

**ETHEKWINI MUNICIPALITY :  
COASTAL STORMWATER & CATCHMENT  
MANAGEMENT DEPARTMENT**

**STORMWATER MANAGEMENT PLAN:  
VIRGINIA BEACH UPGRADES**

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## 1. INTRODUCTION

The eThekweni Municipality proposes to undertake major refurbishments and upgrades to the Durban North Virginia Beach region (shown in Figure 1).

The project entails the provision of improved access, including related facilities and public amenity, to the coastal zone by the eThekweni Municipality, as required by the NEMA: ICM Act. It includes the construction and installation of necessary infrastructure (parking, electricity, lighting, additional security (fencing), road access, sidewalk, portable toilets, etc. to facilitate the construction of a semi-permanent (temporary) rustic open-air type restaurant or café consisting of temporary benches, containers and tables. The proposed restaurant or café will be environmentally friendly, and it is envisaged that the lease holder/developer will use natural materials for the temporary structures, and shall adopt an environmentally sensitive approach to operations. eThekweni Municipality intend to make this a requirement of this proposed lease agreement.

The works will also include the upgrade of the existing public toilets, the provision of additional parking adjacent the coast, the widening of the access road for the provision of parking, installation of additional fencing within the coastal forest to secure the area, dune rehabilitation and the possible rehabilitation of a portion of the existing access track running parallel to the coast.

Access to the site will be via Fairway Road, turning eastward onto the un-named beach access road. The current capacity, design and safety of Fairway Road and the beach access road are deemed adequate by eThekweni Municipalities Transport Authority for the anticipated increase in traffic volumes related to the development.

Three alternate layouts are proposed, the preferred layout being the option negotiated internally between the eThekweni Municipalities Coastal and Stormwater Drainage and the development Planning, Environmental and Management Unit.



**Figure 1: Virginia Beach upgrades aerial photo showing area to be improved.**

## **2. SCOPE OF CONSTRUCTION WORKS**

The scope of works to be constructed will include the following:

### **2.1 Sidewalk**

A new pedestrian walkway, comprising of concrete block paving with a width 1.2m, is to be constructed along the seaward side of the road.

### **2.2 Roadworks**

The parking area is to be reconfigured and a new asphalt wearing course is to be provided. The existing surfacing and layerworks will generally be retained where possible. Limited new layerworks, including milling of the existing surfacing and localized road widening, will be required in places. A new parking area is to be created at the entrance to the area adjacent to the Virginia Airport. New layerworks, segmental concrete block paving surfacing, roadmarking and signage are to be provided, together with new kerbs and channels, stormwater drainage systems.

### **2.3 Protection from Wave Action**

Along sections of the beachfront adjacent to existing and planned alterations, protection from heavy wave action is not required. The area is very stable and has not encountered any instability during past storm events. In the event that the dynamics change, protection will be provided in form of "Geobags", which comprise of a sand-filled bag made of composite geofabrics, weighing approximately 3.8 tons each when filled. This system of erosion protection has been used extensively along the Durban Beachfront, along the coast at Umhlanga Rocks and at other locations along the KwaZulu Natal South and North Coast, with much success. The bags are to be placed in an excavated trench and backfilled with beach sand.

### **2.4 Dune and Coastal Rehabilitation**

Landscaping work will be performed by a selected sub-contractor and includes planting of new dune vegetation along the seaward side of the promenade. In addition to general dune rehabilitation, the entire northern half of the Virginia Beach current road will be returned to natural coastal forest. This is to be undertaken with supervision of an appointed consultant.

## **3. STORMWATER MANAGEMENT PLAN**

Proper management of stormwater runoff is required during the construction stage and thereafter, once the works have been completed. Further descriptions of the current drainage system and the proposed measures to manage run-off during and after construction are provided below.

### **3.1 Existing Stormwater Management Systems**

Run-off emanating from the existing roads and parking areas is not collected via kerbs and channels, and discharges as surface runoff onto the seaward dune system and landward coastal forest. Surface run-off along the informal road flows towards the seaward or landward side, dissipating along the length of the open beachfront or bush area. There is no concentration of run-off along the beachfront as the grades are very flat and the beach, comprising of cohesionless sand, readily absorbs and dissipates any surface water through seepage.

### **3.2 Construction Stage**

Environmental management and monitoring will be undertaken in compliance with the project-specific Environmental Management Plan (EMPr) and the general environmental requirements as stipulated by the eThekweni Municipality provisions.

There is no expected additional stormwater runoff resulting from construction activities. As there is no current storm water system, no additional pollution can 'enter' an existing system. The contractor will however be required to ensure construction activities do not result in any surface runoff contamination into the coastal forest and beach dune area, by utilising:

- Temporary cut off drains and berms may be required to capture storm water and promote infiltration.
- Earth, stone and rubble is to be properly disposed of so as not to obstruct natural water pathways over the site. i.e. these materials must not be placed in storm water channels, drainage lines or rivers.
- Storm water must be disposed of without causing soil saturation, erosion, sloughing and without affecting the integrity of dune stabilising structures.
- Provision shall be made for storm water management measures that will ensure effective run-off control and prevent erosion at run-off points and ponding on the beach.
- There should be periodic checking of the site's drainage system to ensure that the water flow is unobstructed.

### **3.3 Post-Construction Stage**

The management of run-off for the completed works will follow the same principles that are currently in place, which will include the following:

- Run-off from roads and parking areas will be channelled along existing flow paths, which generally enter the coastal dune forest. Channelled flow will be controlled in order to prevent scour issues. Where necessary, new stormwater pipes, catch pits, kerbs and channelling will be installed.
- For open areas, including the walkway, run-off will not be channelled into drains and sheet-flow conditions will be maintained, in the same manner as for the Central Durban new promenade further south, which has proved to be effective.

The intention of this stormwater management plan is to allow for the current flow conditions into the coastal dune forest to be maintained, in a formalised manner that results in no erosion or similar problem associate with the surface runoff. Please the attached provisional Stormwater Layout.