

**OVERARCHING  
ENVIRONMENTAL MANAGEMENT PROGRAMME  
(EMPr)**

**PRE-CONSTRUCTION, CONSTRUCTION, REHABILITATION AND  
MAINTENANCE ACTIVITIES WITHIN THE ISIMANGALISO WETLAND  
PARK**

Revision 14

**Prepared for:**

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*The EMPr is revised periodically to reflect best environmental practice, lessons learned, and new or amended legislation and policy*

*This document also serves as the iSimangaliso Wetland Park Authority's Maintenance Management Plan in line with the Environmental Impact Assessment (EIA) Regulations, 2014.*

June 2019

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**COSTING RESPONSIBILITY**

The environmental specifications contained in this document are to be costed by contractors appointed to undertake construction, operational and maintenance activities in the iSimangaliso Wetland Park.

These costs are required to be shown as a separate line item in the contractor's fully costed bill of quantities.

Failure to provide sufficient financial resources for the implementation of environmental management, maintenance and mitigation measures will not absolve a contractor from fulfilling environmental responsibilities.

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**DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONERS(EAP) WHO COMPILED THE ENVIRONMENTAL MANAGEMENT PROGRAMME**

**Table 1:** representatives of EAP

<b>Name</b>	<b>Education Qualifications</b>	<b>Professional Affiliations</b>	<b>Experience in Environmental Management</b>
Dr Rolf-Dieter Heinsohn	PhD	South African Association of Botanists International Association of Impact Assessment (South African Chapter) South African Institute of Ecologists and Environmental Scientists Certified Environmental Practitioner with the Interim Certification Board of South Africa Certified with the South African Council for Natural Scientific Professions (400442/04)	> 25 years
Ms Ashleigh McKenzie	MSc	International Association of Impact Assessment (South African Chapter) Certified Environmental Practitioner with the Interim Certification Board of South Africa Certified with the South African Council for Natural Scientific Professions (400026/05)	18 years
Mr Giles Churchill	MSc	International Association of Impact Assessment (South African Chapter)	10 years
Monica Shange	Hons Bsc	Certified with the South African Council for Natural Scientific Professions (Pr Sci Nat)-118085 International Association of Impact Assessment (South African Chapter)	12 years

## ACRONYMS AND ABBREVIATIONS

DAFF	Department of Agriculture, Forestry and Fisheries
DWS	Department of Water and Sanitation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo KwaZulu-Natal Wildlife
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
SAWQ	South African Water Quality
The Park	iSimangaliso Wetland Park
The Authority	iSimangaliso Wetland Park Authority

## DEFINITIONS

Definitions are provided in **Appendix 1**.

## 1. INTRODUCTION

The iSimangaliso Wetland Park and the iSimangaliso Wetland Park Authority (iSimangaliso) were established in terms of the World Heritage Convention Act, 1999 (Act 49 of 1999) and Regulations published there under and, as such, iSimangaliso is the legal management authority for the Park. Furthermore, iSimangaliso is governed by the National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) and Regulations published there under and, as such, iSimangaliso is the designated Protected Area Manager for the iSimangaliso Wetland Park. As the authority mandated to protect and develop the iSimangaliso Wetland Park, a proclaimed World Heritage Site, iSimangaliso is required by law to ensure that development and activities taking place within and adjacent to the Park do not negatively affect the Park's World Heritage values or the Principles of Integrated Environmental Management as laid in Chapter 2 of the National Environmental Management Act (NEMA).

To achieve this, iSimangaliso developed its Integrated Management Plan (IMP) for the period 2017-2022 which incorporates an Overarching Environmental Management Programme as one of the key underlying environmental management tools. The IMP was approved by the Minister of Environmental Affairs (then Minister of Water and Environmental Affairs) in 2017.

In order to produce a holistic Overarching Environmental Management Programme that addresses current legislative requirements and objectives, this document was revised to align with the NEMA EIA Regulations published in December 2014 and to provide for management and maintenance activities within iSimangaliso. To this end, the revised Overarching EMP<sup>r</sup> provides management measures for the following:

- ❑ Management measures for all new infrastructure developments within iSimangaliso.
- ❑ Management measures for the maintenance of all existing infrastructure within iSimangaliso.
- ❑ Management measures for maintenance activities within iSimangaliso consistent with the exclusion clauses contained within the December 2014 EIA Regulations as provided for in Section 24(2) and 24D of the National Environmental Management Act. This relates specifically to Listing Notice 1 (R 983) Activities 18, 19, 19A and 27, Listing Notice 2 (R 984) Activities 15 and 24, and Listing Notice 3 (R 985) Activity 12.

This overarching Environmental Management Programme (EMP<sup>r</sup>) is also submitted and considered as a maintenance management plan (MMP) (revision 14). It has been compiled in accordance with the environmental management impact assessment regulations, 2014, for the construction, rehabilitation and maintenance activities within the iSimangaliso Wetland Park world heritage site. This Overarching Environmental Management Programme (EMP<sup>r</sup>) covers the principles, responsibilities and requirements applicable in order to implement effective environmental management during pre-construction, construction, site rehabilitation and maintenance activities within the iSimangaliso Wetland Park<sup>1</sup> (the Park). The aim of this Overarching EMP<sup>r</sup> is to ensure that activities are conducted in accordance with the policies and management practices of the iSimangaliso Wetland Park Authority (the Authority) and the principles of Integrated Environmental Management laid out in Chapter 2 of the National Environmental Management Act. Should any mitigation measures stated in this Overarching EMP<sup>r</sup> conflict with statements in the Project Specifications that form part of the Tender Documents, suitable mitigation measures are to be agreed upon between the Employer, Principal Agent/Engineer<sup>2</sup>, Contractor and the Park Environmental Manager.

<sup>1</sup> Formerly known as the Greater St Lucia Wetland Park.

<sup>2</sup> The term "Principal Agent" applies to JBCC contracts and the term "Engineer" applies to GCC (2004) contracts. In each case, the term shall be interpreted according to the definition thereof in the reference document.



The aim of the revision of this Overarching EMPr is to also align it with the following plans and policies:

- 2017-2022 approved Integrated Management Plan
- Approved Estuarine Management Plans for the St Lucia, Kosi Bay and Mgobozeleni estuaries within the Park
- The National Estuarine Protocol 2013

**It is important to note that this Overarching EMPr covers environmental mitigation measures that are common to activities within the Park. If applicable, additional site specific or project specific mitigation measures relevant to a particular activity or development must be stipulated in an Addendum to this Overarching EMPr (Appendix 4). This includes provision of the following site-specific sub-plans, as applicable and relevant to each specific project:**

- ☐ **Revegetation and Rehabilitation Plan.**
- ☐ **Stormwater Management Plan.**
- ☐ **Erosion and Soil Management Plan.**
- ☐ **Alien Invasive Plant Management Plan/**
- ☐ **Transportation and Traffic Management Plan.**
- ☐ **Open Space Management Plan.**
- ☐ **Plant Translocation Guidelines.**

Compliance with this Overarching EMPr does not absolve the iSimangaliso Wetland Park Authority, its clients, partners, operators or service providers operating or performing any activities or functions within the Park or on behalf of the iSimangaliso Authority, from compliance with all applicable legal environmental requirements and/or legislation.

## 2. PROJECT ENVIRONMENT

The projects will be located within the Park, which is a protected area of national and international importance, and a declared World Heritage Site. The natural values for which iSimangaliso was inscribed on the World Heritage List, and the relevant World Heritage Criteria are:

- ☐ Ecological processes.
- ☐ Superlative natural phenomena and scenic beauty.
- ☐ Biodiversity and threatened species.

The Park also contains four RAMSAR sites<sup>3</sup> that are recognised as being wetlands of international importance and valued for both their ecological functions as well as their importance as economic, cultural, scientific and recreational resources.

Maintenance of the ecological integrity of the Park is vital to the protection of its World Heritage Site status and to the success and sustainability of the Park as a nature based tourism destination. The management measures and environmental specifications stipulated in this EMP seek to minimise risks to these World Heritage values.

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<sup>3</sup> St Lucia, Kosi and Sibaya lake systems, and the Turtle Beaches/Coral Reefs of Tongaland.

### 3. ENVIRONMENTAL PRINCIPLES

The principle of sustainable development that guides environmental management in South Africa<sup>4</sup> requires consideration of the following aspects, throughout all phases of the development:

- ❑ That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied.
- ❑ That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied.
- ❑ That the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied.
- ❑ That waste is avoided, or where it cannot be altogether avoided, is minimised and reused or recycled where possible and otherwise disposed of in a responsible manner.
- ❑ That negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

In the context of the above, it is important to minimise the size (extent) of areas disturbed by construction activities (i.e. the construction footprint). This will assist in limiting construction related environmental impacts and reducing rehabilitation requirements and costs. In addition, all developers shall adhere to all relevant standards relating to international, national, provincial and local legislation, as applicable. This includes requirements relating to waste emissions/discharges (e.g. hazardous, airborne, liquid and solid), waste handling and disposal, noise control, traffic control, etc.

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<sup>4</sup> As stated in the National Environmental Management Act, 1998 (Act No 107 of 1998), as amended.

#### 4. APPLICABLE LEGISLATION

Several laws and regulations apply to the protection of the environment and contain environmental principles and standards that need to be applied. There are also permits and licences that need to be applied for and obtained. Further detail on particular legal requirements of relevance to projects in the Park, are provided in **Appendix 2**.

Laws applicable to protection of the environment in terms of environmental management (and relating to construction and maintenance activities) include but are not restricted to:

- ☐ Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983).
- ☐ Environment Conservation Act, 1989 (Act No 73 of 1989).
- ☐ Hazardous Substances Act, 1973 (Act No 15 of 1973).
- ☐ Human Tissues Act (Act No. 65 of 1983)<sup>5</sup>.
- ☐ KwaZulu-Natal Heritage Act, 2008 (Act No 4 of 2008).
- ☐ KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997).
- ☐ Marine Living Resources Act, 1998 (Act No 18 of 1998).
- ☐ National Environmental Management Act, 1998 (Act No 107 of 1998) (as amended) and relevant Regulations there under, including the EIA Regulations (2014) National Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004).
- ☐ National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004).
- ☐ National Environmental Management: Integrated Coastal Management Amendment Act, 2014 (Act 36 of 2014) and Regulations: Control of Vehicles in the Coastal Area (GNR 496, 27 June 2014).
- ☐ National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003) and Regulation R 1061, 28 October 2005 under Section 86 of the Act.
- ☐ National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and relevant Regulations there under.
- ☐ National Forests Act, 1998 (Act No. 84 of 1998)<sup>6</sup>.
- ☐ National Heritage Resources Act, 1999 (Act No 25 of 1999).
- ☐ National Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002).
- ☐ National Veld and Forest Fire Act, 1998 (Act No 101 of 1998) (Section 34).
- ☐ National Water Act, 1998 (Act No 36 of 1998).
- ☐ Occupational Health and Safety Act, 1993 (Act No 85 of 1993) and Regulations there under.
- ☐ Promotion of Access to Information Act, 2000 (Act No 2 of 2000).
- ☐ Promotion of Administrative Justice Act, 2000 (Act No 3 of 2000).
- ☐ Provincial and Local Government Ordinances and Bylaws (as relevant and applicable).
- ☐ Ramsar Convention on Wetlands of International Importance especially as a Water Fowl Habitat.
- ☐ Road Traffic Act, 1989 (Act No 29 of 1989).
- ☐ Soil Conservation Act, 1969 (Act No 76 of 1969).
- ☐ Water Services Act, 1997 (Act No 108 of 1997).
- ☐ World Heritage Convention Act, 1999 (Act No 49 of 1999)
- ☐ Maritime Zone Act, 1994 (Act 15 of 1994)
- ☐ National estuarine management protocol 2013

<sup>5</sup> Exhumation and reburial of graves must conform to the standards set out in the Ordinance on Excavations (Ordinance No 12 of 1980). Permission must be obtained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and the local police. In addition, permission must be obtained from the landowners (where the graves are located and to where the graves are going to be relocated) before exhumation can take place. Human remains can only be handled by a registered undertaker or an institution declared under the Human Tissue Act (Act 65 of 1983, as amended).

<sup>6</sup> A list of protected trees is published in terms of the Act. At the time of this revision, No 716 of 7 September 2012 is applicable.

And all relevant regulations framed under these Acts and amendments thereto.

#### **4.1 Applicable Management Plans**

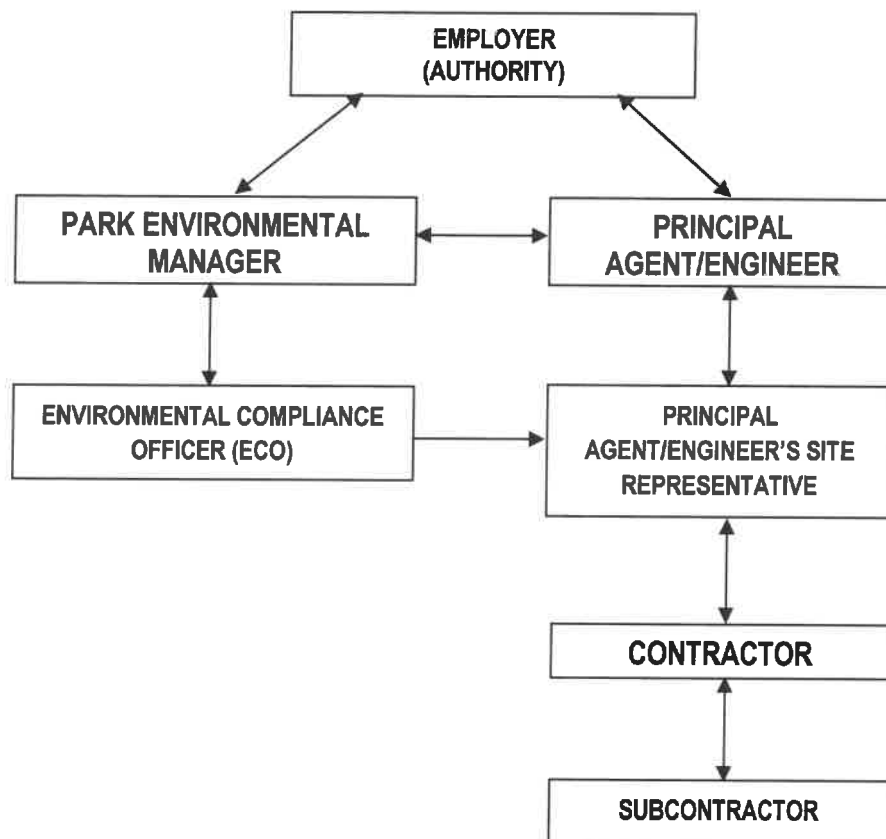
- ☐ Kosi Bay Estuarine management plan; 2017
- ☐ Lake st Lucia Estuarine management plan; 2017
- ☐ Mgobozeleni Estuarine management plan; 2017
- ☐ Isimangaliso Wetland Park integrated management plan (2017-2021)

## **5. PARK RULES**

All parties working within the Park are required to comply with Park Rules. Park Rules will be contained in the contract documents or, if not, are obtainable from iSimangaliso via the Principal Agent/Engineer. Activities undertaken outside of what is covered in Sections 7-10 of this Overarching EMPr require written approval from the Authority. This includes both non-consumptive and consumptive activities, such as movement within the Park (on foot or by vehicle) and angling.

## 6. ENVIRONMENTAL COMPLIANCE – ADMINISTRATIVE AND REGULATORY PROCEDURES

### 6.1 Communication/reporting relationship with respect to environmental management of contracts and relationships between contract parties





## 6.2 Indemnity

All Contractors and their staff are required to sign the Park's Indemnity Form prior to commencing work in the Park.

## 6.3 Roles and responsibilities in compliance

The Authority, as the Employer, is ultimately responsible for ensuring that the terms of the Overarching EMPr are complied with during the Contract. The Authority may appoint a representative (e.g. Principal Agent or Engineer) to oversee this on its behalf. The Principal Agent/Engineer is usually assisted in this regard by the Park Environmental Manager and the Environmental Control Officer (ECO) where one has been appointed. **Appendix 3** outlines the roles and responsibilities of the Principal Agent/Engineer, the Principal Agent/Engineer's Site Representative, the ECO and the Environmental Manager with regard to environmental compliance and compliance monitoring.

## 6.4 Communication and reporting procedures

It should be noted that all communication on site, with regard to environmental matters, is done via the Principal Agent/Engineer's Site Representative and not directly between the ECO and Contractor. Instructions are to be recorded in the site diary or in the minutes of site meetings. Reporting on environmental matters shall be undertaken as outlined in **Appendix 3**.

## 6.5 Non-compliance and remedial action

The Contractor and Sub-contractors are deemed not to have complied with the Overarching EMPr and any subsidiary documents (e.g. a Site-Specific Addendum) if:

- ☐ There is evidence of contravention of the Overarching EMPr specifications within the boundaries of the construction site, site extensions and haul/access roads.
- ☐ There is contravention of the Overarching EMPr specifications that relate to activities outside the boundaries of the construction site.
- ☐ Construction/ maintenance activities take place outside demarcated areas.
- ☐ Environmental damage occurs due to negligence or intent.
- ☐ Failure to comply with corrective or other instructions issued by the Principal Agent/Engineer within a specific time period.

Where the ECO identifies non-compliance by the Contractors and Sub-contractors, this will be discussed at site meetings (or when identified) and remedial actions and associated timeframes specified. The ECO will record these incidents of non-compliance, together with the specified remedial actions and timeframes, in the site inspection checklist (which serves as the environmental compliance report). The Principal Agent/Engineer's Site Representative must also record the relevant instructions for the Contractor(s) in the site diary.

If the specified remedial action has not been carried out by the Contractor(s) within the period stipulated by the ECO, the non-compliance in question shall be dealt with as follows:

- ☐ Where non-compliance has resulted in environmental damage to the site which cannot be rectified by the remedial action specified by the ECO, or the Contractor(s) has failed to carry out the remedial work within the prescribed time limit (or permitted extension thereof), the ECO shall convene a meeting between the Principal Agent/Engineer's Site Representative and the Contractor. Appropriate remedial work shall be discussed and agreed, and failing agreement within 10 days, such dispute shall be resolved in accordance with the dispute resolution provisions contained within the Contract.

- ❑ In determining appropriate remedial action, the ECO and Principal Agent/Engineer shall make a recommendation to the Authority for decision, and where necessary, obtain specialist input.
- ❑ The Principal Agent/Engineer shall issue an instruction to the Contractor to procure execution of the remedial work as agreed between the parties, and the Contractor shall be obliged to procure such remedial work within the prescribed period to the satisfaction of the Principal Agent/Engineer.
- ❑ Failure by the Contractor to comply with an instruction from the Principal Agent/Engineer to procure the carrying out of the required remedial work shall constitute a material breach of the Contract, entitling the Authority to contractual remedy.
- ❑ Where the Authority has taken action to procure the remediation of such consequences it shall be entitled to recover from the Contractor the full cost of remediation.

## 6.6 Penalty clause

Any avoidable or unauthorised, in the case of unavoidable circumstances, non-compliance with the Overarching EMP, Site-Specific Addendum, Environmental Authorisation, Permits or applicable regulations shall be considered sufficient grounds for imposing a sanction. The sanction imposed shall be determined on a case by case basis. Upon receipt of a notice of non-compliance, the Contractor shall correct whatever is the cause of the issuing of the notice, in accordance with the law.

The indicative Rand values of the penalties to be imposed per incident or violation are provided in **Appendix 5**. They reflect first-time incidents of non-compliance only.

Penalties imposed shall be paid to the Authority should the incident occur within the Park or to the landowner should the incident occur on land adjacent to the Park.

The imposition of a penalty by the appropriate regulatory authority does not exonerate or exempt the offender from rehabilitating the damage caused to the environment, if any, or result in the offender not becoming liable to the payment of a fine or imprisonment, or both, and the obligation to rehabilitate the environment or pay the costs of such rehabilitation. These fines and costs for rehabilitation are distinguishable from delay damages the Contractor contractually agrees to pay, if imposed.

## 7. DESIGN AND PRE-CONSTRUCTION

Various environmental management considerations must be dealt with prior to construction by the Principal Agent/Engineer, ECO and/or the Contractor. Responsible parties are indicated in the sections below.

### 7.1 Technical design

- ❑ Environmental sensitivities identified during the environmental impact assessment (EIA) process<sup>7</sup> must be communicated to the Principal Agent/Engineer by the Park Environmental Manager or relevant Environmental Assessment Practitioner so that, where applicable, project specific mitigation measures may be incorporated into the technical designs.

### 7.2 Protection of natural drainage and hydrological regimes

In designing bridges, culverts, pipes and/or other structures or landscaping that affect runoff and drainage, adhere to the following:

- ❑ Culverts, pipes and channels shall be concrete lined.
- ❑ Ensure that drainage systems are kept as natural as possible. Retain natural drainage and normal flow at all times.
- ❑ Consider the effect of the structures on the river and flood plain system, and aim to minimise the impacts.
- ❑ Design calculations shall prove that the optimum solution is being implemented.
- ❑ Consider the effects of backwash and design remedial measures where required.
- ❑ Prevent erosion or scouring of any river or stream resulting from road or bridge construction.
- ❑ Prevent alteration of groundwater movement patterns.
- ❑ Obtain the input of an appropriate expert(s) to ensure the inclusion of wetland protection measures during the detailed design phase of the project.
- ❑ Culvert design must encourage their use as underpass crossings for small to medium sized animals.

### 7.3 Estuarine management, Artificial breaching of watercourses, mouth manipulation and removal of the deposited silt

#### 7.3.1 Estuarine management and breaching

The National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008) ("the ICM Act") which was assented to by the President on the 9 February 2009 and commencement delayed till 1 December 2009, requires estuaries of the Republic to be managed in a coordinated and efficient manner, and in accordance with a National Estuarine Management Protocol ("the Protocol"). Estuaries are subjected to influences from marine, riverine and terrestrial ecosystems. Therefore, estuarine management has to be complex as estuaries require integrated cross-sectorial planning and management. Estuarine management is thus a dynamic process that requires careful implementation of management decisions.

Natural breaching in a pristine system provides the natural variation on which the ecology of the estuary depends for its survival. *This is often not possible at times because of developments in the flood plain of the estuary or river. To protect the biodiversity and for the ecological benefits, artificial breaching is practised, often at very low water levels.* The breaching process requires water level to be as high as possible. The reason for this is that as

<sup>7</sup> Undertaken either via the Park's Internal Scoping process or the environmental authorization process required in terms of the NEMA EIA Regulations.

much sediment as possible should be flushed from the mouth and from the estuary. The potential of flushing of sediments increases exponentially with the increase of outflow velocities after breaching, which in turn increase strongly with the increase in water levels. There are various ecological benefits and motivation of performing artificial breaching on river mouth/rivers in estuaries and that can be affected by flooding, river bank erosion causing sedimentation etc. .

### 7.3.2 Flooding

Flooding can have a variety of direct impacts on the environment and ecosystems contained within a flooded region. Flooding can have a direct impact on the wellbeing of wildlife, livestock, riverbank causing erosion and sedimentation. Large quantities of water can negatively affect natural and farming habitats, as a result of water inundating their habitats.

### 7.3.3 Riverbank Erosion and Sedimentation

Riverbank erosion is caused by high and fast moving water that exceeds riverbanks. Sediment may act as a form of non-point source water pollution that can clog riverbeds and streams as well as reduce storage capacity for reservoirs and wetlands. Flood waters can carry large amounts of sediment and leave deposits behind once flood waters velocity subsides. As silt causes the level of riverbed to rise, the straight course of the river is disturbed. Therefore the river searches for a lateral path (left or right), changing its course and breaching embankments on the new path.

### 7.3.4 Siltation

The silt causes the level of riverbed to rise. As a result, the natural longitudinal course of the river is disturbed. Therefore, the river searches for a lateral path (left or right). As a result, it changes its course and breaches the embankments on the new path it has created. Siltation occurs as a result of human activities that lead to fine soil leaching into nearby rivers. This results in an unnaturally large accumulation of silt that stays in that particular area of that river. Rainstorms may also transport these soils into other water sources. Sensitive marine life and freshwater fish may be affected by suspended silt in their native waters. Other harmful impacts of siltation are human health concerns, the loss of wetlands, coastline alterations, and changes in fish migratory patterns.

### 7.3.5 Embankment breaching

Embankment breaching, an episodic process in fluvial dynamics, is affecting a wide range of physical, ecological and socio-economic issues in the fluvial environment. The main causes of embankment breaching are the use of low quality, unstable material, faulty construction, toe erosion, illegal sand mining as well as inadequate maintenance and improper planning of land use. The river embankments bring adverse impact on the riparian environment by hampering the natural evolution of the floodplain by interfering with the geomorphological processes of the river. The quality of construction of such embankments is never uniformly good, and the embankments themselves deteriorate with time due to erosion by rainfall, interference by humans (e.g., cutting embankments to allow for the passage of irrigation water in the dry season), burrowing of animals, and road or other traffic along and across the structure, etc. Artificial breaching at low water levels is also linked to on-going sedimentation in the river system hence the need to balance the environmental requirements of the estuary with those related to reducing the risks of flooding. Ensure a healthy functional estuary, i.e. open mouth in spring and summer, no fish kills, no excessive algal blooms.

#### 7.4 Environmental authorisations/permits/licences

- ❑ The Principal Agent/Engineer is to seek advice and assistance from the Environmental Manager and/or ECO regarding which environmental authorisations/permits/licences may be required, for example<sup>8</sup>:
- ❑ Licences/permits from Department of Minerals and Energy and the Department of Environmental Affairs (DEA) for borrow pits<sup>9</sup>.
- ❑ Water use licences from the Department of Water and Sanitation with respect to river/stream crossings, construction in or near wetlands, abstraction of water, etc.
- ❑ Approval from Amafa with respect to heritage resources.
- ❑ It must be noted that the Authority, as an Organ of State, is not required to obtain permits for the removal/destruction etc. of trees and trees in natural forests protected under the National Forests Act (refer to **Appendix 2**); nor is it required to obtain permits for plants protected under the Natal Nature Conservation Ordinance<sup>10</sup>. However, emphasis will still be placed on the protection of these species during the course of any development in the Park.
- ❑ Environmental permits that are likely to be required for various project activities must be obtained before the activity commences and the activity undertaken according to the conditions contained within the permit.
- ❑ The applicant of the permit or licence for this project will be the relevant party as defined by the relevant legislation, which in most cases will be the Authority or the Principal Agent/Engineer.

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<sup>8</sup> Refer to Appendix 2.

<sup>9</sup> Note that no mining is allowed within the iSimangaliso Wetland Park. Contractors are to source materials from outside the Park and to ensure that such sources have the relevant legal approvals.

<sup>10</sup> Section 216A of the Ordinance says that "This Ordinance shall not bind the State." The term State is given a wide interpretation so as to include Organs of State. The Authority is an Organ of State. (refer *Claase v Transnet Bpk* 1999 (3) SA 1012).

## 7.5 Liaison with affected parties

- ❑ The Principal Agent/Engineer must ensure that the necessary liaison with landowners, land users, community leaders, service providers and other affected parties has taken place prior to construction and where required, the relevant consent obtained.

## 7.6 Contractors' camp/site office/accommodation

- ❑ Accommodation of labour and Contractors' camps are not permitted in the Park. However, if this is logistically and financially unavoidable, the Contractor will require special permission, which will need to be arranged between the Principal Agent/Engineer and the Authority.
- ❑ Whether inside or outside the Park, the following criteria will apply to the selection of a site for Contractors' camps:
  - Landowner permission is required.
  - Select a location that has easy access and which has already been cleared or disturbed by previous human activity (e.g. old fields, abandoned tracks or yards, previous construction camps or stockpile areas).
  - Select a site that minimises nuisance impacts on neighbours or tourists (e.g. visual intrusion, lights at night, noise, dust, movement of people and vehicles, and safety and security risks).
  - Select a level site.
  - Select a site with good drainage.
  - Stay out of river flood plains and drainage lines, and at least more than 50 m away from the edge or banks of water bodies (e.g. streams, wetlands, pans, dams, lakes, etc).
  - Check the area for nests of birds or large burrows of animals and avoid these areas where possible.
  - Select an area that requires the least amount of removal of indigenous vegetation and large trees.

## 7.7 Construction site layout plan

The Contractor, with assistance from the Principal Agent/Engineer if necessary, is to draw up a construction site layout plan for approval by the Principal Agent/Engineer, ECO and the Authority<sup>11</sup>. This plan must show the positions and extent of all permanent and temporary site structures and infrastructure, including (as relevant):

- Site access (including entry and exit points).
- Roads and haul/access routes.
- Buildings and structures.
- Batching plants.
- Essential services (permanent and temporary water, electricity and sewage).
- Site toilets and ablutions.
- Construction materials stores.
- Vehicle and equipment stores.
- Fuel stores.
- Hazardous substances stores.
- Storm water control measures.
- Borrow areas.
- Excavations and trenches.
- Cut and fill areas.

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<sup>11</sup> If, due to the nature of the development, a site layout plan is not deemed necessary (by the Engineer/ ECO) then the items can be discussed and agreed to at the site handover meeting.

- Topsoil stockpiles.
- Stockpile/laydown areas.
- Spoil areas.
- Solid waste storage and disposal sites.
- Rubble and waste rock storage and disposal sites.
- Hazardous waste storage sites.
- Areas where vegetation will be cleared.
- Features and plants to be conserved.

## 7.8 Site layout and design

The Contractor is to adhere to the following, in terms of site layout and design:

- ☐ Limit the size of the site to a minimum.
- ☐ Provide suitable drainage to prevent soil erosion from stormwater runoff, as well as to prevent stagnant puddles from forming and harbouring mosquitoes that may carry malaria.
- ☐ Locate materials and soil stockpile areas, fuels and chemical storage areas and batching areas away from environmentally sensitive areas and protected from stormwater runoff, fire and access by unauthorised persons.
- ☐ Locate and clearly indicate convenient access routes, temporary loading and parking areas, and turning circles so that vehicle movement can be confined to these areas.
- ☐ Locate chemical toilets so that they are easily accessible for servicing.
- ☐ Locate temporary waste bins and skips so that they are easily accessible for emptying and removal.
- ☐ Design the layout to control and reduce noise from source.
- ☐ Position components and equipment to limit visual intrusion.
- ☐ Select type and colour of roofing and cladding materials to reduce reflection.
- ☐ Direct lights so that they do not pose a nuisance to neighbours.

## 7.9 Plant, animal and heritage resources

- ☐ The presence of protected plants and trees must be determined by the Park Environmental Manager during the scoping/design stage and marked off for protection or translocation well before construction activities commence.
- ☐ The ECO shall be responsible for ensuring that any required demarcation, removal, relocation and/or rescue of plants, animals and/or heritage resources are undertaken prior to construction activities commencing (refer to Sections 8.5, 8.6 and **Appendix 2**).
- ☐ The Principal Agent/Engineer is responsible for timeously notifying the ECO of construction schedules and dates (a minimum of four weeks' notice) so this can be timeously effected.

## 7.10 Environmental awareness training

- ☐ The Contractor and staff are required to attend an environmental awareness training/induction course prior to construction commencing<sup>12</sup> and to keep attendance registers. This course is usually presented by EKZNW and includes a course on Dangerous Animals.
- ☐ Environmental training is to be at the cost of the Employer. The trainer is to ensure that the Park Environmental Manager is in agreement with the course content.
- ☐ Training programs must include (but not necessarily be restricted to) the following briefs:

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<sup>12</sup> If new staff are taken on during the course of construction, they are to attend the course before or as close as possible to the time they start work.

- Basic awareness and understanding of the key environmental features of the work site and environs.
- Understanding the importance of, and the reasons why, the environment must be protected.
- Ways to minimise environmental impacts.
- Requirements of the Overarching EMP and Site-Specific Addendum.
- Risks and protection from dangerous wild animals.
- Prevention and handling of fire.
- Health risks pertinent to the site, including prevention of diseases such as malaria, cholera and tick bite fever.

#### **7.11 Method statements**

- ❑ Before a construction activity commences, the Principal Agent/Engineer and ECO will agree which activities require a method statement. In such cases, the Contractor, with assistance from the ECO, if required, will submit a written method statement, which should include the following:
  - The type of the construction activity.
  - Locality of the activity.
  - Identification of activities or aspects that may cause an impact.
  - Identification of impacts that might result from the activity or aspect.
  - Methodology and/or specifications for prevention, minimisation or mitigation of impacts.
  - Emergency/disaster incident and reaction procedures.
  - Rehabilitation and continued maintenance of impacted environment.
- ❑ The Contractor may provide such information in advance of any or all construction activities provided that new submissions shall be given to the Principal Agent/Engineer whenever there is a change or variation to the original.
- ❑ The Principal Agent/Engineer and ECO will review and approve the construction method statements.

#### **7.12 Construction programme and schedules**

- ❑ The Principal Agent/Engineer is to provide a programme of project activities and time schedules to the ECO, who is also to be made aware of any amendments to the construction programme or alteration to the scope of work, so that impacts on the environment can be assessed.
- ❑ The Principal Agent/Engineer is to ensure that relevant Park staff and other relevant affected parties are made aware of project activities and associated timeframes.



## 8. SITE ESTABLISHMENT

These specifications are the Contractor's responsibility, except where specifically indicated otherwise.

When establishing the site (this includes the site camp and all areas of operation both inside and outside the Park), the environmental objective is to minimise the footprint of disturbance, retain quality of topsoil, minimise loss of vegetation and prevent pollution. The site must be kept neat and tidy at all times.

### 8.1 Site handover

- ☐ The Principal Agent/Engineer is to timeously notify the ECO of the date for the site handover, so that she/he may attend such a meeting to discuss special requirements of the Overarching EMP and Site-Specific Addendum, prior to construction commencing.
- ☐ Contractors and their staff must sign iSimangaliso's indemnity before commencing work in the Park.

### 8.2 Site access

- ☐ No new tracks may be made in the Park without the written permission of the Authority. Use must be made of existing roads and tracks.
- ☐ Crossing of rivers, streams, watercourses, wetlands and pans is not permitted unless indicated on the infrastructure plans. Where unavoidable, crossings must be kept to a minimum and should not permanently alter watercourses or affect flows (flow directions, flow volumes and flow velocities). Where relevant, these crossings must be designed and constructed in accordance with method statements and/or measures specified in the Site-Specific Addendum.

### 8.3 Contractors' camp and construction workers' accommodation

- ☐ Refer to Sections 7.5, 7.6 and 7.7 regarding Contractors' camps/site offices.
- ☐ Construction workers must be housed outside of the Park and brought to the site on a daily basis, except where special approval is received from the Authority.
- ☐ Environmental management of the Contractors' camp, site offices and/or accommodation facilities, regardless of whether they are situated inside or outside the Park, should be undertaken in accordance with applicable legislation and the relevant controls contained in this Overarching EMP.

### 8.4 Stockpile areas

- ☐ The same criteria for selecting a site for the Contractor's camp (Section 7.5) will apply to selection of stockpile areas.
- ☐ The sites for stockpile areas within the Park are to be agreed to by the Principal Agent/Engineer and the Authority.
- ☐ Materials may not be stockpiled underneath or against the trunks of trees.

## 8.5 Site demarcation

- ☐ Demarcate all operational areas (where necessary and practicable) for the duration of construction.
- ☐ Clearly demarcate the perimeter of the area, as well as relevant internal areas (e.g. stockpile areas, parking areas, etc) with fencing, poles, hazard tape or other non-permanent marker, as agreed to by the ECO and Principal Agent/Engineer, to prevent sprawl.
- ☐ Do not paint or permanently mark natural features such as trees or rocks.
- ☐ Prior to clearance, protected tree species and plants must be identified and marked so that they are not interfered with<sup>13</sup>. This is the responsibility of the ECO.
- ☐ Prior to clearance, any areas of archaeological or cultural significance<sup>14</sup> that have been identified must be demarcated. This is the responsibility of the ECO.
- ☐ Any deviations from the agreed demarcation must be approved by the ECO and Principal Agent/Engineer.

## 8.6 Site clearance

- ☐ Detailed, colour photographs shall be taken of the proposed site before any clearing may commence. These records are to be kept by the ECO to aid in the rehabilitation of the site.
- ☐ Prior to site clearance, the ECO must be informed, with 14 days' notice, in order to identify and demarcate any indigenous trees or plants, nesting sites or heritage sites that required protection or translocation.
- ☐ Areas of the construction site requiring clearance shall only be cleared immediately prior to construction activities commencing, i.e. at the last practicable stage.
- ☐ Clearance of indigenous vegetation must be kept to an absolute minimum.
- ☐ No indigenous trees or shrubs may be felled, lopped, pruned or removed without the prior permission of the ECO.
- ☐ Pruning of branches of indigenous trees will be properly undertaken under direct, competent supervision and sealant will be applied to cut surfaces in excess of 50 mm in diameter.
- ☐ Cutting of trees should be undertaken in a way that no nest (birds or other) is in the cut portion, unless approval has been obtained from the ECO. The ECO should consider the conservation status of the animal species in question before making a decision. Epiphytes (orchids and any other species identified by the ECO) are to be removed and relocated under the supervision of the ECO.
- ☐ Avoid clearing and excavating within the drip line (under the canopy) of large trees, as this can lead to root damage and premature death of the tree.
- ☐ Brushwood is to be left on site unless otherwise indicated by the ECO.
- ☐ Wood obtained from clearing and grubbing operations remains the property of the Authority and must be stacked at sites designated by the ECO. The Contractor shall be required to remove and dispose of any wood from site at a designated site for vegetation disposal, should this be required.

<sup>13</sup> Prior to construction, a suitably qualified specialist shall identify protected trees on site as listed under the National Forests Act, 1998. Removal of these trees is to be avoided. Where unavoidable, they should be translocated if possible. Also, certain indigenous plant and animal species in KwaZulu-Natal are provided with special protection under KwaZulu-Natal nature conservation legislation. Refer to Appendix 2.

<sup>14</sup> The area encompassed by the Park and its surrounds is of high significance in terms of heritage resources, particularly archaeological sites. Certain heritage resources are potentially threatened by construction activities. In accordance with the KwaZulu-Natal Heritage, 1997 (Act No 10 of 1997), it is necessary to inform Amafa aKwaZulu-Natali (Amafa), the relevant heritage authority, of proposed projects that may impact on heritage resources. Amafa KwaZulu-Natal will advise whether it is necessary to commission an approved cultural resource management specialist to conduct a survey. Depending on the significance of sites identified, special mitigation measures may be required (e.g. excavation, demarcation or permanent protection). If sites are to be damaged by development, the Employer is required to apply to Amafa for a permit for the destruction of these sites. Construction may only proceed once these permits have been granted.

- ❑ Topsoil is to be stripped, together with grass, groundcover and sedges, from all areas where permanent or temporary structures and access roads are to be constructed. Conservation and handling of topsoil is to be in terms of this document (Section 8.7).
- ❑ Any cleared topsoil<sup>15</sup> and organic material must be stockpiled separately from subsoil and used for later rehabilitation.

### 8.7 Conservation and handling of topsoil

- ❑ Where imported topsoil is required, this must be from a legally approved borrow pit (refer to **Appendix 2**). The source of this material must also be approved by the ECO and Park Environmental Manager.
- ❑ Stockpile topsoil separately from subsoil<sup>16</sup>.
- ❑ Stockpile in an area that is protected from stormwater runoff and wind.
- ❑ Topsoil stockpiles are not to exceed 1.0 m in height and should be protected by a mulch cover.
- ❑ Topsoil, which is to be stockpiled for periods exceeding four months, is to be vegetated with a suitable plant material sourced within a radius of 50 km. The area from which this material is taken must be approved by the ECO and must not result in environmental degradation. Approval to use material from further afield or grass seed mix must be obtained from the ECO and Park Environmental Manager, and will only be considered under exceptional circumstances.

### 8.8 Stormwater drainage

- ❑ Establish stormwater drainage measures on site to prevent soil erosion and to divert runoff from materials and soil stockpile areas, fuels and chemical storage areas, concrete batching areas and vehicle maintenance areas, as relevant.

### 8.9 Storage of harmful or hazardous fuels, oils, bitumen and other chemicals

- ❑ All potentially hazardous substances to be used must be approved by the Principal Agent/Engineer and Park Environmental Manager. Handling, storage and disposal procedures must be agreed to prior to application. If not supplied by the Principal Agent/Engineer, the Contractor must provide a method statement detailing the substances/materials to be used, together with storage, handling and disposal procedures.
- ❑ Ensure compliance with all national, regional and local legislation with regard to the storage of oils, fuels, lubricants, solvents, wood treatments, bitumen, cement, pesticides and any other harmful and hazardous substances and materials. South African National Standards apply.
- ❑ Prevent accidental contamination of soil at storage and handling areas for fuels, oils, lubricants, cement and other chemicals and potentially hazardous or harmful substances by placing them above an impermeable liner. The integrity of the liner is to remain intact for the duration of the contract, until removal.
- ❑ All storage areas for harmful substances are to be bunded with a suitable collection point for accidental spills.
- ❑ Provide drip trays underneath dispensing mechanisms as well as under leaking engines/machinery.
- ❑ Store all chemical containers under cover.

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<sup>15</sup> Topsoil is defined as the A horizon of the soil profile. Topsoil is the upper layer of soil from which plants obtain their nutrients for growth. It is often darker in colour, due to the organic (humic) fraction. Where topsoil is referred to, it is deemed to be both the soil and grass/ground cover fraction.

<sup>16</sup> Subsoil is the soil horizons between the topsoil horizon and the underlying parent rock. Subsoil often has more clay-like material than the topsoil. Subsoil is of less value to plants, in terms of nutrient (food) and oxygen supply, than topsoil. When subsoil is exposed it tends to erode fairly easily.

### 8.10 Batching sites

- ☐ Locate the batching activity in an area of low environmental sensitivity<sup>17</sup> to be identified and approved by the ECO.
- ☐ Clear topsoil from the batching site and stockpile for later rehabilitation purposes.
- ☐ Cement may not be mixed directly on the ground, but rather on a protective sheet or board.
- ☐ Protect the batching plant on the up-slope side by an earth berm or sandbag system to deflect clean surface runoff away from the plant.
- ☐ Contain the batching plant on the down-slope side by a trench and earth berm or sandbag system to control contaminated runoff and construction water emanating from within the plant.
- ☐ Effluent from concrete batch plants should be treated in a designated sedimentation (sludge) dam to the legally required standards to prevent surface and groundwater pollution.
- ☐ Ensure that measures are in place to prevent the overflow of sludge dams during heavy rains and storm conditions.
- ☐ Ensure screening and containment are in place to prevent windblown contamination associated with bulk cement silos, loading and batching.

### 8.11 Water supply

- ☐ Use of water resources which flow into the Park, are within the Park or are part of the Park's system must be approved by the ECO, Park Environmental Manager and any other relevant landowner.
- ☐ No water may be abstracted from any unapproved water bodies in or outside of the Park for the purposes of construction.
- ☐ Ensure that the water use for the project is permissible under the General Authorisation. If not, a water use licence will be required in terms of the National Water Act (refer to **Appendix 2**).

### 8.12 Power supply

- ☐ The power supply to be used is to be approved by the Principal Agent/Engineer and ECO.
- ☐ If generators are to be used, establish generators, motors and stored fuel on a hardened, bunded surface and ensure any associated pollution is controlled (Section 9.7).
- ☐ Noise from generators must be controlled (Section 9.8.3).

### 8.13 Sanitation and ablution facilities

- ☐ In the absence of permanent ablutions, use portable chemical toilets on site.
- ☐ Locate chemical toilets so they can be easily accessed for servicing, but they may not be placed within floodplains, wetlands or closer than 50 m from surface water bodies (unless otherwise directed by the ECO).
- ☐ Make provision for regular servicing of chemical toilets. Disposal of the wastes at a formal sewage disposal facility is required. Sewage may not be dumped into the bush.
- ☐ Use of the "bush toilet" will not be condoned. Where areas are too remote for the provision and servicing of chemical toilets, the establishment of temporary long drops as an alternative must be

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<sup>17</sup> Do not locate batching plants or associated sludge dams within the 1:100 year flood line, or within a horizontal distance of 100 m (whichever is greater) of a watercourse, drainage line or identified wetland, unless unavoidable and approved by the ECO. Do not locate batching plants or associated sludge dams within any riparian vegetation zone.

discussed with the Principal Agent/Engineer and Park Environmental Manager. Strict conditions will apply.

- ☐ Water for washing must be provided on site. Site staff are not permitted to use any open water body or other natural water source (e.g. pans) for purposes of bathing, or the washing of clothes, machinery, equipment or vehicles.

#### **8.14 Waste water management facilities**

- ☐ The Contractor shall design, establish, maintain and operate pollution control facilities necessary to prevent the discharge of water containing polluting matter or visible suspended materials into rivers, streams or existing drainage systems.
- ☐ Should grey water (i.e. water from basins, showers, baths, kitchen sinks etc.) need to be disposed, link into existing facilities, where possible. Where no facilities are available, grey water runoff must be controlled to ensure there is no seepage into wetlands or natural watercourses.

#### **8.15 Solid waste facilities**

- ☐ Provide a sufficient number of refuse bins/skips that are wind, water and scavenger proof, for the temporary storage of waste.
- ☐ Make provision for regular waste collection and disposal (Section 9.4) at a registered waste disposal site.

#### **8.16 Cooking and heating facilities**

- ☐ No open cooking fires shall be allowed anywhere on site.
- ☐ Contained fires (i.e. in a fire drum) shall be allowed for heating and cooking only in designated areas, in other cases cooking is restricted to gas or electrical equipment and shall be located away from flammable vegetation and construction materials.
- ☐ Firewood may not be harvested for cooking or heating.

#### **8.17 Fire control facilities and arrangements**

- ☐ Ensure that the necessary fire fighting equipment is on site, in terms of the requirements of the landowner/manager and surrounding land use and vegetation type.
- ☐ Unless stated specifically in the Site-Specific Addendum (**Appendix 4**), the minimum requirements shall include at least rubber beaters when working in "veld" areas and at least one fire extinguisher of the applicable type when welding activities are undertaken, irrespective of the site.
- ☐ A minimum requirement for construction in high fire risk areas shall be a water bowser/cart (minimum 5,000 litres) equipped with a pump and hose (minimum 30 m), which shall be permanently on site unless otherwise stated by the ECO.
- ☐ The Contractor is to ensure he is aware of the requirements of landowners, especially forestry plantation owners, in terms of fire control regulations on their property.
- ☐ Store flammable materials under conditions that will limit the potential for ignition and the spread of fires. Create a fire-break around the storage area, if necessary.
- ☐ Observe all regulations governing the storage of flammable materials, including those outlined in the Occupational Health and Safety Act.
- ☐ No fires are allowed at the construction site. Cooking and heating facilities, if required, are to be as referred to in Section 8.16.

### 8.18 Safety and security

- ☐ Where relevant, implement security measures to prevent:
  - Access by people with criminal intent.
  - Dangerous animals, such as hippo, rhino, elephant or buffalo, entering the site.
- ☐ Comply with the relevant provisions under the Occupational Health and Safety Act, and associated Construction Regulations (**Appendix 2**).
- ☐ Inform staff of the risk of contraction, the symptoms thereof, and the steps for prevention and treatment of the following:
  - HIV/AIDS.
  - Malaria.
  - Tick bite fever.
  - Heat stroke.
  - Cholera (Guidelines for cholera are available from the Department of Environmental Health, Pietermaritzburg).

### 8.19 Emergency procedures, emergency contact numbers, and first aid

- ☐ Provide all site staff with the contact details of organisations and personnel to be contacted in case of emergencies (for example, fire, medical emergencies, chemical spills, vehicle accidents, search and rescue, etc.).
- ☐ Pin a laminated notice with these emergency numbers at the construction site, the Contractor's camp and keep a similar notice in the cab of all vehicles used on site.

### 8.20 Communication with the public and complaints register

- ☐ Provide signage in appropriate language(s) at the site or nearest Park entrance gate(s) indicating the contact details of the Principal Agent/Engineer and Main Contractor, in case of public concerns or information requirements. Ensure that all staff are able to provide affected parties or the public with the relevant contact details.
- ☐ Provide a complaints register on site and forward such complaints to the ECO on a regular basis.

## 9. SITE MANAGEMENT DURING CONSTRUCTION

When carrying out the Works during the construction phase, the environmental objective is to minimise the footprint of damage, disturbance and/or nuisance (to the social and biophysical environments), to sustainably manage use of water resources and to prevent pollution. Unless otherwise specified, it is the responsibility of the Contractor to comply with the specifications hereunder.

### 9.1 Areas occupied and demarcation of site

- ☐ Do not use the land forming the site of, or connected with, the works for any purpose whatsoever other than for the proper carrying out of the works under the Contract.
- ☐ Maintain demarcation tape/fencing/poles throughout the period of construction.

### 9.2 Use and maintenance of access facilities

- ☐ Record photographically, the state of existing roads that are to be used for access within the protected area, prior to machinery/plant utilising these roads. These are to be reinstated to a state not worse than upon commencement of the project, and to the satisfaction of the Authority and relevant landowner, where applicable.
- ☐ No new access roads are to be created within the Park and no temporary deviations will be allowed except under exceptional circumstances and with the prior approval of the Authority.
- ☐ Ensure that all existing water attenuation and drainage structures are maintained in a state in which they can optimally perform their function.
- ☐ Keep to approved/planned access roads, tracks and turning circles.
- ☐ Obey all rules of the road.

### 9.3 Use of plant and machinery

- ☐ At all times, use plant and machinery which is designed for the task in order to minimise the extent of damage to the environment and to minimise the noise levels.

### 9.4 Solid waste collection and disposal

- ☐ Collect all domestic waste in an adequate number of reasonably spaced, scavenger proof litterbins on the Work Site and within the Contractor's camp.
- ☐ Keep all Work Sites and the Contractor's camp tidy and litter free at all times.
- ☐ Empty litterbins weekly (or as required before they reach capacity).
- ☐ No solid waste may be burnt or buried on site or disposed of by any other method on site or within quarries or borrow pits.
- ☐ Remove stored domestic waste to the nearest registered solid waste disposal facility.
- ☐ Inert, non-toxic building rubble<sup>18</sup> may be stored on site until such time as it can be transported from site to an approved landfill or, with the consent of the ECO, used for levelling or filling purposes.

<sup>18</sup> Building rubble used for filling or levelling purposes is not classed as waste in terms of Waste Regulations as promulgated (GN 1986 GG 12703 of 24 August 1990) under the Environment Conservation Act, 1989 (Act No 73 of 1989).

## 9.5 Liquid waste

- ☐ Grey water may not be discharged directly into any water body (stream, river, dam, wetland, pan etc.) or drainage line.
- ☐ No uncontrolled discharges from the site/working area to the watercourse shall be permitted.
- ☐ Any water that is discharged from site is to comply with the relevant Water Quality Guidelines implemented by the Department of Water and Sanitation (DWS).
- ☐ Where effluent is discharged into the environments of the listed RAMSAR sites in the Park (St Lucia System, Lake Sibaya, Kosi Bay system and the turtle beaches and coral reefs of Thongaland) effluent quality is to comply with DWS Special Limits (Appendix 2) and must have the necessary discharge permits from the Department of Water and Sanitation and the Department of Environmental Affairs (Oceans and Coast).
- ☐ Provide suitable, sufficient and conveniently located sanitation facilities as per Section 8.13.
- ☐ Toilets are to be regularly emptied and serviced. Sewage must be disposed at an approved wastewater treatment site and may under no circumstances be dumped in the bush or buried. The Contractor will be entirely responsible for enforcing their use and for maintaining all toilets in a clean, orderly and sanitary condition.

## 9.6 Hazardous substances and hazardous waste

- ☐ Ensure compliance with all national, regional and local legislation with regard to the storage, handling and disposal of hydrocarbons, chemicals, solvents and any other harmful and hazardous substances and materials. The onus is on the Contractor to identify and interpret the applicable legislation.
- ☐ Position hazardous substances stores as indicated on the approved construction site layout plan, in areas not threatening human life or the environment.
- ☐ Keep a record of all hazardous substances stored on site for submission to the ECO.
- ☐ Store all hazardous substances in secure, safe and weather-proof facilities, underlain by a bunded concrete slab to protect against soil and water pollution.
- ☐ Provide for controlled loading/unloading areas, underlain by an impervious paving or PVC sheet to protect against soil and water pollution.
- ☐ Ensure that personnel handling hazardous substances have been educated in terms of the correct handling, use and disposal thereof.
- ☐ Empty containers in which hazardous substances were kept are to be treated as hazardous waste.
- ☐ Drip trays must be used where dispensing mechanisms or stored receptacles may leak.
- ☐ Under no circumstances shall the spoiling of bituminous products on the site, over embankments, in borrow pits or any burying be allowed.
- ☐ No spillage of bituminous products shall be allowed on site. Special care should be taken to avoid spillage of tar products such as tar prime or pre-coating fluid to avoid water-soluble phenols from entering the ground or contaminating water.
- ☐ Unused or rejected bituminous products shall be removed from site and taken to the supplier's production plant.
- ☐ Used oil, lubricants and cleaning materials from the maintenance of vehicles and machinery should be collected in a holding tank and returned to the supplier.
- ☐ All used filter materials should be stored in a secure bin for disposal off site. Hazardous waste shall not be stored or stockpiled in any area other than that designated on the construction site layout.
- ☐ Solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste. Refer to Section 9.7 for further specifications on dealing with cement/concrete.
- ☐ Regularly dispose of all hazardous waste not earmarked for reuse, recycling or resale (such as oil contaminated with chlorinated hydrocarbons, bitumen, tar, electrical cleaning solvent, certain chemicals and fluorescent tubes) at a registered, licensed hazardous waste disposal site.



## 9.7 Control of pollution

- ☐ Do not locate any depot for any substance which causes or is likely to cause pollution within the 1:100 year flood line, or within a horizontal distance of 100 m (whichever is greater) of a watercourse, drainage line or identified wetland.
- ☐ Do not dump waste of any nature, or any foreign material into any river, stream, drainage line or wetland.
- ☐ Do not allow the use of any river, stream drainage line or wetland for swimming, bathing, or the cleaning of clothing, tools or equipment.
- ☐ Prevent the discharge of water containing polluting matter or visible suspended materials, fines and sediments directly into drainage lines or wetlands.
- ☐ Deflect any unpolluted water/runoff away from any dirty area (including plants, maintenance areas, workshops and Contractors' yards).
- ☐ Take special care during rainy periods to prevent the contents of sumps and drip trays from overflowing.
- ☐ Vehicles may not be serviced or repaired on site (other than emergencies).
- ☐ Ensure that an emergency preparedness plan is in place for implementation in the case of a spill or the release of substances that can be harmful to an individual or the receiving environment.
- ☐ Ensure that accidental oil or fuel spills or leakages (other than those classed as an emergency) are immediately contained and cleaned up.
- ☐ Carefully control all on-site operations that involve the use of cement and concrete (this applies to areas other than the batching plant). Limit cement and concrete mixing to single sites, where possible.
- ☐ Use plastic trays or liners when mixing cement and concrete. Do not mix cement and concrete directly on the ground.
- ☐ Dispose all visible remains of excess cement and concrete after the completion of tasks. Dispose in the approved manner (solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste).
- ☐ Contain water and slurry from cement and concrete mixing operations as well as from batching area wash bays. Direct such wastewater into a settlement pond or sludge dam for later disposal.
- ☐ Do not allow the washing of trucks delivering concrete anywhere but within designated wash bays equipped with runoff containment. Direct such wastewater into a settlement pond or sludge dam for later disposal.
- ☐ Clean out all sludge dams on a regular basis, and dispose of sludge at a licensed facility.
- ☐ Scrape waste concrete and cement sludge off the site of the batching plant on a regular basis, and dispose as inert construction rubble.
- ☐ Unused cement bags are to be stored so as not to be affected by rain or runoff events.
- ☐ Used cement bags shall be disposed by the Contractor at a licensed waste disposal facility.
- ☐ After closure of the batching plant or any area where concrete was mixed, all waste concrete/cement sludge shall be removed together with contaminated soil. The surface shall then be ripped to a depth of 150 mm and the topsoil replaced evenly over the site and re-grassed as per the environmental specification.
- ☐ Remove all excess aggregate and sand.
- ☐ Fume emissions are to be controlled through servicing of vehicles.
- ☐ Where, due to construction requirements, pollution of a water body may potentially occur, ensure protection measures (e.g. attenuation/settlement dams/oil absorbent products) are in place to prevent pollution. Treatment of liquid waste should take place away from the construction site.
- ☐ In the event of pollution of a water body (including sediment loading), the Contractor shall provide alternative water supply to users of that water body until the quality of the water body is restored to its previous unpolluted state. For the sake of this Overarching EMP, pollution is deemed to be a state that is sub-standard to the normal quality of the water body, but is not necessarily in contravention of the South African Water Quality (SAWQ) guideline standards for a prescribed activity.

- ❑ The Contractor is liable for the costs of remedying damages resulting from pollution, in accordance with Section 28 of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA).

## **9.8 Nuisance control**

### **9.8.1 General**

- ❑ Obey Park Rules<sup>19</sup>, including adhering to the speed limits indicated for Park roads.
- ❑ Operate and secure vehicles and equipment in such a way as to minimise risk to the public.
- ❑ No construction staff should approach residents living within or visitors to the Park, for whatever reason, without the knowledge and permission of the Principal Agent/Engineer.
- ❑ Conduct all activities with due regard and consideration of Park visitors and staff, minimising interference with the normal activities of the public and Park staff, and disruption of Sense of Place within the Park.

### **9.8.2 Accommodation of traffic, access and services**

- ❑ Where relevant, accommodation and control of traffic and access to affected locations in the Park are to be undertaken in accordance with engineering specifications in the Contract documents.
- ❑ Disruption of services, e.g. water and electricity, and access to property, must be kept to a minimum at all times. Where such disruption is unavoidable, affected parties must be given two weeks prior notification by the Contractor.

### **9.8.3 Noise and vibration**

- ❑ Undertake the necessary measures to ensure that noise from construction activities is maintained within lawfully acceptable levels<sup>20</sup>.
- ❑ Construction activities generating output levels of 85 dB (A) or more (excessively noisy), in the Park or near human settlement, are to be confined to working hours (08h00 - 17h00) Mondays to Fridays.
- ❑ "Normal" or "noisy" working hours will only be extended with the prior written approval of the Principal Agent/Engineer and ECO who has been notified, at least seven days in advance, of the impending work requiring extension.
- ❑ Maintain machinery and vehicle silencer units in good working order. Offending machinery and/or vehicles shall be banned from use on site until they have been repaired.
- ❑ Maintain appropriate directional and intensity settings on all hooters and sirens.
- ❑ In special cases, such as near crocodile breeding sites, extra measures may be required to reduce noise and vibration. This will need to be discussed on site with the ECO, Principal Agent/Engineer and Contractor.

### **9.8.4 Dust**

- ❑ Control dust at all times on the site, access roads, borrow pits and spoil sites with water, chemical soil stabilisers or temporary surfacing as specified by the Principal Agent/Engineer.

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<sup>19</sup> Park Rules will be contained in the contract documents or, if not, are obtainable from iSimangaliso via the Principal Agent/Engineer.

<sup>20</sup> According to the Environment Conservation Act, 1989 (Act No. 73 of 1989): Noise Control Regulations (No R 1997) and the local by-laws regarding noise. No provincial Noise Control Regulations have been promulgated in KwaZulu-Natal, therefore, the national Noise Control Regulations of the Environment Conservation Act, 1989 (Act No 73 of 1989), Government Notice Number GN 154 of Government Gazette 13717 of 10 January 1992, apply.

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- ❑ Dust control shall be sufficient so as not to have significant impacts in terms of the biophysical and social environments. These impacts include visual pollution, decreased safety due to reduced visibility, negative effects on human health and the ecology due to dust particle accumulation.

#### 9.8.5 Complaints

- ❑ Forward complaints recorded in the complaints register (Section 8.20) to the Principal Agent/Engineer and ECO on a regular basis.
- ❑ Complaints from the public with regard to interference from contract staff shall be regarded in a serious light, and the offender(s) should be subject to disciplinary action. The disciplinary action is to be imposed by the Employer or his representative. If the staff member was acting outside of the site of the works and was contravening Park regulations or legislation, action will be taken by the Authority.

#### 9.9 Fire control

- ❑ Ensure that the Work Site, the Contractor's camp and all living quarters are equipped with adequate fire fighting equipment, specific to the classes of fire likely to occur.
- ❑ No open fires are permitted anywhere on site.
- ❑ Do not permit any smoking within 3 m of any fuel or chemical storage area, or refuelling area.
- ❑ If fire damage to the Park and/or adjacent area is caused by the Contractor or any staff involved in construction activities, the Contractor will be responsible for the costs incurred for control or repair activities.

#### 9.10 Borrow pits and rock quarries

- ❑ Where it is required to import material, this shall be from legal<sup>21</sup> commercial sources or legal borrow areas outside of the Park. Sources of material are to be approved by the ECO, to ensure that no importation of alien invasive plant seeds or other potentially hazardous substances enters the project environment.
- ❑ Do not commence with quarrying activities before the necessary DME approvals are in place (Appendix 2).
- ❑ Comply with the provisions of the environmental management programme for the development, use and rehabilitation of the particular borrow pit. Of particular importance is to:
  - Remove and separately stockpile topsoil and overburden for use during rehabilitation, locating these in areas where they will not be disturbed by the progress of the gravel pit/quarry.
  - Avoid stripping material to bedrock. This limits rehabilitation potential for these areas.
  - Minimise the flow of any surface water or floodwater into borrow areas. Where necessary, protect borrow areas by an earth berm or sandbag system to deflect clean surface runoff away from the excavations.
  - Allow for the natural free drainage of borrow areas. All borrow areas must be drained unless otherwise specified.
  - Bury coarse material incapable of supporting vegetation beneath the finer material.

<sup>21</sup> In terms of the requirements of the National Mineral and Petroleum Resources Development Act, 2002.

### 9.11 Excavations and trenches

- ☐ For all excavations, topsoil is to be removed and stockpiled for later rehabilitation.
- ☐ For significant (large and/or rare) trees identified by the ECO, trenching must be outside the drip line of the tree as specified by the ECO.
- ☐ Excavate and backfill trenches on a progressive basis. Where trenches pose a risk to human or animal safety, they are to be cordoned off to prevent people and animals falling in and getting trapped and/or injured. During breaching the contractor needs to avoid pollution of river water leading to water quality deterioration.
- ☐ Stockpiling of sand during the breaching process should be situated on the bank opposite the maintenance area, in order to minimise the stockpiled sand being washed into the River and/or ocean.
- ☐ Only temporary stockpiling of excavated sand is allowed during the breaching process and this should be away from the inundation level.

### 9.12 Management of topsoil

- ☐ Topsoil is to be handled twice only: once to strip and stockpile, and once to replace and level.
- ☐ Ensure that all topsoil is stored in such a way and in such a place that it will not cause the damming up of water, erosion gullies, or wash away itself.
- ☐ Protect topsoil stockpiles from erosion by wind and water.
- ☐ Do not compact topsoil in any way.
- ☐ Remove exotic/invasive plants and broad leaf weeds that emerge on topsoil stockpiles.
- ☐ Ensure that topsoil is at no time buried, mixed with spoil (excavated subsoil), rubble or building material, or subjected to compaction or contamination by vehicles or machinery. This will render the topsoil unsuitable for use during rehabilitation.
- ☐ The Contractor will be held liable for the replacement of any topsoil rendered unsuitable for use during rehabilitation, for reasons due to his negligence or mismanagement on site.
- ☐ No material stripped or excavated, which is classed in terms of this Overarching EMP as topsoil, should be used as backfill in any excavation.
- ☐ Stockpile topsoil for the minimum time period possible, i.e. strip just before the relevant activity commences and replace as soon as it is completed.
- ☐ Topsoil is to be replaced along the contour.
- ☐ Topsoil is to be replaced to a depth specified by the ECO by direct return (i.e. replaced immediately on the area where construction is complete), rather than stockpiling it for extended periods, where feasible.

### 9.13 Spoil

- ☐ No spoil sites are to be created in the Park unless the material can be used to rehabilitate previously disturbed areas as part of on-going maintenance or in the construction of other infrastructure. This may only occur at the discretion and with the approval of the Park Environmental Manager.
- ☐ Spoil sites outside the Park shall be determined on site in conjunction with the Principal Agent/Engineer, the ECO and affected landowners/residents. The Contractor shall be permitted to use only those spoil areas approved by the Principal Agent/Engineer.
- ☐ Dumping of material over embankments is not permitted.
- ☐ Position spoil sites as indicated on the approved construction site layout plan. No spoil site shall be located within 500 m of any watercourse, nor in sensitive areas identified by the ECO.
- ☐ Position spoil sites on the higher side of a disturbed area, and above a 1:20 year flood line, wherever possible.
- ☐ Ensure that all spoil is stored in such a way and in such a place that it will not cause the damming up of water, erosion gullies, or wash itself away.
- ☐ Do not store spoil in drainage lines.
- ☐ Rehabilitate any permanent spoil dumps as soon as work in that area is complete.
- ☐ In general, no slopes steeper than 1(V):3(H) will be allowed.

- ❑ Bury the coarser material beneath the finer material, and overlay all permanent spoil heaps with a layer of topsoil at least 200 mm thick.
- ❑ Grass as directed by the ECO.

#### 9.14 Erosion control

- ❑ Minimise clearance of vegetation. Retain natural trees, shrubbery and grass species, wherever possible.
- ❑ Cut slope gradients must not exceed the natural angle of repose for the particular soil type, wherever possible.
- ❑ In general, slopes should not be steeper than 1(V):3(H). Where steeper slopes are necessary, they must be stabilised using the most appropriate method and technology as specified by the Principal Agent/Engineer.
- ❑ Finish cut and fill slopes as roughened surfaces which emulate the natural surroundings and accumulate soil.
- ❑ Do not allow surface water or storm water to be concentrated, or to flow down cut or fill slopes or along pipeline routes without erosion protection measures being in place.
- ❑ Line overflow and scour channels with stone pitching along their length and at their points of discharge to prevent soil erosion. The point of discharge must be at a point where there is dense natural grass cover.
- ❑ Ensure that channels do not discharge straight down the contours. These must be aligned at such an angle to the contours that they have the least possible gradient.
- ❑ Protect all areas susceptible to erosion<sup>22</sup> and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
- ❑ Repair all erosion damage as soon as possible and, in any case, not later than six months before the termination of the Maintenance Period to allow for sufficient rehabilitation growth.

#### 9.15 Weed and invader plant control

- ❑ All sites disturbed by construction activities are to be monitored by the ECO for colonisation by invasive alien plant species.
- ❑ The Contractor is responsible for the control of weeds and invader plants within the construction site for the duration of the construction and rehabilitation phase.
- ❑ Control involves killing the plants present, killing the seedlings which emerge, and establishing and managing an alternative plant cover to limit re-growth and re-invasion.
- ❑ The ECO shall identify those plants that require removal during both the construction and maintenance period, for the Contractor's action.
- ❑ The ECO shall provide advice as to effective methods of removal and control of alien plant species, which may be based on Working for Water Guidelines.
- ❑ Alien plant control measures are to be carried out at the cost of the Employer unless the area of development is adopted as part of the alien plant control programme implemented by the Authority.

<sup>22</sup>

This may include:

- Use of approved groundcover or grass.
- Construction of cut off berms (earth and/or rock pack). These are to be angled across the contour and normally would approximate an angle of 30° from the bisector of the contour.
- Placing of brushwood on bare surfaces.
- Other technical methods as directed by the Engineer.

### 9.16 Cutting of trees

- ❑ No protected trees or plants may be cut, disturbed, damaged or destroyed without the necessary permits and/or permission of the ECO (Section 7.3, 8.5, 8.6, **Appendix 2**).
- ❑ Any indigenous trees or bush that require removal in terms of the project must be timeously indicated to the ECO and approved prior to work affecting them (Section 8.6).
- ❑ Any branches of indigenous trees which require removal are to be properly pruned under direct, competent supervision and sealant applied to cut surfaces bigger than 50 mm in diameter.
- ❑ Cutting of trees should be undertaken in a way that no nest (birds or other) is in the cut portion unless approval has been obtained from the ECO. The ECO should consider the conservation status of the animal species in question before making a decision. Epiphytes (orchids and any other species identified by the ECO) are to be removed and relocated under the supervision of the ECO

### 9.17 Transplanting of indigenous trees and plants

- ❑ If required, the Contractor shall transplant designated plants to alternative locations as identified by the ECO, upon the instruction of the Principal Agent/Engineer, at the cost of the Employer. Undertake transplanting as described hereunder.

#### **9.17.1 Removal**

- ❑ Mark the orientation of the tree/shrub (for example, the north-facing side of the trunk indicated by a small arrow made with indelible ink). Do not scratch a mark on the surface of the trunk.
- ❑ Delineate a circle from the trunk with a radius equivalent to the drip-line of the tree, or as indicated by the ECO on site.
- ❑ Excavate the tree with an intact root ball.

#### **9.17.2 Replanting**

- ❑ A hole 500 mm larger in diameter than the anticipated root ball must be prepared in advance of the tree removal in order that the tree can be replanted immediately.
- ❑ Fill holes with water, which must be allowed to seep in before planting.
- ❑ Position the tree as per its original orientation.
- ❑ A planting method known as "puddling" must be employed. This method involves the addition of soil and water simultaneously to expel air from the planting hole. Place the tree in its new hole, making sure the top surface of the root ball is level with the ground level. Place a hosepipe in the hole and leave it running whilst extra soil is added around the root ball.
- ❑ "Compact" the tree in the hole and support with stays for stabilisation.
- ❑ Water trees at least once a week or as instructed by the ECO.

### 9.18 Wild animals

- ☐ All staff are to attend the course on Dangerous Animals (Section 7.9).
- ☐ Make all waste bins scavenger proof and prevent access to sources of food.
- ☐ Depending on the specific area of the Park, dangerous animals may include elephant, hippo, buffalo, crocodile and rhino. It is likely that these animals will avoid the sites of construction activity. However, should it be necessary, the Contractor may request the services of an EKZNW field ranger. This must be negotiated, with the assistance of the Principal Agent/Engineer with the relevant EKZNW Officer-in-Charge, and will be at the Contractor's cost.
- ☐ Management of bats resident in existing buildings, which are to be demolished or upgraded, will be required. The advice of relevant EKZNW ecological staff and/or outside organisations such as the Bat Interest Group should be sought prior to construction activities commencing. Activities which may harm flightless (baby) bats can be avoided by working outside of the breeding season (March to September). Bat houses may need to be provided to accommodate displaced bats.
- ☐ The design of new buildings should aim to prevent bats from entering and taking up residence in roofs/ceilings, etc.
- ☐ Under no circumstances may any animals be fed, handled, removed, snared, shot, killed or otherwise interfered with.
- ☐ If a particular animal species is perceived to become a pest or hazard, the Contractor may apply to the Principal Agent/Engineer and ECO for a mitigation programme to be established.
- ☐ No marine animals should be captured or interfered with during the breaching process
- ☐ No fishing should take place at any water courses or within the ocean or River without any relevant authorisation.
- ☐ Any vehicle/ machinery/ equipment permitted to operate in watercourses or marine environments will be free of leakages of grease, oils, or other materials that could contaminate watercourses/ the marine environment. Any leaking/ leaked petroleum product reasonably associated with a vehicle/ machinery/ equipment having been in contact with flowing or standing water would constitute non-compliance.
- ☐ If threatened or endangered marine species are observed during construction/ maintenance phase, work that could impact these resources shall be stopped and the appropriate officials contacted.
- ☐ Disruption to the normal behaviour of marine mammals in the project area during project construction and/or maintenance is prohibited.

### 9.19 Cultural and natural heritage resources

- ☐ If any heritage resources, artefacts, graves and the like are discovered during the course of the work, they should be cordoned off and the provincial or national cultural heritage resources authority must be notified. Further destructive work at these sites may only continue once they have been assessed and the necessary permits granted.

### 9.20 Special environments

#### 9.20.1 Wetlands

- ☐ Working within wetlands and within 32 m of the temporary edge of the wetland zone, is to be avoided.
- ☐ Where it is unavoidably required to work in a wetland, obtain the necessary licences from DWS prior to construction commencing (Section 7.3, Appendix 2).
- ☐ Construction should not permanently alter the surface or subsurface flow of water through the wetland.
- ☐ No construction materials are to be stockpiled in any wetland areas.
- ☐ No spoil material is to be deposited in wetland areas.

- ❑ No toxic or harmful substances may be used without prior approval of the Authority. Should approval be given, strict management thereof must be applied, including meeting legal requirements.
- ❑ No vehicles are to be driven through or in wetland areas.
- ❑ When trenching through wetlands and drainage lines, return the profile of the wetland/drainage line to one similar to the pre-construction profile. No ridge or channel feature may remain.
- ❑ No drains channelling concentrated runoff may be directed into wetlands of any type.
- ❑ During construction through a wetland, the majority of the flow of the wetland must be allowed to pass down the stream (i.e. no damming must be allowed to take place). In-stream diversions must allow for continuous water flow. The construction of new channels shall not be allowed.

#### **9.20.2 Indigenous forest and indigenous grassland**

- ❑ Minimise the footprint of all construction activities when working within or adjacent to indigenous forest or grassland vegetation by implementing the following measures:
  - Clear the working corridor or development site to the minimum required width (and length).
  - Make use of existing cleared or disturbed areas for site camps, stockpiling of materials, vehicle turning points, etc. Do not clear any new areas for these purposes within indigenous forest vegetation.
  - Do not make any new access roads through this vegetation and confine movement of staff and vehicles to designated areas.
- ❑ Trim trees where possible rather than removing them. Trimming should be done under skilled supervision.
- ❑ No toxic or harmful substances may be used without prior approval of the Authority. Should approval be given, strict management thereof must be applied, including meeting legal requirements.
- ❑ The ECO may rescue smaller plants such as herbs, orchids and shrubs for use in a rehabilitation programme. Brush can be used for erosion control. Wood from large trees should be used as specified by the ECO.

#### **9.20.3 Rivers and streams**

- ❑ A method statement, which is approved by the ECO, is to be provided for river and stream crossings. This should include:
  - Detailed plan of crossing, including pipe protection works.
  - How water flow shall be diverted during construction.
  - Containment of contaminated runoff and waste water.
  - Width of working servitude.
  - Final expected profile of river/stream banks.
  - Reinstatement and rehabilitation of river/stream banks.
- ❑ Remove herbaceous riparian vegetation as indicated by the ECO, with their root ball intact. This vegetation is to be kept moist by means of placing it in the shade, covered with moistened hessian cloth until it is replanted.
- ❑ Do not modify the banks or bed of a watercourse unless specified by the Principal Agent/Engineer with the approval of the ECO. The Contractor shall not cause physical damage to any aspect of a watercourse, other than that necessary to complete the works specified, and in accordance with the accepted method statement.
- ❑ Rocks for use in gabion baskets/reno mattresses may not be obtained from a watercourse.

#### **9.21 Artificial breaching**

In order to protect the biodiversity for the ecological benefits, during artificial breaching the following needs to be considered and cautiously practiced during construction/maintenance phase:



- ❑ Care should be taken if the water levels in the estuary in spring and summer are between 1.3 and 1.6 m MSL for too long. If the salt marshes during this critical time of their life cycle are inundated for too long they start to die-back and breaching would be advisable.
- ❑ It is recommended that breaching should be 3 or 4 days before spring tide. Breaching at this time ensures good additional flushing during the following spring tide.
- ❑ A deep and wide trench should be excavated before breaching.
- ❑ A considerable amount of water is sometimes needed to flush open a small, narrow trench to a medium sized trench. A larger initial trench will result in higher flow velocities and more sediment being flushed out to sea.
- ❑ It is recommended that breaching should be practiced after high tide as possible to allow more water outflow. Breaching during high tide may result in sea water pushing into the estuary especially if there are low flows from the estuary. It is therefore recommended that the ideal breaching that yield maximum results should be done to coincide with the low spring tide as that will allow more time for water to drain into the sea.
- ❑ The actual moment of breaching during the tidal cycle is at high tide or, waves permitting, as close after high tide as possible.
- ❑ High waves can sometimes interfere with the breaching process at high tide and shortly after high tide. It is therefore important to watch the effect of the waves in front of the mouth. The mouth can be breached as soon as it is considered that the waves will no longer interfere significantly.
- ❑ The high outflow after breaching which causes the scouring lasts over several hours and often more than a tidal cycle. The maximum outflow normally occurs approximately 4 to 8 hours after a breaching and the flow velocities will be increased if there is a greater difference in water levels between the estuary and the sea.
- ❑ The breaching of a mouth can become difficult and sometimes even impossible when the waves are very high. In such conditions and if direct problems because of flooding do not exist, it may be better to postpone the breaching by a few days.
- ❑ The position at which a mouth should be breached should accurately be positioned as there is often considerable controversy concerning the location where a mouth breaching should take place. This should be done even if a greater amount of sediment needs to be excavated, because this is the optimum position for a successful breaching. However in the case where breaching has historically been undertaken at a particular and same point (such as in the St Lucia Estuary system) this must not be altered.
- ❑ An estuary mouth is highly dynamic and unforeseen events may require special management actions. For example, if the mouth stays open for a very long period it may migrate and start to cut into dunes.
- ❑ No specific levels of height and width of a sand berm at the mouth of an estuary during breaching have been determined at this stage, as this is usually considered together with all the other factors discussed during the practical breaching process and will be included in site specific measures. However precaution on the channels should be considered.
- ❑ Appropriate use of machinery within water courses
- ❑ Demarcating and fencing-appropriate barricading material should be used to demarcate the site during breaching
- ❑ Anti-erosion measures-ISimangaliso Wetland Park authority should instruct the appointed contractor to implement erosion prevention measures, should it be required.
- ❑ Fuel and Service areas -storage of any fuel or other petroleum products is prohibited on site
- ❑ Refuse-Any boards or barricading material erected must be removed once the work is complete and all waste to be removed to appropriate waste disposal facilities.
- ❑ Breaching activity only involves moving sand and therefore no foreign material should be deposited on site.
- ❑ Location and timing- breaching should be timed to ensure maximum outflow occurs during daylight hours, to avoid a repeat of a previous incident

- ❑ Breaching should be conducted just before high tide to ensure that the tide is receding by the time the outflow starts gaining momentum, reducing any obstruction by the sea. For the same reason, breaching should not take place during high swell and surf conditions, which would also carry flushed sediment back into the estuary.
- ❑ Public safety and law enforcement should be considered during breaching process
- ❑ Impact on estuarine fish abundance, species richness/ community composition -Artificial breaching may be necessary in order to maintain the ecological functioning of the estuary and its value as a nursery for fish. Recruitment into marine fisheries also depends on juveniles and sub-adults surviving the estuarine environment, including high fishing effort.
- ❑ Hazardous spill- Breaching will only be considered if the hazardous substance holds no risk to the near shore environment and the spill is registered as a disaster. In the event of an oil spill at sea, the mouth can temporarily be closed to prevent oil from entering the system.
- ❑ Minimum breaching level (water level should be as high as possible before breaching)
- ❑ The beginning of spring (September), to ensure ecological functioning and to coincide with the end of the hydrological year. Normally the mouth should be breached about three/four days before a springtide in September. Early in September is more beneficial for fish.
- ❑ Consider safety of public during breaching -Care should be taken with the general public to ensure their safety. The area where breaching will take place should be cordoned off with the aid of red and white hazard tape to keep the public out. Ideally an official or security person must man the area in question. Temporarily close the designated area in circumstances that could pose a danger to the human life or property. This must be accompanied by appropriate signage.
- ❑ Breaching trench to maximize outflow.
- ❑ Disposal of sediment removed during excavation -The sand excavated from the trench should not be stored on the banks next to the trench but rather be pushed out into the sea where wave action will transport it away. Otherwise, the sand stored on these banks will drop back into the excavated channel reducing the effectiveness of the outflow and the wider and deeper scouring of this trench. In the unlikely event of marine sediment remaining on the beach after a breaching, no additional action is required as it will generally wash away after a few high tides.
- ❑ Mobilizing machinery and equipment on site during breaching-Equipment and machinery to be utilised in a breaching must be in a good and functional state. The contractor should ensure that oil leaks are not to cause additional pollution.
- ❑ Care should be taken to ensure that earth moving equipment do not disturb indigenous vegetation of conservation worthiness en route to the excavation site. Bird nesting areas are to be avoided. Where possible, existing access roads / tracks should be used. Once it has been established that a clear outflow channel has formed and breaching is progressing on its own momentum, the earth moving equipment may be removed from the beach. Implement an appropriate crowd control mechanism,
- ❑ Ensure that all users adhere to the local authority By-Laws relating to the designated areas at all times. The legal requirements associated with the use of the designated area must be brought to the attention of all persons that are granted access to the designated area by the applicant.
- ❑ Noise & light pollution during a breaching should be kept to a minimum and within the relevant noise control by-laws/regulations of the iSimangaliso wetland park.
- ❑ Verifying that the sand berm at the mouth is high enough above the water line that there is no risk of "fluidization" of berm sediment (i.e. turns to quicksand) and associated risk to operator and equipment;

## 9.22 Health and safety

- ❑ Adhere to the requirements of the Occupational Health and Safety Act, and associated Construction Regulations (Appendix 2).
- ❑ Ensure that emergency numbers and First Aid supplies are always easily accessible.
- ❑ Obey speed limits and travel more slowly where conditions dictate.

- ☐ Ensure that operators and drivers limit their potential to endanger humans and animals at all times, by observing strict safety precautions.

## 10. REINSTATEMENT AND REHABILITATION

The objective of reinstatement and rehabilitation is to ensure that all areas disturbed by the project are returned to a state not worse than before the project commenced.

### 10.1 Areas to be reinstated and rehabilitated

- ❑ Reinstatement and rehabilitation are required for all areas disturbed by the project. This includes the entire development site, access roads, construction camps and servitudes for any services that may have been established.
- ❑ The Contractor shall reinstate and rehabilitate all disturbed areas outside the demarcated working area at his own cost and to the satisfaction of the ECO.

### 10.2 Progressive reinstatement and sourcing of plant material

- ❑ The concept of progressive reinstatement is fundamental to cost effective (both financial and environmental) rehabilitation of a site. This concept must be followed at all times.
- ❑ Where landscaping is utilised, the concept is to use and restore indigenous plants occurring within a 50 km radius to the site, in accordance with the concept of xeriscaping<sup>23</sup>.
- ❑ The area from which this material is taken must be approved by the ECO and Park Environmental Manager, and must not result in environmental degradation.
- ❑ Only in exceptional circumstances will sourcing of plant material from further afield or grass seed mixes be considered and approved by the Park Environmental Manager.

### 10.3 Housekeeping

- ❑ All areas are to be cleared of rubble associated with construction. This includes the removal of surplus materials, excavation and disposal of consolidated waste concrete and concrete wash water, litter, etc.
- ❑ All soil contaminated by hydrocarbons, for example, from leaking machines, refuelling spills etc., is to be excavated to the depth of contaminant penetration, placed in 200 litre drums and removed to a licensed hazardous waste landfill site.

### 10.4 Finishing

#### 10.4.1 Final grading

- ❑ Final levels of all disturbed areas are, where feasible, to be consistent with the natural topography of the area.
- ❑ All drainage lines affected by construction are to be reinstated to approximate their original profile. Where this is not feasible due to technical constraints, the profile is to be agreed upon by the ECO and Principal Agent/Engineer.
- ❑ All compacted (disturbed) areas (including stockpile areas) are to be ripped (along the contour) to a depth of 150 mm prior to the replacement of topsoil, except where otherwise specified in the Site-Specific Addendum to this Overarching EMP.

<sup>23</sup> Landscaping with vegetation that has a low water usage. The objective is to conserve as much water as possible, whilst still beautifying an area (i.e. conservation and aesthetics). The concept embraces utilising indigenous plants occurring within a 50 km radius of the development site.

#### **10.4.2 Top soiling**

- ☐ Topsoil is to be replaced to the required depth as specified by the ECO.
- ☐ Topsoil is not to be compacted but, once replaced, is to be scarified consistent with the natural contour.

#### **10.5 Reinstatement of wetland areas and water courses**

Where water courses or wetlands have been affected by construction activities:

- ☐ Ensure that watercourse banks are returned to their original profile.
- ☐ The surface reinstatement of wetland areas is to ensure that no depressions remain that could act as channels for preferential water flow (thereby affecting the hydrological regime of the wetland).
- ☐ The Contractor shall preserve all riparian and wetland vegetation for use in rehabilitation of those environments. This vegetation is to be kept moist at all times. It is to be placed in the shade and covered with moistened hessian cloth until replanting, which is to be undertaken immediately that surface reinstatement is complete.
- ☐ Plants are to be, as nearly as possible, replanted in areas from which they were removed.

#### **10.6 Vegetation re-establishment**

- ☐ All areas disturbed by contract activities are to be revegetated to the satisfaction of the ECO.
- ☐ Refer to Section 10.2 regarding progressive reinstatement, xeriscaping and sources of plant material.
- ☐ Methods of vegetation removal and re-establishment, where required, shall be specified by the ECO, in terms of:
  - Removal and storage of vegetation.
  - Source of vegetative material.
  - Ground preparation.
  - Weed removal.
  - Irrigation.
  - Planting times.
- ☐ Fertilisers and compost may not be used unless agreed to by the Park Environmental Manager.
- ☐ Where there is a possibility of game grazing a rehabilitated site, the game should, as far as is practicable, be excluded for the first three months of re-grassing, by placing brushwood over the rehabilitated areas, as approved by the ECO.

#### **10.7 Alien plant control**

- ☐ Alien plant control measures are to be carried out at the cost of the Employer unless the area of development is already being controlled as part of the Park's alien plant control programme.
- ☐ All sites disturbed by construction activities shall be monitored for colonisation by invasive alien plant species.
- ☐ The ECO shall identify those plants that require removal during both the construction and maintenance period, for the Contractor's action.
- ☐ The ECO shall provide advice as to effective methods of removal and control of alien plant species, in accordance with applicable legislation (Appendix 2).
- ☐ Existing alien plants are to be removed and their spread prevented.

## **11. COMPLETION OF CONTRACT**

- ☐ Prior to completion of the Contract, the Principal Agent/Engineer is to timeously notify the ECO and Park Environmental Manager of "Practical Completion" meetings or "snagging" periods, to provide them with the opportunity to identify work outstanding or incomplete (snags).
- ☐ The ECO is to timeously submit a snag list prior to the date for completion.
- ☐ The Principal Agent/Engineer is to timeously notify the ECO and Park Environmental Manager of "Completion" meetings so that the work can be signed off.

## **12. MAINTENANCE**

iSimangaliso regularly undertakes maintenance activities within the Park. The environmental specifications contained in this EMPr have been specifically designed to be applicable to maintenance activities as supplemented by site-specific mitigation and management measures (where required).

## APPENDIX 1 - DEFINITIONS

### Alien species

- (a) A species that is not an indigenous species.
- (b) An indigenous species translocated or intended to be translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention.

### Artificial Breaching

When used in the context of this document artificial breaching would mean breaching in instances where such an action is required for ecological reasons indicated in this document and also provided for in the approved Estuarine Management Plans of the iSimangaliso Wetland Park.

### Contractor

This is a person/company in the employ of the Employer, acting for the Employer or has a written agreement with the Employer. This applies to both principal and sub-contractors.

### Employer

Employer" means the client, developer, landowner or land manager commissioning the project.

### Engineer

"Engineer" means the engineering company acting through a Director, a Partner or an official authorised thereto in writing responsible for design and project management. (The Engineer is also sometimes referred to as the Project Manager). For certain projects, this role is undertaken by another professional person responsible for the design and/or management of the contract/s, referred to as the Principal Agent.

### Engineer's Site Representative

An on-site representative of the Engineer, who is responsible for day-to-day management of the project.

### Environmental Control Officer (ECO)

Either a staff member of the Employer or Principal Agent/Engineer, or an Environmental Consultant assigned to the project on a part- or full-time basis. The Environmental Control Officer shall be a member of the core regulatory team and shall advise the Principal Agent/Engineer and Park Environmental Manager on all environmental matters relating to the development.

### Environment

"Environment" means the surroundings within which humans exist and that are made up of:

- (a) The land, water and atmosphere of the earth.
- (b) Micro-organisms, plant and animal life.
- (c) Any part or combination of (a) and (b) and the interrelationships among and between them.
- (d) The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

### Forest

Includes:

- (a) A natural forest, woodland and a plantation.
- (b) The forest produce in it.
- (c) The ecosystems which it makes up.



#### Environmental Manager

Appointed representative of the Authority, responsible for environmental management as required by the Authority. For specific projects, this role may be assigned to EKZNW Conservation Staff or an Environmental Consultant.

#### Interested and Affected Parties (I&APs)

All persons who may be affected by the project either directly or indirectly, or who have an interest or stake in the area to be affected by the project. I&APs include landowners, tribal or local authorities, local residents, tourists, public interest groups, etc.

#### Natural Forest

"Natural forest" means a group of indigenous trees:

- (a) Whose crowns are largely contiguous.
- (b) Which have been declared by the Minister to be a natural forest.

#### Principal Agent

"Principal Agent" means the company acting through a Director, a Partner or an official authorised thereto in writing responsible for the administration of the project on behalf of the Employer. (The Principal Agent is also sometimes referred to as the Project Manager).

#### Principal Agent's Site Representative

An on-site representative of the Principal Agent responsible for day-to-day management of the project.

#### Progressive Reinstatement

Reinstatement of disturbed areas to topsoil profile on an on-going basis immediately after selected construction activities (e.g. backfilling of a trench) are completed. This allows for passive rehabilitation (i.e. natural recolonisation by vegetation) to commence.

#### Prospecting

Intentionally searching for any mineral by means of any method:

- ☐ Which disturbs the surface or subsurface of the earth, including any portion of the earth that is under the sea or under water.
- ☐ In or on any residue stockpile or residue deposit, in order to establish the existence of any mineral and to determine the extent and economic value thereof.
- ☐ In the sea or other water on land.

#### Rehabilitation

Rehabilitation is defined as the return of a disturbed area to a state, which approximates the state (where possible), which it was before disruption. Rehabilitation for the purposes of this specification is aimed at post-reinstatement revegetation of a disturbed area and the achievement of a stable land surface. Revegetation should aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.

#### Riparian Vegetation

Vegetation occurring on the banks of a river or stream (i.e. vegetation fringing a water body). In this specification, riparian vegetation in terms of removal, storage and replacement is only applied to sedge, grass, groundcover, reed, bulrush, or herbaceous component of riparian vegetation and excludes the woody component.

#### Solid Waste

Means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

Subsoil

Subsoil is the soil horizons between the topsoil horizon and the underlying parent rock. Subsoil often has more clay-like material than the topsoil. Subsoil is of less value to plants, in terms of nutrient (food) and oxygen supply, than topsoil. When subsoil is exposed it tends to erode fairly easily.

Tree

"Includes any tree seedling, sapling, transplant or coppice shoot of any age and any root, branch or other part of it".

Topsoil

This is defined as the A horizon of the soil profile. Topsoil is the upper layer of soil from which plants obtain their nutrients for growth. It is often darker in colour, due to the organic (humic) fraction. Topsoil is deemed for the purposes of this specification as the layer of soil from the surface to the specified depth required for excavation. Where topsoil is referred to, it is deemed to be both the soil and grass/ground cover fraction.

Waste Water

Means water contaminated by the Contractor's activities.

Water Body

Any open body of water including streams, dams, rivers, lakes, and the sea.

Wetland Vegetation

Vegetation that is indicative of a wetland environment, e.g. sedges, rushes, reeds, hydrophilic grasses and ground-covers, but for the purposes of this specification excludes woody species.

Wetland

A seasonally, temporally, or permanently wet area, which also may exhibit a specific vegetation community. It is often marshy in character.

Woodland

A group of indigenous trees which are not a natural forest, but whose crowns cover more than five per cent of the area bounded by the trees forming the perimeter of the group.

Xeriscaping

Landscaping with vegetation that has a low water usage. The objective is to conserve as much water as possible, whilst still beautifying an area (i.e. conservation and aesthetics). The concept embraces utilising indigenous plants occurring within a 50 km radius of the development site.

## APPENDIX 2 – APPLICABLE LEGISLATION

This Appendix provides additional information to that contained in Chapter 4.

### **A2.1 National Environmental Management Act, 1998 (Act No 107 of 1998) (as amended)**

NEMA is South Africa's overarching environmental legislation. It provides the legislative framework for Integrated Environmental Management in South Africa.

In terms of this Act, anyone who causes or may cause significant pollution or degradation of the environment must take reasonable measures to prevent this and to minimise and rectify such pollution or degradation of the environment (Section 28 - Duty of Care and Remediation of Environmental Damage).

The Environmental Impact Assessment Regulations under NEMA list activities for which environmental authorisation is required before construction can commence and specifies the process to be followed to apply for such authorisation.

### **A2.2 National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003)**

In terms of Regulation No R1061, 28 October 2005 under Section 86 of the Act, written permission is required from the Authority to be able to proceed with proposed developments within the Park. Permission may be subject to conditions pertaining to development activities conducted within the Park.

### **A2.3 National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004)**

This Act provides for the management and conservation of South Africa's biodiversity, to protect species and ecosystems and to ensure sustainable use of indigenous biological resources. Among other provisions, the Act covers alien and invasive species and genetically modified organisms that pose a threat to biodiversity. Regulation No R. 598 published under this Act currently applies, viz. Alien and Invasive Species Regulations, 2014 (1 August 2014). Alien and invasive species are listed in Government Notice No 599 (1 August 2014). The Act also provides for regulations and lists regarding Threatened and Protected Species (TOPS).

### **A2.4 National Forests Act, 1998 (Act No 84 of 1998)**

Under this Act (as amended), a national list of tree species has been declared as protected. Listed tree species and trees in a natural forest may not be cut, disturbed or damaged and their products transported or sold by a person, without a licence from the relevant provincial forestry official. This also applies to trees which are part of a natural forest. However, as an organ of state, Sections 7 and 15 of the Act do not apply to the Authority insofar as it exercises its functions in terms of its own enabling legislation, namely the World Heritage Convention Act, 1999 (Act No. 49 of 1999) but the Act will be enforceable against the Authority insofar as the Authority is required to give effect to the Principles enshrined in the Act (refer to correspondence to Authority from White and Case, International Lawyers, 12 April 2005).

## A2.5 KwaZulu-Natal Heritage Act, 2008 (Act No 4 of 2008)

In terms of Section 27(1), any person who intends to undertake a development categorised as one or more of the listed activities under the EIA Regulations, must, at the very earliest stages of initiating such a development, notify Amafa aKwaZulu-Natali (Amafa) and provide details regarding the location, nature and extent of the proposed development. This includes the construction of a road exceeding 300 m in length, the construction of a bridge or similar structure exceeding 50 m in length, and a development, or other activity which will change the character of an area of land, or water exceeding 10,000 m<sup>2</sup> in extent. Amafa must, within 14 days of receipt of a notification, advise the developer whether a heritage impact assessment report is required or not, prior to construction commencing.

If, during construction, archaeological or palaeontological objects or material or a meteorite is discovered, the find must immediately be reported to the responsible heritage resources authority. No person may, without a permit, destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite.

## A2.6 National Water Act, 1998 (Act No 36 of 1998)

Alteration of a stream or river (i.e. alteration of the course or river bed) requires a Water Use Licence from the Department of Water and Sanitation in terms of Sections 21, 36, 40 and 41 of the National Water Act. In certain cases, a general authorisation is given to impede or divert the flow of a watercourse. Pollution of river water (silt-laden run-off, oil from machines, etc.) is a contravention of the Act and is not permitted. Wetlands are also protected under this Act. No land use shall utilise the vegetation in a vlei or flood area of a watercourse in a manner that may cause damage or deterioration thereof.

A licence is required from the Minister of Water and Sanitation for the abstraction of water where the abstraction exceeds the levels prescribed by a general authorisation. Regulations regarding General Authorisations have been published in terms of Section 39 of the Act, with regard to the taking of water from a water resource, storage of water and discharge of water containing waste. In terms of the Park's Waste Water Policy, Special Limits (as contained in the relevant General Authorisations<sup>24</sup>) are to be adhered to when discharging effluent in the Park.

A Water Use Licence is usually required when infrastructure is constructed within 500 m of the boundary of a wetland.

## A2.7 Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983)

Regulations under this Act deal with the control of invasive plants and declared weeds<sup>25</sup>. The regulations applicable in the Conservation of Agricultural Resources Act, Act 43 of 1983 apply in the KwaZulu-Natal Province. Declared weeds or invader plants are defined by the Conservation of Agricultural Resources Act, 1983, Act 43 of 1983 as follows:

- Category 1: Declared weeds. These species must be eradicated from all areas, and are only permitted with written permission from the Executive Officer (as defined by the Act) or in the case of a formally approved biological control reserve.

<sup>24</sup> For example, GN 665 of 6 September 2013 – but note these Regulations are revised periodically and must be checked for updates.

<sup>25</sup> Note that under the NEM: Biodiversity Act, Regulations have also been promulgated regarding alien invasive weed control.

- ❑ Category 2: Invader plants. These species are only permitted in specially demarcated areas and should be eradicated in all areas, except where permission has been granted. These species are not permitted to grow within 50 m of the 1:50 flood line.
- ❑ Category 3: These plants shall not occur on any land or inland water surface other than in a biological control reserves. No land user shall allow Category 3 plants to occur within 30 metres of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland.

In terms of Government Notice R 1048, the following regulations are applicable with regards to the control of invasive plants and declared weeds:

Where Category 1, 2 or 3 plants occur, it is necessary for the land user to control the plants using one of the methods of control prescribed by the Regulations. The landowner must immediately take steps to eradicate them by using the methods prescribed in the regulations, namely: (1) uprooting and burning, (2) the application of a suitable chemical weed-killer (herbicide), (3) any other method of permanent eradication.

One may not uproot or remove such plants and dump or discard them elsewhere to re-grow or to allow their seeds to be spread or blown onto other properties.

If a landowner does not comply with the requirements above, a person may be found guilty of a criminal offence.

#### **A2.8 Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002)**

In terms of this Act and Regulations there under, mining authorisation is necessary for new borrow pits, quarries and sand pits required for construction materials. No mining is allowed within the Park and materials must be obtained by authorised sources from outside of the Park. A developer must follow the application procedure in terms of the provisions of Sections 16 (application for prospecting right), 20 (permission to remove and dispose of minerals), 22 (application for mining right) and 27 (application for, issuing and duration of mining permit) in respect of any activity to remove any mineral for construction. An Environmental Management Programme for approval in terms of Section 39(4) must also be submitted. The application for environmental authorisation for these activities may entail either a Basic Assessment or an Environmental Impact Assessment process, as prescribed in the NEMA EIA Regulations and Listing Notices.

While an organ of state is exempted from certain provisions of the Act pertaining to applications for mining rights and permits, it is still required to submit an environmental management program for approval in terms of Section 39(4) of the Act.

In terms of this Act, any landowner or lawful occupier of land who lawfully, takes sand, stone, rock, gravel or clay for farming or for effecting improvements in connection with such land or community development purposes, is exempted<sup>26</sup> as long as the sand, stone, rock, gravel or clay is not sold or disposed of.

<sup>26</sup> Provided that excavation does not take place in a watercourse or its floodplain. This is a listed activity.

**A2.9 National Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004)**

There is a schedule of listed activities under Section 21 of the NEM:AQA with 10 categories which require atmospheric emission licensing. This includes processes relating to petroleum products, cement, tar and macadam preparation. A developer must ensure that he has the required licence if he triggers listed activities in the schedule.

**A2.10 Occupational Health and Safety Act, 1993 (Act No 85 of 1993)**

Construction Regulations (2003) published under this Act apply to construction activities including "the moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work". A "health and safety plan" which addresses hazards identified, and includes safe work procedures to mitigate, reduce or control the hazards identified, is required under this Act. A risk assessment must also be undertaken by a qualified person(s) and the Contractor shall ensure that all employees under his/her control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment.

**A2.11 The National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008) ("the ICM Act")**

The act was promulgated in December 2009, and requires estuaries of the Republic to be managed in a co-ordinated and efficient manner, in accordance with a National Estuarine Management Protocol ("the Protocol"). The Protocol provides guidance for the management of estuaries through the development and implementation of individual estuarine management plans (EMPs). The EMPs seek to achieve greater harmony between ecological processes and human activities while accommodating orderly and balanced estuarine resources utilisation.

**A2.13 Maritime Zone Act, 1994(Act 15 of 1994)**

Notwithstanding this Act or any other law the Republic may, in any area of the sea or the airspace above the sea, take such measures as are necessary against any vessel or aircraft in order to protect the coastline of the Republic or related interests, including fishing, from pollution or any threat of pollution resulting from a maritime casualty or an act or omission relating to such a casualty and which may reasonably be expected to result in major harmful consequences.

## APPENDIX 3 – ROLES AND RESPONSIBILITIES IN COMPLIANCE MONITORING

### A3.1 Roles and responsibilities in compliance monitoring

The Principal Agent/Engineer is responsible for ensuring that the terms of the Overarching EMPr are complied with during the Contract. He is assisted in this regard by the Environmental Control Officer (ECO) and the Park Environmental Manager.

#### A3.1.1 Principal Agent/Engineer and their Site Representative

The Principal Agent/Engineer's Site Representative assists the Principal Agent/Engineer on site. The Principal Agent/Engineer is ultimately responsible for ensuring compliance with the Overarching EMPr and shall be responsible for the following functions:

- ☐ Ensure that the principal and sub-contractors are conversant with the requirements of the Overarching EMPr and that all staff on site have attended the Induction/Environmental Training Course<sup>27</sup>.
- ☐ Ensure that the Contractor complies with the Overarching EMPr and, if not, ensure that the Contractor bears the costs of damages/compensation resulting from non-compliance with the Overarching EMPr.
- ☐ Monitor compliance with the requirements of the Overarching EMPr, with assistance from the ECO. If necessary, on the recommendation of the ECO and/or Park Environmental Manager, instruct the Contractor to suspend any or all works on site, if the Contractor or his Subcontractor/supplier fails to comply with the Overarching EMPr.
- ☐ Ensure that the Contractor conducts all activities in a manner that minimises disturbance to the management activities of the Park and adjacent areas, affected local communities and visitors to the protected area and maintain a register of complaints and queries by members of the public at the site office, to be forwarded regularly to the ECO.
- ☐ Liaise directly with the ECO in terms of environmental issues and maintain close channels of communication with the ECO regarding foreseeable activities that may require environmental input.
- ☐ Attend site handover, monthly site meetings and site completion meetings.
- ☐ Ensure that all communication on site concerning the Contractor and environmental matters is directed through the Principal Agent/Engineer's Site Representative and recorded in the site instruction book.
- ☐ Monitor and report compliance with the Overarching EMPr and advise the Principal Agent/Engineer and Park Environmental Manager on action to be taken if the specifications are not followed.
- ☐ Document the state of the site (photographically) prior to construction activities, during construction and after rehabilitation. This documentation may be in the form of geo-referenced photographs, video recordings and written descriptions.
- ☐ Provide technical advice and solutions relating to the speedy resolution of unforeseen environmental issues/problems during the construction phase.
- ☐ Maintain records of all site visits and site inspection checklists.
- ☐ Ensure that he/she is acquainted with, and consults regularly, the site diary and/or site instruction book.
- ☐ Ensure that outstanding environmental actions are included on the snag list prior to completion, and ensure all snags have been attended to prior to issuing of completion certificates by the Principal Agent/Engineer to the Contractor.
- ☐ Sign off the environmental work on completion of the contract, and sign off sub tasks during the contract, as required.

<sup>27</sup> A simple induction course for construction staff, amongst other topics, dealing with risks of working within the Park (dangerous animals) is to be held at the site handover meeting on site and will be the responsibility of the Environmental Control Officer.

- ❑ Provide a brief report on environmental performance for the Contractor's final certificate, to be approved by the Park Environmental Manager.

### **A3.1.2 Park Environmental Manager**

The Park Environmental Manager will play a regulatory role to ensure that there is sound environmental management in the Park and on adjacent areas which affect the Park. He/she will also provide support to the ECO during projects affecting the Park. His/her responsibilities will be to:

- ❑ Advise the ECO about the interpretation, implementation and enforcement of the Overarching EMP and other related environmental matters, particularly in exceptional circumstances.
- ❑ Review monthly environmental checklists/reports submitted by the ECO.
- ❑ Attend site handover and site completion meetings.
- ❑ Attend monthly site meetings, as required.
- ❑ Report on the environmental performance of the contract to the Park Authority CEO, as required.
- ❑ Sign off the environmental work on completion of the contract, and sign off sub tasks during the contract as required.

### **A3.2 Reporting procedure**

Reporting on environmental matters shall be undertaken as follows:

- ❑ The ECO shall ensure that all communication on site concerning the Contractor and environmental matters is directed through the Principal Agent/Engineer's Site Representative and recorded in the site instruction book.
- ❑ The ECO, with the assistance of the Principal Agent/Engineer's Site Representative, shall complete a Project start-up inspection checklist prior to the commencement of each contract and forward it to the Park Environmental Manager.
- ❑ The ECO will complete monthly checklists (or more often if required), which will form the basis of the environmental reporting required at site meetings and will be forwarded to the Park Environmental Manager. Special measures discussed at pre-construction on-site meetings or during the construction period should be included on such inspection sheets.
- ❑ The ECO will attend monthly site meetings and report briefly on progress and environmental issues that require attention. The monthly checklists and other documentation, as necessary, will be attached to the minutes of the site meeting and will serve as the monthly environmental report for the Contractor, Principal Agent/Engineer and Park Environmental Manager.
- ❑ The ECO, with the assistance of the Principal Agent/Engineer or Principal Agent/Engineer's Site Representative, shall complete a site closure report on completion of the contract and forward it to the Park Environmental Manager.
- ❑ The ECO will provide a brief report on environmental performance for the Contractor's final certificate, to be approved by the Park Environmental Manager.



### A3.3 Record keeping

The following environmental records must be kept by the ECO in good order and be made available to independent auditors and/or DEA, if required:

- ☐ Environmental Authorisation from DEA.
- ☐ Overarching EMP and Site-Specific Addendum (if applicable).
- ☐ Construction site layout plans.
- ☐ Method statements.
- ☐ All communications detailing changes of design/scope that may have environmental implications.
- ☐ Site inspection checklists (serving as the regular environmental compliance report).
- ☐ Environmental awareness training attendance registers and training material.
- ☐ Environmental incident and accident reports.
- ☐ Environmental performance certificates (written sign off).
- ☐ All relevant permits, agreements and legal documents relating to environmental matters.
- ☐ Photographic record before, during and after construction.
- ☐ Records of non-compliance and corrective action or remedial work should be kept as part of record keeping.
- ☐ The isimangaliso wetland park is responsible for continuous monitoring of the conditions in the catchment when water levels become elevated. Communication between the different role players, should take place at a regular basis. This can be done at advisory committee/forum meetings or as email communications summarising critical aspects. The monitoring should include the following aspects:
  - The actual and expected rainfall in the catchment;
  - The water level in the estuary and its rate of increase;
  - The height and width of the sand berm at the mouth;
  - The actual and predicted wave conditions;
  - The availability of equipment (bulldozer) to breach the mouth;
  - Water quality conditions (if applicable);
  - Biotic responses to elevated water levels (e.g. fish aggregations at mouth, formation of algal blooms, die-back of macrophytes, bird nesting behaviour).
- ☐ While breaching should be conducted according to an Estuary Mouth Management Plan and an approved Mouth Maintenance Plan, some of the general breaching principles may be waived under emergency conditions to ensure an expedient breaching constant monitoring of the conditions in the catchment is required when emergency conditions develop. Communication between the different role players, involved, should take place, if time is available, to monitor the situation and in those instances compliance with the relevant prescripts in terms of Section 30 of the National Environmental Management Act is paramount.
- ☐ Following an estuary mouth opening a breaching Incidence report needs to be compiled. This report should contain as much as possible information on the breaching motivation and the process followed during the breaching. Annual Breaching Report needs to be presented to all Interested and Affected Parties (I&AP) (relevant authorities and civil society) to communicate progress with the implementation of the MMP. Such feedback sessions provide the opportunity for a critical review of current breaching practises and discussions on possible improvements to future MMPs. The Annual Mouth Breaching Report will also serve as a national reporting document.

## APPENDIX 4 – PROJECT SITE-SPECIFIC ADDENDUM (ST.LUCIA ESTUARY)

Where applicable, a Site-Specific Addendum containing project specific measures relevant to a particular development will be provided, and included as Appendix 4.

### A4.1 Introduction

A number of rivers flow into the Park, many of them draining into Lake St Lucia. The uMfolozi and uMkhuze Rivers are the largest of these rivers, both of which have significant portion of their catchments outside of the Park boundaries. The smaller rivers and streams entering and within the Park are largely seasonal, being reduced to isolated pools during dry months. The uMfolozi River in the south, is the major source of fresh water to Lake St Lucia. Although artificially separated from Lake St Lucia since 1952 to prevent the inflow of suspended sediment into the main St Lucia system, the link between the uMfolozi River and Lake St Lucia was re-established under a new management approach in 2016, and Lake St Lucia and uMfolozi River mouth have since been managed as one system. iSimangaliso's Estuary Management Plans (EstMP) have been broadly formulated in compliance with Section 34 of the National Environmental Management: Integrated Coastal Management Act (Act No 24 of 2008) (ICM Act), read with the National Estuarine Management Protocol 2013 (the Protocol), as well as the World Heritage Convention Act (Act No 49 of 1999) (WHC Act), and other relevant material and practical experience relevant to the uniqueness of each estuary.

The objective of the Integrated Management Plan (IMP), is to provide measures to protect and manage the World Heritage site in a manner that is consistent with the objectives and principles of the governing Acts. The statutory decision-making framework that the iSimangaliso Authority will use to develop and manage the Park. Implementation of the policy of minimum interference in the estuarine system to facilitate as much natural functioning as possible, limiting artificial breaching and then only for ecological reasons

Artificial breaching is the active removal of the sandbar from an estuary by human manipulation. This is usually done in response to rising water levels that rise behind the sand barrier, once the estuary is cut off from the sea. A variety of fish species and invertebrates have life histories geared to the natural cycles of opening and closing, and along with many plants and birds are dependent on these natural cycles. Once estuaries closes, habitat, nutrients and food availability increase dramatically thereby providing ideal conditions for growth and survival.

Artificial breaching in KwaZulu-Natal is most often carried out during winter or when rainfall is low. Unseasonal flushing of these systems reduces the nursery function for many fish and invertebrates by the removal of food resources and premature flushing of juvenile fish and prawns, out into a hostile marine environment while they are still too young to cope. Unmanaged artificial breaching can disrupt the natural cycle resulting in negative effect on the plants and animals within estuaries. Artificial breaching is a convenient, yet it can be disruptive means of altering the natural processes of an estuary. This is often done for the benefit of a few individuals but at the expense of the ecological health and services. Artificial breaching has been recognized as being a highly damaging activity for estuaries. For this reason the alignment between the Estuarine Management Plans for the Park which provides for breaching only for ecological purposes and the consideration of what constitutes ecological and the associated maintenance risks has been factored into this maintenance management plan. The said maintenance activity (artificial breaching) will bring ecological benefits by encouraging the flow of the Msunduzi River which has been silted up in certain areas by agriculture induced excess (unnatural) sediments. This will subsequently reduce flooding and embankments causing water to be blocked upstream while promoting the water exchange for improving water quality, reduce and facilitate migration of marine organisms.

## A4.2 Background

The aim of the amendment process as discussed earlier is to align the Estuarine Management Plan with the iSimangaliso Overarching EMP which is also our maintenance management plan. Further to this the site specific maintenance plan then serves to provide more specific detail on a current matter as below. It must be clearly noted that the amendment of the Overarching Maintenance Plan seeks to ensure alignment with the Estuarine Management Plans for the Park. The Site specific addendum provided here is to give the National Department of Environmental Affairs some insight into a current situation we are dealing with which prompted us to also consider our enabling planning tools.

The current flooding and excessively unnatural deposit of silt on the Msunduzi River has negatively impacted on the health and wellbeing of wildlife and livestock; riverbank erosion, agricultural practises and sedimentation within the Msunduzi River. The current silt has caused the level of riverbed to rise. As a result, the natural longitudinal course and flow of the river is disturbed thus inundation of the river. This has had a negative impact on the sensitive marine life and freshwater fish affected by suspended silt in their natural habitat. Sensitive marine life and freshwater fish may be affected by suspended silt. Other harmful impacts of siltation are the loss of associated wetlands, agricultural practices in close proximity and coastline alterations.

Any breaching process requires water level to be as high as possible. The reason for this is that as much sediment as possible should be flushed from the mouth and from the estuary. The potential of flushing of sediments increases exponentially with the increase of outflow velocities after breaching, which in turn increase strongly with the increase in water levels. There are various ecological benefits and motivation of performing artificial breaching of river mouth/rivers in estuaries and that can be affected by flooding, river bank erosion causing sedimentation etc. Sediments are an important part of beach nourishment, thus maintaining the beach profile along the coast.

Breaching provides numerous environmental goods and services to the species situated within and adjacent to them. *Decisions to artificially open the mouth of an estuary often therefore need to achieve a difficult balance between ecological (generally public) interests and proprietary (generally private) interests, a balance which should ideally be informed by the numerous laws, and their associated plans and policies, of direct relevance to protecting and managing estuaries.* Artificial breaching, which is undertaken at lesser water levels, causes major changes in the mouth condition, water levels, salinity distribution and water quality. Artificially breached at lower than natural breaching water levels, decreases the volume and duration of water flow out to sea, reduces sediment scouring, disrupts the long-term erosion/depositional cycles in the estuary, results in increased sedimentation in the lower estuary, and changes the estuary's abiotic state from a predominantly open marine system to a predominantly closed marine system.

## A4.3 Need for artificial breaching the Msunduzi mouth currently

As indicated above generally there are risks associated with any breaching and in effect this has to always be on a case by case basis and in this instance the aim of breaching is to alleviate the current ecological challenges posed by the unnatural deposition of silt on the Msunduzi River which are as follows:

The prolonged inundation and flooding of the mangrove and swamp forests is causing inhibition of leaf growth, inhibition of stem extension and photosynthesis, senescence and reduced plant productivity. Prolonged inundation slows flowering and subsequent seed. This has serious consequences since, although propagation is predominantly vegetative in salt marsh species, resident seed banks play an important role in the re-establishment of salt marsh communities when water levels drop after protracted flooding. Closed mouth leads to decrease in species richness (absence of marine associated species). Associated decrease in salinity has a

negative impact on invertebrates within the River Estuary which are adapted to life in a more tidal system and loss of recruitment of key species on estuarine invertebrate abundance, species richness/ community composition. The artificial breaching will reduce water level currently cause flooding and subsequently promote water exchange for improving water quality; and facilitate migration of marine organisms. The current inundation has had negative impacts on the KwaSokhulu Farmers who are involved in agricultural practises in close proximity to the River where their agricultural operations have become inundated because of rising water levels of the Msunduzi river. Thus losing their crop production. This is acknowledged however as stated in the principal overarching maintenance management plan, the intention of the amendment of the maintenance plan is to align it with the Estuarine Management Plans for the Park. Where a specific situation arises (such as the KwSokhulu matter) a site specific addendum to the EMPr is then normally submitted for consideration.

## APPENDIX 5 – PENALTIES

The amounts are indicative only.

Failure to demarcate working servitudes	R 1,600
Working outside of the demarcated servitude	R 4,000
Failure to strip topsoil with intact vegetation	R 4,000
Failure to stockpile topsoil correctly	R 4,000
Failure to stockpile or spoil materials in designated areas	R 3,200
Pollution of water bodies (including increased suspended solid loads)	R 8,000
Failure to control stormwater runoff	R 8,000
Failure to prevent siltation of natural habitat outside of working servitudes	R 8,000
Failure to provide adequate sanitation	R 8,000
Unauthorised removal of indigenous woody vegetation	R 8,000 basic fine plus R 1,000 per shrub/tree
Failure to erect temporary fences	R 1,600
Failure to provide protection measures for hippopotami or rhinoceros in deep excavations	R 8,000
Failure to provide adequate waste disposal facilities and services	R 8,000
Failure to reinstate disturbed areas within the specified time frame	R 8,000
Failure to rehabilitate disturbed areas within the specified time frame	R 9,600
Failure to obey site protection measures	R 13,000
Failure to maintain demarcation tape	R 1,600
Fire – costs of runaway fires will be borne by the Contractor, should he/she be proven responsible for such fires	Costs to be borne by Contractor
Animal poaching	R 100,000*
Medicinal plant and other plant removal	R 2,400
Any other contravention of the project specific specification	R 8,000
Any other contravention of the particular (general) environmental specification	R 8,000

\*And prosecution.

In addition to the penalty, the Contractor shall be required to undertake the necessary rehabilitation/mitigation measures resulting from non-compliance. These will be as instructed by the Principal Agent/Engineer, on the advice of the ECO or the Authority.

## APPENDIX 6 – COMMENTST AND RESPEONCE REPORT

### Comments raised by Economic Development Tourism and Environmental Affairs (EDTEA) dated 20 June 2019

- **Comments raised in regards section 9.21 of the revised EMP on the 3<sup>rd</sup> bulletin:**

Breaching during high tide may result in sea water pushing into the estuary especially if you have low flows from the estuary, hence the second part of this statement may yield positive results. The ideal breaching that yield maximum results should be done to coincide with the Low Spring tide as that will allow more time for water to drain into the sea.

#### Response to comment above

Section 9.21 of the revised EMP on the 3<sup>rd</sup> bulletin has been aligned to EDTEA comments above. The statement has been revised and consolidated to provide a more clear statement, see amended section 9.21 of the revised EMP on the 3<sup>rd</sup> bulletin.

- A comment raised in regards section 9.21 of the revised EMP on the 21<sup>st</sup> bulletin

This statement seems to suggest that breaching may result in loss of sediments, yet the idea is to flush out sediments that is already the estuary.

#### Response to comment above

The statement has been rephrased to minimise ambiguity

- Comment raised in regards to appendix 2 "applicable legislation" of the EMP document

Appendix 2 of the document "applicable legislation" makes reference to sea shore act. This act was repealed by the Integrated Coastal Management Act, save the section that were assigned to the provinces (see section 98 and schedule 1 of ICM Act).

#### Response to comment above

The relevant Integrated Coastal Management Act, section 98 and schedule 1 confirms that the sea shore act has been repealed. therefore the sea shore act has since been removed in this EMP revised document

- For consistency purposes within the report, is the name of the River Umsunduzi or is it Msunduzi?

#### Response to comment above

The consistency of the name of the river Msunduzi has been rectified and is now consistence within the report.

**Comments raised by KZN Wildlife dated 25 June 2019**

**□ Comment 1:**

Thank you for the opportunity to comment on the iSimangaliso Overarching Environmental Management Programme (EMPr) to check for alignment with the St Lucia Estuarine Management Plan and to highlight potential concerns.

The main concern at this stage and the focus of Ezemvelo's comment for now is specifically on **Appendix 4 – PROJECT SITE-SPECIFIC ADDENDUM (ST.LUCIA ESTUARY)** of the EMPr and the proposal to artificially breach the Msunduzi River. It is important to note upfront that it is the consensus of the estuarine scientific community that the geographical boundaries of estuaries in South Africa are defined by the 5 m amsl contour, and that the area enclosed by this boundary is referred to as the Estuarine Functional Zone (EFZ).

(i) In the case of the St Lucia, the EFZ includes the uMfolozi river, the Msunduzi river and the St Lucia systems i.e. these form a single management unit and the components cannot be manipulated individually without adversely affecting the entire Lake St. Lucia estuarine system. Ezemvelo has been part of technical task team revisiting the delineation of estuaries in KZN and supports the delineation of a common boundary for the Lake St. Lucia estuarine system that encompasses the uMfolozi, the Msunduzi and the St. Lucia.

The EMPr is aimed at mitigating impacts of activities undertaken in the Park as espoused in the following statement:

*"This Overarching Environmental Management Programme (EMPr) covers the principles, responsibilities and requirements applicable in order to implement effective environmental management during pre-construction, construction, site rehabilitation and maintenance activities within the iSimangaliso Wetland Park (the Park). The aim of this Overarching EMPr is to ensure that activities are conducted in accordance with the policies and management practices of the iSimangaliso Wetland Park Authority (the Authority) and the principles of Integrated Environmental Management laid out in Chapter 2 of the National Environmental Management Act."*

It is not meant to provide the policy or strategy to inform decisions to undertake activities such as breaching the estuary. Rather, it is the Estuary Management Plan that informs how to manage the estuary with regard to breaching.

**Response to comment above**

On the 30 November 2015 Isimangaliso wetland park authority made an application to Department of Environmental Affairs (DEA) to request adoption and approval of the overarching Environmental Management Programme (EMPr: Revision 13) as a maintenance plan in accordance with the environmental impact assessment regulations, 2014 for activities within the world heritage site (isimangaliso wetland park). The overarching Environmental Management Programme (EMPr: Revision 13) was approved on the 09 February 2016. However the approved EMPr did not address issues relating to breaching hence the revision of the proposed EMPr (revision 14) to accommodate breaching activities as part of maintenance activities within the EMPr. Estuary Management Plan have been adopted in the revised EMPr in order to cater for the breaching activities, while aligning with the estuary management plans of Isimngaliso wetland park. Therefore this revised EMPr is not meant to provide the policy or strategy to inform decisions to undertake activities such as breaching the estuary but rather ensure that breaching is considered in the maintenance activities of the revised EMPr within the park. In order to produce a holistic Overarching Environmental Management Programme that addresses current legislative requirements and objectives, this document is revised to align with the NEMA EIA Regulations published in December 2014, approved Kosi bay, lake st.lucia, Mgobozeleni estuary management plans together with isimangaliso wetland park integrated management plan and it provides for management and maintenance activities within iSimangaliso. This Overarching Environmental Management Programme (EMPr)

covers the principles, responsibilities and requirements applicable in order to implement effective environmental management during pre-construction, construction, site rehabilitation and maintenance activities within the iSimangaliso Wetland Park (the Park). The aim of this Overarching EMP is to ensure that activities are conducted in accordance with the policies and management practices of the iSimangaliso Wetland Park Authority (the Authority) and the principles of integrated Environmental Management laid out in Chapter 2 of the National Environmental Management Act.

**□ Comment 2:**

(ii) There is also misalignment between the St. Lucia Estuarine Management Plan and the EMP when it comes to artificial breaching when reading the following 2 statements respectively:

(a) *"Thus, artificial breaching disrupts the natural cycle and, therefore, has a negative effect on the plants and animals within estuaries (which in one study showed a twentyfold decrease in biomass). Artificial breaching is a convenient, but ecologically disruptive, means of altering the natural processes of an estuary. This is often done for the benefit of a few individuals but at the expense of the ecological health and services that these important systems provide and in this way having a ripple effect through many other lives. It is recognised and has been shown in the literature to be a highly damaging activity for estuaries"*<sup>1</sup>.

(b) *"iSimangaliso wetland park authority have opted to artificially open the Msunduzi River to the sea in order to rectify the current ecological depredatory impact on estuarine fish abundance, species richness/ community composition and ecological functioning of the Msunduzi River"*<sup>2</sup>

It is suggested that the estuarine management plan should take the lead in this matter of artificial breaching.

**Response to comment above**

Comment noted, in order to ensure precise alignment between the St. Lucia Estuarine Management Plan and the EMP. The above statements within the draft EMP has since been revised see page 58 and 59 above

**□ Comment 3:**

Keeping with the philosophy of a common boundary, it must be recognised that there are no half measures when managing St Lucia together with the Mfolozi River. The Msunduzi River cannot be breached in isolation of the Mfolozi River as they are one system. The St Lucia-Mfolozi cannot be managed as one system without using the natural scouring effect resulting from allowing the water level to back up before flushing. If there is no head of water before the joint mouth breaches to the sea, the sediments will not be scoured out.

If there is artificial breaching, it would mean going back to the former two-mouth system and will require reinstating the dredger and reclamation unit to manage the system. If this is the case, the implication here is that GEF funding used in the St. Lucia Restoration Project would have been spent in vain. The management of the system cannot be compartmentalised. Either the Mfolozi river is linked with St Lucia (requiring water to be backed up in the lower floodplain), or it is not linked and Lake St Lucia will suffer from water starvation. Presently

Lake St Lucia is full and a badly timed artificial breach of the Msunduzi/Mfolozi mouth may inevitably drain the lake.

**Response to comment above**

This comment is noted and will be considered. It must be noted however that the aim of this document is to ensure alignment of the Estuarine Management Plans for the Park with this Amendment of the Maintenance Plan for the Park. It is aimed at ensuring that all our tools that relate to maintenance (including breaching for



ecological purposes) have a structure and are implemented accordingly. This by no means replaces the legality of the action, whichever mechanisms out to be sought in this regard will be sought.

While Ezemvelo recognizes that there are instances where artificial breaching will be required to improve the ecological condition of the system, Ezemvelo is also aware of the plight of the KwaSokhulu Farmers where their operations have become inundated because of rising water levels of the Msunduzi River. There has been considerable pressure to breach the system as a means to alleviate that backflooding. Both the documents (EMPr and Estuarine Management Plan) are lacking in a management response to this scenario. Interventions that are proposed here must also include exploring all options to assist the local community members who's farming operations are being inundated by rising waters from the Msunduzi River, not only by artificial breaching. The overall negative ecological impacts of artificially breaching on the entire system will almost certainly far outweigh the cost of the loss of production from the flooded areas. The Park Authority therefore needs to explore other alternatives through their community liaison programmes e.g. offer employment through invasive alien control programmes or some other type of compensation or improved livelihood opportunity.

#### **Response to comment above**

The implications of breaching thus need to be considered at the full system level, the national level as well as at the international level. In addition to the GEF funding issue, artificially breaching this system may be a violation of a 2017 High Court Judgement that prevented the system from being artificially breached due to sugarcane fields in the floodplain being similarly inundated by rising waters as a result of back flooding. Overall, it must be considered that the improper management of the estuary will result in a Ramsar site being mismanaged and the UNESCO World Heritage site being compromised.

#### **Response to comment above**

This comment is noted and again this process aims at ensuring the enabling tools are aligned, by no means does it serve to replace a need to comply with any applicable legislation including any decision of the high court.

#### **End Note**

