 30cm to allow organic contaminants to breakdown and promote vegetation establishment.</p> <p>The construction camp site must be landscaped to ensure efficient drainage of the site. Water must not be allowed to pond on the site.</p> <p>The area designated for the deposition of spoil material is to be levelled and shaped to ensure efficient drainage of the site. Water must not be allowed to pond on site. Under no circumstances is general or hazardous waste to be disposed of at this site.</p> <p>Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from construction camp and disposed of at a recognised landfill facility.</p>	Contractor

<p>The land should be rehabilitated such that secondary use is an option, meaning that grazing, planting and or settlements can optimise the appropriate areas.</p> <p>Proper well established access control and fencing, clear communication of actual and or eminent risk.</p> <p>Shaping, compacting of the total area and slope stabilisation and smoothing to ensure the pre-designed rehabilitation shape / surface gradient is achieved and the area should be suitable for vegetation</p> <p>Landscaping that would facilitate surface runoff and result in free draining areas. If possible drainage lines should be reinstated;</p> <p>Ensure that removed access and haul roads are not eroding.</p> <p>The main closure objective therefore is to leave the site in as safe and self-sustaining a condition as possible and in a situation where no post-closure intervention is required. The aim is to ensure that the affected environment is maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof. The aesthetic value of the area will also be reinstated.</p> <p>Final rehabilitation must be completed within a period specified by the contractor.</p> <p>Access routes and other infrastructure areas must be rehabilitated;</p>	<p>Photographs of the construction Camp, before and during the construction and after rehabilitation, must be taken at selected fixed points and kept on record for the information of the construction.</p> <p>Flora and Fauna</p> <p>1) Rehabilitation of the construction site i.e. through planting of vegetation will not be effective if soil erosion or instability problem has not been addressed. Therefore removing the existing alien invasive species is recommended. The young alien plants will be removed continuously until the indigenous vegetation has become well established and alien species no longer grow. When choosing what to plant use local native species. Local species can be sourced from local nurseries. Rehabilitation of degraded backside habitats will improve their physical structure. Controlling the weeds around the planted trees will assist in reducing competition for light and water. Depending on seasonal conditions and how much soil moisture the plants were planted into, they will need continued watering. So depending on the area in which plants are planted will determine the frequency of watering.</p> <p>2) Replace topsoil from stockpiles to a thickness of on average 100mm and spread using plant that will minimise the risk of compaction.</p> <p>3) Establish vegetation on the footprints where topsoil has been replaced as well as on any unvegetated slopes.</p> <p>During all the phases of the project, active soil erosion prevention and rehabilitation must occur. Active monitoring by the site Manager and ECO must occur to ensure prevention or early detection of soil erosion. Early detection will increase the successful chances of rehabilitation of that area. Surrounding trees and vegetation must be kept to act as screens that reduce erosion. Areas susceptible to erosion must be installed with temporary and permanent works within 48 hours.</p>
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Environmental Management Programme for a proposed Development of a 54M High Lattice Mast with a 16M X 16M Base Station in the Magangangozi Rural Area in Bergville, within Okhahlamba Local Municipality

Icebo Enviro Projects

	<p>Site safety All areas under rehabilitation will be barricaded to ensure no access to site, as it will be unsafe by the public to do so Warning signs will be erected don site Only authorised staff will have access Security will be onsite 24hrs until rehabilitation is finalised All staff will have appropriate PPE clothing while on site</p> <p>Final use Once rehabilitation has progressed the final use of the site will be determined by client and community. This information will further be detailed in the final rehabilitation report</p>	
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Inspection of the project must take place to monitor its constructional status. The construction must be regularly monitored. If any failure is identified or incidents occur due to its construction are identified or reported by the public, actions must be taken to remedy the situation.

6. GENERAL ENVIRONMENTAL MONITORING

A monitoring programme will be implemented for the duration of the construction phase. This programme will include:

- General environmental monitoring establishing a baseline through the taking of and potential impact sites, along the routes prior to construction.
- Monthly audits will be conducted by the ECO for the remainder of the construction phase to ensure compliance to the EMPr conditions, and where necessary make recommendations for corrective action. These audits can be conducted randomly and do not require prior arrangement with the Project Coordinator.
- Compilation of an audit report with a rating of compliance with the EMPr. The ECO will keep a photographic record of any damage to areas outside the demarcated site and construction area. The date, time of damage, type of damage and reason for the damage will be recorded in full to ensure the responsible party is held liable.
- All claims for compensation emanating from damage must be directed to the ECO for appraisal. The Contractor will be held liable for all unnecessary damage to the environment.
- A register will be kept of all complaints.

7. SAFE WORKING PROCEDURES TO BE FOLLOWED

The Contractors will 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 will be recorded in a dedicated register and the response noted with the date and action taken. The ECO must be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause will be reported to the relevant authority for them to deal with the transgression, as it deems fit.

8. ENVIRONMENTAL CODE OF CONDUCT

One of the objectives of the EMPr is to ensure that all the workforce, contractors, sub-contractors and construction staff have an understanding of environmental issues and potential impacts on site activities. This environmental code of conduct provides the basic rules that must be strictly adhered to. It is the responsibility of the ECO to ensure that each contractor, sub-contractor and workforce understand and adhere to the Code of Conduct.

9. ENVIRONMENTAL CODE OF CONDUCT

ALL PERSONS ARE OBLIGED TO KEEP TO THE RULES OF THIS CODE OF CONDUCT

You must study and keep to the rules – ignorance, negligence, recklessness or a general lack of commitment will not be tolerated!

10. ENVIRONMENTAL RULES

- Preventing Pollution
- Littering will not be tolerated.
- Put all waste in the correct waste containers provided.
- Use the toilet facilities provided.
- Report to your supervisor when you spill, or notice a hazardous substance being spilled or when you see a vehicle, piece of machinery or container that is leaking fuel, oil or other hazardous substances.
- Do not Trespass
- Never climb over any fence or trespass on private property. You are not allowed to enter neighbouring properties.
- Maintaining the Character and Visual Quality of the Area
- Never deface, draw or cut lettering or any other markings on trees, rocks or buildings in the area.
- Digging, excavation and the erection of any permanent or semi-permanent structures of any kind are prohibited.
- If you spot any litter lying around – please pick it up and throw it in the correct waste container.
- Fire Control

- Make sure you are familiar with fire fighting procedures.
- Make sure you are aware of the locations of all fire fighting equipment.
- No fires are allowed outside the confines of the construction Camp.
- No burning of waste is allowed.
- Caring for Plants and Animals
- Strictly leave all animals alone – never tease, catch or set devices to trap or kill any animal.
- Never damage, chop down or remove any tree or shrub (unless you are instructed to do so).
- Use commercially bought firewood.

11. CONCLUSION

Although all foreseeable actions and potential mitigations or management actions relating the mast construction activities in this document, the EMPr must be seen as a day-to-day management document. The EMPr thus sets out the environmental and social standards, which would be required to minimize the negative impacts and maximize the positive benefits of the project as detailed in the BAR and specialist report. The EMPr could thus change daily, and if managed correctly lead to a successful construction phases. Further guidance must also be taken for any conditions contained in the Environmental Authorization. All attempts must be made to have this EMPr available so that the Contractors are made aware of the potential cost and timing implications needed to fulfill the implementation of the EMPr, thus adequately budgeting for these.