CEN INTEGRATED ENVIRONMENTAL MANAGEMENT UNIT

Environmental and Rural Development Specialist

Final Basic Assessment Report:

Re-development and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2)

Project Title:

Final Basic Assessment Report: redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2)

Project Applicant: Mandela Bay Development Agency

Reference Number: ECM1/LN1&3/M/11-103

Environmental Assessment Practitioner:

CEN Integrated Environmental Management Unit

36 River Road, Walmer, Port Elizabeth, 6070

South Africa

Phone (041) 581-2983 • Fax 086 504 2549

E-mail: steenbok@aerosat.co.za

Date of submission: April 2012

Executive Summary

CEN Integrated Environmental Management Unit was appointed by the Mandela Bay Development Agency to undertake the necessary environmental assessments for the proposed redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2). Activities will take place on Erf 1031, Erf 576 and the Remainder of Erf 575, Humewood (approximate GPS co-ordinates: 33°58'23.17"S 25°38'45.70"E).

This Basic Assessment report is required in terms of Regulation (56) of the Environmental Impact Assessment EIA Regulations (Government Notice R.543 in Government Gazette 33306 of 18 June 2010) and in terms of Chapter 5 of the National Environmental Management Act as amended (Act 107 1998).

1.1 Activity Description

1.1.1 Listed Activities

The following activities have been identified:

No. R. 544	**10 December 2010 – Listing 1**
Activity number	**Activity description**
16	Construction or earth moving activities in the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea, in respect of – (iii) embankments; (iv) rock revetments or stabilising structures including stabilising walls; (v) buildings of 50 square metres or more; or (vi) infrastructure covering 50 square metres or more Project activity: building a boardwalk and an artificial wetland within 100 m of the high water mark of the sea

No. R. 544	**10 December 2010 – Listing 1**
Activity number	**Activity description**
17	The planting of vegetation or placing of any material on dunes and exposed sand surfaces, within the littoral active zone for the purpose of preventing the free movement of sand, erosion or accretion, excluding where the planting of vegetation or placement of material relates to restoration and maintenance of indigenous coastal vegetation or where such planting of vegetation or placing of material will occur behind a development setback line. Project activity: dune rehabilitation
18	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from: (iv) the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea Project activity: the excavation of material to construct a boardwalk and an artificial wetland within 100 m of the high water mark of the sea
No. R. 546	10 December 2010 – Listing 3
Activity number	Activity description
12	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation (c) Within the littoral active zone or 100 metres inland from high water mark of the sea Project activity: clearance of dune vegetation to construct a boardwalk

1.1.2 Activity Description

The Kings Beach node falls within the Mandela Bay Development Agency's (MBDA) mandate area which comprises ~1039 ha of land in the Inner Metropolitan Area of the Nelson Mandela Bay Municipality. The role of the MBDA is to re-engineer and revitalize land within its mandate area. A phased plan to redevelop the Kings Beach Node has been proposed – Phase 1 has already commenced. The following activities are proposed for Phase 2 (refer to Figure 1):

- Construction of 2 access boardwalks to the beach with a viewing deck (there are currently 4 access points at ground level – 2 will remain, and the other 2 will be converted to raised access boardwalks)
- Construction of an artificial wetland to filter and attenuate stormwater prior to it being discharged onto the beach
- Improved stormwater management
- Upgrading the a portion of the existing parking area
- Construction of a skatepark
- Landscaping
- Maintenance and repairs of existing structures and infrastructure

- **Figure 1: Site Plan (Source: EARTHWORKS Landscape Architects).**

1.2 Methodology

1.2.1 Compliance with legislated requirements

The Environmental Impact Assessment Regulations (2010) clearly state the requirements that need to be fulfilled by all role-players involved in the Environmental Assessment Process. In this regard, Regulations 21 to 25 list the requirements that an EAP must fulfil in order to compile a comprehensive Basic Assessment Report.
To assist with interpretation of these regulations, a set of guidelines was published by the Department of Environmental Affairs. In this regard, Guidelines 3 (General Guide to Environmental Impact Regulations (2006)), 4 (Public Participation) and 5 (Assessment of Alternatives and Impacts) were consulted.

1.3 Identification and Assessment of Alternatives

The methodology described in guidelines published to assist with the interpretation of EIA Regulations was followed to ensure the adequate consideration of alternatives, including the “no development” option. Two site layout and development concept alternatives were considered and assessed, primarily involving disturbance to dunes, layout and positioning of boardwalks, and stormwater management. The preferred option was developed in consultation with WESSA, the Beach Office and the professional project architect and engineer. The “no-development” option was considered as a baseline throughout the prediction and analysis of impacts.

1.4 Prediction and Analysis of Impacts

Impacts were predicted and analysed based on observations made during site visits and discussions with authorities, review of scientific literature, analysis of various Environmental Planning Guidelines (e.g. the East Cape Biodiversity Conservation Plan (2007), the Nelson Mandela Bay Metropolitan Open Space System (2009)), aerial photography interpretation, and comments from Interested and Affected Parties.

1.4.1 Comments from Interested and Affected Parties

All registered Interested and Affected Parties and other stakeholders have been sent a copy of this Executive Summary and notified of the availability of the full Draft Basic Assessment Report. All I&APs have been given a 40 day period to review the draft report and submit comments.

Below is a summary of comments raised by registered Interested and Affected Parties in response to the public participation process . These have been integral in the assessment of impacts.

- Is there a possibility of re-developing the Kings Beach Lifesaving Club footprint to include a low impact commercial development node? Will such plans require a separate process or can this be included for consideration within the scope of this environmental assessment?
- Our interest extends to the modification of the dunes and building of a boardwalk within 100 m of the high water mark of the sea and in particular how this will affect sand shift around the Kings Beach Surf Lifesaving clubhouse and access levels to the existing paved courtyard (as well as any drainage requirements). We also need to understand the wider scope implications of the re-development of the parking areas and access to the adjacent grassed areas as well as level changes and any further storm water mitigation activities that may be planned around the skate park.
- As per our telephone conversation, I respond with this e-mail regarding the development on Kings Beach, and how it will affect our business. Please keep us informed of the development process that would happen around the Supertube area.
- Concern raised over boardwalk and dune modification proposal
- What will be done to protect sand movement?
- Request to be registered as an I&AP
- Submitted several comments regarding mostly dune landscaping and modification:
- There are a few protected trees on the site, viz. white milkwood (Sideroxylon inerme) and red milkwood (Mimusops caffra), which should be retained if possible. They may not be disturbed, damaged, destroyed or felled without a licence from the Forestry office in Port Elizabeth. Any applications should be directed to that office.

- The landscaping of the strand plant foredune hummocks [according to the classification of Tinley (1985)] is regarded as highly undesirable, and should under no circumstances be allowed. Note is taken of the fact that the dune has apparently been constructed artificially to a certain height in the 1980's, and that the proposal is now to reduce their height to what it had been originally, to inter alia obtain sea-views. However, in this proposal consideration is apparently not given to the fact that foredunes are dynamic wind-shaped structures which are natural features on sandy shores above the high water mark, and that, regardless of how they were originally "constructed artificially", they have since, due to natural physical and biological forces and influences, developed into vegetated foredunes comparable to any such dunes formed by nature.
- Attached photographs of these dunes reveal that they are covered with typical indigenous strand vegetation found in the dynamic dune zone, vegetated with littoral species consisting of i.a. Ehrharta villosa ("pypgras"), Ipomoea brasiliensis ("seepatat"), Agropyron distichum (sea wheat), Gazania sp. ("gousblom"). This vegetation is rhizomatous or stoloniferous in nature with the characteristic of the former to continuously grow out above the accumulating sand, thereby forming crested dunes, and binding the sand that is wind-blown inland of the high water mark. Dune growth in this way is a natural process, which has undoubtedly occurred since the original sand dunes were formed artificially. (See photographs).
- It is foolish to interfere with this dynamic semi-stabilised foredune zone, as it is a natural(ised) eco-system that provides services free of charge by providing a natural and resilient buffer that absorbs and dissipates the energy of the sea and wind in a dynamic zone of semi-mobile sand. If this buffer was to be replaced by for example rigid structures like rock or concrete, or artificially stabilised vegetated soil, the energy of waves and wind would "collide" with these inflexible surfaces and create turbulence and eddies producing erosion and undermining of the structures created to protect the inland stable zone against these forces.
- In the light of increasing sea-levels through global climate change, it is very important to retain these dynamic buffer zones. They will absorb to some extent the forces exerted by storms. They are periodically eaten into by storm tides, removing sand, but during calm weather and seas they are again brought back to the shore by natural accretion processes. Any artificial interference with this process can only

destabilize and disrupt this dynamic equilibrium, to the detriment of the development behind it.

- In this regard, reference is also to be made to the CSIR publication “Coastal Dunes of South Africa”, Report No. 109, by Dr. K.L. Tinley, 1985.
- A process of colonization with more permanent indigenous dune vegetation consisting of woody shrubs and trees, e.g. Rhus crenata (“duine kraaibessie”), has started in the lee of the dunes as they are currently. These should be encouraged by establishing more of these species. The value of this natural shelter against winds from the sea, should outweigh the need to have a direct line of sight to the sea. The sea can easily be accessed by the accesses provided, and the system of proposed boardwalks along the dunes as they currently are, which is supported, should adequately provide in this need.
- The proposed landscaping of the dunes will not be permanent, for the natural sand accretion processes will prevail and will naturally revert back to building the dune higher, as has taken place in the past. It appears that the proposal has not considered this aspect. Once the dunes have been landscaped, they will not remain in such a state, and if they are stabilized with too permanent a surface, they will be damaged by the forces of the elements.
- In the light of imminent sea-level rises, it would be prudent, and should be enforced by the authorities responsible, to instead of expanding the artificial development in the direction of the sea, withdraw further inland and determine a setback line, as these developments close to the sea are certain to be inundated by the sea in the not too distant future.
- Kings Beach was a Blue Flag status beach until end of 2009, when it failed to regain its flag due to deficiencies with the four ablution blocks and significant problems with beach management – largely due to not managing stormwater runoff from the carpark.
- My/Blue Flag’s interest in this project is to promote the redevelopment up to the standards of Blue Flag, so that the NMBM can re-apply, as is apparently its intention. Getting appropriate dune management is also key. As discussed please find attached a Blue Flag Report on some of the issues.
- Agree with issues identified in BID
- Concern that Phase 1 commenced without an authorisation which may result in non-compliance issues

- Has the Parks Department been consulted? They are responsible for developing open space.
- Will viewing decks on the access boardwalks fall in the inundation zone?
- How many phases are planned for the greater beachfront development? Why is a piecemeal approach being taken?
- Can this assessment deal with the current maintenance problems of the existing boardwalk along the remainder of the beachfront?
- What has the original round of public participation covered and what has the response been so far?
- Are there opportunities for local economic development in the proposal?

Comments on Draft BAR:

- Provision should be made for a multiple use recreational path which connects with the existing recreational path network of the city. Currently cyclists are prohibited from using the tarmac sec on by no cycling signs. Conceptual drawings of the proposed development indicate cycling facilities and this is to be welcomed. Single use paths and the current system of no cycling signage give rise to the potential for recreational conflict and mitigation measures for such potential conflict needs to be considered.
- With respect to the process, I note that the beach office was involved in design discussions. Is it possible to get information related to what they were asked to comment on as we would have thought there may be some input from our side particularly as the club house and tower will be directly impacted (this is not directly related to the EIA hence the reason I haven't included it under our main comments). If this falls outside your mandate, please advise whom I should be contacting to discuss this.
- With respect to Dean Biddulphs' comments, this is something the Life saving club has already been investigating (and which are quite advanced with respect to proposals), so with respect to the 2nd part of his question, would such plans require a separate process or does the EIA include for this within its scope?
- With respect to the EAP response to Kings Beach comments, if the dunes are not to be modified, how will the club members continue to access the beach as the dune field extends itself across the access route to link with the existing dune adjacent? This appears to be natural phenomena that will not stabilize over time, only increase in magnitude (as has the height of the dune in front of the club tower).

- In addition, what mitigating process has been proposed to prevent the sand buildup that has gone on since the dunes were created in the current guise from swamping the club in future years? This is already happening on a regular basis due to natural sand movement phenomena and not just foot traffic across the dune which is a fairly recent event caused by sand covering the fences that were originally erected along the pathway to prevent access i.e. there was already sand overblow despite the dune vegetation being sufficiently stabilized which increased the hard core at the base of the dunes on the seaward side.
- We note the two boardwalks proposed and would like to be consulted by the relevant design teams with respect to exact route, levels and also details of the lookout point and its potential for use by life guard's during the course of their daily activities. In addition, we note no boardwalk or other access proposals for the MacArthur baths side of the beach which seems at odds with the municipalities stated aims to make the beach more accessible as currently this is a serious problem for anyone on crutches or in a wheelchair (the current concrete walkway ends with no steps and in addition the storm water runoff is eroding the beach further exacerbating the drop off). We note that mention is made of steps and gabion cages but the details on this do not appear to make allowance for disabled access. Although the report details that access 4 is the most heavily trafficked and main access to the beach, those aspects appear to have been ignored alongside what mitigation of storm water will occur there. The secondary issue of storm water from beneath the Mac Baths sea wall eroding the beach and thereby creating a sea gully does not appear to have been addressed in any way other than as a possible health hazard due high e-coli counts in an area children love to play in and which drains directly into the bathing area.
- The proposals for the tertiary wetland are of grave concern mainly due to two aspects: firstly, the level of this wetland would seem to be at odds with the current ground levels adjacent to the beach areas which would therefore possibly create a flooding potential for the club and ablution block adjacent should overflow not be captured by the wetland i.e. that water directed along the current access road. Do any sectional details exist for the proposed drainage detailing the collection and subsequent control of this additional water processing by the wetland area? The secondary aspect is the impact of this additional water run-off on the existing gully's that have been the cause of much trouble to the bathing public this summer. It is our understanding that Afri-Coast Engineers are in the process of carrying out a detailed shoreline study that

should provide clarity on the impact of rising sea levels on the beach erosion and increasing flooding patterns that have seen the high water mark extend to the base of the dune system along virtually the entire beach length. In addition, we believe this report should also inform the proposed design of any storm water system as it is our contention that increased water flow from the car park via the various roadways is leading to the increased erosion of sections of the beach and offshore sea bed.

- The proposals highlight that sand build up has caused problems with the storm water drainage system as originally designed at Point 5 but should also include Point 6 as any drainage at that point dams at the base of the existing concrete ramp due to sand build up creating a dam effect. We see no proposals that address this issue which will only increase should the adjacent dune not be reduced in size. It may be that the existing concrete ramp should be extended to the high water mark at the base of the dune system allowing easier maintenance access and assisting in managing the storm water drainage problem. We have in essence a man made system that now needs additional man made aspects to control it rather than returning the beach to what it had become by natural sand build-up following the extension of the harbour wall in the 1930's.
- The BAR mentions that the water quality in the artificial wetland must be monitored to determine the effectiveness of the system. Are there any other operational requirements such as maintenance of the artificial wetland?
- Who will be responsible for maintenance of infrastructure?
- The section in the BAR under Authority Participation should read:
  - NMBM Environmental Management Sub-Directorate
  - NMBM Infrastructure and Engineering Directorate
  - NMBM Electricity and Energy Directorate
- The NMBM Economic Development and Recreational Services Directorate should possibly be registered as an interested and affected party, particularly Beaches, Resorts and Support Services

1.5 Summary of Predicted Impacts

Section D of the Basic Assessment Report details the assessment of impacts.
The table below is a summary of predicted impacts in construction and operational phases:

Impact	**Construction phase**		**Operational Phase**	
	No-go	**Preferred alternative**	**No-go**	**Preferred alternative**
Coastal ecology/biodiversity	Long term, Low -	Short term, Low -	Long term, Moderate -	Long term, Moderate +
Noise	No impact	Short term, Low -		
Air quality (dust)	No impact	Short term, Low -		
Surface and groundwater impacts (erosion and contamination)	Long term, Moderate -	Long term, Low -		
Stormwater management			Long term, High -	Long term, High+
Sediment dynamics			Long term, High +	Long term, Moderate +
Waste management	No impact	Short term, Low -		
Archaeological impacts	No impact	No impact		
Visual Impacts			Long term, Moderate -	Long term, High +
Socio-Economic Impacts (tourism and recreational users)	No impact	Short term, Low -	Long term, High -	Long term, High +
Socio-Economic Impacts (employment opportunities)	Long term, Moderate -	Short term, High +		
Cumulative Impacts: The MBDA has commenced with upgrading a portion of the Kings Beach area which includes the				

Impact	Construction phase		Operational Phase	
	No-go	**Preferred alternative**	**No-go**	**Preferred alternative**
construction of a lake and various landscaping activities (Phase 1). This proposal will build on the efforts made so far in Phase 1 and together will collectively promote improved recreational usage and tourism opportunities of the area. Improved stormwater management will assist in improving water quality that flows to the beach, and should assist in Kings Beach attaining Blue Flag status. This will further aid in increasing tourism potential of the area. Studies to determine the carrying capacity of the southern beaches of Port Elizabeth have shown that only certain beaches are highly used, while others are underutilised (e.g. Kings Beach). Some of the reasons for underutilisation are safety, and lack of facilities. The proposed upgrade will assist in 'spreading out' recreational usage along the beaches, and which will reduce impacts at other beaches that are currently over-utilised.				
			Long term, High – (if the area is not upgraded, a valuable tourist area will be underutlised. If stormwater is not managed, coastal water quality will continue to deteriorate)	Long term, High + (the inclusion of an artificial wetland in the prefer alternative improves stormwater management)

1.5.1 Environmental Impact Statement and Recommendations

This assessment showed that potential negative impacts would be limited to construction phase only (short term), and provided that mitigation measures are implemented, they will be of low significance. Positive operational impacts are:

- improved stormwater managed through the construction of an artificial wetland that will attenuate and filter stormwater prior to it discharging into the surrounding coastal environment,
- improved recreational facilities and aesthetics of an important coastal tourist node that will improve safety and promote utilisation by the public, and

- possibly improved management of dunes by limiting beach access to boardwalks (i.e. reduced trampling of dune vegetation and resultant erosion).

Positive impacts listed above should assist in efforts aimed at Kings Beach attaining Blue Flag status which has obvious socio-economic benefits, mostly related to international tourism.

It is recommended that all mitigation measures contained in the Basic Assessment report be included in an environmental authorisation, should one be issued.

CEN INTEGRATED ENVIRONMENTAL MANAGEMENT UNIT

Environmental and Rural Development Specialist

FINAL BASIC ASSESSMENT REPORT:

Re-development and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2).

Project Title:

FINAL BAR: Re-development and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2).

Project Applicant: Mandela Bay Development Agency

Reference Number: ECm1/LN1&3/M/11-103

Environmental Assessment Practitioner:

CEN Integrated Environmental Management Unit

36 River Road, Walmer, Port Elizabeth, 6070

South Africa

Phone (041) 581-2983 • Fax 086 504 2549

E-mail: steenbok@aerosat.co.za

Date of submission: 9 April 2012

PROVINCE OF THE EASTERN CAPE
DEPARTMENT OF ECONOMIC DEVELOPMENT
AND
ENVIRONMENTAL AFFAIRS

BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:	
Application Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.

2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.

4. An incomplete report may be returned to the applicant for revision.

5. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.

6. This report must be handed in at offices of the relevant competent authority as determined by each authority.

7. No faxed or e-mailed reports will be accepted.

8. The report must be compiled by an independent environmental assessment practitioner.

9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	YES	NO

If YES, please complete form XX for each specialist thus appointed:
Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

The application is for the redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2). Activities will take place on Erf 1031, Erf 576 and the Remainder of Erf 575, Humewood (approximate GPS co-ordinates: 33°58'23.17"S 25°38'45.70"E).

The Kings Beach node falls within the Mandela Bay Development Agency's (MBDA) mandate area which comprises ~1039 ha of land in the Inner Metropolitan Area of the Nelson Mandela Bay Municipality. The role of the MBDA is to re-engineer and revitalize land within its mandate area. A phased plan to redevelop the Kings Beach Node has been proposed – Phase 1 has already commenced. The following activities are proposed for Phase 2 (refer to the site plan attached as Figure 1 in Appendix A):

- Construction of 2 access boardwalks to the beach with a viewing deck (there are currently 4 access points at ground level – 2 will remain, and the other 2 will be converted to raised access boardwalks)
- Construction of an artificial wetland to filter and attenuate stormwater prior to it being discharged onto the beach
- Improved stormwater management
- Upgrading the a portion of the existing parking area
- Construction of a skatepark
- Landscaping
- Maintenance and repairs of existing structures and infrastructure

Preliminary List of Listed Activities in Terms of the EIA Regulations
The Minister of Environmental Affairs and Tourism has in terms of sections 24 and 24D of the National Environmental Management Amendment Act (Act No. 107 of 1998), listed the activities that require an environmental assessment.

In terms of the Environmental Impact Assessment Regulations, 2010, made under section 24(5) of the Act and published in Government Notice R.543 in Government Gazette 33306 of 18 June 2010 the following activities are triggered by the application:

No. R. 544	10 December 2010 – Listing 1
Activity number	Activity description
16	Construction or earth moving activities in the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea, in respect of – (iii) embankments; (iv) rock revetments or stabilising structures including stabilising walls; (v) buildings of 50 square metres or more; or (vi) infrastructure covering 50 square metres or more Project activity: building a boardwalk and an artificial wetland within 100 m of the high water mark of the sea
17	The planting of vegetation or placing of any material on dunes and exposed sand surfaces, within the littoral active zone for the purpose of preventing the free movement of sand, erosion or accretion, excluding where the planting of vegetation or placement of material relates to restoration and maintenance of indigenous coastal vegetation or where such planting of vegetation or placing of material will occur behind a development setback line. Project activity: dune rehabilitation
18	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from: (iv) the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea Project activity: the excavation of material to construct a boardwalk and an artificial wetland within 100 m of the high water mark of the sea
No. R. 546	10 December 2010 – Listing 3
Activity number	Activity description
12	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation (c) Within the littoral active zone or 100 metres inland from high water mark of the sea Project activity: clearance of dune vegetation to construct a boardwalk

2. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Paragraphs 3 – 13 below should be completed for each alternative.

The activity is site specific – i.e. it is for the upgrade recreational areas in the Kings Beach node that falls within the MBDA's mandate area. Therefore no site alternatives have been considered.

The activity is to upgrade a portion of the Kings Beach node to improve safety and the state of recreational facilities. The area has been designated for low-impact recreational use, and other land use activities would not be suitable (e.g. offices, residential).

Two layout alternatives were considered:
Layout 1 (refer to Figure 2 in Appendix A):
The initial layout was presented by the applicant and included the following activities:

- Construction of a boardwalk that will cross the dune system
- Reducing the height of a portion of the dune to its original constructed height (i.e. the dune was artificially constructed in the 1980s) to allow visual connectivity between the park and the beach
- Dune rehabilitation
- Construction of a skatepark
- Construction of a parking lot

This concept was sent out for an initial round of public participation and a site visit was done. On-site meetings were held with M. Griffiths from WESSA and G. Murrell from the NMBM Beach office to discuss the proposal. Both parties voiced their objection to reducing the dune height and to the boardwalk proposal. Concern was raised over the maintenance costs and efforts that are currently spent on the existing boardwalk that stretches from Pollock Beach in a southerly direction towards the Beacon, and it was felt that the boardwalk proposal would result in the same issues. An alternative boardwalk concept was proposed where a limited number of access boardwalks running perpendicular to the beach with lookout points are positioned in areas where the public currently accesses the beach. T Stehle from the Department of Forestry also strongly objected to interfering with the dune system by reducing its height and noted the value that the dunes provide in terms of ecosystem services. Based on these discussions, the preferred alternative (not reducing the height of the dunes and a limited number of perpendicular access boardwalks) was presented to the applicant who agreed to the amended concept. The applicant and technical team were asked to investigate ways in which to address the current stormwater problems experienced on site (mostly related to uncontrolled flow which causes erosion and poor quality stormwater flowing to the beach). Based on this, the project team has designed an artificial wetland adjacent to the supertubes. Stormwater that currently discharges directly

to the beach will be directed to the wetland for attenuation and filtration. Primary motivating factors for the preferred layout alternative are as follows:

- Dunes provide useful ecosystem services and should not be reduced in height:
    - They protect landward structures and infrastructure from storm surges and sea level rise
    - Dunes provide protection and shelter from easterly winds that dominate in the summer months as well as corrosive sea spray. This has benefits for cost and maintenance savings; and is beneficial for the park area behind the dunes since the area will be protected from winds in prime summer months
    - Dunes provide a source of sediment to beach after erosion events caused by high waves. Without this source of replenishment, there is a risk of erosion
    - Dunes provide habitat for fauna, and nesting sites for birds
- The Integrated Coastal Management Act (ICM) is clear on the role of the coastal protection zone and the need to protect it:
    - Section 16(b) defines the coastal protection zone (c.p.z.) as any part of the littoral active zone that is not coastal public property (land below the high water mark of the sea). Therefore land above the high water mark that is still in the littoral active zone (e.g. the mobile section of the dunes) falls under the definition of a c.p.z. Section 17 (a – f) of the ICM explains the purpose of the c.p.z. and those that are relevant to this application are as follows:

(a) Protect the ecological integrity, natural character, and economic, social and aesthetic value of coastal public property
(b) Avoid increasing the effect or severity of natural hazards in the coastal zone
(c) Protect people, property and economic activities from risks arising from dynamic coastal processes; including the risk of sea level rise
(d) Maintain the natural functioning of the littoral active zone

- It is clear that the dunes, as part of the c.p.z., have an important function in protecting areas landward of the coastal zone. This carried additional weight in discarding the proposal to reduce the height of the dunes.
- The preferred alternative therefore looks at ways to protect the dunes and reduce current impacts (e.g. trampling of vegetation and the formation of blowouts) rather than reducing their height; and only 2 new access boardwalks are proposed. Stormwater management is also significantly improved in the preferred alternative through the creation of an artificial wetland. Refer to Figure 15 and 16 in Appendix C for a schematic plan of the boardwalk and wetland.

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection. List alternative sites if applicable.

The study area falls within the Mandela Bay Development Agency's (MBDA) mandate area. The role of the MBDA is to re-engineer and revitalize land within its mandate area. Kings Beach is one of 7 nodes that were identified for development in the area between the harbour and Cape Recife in the Southern Beachfront Structure Plan (mid-1980's). The East Cape Biodiversity Conservation Plan (2007) classifies the site as 'towns and settlements' (refer to Figure 21 in Appendix G), and the development proposal is in line with land use guidelines suggested for such areas. The site has no critical biodiversity areas or ecological process areas traversing it according to the Nelson Mandela Bay Metropolitan Open Space System (2009) (refer to Figures 19 and 20 in Appendix G). The site is highlighted in the NMBM Spatial Development Framework Plan (2009) for "Vision 2020 Projects" of which the proposal is one (refer to Figure 22 in Appendix G). The site is therefore suitable for consideration and assessment of the proposed activity, and no site alternatives have been considered.

Alternative:

	Latitude (S):		**Longitude (E):**	
Alternative S1[1] (preferred or only site alternative)	33°	58'23.17"	25°	38'45.70"
Alternative S2 (if any)	°	'	°	'
Alternative S3 (if any)	°	'	°	'

In the case of linear activities: N/A

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:	**Size of the activity:**
Alternative A1[2] (preferred activity alternative)	Site: ~ 12.8 ha Activity size: • 2 access boardwalks: 400 m^2 • Artificial wetland: 2000 m^2

[1] "Alternative S.." refer to site alternatives.
[2] "Alternative A.." refer to activity, process, technology or other alternatives.

	• Skatepark: 1500 m²
Alternative A2 (if any)	m²
Alternative A3 (if any)	m²
or, for linear activities:	

5. SITE ACCESS

Does ready access to the site exist?	YES	NO
If NO, what is the distance over which a new access road will be built	m	

Describe the type of access road planned:

The site is accessible from Marine Drive/Beach Road

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

6.1 the scale of the plan which must be at least a scale of 1:500;
6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 the exact position of each element of the application as well as any other structures on the site;
6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 all trees and shrubs taller than 1.8 metres;
6.7 walls and fencing including details of the height and construction material;
6.8 servitudes indicating the purpose of the servitude;
6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- rivers;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species);

6.9 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
6.10 the positions from where photographs of the site were taken.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R50 million
What is the expected yearly income that will be generated by or as a result of the activity?	n/a
Will the activity contribute to service infrastructure?	YES [X]
Is the activity a public amenity?	YES [X]
How many new employment opportunities will be created in the development phase of the activity?	60
What is the expected value of the employment opportunities during the development phase?	~R2 million
What percentage of this will accrue to previously disadvantaged individuals?	80%
How many permanent new employment opportunities will be created during the operational phase of the activity?	5
What is the expected current value of the employment opportunities during the first 10 years?	~R1.8 million
What percentage of this will accrue to previously disadvantaged individuals?	100%

9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

The southern beachfront structure plan was prepared in the mid-1980's. Its main principle was to not allow private sector development on the seaward side of Beach Road/Marine Drive except within 7 nodes identified for development between the harbour and Cape Recife. Areas

between nodes were to remain as open, linked landscaped areas for free use by the community.

King's Beach is the largest of the nodes on the southern beachfront and was the first to be identified for a more detailed master plan in 1987. The master plan covered land that was open and undeveloped but was based on a long term view of the greater King's Beach area that included the harbour land in the belief that one day it would form part of the City's southern beachfront developments.

The master plan was therefore developed based on a concept of parallel zones. The first of these is the beach itself backed up by a dune zone that is wide enough to accommodate a primary and secondary dune. These two zones stretch from MacArthur Baths in the south to the harbour breakwater. A third zone is known as the back of beach zone and also stretches from MacArthur Baths in the south to the harbour breakwater. This third zone is intended to remain free of concession and lease areas and to be open for free use and access by the public.

Zones four and five were identified for parking and concession uses respectively. The parking zone was located so as to serve the back of beach area on one side and the concession zone on the other. The intention from an aesthetic point of view was to develop the parking areas as a series of small landscaped parking areas that would collectively meet the needs of all users of King's Beach both day and night.

The concession zone was designed to occupy the balance of the greater King's Beach area located between Beach/Humewood Road, the parking zone and the harbour and it was recognised that it would only be finally developed once the Oil Tank Farm and the Manganese Ore Loading Facility had been relocated and the land reinstated.

An important component of the Master Plan was a stormwater analysis and the development of a stormwater management plan that identified the manner in which the overall area needed to be sculpted so as to ensure that stormwater flowed to the sea in the correct manner and so that developments would not be flooded during heavy rains.

Since the preparation of the Master Plan, the issue of rising sea levels has come to the fore and its possible impacts have not been accommodated as yet. If the worst scenarios for sea level rises are to be taken into account, most of King's Beach will again be under water unless a system of dykes is introduced.

Based on the Master Plan, the first Development Plan for King's Beach was prepared in the late 1980's to early 1990's for that portion of King's Beach in Municipal ownership. Although it didn't cover the entire Municipally owned Erf, it did set the scene for its development and guided the initial development of that portion that was not occupied by the old King's Beach Amphitheatre complex, the miniature kiddies railway line and pool and that part that forms part of the existing car park at King's Beach. The first order of work was to remove unnecessary

structures and to correctly grade the site to deal with stormwater issues. It was then top-soiled and grassed. Flower bed and planting was introduced with the adventure playground and the pathways. A later budget item allowed the building of the two freshwater swimming pools – one for toddlers and one for older children – and the paving of all the then gravel pathways.
A third budget item for this area of King's Beach allowed the preparation of detailed landscaping plans and the development of the first portion of the promenade nicknamed "Maternity Walk." The last money to be spent at King's Beach in the early 1990's was the building of the skateboard bowl and basketball court behind the King's Beach Lifesaving Club.

The Kings Beach node falls within the Mandela Bay Development Agency's (MBDA) mandate area which comprises ~1039 ha of land in the Inner Metropolitan Area of the Nelson Mandela Bay Municipality. The role of the MBDA is to re-engineer and revitalize land within its mandate area. A phased plan to redevelop the Kings Beach Node has been proposed – Phase 1 has already commenced.

Historically, this area is one of the more important sections of Nelson Mandela Bay because it is where the Metropolitan Area had its beginnings on the coast. It is therefore very important for urban conservation and for tourism. The entire image of the NMBMM is contained in this central city area; it is the "face" that Nelson Mandela Bay presents to the rest of the world and which therefore gives it its unique identity, separating it from any other city.

As early as 1985, a structure and strategy plan was developed for the Port Elizabeth beachfront. Kings Beach was one of the 7 nodes identified for development along the beachfront. These nodes were devised to each contain a range of different facilities, with relatively natural areas between them. In this report, Kings Beach was highlighted as being the most popular beach, with the largest variety of facilities, especially for children. In the structure plan, the intention was that each node be developed to cater for special interests of holiday makers, and that each node has its own identity. Kings Beach was identified as having a high level of activity and entertainment, and should be developed to become the hub of entertainment along the beachfront. The Structure Plan simultaneously recognised the importance of retaining natural areas, especially dunes.

Indicate any benefits that the activity will have for society in general:

Improved recreational area, improved safety and aesthetics, improved accessibility to the beach through the design of boardwalks that also allow for disabled access, stormwater quality that is currently discharged to the beach should improve because of the tertiary wetland that is proposed as part of this project.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The proposal is to upgrade the Kings Beach node to promote utilization of the area. The project will result in an improvement in aesthetics of the area, and will create recreational opportunities for local communities. There are also possibilities for local economic development (e.g. through impermanent trading structures). The upgrading of the area should attract more people, and will therefore increase

the clientele base for surrounding businesses. An increase in property values can also be expected in the surrounding suburbs.

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
• National Environmental Management Act	• DEAET	• 1998
• National Environmental Management Act: Biodiversity Act (Act 10 of 2004)	• DEAET	• 2004
• National Environmental Management: Integrated Coastal Management Act (Act No 24 of 2008)	• DEAET	• 2008
• Environmental Conservation Act (Act 73 of 1989)	• DEAET	• 1989
• Nature and Environmental Conservation Ordinance No 19 of 1974	• DEDEA	• 1974
• National Water Act 36 of 1998	• DWA	• 1998
• National Heritage Resources Act 25 of 1999	• SAHRA	• 1999
• Environmental Impact Assessment Regulations	• DEAET	• 2006, 2010

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	NO
If yes, what estimated quantity will be produced per month?	undetermined m^3	

How will the construction solid waste be disposed of (describe)?

Construction waste will be removed from site by the appointed contractor to a registered waste disposal site. Where possible, construction waste material must be used as fill material. It is recommended that the contractor register on the NMBM's waste exchange project where construction rubble can be recycled and/or re-used.

Where will the construction solid waste be disposed of (describe)?

Closest registered waste disposal site (Arlington)

Will the activity produce solid waste during its operational phase?	YES	NO
If yes, what estimated quantity will be produced per month?	m^3	

How will the solid waste be disposed of (describe)?

N/A

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	YES	NO

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?	YES	NO

If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO
If yes, what estimated quantity will be produced per month?	m^3	
Will the activity produce any effluent that will be treated and/or disposed of on site?	Yes	NO

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. NO

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	NO	

If yes, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

None – the activity will not generate wastewater

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

There is a possibility that dust will be generated during construction phase, particularly during high wind conditions. Mitigation measures suggested to control dust generation in subsequent sections will ensure that the concentration is insignificant

11(d) Generation of noise

Will the activity generate noise?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

Noise generated will mostly be from construction activities. All machinery will be within sound working order and will meet the necessary noise level requirements. Construction activities will be limited to daylight hours.

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

municipal	water board	groundwater	river, stream, dam or lake	Other	the activity will not use water

The activity will not require water in operational phase. Landscaped areas will be irrigated using water that is collected and stored in ponds in the area that have been created in Phase 1.

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:	N/A	
Does the activity require a water use permit from the Department of Water Affairs?	YES	NO

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The activity will not require energy in operational phase.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

n/a

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A): [ ]

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? YES | NO

If YES, please complete form XX for each specialist thus appointed:
All specialist reports must be contained in Appendix D.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.
Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

The site is generally flat and slopes gently towards the sea in an easterly and north-easterly direction. The seaward side of the site is flanked by a foredune system.

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline
2.2 Plateau
2.3 Side slope of hill/mountain
2.4 Closed valley
2.5 Open valley
2.6 Plain
2.7 Undulating plain / low hills
2.8 Dune
2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1:		Alternative S2 (if any):		Alternative S3 (if any):	
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	YES	NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

4.1 Natural veld – good condition [E]
4.2 Natural veld – scattered aliens [E]
4.3 Natural veld with heavy alien infestation [E]
4.4 Veld dominated by alien species [E]
4.5 Gardens
4.6 Sport field
4.7 Cultivated land
4.8 Paved surface
4.9 Building or other structure
4.10 Bare soil

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition[E]	**Natural veld with scattered aliens**[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	**Gardens**
Sport field	Cultivated land	**Paved surface**	**Building or other structure**	**Bare soil**

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

5.1 Natural area
5.2 Low density residential
5.3 Medium density residential
5.4 High density residential
5.5 Informal residential
5.6 Retail commercial & warehousing
5.7 Light industrial
5.8 Medium industrial [AN]
5.9 Heavy industrial [AN]
5.10 Power station
5.11 Office/consulting room
5.12 Military or police base/station/compound
5.13 Spoil heap or slimes dam[A]
5.14 Quarry, sand or borrow pit
5.15 Dam or reservoir
5.16 Hospital/medical centre
5.17 School
5.18 Tertiary education facility
5.19 Church
5.20 Old age home
5.21 Sewage treatment plant[A]
5.22 Train station or shunting yard [N]
5.23 Railway line [N]
5.24 Major road (4 lanes or more) [N]

5.25 Airport [N]
5.26 Harbour
5.27 Sport facilities
5.28 Golf course
5.29 Polo fields
5.30 Filling station [H]
5.31 Landfill or waste treatment site
5.32 Plantation
5.33 Agriculture
5.34 River, stream or wetland
5.35 Nature conservation area
5.36 Mountain, koppie or ridge
5.37 Museum
5.38 Historical building
5.39 Protected Area
5.40 Graveyard
5.41 Archaeological site
5.42 Other land uses (describe): **recreational area**

If any of the boxes marked with an "N "are ticked, how will this impact / be impacted upon by the proposed activity.

No impact
If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity.
The manganese ore deposits and fuel storage tanks are included as heavy industrial activities although they are only storage and transfer facilities rather than manufacturing industries. The proposed activity will not impact on the industrial facilities. The fuel storage tanks pose possible safety risks in terms of fire and explosions. The manganese ore dumps result in dust being blown over the surrounding suburbs especially when the easterly winds blow which is a nuisance and health hazard. However, both these facilities are relocating to the Ngqura harbour.

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.
If YES, specify and explain:
If YES, specify:
No impact

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or palaeontological sites, on or close (within 20m) to the site?	YES	NO
	Uncertain	
If YES, explain:		
If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.		
Briefly explain the findings of the specialist:	Dr Johan Binneman was appointed to do a Level 1 Heritage Impact Assessment (report attached as Appendix D). During the investigation, no archaeological sites/materials were found and it is unlikely that any *in situ* archaeological remains will be exposed during the development. The report recommends that the development be exempt from a full Phase 1 Archaeological Impact Assessment. The report has been submitted to SAHRA.	
Will any building or structure older than 60 years be affected in any way?	YES	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO
If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.		

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;

Two notice boards were placed on site:
1) At the access point to the beach east of the Supertubes
2) Along the pedestrian walkway south of MacArthur baths

(b) giving written notice to—

(i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;

(ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
(iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
(iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
(v) the municipality which has jurisdiction in the area;
(vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
(vii) any other party as required by the competent authority;

Background Information Documents were sent to the following:

1) Government and municipal officials, and conservation organisations:

Department/Organisation	Official/Responsible Person
NMBM Environmental Management Sub-Directorate	Kithi Ngesi (KNgesi@mandelametro.gov.za), Abigail Kamineth (akamineth@mandelametro.gov.za) Jill Miller (jmiller@mandelametro.gov.za), Godfrey Murrell, Tony Knott
NMBM Director of Parks	Tsietsi Mokonenyane
NMBM Infrastructure and Engineering Directorate	Barry Martin, A. Snyman, Stan Groenewald, Tony Arthur
NMBM Planning/Housing/Human Settlements Department	Dawn McCarthy (DMccarth@mandelametro.gov.za), Nadia Wessels (nwessels@mandelametro.gov.za), Schalk Potgieter; Alastair Jordaan
NMBM Electricity and Energy Directorate	Dennis Johns, G Ferreira, R Harris
NMB Development Agency	Yonela Madyibi, Jonathan Mercer, Pierre Voges
Department of Forestry	Gwen Sgwabe, Thabo Nokoyo, Theo Stehle
South African Heritage Resources Agency	Mariagrazia Galimberti
Department of Economic Development and Environmental Affairs	Jeff Govender, Andries Struwig
Department of Water Affairs	L. Fourie, M. Bloem, P Retief, P. Tshatshu, A. Lucas, J. Jacobs
Eskom	Tom Smith, Mavis Sitole
Oceans and Coasts	M. Tshikotshi
WESSA	M. Griffiths
East Cape Conservancies	Megan Hope
Coastal Environmental Trust	P. Schwartz
Ward Councillor	D Biddbulph

2) Neighbours and other stakeholders in the area

a. Transnet: Primrose Madikizela, Nelisa Ndulama
b. Southernports
c. Kings Beach Surf Life Saving Club
d. Residences and businesses within 100 m of the study boundary

(c) placing an advertisement in—
  (i) one local newspaper; or
  (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
  (i) illiteracy;
  (ii) disability; or
  (iii) any other disadvantage.

Adverts were placed in *The Herald* and *Die Burger* on 1 November 2011 (see below). An article was also written in the *Metro Minutes* 1 (25) on 4 November 2011.

Die Burger 1 Nov 2011

KENNISGEWING
Omgewingsimpakproses

Kennis geskied hiermee kragtens Regulasie (56) van die Omgewingsimpakstudie- (OIS) regulasies (Staatskennisgewing R.543 in Staatskoerant 33306 van 18 Junie 2010) en kragtens Hoofstuk 5 van die Wet op Nasionale Omgewingsbestuur, soos gewysig (Wet 107 van 1998), om die volgende aktiwiteite uit te voer:

Die **Mandelabaai Ontwikkelingsagentskap** wil graag die suidelike gedeelte van die Koningstrand-nodus op die Nelson Mandelabaai suidelike strandfront (Fase 2) as park aanlê en ontwikkel. Die voorgestelde aktiwiteite vereis 'n Basiese Evaluasie kragtens die OIS-regulasies (2010).

Tipe evaluasie: Basiese evaluasie

Ligging: Erf 1031, Erf 576 en die Restant van Erf 575, Humewood (geskatte GPS-koördinate: 33°58'23.17"S 25°38'45.70"O).

Belangstellende en geaffekteerde partye word genooi om aan die proses deel te neem deur gedetailleerde geskrewe kommentaar binne 40 dae van hierdie advertensie (10 Desember 2011) te rig aan:

Dr. Mike Cohen
CEN Integrated Environmental Management Unit
Riverweg 36, Walmer, Port Elizabeth, 6070
Tel. 041 581 2983 / Faks 086 504 2549
E-pos: steenbok@aerosat.co.za

4399038(1B324FQ) 1/11(180)

The Herald 1 Nov 2011

NOTICE OF ENVIRONMENTAL IMPACT PROCESS

Notice is hereby given in terms of Regulation (56) of the Environmental Impact Assessment EIA Regulations (Government Notice R.543 in Government Gazette 33306 of 18 June 2010) and in terms of Chapter 5 of the National Environmental Management Act as amended (Act 107 1998) to carry out the following activities:

The Mandela Bay Development Agency would like to landscape and redevelop the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2). The proposed activities require a Basic Assessment in terms of the EIA Regulations (2010).

Type of Assessment: Basic Assessment

Locality: Erf 1031, Erf 576 and the Remainder of Erf 575, Humewood (approximate GPS co-ordinates: 33°58'23.17"S 25°38'45.70"E).

Interested and Affected Parties are invited to participate in the process by submitting detailed written comment within 40 days of this advertisement (10 December 2011) to:

Dr Mike Cohen
CEN Integrated Environmental Management Unit
36 River Road,
Walmer,
Port Elizabeth, 6070
Phone: (041) 581-2983 /
Fax: 086-504-2549
E-mail:
steenbok@aerosat.co.za

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and
(b) state—
  (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
  (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
  (iii) the nature and location of the activity to which the application relates;
  (iv) where further information on the application or activity can be obtained; and
  (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response

report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

- NMBM Human Settlements Directorate
- NMBM Environmental Management Sub-Directorate
- NMBM Infrastructure and Engineering Directorate
- NMBM Electricity and Energy Directorate
- Department of Water Affairs
- Department of Agriculture, Forestry and Fisheries
- South African Heritage Association (Cape Town office)
- ESKOM

The project was presented to the NMBM Corporate Environmental Task Team on 28 November 2011.

List of authorities from whom comments have been received:

- NMBM Human Settlements Directorate (Schalk Potgieter)
- NMBM Environmental Management Sub-Directorate (Godfrey Murrell and Jill Miller)
- Department of Agriculture Forestry and Fisheries (Theo Stehle)
- Comments were received/ queries raised at the CETT presentation from/by Abigail Kamineth, Stuart Beatty and Kithi Ngesi
- The Department of Water Affairs acknowledged receipt of the Draft BAR and have no comments

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	YES	NO

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

• Is there a possibility of re-developing the Kings Beach Lifesaving Club footprint to include a low impact commercial development node? Will such plans require a separate process or can this be included for consideration within the scope of this environmental assessment?
• Our interest extends to the modification of the dunes and building of a boardwalk within 100 m of the high water mark of the sea and in particular how this will affect sand shift around the Kings Beach Surf Lifesaving clubhouse and access levels to the existing paved courtyard (as well as any drainage requirements). We also need to understand the wider scope implications of the re-development of the parking areas and access to the adjacent grassed areas as well as level changes and any further storm water mitigation activities that may be planned around the skate park.
• As per our telephone conversation, I respond with this e-mail regarding the development on Kings Beach, and how it will affect our business. Please keep us informed of the development process that would happen around the Supertube area.
• Concern raised over boardwalk and dune modification proposal • What will be done to protect sand movement?
• Request to be registered as an I&AP
• Submitted several comments regarding mostly dune landscaping and modification: • There are a few protected trees on the site, viz. white milkwood (*Sideroxylon inerme*) and red milkwood (*Mimusops caffra*), which should be retained if possible. They may not be disturbed, damaged, destroyed or felled without a licence from the Forestry office in Port Elizabeth. Any applications should be directed to that office. • The landscaping of the strand plant foredune hummocks [according to the classification of Tinley (1985)] is regarded as highly undesirable, and should under no circumstances be allowed. Note is taken of the fact that the dune has apparently been constructed artificially to a certain height in the 1980's, and that the proposal is now to reduce their height to what it had been originally, to *inter alia* obtain sea-views. However, in this proposal consideration is apparently not given to the fact that foredunes are dynamic wind-shaped structures which are natural features on sandy shores above the high water mark, and that, regardless of how they were originally "constructed artificially", they have since, due to natural physical and biological forces and influences, developed into vegetated foredunes comparable to any such dunes formed by nature.

- Attached photographs of these dunes reveal that they are covered with typical indigenous strand vegetation found in the dynamic dune zone, vegetated with littoral species consisting of *i.a. Ehrharta villosa* ("pypgras"), *Ipomoea brasiliensis* ("seepatat"), *Agropyron distichum* (sea wheat), *Gazania* sp. ("gousblom"). This vegetation is rhizomatous or stoloniferous in nature with the characteristic of the former to continuously grow out above the accumulating sand, thereby forming crested dunes, and binding the sand that is wind-blown inland of the high water mark. Dune growth in this way is a natural process, which has undoubtedly occurred since the original sand dunes were formed artificially. (See photographs).
- It is foolish to interfere with this dynamic semi-stabilised foredune zone, as it is a natural(ised) eco-system that provides services free of charge by providing a natural and resilient buffer that absorbs and dissipates the energy of the sea and wind in a dynamic zone of semi-mobile sand. If this buffer was to be replaced by for example rigid structures like rock or concrete, or artificially stabilised vegetated soil, the energy of waves and wind would "collide" with these inflexible surfaces and create turbulence and eddies producing erosion and undermining of the structures created to protect the inland stable zone against these forces.
- In the light of increasing sea-levels through global climate change, it is very important to retain these dynamic buffer zones. They will absorb to some extent the forces exerted by storms. They are periodically eaten into by storm tides, removing sand, but during calm weather and seas they are again brought back to the shore by natural accretion processes. Any artificial interference with this process can only destabilize and disrupt this dynamic equilibrium, to the detriment of the development behind it.
- In this regard, reference is also to be made to the CSIR publication "Coastal Dunes of South Africa", Report No. 109, by Dr. K.L. Tinley, 1985.
- A process of colonization with more permanent indigenous dune vegetation consisting of woody shrubs and trees, e.g. *Rhus crenata* ("duine kraaibessie"), has started in the lee of the dunes as they are currently. These should be encouraged by establishing more of these species. The value of this natural shelter against winds from the sea, should outweigh the need to have a direct line of sight to the sea. The sea can easily be accessed by the accesses provided, and the system of proposed boardwalks along the dunes as they currently are, which is supported, should adequately provide in this need.
- The proposed landscaping of the dunes will not be permanent, for the natural sand accretion processes will prevail and will naturally revert back to building the dune higher, as has taken place in the past. It appears that the proposal has not considered this aspect. Once the dunes have been landscaped, they will not remain in such a state, and if they are stabilized with too permanent a surface, they will be damaged by the forces of the elements.
- In the light of imminent sea-level rises, it would be prudent, and should be enforced by the authorities responsible, to instead of expanding the artificial development in the direction of the sea, withdraw further inland and determine a setback line, as these developments close to the sea are

certain to be inundated by the sea in the not too distant future.
• Kings Beach was a Blue Flag status beach until end of 2009, when it failed to regain its flag due to deficiencies with the four ablution blocks and significant problems with beach management – largely due to not managing stormwater runoff from the carpark. • My/Blue Flag's interest in this project is to promote the redevelopment up to the standards of Blue Flag, so that the NMBM can re-apply, as is apparently its intention. Getting appropriate dune management is also key. As discussed please find attached a Blue Flag Report on some of the issues.
• Agree with issues identified in BID • Concern that Phase 1 commenced without an authorisation which may result in non-compliance issues
• Has the Parks Department been consulted? They are responsible for developing open space. • Will viewing decks on the access boardwalks fall in the inundation zone? • How many phases are planned for the greater beachfront development? Why is a piecemeal approach being taken? • Can this assessment deal with the current maintenance problems of the existing boardwalk along the remainder of the beachfront? • What has the original round of public participation covered and what has the response been so far? • Are there opportunities for local economic development in the proposal?
Comments on Draft BAR:
• Provision should be made for a multiple use recreational path which connects with the existing recreational path network of the city. Currently cyclists are prohibited from using the tarmac sec on by no cycling signs. Conceptual drawings of the proposed development indicate cycling facili es and this is to be welcomed. Single use paths and the current system of no cycling signage give rise to the potential for recreational conflict and mitigation measures for such potential conflict needs to be considered.
• With respect to the process, I note that the beach office was involved in design discussions. Is it possible to get information related to what they were asked to comment on as we would have thought there may be some input from our side particularly as the club house and tower will be directly impacted (this is not directly related to the EIA hence the reason I haven't included it under our main comments). If this falls outside your mandate, please advise whom I should be contacting to discuss this.
• With respect to Dean Biddulphs' comments, this is something the Life saving club has already been investigating (and which are quite advanced with respect to proposals), so with respect to the 2nd part of his question, would such plans require a separate process or does the EIA include for this within its scope?
• With respect to the EAP response to Kings Beach comments, if the dunes are not to be modified,

how will the club members continue to access the beach as the dune field extends itself across the access route to link with the existing dune adjacent? This appears to be natural phenomena that will not stabilize over time, only increase in magnitude (as has the height of the dune in front of the club tower).
• In addition, what mitigating process has been proposed to prevent the sand buildup that has gone on since the dunes were created in the current guise from swamping the club in future years? This is already happening on a regular basis due to natural sand movement phenomena and not just foot traffic across the dune which is a fairly recent event caused by sand covering the fences that were originally erected along the pathway to prevent access i.e. there was already sand overblow despite the dune vegetation being sufficiently stabilized which increased the hard core at the base of the dunes on the seaward side.
• We note the two boardwalks proposed and would like to be consulted by the relevant design teams with respect to exact route, levels and also details of the lookout point and its potential for use by life guard's during the course of their daily activities. In addition, we note no boardwalk or other access proposals for the MacArthur baths side of the beach which seems at odds with the municipalities stated aims to make the beach more accessible as currently this is a serious problem for anyone on crutches or in a wheelchair (the current concrete walkway ends with no steps and in addition the storm water runoff is eroding the beach further exacerbating the drop off). We note that mention is made of steps and gabion cages but the details on this do not appear to make allowance for disabled access. Although the report details that access 4 is the most heavily trafficked and main access to the beach, those aspects appear to have been ignored alongside what mitigation of storm water will occur there. The secondary issue of storm water from beneath the Mac Baths sea wall eroding the beach and thereby creating a sea gully does not appear to have been addressed in any way other than as a possible health hazard due high e-coli counts in an area children love to play in and which drains directly into the bathing area.
• The proposals for the tertiary wetland are of grave concern mainly due to two aspects: firstly, the level of this wetland would seem to be at odds with the current ground levels adjacent to the beach areas which would therefore possibly create a flooding potential for the club and ablution block adjacent should overflow not be captured by the wetland i.e. that water directed along the current access road. Do any sectional details exist for the proposed drainage detailing the collection and subsequent control of this additional water processing by the wetland area? The secondary aspect is the impact of this additional water run-off on the existing gully's that have been the cause of much trouble to the bathing public this summer. It is our understanding that Afri-Coast Engineers are in the process of carrying out a detailed shoreline study that should provide clarity on the impact of rising sea levels on the beach erosion and increasing flooding patterns that have seen the high water mark extend to the base of the dune system along virtually the entire beach length. In addition, we believe this report should also inform the proposed design of any storm water system as it is our contention that increased water flow from the car park via the various roadways

is leading to the increased erosion of sections of the beach and offshore sea bed.
• The proposals highlight that sand build up has caused problems with the storm water drainage system as originally designed at Point 5 but should also include Point 6 as any drainage at that point dams at the base of the existing concrete ramp due to sand build up creating a dam effect. We see no proposals that address this issue which will only increase should the adjacent dune not be reduced in size. It may be that the existing concrete ramp should be extended to the high water mark at the base of the dune system allowing easier maintenance access and assisting in managing the storm water drainage problem. We have in essence a man made system that now needs additional man made aspects to control it rather than returning the beach to what it had become by natural sand build-up following the extension of the harbour wall in the 1930's.
• The BAR mentions that the water quality in the artificial wetland must be monitored to determine the effectiveness of the system. Are there any other operational requirements such as maintenance of the artificial wetland?
• Who will be responsible for maintenance of infrastructure?
• The section in the BAR under Authority Participation should read: o NMBM Environmental Management Sub-Directorate o NMBM Infrastructure and Engineering Directorate o NMBM Electricity and Energy Directorate • The NMBM Economic Development and Recreational Services Directorate should possibly be registered as an interested and affected party, particularly Beaches, Resorts and Support Services

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

• The issue was discussed with the MBDA. There are opportunities for non-permanent structures to be set up and operate.
• Dunes will not be modified in the preferred alternative. • Two access boardwalks are proposed (refer to Figure 1 in Appendix A for relative positions): o One east of the Kings Beach Surf Life Saving Club's launch and access area where the public currently accesses the beach by walking over the dune. The boardwalk will extend from the existing paved areas landwards of the dune to the beach and has been designed to reduce the formation of further blow-outs and also to allow for sand movement beneath the boardwalk. Rehabilitation of the dunes surrounding the boardwalk will be suggested, as well as a system of long-term adaptive management, where a combination of maintenance (e.g. physically removing accumulated sand) and rehabilitation is suggested until the dune is stabilised. The dune in front of the club is unstable and slumps/shifts over paving and access areas partly because of its instability in this area. Part of the reason for the dune's instability is that people walk over it and trample vegetation, which leads to the formation of blowouts. By limiting foot traffic to a boardwalk and rehabilitating the area around it, it is

hoped that the dune will stabilise. o The second boardwalk is proposed at the position of the current access boardwalk. The same principles in designing the boardwalk as mentioned for the first boardwalk apply here • The boardwalks should not limit or interfere with access to the existing paved courtyard. • A stormwater management plan has been done by the consulting engineers (BVI) and a tertiary wetland has been designed by the architects. It is proposed to direct stormwater that currently flows directly onto the beach from the surrounding area (including the parking lot) to the tertiary wetland, from where it will slowly permeate into the underlying sandy soils and eventually to the coastal zone. This should assist in slowing down stormwater flow to the beach and resultant erosion, and improve the quality of stormwater which is currently poor.
• Splash Waterworld has been registered as an I&AP and will be kept informed of the process. The idea of proposed upgrade is to increase public usage of the area which should be a benefit to local businesses
• On-site discussions were held with Mr Murrell and Mr Griffiths of WESSA where they made several recommendations. These were used to guide the alternative proposal which is now the preferred alternative. The dunes will not be modified, and the boardwalk concept has been changed to two access boardwalks with viewing platforms. Recommendations have been included in this report to address sand movement.
• Noted and registered.
• The areas where the two access boardwalks are planned have no species that are protected in terms of the NFA. The areas that have been selected are currently used as access paths and are mostly denuded of vegetation apart from some *Tetragonia decumbens, Ehrharta villosa, Cyperus natalensis* and *Ipomoea pes-caprae* on the outer edges of the current access path (refer to Figure 10 in Appendix B) and some woody vegetation (e.g. *Aloe* sp.) at the landward extent of the boardwalk. Vegetation that has to be removed to construct the boardwalk will be used for rehabilitation • Dunes will not be altered in the preferred alternative. • Landscaping will be limited to areas on the landward side of the dunes (i.e. in existing park and pathway areas). Sections of the dune that were previously grassed will be vegetated with indigenous vegetation to naturalise the dunes. • Landscaping on dunes will be limited to rehabilitation of blow-outs that have been caused by current mismanagement and trampling of vegetation. Appropriate vegetation that occurs naturally in dunes will be used for this purpose. • The ecosystem services that the dunes provide is recognized and they will not be interfered with.
• The Blue Flag Report highlighted problem areas that led to the area losing its Blue Flag status. This information has been relayed to the applicant and will be included as mitigation measures in the assessment report. The project proposal will attempt to assist the beach in regaining Blue Flag

status
• Phase 1 did not trigger any listed activities in terms of the EIA Regulations (2010) and therefore did not require and environmental authorization. The matter has been discussed with the NMBM and DEDEA.
• The Director of Parks, Mr Tsietsi Mokonenyane, was sent a copy of the BID and notified via email of the proposed activities. • Yes • This project is not part of the greater Kings Beach Development plan that is proposed on private land and Transnet Land. • Unfortunately the existing boardwalk along the remainder of the beachfront cannot be included in this assessment since it is not within the study domain and is outside of the MBDA's mandate area • The original round of public participation was done in terms of Regulation 54 of the EIA Regulations (2010) and included: a. An advert was placed in The Herald and Die Burger b. Two site notices were placed on site c. BIDs were sent to neighbours within 100 m of the site, municipal and government authorities d. The Ward Councillor was notified • A copy of all responses received from Interested and Affected Parties is included in this table and in the section that follows • Yes, there is a possibility that non-permanent structures can be used for local economic development
Comments on Draft BAR:
• The query on cycle paths was sent to the project architects - a cycle path is part of a later phase of the project
• The Beach Office submitted comments in response to the Background Information Document (BID) that was circulated in the initial round of public participation. They submitted specific comment relating to the original proposal to build a boardwalk along and over the dunes, and to modify dune height to increase visual connectivity between the park area on the landward side of the dunes and the beach. This prompted on-site discussions, where it was suggested to rather build a limited number of access boardwalks at positions where pedestrians currently access the beach. The KBSLC also submitted comments on the BID which were considered in the Draft BAR.
• The matter was discussed with the project proponents. There are opportunities for local economic employment/businesses to set-up within the study area. Proposals do not form part of this environmental assessment. Whether a specific development would require an environmental assessment can only be determined with detailed project information (this is needed to check the list of activities published under GNR 544 to 546 of the EIA Regulations (2010)).
• The EAP's response referred to the original proposal by the MBDA to reduce the height of the dunes in the study area to promote visual connectivity between the park and the beach. The metro currently manages sand build-up on various sections of the beachfront (including the area in front of the clubhouse) in an attempt to protect structures and infrastructure and this will continue.
• We agree that sand movement is a natural phenomenon which will continue, and that foot traffic is merely an exacerbating factor (by destabilising dunes and promoting dune slumping). Impacts on

dune destabilisation that may result from the project proposal (specifically constructing boardwalks over the dunes) have been considered and mitigation measures have been suggested to avoid these (e.g. through boardwalk design and placement, and dune rehabilitation). The NMBM currently actively manages sand build up on various sections of the beachfront to protect infrastructure and structures, including sand accumulation in front of the club. Long term management is dependent on maintenance budgets. The metro is currently busy with an application to upgrade the promenade and build a sea wall on the section of the beachfront between McArthur Baths and the old 'tin hat' structure. It is proposed to use sand that has accumulated in front of the club to build the wall which will assist in maintaining access to the beach and protecting the club in the short term. Long term strategies include the following: a. Place geobags on the seaward side of the dunes to trap sand and prevent it from migrating landwards b. Implement a system of adaptive management where sand build-up is physically removed and dunes are stabilised (using geobags and by planting vegetation) until an equilibrium phase is reached c. Build access boardwalks and attempt to restrict foot traffic to these to prevent trampling of dune vegetation
• Detailed design drawings are included in Appendix C of the BAR. • The existing concrete beach access will be upgraded to include for a ramp and steps, which will be extended to below the general sand level of the beach in order to still provide the same level of access even with changes in sand levels. • The continuous stormwater flow to beneath the MacArthur Baths seawall will be reduced by channeling flow from The Beaches flats to the lake that is currently being constructed as part of Phase 1. In addition to this, a large potable water leak that contributes flow into the stormwater system has been located by the project team and will be remedied by the NMBM.
• General low-flow volumes of stormwater run-off will be detained in the wetland from where it will filter into the sand and/or evaporate. Higher volumes of flow will continue to flow onto the beach as in the current situation. However, the constant erosion that is happening on the beach will be reduced through stormwater attenuation, allowing the eroded areas to 'repair' (with the assistance of active management). Although the very flat levels along this area do not allow for fast flowing channelization away from the pond (overflow situation), the overflow will be drain towards the north-west behind the dunes, in-between the dunes and the super-tube facility. A shaped channel will be created behind the dunes, allowing stormwater to drain towards the natural wetland during flooding, although stormwater will still access the beach at the main access areas. By channeling flow towards the wetland, as well as access onto the beach at the main access points, it is attempted to prevent flow into the King's Beach SLC facility. It is also envisaged to reconstruct the main parking area with revised levels to drain stormwater away from the access areas adjacent to the lifesaving club buildings. By manipulating the levels of the main parking area, stormwater flow to points 7 and 8 will thus be drastically reduced.
• The preferred alternative is not to physically reduce the height of the dune because of the ecosystem services it provides. However, maintenance is required and continued access (especially for lifesaving activities) is necessary. As mentioned earlier, sand build-up in the affected area is managed by the metro and will be further reduced by utilising sand for building a sea-wall in

a separate project (should this be authorised by DEDEA). Long term measures to reduce sand build-up have been suggested above.
• Yes, the quality of the water will be an indicator of whether the wetland needs maintenance – for example it may be necessary to replace wetland plants after some time if the system becomes clogged.
• The project is an MBDA initiative. However, maintenance will be the responsibility of the NMBM. The MBDA is trying to source an independent budget to manage their development projects.
• Noted and corrected, thank you • Godfrey Murrel and Tony Knott from the Beach Office and Tsietsi Mokonenyane of the Parks Department have been included in public participation.

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

Planning and Design Phase:
Alternative (preferred alternative)

Direct impacts:
none
Indirect impacts:
none
Cumulative impacts:
none

Construction Phase
Alternative (preferred alternative)

Direct impacts:
Negative:

- **Impacts on coastal ecology:**

Generally, potential impacts of construction on vegetation include damage to, or destruction of, indigenous vegetation and potential loss of intact communities or species of conservation significance, as well as the possible introduction of alien species. Typical coastal dune vegetation is found in the area where the boardwalks are proposed (e.g. *Tetragonia decumbens, Ehrharta villosa, Cyperus natalensis, Thinopyrum distichum, Arctotheca populifolia, Gazania rigens, Carpobrotus* sp. *and Ipomoea pes-caprae*) with some woody species occurring on the lee side of the dunes (e.g. *Aloe* spp, *Rhus* spp, *Mimusops caffra, Brachylaena discolour, Osyris compressa, Tarchonanthus camphorates, Chrysanthemoides monilifera, Carissa bispinosa, Tecoma capensis* etc). Alien vegetation and garden plants have encroached sections of the dunes especially on the lee side (e.g. *Agave sisalana, Acacia cyclops*). The first boardwalk is largely positioned in areas that have been

denuded of vegetation, while the second boardwalk is planned in an area where a boardwalk currently exists. One of the reasons for the construction of the boardwalk is to restrict foot traffic to the boardwalk only and prevent trampling of dune vegetation and the formation of blow-outs that is currently happening. Vegetation that has to be removed to construct the boardwalk will be used in rehabilitation. The tertiary wetland is planned on a grassed lawn area east of the Supertubes. Other project activities will occur on existing paved areas/built landscapes and will not result in the loss of indigenous vegetation. A significant loss in floral species and disturbance to plant communities is not anticipated. *Mimusops caffra* is protected under the National Forest Act – no specimens were observed in the area where the boardwalks are planned.

Impacts associated with fauna primarily relate to disturbance and the loss of habitat and the limitation of free movement. The study area is subject to anthropogenic impacts and is in a highly urbanised area; therefore a high diversity of fauna is not expected. Small mammals and coastal birds utilise the dune area where boardwalks are proposed and there is a possibility that they may be disturbed during construction. However, it is expected that fauna in the area are accustomed to human and vehicle activity. The disturbance footprint in the preferred alternative is relatively small (i.e. restricting the boardwalk to two access boardwalks only and not reducing dune height reduces disturbance in the dunes), and there is sufficient area for fauna to relocate to in construction phase. Mitigation measures will be suggested below to reduce disturbances to coastal fauna by vehicles and general construction activities.

There are no critical biodiversity areas or ecological process areas that traverse the site according to the NMBM MOSS Plan (2009). The ECBCP (2007) classified the site as 'towns and settlements'. These areas are therefore suitable for consideration of development and impacts on biodiversity processes and ecological connectivity are not anticipated.

Based on the above, significantly negative impacts on coastal ecology are not expected. However, the following impacts must be considered in construction phase (mitigation measures will be given below to prevent these from occurring):

1) Construction vehicles and machinery may disturb or kill fauna, especially reptiles and birds.
2) Dune vegetation outside of areas proposed for development may be trampled by construction workers
3) Cooking on open fires creates a fire risk, which could impact on flora and fauna
4) Disturbance may create opportunities for the introduction of alien vegetation

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	Long term	Probable	Low -	Low – (alien vegetation and garden plants are encroaching on dune areas. The public is accessing the beach over dunes in an

				uncontrolled manner leading to vegetation trampling and the formation of blowouts).
Alternative 1	Short term	Probable	High -	Moderate -
Preferred alternative	Short term	Probable	Moderate -	Low – (with possible + impacts because of reduced vegetation trampling and improved dune stabilization)

- **Noise:**

Noise will be created during construction phase by machinery and construction staff. This may impact on fauna (mostly coastal birds) and surrounding land users (residents and persons visiting the beach). The surrounding area is highly urbanised and currently experiences noise from traffic, people utilising recreational areas, sporting events, harbour activities etc). The severity of the impact can be reduced to low significance by limiting the working hours of construction staff to between 07:00 and 17:00 and weekdays only; ensuring that construction vehicles adhere to speed limits and are in sound working order; and educating staff about the sensitivity of the area and the need for sensitive work methods.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Alternative 1	Short term	Probable	Low -	Low -
Preferred alternative	Short term	Probable	Low -	Low -

- **Air Quality impacts (dust):**

As vegetation is cleared and soil is exposed in construction phase, the potential of dust creation increases. Increased wind speeds will exacerbate the problem, especially considering the exposed nature of the site. Dust may affect the visual and air quality of the area, and will impact on recreational users and possibly residents in the area. Mitigation measures will be given that should prevent dust creation.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Alternative 1	Short term	Probable	Moderate -	Low -
Preferred	Short	Probable	Moderate -	Low -

alternative	term			

- **Surface and ground water impacts (erosion and contamination)**

Surface water runoff currently drains to the beach and collects in a depression in front of the dunes. During heavy rainfall, stormwater channels down the existing access to the beach near the parking lot, eroding the dunes and potentially contaminating the coastal zone (e.g. stormwater picks up pollutants along its flow path such as hydrocarbons, oils, pathogens, metals etc). The management of stormwater and prevention of erosion of dunes and coastal infrastructure at the site was raised as a concern in the Blue Flag Status review document.

During construction phase, surface water may be contaminated by materials associated with construction (e.g. cement, fuel). Since the coastal zone is the ultimate receptor of stormwater flow from the site, this would be a high impact. Mitigation measures will be suggested below to reduce the possibility of this impact from occurring.

As vegetation is removed and sediment disturbed in construction phase, there is an increased chance of erosion occurring. This is particularly important in the dunes where boardwalks are proposed. As mentioned under biodiversity impacts, the first boardwalk is positioned mostly in an area where vegetation is denuded and a blowout has formed because of destabilisation from foot traffic; while the second boardwalk is positioned in an area where a boardwalk exists. Sediment in these areas is currently disturbed and the dunes are slumping landwards. It is important that construction activities do not exacerbate this problem. Mitigation measures will be suggested below to avoid further dune destabilisation.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	Long term	Probable	Moderate -	Moderate – (dunes are slumping and blowouts have formed due to vegetation trampling)
Alternative 1	Long term	Probable	High -	Moderate -
Preferred alternative	Long term	Probable	High -	Low -

- **Dumping of building rubble and other construction wastes**

A common construction impact is poor waste management, resulting in dumping of rubble and other wastes in open space areas. It is vital that all solid waste be removed from site to a registered waste disposal site. If properly controlled, this impact would be of low significance.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Alternative 1	Short term	Probable	High -	Low -
Preferred alternative	Short term	Probable	High -	Low -

- **Destruction of and/or disruption to heritage and/or cultural resources**

Dr Binneman did a Level 1 Archaeological Impact Assessment (AIA) of the site (report attached as Appendix D). His report concluded that the site is of low cultural sensitivity and it is unlikely that any archaeological heritage remains will be found. A letter of recommendation was written to exempt the site from undergoing a full Phase 1 AIA. The report has been forwarded to SAHRA. No impacts are therefore predicted.

- **Socio-economic impacts (e.g. tourism and recreational users)**

It is estimated that construction will take 10 months in which time the recreational use of the area will be affected. However, the upgrade is necessary to improve the recreational facilities and the intention is to promote increased usage by the public. Phase 1 of the project should be complete d and the beach area will be unaffected. Access to the beach will not be affected as existing paths will remain open. It is not expected that businesses in the immediate area (e.g. Splashworld, beachfront traders) will be effected since these facilities fall outside of the construction area. However, mitigation measures will be included below to prevent impacts on the socio-economic environment.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Alternative 1	Short term	Probable	High -	Low -
Preferred alternative	Short term	Probable	High -	Low -

Positive:

Employment creation: construction phase will generate ~60 short-term jobs (i.e. for 10 months). Local businesses will also benefit from supplying materials.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	Long term	Probable	Moderate -	Moderate -
Alternative 1	Short term	Probable	Moderate +	High +
Preferred alternative	Short term	Probable	Moderate +	High +

Indirect impacts:
None
Cumulative impacts:
None

Mitigation Measures
Coastal ecology:

- During construction phase, work areas must be clearly demarcated with danger tape so that construction workers limit their impact to these areas alone.
- Foot traffic over dunes must be discouraged to avoid trampling of vegetation and the formation of blowouts
- In areas to be disturbed, indigenous vegetation must be removed and stored in a nursery area for site rehabilitation. Any necessary permits must be obtained prior to the removal of protected and threatened species
- All construction vehicles must stay on single demarcated access tracks to avoid compaction of soil and roots. Vehicles must not be allowed in dune areas.
- A rehabilitation programme for cleared areas around structures must be developed and implemented
- Rehabilitation should be undertaken in a progressive manner. Re-vegetation of the disturbed areas with indigenous material should be undertaken as soon as construction activities at an individual site have been completed.
- Until such time as vegetation has established, temporary soil stabilization measures must be used. These can include the use of gravel bags, straw and other matting materials, hay bales, siltation fences, sedimentation basins, grassy swales, hydro-seeding, and straw mulching.
- Only indigenous vegetation that occurs naturally on site is to be planted in site rehabilitation and in landscaping activities
- All alien vegetation and garden plants must be removed from site and a maintenance programme for continual removal and/or follow-up actions must be developed
- Provide an information programme for contractors and site staff about the need to conserve the fauna and flora of the area. All construction staff must receive training

on environmentally safe work methods.
- Safe cooking areas must be provided for staff and no open fires must be allowed on site

Noise:
- All construction vehicles must be in sound working order
- The normal municipal by-laws with regards to noise control must apply
- Construction staff must be informed about the ecological sensitivity of the surrounding area, as well as the sensitivity of neighbours and recreational users to noise.
- Use should be made of local labour
- As far as practically possible, construction times must be limited to low tourist seasons, and should not occur on weekends or public holidays

Dust:
- Prompt rehabilitation and wetting down of recently cleared areas should minimize dust creation
- All work must stop during high wind conditions
- Construction vehicles must adhere to speed limits
- If fine building materials/sands are to be transported at the back of trucks, they must be adequately covered

Stormwater management and erosion:
- Disturbance and clearing of natural vegetation should be kept to the minimum required for construction.
- Newly cleared and exposed areas must be promptly rehabilitated with indigenous vegetation to avoid erosion. Where necessary, temporary stabilization measures must be used until vegetation establishes.
- Minimise the total amount of bare soil exposed to erosive forces by (1) controlling the amount of ground that is cleared at one time in preparation for construction, and (2) limiting the amount of time that bare ground may remain exposed before rehabilitation measures are put into place
- During construction phase, all soil stockpiles should be located on level areas, which are not susceptible to erosion and at a suitable distance from drainage areas. Where possible stockpile sites should be located on already disturbed areas where the site rehabilitation programme will be beneficial after all work has been completed. If necessary, stockpiles should be surrounded by silt curtains or some stabilizing measure.
- Soil stockpiles must not exceed 1.5 m in height and should not be stored for longer than 6 months. If alien material sprouts in stockpiles, this should be removed immediately.
- Overburden must not be mixed with topsoil stockpiles. Topsoil should not be stripped or stockpiled when wet, as compaction will occur.

- Sediment fencing should be erected downslope of all stockpiles to intercept any sediment, and upslope runoff should be diverted away from stockpiles.
- Plan for the worst case, that is, for heavy rainfall and runoff events, or high winds.
- Appropriate erosion control measures must be implemented on and adjacent to the access tracks and all construction areas and a monitoring programme established to ensure that no erosion is taking place. At the first sign of erosion the necessary remedial action must be taken.
- Care must be taken to ensure that runoff is well dispersed so as to limit erosion.
- Special attention should be paid to storm water control over the site. Site drainage must prevent ponding near structures and roads, and ensure that uncontrolled surface run-off does not encourage unwanted surface erosion and scour. Erosion control is particularly important in the dunes and in areas where stormwater flow is directed to coastal areas.
- When constructing erosion-control structures, it is important that the structure should trap silt, but allow for continued flow of water. Solid structures divert, rather than slow down, water flow. The effect of water diversion is to initiate a new erosion area/donga. This must be avoided.

Surface and groundwater contamination:

- Ensure all construction machinery is in sound working order to prevent oil leaks and excessive exhaust fume emissions.
- No rock, silt, cement, grout, asphalt, petroleum product, timber, vegetation, domestic waste, or any deleterious substance should be placed or allowed to disperse into the surrounding area
- Establish a site office where materials are stored and waste is managed
- Generators and fuel supply needed for equipment during the construction phase must be placed on trays, which rest on clean river sand. This is to prevent any oil or fuel spills. The river sand (clean or contaminated) must be removed from the site once construction has been completed. All contaminated material must be disposed of at a registered waste disposal facility
- No cement or concrete should be mixed on the soil surface or within drainage lines. Cement mixers must be placed on large trays to prevent accidental spills onto the soil surface.
- If any spills occur, contaminated material must be removed immediately to an appropriate registered waste disposal site
- No vehicle must be re-fuelled, serviced or repaired on the construction site, except in designated areas
- No fuel is to be stored on site.
- Toilet facilities must be made available to construction staff
- Adequate waste disposal bins must be positioned on site. These must be properly secured and covered to prevent scavengers from tipping them.
- Educate all construction staff on sound environmental work practices.

Dumping of building rubble and other construction wastes:

- All building rubble and other construction wastes must either be recycled (i.e. used on site in the building process) or removed from site to a registered waste disposal site. Environmentally acceptable work practice methods will be built into the contractor's code of conduct that will include the importance of good housekeeping on site. A suitably qualified company will conduct construction audits during which dumping will be strictly monitored.
- Litter must be controlled during construction – adequate bins must be made available on site at all times. These must be made scavenger proof and must be emptied on a regular basis.
- Prior to site closure, all building rubble and other wastes must be removed from site
- Construction materials stored at the camp site must be secured – i.e. plastics must be covered to prevent being blown off site. Skips must be regularly emptied and must be covered
- Any hazardous materials that need to be stored on site must be done so under lock and key

Destruction and/or disruption of heritage resources

- A Phase 1 Archaeological Heritage Impact Assessment was done by Dr Johan Binneman (attached as Appendix D). The recommendations of his report are included as mitigation measures below:
    - Although it is unlikely that archaeological remains will be found in situ, or of any contextual significance there is always a possibility that human remains and/or other archaeological and historical material may be uncovered during the development. The property is situated in the sensitive coast zone where shell middens are expected to be found. Such material must be reported to the nearest museum, archaeologist or to the South African Heritage Resources Agency if exposed, so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to remove/collect such material

Socio-economic impacts

- Use must be made of local labour and materials sourced from local suppliers
- Access to the beach must not be prevented
- Consideration must be given to surrounding businesses (especially Splashworld and the beachfront traders) and their normal business operations must not be interfered with during construction. This includes allowing safe access for the public to their businesses
- As far as practically possible, construction should occur out of high tourist seasons and no work should take place on weekends and public holidays

Operational Phase

Alternative (preferred alternative)

Direct impacts:

- **Biodiversity impacts:**

As mentioned under construction impacts, the site is not part of any critical biodiversity areas or ecological process areas in the NMBM MOSS plan or the ECBCP (2007), therefore long term impacts on ecological connectivity or biodiversity processes are not expected to be significant. Assuming successful stabilisation around the boardwalks, and that landscaping is done using appropriate coastal vegetation, a positive impact on biodiversity is expected in the long term. Limiting beach access to the boardwalks only should allow dune vegetation to stabilise, and small fauna and birds that utilise dune areas will be less disturbed. Part of the proposal is to re-vegetate areas that were previously landscaped as lawns with natural coastal vegetation, thereby increasing habitat for fauna and biodiversity pattern. The planned wetland that is designed to attenuate and filter stormwater will create additional natural areas that can be used by birds in particular. Mitigation measures will be suggested below that includes an adaptive management approach to assist with stabilising dune vegetation and management of sand. A positive impact on biodiversity is expected, provided that dune rehabilitation after installation of the boardwalks is successful.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	Long term	Probable	Moderate -	Moderate – (alien vegetation and garden plants are encroaching dune vegetation; trampling of dune vegetation has formed blow outs and dune slumping)
Alternative 1	Long term	Probable	High -	High – (reduction of dunes would have resulted in the loss of

				valuable ecosystem services provided by the dunes (e.g. protection buffer from storm surges and salt spray))
Preferred alternative	Long term	Probable	Low +	Moderate +

- **Sediment dynamics**

Kings Beach has been accreting since the construction of the harbour in 1929 due to the entrapment of sand that is transport via littoral drift in a northerly direction. The beach is in a constant state of flux with sand being deposited by waves in calm conditions, and eroding in high wave conditions. The current dunefield along the Kings Beach area was partly created by human intervention where sand was trapped by using bags, plastic lining and other materials. Irrespective of their 'artificial' creation, dunes at Kings Beach now function as a natural system and provide vital ecosystem services to the surrounding area and community. The dunes consist of a primary and to an extent, secondary dune system, the latter being stabilised on the lee side by woody vegetation. The frontal/primary dunes are relatively mobile/dynamic and are colonised by plants that can grow through moving sand (e.g. *Ipomoea pes-caprae, Ehrharta villosa*).

Foot traffic over sensitive dunes leads to trampling and destruction of sand-binding vegetation and the formation of blow-outs (refer to Figure 9 in Appendix B). This, in turn, leads to wind-blown sand being deposited on or against structures and infrastructure. The municipality has to actively manage the accumulation of wind-blown sand on pathways and against the Kings Beach Life Saving Club. One of the key motivating factors for the construction of an access boardwalk is to limit foot traffic over dunes in an attempt to improve the current situation.

Boardwalks over dunes can result in altered sand movement in the area around the structure, which can lead to sand accumulation on the boardwalk and unnecessary maintenance costs, as well as local areas of erosion and further dune destabilisation.

The primary impact that boardwalks may have on dunes is preventing the free movement of sand, especially in the mobile/dynamic zone. Since the intention of the boardwalk is to protect the dunes from uncontrolled access by humans and resultant vegetation trampling and dune erosion, care must be taken to design the boardwalk correctly to avoid further impacts. Natural sand migration can be allowed to continue by building the boardwalk high enough to allow for sand movement to continue. Research shows that the passive impacts of boardwalks on dunes are relatively low if sand is allowed to migrate beneath them; however maintenance issues are of greater concern. This is one of the reasons why the first boardwalk alternative was discarded – i.e. the positioning of the boardwalk along the dune parallel to the beach presented much greater maintenance risks than 2 access boardwalks perpendicular to the coast.

Mitigation measures will be suggested to prevent the chance of sand build-up on the surface of boardwalks.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	Long term	Probable	High -	High – (uncontrolled access to the beach results in blowouts and dune slumping. This has significant maintenance issues for the NMBM)
Alternative 1	Long term	Probable	High -	High – reducing the height of the dunes would impact on the dynamic coastal interactions (i.e. removing a section of the dune would rob the beach of a source of sand that is needed to replenish the beach in times of high wave events. This may lead to beach erosion). The original alignment of a continuous boardwalk through the dunes parallel to the coast would also create unacceptable maintenance costs for the NMBM.
Preferred alternative	Long term	Probable	Low +	Moderate + (reduced erosion and dune slumping is expected if the boardwalk is properly designed and adaptive management is followed)

- **Visual impacts**

Upgrading the area can only be seen as a positive visual impact.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	Long term	Probable	Moderate -	Moderate – (alien vegetation and garden plants detract from the visual quality that would be provided by a more natural system; poorly maintained structures and infrastructure further degrades visual quality)
Alternative 1	Long term	Probable	Moderate +	High +
Preferred alternative	Long term	Probable	Moderate +	High +

- **Stormwater Management**

BVI engineers have investigated stormwater management methods of the stormwater catchment influencing the King's Beach Development Node and the management of said stormwater within this area (report attached as Appendix D). The report considers stormwater management of the full study area including Phase 1 and 2, as well as possible future phases. A pond is being built in Phase 1 that will have a storage capacity of 3240 m^3 of which 144.6 m^3/day will be extracted daily and replaced by new water. A stormwater retention area/artificial wetland is planned for Phase 2 adjacent to the Supertube area. Low flow, which normally discharges onto the beach via the existing access between the lifesaving club and the supertubes, will be re-directed to the wetland and allowed to dissipate into the sand, evaporate or be discharged into a northern direction towards the natural stream area. For this purpose a natural channel (already formed in part) will be created behind the secondary dune system in allowing the retained water to drain to the north. The grassed surfaces will also assist in removing pollutants from the stormwater.

Although most of the parking area drains towards this point at present, the drainage slope is extremely flat. During future phasing of the project the whole parking area is to be redesigned to include for the parking area to be re-shaped. A large section of the parking will then drain towards the artificial wetland, with a further section being sloped towards the natural stream to the north and only a relatively small part of the parking draining to **the** access area mentioned in the paragraph above (refer to Point 7 in Layout 1 of the report). It is also proposed to include bio-retention areas in the islands within the parking area to treat the flow from the parking area before being discharged towards Point 7 and the stormwater retention area.

The existing beach access adjacent to McArthur Baths (refer to Point 4 in Layout 2 in the report) will be upgraded by replacing the existing broken concrete pathway with a new concrete pathway, as well as steps onto the beach and erosion control for any stormwater discharging at this point. The erosion control will include gabion structures to stabilise the movement of sand over this access and the wash-out occurring as a result of the stormwater discharge. No additional stormwater will be discharged to this point.

The improved management of stormwater flow and quality as suggested in the specialist report by BVI is seen as a positive impact for the area.

Impact	**Duration**	**Probability**	**Significance without mitigation**	**Significance with mitigation**
No-go option	Long term	Probable	High -	High – (management of stormwater is poor resulting in erosion and poor water quality on the beach)
Alternative 1	Long term	Probable	Moderate +	High +
Preferred alternative	Long term	Probable	Moderate +	High +

Indirect impacts:

- **Socio-economic impacts**

Kings Beach has been identified as a major node along the southern beachfront for recreational development. Upgrading facilities and improving safety and beach access should greatly assist in

increasing the number of beach users, and will improve the aesthetics of the area. This should result in an increased clientele basis for local businesses and possibly an improvement in property values. The upgrade will also add to the tourism value of the beachfront. The proposal includes opportunities for local economic development (e.g. through the establishment of impermanent structures by local traders).

Kings Beach has lost its Blue Flag status for a number of reasons, including poor management of stormwater, erosion of structures and infrastructure especially at the ablution facilities and near the Life Saving Club. This has implications for tourism, especially international tourists who are more inclined to visit a beach if it has Blue Flag status. The improved management of stormwater in this proposal will greatly assist in attenuating flow and reducing erosion, as well as improving the quality of stormwater that ends up on the beach. It is suggested that the Development Agency makes budget available for the improvement of ablution facilities and other areas highlighted as needing repair in the Blue Flag Pilot Beach inspection. The project's contribution to assisting Kings Beach in attaining Blue Flag status is viewed as highly positive.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	Long term	Probable	High -	High -
Alternative 1	Long term	Probable	Moderate +	Moderate + Moderate – (if dunes were to be reduced in height, the protective function that they provide to landward areas would be lost – this is a negative social and possibly economic impact)
Preferred alternative	Long term	Probable	Moderate +	High +

Cumulative impacts:
Negative:
None expected

Positive:
The MBDA has commenced with upgrading a portion of the Kings Beach area which includes the construction of a lake and various landscaping activities (Phase 1). This proposal will build on the efforts made so far in Phase 1 and together will collectively promote improved recreational usage and tourism opportunities of the area. Improved stormwater management will assist in improving water quality that flows to the beach, and should assist in Kings Beach attaining Blue Flag status. This will further aid in increasing

tourism potential of the area. Studies to determine the carrying capacity of the southern beaches of Port Elizabeth have shown that only certain beaches are highly used, while others are underutilised (e.g. Kings Beach). Some of the reasons for underutilisation are safety, and lack of facilities. The proposed upgrade will assist in 'spreading out' recreational usage along the beaches, and which will reduce impacts at other beaches that are currently over-utilised.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	Long term	Probable	High -	High – (if the area is not upgraded, a valuable tourist area will be underutlised. If stormwater is not managed, coastal water quality will continue to deteriorate).
Alternative 1	Long term	Probable	Moderate +	Moderate +
Preferred alternative	Long term	Probable	Moderate +	High + (the inclusion of an artificial wetland in the prefer alternative improves stormwater management)

Mitigation Measures:

Direct Impacts

Biodiversity:

- To avoid litter in the dunes and other open areas, provision must be made for sufficient bins, including on the walkway and especially at areas where there are benches. Refuse bins must be maintained
- Landscaping must be done with indigenous plants only that would naturally occur on site. Use can be made of species removed in the search and rescue operation during construction phase. Existing alien vegetation and garden plants that are not indigenous should be removed from the area.
- A rehabilitation plan for dunes, especially areas where blow-outs have formed and around boardwalks must be done by a suitably qualified specialist. The plan must be adaptive in nature, where long-term monitoring is done.
- Education boards should be placed at strategic points to inform the public about local environmental conditions and how they can be a part of continuous improvement of the system.

Sediment Dynamics:

- Spacing between planks must be sufficient for sediment to pass through rather than accumulate
- The boardwalk must be high enough to allow sand to pass under it. This must be determined on site taking into consideration the height of the stabilized secondary dunes and the mobile frontal dunes.
- The architect has aligned the boardwalk to reduce exposure to sand build up by using the natural contours of the dune and considering the dominant wind direction
- Geobags must be placed on the seaward side of the dunes to trap sand and prevent it from migrating landwards – this will assist in protecting landward structures and infrastructure from being inundated by sand.
- A system of adaptive management will have to be used to prevent sand build up on boardwalks and to avoid dune erosion in the vicinity of the structures. This will include vegetating the areas around the boardwalk using appropriate vegetation (i.e. depending on if you are vegetating the frontal or secondary dune system), and physically removing accumulated sand until a relatively stable scenario is achieved.
- Special consideration must be given to sediment build-up in front of the Kings Beach Life Saving Club. The proposal must not allow important access points for the club to be closed or compromised in any way.

Stormwater Management:

- Recommendations as per BVI's report must be implemented
- Water quality in the artificial wetland should be monitored every two months to determine its effectiveness in filtering stormwater
- Vegetation in the wetland should consist of species that would naturally occur in wetlands/dune slacks in coastal area.

Indirect Impacts

Socio-Economic Impacts

- Local economic development opportunities must be identified
- Funds must be made available to assist in the upgrade of facilities highlighted in the Blue Flag evaluation report

3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Two layout alternatives and development concepts were considered. The preferred alternative

presents minimal negative impacts that are mostly of short term duration (i.e. limited to construction phase), and significantly positive socio-economic impacts in operational phase. The table below summarises the predicted impacts by giving their significance rating and the likely duration of the impact **with mitigation measures** in place:

Impact	Construction phase		Operational Phase	
	No-go	Preferred alternative	No-go	Preferred alternative
Coastal ecology/biodiversity	Long term, Low -	Short term, Low -	Long term, Moderate -	Long term, Moderate +
Noise	No impact	Short term, Low -		
Air quality (dust)	No impact	Short term, Low -		
Surface and groundwater impacts (erosion and contamination)	Long term, Moderate -	Long term, Low -		
Stormwater management			Long term, High -	Long term, High+
Sediment dynamics			Long term, High +	Long term, Moderate +
Waste management	No impact	Short term, Low -		
Archaeological impacts	No impact	No impact		
Visual Impacts			Long term, Moderate -	Long term, High +
Socio-Economic Impacts (tourism and recreational users)	No impact	Short term, Low -	Long term, High -	Long term, High +
Socio-Economic Impacts (employment opportunities)	Long term, Moderate -	Short term, High +		

Cumulative Impacts:

The MBDA has commenced with upgrading a portion of the Kings Beach area which includes the construction of a lake and various landscaping activities (Phase 1). This proposal will build on the efforts made so far in Phase 1 and together will collectively promote improved recreational usage and tourism opportunities of the area. Improved stormwater management will assist in improving water quality that flows to the beach, and should assist in Kings Beach attaining Blue Flag status. This will further aid in increasing tourism potential of the area. Studies to determine the carrying capacity of the southern beaches of Port Elizabeth have shown that only certain beaches are highly used, while others are underutilised (e.g. Kings Beach). Some of the reasons for underutilisation are safety, and lack of facilities. The proposed upgrade will assist in 'spreading out' recreational usage along the beaches, and which will reduce impacts at other beaches that are currently over-utilised.

			Long term, High – (if the area is not upgraded, a valuable tourist area will be underutlised. If stormwater is not managed, coastal water quality will continue to deteriorate)	Long term, High + (the inclusion of an artificial wetland in the prefer alternative improves stormwater management)

No-go alternative (compulsory)

The no-go alternative assumes the site remains as is – i.e. a beachfront area within a prime node identified in structural plans, with limited and degraded recreational facilities. The area is unsafe and underutilised as such. The site does not have any environmental issues that make it fatally flawed from consideration of low-impact recreational activities (i.e. there are no critical biodiversity areas in the NMBM MOSS Plan or the East Cape Biodiversity Conservation Plan). The current environment does not attract a large number of tourists or recreational users, and presents little opportunity for local economic development initiatives. Stormwater is poorly managed and is eroding portions of the dunes as it flows onto the beach, and is also deteriorating coastal water quality which is one of the reasons why Kings Beach lost its Blue Flag status. Uncontrolled access occurs over the dunes at Kings Beach, resulting in trampling of vegetation and the formation of blow-outs. This is accelerating sediment accumulation on structures and infrastructure on the landward side of the dunes and unnecessary maintenance costs.

SECTION E. RECOMMENDATIONS OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES	NO
Is an EMPr attached?	YES	NO

The EMPr must be attached as Appendix F.

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

- All mitigation measures listed in this report should be contained in an authorisation
- Dune rehabilitation must be an ongoing process where a system of adaptive management is used to prevent the formation of blowouts and reinstate natural dune vegetation
- Efforts must be made to stabilise dunes on the seaward side by using geobags to trap sand and prevent it from migrating landwards. This is necessary to protect important structures and infrastructure and maintain beach access for essential services (e.g. the Kings Beach Surf Lifesaving Club)
- Efforts must be made to address the shortcomings of current facilities at Kings Beach as highlighted in the Blue Flag status evaluation report to assist in the area regaining its status
- Monitoring of stormwater quality in the artificial wetland is suggested to determine its effectiveness. The wetland must be maintained/managed to ensure its long-term functionality.
- Opportunities must be sought for local economic development initiatives in the area

SECTION F: APPENDICES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information

Appendix A: Site plan(s)

- **Figure 1: Preferred Site Plan**

KINGS BEACH Port Elizabeth

sketch plan scale 1:500

0 2.5 5 50 100

EARTHWORKS LANDSCAPE ARCHITECTS

- **Figure 2: Initial Layout Plan**

KEY

- PROPOSED PAVING
- COBBLE PAVING
- TREES IN GRASS AREAS
- TREES IN PAVING
- REEDS

KINGS BEACH
PHASE 2

Landscape Sketchplan
Scale: 1:750 DWG: KB-LS2-00
Date:OCTOBER 2011

0 25 50 M

NORTH

EARTHWORKS
landscape architects

Appendix B: Photographs

Figure 1: A view of the area in front of the Supertubes after heavy rainfall.

Figure 2: A view of the current access path to the beach that runs south of the Supertubes after heavy rainfall.

Figure 3: A view of the access to the beach on the seaward side. Note attempts that have been made to prevent erosion and stabilize dunes using sandbags.

Figure 4: A photo of stormwater channeled onto the beach in front of the access path. Note fencing in front of dunes to assist in plant colonization and stabilization by discouraging foot traffic.

Figure 5: The area directly adjacent to the fence on the beach side was a constructed paved path 6 months prior to this photo.

Figure 6: A view of the area adjacent to the Supertubes where the artificial wetland is proposed.

Figure 7: A view of section of the area where Boardwalk 1 is proposed. The area is mostly denuded of vegetation and is used as an access path.

Figure 8: The area where Boardwalk 1 is planned is flanked by typical foredune vegetation (e.g. *Tetragonia decumbens, Ipomea pes-caprae, Ehrharta villosa, Gazania rigens* etc.).

Figure 9: A view of an existing boardwalk in the area where Boardwalk 2 is proposed.

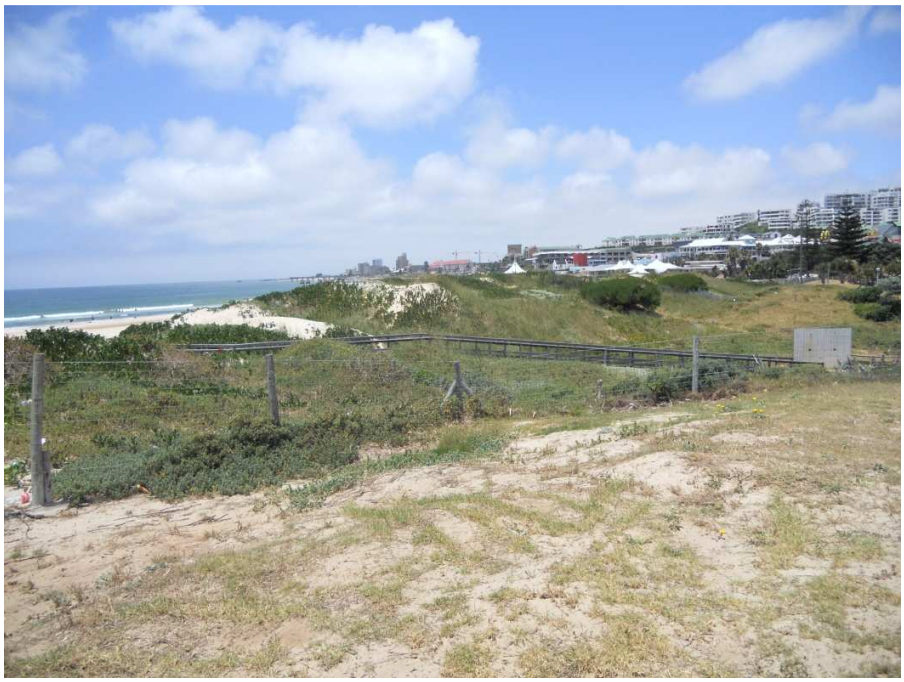


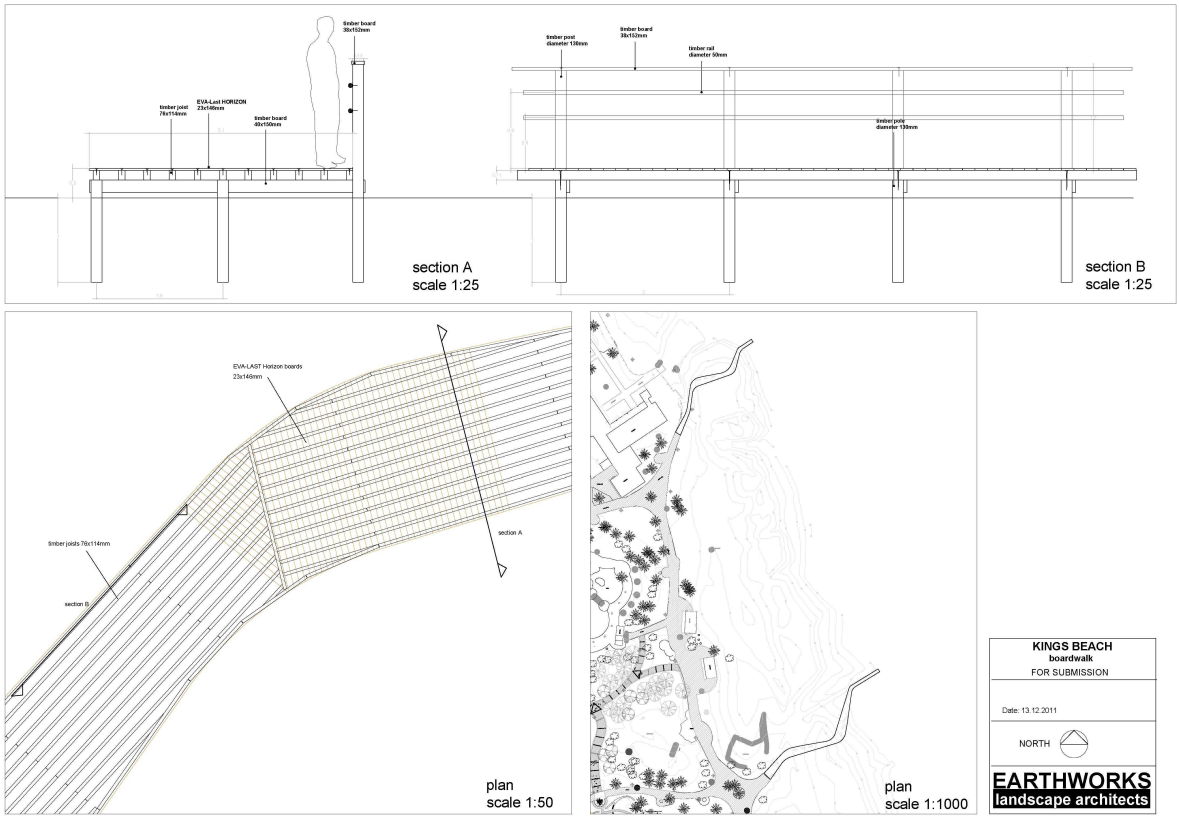
Figure 10: A view of the landward side of the existing boardwalk at the area proposed for Boardwalk 2. Note the more dense vegetation on the lee side of the dunes which also is woodier in nature.

Figure 11: A view of the skatepark that will be upgraded.

Figure 12: A view of existing landscaped and paved areas that will be upgraded. The dune in the foreground has been grassed. It is proposed to reinstate natural dune vegetation.

Appendix C: Facility illustration(s)

- **Figure 1: A schematic plan of the proposed access boardwalk.**



➢ **Figure 2: Drawing of the proposed artificial wetland.**

Appendix D: Specialist reports

- **Engineering Report and Stormwater Management Plan (BVI Engineers)**

KING'S BEACH ENVIRONMENTAL UPGRADING
MBDA 001/11/SSIF

STORMWATER MANAGEMENT REPORT

JANUARY 2012

ISSUED TO:

Mandela Bay Development Agency

PO Box 74
Port Elizabeth
6000

As Per Distribution List

PREPARED BY:

BVi Consulting Engineers
Eastern Cape (Pty) Ltd

152 Cape Road
Mill Park
PORT ELIZABETH, 6001
Tel: 041 373 4343
Fax: 041 373 7315

Contact Person:
Mr. Francois van Graan

MBDA: 001/11/SSIF

KING'S BEACH – ENVIRONMENTAL UPGRADING

CONTROL PAGE

REPORT ISSUE

ISSUE	DATE	DESCRIPTION
1	2 December 2011	Stormwater Management Report Revision 0
2		
3		
4		

DISTRIBUTION AND COMMUNICATION

1	Me. Yonela Madyibi	Mandela Bay Development Agency Project Manager	Tel: 041-501 8303 Fax: 041-501 8311
2	Mr. Mike Cohen	CEN Environmental Management Unit cc Environmental Consultant	Tel: 041-581 2983 Fax: 041-581 2983
3			
4			
5			
6			
7			
8			

REVIEWED BY:		
NAME:	SIGNATURE:	DATE:

INDEX PAGE

1. INTRODUCTION

BVi Consulting Engineers (Pty) Ltd was appointed to carry out the planning, design, tender preparation, contract administration and construction monitoring for Contract No : MBDA 001/11/SSIF: KING'S BEACH – ENVIRONMENTAL UPGRADING.

The King's Beach development node includes Erven 575, 576, 1031, 1069 and 1070 Humewood, Port Elizabeth and is situated between the main King's Beach parking area up to MacArthur Baths and between Beach Drive and the King's Beach beach area.

This report is prepared for the Mandela Bay Development Agency to present the stormwater management methods of the stormwater catchment influencing the King's Beach Development Node and the management of said stormwater within this area.

2. LOCALITY

The King's Beach Development Node includes the following area:

3. STATUS QUO

There are two sub-surface stormwater systems currently draining from the King's Beach Area, with most of the excess being channeled towards the beach via four additional discharge points through the dune-system.

3.1. Main King's Beach Parking Area

The King's Beach Parking area is drained from two stormwater catch-pits situated in the centre of the King's Beach parking area and discharges stormwater into the catchment area between the parking area and the existing manganese ore bins at the harbor. This area consists of a natural stream path and acts as a detention area before discharging excessive stormwater flow onto the beach (**Point 9**). See layout in **Addendum A – Layout 1**.

The remainder of the stormwater that drains along the surface from the extremely flat parking area is discharged onto the beach at the two pedestrian accesses (**Points 7 and 8**). This causes some erosion to the beach area with potential pollutants from the parking area settling in the sand. These areas are therefore constantly subjected to 'wash-out' effects as can also be seen on the aerial photos.

3.2. King's Beach Park

The park was originally designed to drain to a central valley discharging to King's Beach at **Points 4, 5 and 6**. See layout in **Addendum A – Layout 2**. Outflow at **Point 6** is however restricted to flow that originates from the Surf and Lifesaving Club building and club parking. Although the access onto the beach at **Point 5** was planned to drain the bulk of the stormwater from the park, the access has been blocked by a sand build-up in this access. This was effectively caused by the boardwalk type access being constructed through this access, as well as stormwater not washing out the access during times of drought. The access onto the beach at **Point 4** is therefore discharging most of the stormwater from the park at present. Most of the pedestrian traffic accesses the beach at this point.

3.3. Formal Stormwater Infrastructure

Most of the stormwater collected by the main stormwater line running along the eastern edge of the adjacent Beach Drive, discharges onto the beach at **Point 3** below the MacArthur Baths retaining wall. Contributing to this flow is water being pumped from The Beaches apartment building's basement at a rate of between 1.7 and 2.2 l/s. The quality of stormwater discharging at **Point 3** is not reliable and a water test done at this point indicated an e.coli count of 880 colonies per 100ml. This

could be contributed to pollution entering the stormwater system from higher up in the Humewood and LaRoche Drive areas. It is proposed that the Nelson Mandela Bay Municipality further investigate this problem in order to minimise pollution to the beach area.

4. PURPOSE OF THIS REPORT

The purpose of this report is to present the findings of a broad based study on the factors affecting the stormwater flow to and from the King's Beach development node.

The purpose of incorporating stormwater management into the design is to create sustainable, safe and reliable stormwater infrastructure along the King's Beach development node.

5. INFORMATION RECEIVED

A detailed Topographical and Engineering Survey was performed along the King's Beach area logging existing stormwater and other infrastructure.

The above was compared to the stormwater infrastructure as received from the NMBM and discrepancies were further investigated in order to compile the stormwater layout of all systems contributing to, as well as draining from the King's Beach area.

6. NEW STORMWATER INFRASTRUCTURE

6.1. New Pond in King's Beach Park

A pond is being created within the King's Beach Park area as part of the project that will contribute to the aesthetics of the park, as well as creating a safe environment where kids can play with their radio control boats, etc.

The pond is to be filled and kept topped up by supplementing the pond water by draining ground-water, originating from the basement of The Beaches apartment building, to the dam. The Beaches basement delivers between 1.7 l/s and 2.1 l/s of water currently to the stormwater system. Additional water will also be pumped from the Happy Valley system into the pond, from where the irrigation system will also be fed. The water from Happy Valley will be supplied from an existing borehole situated at the Frames Dam. The borehole and pump has been vandalised and will need to be refurbished.

Two artificial fountains will be created from where the above water supply is to be fed into the pond. The first artificial fountain will consist of a refurbishment of the existing old rock fountain (**Layout 3 – Point A3**). The water being circulated from the pond overflow structure at **Point A1** will be discharged to this fountain at a rate of between

20 and 30 litres per second. A second artificial fountain will be constructed at **Point A4** at which point the flow from The Beaches basement will be discharged at a rate of between 1.7 and 2.2 litres per second. From here the water will flow through a winding, rough surfaced concrete and rock channel, acting as an interactive play channel before entering the pond.

To the North of the pond an overflow structure will be constructed keeping the pond water level constant. The overflow structure will include for:

- Hinged deck panels which can be opened to access the overflow structure.
- An accessible and removable grid system in order to remove floating debris and pollution from the pond.
- A sump where the circulation pump is to be situated constantly circulating water through the pond back to one of the artificial fountains.
- A sump connected to the existing stormwater system in the parking area to drain any excess water or stormwater entering the pond system in order to keep the pond water level constant.

A 300mm diameter (internal diameter of 292mm) stormwater pipe culvert drain is to be constructed from the pond overflow structure to the centre of the parking area in order to drain the excess overflow from the pond to the existing subsurface system in the car park.

A low point to the pond edge is to be situated at the point closest to the car park to allow for an overland escape route in extreme situations where the pond capacity is exceeded. The excess water will then be drained along the new walkway to the south of the parking area towards the beach access (**Beach Access 7**) adjacent to the Surf and Lifesaving Club. It will however be intercepted at the proposed low-lying retention section in the lawn area adjacent to the super-tube prior to over-spilling onto the beach.

The section at which the water from the interactive play channel will enter the pond will be planted with several species of indigenous plants in order to remove any possible pollutants that may have entered the stream.

The irrigation system will be fed from the pond via a sump and pump set-up. The flow contributing to the dam, as well as extraction/losses is calculated as follow:

	Daily Average	**7 Day Flow**
The Beaches Flow	+ 155.5 m^3	+ 1088.6 m^3
Evaporation	- 43.2 m^3	- 302.4 m^3
Infiltration	- 32.4 m^3	- 226.8 m^3
Irrigation	- 69.0m^3	- 483.0 m^3

The total pond volume is 3240 m^3 of which 144.6 m^3/day is being extracted daily and replaced by new water. The volume of water re-circulated per day through the fountain is approximately 1150 m^3.

6.2. Stormwater Retention Area

A stormwater retention area is to be created adjacent to the super-tube area (**Layout 4 - Point C**). Low flow, which normally discharges onto the beach at **Point 7**, will be re-directed to the retention area (grassed) and allowed to dissipate into the sand, evaporate or be discharged into a northern direction towards the natural stream area. For this purpose a natural channel (already formed in part) will be created behind the secondary dune system in allowing the retained water to drain to the North. The grassed surfaces will also assist in removing pollutants from the stormwater.

Although most of the parking area drains towards this point at present, the drainage slope is extremely flat. During future phasing of the project the whole parking area is to be redesigned to include for the parking to be re-shaped. A large section of the parking will then drain towards the new pond, with a further section being sloped towards the natural stream to the north and only a relatively small part of the parking draining to **Point 7**. It is also proposed to include bio-retention areas in the islands within the parking area in order to treat the flow from the parking area before being discharged towards **Point 7** and the stormwater retention area.

6.3. Existing Beach Access Points

The existing beach access at **Point 5** will be retained. Although this access used to drain most of the stormwater in the park to the beach, the build-up of sand in this area has resulted in ponding of water in the park. This water will however be diverted to the newly established pond. Minimal stormwater will thus be discharged onto the beach at this point compared to previous discharge.

The beach access at **Point 4** will be upgraded in Phase II of the project by replacing the existing broken concrete pathway with a new concrete pathway, as well as steps onto the beach and erosion control for any stormwater discharging at this point. The erosion control will include gabion structures to stabilise the movement of sand over this access and the wash-out occurring as a result of the stormwater discharge. No additional stormwater will be discharged to this point.

The beach access at **Point 6** will stay unchanged for this project (both phases) and discharges stormwater from the King's Beach Surf and Lifesaving Club complex. It also acts as an emergency access onto the beach by the King's Beach Lifesavers.

As mentioned in the report the stormwater flow at **Point 7** will be reduced due to the introduction of a low-lying retention area on the grassed section between the walkway and the super-tube facility. This will prevent the low-flow from washing onto the beach. In extreme conditions, overflow is however allowed for from the main pond should the capacity of the new pond and its overflow structure be breached to allow for overland flow onto the beach.

The beach access at **Point 8** will stay unchanged as this area is situated on an adjacent property.

No new beach accesses will be developed under this project.

7. CONCLUSION

The proposed upgrading of the King's Beach development node will assist in creating a stable platform for the establishment of a safe and secure public open space with existing and new entertainment facilities. One of the main aims of the project is to create a visibly pleasing, safe and entertaining area to be utilised by both local residents and visitors to the Nelson Mandela Bay.

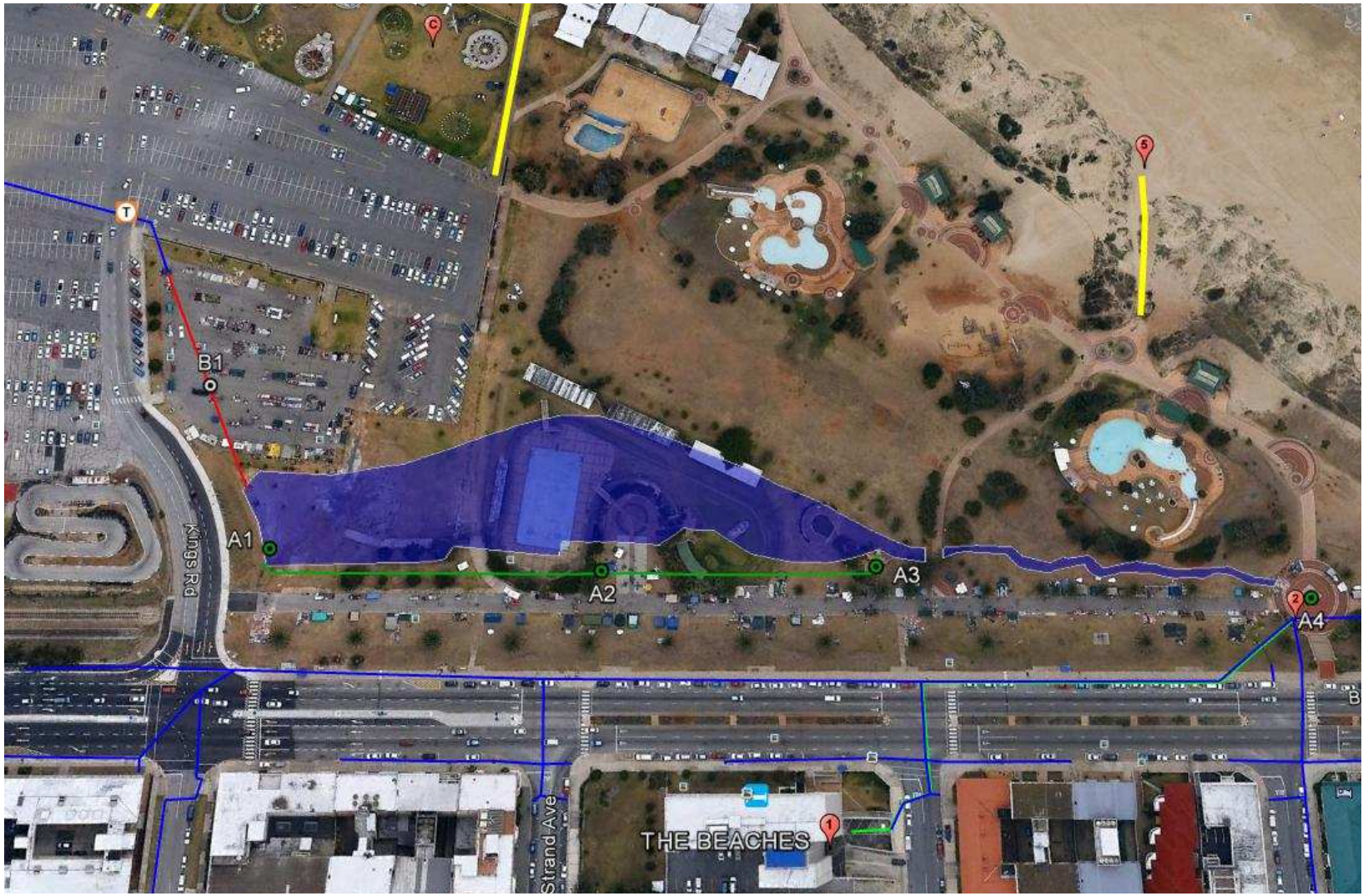
In creating such facility, stormwater control measures are incorporated into the design in an effort to minimise any form of erosion or pollution along the King's Beach beachfront, by making use of stormwater detention and retention structures. This infrastructure will help in reducing the negative effects that stormwater flow to the area has had over the past years.

ADDENDUM A

Stormwater Layouts

LAYOUT 1

LAYOUT 2



LAYOUT 3

LAYOUT 4

- **Phase 1 Archaeological Heritage Impact Assessment (Dr Johan Binneman)**

A LETTER OF RECOMMENDATION (WITH CONDITIONS) FOR THE EXEMPTION OF A FULL PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED PHASE 2 REDEVELOPMENT AND LANDSCAPING OF THE SOUTHERN PORTION OF THE KINGS BEACH NODE ON THE NELSON MANDELA BAY SOUTHERN BEACHFRONT (ERF 1031, ERF 576 AND THE REMAINDER OF ERF 575, HUMEWOOD), EASTERN CAPE PROVINCE

.

Prepared for: CEN Integrated Environmental Management Unit
36 River Road
Walmer
Port Elizabeth
6070
Tel: 041 5812983/5817811
Fax: 041 5812983
Contact person: Dr Belinda Clark
email: steenbok@aerosat.co.za

Compiled by: Dr Johan Binneman
On behalf of: Eastern Cape Heritage Consultants
P.O. Box 689
Jeffreys Bay
6330
Tel: 042 2960399
Cell: 0728006322
email: kobusreichert@yahoo.com

Date: January 2012

A LETTER OF RECOMMENDATION (WITH CONDITIONS) FOR THE EXEMPTION OF A FULL PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED PHASE 2 REDEVELOPMENT AND LANDSCAPING OF THE SOUTHERN PORTION OF THE KINGS BEACH NODE ON THE NELSON MANDELA BAY SOUTHERN BEACHFRONT (ERF 1031, ERF 576 AND THE REMAINDER OF ERF 575, HUMEWOOD), EASTERN CAPE PROVINCE

PROJECT INFORMATION

The type of development

The project includes the proposed phase 2 redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront. Phase 1 has already commenced. The following activities are proposed for Phase 2:

- Construction of 4 access boardwalks with viewing decks in the dune area, but the dune height will not be altered.
- Construction of a skatepark.
- Construction of a parking lot.
- Construction of an artificial wetland behind the dune on the seaward side of the supertube to attenuate and filter stormwater.

The Developer

Mandela Bay Development Agency (MBDA)

The Consultant

CEN Integrated Environmental Management Unit
36 River Road
Walmer
Port Elizabeth, 6070
Tel: 041 5812983/5817811
Fax: 041 5812983
Contact person: Dr Belinda Clark
Email: steenbok@aerosat.co.za

Terms of reference

The original proposal was to conduct a phase 1 archaeological impact assessment (AIA) for the proposed phase 2 redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (erf 1031, erf 576 and the remainder of erf 575, Humewood), Eastern Cape Province, to describe and evaluate;

- the importance of possible archaeological sites, features and materials,
- the potential impact of the development on these resources and,
- to propose recommendations to minimize possible damage to these resources.

DESCRIPTION OF THE PROPERTY

Map: 1:50 000 3325 DC & 3425 BA Port Elizabeth

Location data

The proposed phase 2 redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (erf 1031, erf 576 and the remainder of erf 575, Humewood), Kings Beach, Port Elizabeth, Eastern Cape Province, is situated south of the harbour and between the beach and Beach Road (Maps 1-3) (General GPS reading: 33.58.23,14S; 25.38.41,39E).

ARCHAEOLOGICAL INVESTIGATION

Methodology and results

The investigation was conducted on foot. GPS readings were taken with a Garmin and all important features were digitally recorded. The proposed property for the development is situated between the beach and Beach Road and has been extensively developed in the past with parking areas, walk ways, lawns and a variety of buildings and other recreation facilities. The low dune along the immediate beach area was artificially constructed in the 1980s to allow visual connectivity between the park and the beach. Current construction activities exposed large areas previously covered by structures and features. This provided the opportunity to investigate these areas for possible archaeological sites/materials (Figs 1-8). No archaeological sites/materials were found and it is unlikely that any *in situ* archaeological remains will be exposed during the development.

Figs 1-4. Different views of the proposed property for the phase 2 redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront. Note: the area has been extensively disturbed in the past and by current developments.

Figs 5-8. More views of the proposed property for the phase 2 redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront. Note: the area has been extensively disturbed in the past and by current developments.

CONDITIONS

Rudner (1968:544) reported the remains of 41 KhoiSan pots from the general area of Port Elizabeth, but it is unknown if any pots were from the Kings Beach location. He also mentioned that *Humewood is built on extensive middens,* but do not provide more information.

Although it is unlikely that archaeological remains will be found *in situ,* or of any contextual significance there is always a possibility that;

- human remains and/or other archaeological and historical material may be uncovered during the development. The property is situated in the sensitive coast zone where shell middens are expected to be found.

Such material must be reported to the nearest museum, archaeologist or to the South African Heritage Resources Agency if exposed, so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to remove/collect such material (See Appendix B for a list of possible archaeological sites that maybe found in the area).

LETTER OF RECOMMENDATION

It is recommended that the proposed phase 2 redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (erf 1031, erf 576 and the remainder of erf 575, Humewood), Kings Beach, Port Elizabeth, Eastern Cape Province, is exempted from a full Phase 1 Archaeological Impact Assessment. The proposed

area for development is of low cultural sensitivity and it is unlikely that any archaeological heritage remains will be found on the property. The proposed development may proceed as planned.

Note that this letter of recommendation only exempts the proposed development from a full Phase 1 Archaeological Impact Assessment, but not for other heritage impact assessments. It must also be clear that this letter of recommendation for exemption of a full Phase 1 archaeological impact assessment will be assessed by the relevant heritage resources authority. The final decision rests with the heritage resources authority, which should give a permit or a formal letter of permission for the destruction of any cultural sites.

The National Heritage Resources Act (Act No. 25 of 1999, section 35) (see Appendix A) requires a full Heritage Impact Assessment (HIA) in order that all heritage resources, that is, all places or objects of aesthetics, architectural, historic, scientific, social, spiritual linguistic or technological value or significance are protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects.

GENERAL REMARKS AND CONDITIONS

It must be emphasised that this letter of recommendation for exemption of a full Phase 1 archaeological impact assessment is based on the visibility of archaeological sites/material and may not therefore, reflect the true state of affairs. Sites and material may be covered by soil and vegetation and will only be located once this has been removed. In the unlikely event of such finds being uncovered, (during any phase of construction work), archaeologists must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed (see attached list of possible archaeological sites and material). The *onus* is on the developer to ensure that this agreement is honoured in accordance with the National Heritage Act No. 25 of 1999.

APPENDIX A: brief legislative requirements

Parts of sections 35(4), 36(3) and 38(1) (8) of the National Heritage Resources Act 25 of 1999 apply:

Archaeology, palaeontology and meteorites

35 (4) No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

Burial grounds and graves

36. (3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b)any excavation equipment, or any equipment which assists in the detection or recovery of metals.

Heritage resources management

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of the site –

(i) exceeding 5000m^2 in extent, or

(ii) involving three or more erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;

(d) the re-zoning of a site exceeding 10 000m^2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must as the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

APPENDIX B: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM COASTAL AREAS: guidelines and procedures for developers

Shell middens

Shell middens can be defined as an accumulation of marine shell deposited by human agents rather than the result of marine activity. The shells are concentrated in a specific locality above the high-water mark and frequently contain stone tools, pottery, bone and occasionally also human remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m^2 in extent, should be reported to an archaeologist.

Human Skeletal material

Human remains, whether the complete remains of an individual buried during the past, or scattered human remains resulting from disturbance of the grave, should be reported. In general the remains are buried in a flexed position on their sides, but are also found buried in a sitting position with a flat stone capping and developers are requested to be on the alert for this.

Fossil bone

Fossil bones or any other concentrations of bones, whether fossilized or not, should be reported.

Stone artefacts

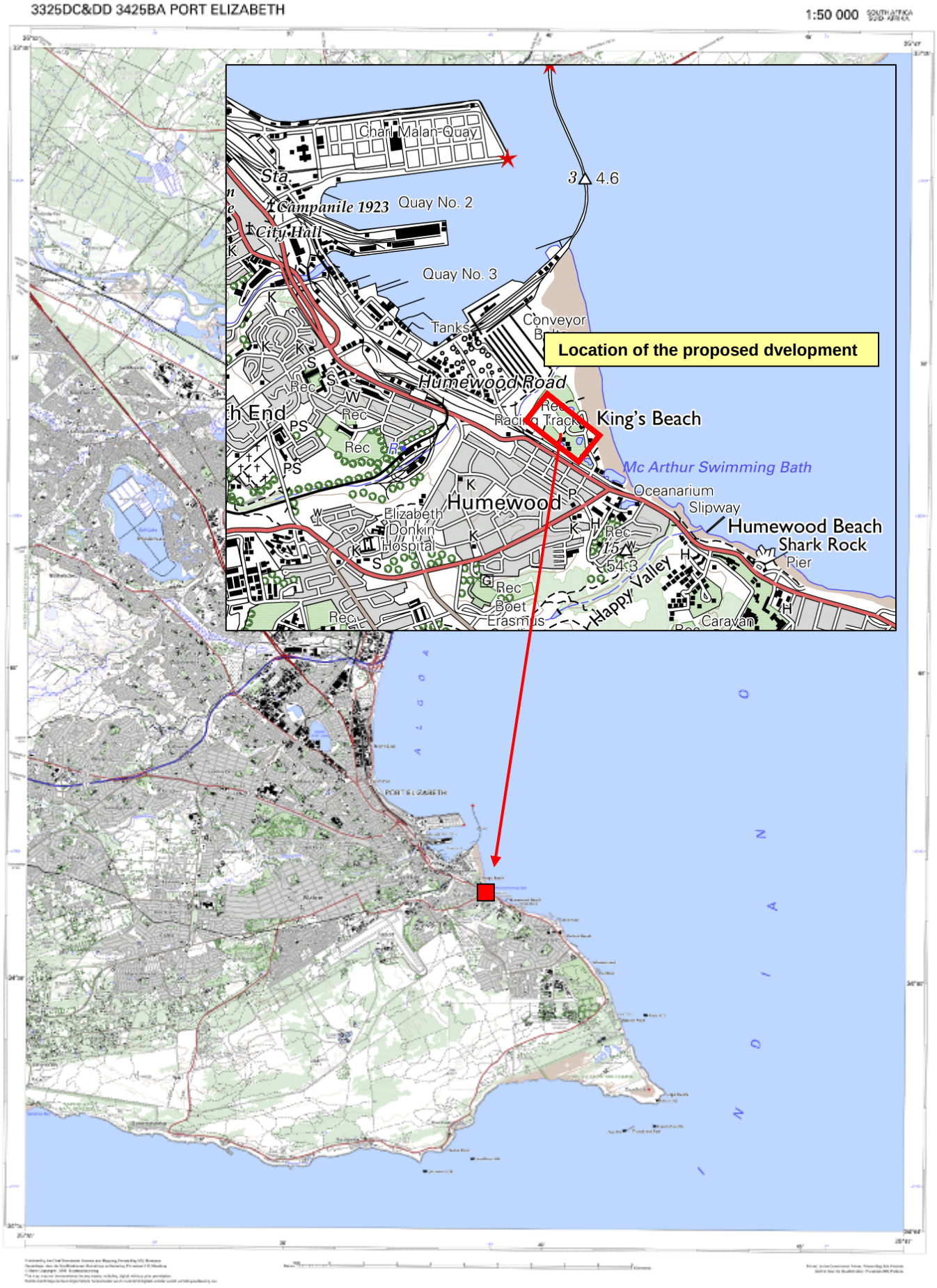
These are difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally should be reported. If the stone tools are associated with bone remains, development should be halted immediately and archaeologists notified.

Stone features and platforms

These occur in different forms and sizes, but easily identifiable. The most common are an accumulation of roughly circular fire cracked stones tightly spaced and filled in with charcoal and marine shell. They are usually 1-2 metres in diameter and may represent cooking platforms for shell fish. Others may resemble circular single row cobble stone markers. These occur in different sizes and may be the remains of wind breaks or cooking shelters.

Historical artefacts or features

These are easy to identify and include foundations of buildings or other construction features and items from domestic and military activities.



Map 1. 1:50 000 Maps indicate the location of the proposed redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront.

Map 2. Aerial images of the location of the proposed redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront.

Map 3. Aerial images of the location of the proposed redevelopment and landscaping of the southern portion of the Kings Beach node on the Nelson Mandela Bay southern beachfront.The approximate size of the property is outline in red (insert map courtesy CEN Integrated Environmental Management Unit).

Appendix E: Comments and responses report

Interested and Affected Party	Comment	EAP response
Councillor Dean Biddulph	• Is there a possibility of re-developing the Kings Beach Lifesaving Club footprint to include a low impact commercial development node? Will such plans require a separate process or can this be included for consideration within the scope of this environmental assessment?	• The issue was discussed with the MBDA. There are opportunities for non-permanent structures to be set up and operate.
Kings Beach Surf Life Saving Club	• Our interest extends to the modification of the dunes and building of a boardwalk within 100 m of the high water mark of the sea and in particular how this will affect sand shift around the Kings Beach Surf Lifesaving clubhouse and access levels to the existing paved courtyard (as well as any drainage requirements). We also need to understand the wider scope implications of the re-development of the parking areas and access to the adjacent grassed areas as well as level changes and any further storm water mitigation activities that may be planned around the skate park.	• Dunes will not be modified in the preferred alternative. • Two access boardwalks are proposed (refer to Figure 1 in Appendix A for relative positions): • One east of the Kings Beach Surf Life Saving Club's launch and access area where the public currently accesses the beach by walking over the dune. The boardwalk will extend from the existing paved areas landwards of the dune to the beach and has been designed to reduce the formation of further blow-outs and also to allow for sand movement beneath the boardwalk. Rehabilitation of the dunes surrounding the boardwalk will be suggested, as well as a system of long-term adaptive management, where a combination of maintenance (e.g. physically removing accumulated sand) and rehabilitation is suggested until the dune is stabilised. The dune in front of the club is unstable and slumps/shifts over paving and access areas partly because of its instability in

		this area. Part of the reason for the dune's instability is that people walk over it and trample vegetation, which leads to the formation of blowouts. By limiting foot traffic to a boardwalk and rehabilitating the area around it, it is hoped that the dune will stabilise. • The second boardwalk is proposed at the position of the current access boardwalk. The same principles in designing the boardwalk as mentioned for the first boardwalk apply here • The boardwalks should not limit or interfere with access to the existing paved courtyard. • A stormwater management plan has been done by the consulting engineers (BVI) and a tertiary wetland has been designed by the architects. It is proposed to direct stormwater that currently flows directly onto the beach from the surrounding area (including the parking lot) to the tertiary wetland, from where it will slowly permeate into the underlying sandy soils and eventually to the coastal zone. This should assist in slowing down stormwater flow to the beach and resultant erosion, and improve the quality of stormwater which is currently poor.
Splash Waterworld	• As per our telephone conversation, I respond with this e-mail regarding the development on Kings Beach, and how it will affect our business. Please keep us informed of the development process that would happen around the Supertube area.	• Splash Waterworld has been registered as an I&AP and will be kept informed of the process. The idea of proposed upgrade is to increase public usage of the area which should be a benefit to local businesses
Godfrey Murrell (NMBM Beach Office)	• Concern raised over boardwalk and dune modification proposal • What will be done to protect sand movement?	• On-site discussions were held with Mr Murrell and Mr Griffiths of WESSA where they made

		several recommendations. These were used to guide the alternative proposal which is now the preferred alternative. The dunes will not be modified, and the boardwalk concept has been changed to two access boardwalks with viewing platforms. Recommendations have been included in this report to address sand movement.
Transnet (Primrose Madikizela)	• Request to be registered as an I&AP	• Noted and registered.
Department of Forestry (Theo Stehle)	• Submitted several comments regarding mostly dune landscaping and modification: • There are a few protected trees on the site, viz. white milkwood (*Sideroxylon inerme*) and red milkwood (*Mimusops caffra*), which should be retained if possible. They may not be disturbed, damaged, destroyed or felled without a licence from the Forestry office in Port Elizabeth. Any applications should be directed to that office. • The landscaping of the strand plant foredune hummocks [according to the classification of Tinley (1985)] is regarded as highly undesirable, and should under no circumstances be allowed. Note is taken of the fact that the dune has apparently been constructed artificially to a certain height in the 1980's, and that the proposal is now to reduce their height to what it had been originally, to *inter alia* obtain sea-views. However, in this proposal consideration is apparently not given to the fact that foredunes are dynamic wind-shaped structures which are natural features on sandy shores above the high water mark, and that, regardless of how they were originally "constructed artificially", they have since, due to natural physical and biological forces and influences, developed into vegetated foredunes comparable to any such dunes formed by nature.	• The areas where the two access boardwalks are planned have no species that are protected in terms of the NFA. The areas that have been selected are currently used as access paths and are mostly denuded of vegetation apart from some *Tetragonia decumbens, Ehrharta villosa, Cyperus natalensis* and *Ipomea pes-caprae* on the outer edges of the current access path. • Dunes will not be altered in the preferred alternative. • Landscaping will be limited to areas on the landward side of the dunes (i.e. in existing park and pathway areas) • Landscaping on dunes will be limited to rehabilitation of blow-outs that have been caused by current mismanagement and trampling of vegetation. Appropriate vegetation that occurs naturally in dunes will be used for this purpose. • The ecosystem services that the dunes provide is recognized and they will not be interfered

	• Attached photographs of these dunes reveal that they are covered with typical indigenous strand vegetation found in the dynamic dune zone, vegetated with littoral species consisting of *i.a. Ehrharta villosa* ("pypgras"), *Ipomoea brasiliensis* ("seepatat"), *Agropyron distichum* (sea wheat), *Gazania* sp. ("gousblom"). This vegetation is rhizomatous or stoloniferous in nature with the characteristic of the former to continuously grow out above the accumulating sand, thereby forming crested dunes, and binding the sand that is wind-blown inland of the high water mark. Dune growth in this way is a natural process, which has undoubtedly occurred since the original sand dunes were formed artificially. (See photographs). • It is foolish to interfere with this dynamic semi-stabilised foredune zone, as it is a natural(ised) eco-system that provides services free of charge by providing a natural and resilient buffer that absorbs and dissipates the energy of the sea and wind in a dynamic zone of semi-mobile sand. If this buffer was to be replaced by for example rigid structures like rock or concrete, or artificially stabilised vegetated soil, the energy of waves and wind would "collide" with these inflexible surfaces and create turbulence and eddies producing erosion and undermining of the structures created to protect the inland stable zone against these forces. • In the light of increasing sea-levels through global climate change, it is very important to retain these dynamic buffer zones. They will absorb to some extent the forces exerted by storms. They are periodically eaten into by storm tides, removing sand, but during calm weather and seas they are again brought back to the shore by natural accretion processes. Any artificial interference with this process can only destabilize and disrupt this dynamic equilibrium, to the detriment of the development behind it. • In this regard, reference is also to be made to the CSIR publication "Coastal Dunes of South Africa", Report No. 109, by Dr. K.L. Tinley,	with.

	1985. • A process of colonization with more permanent indigenous dune vegetation consisting of woody shrubs and trees, e.g. *Rhus crenata* ("duine kraaibessie"), has started in the lee of the dunes as they are currently. These should be encouraged by establishing more of these species. The value of this natural shelter against winds from the sea, should outweigh the need to have a direct line of sight to the sea. The sea can easily be accessed by the accesses provided, and the system of proposed boardwalks along the dunes as they currently are, which is supported, should adequately provide in this need. • The proposed landscaping of the dunes will not be permanent, for the natural sand accretion processes will prevail and will naturally revert back to building the dune higher, as has taken place in the past. It appears that the proposal has not considered this aspect. Once the dunes have been landscaped, they will not remain in such a state, and if they are stabilized with too permanent a surface, they will be damaged by the forces of the elements. • In the light of imminent sea-level rises, it would be prudent, and should be enforced by the authorities responsible, to instead of expanding the artificial development in the direction of the sea, withdraw further inland and determine a setback line, as these developments close to the sea are certain to be inundated by the sea in the not too distant future.	
WESSA (Morgan Griffiths)	• Kings Beach was a Blue Flag status beach until end of 2009, when it failed to regain its flag due to deficiencies with the four ablution blocks and significant problems with beach management – largely due to not managing stormwater runoff from the carpark. • My/Blue Flag's interest in this project is to promote the redevelopment up to the standards of Blue Flag, so that the NMBM can re-apply, as is apparently its intention. Getting appropriate dune	• The Blue Flag Report highlighted problem areas that led to the area losing its Blue Flag status. This information has been relayed to the applicant and will be included as mitigation measures in the assessment report. The project proposal will attempt to assist the beach in regaining Blue Flag status

	management is also key. As discussed please find attached a Blue Flag Report on some of the issues.	
NMBM Human Settlements Directorate (Schalk Potgieter)	• Agree with issues identified in BID • Concern that Phase 1 commenced without an authorisation which may result in non-compliance issues	• Phase 1 did not trigger any listed activities in terms of the EIA Regulations(2010) and therefore did not require and environmental authorization. The matter has been discussed with the NMBM and DEDEA.
CETT comments	• Has the Parks Department been consulted? They are responsible for developing open space. • Will viewing decks on the access boardwalks fall in the inundation zone? • How many phases are planned for the greater beachfront development? Why is a piecemeal approach being taken? • Can this assessment deal with the current maintenance problems of the existing boardwalk along the remainder of the beachfront? • What has the original round of public participation covered and what has the response been so far? • Are there opportunities for local economic development in the proposal?	• The Director of Parks, Mr Tsietsi Mokonenyane, was sent a copy of the BID and notified via email of the proposed activities. • Yes • This project is not part of the greater Kings Beach Development plan that is proposed on private land and Transnet Land. • Unfortunately the existing boardwalk along the remainder of the beachfront cannot be included in this assessment since it is now within the study domain and is outside of the MBDA's mandate area • The original round of public participation was done in terms of Regulation 54 of the EIA Regulations (2010) and included: a. An advert was placed in The Herald and Die Burger b. Two site notices were placed on site c. BIDs were sent to neighbours within 100 m of the site, municipal and government authorities d. The Ward Councillor was notified • A copy of all responses received from Interested and Affected Parties is included in this table and in the section that follows • Yes, there is a possibility that non-permanent structures can be used for local economic development

Comments on Draft BAR		
Graham Taylor	• Provision should be made for a multiple use recreational path which connects with the existing recreational path network of the city. Currently cyclists are prohibited from using the tarmac sec on by no cycling signs. Conceptual drawings of the proposed development indicate cycling facilities and this is to be welcomed. Single use paths and the current system of no cycling signage give rise to the potential for recreational conflict and mitigation measures for such potential conflict needs to be considered.	• The query on cycle paths was sent to the project architects - a cycle path is part of a later phase of the project
Kings Beach Surf Lifesaving Club	• With respect to the process, I note that the beach office was involved in design discussions. Is it possible to get information related to what they were asked to comment on as we would have thought there may be some input from our side particularly as the club house and tower will be directly impacted (this is not directly related to the EIA hence the reason I haven't included it under our main comments). If this falls outside your mandate, please advise whom I should be contacting to discuss this.	• The Beach Office submitted comments in response to the Background Information Document (BID) that was circulated in the initial round of public participation. They submitted specific comment relating to the original proposal to build a boardwalk along and over the dunes, and to modify dune height to increase visual connectivity between the park area on the landward side of the dunes and the beach. This prompted on-site discussions, where it was suggested to rather build a limited number of access boardwalks at positions where pedestrians currently access the beach. The KBSLC also submitted comments on the BID which were considered in the Draft BAR.
	• With respect to Dean Biddulphs' comments, this is something the Life saving club has already been investigating (and which are quite advanced with respect to proposals), so with respect to the 2nd part of his question, would such plans require a separate process or does the EIA include for this within its scope?	• The matter was discussed with the project proponents. There are opportunities for local economic employment/businesses to set-up within the study area. Proposals do not form part of this environmental assessment. Whether a specific development would require an environmental assessment can only be determined with detailed project information (this is needed to check the list of activities published under GNR 544 to 546 of the EIA Regulations (2010)).

	• With respect to the EAP response to Kings Beach comments, if the dunes are not to be modified, how will the club members continue to access the beach as the dune field extends itself across the access route to link with the existing dune adjacent? This appears to be natural phenomena that will not stabilize over time, only increase in magnitude (as has the height of the dune in front of the club tower).	• The EAP's response referred to the original proposal by the MBDA to reduce the height of the dunes in the study area to promote visual connectivity between the park and the beach. The metro currently manages sand build-up on various sections of the beachfront (including the area in front of the clubhouse) in an attempt to protect structures and infrastructure and this will continue.
	• In addition, what mitigating process has been proposed to prevent the sand buildup that has gone on since the dunes were created in the current guise from swamping the club in future years? This is already happening on a regular basis due to natural sand movement phenomena and not just foot traffic across the dune which is a fairly recent event caused by sand covering the fences that were originally erected along the pathway to prevent access i.e. there was already sand overblow despite the dune vegetation being sufficiently stabilized which increased the hard core at the base of the dunes on the seaward side.	• We agree that sand movement is a natural phenomenon which will continue, and that foot traffic is merely an exacerbating factor (by destabilising dunes and promoting dune slumping). Impacts on dune destabilisation that may result from the project proposal (specifically constructing boardwalks over the dunes) have been considered and mitigation measures have been suggested to avoid these (e.g. through boardwalk design and placement, and dune rehabilitation). The NMBM currently actively manages sand build up on various sections of the beachfront to protect infrastructure and structures, including sand accumulation in front of the club. Long term management is dependent on maintenance budgets. The metro is currently busy with an application to upgrade the promenade and build a sea wall on the section of the beachfront between McArthur Baths and the old 'tin hat' structure. It is proposed to use sand that has accumulated in front of the club to build the wall which will assist in maintaining access to the beach and protecting the club in the short term. Long term strategies include the following: a. Place geobags on the seaward side of the dunes to trap sand and prevent it

		from migrating landwards b. Implement a system of adaptive management where sand build-up is physically removed and dunes are stabilised (using geobags and by planting vegetation) until an equilibrium phase is reached c. Build access boardwalks and attempt to restrict foot traffic to these to prevent trampling of dune vegetation
	• We note the two boardwalks proposed and would like to be consulted by the relevant design teams with respect to exact route, levels and also details of the lookout point and its potential for use by life guard's during the course of their daily activities. In addition, we note no boardwalk or other access proposals for the MacArthur baths side of the beach which seems at odds with the municipalities stated aims to make the beach more accessible as currently this is a serious problem for anyone on crutches or in a wheelchair (the current concrete walkway ends with no steps and in addition the storm water runoff is eroding the beach further exacerbating the drop off). We note that mention is made of steps and gabion cages but the details on this do not appear to make allowance for disabled access. Although the report details that access 4 is the most heavily trafficked and main access to the beach, those aspects appear to have been ignored alongside what mitigation of storm water will occur there. The secondary issue of storm water from beneath the Mac Baths sea wall eroding the beach and thereby creating a sea gully does not appear to have been addressed in any way other than as a possible health hazard due high e-coli counts in an area children love to play in and which drains directly into the bathing area.	• Detailed design drawings are included in Appendix C of the BAR. • The existing concrete beach access will be upgraded to include for a ramp and steps, which will be extended to below the general sand level of the beach in order to still provide the same level of access even with changes in sand levels. • The continuous stormwater flow to beneath the MacArthur Baths seawall will be reduced by channeling flow from The Beaches flats to the lake that is currently being constructed as part of Phase 1. In addition to this, a large potable water leak that contributes flow into the stormwater system has been located by the project team and will be remedied by the NMBM.
	• The proposals for the tertiary wetland are of grave concern mainly due to two aspects: firstly, the level of this wetland would seem to be	• General low-flow volumes of stormwater run-off will be detained in the wetland from where it will

	at odds with the current ground levels adjacent to the beach areas which would therefore possibly create a flooding potential for the club and ablution block adjacent should overflow not be captured by the wetland i.e. that water directed along the current access road. Do any sectional details exist for the proposed drainage detailing the collection and subsequent control of this additional water processing by the wetland area? The secondary aspect is the impact of this additional water run-off on the existing gully's that have been the cause of much trouble to the bathing public this summer. It is our understanding that Afri-Coast Engineers are in the process of carrying out a detailed shoreline study that should provide clarity on the impact of rising sea levels on the beach erosion and increasing flooding patterns that have seen the high water mark extend to the base of the dune system along virtually the entire beach length. In addition, we believe this report should also inform the proposed design of any storm water system as it is our contention that increased water flow from the car park via the various roadways is leading to the increased erosion of sections of the beach and offshore sea bed.	filter into the sand and/or evaporate. Higher volumes of flow will continue to flow onto the beach as in the current situation. However, the constant erosion that is happening on the beach will be reduced through stormwater attenuation, allowing the eroded areas to 'repair' (with the assistance of active management). Although the very flat levels along this area do not allow for fast flowing channelization away from the pond (overflow situation), the overflow will be drain towards the north-west behind the dunes, in-between the dunes and the super-tube facility. A shaped channel will be created behind the dunes, allowing stormwater to drain towards the natural wetland during flooding, although stormwater will still access the beach at the main access areas. By channeling flow towards the wetland, as well as access onto the beach at the main access points, it is attempted to prevent flow into the King's Beach SLC facility. It is also envisaged to reconstruct the main parking area with revised levels to drain stormwater away from the access areas adjacent to the lifesaving club buildings. By manipulating the levels of the main parking area, stormwater flow to points 7 and 8 will thus be drastically reduced.
	• The proposals highlight that sand build up has caused problems with the storm water drainage system as originally designed at Point 5 but should also include Point 6 as any drainage at that point dams at the base of the existing concrete ramp due to sand build up creating a dam effect. We see no proposals that address this issue	• The preferred alternative is not to physically reduce the height of the dune because of the ecosystem services it provides. However, maintenance is required and continued access (especially for lifesaving activities) is necessary. As mentioned earlier, sand build-up in the

	which will only increase should the adjacent dune not be reduced in size. It may be that the existing concrete ramp should be extended to the high water mark at the base of the dune system allowing easier maintenance access and assisting in managing the storm water drainage problem. We have in essence a man made system that now needs additional man made aspects to control it rather than returning the beach to what it had become by natural sand build-up following the extension of the harbour wall in the 1930's.	affected area is managed by the metro and will be further reduced by utilising sand for building a sea-wall in a separate project (should this be authorised by DEDEA). Long term measures to reduce sand build-up have been suggested above.
NMBM Environmental Management Sub-Directorate (Jill Miller)	• The BAR mentions that the water quality in the artificial wetland must be monitored to determine the effectiveness of the system. Are there any other operational requirements such as maintenance of the artificial wetland?	• Yes, the quality of the water will be an indicator of whether the wetland needs maintenance – for example it may be necessary to replace wetland plants after some time if the system becomes clogged.
	• Who will be responsible for maintenance of infrastructure?	• The project is an MBDA initiative. However, maintenance will be the responsibility of the NMBM. The MBDA is trying to source an independent budget to manage their development projects.
	• The section in the BAR under Authority Participation should read: o NMBM Environmental Management Sub-Directorate o NMBM Infrastructure and Engineering Directorate o NMBM Electricity and Energy Directorate • The NMBM Economic Development and Recreational Services Directorate should possibly be registered as an interested and affected party, particularly Beaches, Resorts and Support Services	• Noted and corrected, thank you • Godfrey Murrel and Tony Knott from the Beach Office and Tsietsi Mokonenyane of the Parks Department have been included in public participation.
Department of Water Affairs	• The office acknowledges receipt of the Draft BAR and the technical unit has no comments on the comments.	• Noted, thank you.

Verbatim copies of all comments submitted by Interested and Affected Parties are presented below:

Councillor Dean Biddulph

From: Dean Biddulph [dbiddulph@mandelametro.gov.za]

Sent: Monday, October 31, 2011 1:06 PM

To: Belinda Clark

Subject: Re: Environmental Assessment: Proposed redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront

Dear Belinda

I wish to register as an Interested and / or Affected Party and request that the following issues receive attention during the assessment process:

I would like the possibility of redeveloping the Kings Beach Lifesaving Club footprint to include a low impact commercial development node - ie smaller than the Barneys Complex at Hobie. I have discussed this with Pierre Voges who feels that we can draft an RFP at the beginning of Phase 2 of the Kings Beach redevelopment.

Will such plans require a separate process or can this be included for consideration within the scope of your existing brief?

Many thanks

Name of Respondent: Dean Biddulph
Organisation / Company: Ward 2 Councillor
Address: 16 La Roche Drive, Humewood
Fax Number: 041 585 0514
Tel Number: 082 559 6158
Email: dbiddulph@mandelametro.gov.za

Dean

Dean Biddulph

DA Whip
Councillor Ward 2,
EDTA and MPAC Portfolio Committee
Nelson Mandela Bay Municipality
041 - 585 0515 (Office)
041 - 585 0514 (Fax)
082 559 6158
E-mail : dbiddulph@mandelametro.gov.za

P ***Please consider the environment before printing this e-mail***

Kings Beach Surf Life Saving Club

From: Mike Cohen [steenbok@aerosat.co.za]
Sent: Friday, December 02, 2011 11:45 AM
To: chris@a3dsa.com
Cc: 'KB Secretary'
Subject: RE: Environmental Assessment for Kings Beach Phase 2 - Registra on

Hi Chris

Many thanks for registering as an Interested and Affected Party and for raising the issues of concern. We will address the issues in our report and keep you informed of developments

We look forward to your further par cipa on

Best Regards

Mike

From: A3D SA [mailto:chris@a3dsa.com]
Sent: 02 December 2011 09:40 AM
To: 'Dr Mike Cohen'
Cc: 'KB Secretary'
Subject: Environmental Assessment for Kings Beach Phase 2 - Registration

To Mike

With respect to the above, I wish to register on behalf of the Kings Beach SLSC as an interested and affected party for Phase 2 of the Kings Beach redevelopment plan. Our interest extends to the modification of the dunes and building of a boardwalk within 100 m of the high water mark of the sea and in particular how this will affect sand shift around the clubhouse and access levels to the existing paved courtyard (as well as any drainage requirements). We also need to understand the wider scope implications of the redevelopment of the parking areas and access to the adjacent grassed areas as well as level changes and any further storm water mitigation activities that may be planned around the skate park.

I have attached the completed scanned version of the form provided incl. additional contact information.

Regards

Chris Allen
Club Captain Kings Beach SLSC

Chris Coetzer

From: Splash Waterworld [mailto:splashwaterworld@gmail.com]
Sent: 14 November 2011 07:16 AM
To: steenbok@aerosat.co.za
Subject: Kings Beach Development - Supertubes

Good Day Dr. Cohen

REGARDING KINGS BEACH DEVELOPMENT

As per our telephone conversa on, I respond with this e-mail regarding the development on Kings Beach, and how it will affect our bussiness.
Please keep us informed of the development process that would happen around the Supertube area.

Kind Regards

Chris Coetzer

Supertubes Splash Waterworld

P.O.Box 20053
Humewood
Port Elizabeth
6013

073 211 1283
www.pesupertubes.co.cc
Join us on Facebook

Schalk Potgieter

CEN IEM UNIT
36 River Road, Walmer, Port Elizabeth 6070
Fax 086 504 2549 Email steenbok@aerosat.co.za

Registration / Comment Sheet

Environmental Assessment: Proposed redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2).

31 October 2011

I wish to register as an Interested and / or Affected Party and request that the following issues receive attention during the assessment process

Closing Date for Comments: 10 December 2011

Name of Respondent: Schalk Potgieter
Organisation / Company: Nelson Mandela Bay Metropolitan Municipality
Address: Human Settlements Directorate, PO Box 9, Port Elizabeth, 6000
Fax Number: 086 636 1395
Tel Number: 041 506 2168 or 082 374 1233
Email: spotgiet@mandelametro.gov.za

Concur with the identified potential issues
Special concern that activities my have been initiated prior to environmental authorization and that this may result on compliance issues

Please use additional sheets as necessary

Signature: M.S.W. Potgieter Date: 31 October 2011

Primrose Madikizela (Transnet)

From: Madikizela@transnet.net [mailto:Madikizela@transnet.net]
Sent: 07 November 2011 04:24 PM
To: steenbok@aerosat.co.za
Subject: FW: Environmental Assessment: Proposed redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront

Hi

I am avoiding printing the Form, completing and sending it to you. Is it possible for you to accept my e-mailed interest as a confirmation of my registration, please.

With kind regards

Primrose Madikizela
SHEQ Manager
Port of Port Elizabeth
Transnet National Ports Authority

+27 41 507 1951 +27 86 648 7264

+27 83 409 7106 primrose.madikizela@transnet.net

Morgan Griffiths (WESSA)

From: Morgan Griffiths [morgan@wessaep.co.za]
Sent: Tuesday, November 01, 2011 4:39 PM
To: 'Belinda Clark'
Subject: RE: Environmental Assessment: Proposed redevelopment and landscaping of the southern por on of the Kings Beach Node on the Nelson Mandela Bay southern beachfront
A achments: 091218 Kings Evalua on Report.doc

Hi Belinda

Thank you for our discussion this a ernoon on this project. Kings Beach was a Blue Flag status beach un l end of 2009, when it failed to regain its flag due to deficiencies with the four ablu on blocks and significant problems with beach management – largely due to not managing stormwater runoff from the carpark.

My/Blue Flag's interest in this project is to promote the redevelopment up to the standards of Blue Flag, so that the NMBM can re-apply, as is apparently its inten on. Ge ng appropriate dune management is also key. As discussed please find a ached a Blue Flag Report on some of the issues.

Please call me should you have any enquiries and I will be happy to par cipate in a site visit.

With thanks
Morgan Griffiths
WESSA

Theo Stehle (DAFF)

From: TheoS [TheoS@nda.agric.za]
Sent: Monday, November 14, 2011 3:40 PM
To: Belinda Clark
Cc: steenbok@aerosat.co.za; Nokoyo Thabo (KWT)
Subject: RE: Environmental Assessment: Proposed redevelopment and landscaping of the southern por on of the Kings Beach Node on the Nelson Mandela Bay southern beachfront
A achments: KINGS BEACH RE-DEVELOPMENT PROPOSAL COMMENTS ON BID (1) NOV11.pdf; KINGS BEACH RE-DEVELOPMENT PROPOSAL COMMENTS ON BID NOV11.doc; KINGS BEACH RE-DEVELOPMENT PROPOSAL PHOTOS NOV11.pdf

Dear Belinda

Attached please find my comments. They concern mainly the proposed dune landscaping.

Kind regards

Theo

Theo Stehle

Forestry Scientific/Technical Support
Bosbou Wetenskaplike/Tegniese Ondersteuning
Private Bag / *Privaatsak* X12, Knysna 6570
Tel. +27(0)44-302 6905
Fax +27(0)44-3825461
E-mail / *E-pos*: theos@daff.gov.za

COMMENTS FROM THE DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES RE THE PROPOSED RE-DEVELOPMENT AND LANDSCAPING OF PORTION OF KING'S BEACH, HUMEWOOD, PORT ELIZABETH

With the exception of the comments on the trees protected under the National Forests Act below, it is made clear that these comments are of a general nature and do not fall within the current legal mandate of the Forestry section of the Department of Agriculture, Forestry and Fisheries (DAFF).

There are a few protected trees on the site, viz. white milkwood (*Sideroxylon inerme*) and red milkwood (*Mimusops caffra*), which should be retained if possible. They may not be disturbed, damaged, destroyed or felled without a licence from the Forestry office in Port Elizabeth. Any applications should be directed to that office.

However, by virtue of its former function of the protection, management and stabilization of State coastal dune areas, there is expertise left in DAFF (Forestry) that could contribute toward making the correct decisions regarding this EIA process.

The landscaping of the strand plant foredune hummocks [according to the classification of Tinley (1985)] is regarded as highly undesirable, and should under no circumstances be allowed. Note is taken of the fact that the dune has apparently been constructed artificially to a certain height in the 1980's, and that the proposal is now to reduce their height to what it had been originally, to *inter alia* obtain sea-views. However, in this proposal consideration is apparently not given to the fact that foredunes are dynamic wind-shaped structures which are natural features on sandy shores above the high water mark, and that, regardless of how they were originally "constructed artificially", they have since, due to natural physical and biological forces and influences, developed into vegetated foredunes comparable to any such dunes formed by nature.

Attached photographs of these dunes reveal that they are covered with typical indigenous strand vegetation found in the dynamic dune zone, vegetated with littoral

species consisting of *i.a. Ehrharta villosa* (“pypgras”), *Ipomoea brasiliensis* (“seepatat”), *Agropyron distichum* (sea wheat), *Gazania* sp. (“gousblom”). This vegetation is rhizomatous or stoloniferous in nature with the characteristic of the former to continuously grow out above the accumulating sand, thereby forming crested dunes, and binding the sand that is wind-blown inland of the high water mark. Dune growth in this way is a natural process, which has undoubtedly occurred since the original sand dunes were formed artificially. (See photographs).

It is foolish to interfere with this dynamic semi-stabilised foredune zone, as it is a natural(ised) eco-system that provides services free of charge by providing a natural and resilient buffer that absorbs and dissipates the energy of the sea and wind in a dynamic zone of semi-mobile sand. If this buffer was to be replaced by for example rigid structures like rock or concrete, or artificially stabilised vegetated soil, the energy of waves and wind would “collide” with these inflexible surfaces and create turbulence and eddies producing erosion and undermining of the structures created to protect the inland stable zone against these forces.

In the light of increasing sea-levels through global climate change, it is very important to retain these dynamic buffer zones. They will absorb to some extent the forces exerted by storms. They are periodically eaten into by storm tides, removing sand, but during calm weather and seas they are again brought back to the shore by natural accretion processes. Any artificial interference with this process can only destabilize and disrupt this dynamic equilibrium, to the detriment of the development behind it.

In this regard, reference is also to be made to the CSIR publication “Coastal Dunes of South Africa”, Report No. 109, by Dr. K.L. Tinley, 1985.

A process of colonization with more permanent indigenous dune vegetation consisting of woody shrubs and trees, e.g. *Rhus crenata* (“duine kraaibessie”), has started in the lee of the dunes as they are currently. These should be encouraged by establishing more of these species. The value of this natural shelter against winds from the sea,

should outweigh the need to have a direct line of sight to the sea. The sea can easily be accessed by the accesses provided, and the system of proposed boardwalks along the dunes as they currently are, which is supported, should adequately provide in this need.

The proposed landscaping of the dunes will not be permanent, for the natural sand accretion processes will prevail and will naturally revert back to building the dune higher, as has taken place in the past. It appears that the proposal has not considered this aspect. Once the dunes have been landscaped, they will not remain in such a state, and if they are stabilized with too permanent a surface, they will be damaged by the forces of the elements.

In the light of imminent sea-level rises, it would be prudent, and should be enforced by the authorities responsible, to instead of expanding the artificial development in the direction of the sea, withdraw further inland and determine a setback line, as these developments close to the sea are certain to be inundated by the sea in the not too distant future.

Theo Stehle
Forestry Scientific & Technical Support
Knysna

HUMMOCK FOREDUNES WITH LITTORAL VEGETATION: KING'S BEACH

Ipomoea pes-caprae in association with *Ehrharta villosa*

HUMMOCK FOREDUNES WITH LITTORAL VEGETATION: KING'S BEACH

Dune building plants: *Gazania* sp., *Ehrharta villosa* & *Agropyron distichum*

HUMMOCK FOREDUNES ON LEE SIDE: KING'S BEACH

Rhus crenata in centre of photograph

Potential for the establishment of indigenous woody dune vegetation

Correspondence received in response to Draft BAR

Kings Beach Surf Lifesaving Club

From: "A3D SA" <chris@a3dsa.com>
Date: Mon, 19 Mar 2012 18:19:29 +0200
To: 'Mike Cohen'<steenbok@aerosat.co.za>
ReplyTo: <chris@a3dsa.com>
Cc: 'KB Secretary'<kingsbeachslsc@gmail.com>
Subject: RE:Comments on draft assessment for Kings Beach Redevelopment - phase 2

Hi Mike

Please see our comments below. With respect to the process, I note that the beach office was involved in design discussions. Is it possible to get information related to what they were asked to comment on as we would have thought there may be some input from our side particularly as the club house and tower will be directly impacted (this is not directly related to the EIA hence the reason I haven't included it under our main comments). If this falls outside your mandate, please advise whom I should be contacting to discuss this.

With respect to Dean Biddulphs' comments, this is something the Life saving club has already been investigating (and which are quite advanced with respect to proposals), so with respect to the 2nd part of his question, would such plans require a separate process or does the EIA include for this within its scope?

With respect to the EAP response to Kings Beach comments, if the dunes are not to be modified, how will the club members continue to access the beach as the dune field extends itself across the access route to link with the existing dune adjacent? This appears to be a natural phenomena that will not stabilize over time, only increase in magnitude (as has the height of the dune in front of the club tower). In addition, what mitigating process has been proposed to prevent the sand buildup that has gone on since the dunes were created in the current guise from swamping the club in future years? This is already happening on a regular basis due to natural sand movement phenomena and not just foot traffic across the dune which is a fairly recent event caused by sand covering the fences that were originally erected along the pathway to prevent access i.e. there was already sand overblow despite the dune vegetation being sufficiently stabilized which increased the hard core at the base of the dunes on the seaward side.

We note the two boardwalks proposed and would like to be consulted by the relevant design teams with respect to exact route, levels and also details of the lookout point and its potential for use by life guard's during the course of their daily activities. In addition, we note no boardwalk or other access proposals for the MacArthur baths side of the beach which seems at odds with the municipalities stated aims to make the beach more accessable as currently this is a serious problem for anyone on crutches or in a wheelchair (the current concrete walkway ends with no steps and in addition the storm water run off is eroding the beach further exacerbating the drop off). We note that mention is made of steps and gabion cages but the details on this do not appear to make allowance for disabled access. Although the report details that access 4 is the most heavily trafficked and main access to the beach, those aspects appear to have been ignored alongside what mitigation of storm water will occur there. The secondary issue of storm water from beneath the Mac Baths sea wall eroding the beach and thereby creating a sea gully does not appear to have been addressed in any way other than as a possible health hazard due high e-coli counts in an area children love to play in and which drains directly into the bathing area.

The proposals for the tertiary wetland are of grave concern mainly due to two aspects: firstly, the level of this wetland would seem to be at odds with the current ground levels adjacent to the beach areas which would therefore possibly create a flooding potential for the club and ablution block adjacent should overflow not be captured by the wetland i.e. that water directed along the current access road. Do any sectional details exist for the proposed drainage detailing the collection and subsequent control of this additional water processing by the wetland area? The secondary aspect is the impact of this additional water run-off on the existing gully's that have been the cause of much trouble to the bathing public this summer. It is our understanding that Afri-Coast Engineers are in the process of carrying out a detailed shoreline study that should provide clarity on the impact of rising sea levels on the beach erosion and increasing flooding patterns that have seen the high water mark extend to the base of the dune system along virtually the entire beach length. In addition, we believe this report should also inform the proposed design of any storm water system as it is our contention that increased water flow from the car park via the various roadways

is leading to the increased erosion of sections of the beach and offshore sea bed.

The proposals highlight that sand build up has caused problems with the storm water drainage system as originally designed at Point 5 but should also include Point 6 as any drainage at that point dams at the base of the existing concrete ramp due to sand build up creating a dam effect. We see no proposals that address this issue which will only increase should the adjacent dune not be reduced in size. It may be that the existing concrete ramp should be extended to the high water mark at the base of the dune system allowing easier maintenance access and assisting in managing the storm water drainage problem. We have in essence a man made system that now needs additional man made aspects to control it rather than returning the beach to what it had become by natural sand build-up following the extension of the harbour wall in the 1930's.

Regards

Chris Allen
Club Captain - Kings Beach Surf Lifesaving Club

Graham Taylor

From: Graham Taylor [mailto:Graham.Taylor@coega.co.za]
Sent: 27 February 2012 01:00 PM
To: Mike Cohen
Subject: RE: [PE Harbour Alert] Message No.29 - Kings Beach Redevelopment

Mike

Provision should be made for a mul use recrea onal path which connects with the exis ng recrea onal path network of the city. Currently cyclists are prohibited from using the tarmac sec on by no cycling signs. Conceptual drawings of the proposed development indicate cycling facili es and this is to be welcomed. Single use paths and the current system of no cycling signage give rise to the poten al for recrea onal conflict and mi ga on measures for such poten al conflict needs to be considered.

Thanks

Graham Taylor

NMBM Environmental Management Sub-Directorate (Jill Miller)

From: Jill Miller [jmiller@mandelametro.gov.za]
Sent: Monday, April 02, 2012 3:02 PM
To: Belinda Clark
Subject: Re:

Hi Belinda

It is recommended by CEN in the report that the water quality of the artificial wetland must be monitored to determine the effectiveness of the system. Are there any other operational requirements such as maintenance of the artificial wetland. Who will be responsible for maintenance of infrastructure?

The section in the report under **Authority Participation** should read as:

NMBM Environmental Management Sub-Directorate
NMBM Infrastructure and Engineering Directorate
NMBM Electricity and Energy Directorate

The NMBM Economic Development and Recreational Services Directorate should possibly be registered as an Interested and Affected Party, particularly Beaches, Resorts and Support Services.

Regards

Jill Miller
Environmental Management
Nelson Mandela Bay Municipality
Tel: 041 506 1332
Fax: 041 585 7261
Email: jmiller@mandelametro.gov.za

Department of Water Affairs

water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Water Use Authorization, Private Bag X6041, **Port Elizabeth**, 6000

Tel: 041 501 0717 **Fax:** 086 560 5042 **E-mail:** bloemm@dwa.gov.za
Enquiries: M. Bloem **Ref**: Kings Beach Node – Phase 2

CEN Integrated Environmental Man- Unit
36 River Road
Walmer
Port Elizabeth
6070

Attention: Dr. M. Cohen

DRAFT BASIC ASSESSMENT REPORT: RE-DEVELOPMENT AND LANDSCAPING OF THE SOUTHERN PORTION OF THE KINGS BEACH NODE ON THE NELSON MANDELA BAY SOUTHERN BECHFRONT (PHASE 2)

This office acknowledges receipt of the above mentioned project from CEN

The Technical Units from this office has no comments with regard to this development.

Yours Faithfully

Acting CHIEF DIRECTOR: EASTERN CAPE

Date: 15/3/12

Appendix F: Environmental Management Program for the redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2).

Table of Contents

Table of Figures

Chapter 1

Chapter 1: Introduction to the Environmental Management Program

1.1 Background

CEN Integrated Environmental Management Unit[1] was appointed by the Mandela Bay Development Agency to compile an Environmental Management Program (EMPr) for the redevelopment and landscaping of the southern portion of the Kings Beach Node on the Nelson Mandela Bay southern beachfront (Phase 2). The aspects of the activity that will be covered in this EMPr are:

- Construction of 2 access boardwalks to the beach with a viewing deck (there are currently 4 access points at ground level – 2 will remain, and the other 2 will be converted to raised access boardwalks)
- Construction of an artificial wetland to filter and attenuate stormwater prior to it being discharged onto the beach
- Improved stormwater management
- Upgrading the a portion of the existing parking area
- Construction of a skatepark

[1] A company profile and *Curriculum Vitae* of the persons responsible for compiling this EMPr are attached as Appendix 1

- Landscaping
- Maintenance and repairs of existing structures and infrastructure

Figure 1 is the site layout plan.

- **Figure 1: Site Plan**

1.2 Purpose of the Environmental Management Programme

The purpose of this document is to provide a framework for the management of environmental impacts associated with the above-mentioned activities. This EMPr is a framework plan and does not provide specific management plans detailing how management actions are to be implemented, but rather is structured around a number of construction and operational phase activities and identifies where more detailed Method Statements should be developed by the contractors and the subcontractors respectively.

The appropriate contractors must submit Method Statements to the Resident Engineer or his representative and Site Environmental Control Officer outlining proposed construction activities, phasing and procedures and methods to comply with the targets stipulated in this EMPr. Method Statements should, where applicable, include Site Establishment Drawings and Plans with sufficient detail to assess the potential impact of the site facilities or to assess the degree of safeguarding provided against pollution and other impacts.

Method Statements indicate how the procedures will be applied in order to meet the relevant targets and are central to the proper implementation of the EMPr. It is anticipated that in addition to assessing the systems and performance of the EMPr, the Site Environmental Control Officer will scrutinise the formulation of, and adherence to "Method Statements" in some detail.

Method Statements must be submitted before any work on the project is undertaken. The various method statements must be approved by the Resident Engineer or his representative (in consultation with the Site Environmental Control Officer). The Resident Engineer or his representative must keep copies of these Method Statements and letters of approval (including conditions attached) in a Method Statements file.

The Resident Engineer or his representative (and the Site Environmental Control Officer) must approve any deviations from the approved Method Statements.

All amendments must be in writing and must be submitted to the Resident Engineer or his representative.

Method statements should be submitted to the Environmental Consultant for comment before final approval is issued.

The EMPr should be viewed as a dynamic document, which may require updating and / or revision during the operation and decommissioning of the project.

The successful implementation of this EMPr is dependent on its forming part of the project's management system. Without regular checks on performance and corrections of deviations from the environmental objectives, procedures and targets, the EMPr will fall into disuse and become ineffective. The EMPr, therefore, includes various elements of an Environmental Management System such as objectives and targets, the allocation of responsibilities, checking of corrective action, regular audits, and management review of the system.

1.2.1 For Whom is the Plan Intended?

The plan is a management tool and will be used primarily by the Project Manager, Resident Engineer and the contractors responsible for the onsite work. It is recommended that this EMPr should be available to the public upon request.

Chapter 2

Chapter 2: Environmental Management Programme Requirements

2.1 Introduction

The Environmental Management Requirements are designed to address the legislation as well as issues and impacts associated with the proposed activities.

2.1.1 Management actions that must be completed prior to the commencement of all works

Objective:

To ensure that all conditions and requirements of EMPr are met.

Aspect

- Actions to be completed by the proponent and contractor prior to the commencement of the relevant construction activity

Procedure

- Review the EMPr and other relevant legislation, and convey the outstanding actions to the responsible team member.

Targets

✹ Ensure that all requirements are in place and that any approval is obtained in writing prior to commencing any construction activities

It is recommended that the Resident Engineer or his representative and / or the Contractors obtain copies of all relevant legislation. An updated file of all legislation should be maintained at the Resident Engineer or his representative's office.

The specific requirements in the following section are worded in broad terms and details of the actions to be undertaken must be presented in the Method Statement for each aspect. Method statements are compiled by the contractors or their sub-contractors and approved by the Resident Engineer or his representative and the Site Environmental Control Officer. All method statements are to be reviewed by the Independent Environmental Consultant.

2.1.1.1 Basic Planning

Objective

To plan the construction site to allow for sound environmental management and effective rehabilitation.

Aspect

All activities related to construction of structures and infrastructure.

Procedure

✹ Compile an annotated base plan / map of the site indicating the various activity zones, roads and tracks, all stockpile areas, campsites and all other areas which will be used or altered during the construction phase. The plan must also indicate environmentally sensitive and no-go areas.

- Plans for the removal and disposal of wastes and any hazardous or contaminated materials (such as; fuel drums, soil which has been contaminated with leaked fuel or oil, and alien weed infested soil) should be described as appropriate for the scale of the operation

- Note the location of registered waste disposal sites

- Develop an environmental awareness plan for all construction staff. The plan must highlight all possible environmental risks that may result from construction activities. A plan must be in place and provided to all staff on how to deal with these risks, should they occur

Targets

- Approved site plan before commencing construction

- Approved environmental awareness plan and training programme for all construction staff prior to construction commencing

- The following issues must be addressed and where appropriate shown on the Environmental Management Site Plan

Issue	Nature / Description
Sequence of events	Description of the nature of the process required. Briefly describe the sequence of events that will take place from the time that the contractor moves onto site to the time when the site is handed over to the Project Proponent
Health and safety	Potential risks and hazards and precautions that will be taken Cooking area, hazardous materials site, first aid kit, fuel store, security issues, fire management, beach access for the public

Issue	Nature / Description
On site toilets	How many required for the particular development? How long are the toilets required on site? Location of toilets (Site Plan)
Workforce	Number of onsite workers Training of workforce in terms of environmental awareness Management of workforce, particularly sub-contractors
Transport and traffic	Transport required for site workers Routes to be used by construction vehicles Demarcate location of traffic turning circle and parking areas (Site Plan)
Infrastructure and associated equipment	Nature and extent of infrastructure construction Indicate on site plan
Topsoil	Approximation of quantity to be excavated Where to be stockpiled (Site Plan) How long to be stockpiled Area required for stockpile Management of stockpiles: alien vegetation control in stockpiles, silt curtains on downslope edge of stockpiles, watering if necessary

Issue	Nature / Description
Earthworks/cleaning	Volume of material to be excavated/cleaned Duration of operations Where stocks to be kept on site (Site Plan) How long to be kept on site Where, when and how to be disposed of Recycling and/or re-use of materials
Equipment needed for construction activities	Area required for material and equipment storage Duration of works Nature of equipment and necessary materials
Drinking water	Quantity required Duration of period in which required Source of water Location of potable water (Site Plan)
Cooking areas	Area required Equipment required e.g. gas stoves, matches etc. Location - must take into consideration the vegetation conditions (Site Plan)
Existing structures	Indication of location of any structures that need to be removed and/or protected (particularly those with heritage value as identified in the Heritage Impact Assessment)

Issue	Nature / Description
Life of project	Working hours Time frame
Construction site	Work area required Location of construction site and work area (Site Plan) Demarcation of no-go areas
Environmentally sensitive areas and possible environmental risks associated with construction activities	A plan of environmentally sensitive areas must be drawn up and made available to contractors. This will include areas prone to erosion, sensitive vegetation, dunes etc. These areas are to be demarcated as no-go areas on a plan. A training programme on possible environmental risks that may result from construction activities and how to deal with these (including a reporting structure) must be made available prior to construction commencing. A search-and-rescue operation and relocation plan must be done prior to construction commencing. A nursery area must be set aside for storage of plants to be used in on-site rehabilitation.
Waste management	Litter drums - number, type, size, location (Site Plan) Closest registered waste disposal site (Location map) Waste management plan Recycling / material re-use options

2.1.1.2 Restriction of Working Areas

Objective

To keep the demarcated and /or fenced off work area as small as possible. To restrict work to demarcated areas only.

Aspects

The effective demarcation of the construction site

Procedure

- The demarcated area must cover as small an area as possible.

- Prior to any construction beginning, the actual site to be worked must be clearly demarcated by means of highly visible durable tape.

- Once the demarcated area has been approved a written motivation to alter the boundary must be submitted to the Resident Engineer or his representative for consideration and (possible) approval.

- The markings of the site must be maintained throughout the construction period, as and where determined by the Resident Engineer or his representative. This is to ensure that unnecessary damage is not done to the surrounding areas. It will also ensure the safety of people working on site and people moving in the vicinity of the site.

- All site workers must be informed of the limits of the site and should be instructed not to utilise areas outside of the defined activity zone.

- All construction material and machinery required for construction activities should be located within the demarcated activity zone. No activities or dumping may take place outside of the demarcated activity zone

- A comprehensive set of photographs should be taken of the site prior to commencing any construction.

- At the end of construction activities all components of the marking system (tape and poles) must be removed, to the satisfaction of the Resident Engineer or his representative.

- Vehicles must be instructed to remain on the track and deviations from the approved track must not be permitted.

- Production of an Area Restriction Method Statement which includes the access road

Targets

- Approved Area Restriction Method Statement.

- Controlled access to the site for the contractors, work crews, sub-contractors

- Prohibited access to the public, with adequate sign posting (for safety reasons)

2.1.1.3 Flora and Fauna

Objective

To minimise damage to indigenous flora and fauna utilising the construction site and the surrounding areas. To re-vegetate the area as necessary to alleviate erosion potential and to improve any aesthetic issues. To ensure minimum disturbance to indigenous flora and fauna occupying the area influenced by the construction.

Aspects

Areas to be cleared for construction, areas to be re-vegetated; lighting of fires, permit applications for removal of protected and threatened species, alien vegetation control.

Procedure

- The Conservation of Agricultural Resources Act (Act 43 of 1983) states that no person shall dispense any weed in the country. In accordance with the Act every effort must be made to ensure that the site and other clearly marked areas relating to the operation and decommissioning is kept free of weeds or invasive plants.

- If any protected or threatened floral species are to be removed for construction, the necessary permits must first be obtained
- A search-and-rescue operation must be done prior to construction commencing for any indigenous plants that can be successfully transplanted in rehabilitation efforts
- A site must be set aside before construction starts for use as a nursery area for any removed plants
- A rehabilitation plan for disturbed areas, especially in the dunes, must be drawn up
- All cleared areas adjacent to the work area should be re-vegetated and maintained to control erosion and minimise dust.
- Where necessary, suitable erosion control measures must be used until re-vegetation of cleared areas is successful. This is especially important in the dunes.
- All the areas cleared must be rehabilitated with suitable indigenous vegetation upon completion of the construction works.
- Fill material should preferably not be brought onto site. This is to avoid the introduction of alien vegetation and weeds. Excess material should be removed from the site and disposed of at a registered waste site.
- Fires are to be prohibited on and adjacent to the site during the construction phase.

Targets

- Approved Flora and Fauna Method Statement.
- Rehabilitation plan
- No fires are permitted on or close to vegetated areas.

2.1.1.4 Cultural Historic, and Archaeological

Objective

To limit damage to possible cultural historic and archaeological artefacts and sites, features and objects.

Aspects

Clearing of sites, excavation, rehabilitation and related activities.

Procedure

- The Resident Engineer or his representative must ensure that all staff is trained to recognise potential cultural historic, and archaeological artefacts and sites. The Resident Engineer or his representative must also ensure that a system is in place to halt the specific activity if such a site is identified. The Resident Engineer or his representative may consider offering a reward to personnel who identify such sites.

- If any such sites are identified construction activities in the vicinity must be halted and the find brought to the immediate attention of the Resident Engineer or his representative who will report it to the National Heritage Council.

- The Resident Engineer or his representative must then arrange for the appointment of a qualified historian or archaeologist to examine the site and recommend further action.

- Following consultation with the historian or archaeologist, the Resident Engineer or his representative will be responsible for approving the resumption of normal activities.

- A Cultural Historic and Archaeological Method Statement incorporating the above procedures and the site clearance plan, including timing, physical boundaries,

the maximum depth of excavations and programming of these excavations, must be submitted by the appropriate contractor(s) to the Resident Engineer or his representative for approval.

Targets

- Approved Archaeological Method Statement.

- No cultural historic, or archaeological artefacts or sites may be purposefully damaged or destroyed. (It is illegal to disturb fossils or other historic and or cultural sites and objects without the prior consent of the National Heritage Council.)

2.1.1.5 Preservation of Topsoil

Objective

To reduce the size of all stripped areas and to store stripped topsoil separately for use in site rehabilitation and landscaping once construction has been completed.

Aspects

Storage of stockpiles of soil, conservation of additional topsoil areas, erosion control.

Procedure

- Topsoil must be stripped from the work area and stockpiled on an area outside of the immediate work area, but inside the demarcated work area. Stockpiled soils shall be neat, and the dumped soil shall be flattened immediately after placement to ensure minimum exposure to wind and water.

- Topsoil must be utilised in the rehabilitation of the site once the construction work has been completed. Any excess topsoil must be removed from the site. Excess topsoil can be used in erosion control works on any other disturbed area.

- *Cynodon dactylon* (kweek) (or an alternative such as *Stenotaphrum secundatum* or other suitable species recommended by a restoration ecologist)

should be used to re-vegetate the topsoil stockpiles if they are to be left for longer than 90 days. A typical seeding rate would be 6 kg seed per hectare. (Applicable only where stockpiled soil will be retained for longer than 3 months). For shorter periods a mulch of natural vegetation cut on site during the clearing operation (grass and shrubs) can be placed over the stockpiled soil.

- The maintenance of soil erosion control measures must be strictly monitored and reported.

- A Topsoil Preservation Method Statement incorporating the above procedures, including timing, must be submitted to the Resident Engineer or his representative for approval.

Targets

- Approved Topsoil Preservation Method Statement.

- All topsoil must be separately stripped and stored.

2.1.1.6 Air Quality

Objective

To minimise nuisance and potential health problems, and potential damage to flora, associated with dust and/or sand.

Aspects

Vehicle movement, stockpiling (of sand) and site clearing.

Procedure

- Staff should be trained to report dust-generating activities as soon as they detect them.

- Dust can be suppressed by a combination of:

- Regularly - at least daily during the dry and windy conditions - spraying exposed areas with water, at a frequency to be determined by the Resident Engineer or his representative.
- Compacting exposed areas
- Using environmentally acceptable chemical and other suppression methods where appropriate
- Covering long-term stockpiles or temporarily re-vegetating them
- Halting dust generating activities when wind speed exceeds 35 km/h
- Imposing a 15 - 20 km/h speed limit on access roads
- Re-vegetating exposed areas during the operating and decommissioning phases.

✹ Any complaints about dust recorded in the complaints register must be immediately investigated by the Resident Engineer or his representative and addressed.

✹ The Resident Engineer or his representative (advised by the Site Environmental Control Officer) must implement a more rigorous dust-monitoring programme if there are persistent complaints about dust in the area.

✹ No waste, vegetation or any other material shall be burnt in compliance with smoke control regulations issued in accordance with the Atmospheric Pollution Prevention Act (Act 45 of 1965) and the Air Quality Act (Act 39 of 2004).

Targets

- Approved Air Quality Method Statements.

- Dust visibly generated by construction activities may not exceed a deposition level of 0.5 g/m^2/day. (Department of Health denotes this level as heavy fallout of nuisance dust).

- Excessive dust generation as determined visually by the Resident Engineer or his representative is not permitted.

- Comply with conditions and standards set in relevant legislation (Air Quality Act No 39 of 2004) and the Municipal By-Laws

2.1.1.7 Noise and Vibration

Objective

To avoid disturbing residents, employees, recreational users, and fauna, with particular reference to construction and decommissioning activities on the site.

Aspects

Operation of construction equipment, assorted maintenance and vehicles.

Procedure

- Where possible the contractors must use equipment which limits noise generation.

- Any complaints pertaining to noise and vibrations as recorded in the complaint register must be immediately investigated by the Resident Engineer or his representative and addressed. SABS 0103 - 1983 Code of Practice indicates that an increase of ambient noise levels by 5 dB (A) will induce “sporadic complaint” from the community.

- The Resident Engineer or his representative may decide to restrict noisy activities to normal working hours i.e. Monday - Friday 7am -5pm; Saturday 7am - 1pm. It is preferable that no construction takes place on weekends, public holidays or peak holiday periods (e.g. Easter and Christmas)

- Noisy vehicles, especially those travelling near residential areas, must be fitted with appropriate silencers and the drivers must be trained to drive in a manner that limits noise disturbance.

- Attempts must be made to schedule noisy activities so that they occur simultaneously and over as short a period as possible.

- Vibration inducing activities must also be simultaneously scheduled wherever possible.

- A formal noise monitoring programme must be implemented by the Resident Engineer or his representative if there are persistent complaints.

- A Noise and Vibration Method Statement must be submitted by the appropriate contractors (s) to the Resident Engineer or his representative for approval.

Targets

- Approved Noise and Vibration Method Statement.

- In terms of Section 25 of the Environment Conservation Act 73 of 1989, ambient noise levels in surrounding residential and commercial areas may not increase by more than 7 dB (A).

- The Occupational Health and Safety Act 85 of 1993 stipulates that noise levels in excess of 85 dB (A) at 1 metre from equipment are not permitted.

- Excessive noise as determined subjectively by the Resident Engineer or his representative.

2.1.1.8 Water Consumption

Objective

To minimise the consumption of water

Aspects

Equipment servicing areas, domestic water use, water required for construction and related activities.

Procedure

- Opportunities to reduce consumption of or re-use water must be adopted wherever possible.

- Methods must be employed to ensure that water is not wasted. Environmental awareness training must ensure that staff is aware of the need to conserve water and to minimise the pollution of water.

- A Water Consumption Method Statement must be submitted by the appropriate contractor(s) to the Resident Engineer or his representative for approval.

Targets

- Approved Water Consumption Method Statement

- The Resident Engineer or his representative to set a realistic water consumption quota.

2.1.1.9 Water Quality

Objective:

To minimise the potential contamination of ground and surface water

Aspects

Poorly maintained equipment and vehicles, vehicle parking areas, and contaminated run-off during construction.

Procedure

- The Resident Engineer or his representative shall ensure that all precautions are taken to ensure that no surface or ground water becomes polluted. Any deliberate or unplanned pollution of water is an offence in terms of the National Water Act (Act 36 of 1998).

- Generators and fuel supply needed for equipment during the construction phase must be placed on trays, which rest on clean river sand. This is to prevent any oil or fuel spills. The river sand (clean or contaminated) must be removed from the site once construction has been completed. All contaminated material must be disposed of at a registered waste disposal facility

- No vehicle must be re-fuelled, serviced or repaired on the construction site, except in designated areas.

- No cement or concrete should be mixed on the soil surface or within drainage lines. Cement mixers must be placed on large trays to prevent accidental spills onto the soil surface. Where cement or concrete is mixed on the soil, contaminated soils should be removed and disposed of at a registered waste disposal site

- Care should be taken at all times to ensure that dirty water does not enter into any drainage line or adjacent surface water feature.

- Temporary storm-water runoff basins and drainage ditches may have to be constructed in order to capture storm-water.

- Sediment transport of storm-water must be minimised e.g. by using silt traps, geo-textiles, diversionary berms, soil stabilisation and temporary settling ponds.

- Establish, if necessary, sediment filter fences made of straw bales, geotextile filter fabric, gravel or sandbags around stockpiled soil and in sloping areas to capture silt laden runoff;

- Ensure sediment filter fences are maintained until work has finished in that area. Rubbish and other extraneous matter should be removed from fences as it decreases the ability of structures to filter water and trap sediment;

- Protect drainage and/or wetland areas with filter fence to ensure that sediment does not enter area and affect aquatic flora and fauna;

- Staff must not be permitted to use dams or any pond for the purpose of bathing, washing of clothes, vehicles and equipment, nor the disposal of any waste.

- Details of storage of all chemicals must be submitted to the Resident Engineer or his representative for approval.

- Contaminated soil (e.g. in vehicle parking areas, under generators) must be removed to an appropriate permitted solid waste disposal facility.

- Environmental awareness training must ensure that staff is aware of the need to prevent water pollution.

- A Water Quality Method Statement must be submitted by the appropriate contractor(s) to the Resident Engineer or his representative for approval.

- Should a polluting incident occur, the Resident Engineer or his representative shall immediately contact the regional office of the Department of Water Affairs (requirement of National Water Act). Cleanup shall take place in consultation with the Department.

- No contaminated runoff must be allowed to drain into the coastal environment.

Targets

- Approved Water Management Method Statement.
- No contamination of surface or groundwater or the coastal zone.
- SABS 241 effluent discharge standard

2.1.1.10 Waste Management

Objective

To limit the potential for groundwater and surface water pollution as well as the visible and malodorous accumulation of waste materials. To prevent littering and associated environmental impacts.

Aspects

General operation and decommissioning activities

Procedure

- A system for identifying, classifying and disposing of solid waste must be devised. Before construction begins, it is important to establish who will be responsible for identifying any local and or provincial requirements (e.g., recycling standards and proper disposal of solid wastes) and who will be responsible for complying with these requirements.
- Waste should be classified as domestic (including litter), hazardous, toxic or recyclable.
- Waste materials (e.g. paper and glass) must be sorted and sent for recycling, where the quantity allows this and if the facilities are available. Certain waste materials are valuable and could be sold to (local) entrepreneurs for further use.

- No littering is permitted on site; litterbins must be provided throughout the site. These litter bins must be predator and scavenger proof.

- Centralised eating facilities must be provided for workers in order to facilitate litter control.

- All solid waste must be disposed of off-site at suitably permitted waste facilities. This includes any building rubble left after construction.

- A register of waste disposal and sorting records must be retained by the contractors and submitted to the Resident Engineer or his representative for auditing purposes.

- Appropriate temporary disposal areas must be covered and be on an impermeable floor.

- A Waste Management Method Statement must be submitted by the appropriate contractor to the Resident Engineer or his representative for approval

Targets

- Approved Waste Management Method Statement.

- National Water Act (Act 36 of 1998) and National Waste Act (Act 59 of 2008)

- All waste material must be removed from the site and suitably disposed of; no solid wastes shall be stored on-site for more than one week.

2.1.1.11 Fuel and Hazardous Materials Storage

Objective

To ensure that materials are appropriately stored to minimise the potential for pollution and accidents.

Aspects

Storage of fuels solvents, and other hazardous and toxic substances

Procedure

- Fuel, solvents and other hazardous or toxic substances must be securely stored in a restricted, locked facility approved by the Resident Engineer or his representative.
- Fuel and hazardous materials containers must be properly and boldly labelled.
- Storage facilities must be regularly maintained.
- An emergency response plan (e.g. in case of fire) must be formulated, including steps taken to manage the capture and treatment of polluted water.
- A Fuels and Hazardous Materials Storage Method Statement must be submitted by the appropriate contractor to the Resident Engineer or his representative for approval.
- The provisions of the Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) must be adhered to.
- The provisions of the Hazardous Substances Act (Act 15 of 1973) must be adhered to.

Targets

- Approved Fuels and Hazardous Materials Storage Method Statement.
- Approved Emergency Response Procedure Method Statement.
- Fuels and hazardous liquids must be stored in an impervious, bunded and covered area with a capacity of 110% of the largest single storage tank.

2.1.1.12 Social Issues

Objective

To ensure the health and safety of the construction workforce and surrounding landowners, recreational users and workers. To ensure that activities associated with construction, particularly the presence of the workforce, do not create social problems or exacerbate any which may already exist; and that construction activities do not impact on the normal operations of surrounding businesses.

Aspects

Staff and surrounding landowners and recreational users welfare, health and safety. Non-interference with surrounding commercial activities

Procedure
Employment

- A policy of employing local people should be implemented wherever possible. This will ensure that benefits of the construction are provided to local communities and will prevent an influx of job seekers to the site. This policy must be finalised before the hiring of sub-contractors.

- Local sub-contractors should be employed wherever possible to maximise the localised economic benefits of the project.

- No recruitment of workers must occur on site.

- Access to the construction site must be strictly controlled.

- A policy regarding alcohol and weapons on the construction site must be formulated. This policy must be finalised prior to the commencement of work.

- A mechanism must be established to receive and address complaints from the staff.

- For security reasons, cash wages should be paid off site.

Health and Safety

- Adequate ablution facilities and chemical toilet facilities must be erected and maintained in good order on the site for the duration of the construction and decommissioning phase. Toilets should be removed from site when construction is completed. Waste must be disposed of at a registered waste site.

- Adequate clean drinking water must be available to construction staff at all times during the construction period.

- An area must be demarcated for staff to conduct all necessary cooking activities. The site must be selected to ensure that there is no risk of fires. It would be advisable to ensure that small gas cookers are available on site.

- A complaints register must be kept of any issues raised by surrounding landowners. These must be attended to immediately

General

- A Social Issues Method Statement must be submitted by the appropriate contractors to the Resident Engineer or his representative for approval

- Safe access to the beach must be allowed during construction

- Local businesses must be allowed to operate in an uninterrupted fashion, and access must not be prohibited in construction phase

Targets

- Approved Social Issues Method Statement.

- Labour Relations Act, 1995 (Act 66 of 1995).

2.1.1.13 Site Rehabilitation

Objective

To re-vegetate areas that have been disturbed during construction.

Aspects

Dismantling and removal of all construction infrastructure, re-vegetation and landscaping of disturbed areas on site, replacement of topsoil. Ensuring that adequate erosion control measures are in place, especially in dune areas

Procedure

- The first step in the rehabilitation operation is a general clean up of the total area around the works. All construction infrastructure, equipment, materials and wastes must be removed from the site upon completion of construction (or earlier, in a phased manner, if possible).

- All compacted and previously used construction areas shall be scarified to a depth of 150mm prior to topsoil being replaced.

- Stored topsoil must be replaced on disturbed areas to a depth of at least 150mm.

- Vegetation that was cleared may contain small amounts of seed, or provide useful fauna habitat. Logs, limbs and stumps should be cleared and stockpiled separately to the topsoil stripping operation. Smaller sized vegetative material may provide useful mulch for later use in erosion control works, or else it should be combined with the topsoil.

- Wherever possible, stripped topsoil should be placed directly onto an area being rehabilitated. This avoids stockpiling and double handling of the soil. Topsoil placed directly onto rehabilitation areas contains viable seed, nutrients and microbes that allow it to re-vegetate more rapidly than topsoil that has been in stockpile for long periods.

- Do not strip topsoil when saturated, as this will exacerbate the damage to the soil structure. If topsoil must be stockpiled, remember that it deteriorates in quality while stockpiled

- Cleared areas must be landscaped to improve the aesthetic appearance of the site; suitably landscaped berms of topsoil may be created as part of the erosion control programme.

- On erodible sites, it is most important that slopes be reduced during site preparation. Steep slopes of greater than about 3 to 1 (20% or 36%) will generally continue to erode unless expensive stabilisation measures such as pegging out of geotextiles or mulch mats to break up the slope are undertaken.

- Topsoil should be re-spread uniformly over the area at a suitable depth to support re-vegetation. Remember that a thin layer of topsoil is far better than none at all. Re-spread soil should be left with a rough surface with many suitable locations for lodgement and germination of seeds. Smooth surfaces should be ripped, or manually cultivated to improve the 'roughness' of the seedbed and provide suitable sites for lodgement and germination of seeds.

- Any excess topsoil (not used in landscaping) must be disposed of in an environmentally acceptable manner.

- Where topsoil is not available on site, alternatives must be sought - these may include subsoil or imported topsoils. Extreme care should be taken when importing topsoils because they often contain seeds of vigorous weeds

- All compacted areas should be ripped along the contour. This may be carried out before or after spreading topsoil. Ripping will promote water infiltration and root penetration. Ripping should be carried out when the soil is relatively dry to increase soil break-up. Ripping after soil spreading will also help to 'key' in the soil to the underlying material, and it provides a rough surface for seed application. Where

soils have been spread some time before seeding, settling and formation of a hard crust may have occurred. If this is the case, the area should be ripped.

- All disturbed areas must be re-vegetated with suitable (i.e. naturally occurring in the area) vegetation.

- Where necessary, temporary stabilisation of areas should be done before final rehabilitation;

- Re-vegetation of area with locally collected seed and individual plant specimens removed prior to construction.

- The best erosion prevention at a site is the establishment of vegetation. However, while vegetation is becoming established, it may be necessary to employ other erosion prevention techniques.

- It is generally wise to retain any existing drainage controls, such as contour banks, rock filters and cut-off drains, upslope of the area being rehabilitated, to slow down surface run-off. A rough surface will capture more water and allow rainfall to infiltrate rather than flow directly downhill. Artificial structures should be removed once the site is fully rehabilitated.

- The soil erosion measures installed need to be checked regularly.

- A specific rehabilitation plan must be done for areas where boardwalks will be built in dunes. Vegetation must be site and location specific (i.e. depending on if rehabilitation is being done in foredunes or secondary dunes).

Targets

- Approved Site Rehabilitation Method Statement.

- Site rehabilitation to be completed within one month after the end of the construction period, or by an alternative date stipulated by the Resident Engineer or his representative.

2.1.2 Response to Public Complaints

The Resident Engineer or his representative must respond to queries and complaints from the public. In responding to such queries and / or complaints the Resident Engineer or his representative must document all such communications in a complaints register. All queries and complaints must be reported to the project proponent. All remedial action taken on a complaint must be recorded in the complaints register.

2.1.3 Environmental Compliance Monitoring

The Resident Engineer or his representative and / or the Site Environmental Officer must devise a monitoring programme in order to ensure compliance with the procedures and targets.

The Resident Engineer or his representative is responsible for monitoring the procedures and targets applicable to each environmental management requirement. The Resident Engineer or his representative in conjunction with the Environmental Officer must decide on the frequency of inspections.

For each of the environmental management requirements, the specific elements listed below should be monitored. This list is intended as a guide and is not necessarily exhaustive; consequently, other elements might need to be monitored to ensure compliance with the relevant target.

2.1.3.1 Restriction of Access to Sites

✹ The Site Environmental Officer should inspect the demarcated area on a regular basis and inform the contractors of any violations or areas where markings must be replaced.

2.1.3.2 Fauna

- All animal mortalities must be recorded and reported to the Resident Engineer or his representative.

- A record must be kept of fauna that was successfully translocated to non-disturbance areas prior to construction

2.1.3.3 Flora

- The ECO/Resident Engineer must check that the nursery is well managed

- The ECO must check that all the necessary permits are in place for removal of protected and threatened species

- The success rate of vegetation re-establishment must be monitored

2.1.3.4 Cultural Historic and Archaeology

- During earthmoving, excavation and site rehabilitation the Site Environmental Officer must monitor for potential cultural historic, and archaeological sites daily, or more frequently at his/her discretion.

2.1.3.5 Preservation of Topsoil

- Regular checks, at the discretion of the Site Environmental Officer, need to be undertaken on the storage of the topsoil and the state of the vegetation or mulch covering the topsoil.

- Checks on the erosion of the area must be carried out regularly, and it must be ensured that the erosion minimisation measures installed are effective.

2.1.3.6 Air Quality

- Dust must be visually monitored on a regular basis (daily), or more frequently in conditions conducive to dust generation, as determined by the Site Environmental Officer.

2.1.3.7 Noise and Vibrations

- The Site Environmental Officer must subjectively monitor noise and vibration levels on a frequent basis.

- The Site Environmental Officer must implement a formal noise-monitoring programme if persistent complaints are recorded.

2.1.3.8 Water Consumption

- Daily consumption of water must be monitored and recorded against the set water quota. Any excessive usage or peaks must be investigated.

2.1.3.9 Water Quality

- The Site Environmental Officer must visually inspect runoff basins, drainage ditches and sediment traps on a daily basis to ensure that they are in an acceptable condition.

- Other potential sources of surface and groundwater pollution must be inspected daily.

- Effluent must be monitored (against SABS 241 standard).

2.1.3.10 Waste Management

- The Site Environmental Officer must inspect on-site waste disposal facilities / temporary storage areas daily, to ensure that they are sufficient and that they are properly maintained.

- During site inspections the Site Environmental Officer must check for waste material, which is inappropriately (temporarily) disposed of or stored.

2.1.3.11 Fuel and Hazardous Materials Storage

- The Site Environmental Officer must ensure that materials are stored in the designated area set aside for that purpose.

✹ During daily site inspections the Site Environmental Officer must check storage facilities to ensure that they are in a proper state of repair.

2.1.3.12 Social Issues

✹ The Site Environmental Officer must monitor the site regularly (as part of daily inspections) and be alert to potential social problems on and off site.

2.1.3.13 Site Rehabilitation

✹ The Site Environmental Officer must monitor site landscaping and re-vegetation, commencing after construction

✹ Monitor the erosion control measures.

2.1.3.14 Site Housekeeping

✹ The Site Environmental Officer must monitor the site for litter and other waste material

2.1.4 Corrective and Preventive Action / Management of Environmental Problems

The Site Environmental Control Officer must devise a Corrective Action Procedure for implementing corrective and preventive action. The Corrective Action Procedure is to be implemented by all contractors and sub contractors on site. A flow-chart of responsible persons must be drawn-up that identifies a reporting structure for non-compliance.

2.1.5 Documentation

The Site Environmental Control Officer and Resident Engineer or his representative must devise forms (i.e. pro forma) for:

- Daily, weekly and monthly (or as appropriate) monitoring of environmental management requirements and targets (these should be integrated with those for Quality, Health, Safety and, possibly, Maintenance).
- Non compliance (time, offender), including a register of “offenders”
- Recommended corrective action
- Resolution of non-compliance problems

These records should be made available for external review.

The Site Environmental Control Officer and Resident Engineer or his representative must also devise forms for:

- Method Statements
- Logging complaints received in a complaints register
- Evaluating the environmental awareness training programme
- Evaluating the job-specific environmental training programmes
- Auditing of activities

The Site Environmental Control Officer, Resident Engineer or his representative, Contractor and sub-contractors must keep a record of all meetings attended, waste disposal documents, audits undertaken and other environmental issues as appropriate.

2.1.6 Roles and Responsibilities for the Implementation of the Environmental Management Programme

This section defines the roles of the key parties involved in the implementation of the EMPr for the Kings Beach Phase 2 development and mitigation measures suggested in the Basic Assessment Report relevant to construction phase.

2.1.6.1 The Developer

The Mandela Bay Development Agency, as the project initiator, has the overall accountability and responsibility for environmental management during the design, construction and operational phases of the development. Further it is their responsibility to ensure that the conditions of the Environmental Authorisation and mitigation measures suggested in the Basic Assessment Report are communicated to, implemented and complied with by the project managers, contractors and sub-contractors.

While it is the responsibility of the contractors and the sub-contractors to prepare and implement the detailed Method Statements, the Mandela Bay Development Agency will remain accountable for their implementation.

The Mandela Bay Development Agency (and not the Project Manager, Resident Engineer or the contractors) will be responsible for liaison with the relevant authorities with respect to the implementation of the Environmental Authorisation and the EMPr.

With respect to the EMPr for the construction phase, the Mandela Bay Development Agency is responsible for:

- Liaising with the project engineer, architects and builders, to ensure that all components of the facility are designed to meet all the listed environmental conditions as well as all of the legal requirements.

- Reviewing the Method Statements prepared by project engineers, the contractors and sub-contractors for specific activities relating to the construction phase.
- Reviewing and approving management plans prepared by the project engineers, contractors and sub-contractors.
- Reviewing and approving any environmental monitoring programmes that are recommended by the environmental consultant, the site environmental control officer or the authorities.
- Advising on actions to be taken in the event of incidents or public complaints.
- Providing the results of environmental reports to the relevant authority
- Ensuring that the required audits are undertaken on a timely basis and that the results of the audits are communicated to all operation personnel.

2.1.6.2 Authorities (Please note that the extract below assumes that a positive Environmental Authorisation will be issued, and is therefore only relevant if such occurs)

The authorities are responsible for the timely processing and issuing of the necessary permits and authorisations for the development. The authorities will ensure that the Mandela Bay Development Agency complies with the terms that are stipulated within the Environmental Authorisation should and when it be issued. Where necessary, the authorities will assist the Mandela Bay Development Agency in understanding and meeting the specified requirements.

The authorities may perform random controls to ensure compliance with the conditions. In such case, the Mandela Bay Development Agency will assist the authorities in every possible way so as to facilitate the control. In case of long-term

non-compliance, the Mandela Bay Development Agency will be required to provide an action plan with corrective measures for approval by the authorities.

2.1.6.3 Responsibilities: Resident Engineer

All obligations relevant to the Mandela Bay Development Agency concerning the implementation of the EMPr, will apply to the Resident Engineer or his representative, contractors and sub -contractors associated with the construction phase of the development. the Mandela Bay Development Agency will inform the Resident Engineer or his representative of these obligations, as well as of the Method Statements required in terms of these obligations, and will control their implementation. The Resident Engineer or his representative is to convey the requirements of the EMPr to the contractors and their sub-contractors; and ensure that they comply with these obligations.

It is the responsibility of the project engineers, contractors and sub -contractors to prepare and implement Method Statements which detail the means they will employ in order to meet the objectives set in the Construction EMPr.

The contractors and sub-contractors will be required, where specified, to provide Method Statements to the Resident Engineer or his representative setting out in detail how the management actions will be implemented in order to ensure that the environmental management objectives will be achieved. The method statements of different sub-contractors will be consolidated by the Resident Engineer or his representative into a Management Plan for a particular component of the EMPr. These Management Plans must be reviewed and approved by the Mandela Bay Development Agency prior to the commencement of the relevant construction activity.

The Resident Engineer shall through the Mandela Bay Development Agency appoint a Site Environmental Control Officer (or officers, if more than one is required), whose

primary role shall be to coordinate the environmental management activities during the construction phase of the development.

The Resident Engineer or his representative working in close cooperation with the Site Environmental Control Officer ensures that the EMPr is implemented. The Resident Engineer or his representative is the direct link between the Site Environmental Control Officer and the Contractors and sub-contractors. Specific responsibilities include:

- Distribution of copies of the EMPr to the project team
- Advising the developer on the appointment of any specialist if required
- Attending Project Progress Meetings, where the performance of the EMPr is discussed and / or reviewed.
- Commission of monitoring programme recommended by the Site Environmental Control Officer
- Ensuring that measures are taken to address any problems in the implementation of the EMPr
- Briefing the contractors regarding their EMPr responsibilities and ensure that they implement the conditions of the EMPr
- Formalising systems and delegating authority to ensure that the EMPr is effectively implemented
- Regular site inspections and monitoring to ensure compliance with the prescribed procedures in the EMPr
- Devising a Corrective Action Procedure for implementing corrective and preventive action

- Regular consultation with the Site Environmental Control Officer, as appropriate
- Facilitating the implementation of a general and specific environmental awareness training programme
- Devising a system to evaluate the training programme regularly and recommend changes as required
- The creation, in consultation with the Site Environmental Control Officer, of a Method Statement pro-forma, for distribution to the appropriate contractors and their sub-contractors
- The examination, revision and approval, of contractors Method Statements
- Keeping records of waste disposal, audits, inspections, monitoring and corrective actions
- Ensuring that copies of the EMPr are available to all contractors and sub-contractors
- Identification of any new significant environmental impacts and their associated aspects, and the necessary environmental management requirements to manage them
- Organising regular internal audits on the implementation of the EMPr

2.1.6.4 Responsibilities: Contractors and Sub-Contractors

The Contractor/s and sub-contractors have final responsibility and are accountable to the Developer for the effective implementation and monitoring of the EMPr.

The contractor and sub-contractors are responsible to the Resident Engineer or his representative for the effective implementation of the EMPr within their respective line functions. Specific responsibilities include:

- The full implementation of all of the requirements of the EMPr in terms of the approved method statements.
- Ensuring that all sub-contractors are familiar with and implement the EMPr
- Identifying procedures applicable to the activities they perform and / or control
- Identifying, in consultation with the Resident Engineer or his representative which sub-contractors are responsible for compiling (which) method statements
- Compiling method statements to meet the procedures and targets
- Submitting method statements to the Resident Engineer or his representative for approval
- Devising a system for monitoring compliance with method statements and procedures
- Identifying environmental training needs and implementing the environmental awareness training programme commissioned by the Resident Engineer or his representative
- Implementing corrective and preventive actions recommended by the Resident Engineer or his representative
- Reviewing of the EMPr implementation and effectiveness at site meetings with the Resident Engineer or his representative and the Site Environmental Control Officer
- Ensuring regular internal auditing of the implementation of the EMPr.
- Maintaining and submitting records of waste disposal activities and corrective actions taken to rectify environmental problems on site.

- Attending EMPr monitoring meetings with the Resident Engineer or his representative
- Keeping of a complaints register on site.

2.1.6.5 Responsibilities: Site Environmental Control Officer

A Site Environmental Control Officer with appropriate environmental and construction experience must be appointed by the Project Manager or Resident Engineer (through the Mandela Bay Development Agency to advise and assist the Resident Engineer or his representative and project team where necessary and to monitor the implementation of the EMPr. The Site Environmental Control Officer reports to the developer through the Resident Engineer or his representative and or depending on circumstances to the Independent Environmental Consultant appointed by the Mandela Bay Development Agency.

His/Her duties include:

- To raise the awareness of the contractor and sub-contractors and their staff to the environmental sensitivity of the project area and to foster an appropriate environmental attitude during the contract period.
- Supporting and advising the Resident Engineer or his representative, especially as regards review of Method Statements, auditing, monitoring and corrective and preventive action
- Accompanying the Resident Engineer or his representative on site inspections at a frequency determined by the developer, the Resident Engineer or his representative and the Environmental Consultant
- Recommending environmentally appropriate solutions to environmental problems

- Recommending additional environmental management measures as appropriate
- Attending Project Progress Meetings, as necessary or on a basis determined by the developer and the Resident Engineer or his representative

2.1.6.6 Responsibilities: Environmental Consultant

The project proponent [the Mandela Bay Development Agency] has retained the services of an Independent Environmental Consultant during the construction phase of the development. The role and function of the independent environmental consultant is to:

- Assist the developer in ensuring that the conditions of the Environmental Authorisation and mitigation measures in the Basic Assessment Report are adhered to
- Undertake periodic independent environmental audits on a time frame to be agreed to between the developer and the consultant
- Assist in liaison with Interested and Affected Parties and other stakeholders in the project
- Assist in the review and compilation of method statements to cover the various aspects of the work to be undertaken on site
- Assist the Site Environmental Control Officer in his day to day functions when necessary
- Review audits undertaken by the Site Environmental Control Officer
- Assist with environmental monitoring programmes established to ensure that a high level of conservation is attained on the development site

- Attend site and other meetings as decided upon by the development proponent and the consultant

Appendix 1: Company Profile and *Curriculum Vitae*

South Africa is confronted with numerous socio-economic problems:- Poverty, inadequate housing, water supply, and sanitation, unsustainable patterns of development, inadequate financial, human and technical resources and the lack of a coordinated approach to environmental management. This has resulted in a rapid decline in environmental quality, a loss of vital biodiversity and an increased exposure to health hazards in the environment from polluted water, air, unsafe and toxic waste material.

The philosophy of CEN Integrated Environmental Management Unit is forged on the belief that the people of South Africa will only achieve their goals and aspirations through a drive for sustainable development or development that delivers basic environmental, social and economic services to all without threatening the viability of natural, built and social systems upon which these services depend.

The sustainability that concerns the CEN IEM Unit is not just about ecology and sustaining environments. It must meet the essential needs for jobs, food, energy and water and achieve sustainability of both human and natural resources. Sustainable development must unite economics and ecology in decision-making and enhance the resource base.

Mission of CEN Integrated Environmental Management Unit

To contribute to the socio-economic advancement and the sound management of the natural resource base of Southern Africa, but in particular, the Eastern Cape Province.

The CEN Integrated Environmental Management Unit will achieve its mission through;

- the implementation of rural development and resource management programmes;
- conducting environmental and social impact assessments of development initiatives;
- policy initiatives on environmental and development issues;
- the formulation of guidelines for projects and assessments of projects;
- the initiation and implementation of rural development programmes.
- the initiation and implementation of integrated environmental management plans.

The Unit offers a wide range of environmental, educational and rural development services. It offers these services on a retainer consulting relationship as well as on a project based consulting relationship. Through its services it aims to integrate economic, social and environmental sustainability.

The Unit can provide expertise in a number of fields including:

- Agro-forestry Development
- Biodiversity Conservation
- Catchment Planning and Management
- Environmental Impact Assessments
- Environmental Management Plans and Programmes

- Game / Cattle Farming Operations
- Land Use Planning
- Natural Resource Management
- Protected Area Planning and Management
- Soil Conservation
- Sustainable Development Strategic Planning
- Tourism Site Location, Planning and Development
- Urban Agriculture
- Urban Open Space Planning

Skills Transfer Policy

CEN Integrated Environmental Management Unit operates a Skills Transfer Programme. Wherever possible CEN IEM Unit utilises the services of students from the formally disadvantaged community. Professionals in environmental management train these students in the process of Environmental Impact Assessments, Environmental Evaluation and Specialist Field Surveys.

Curriculum Vitae:

2.1.6.7 Michael Cohen

CEN Integrated Environmental Management Unit
36 River Road
Walmer, Port Elizabeth. 6070

Telephone: (+27) 041-581-2983
Facsimile: 086 504 2549
E-mail: steenbok@aerosat.co.za

Date of Birth:

18 January 1945

Nationality:

South African

Languages:

English (mother tongue), Afrikaans (good)

Qualifications:

B.Sc. (Zoology, Psychology. Wits. RSA).
B.Sc. (Hons) (Wildlife Management. U Pretoria).
M.Ag. (Wildlife and Fisheries Ecology: Texas A&M). (1973)
D.Sc. (Wildlife Management. U Pretoria). (1988)

Institutions:

South African Council of Natural Scientists (SACNAS)
Professional Member - Institute of Ecologists and Environmental Scientists
Member - International Association for Impact Assessment - South African Chapter

Member of IUCN Commission on National Parks and Protected Areas. (CNPPA) (1994 -1996)
Member of IUCN World Commission on Protected Areas (1997 – current)
Honorary Member of the Institute of Environment and Recreation Management of Africa 1995
Appointed to the Board of the Institute of Ecologists and Environmental Scientists - April 1997-May 2000
Referee to environmental assessment practitioners applying to the Interim Certification Board for Environmental Assessment Practitioners (ICB) for professional certification (2001 - present)
Appointed to the Council of the Provincial Heritage Resource Authority. Ministry of Sport, Arts and Culture. Province of the Eastern Cape 2003 (Resigned)

Professional History:
May 1996 – Present

Environmental Consultant: CEN Integrated Environmental Management Unit

July 1995 - May 1996

Director: Eastern Cape Nature Conservation. Ministry of Economic Affairs, Environment and Tourism. Left to start own consultancy business

January 1993 - June 1995

Regional Director: Cape Nature Conservation. Eastern Cape Region

October 1985 - December 1992

Deputy Director: Environment. Chief Directorate: Environmental Conservation Directorate: Environmental Management Department of Environment Affairs

July 1983 - September 1985

Assistant Director: Environment Chief Directorate: Environmental Conservation Department of Environment Affairs

March 1981 - July 1983

Chief Professional Officer Chief Directorate: Environmental Conservation Department of Environment Affairs

June 1978 - February 1981

Regional Ecologist: Transvaal Nature Conservation Division: Eastern Region (TPA)

August 1976 - May 1978

Officer-in-Charge. Suikerbosrand Nature Reserve Transvaal Nature Conservation Division (TPA)

1972 - July 1976

Research Assistant Eugene Marais Chair of Wildlife Management University of Pretoria

Specialist Courses:

- 1993 Completed the certificate course in Public Management at the University of Pretoria. The certificate was awarded Cum Laude
- 1989 Completed course in Practical Techniques in Environmental Impact Assessment conducted by the Environmental Evaluation Unit at the Graduate School of Business, University of Cape Town
- 1973 Completed the International Seminar on the Administration of National Parks and Equivalent Reserves held in the United States, Canada and Mexico
- 1973 Completed short course in Tropical Ecology while at Texas A & M University

International Experience:

- Nominated as a member of an international team to evaluate the professional activities of the Nature and National Parks Protection Authority of Israel (Evaluation was to be conducted during November 2000)
- 1994 - Represent South Africa as Scientific Councillor on the Convention on Migratory Species - Nairobi, Kenya
- 1994 - Alternate delegate for South Africa at the Conference of the Parties of the Convention on Migratory Species - Nairobi, Kenya
- 1994 -Member of the negotiations team for the African Eurasian Waterfowl Agreement - Nairobi, Kenya
- 1993 -Represent South Africa as Scientific Councillor on the Convention on Migratory Species - Bonn, Germany
- 1992 -Visit to Israel to hold preliminary discussions on a bilateral agreement on Nature and Environmental Conservation
- 1992 -Participate in the IV World Congress on National Parks and Protected Areas - Caracas - Venezuela - Present two papers at the Congress and participate in numerous working groups on a wide range of protected area issues
- 1991 - 1995 South African Representative on the Scientific Council for the Convention on Migratory Species
- 1990 -Visit to England and Israel (met with a variety of nature and environmental conservation organisations) for discussion on joint projects and for discussions on national and regional protected area systems plans
- 1989 -Member of South African delegation to the XV Antarctic Treaty meeting, Paris
- 1988 -Delegate to the 17th IUCN General Assembly - Costa Rica
- 1986 -Seminar on Environmental Education - Israel

Specialisation in Firm:

Integrated Environmental Management, Environmental Impact Assessment, Rural Development, Natural Resource Planning and Management

Recent Experience:

Environmental Impact Assessment:

2006 – To Present Selected Projects

- Scoping Exercise for a Proposed Pilot Aquaculture Operation for the Grow-Out of Penaeus vannamei Prawn Larvae For Commercial Purposes Within the Coega Industrial Development Zone at Port Elizabeth Eastern Cape Province Ballastrada Trade and Investments (Pty) Ltd, Trading as SeaArk Africa

- Environmental Management Plan for a Pilot Aquaculture Operation for the Grow-Out of *Litopenaeus vannamei* Prawn Larvae For Commercial Purposes, Coega Industrial Development Zone at Port Elizabeth, Eastern Cape Province

- Environmental Assessment for a Proposed Interpretive Centre, Day Visitor Site and Boardwalk Trail in the, Baviaanskloof Mega-Reserve Wilderness Foundation

- Environmental Assessment for a Proposed Residential Development, Remainder of Erf 328 Kabeljous River Jeffrey's Bay

- Environmental Assessment for the Augmentation of the Jeffrey's Bay Bulk Water Supply System (Pump Station, Supply Mains from Churchill Supply Mains and 5 Ml Reservoir)

- Environmental Assessment for the Proposed Augmentation of the Jeffrey's Bay Main Electrical Substation

- Environmental Assessment for a Proposed Residential Development, Remainder of Farm Noorsekloof 327, Jeffrey's Bay

- Environmental Assessment for the Proposed Rezoning and Subdivision of Portion of Portion 8 of the Farm Kabeljous River No. 321, Jeffrey's Bay
- Sensitivity Assessment for the Subdivision of Portion 1 (Remaining Extent) of the Farm Klein Buffelsfontein No 477/1
- Environmental Assessment for a Proposed Resort Development, Portion 84 of the Farm De Stades No. 485, Beachview
- Environmental Assessment for the Rezoning and Subdivision of the Remainder of the Farm Boschkloof No. 896, Division of Humansdorp
- Environmental Assessment for the Rezoning of Portion B of the Remainder of Farm 428 to "Special Zone Nursery"
- Environmental Management Programme Report for a Proposed Sand, Clay and Calcrete Mining Operation in the Coega Valley on Portions 1 and 4 of the Farm Welbedachtsfontein, 300, Port Elizabeth
- Environmental Assessment for Subdivision and Rezoning of Erf 483 Bushman's River for Residential Development
- Environmental Assessment for the Rezoning of Farms 328/1, 328/2 and Farm 779, Jeffrey's Bay, Kabeljouws-on-Sea

2001 – 2004 Selected Projects

- Environmental Assessment for the Extension of the Tsitsikamma Golf Estate.
- Environmental Assessment for a Residential Development in Jeffrey's Bay.
- Environmental Assessment for a Township Development in Jeffrey's Bay
- Environmental Assessment for Luxury Lodges and a Tent camp on the Mkambati Nature Reserve
- Environmental Assessment for a Boat Launch Facility at Gwe-Gwe, Mkambati Nature Reserve

- Environmental Assessment for a Boat Launch Facility at Kings Beach Port Elizabeth
- Environmental Assessment for the Port Elizabeth Golf Course Estate
- Environmental Assessment for a Resort Development on the Kromme River
- Environmental Assessment for the Establishment of a Presidential Suite at the Eagles Cragg Lodge, Shamwari Game Reserve
- Environmental Assessment for the Establishment of a Golfing Estate at the Port Elizabeth Golf Club
- Environmental Assessment for the Eskom Tsitsikamma 66kV powerline
- Environmental Assessment for three resorts in the Zuurrberg Area
- Environmental Assessment for a Satellite Resort on the Gorah Concession Area, Addo Elephant National Park
- Environmental Assessment for the Alicedale Golf Resort Development
- Environmental Assessment for three lodges on the Lalibella Game Reserve
- Environmental Assessment for the closure of the Marina Martinique Small Boat Harbour
- Environmental Assessments for two caravan parks on the Gamtoos River
- Environmental Assessment for the upgrading of the Road from Flagstaff to Holy Cross
- Biophysical Environmental Assessment on the proposed ESKOM Power line to feed the Aluminium Smelter at Coega
- Environmental Assessment of the Bayethe Game Reserve
- Environmental Assessment of Eagles Cragg Game Lodge – Shamwari

Game Reserve

- Environmental Impact Assessment on the Sanderlings Coastal Wetland Resort
- Scoping Report for boat mooring facilities on the Kromme River to serve a residential resort
- Class Environmental Assessment for Working for Water projects in terms of the new DWAF Environmental Evaluation System
- Environmental Scoping for a Housing Development on a Portion of Land in the Van Stadens Wildflower Nature Reserve
- Environmental Impact Assessment on two Leather Tanneries in Middelburg, Eastern Cape Province
- Compilation of an Environmental Evaluation System for the Department of Water Affairs and Forestry (DWAF) (Eastern Cape) This environmental evaluation system is currently being incorporated into the national DWAF's Environmental Management System
- Compilation of an Environmental Evaluation Administration System and Manual for the Department of Water Affairs and Forestry

Natural Resource Management

- Environmental Management Plan for the King Williamstown - East London National Road
- Investigation into the Protected Area Estate in the Province of the Eastern Cape: A Review of Goals and Objectives, Strengths and Weaknesses and an Analysis of Various Institutional Structures Suitable for Achieving the Goals and Objectives.
- Design and run RSA's premier stewardship programme (The South African Natural Heritage Programme and Sites of Conservation Significance Programme)

- Co-ordinate South African Plan for Nature Conservation
- Management Plan for the Suikerbosrand Nature Reserve
- Management Plan for the Marion and Prince Edward Islands (Draft).
- Protected Area Systems Plan
- Management Plans for game farmers
- Bioregional Planning

Policy

- Arrange and run two DWAF regional information sessions for the DWAF Regional Offices and Provincial Government Departments of the Western and Eastern Cape on the Implementation of the DWAF's (Eastern Cape) Environmental Evaluation System (2001). A further seven provincial workshops will follow.
- Run five Eastern Cape Information Sessions for District Municipalities in the Eastern Cape Province on the Implementation of the DWAF Environmental Evaluation System (2001)
- Member DANCED Review Mission on the National Waste Management Strategy
- Compile South African National Report to the Convention on Biological Diversity
- Sub-consultant to the Drafting team for the National White Paper on Integrated Pollution Control and Waste Management.
- Member of a six person drafting team for the National Green Paper on an Environmental Management Policy for South Africa where I represented the nine provinces.
- Appointed as one of the Reference Group for the National White Paper on an Environmental Management Policy for South Africa.

Papers and Publications:

- Author and co-author of some 27 papers, reports and conference presentations as well as a number of popular papers on environmental conservation.

Selected Clients

South African

- BKS
- Blue Crane Development Agency
- Crown Chickens
- Department of Environmental Affairs and Tourism
- Department of Water Affairs and Forestry
- Lalibela Private Game Reserve
- Mandela Bay Development Agency
- Municipality of Port Elizabeth (Nelson Mandela Metropole)
- Ninham Shand (Eastern Cape)
- Portnet
- Shamwari Game Reserve (Mantis Collection)
- South African National Roads Agency Ltd
- Stewart Scott (Eastern Cape)
- Telkom South Africa
- Vodacom South Africa
- Wilderness Safaris

International

- DANCED (Denmark)
- IDRC (Canada)
- European Union

Curriculum Vitae: Belinda Joan Clark

Qualifications

- B.Sc (Botany, Geology)
- B. Sc Honours (Botany: ecology, environmental management, agriculture)
- M.Sc (Botany: Marine Eco-physiology)
- PhD (Botany: Marine Ecology, focusing on marine pollution)

Awards:

- UPE Scholar Merit Award (Matric Results), Deans Bursary (2001-2003)

Fields of research:

- Third year project:

Habitat Requirements of Estuarine macrophytes of the Eastern Cape.

- Honours projects:

(1) Determination of indigenous plant sales by Port Elizabeth nurseries.
(2) Population Dynamics of *Cyclopia* sp. of the Eastern Cape.

- Masters project: The effect of potential pollutants on the surf-zone diatom, *Anaulus australis*

- PhD Project: Microalgae as indicators of coastal pollution in South African surf-zones

- Techniques courses:
Computer literacy, Photography, Microscopy, Land Surveying, Statistics, First Aid Level 1

Other studies and Workshops:

- Eastern Cape Tour Guide Course: January 2010

- Introduction to Wildflower Identification: January 2010

- National Biodiversity Planning Forum (2009)

- National Biodiversity Planning Forum (2008)

- Identification workshop on the *Ericaceae* family

- Advanced International Training Programme on Urban Environmental Management (2010)

- Workshops on the EIA Regulations (2010)

Seminars delivered:

- Thicket Forum – August 2008: Case study: Towards implementing environmental planning guidelines (STEP, MOSS, ECBCP) in EIAs

- Phycological Society of Southern Africa (PSSA) - January 1999: The effect of water-solute oil extracts and metals on oxygen evolution rates by *Anaulus australis*.

- PSSA – July 2000: The effect of excess concentrations of nitrate, ammonium, and phosphate on cell division cycles of *Anaulus australis*.

- PSSA – January 2002: Microalgae as indicators of pollution in surf-zones in Algoa and St Francis Bay

- PSSA – January 2003: Increases in surf-zone nutrient concentrations as a result of increased septic tank outflow after an Easter weekend

- PSSA – January 2004: Surf-zone water quality and the associated microalgal species composition

- SAAB – January 2002: Microalgae as indicators of pollution on the south coast of South Africa

- South African Marine Science Symposium (SAMSS) – January 2005 – Factors determining the dominance of dinoflagellate cells versus *Anaulus australis*.

- UPE Departmental Seminars - Hydroponics (1997), Aspects of ecophysiology of *A. australis* (1998), Microalgae as indicators of pollution (project proposal) (2000), Microalgae as indicators of pollution (2001)

Career Biography

- Nelson Mandela Metropolitan University (North Campus) (Jan 2004)

  - Responsibilities:
    Lecturer in Epidemiology II, III and IV (Department of Environmental Health)
    Supervising and participating in various post-graduate research projects, dealing largely with community health and environmental pollution

- IECM (January 2000 – December 2003)

  - Responsibilities:
    Coega Harbour Environmental Monitoring and Cerebos Saltworks

contracts – water and sediment quality analyses, microalgal counts, invertebrate sorting

- Nelson Mandela Metropolitan University (South Campus) (March '97)

- Responsibilities:

  Practical demonstrator - conducting and marking practicals for undergraduate students

  Grysbok Trail Guide – leading school groups on educational trails through the Nature Reserve on campus

  Field Research Assistant: saltmarsh rehabilitation (Thesens Island), succulent thicket rehabilitation (Addo Elephant National Park), management of biota of solar saltworks (Velddrif and Swartkops), age structure of tree Euphorbias (various areas throughout the Eastern Cape), freshwater requirements of estuarine macrophytes (Seekoei River estuary, Eastern Cape)

- UCT Freshwater Research Unit (January '99 – 2000)

- Responsibilities:
  Data capturing for Hydraulics Biotype Database
  Laboratory work

Recent experience (CEN IEM Unit: 2008 - 2010):

Basic Assessment Reports

Completed Projects:

1. BAR for the proposed erection of an above-ground 2300 l diesel storage tank for a standby generator in an industrial area (Aberdare Cables)
2. BAR for the proposed rezoning and subdivision of a Portion of Erf 349, New Brighton to develop the Helenvale Community Centre (multi-purpose hall and offices) as part of the Helenvale Urban Renewal Programme.

3. BAR for the proposed augmentation of bulk water supply to Nieu-Bethesda, Camdeboo Municipality, Eastern Cape
4. BAR for the establishment of an oyster nursery on Erf 171, Swartkops (old coal power station site).
5. BAR for the proposed development of an Eco-Estate on Portion 190 of Chelsea 25, comprised of 18 residential units and associated infrastructure
6. BAR for the proposed Development and erection of a prototype 300 KW wind turbine adjacent to the Neptune Substation in the Coega IDZ.
7. BAR for the proposed rezoning and subdivision of Portion 75 of the Farm Kragga Kamma No 23 for rural-residential development.

Current Projects:

1. BAR for the proposed excavation of a portion of the western channel of the Bushmans Estuary, Eastern Cape
2. BAR for the proposed subdivision of Portion 3 of Farm No 43 in Theesecombe into 3 portions, Eastern Cape
3. BAR for the proposed sinking and pumping of two boreholes and further pumping of an additional 3 existing boreholes to supply water to the proposed Cob Creek Estate on Portion 21 of the Farm Kabeljaauws Rivier No 321 in Jeffreys Bay, Eastern Cape
4. BAR for the proposed establishment of lodges and tented camps, as well as the necessary services infrastructure on sections of the following farms in the divisions of Jansenville and Pearston, Eastern Cape Province: Remainder of the Farm Vlak Nek No 31, Ptn 1 of the Farm Vlak Nek No 31, Farm 30, Farm 101, Ptn 1 of the Farm Groot Kloof No 32, Remainder of Farm Groot Kloof No 32, Ptn 1 of the Farm Jacobsdal No 33, Remainder of Farm Jacobsdal No 33, Ptn 1 of the Farm Hinchinbrook No 92, Farm Oudeberg No 94, Ptn 4 of the Farm Smitskraal No 113, Remainder of the Farm Russouwspoort No 115, Remaining Extent of the Farm Smitskraal No 113, and Ptn 1 of the Remaining Extent of the Farm Smitskraal No 113 .
5. BAR for the proposed rezoning, subdivision and consolidation of portions of Erf 1 and Erf 6, and the entire Erf 15831in Uitenhage to develop housing (Joe Slovo Housing Project).
6. BAR for the proposed rezoning of Portion 30 of the Farm Maitlands No 478, Uitenhage from Agricultural Zone I to Resort Zone 2 to develop holiday housing

Environmental Impact Reports
Completed Projects:

1. EIA for a Low-Density Golf and Agricultural Estate on the Remainder of the Farm Excelsior No 443, Division Joubertina
2. EIA for the Proposed Development of an Integrated Residential Estate on Erven 5614 and 5616, KwaNobuhle, Uitenhage, Eastern Province
3. EIA for the Proposed Establishment of the Sardinia Bay Golf Estate on Erf 378 Theesecombe, Port Elizabeth
4. EIA for Roll-Out Phase of an Aquaculture Operation for the Grow-Out of *Litopenaeus vannamei* Prawn Larvae for Commercial Purposes and a Process Plant, Zones 1 and 10, Coega Industrial Development Zone, Port Elizabeth, Eastern Cape Province

Current Projects:

1. EIA for the proposed rezoning and subdivision of Farm 484 in the Humansdorp District, Eastern Cape, to establish a mixed-use development.
2. EIA for the proposed development of a Leisure Estate (Kadouw Leisure Estate) on Remainder of Farm 201, Ptn 15 of Farm 194, and Farm 627 in the Sundays River Valley area
3. EIA for the Proposed Rezoning and Subdivision of Ptn 1 and 118 of the Farm Chelsea 25 (Kragga Kamma Game Park), Port Elizabeth, Eastern Cape
4. EIA for the Proposed Rezoning of Portions 55, 56, 62 and 81 of the Farm Maitland Mines No 478, Uitenhage, Eastern Cape to Establish Lodge Developments and a Nature Reserve
5. EIA for the Proposed Rezoning and Subdivision of Farms 36 and 37 in Theesecombe, Port Elizabeth for a Rural-Residential Development, Lodge and Associated Infrastructure.
6. EIA for the Proposed Rezoning, Subdivision, and Consolidation of Farm Vrede No. 190, Knysna, Western Cape for a Residential Development (Simola Phase 3)
7. EIA for the Proposed Rezoning and Subdivision of Portion 1 of the Farm Seaview No 28 in Port Elizabeth for a Residential Development and Associated Infrastructure
8. EIA for the Proposed Rezoning and Subdivision of Erven 402,403, 438 and 726, Theesecombe, Port Elizabeth to establish a Residential Development and Associated Infrastructure

Sensitivity Assessments/Environmental Situational Assessments/Specialist Input Studies

Completed Projects:

1. Sensitivity Assessment of Ashmead Resort in Knysna, Western Cape

2. Sensitivity Assessment for the creation of a high intensity mixed-use waterfront development on Erf 577 and a portion of Erf 578, Kings Beach, Port Elizabeth
3. Environmental Comment on the Proposed Port St Johns Master Plan
4. Specialist investigation of the Kariega River Estuary in response to a proposed housing development on the eastern bank of the estuary.

Current Projects:

1. Environmental Input into the Happy Valley Local Spatial Development Framework (LSDF)
2. Environmental Input into the Kings Beach Precinct Plan
3. Scoping Report: A review of available information of operations at the Manganese Ore Terminal and Storage Facility and Tank Farm on Erf 578 at the Port Elizabeth Harbour area with emphasis on environmental transgressions
4. Sampling protocol to determine the extent of potential contamination in the environment surrounding the Manganese Ore Facility and Fuel Storage Tanks in the Port Elizabeth Harbour

Environmental Auditing
Completed Projects:

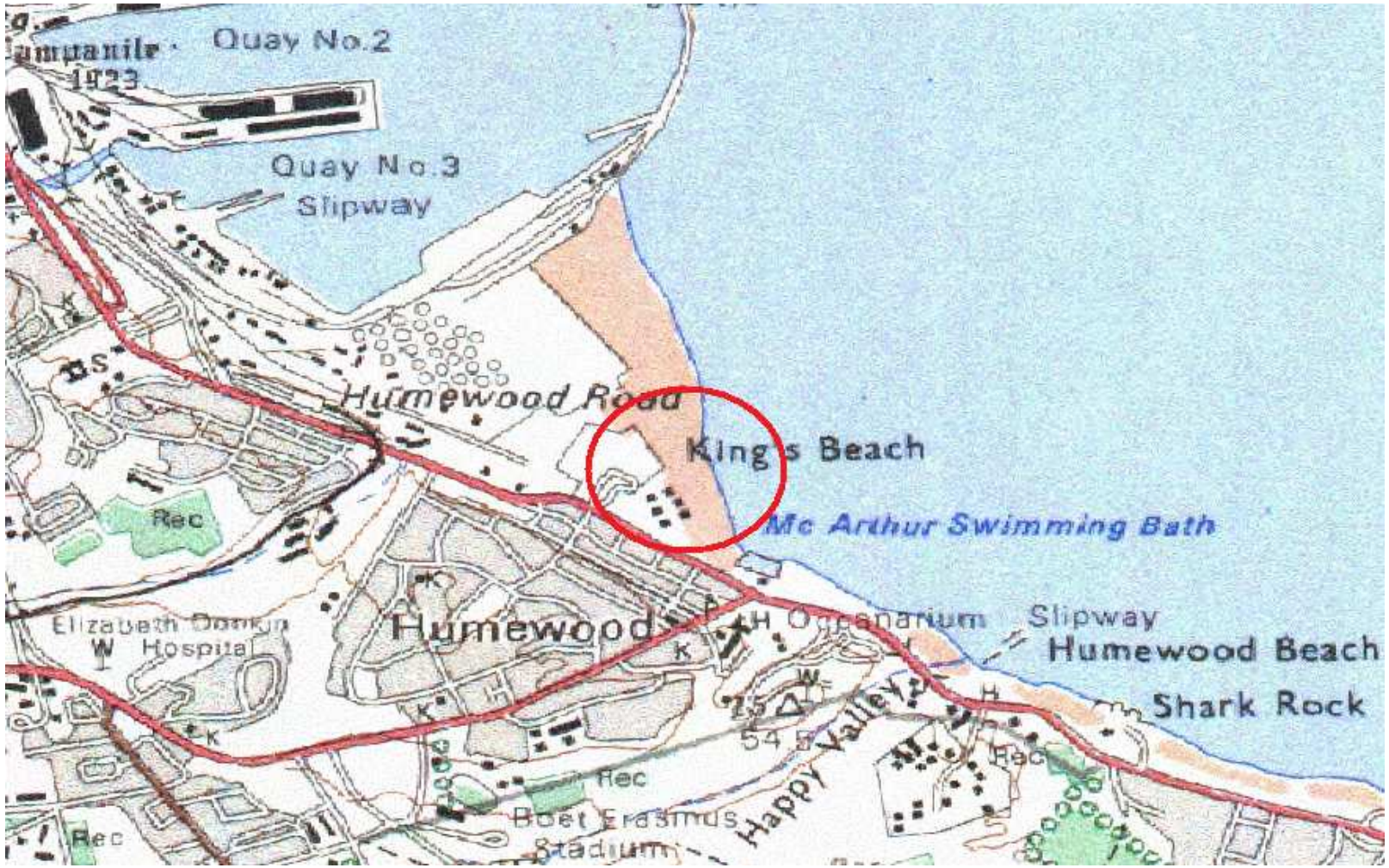
1. Environmental Audit for the Upgrading of a Stormwater Channel and Wetland in Blue Water Bay
2. Environmental Audit for the Construction of Kenton Eco-Estate and Associated Infrastructure on the Farm Remainder of Grants Valley 396, Kenton-on-Sea
3. St Francis Bay Marina Extension: Final Audit

Water Use Applications
Current Projects:

1. Water Use Application (Section 21 (c) and (i) of the National Water Act) for the proposed construction of a low-level culvert bridge and the installation of wet services across the Seaview Stream on Farm 36 and 37 in Theesecombe, Port Elizabeth.

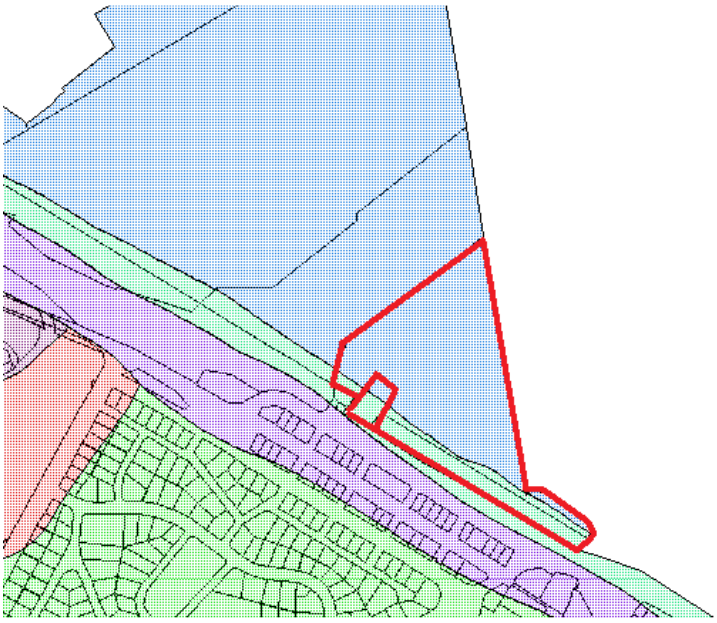
Document Printed February 2012

Appendix G: Other information



➢ **Figure 1: An extract from a 1:50 000 topographical map (site circled in red).**

Classification of the site according to the NMBM MOSS Plan (2009):



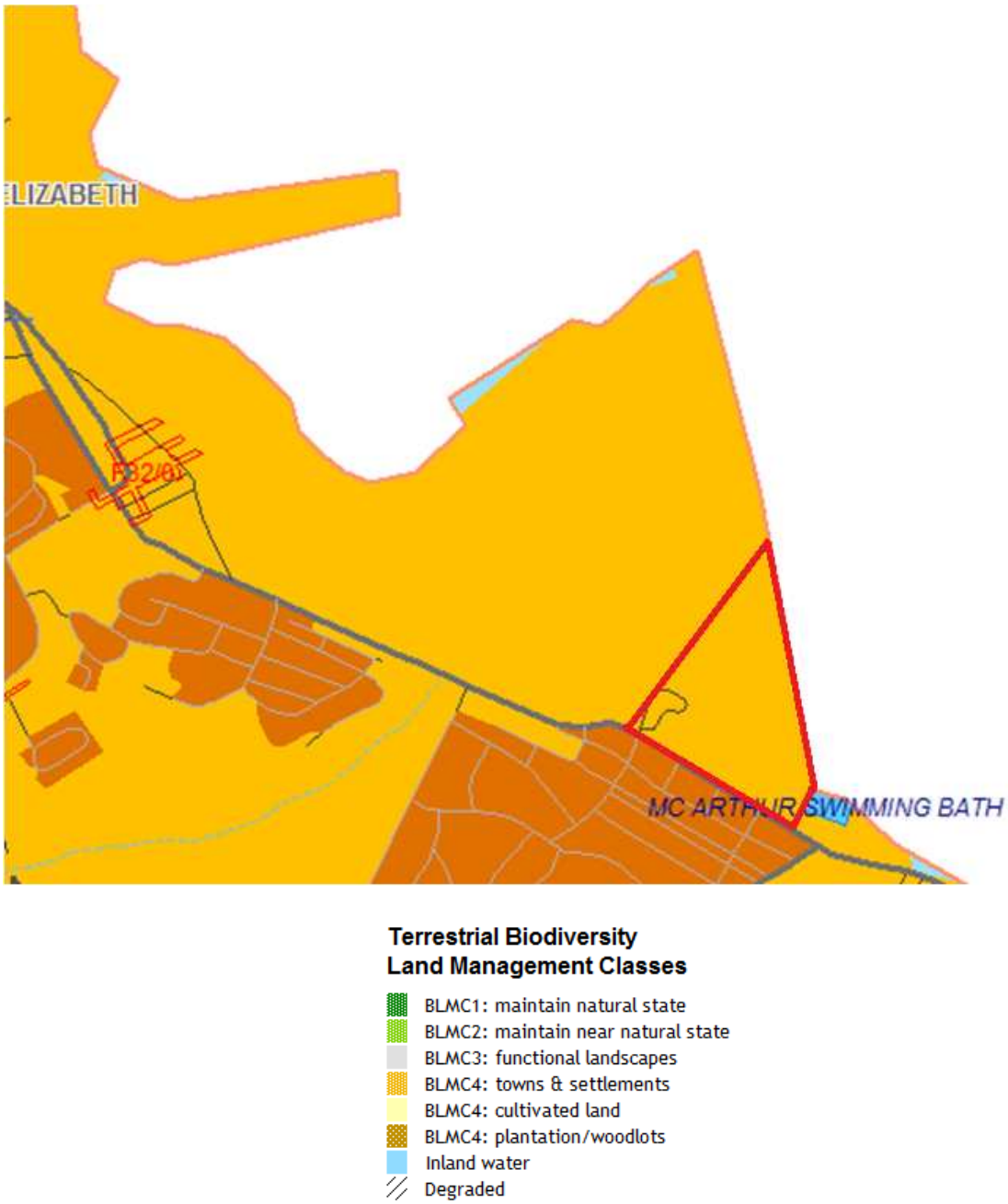
- **Figure 2: Vegetation on site is classified as 'coastal vegetation' and is rated as least threatened).**

- **Figure 3: Critical Biodiversity Areas (in green) according to the NMBM MOSS Plan (2009) (site outlined in red).**

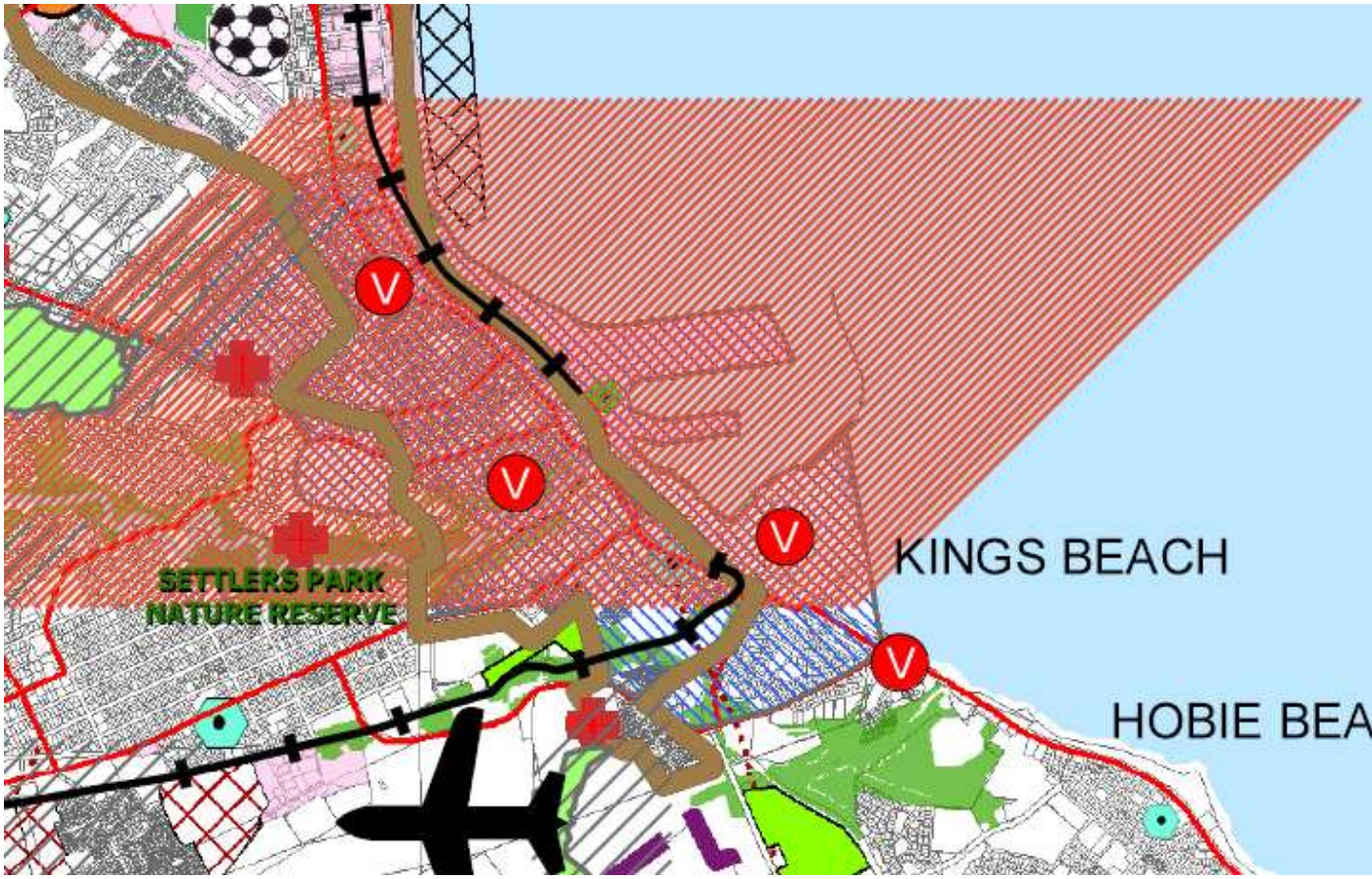
➢ **Figure 4: The Hume River corridor (in blue) drains south-west of the site (outlined in red).**

East Cape Biodiversity Conservation Plan:

According to this plan, the site is classified as a BLMC4 area where the land cover is towns and settlements.



- **Figure 5: The site is classified as 'towns and settlements' in the ECBCP (2007). The relative site boundary is outlined in red.**



- **Figure 6: An extract from the NMBM Spatial Development Framework Plan (2009). The site falls in an area that has been highlighted for 'Vision 2020 Projects'.**

Document Printed April I2012