

# PROPOSED CONSTRUCTION AND OPERATION OF A SEWAGE TREATMENT PLANT AT CAPE POINT, TABLE MOUNTAIN NATIONAL PARK

## FULL SCOPING AND EIA PROCESS

### FINAL SCOPING REPORT EXECUTIVE SUMMARY

#### 1 INTRODUCTION

SANParks proposes to construct a new sewage treatment plant to meet the demands of the growing numbers of visitors to Cape Point. The proposed plant will be designed to treat approximately 32 850 m<sup>3</sup> of effluent per annum and therefore exceeds the threshold listed in the National Environmental Management: Waste Act (NEM: WA) 59 of 2008 that requires a Waste Management Licence. Section 20 of NEM: WA stipulates that a full Scoping and EIA process must be undertaken. SANParks has appointed KHULA Environmental Consultants to undertake the full Scoping and EIA Process. Owing to the location of the proposed development in a National Park, the National Department of Environmental Affairs (DEA) is the appropriate authority delegated with decision-making powers in respect of this application.

#### 2 FULL SCOPING AND EIA PROCESS

##### 2.1 Legal and Procedural Framework

The proposed sewage treatment plant will be designed with an annual throughput capacity of 38 500 m<sup>3</sup>. As such it exceeds the threshold of activity 7 in Category B of GN 718 (July 2009) as follows:

*The treatment of wastewater, effluent or sewage with an annual throughput of capacity of 15 000 cubic metres or more*

All listed waste management activities require a Waste Management Licence before proceeding. If a Category B waste management activity is triggered then, in support of the application for the Waste Licence, a Full Scoping and EIA process must be undertaken and an Environmental Assessment Practitioner (EAP) must be appointed to undertake the EIA.

The Full Scoping and EIA process is currently at the Scoping Phase. The overall aim of the Scoping Phase is to determine those environmental issues and impacts associated with the proposed development that require further investigation and the level of investigation required. This scope of works or terms of reference for the EIA is presented in the Plan of Study for Scoping (see Section 8).

#### 3 DESCRIPTION OF AFFECTED ENVIRONMENT

The proposed Sewage Treatment Plant will be located at the Cape Point precinct in the Cape of Good Hope section of Table Mountain National Park. The proposed site for the new sewage treatment plant is immediately adjacent and to the south of the parking area that serves the restaurant, shops and funicular at the Cape Point precinct.

Most of the Cape Point precinct site comprises brick paving which is bordered with natural stone finishes. Buildings within the Cape Point precinct include the following:

- A visitors Information Centre/TMNP staff office/concessionaire office combined into one building which is located to the north west of the parking area;
- A restaurant which is located to the north of the parking area (the roof of which is at the same level as the parking area);
- A small shop which is located to the east of the parking area; and
- Ablutions which are located to the south east of the parking area (the roof of which is also at the same level as the parking area).

All buildings are of a similar design with flat planted roofs and plastered with aggregate to minimize their visual intrusion in the landscape. A paved walkway extends to the south east which provides access to the funicular which transports tourists to viewing sites nearer the point and the site of the old lighthouse. Bordering the transformed zone is natural vegetation comprising mostly dense thicket vegetation.

As the site is situated within TMNP the predominant land use is nature conservation. Being situated on the southernmost tip of the Cape Peninsula, the site is virtually surrounded by the Atlantic Ocean, of which a large proportion is declared as a Marine Protected Area (MPA). Beyond the boundary and to the north west of the Cape of Good Hope section of TMNP lie several privately-owned farms including the Cape Point Ostrich Farm which is a popular tourist attraction. The nearest human settlements to Cape Point are Simons Town, Red Hill Informal Settlement and Scarborough with Simons Town being the largest town. The Cape Town CBD is located at the northern-most extreme of the Table Mountain range, some 50 km away.

#### 4 MOTIVATION FOR AND DESCRIPTION OF ACTIVITY

##### 4.1 Motivation

Cape Point is the most frequented visitor site in all national parks in South Africa with annual visitor numbers ranging between 650 000 and 850 000 over the last 12 years. Many visitors make use of the facilities at Cape Point which include the ablutions which generate significant volumes of sewage. Added to this is the operation of a restaurant which is very popular with visitors to Cape Point, which also generates significant volumes of restaurant effluent. To date this domestic sewage and restaurant effluent has been directed via a gravitational reticulation system to a system of septic tanks and soak-aways (recently supported by temporary measures to provide additional capacity and improve treatment). This system is effective in treating effluent and disposing the treated liquid by-product ("treated effluent") at relatively low volumes (up to 50 m<sup>3</sup>/day).

However when volumes of effluent generated increase then more “advanced” methods of effluent treatment and disposal become necessary and this is currently the requirement at Cape Point.

Based on visitor number projections of 2.5% over the next 10 years, an improved system with a capacity of 90 m<sup>3</sup>/day is urgently required. The new proposed sewage treatment plant known as a Sequential Batch Reactor (SBR) has a proven track record, has capacity to treat greater volumes of effluent and has the ability to treat the effluent to meet the standard required by the DWA in permitting the disposal of the treated effluent into the environment. SANParks considers this type of plant as the most appropriate means of treating the effluent at Cape Point, particularly given the space constraints and sensitivity of the potentially affected environment.

#### 4.2 Description of the Proposed Activity

The proposed plant will be in the form of a Sequential Batch Reactor (SBR) which is in essence a turbo-charged septic tank. A SBR treats the sewage in batches by means of the introduction of additional oxygen from aerators thus reducing the biochemical oxygen demand (BOD) and chemical oxygen demand (COD) to make it suitable for discharge and or re-use. The proposed plant will be housed in a building comprising the following:

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- • A 150m<sup>3</sup> primary tank
- • A 25m<sup>3</sup> secondary tank (COD less than 400)
- • A 25m<sup>3</sup> additional / special treatment tank for re-use of water. This will achieve COD levels of less than 75 and includes UV panels for final disinfection of the discharge prior to release and discharge in the surrounding area.
- • A control room for the operator of the plant which will contain the control panel, work space and ablution and shower facilities.
- • Stand-by Generator (SBG) which will be used for the powering of the Sewage Treatment Plant in the event of a power failure and for the provision of power to the water and fire pumps so as to maintain their operation during such power outages.
- • Fuel storage for supply to the SBG. Approximately 900 litres will be provided for (with an additional 215 litre built-in tank). This would give ±48 hours of continuous operation or 5 days of 8 hours operation / day.

External items required will consist of the following:

- A sewer rising main from the existing septic tank to the new Sewage Treatment Plant.
- A discharge pipeline for releasing treated effluent to the appropriate discharge point.
- Pumping main to convey the re-use water to storage tank or a small pressure pump to supply treated water direct to toilets.
- Gravity main to convey treated effluent (re-use water) to toilets/ablution block.
- Water storage tanks located behind the curio shop.

The treated effluent will be both reused in the toilets at Cape Point as well as disposed of via a deep discharge system. Based on the figures reflecting the volumes of effluent generated by the Cape Point precinct it can be assumed that approximately 50% of the treated effluent will be reused.

## 5 ALTERNATIVES

In terms of the NEMA EIA Regulations the applicant is required to demonstrate that reasonable alternatives have been described and investigated in sufficient detail. In addition to the preferred alternative as described above (i.e. sewage treatment plant to the south of the existing car park), the following additional alternatives are being considered in this EIA process:

- The “No-Go” or “leave as is” alternative;
- The option of connecting to the municipal sewer;
- Three site alternatives for the proposed sewage treatment plant (excluding the preferred alternative) within the Good Hope Section of TMNP; and
- Two treated effluent discharge alternatives.

### 5.1 The “No-Go” alternative

The “No-Go” or “leave-as-is” alternative assumes that the current system of effluent treatment, the system of conservancy tanks and soak-aways supported by the temporary system, will remain in place.

### 5.2 Connecting to Municipal Network

A logical alternative to constructing a new sewage treatment plant is the option of connecting to the Municipal sewerage network. This option would necessitate the construction of a new sewerage pipeline from the Cape Point precinct to the nearest connection point in the Municipal reticulation, assumed to be at either Scarborough or Simon’s Town, both some 20 km away by road. As it is common practice to align services in road reserves one can assume that approximately 20 km of new pipeline would be required. Also, owing to local topographic conditions, gravitational feed would not be possible along the entire length of the pipeline therefore necessitating one or more pumpstations. This alternative will not be assessed further in the EIA due to the very high cost associated with this option.

### 5.3 Site Alternatives

In selecting the preferred site immediately south of the existing parking area, SANParks considered additional alternative sites within the Park as follows:

- Below the parking area surface at the Cape Point Lighthouse Precinct;
- At the Rooikrans parking area; and
- At Goldfields.

These alternatives are associated with technical challenges and costs and as a result these will not be investigated further.

### 5.4 Treated effluent Disposal Alternatives

The discharge of treated effluent is arguably the aspect of the project that can cause the most environmental harm. Given that there are no watercourses in close proximity to the site several options for the disposal of the treated effluent have been considered by SANParks as follows:

- Discharge via a marine outfall; and
- Discharge into the veld via a network of underground pipes.

The option of disposing the treated effluent via a marine outfall pipeline is prohibitively costly and is associated with many unknowns. Also the receiving environment is a Marine Protected Area and as such is unlikely to be permitted.

Due to the potential impact of the treated effluent on Fynbos any terrestrial disposal system which is not sufficiently below-ground could generate significant botanical impacts. An independent botanical specialist study was commissioned to investigate the various discharge options and found that the option of discharging treated effluent into the veld is fatally flawed. Accordingly only the option of disposal via a deep well is being considered. In addition to the option of siting the deep well at the Cape Point precinct there is a large disturbed area at the Rooikrans parking area that may be suitable for the proposed deep well, should the preferred site at Cape Point be unsuitable. A geohydrologist will have to determine the suitability of the sites, particularly in terms of the potential migration pathways and secondary impacts (e.g. if effluent should daylight anywhere within the park and cause botanical impacts).

To conclude the following alternatives will be assessed in detail in the EIA phase:

- The No-Go or leave-as-is alternative (i.e. the continued discharge of partially treated effluent via the existing soak-away system);
- Discharge of effluent treated generated by the proposed SBR Treatment Plant located at Cape Point via a deep well also located at Cape Point parking area; and
- A second site alternative whereby the treated effluent is discharged via a deep well located at the Rooikrans parking area some 2.4km back towards the entrance gate.

## 6 PUBLIC PARTICIPATION PROCESS

Table 1 provides a summary of the PPP activities.

**Table 1: Schedule of PPP activities undertaken to date**

Activity	Date
Advertisement of the process in the regional and local media	16 February 2012
Placement of on-site notices	16 February 2012
Circulation of Executive Summary to IAPs	16 February 2012
Release of Draft Scoping Report for comment	16 February – 27 March 2012
Release of Final Scoping Report for comment	13 September 2013

All comments on the Draft Scoping Report have been recorded and responded to in a Comments and Responses Report (Scoping phase) which is being circulated along with the Final Scoping Report for comment. Any final comment received will be included in the submission to DEA which will include the Final Scoping Report and the Comments & Responses Report. As a result the comment received from IAPs will be considered by DEA in deciding whether or not to approve the Final Scoping Report (and Plan of Study for EIA).

To date the key issues raised by IAPs are as follows:

- **Alternatives:** Given the likely high impact on flora associated with the proposed method of treated effluent disposal alternatives need to be considered including the option of a marine discharge and the use of conservancy tanks.
- **Potential Botanical Impacts:** Given the proposed discharge of treated effluent into an area which contains fynbos vegetation which is adapted to nutrient-poor, dry conditions, highly significant botanical impacts are likely.
- **Potential Groundwater impacts:** The disposal of treated effluent below-ground (or above-ground) has the potential to contaminate subsurface aquifers.
- **Potential Surface Water impacts:** The disposal of treated effluent below-ground (or above-ground) has the potential to contaminate springs downslope of the disposal site.
- **Impact of Climate Change Research:** Methane emissions from the proposed sewage treatment plant could critically impact the SA Weather Service's long term methane records which are of regional and international significance.
- **Additional specialist studies:** Given the potentially significant botanical and groundwater impacts independent specialist botanical and geohydrological studies are warranted. Also, given the need to investigate the alternative of a marine discharge, a specialist marine impact assessment is required.

To address to the key issues raised the following is proposed:

- **Alternatives:** The option of a marine discharge has for reasons explained in the Scoping Report been eliminated from further investigation due to the high cost associated with this option. Also, subject to a preliminary investigation by an independent botanist, the least costly option of discharging into the veld via a system of underground pipes has been regarded as fatally flawed and will not be considered further. Accordingly the option of discharging into a deep well as well as the No-Go alternative will be assessed in detail in the EIA phase.
- **Potential Botanical Impacts:** The potential impacts of the two effluent disposal options, as well as the No Go alternative, on Fynbos has been assessed by an independent and suitably qualified botanist. The botanist has confirmed that the option of discharging via underground pipes is potentially associated with highly significant botanical impacts which have rendered this option as being fatally flawed.
- **Potential Groundwater impacts:** The potential impacts of the two effluent disposal options, as well as the No Go alternative, on groundwater will be assessed by an independent and suitably qualified geohydrologist.
- **Potential Surface Water impacts:** The likelihood of contamination of springs and other surface water bodies form part of the scope of the independent specialist groundwater study.
- **Impact of Climate Change Research:** Methane gas can only be produced under anaerobic conditions. Neither the existing system for effluent treatment nor the proposed system operate under anaerobic conditions so it unlikely that any detectable levels of methane will be generated.
- **Additional specialist studies:** A specialist botanical investigation has been undertaken and a specialist groundwater impact assessment study will be undertaken. As the option of a marine discharge is prohibitively expensive this option is not

being considered further in the EIA and as such a specialist study is not warranted.

## 7 POTENTIAL ENVIRONMENTAL IMPACTS

The following potentially significant impacts associated with the proposed construction of the sewage treatment plant have been identified in the Scoping phase:

### 7.1 Construction phase Impacts

Construction activities in sensitive environments need to be carefully managed or they may lead to significant environmental impacts. Immediately abutting the parking area and restaurant complex at Cape Point is pristine indigenous vegetation. The Point is also known as being a site of heritage significance. Construction activities, particularly site clearing and excavations, can lead to damage and/or destruction of flora and displace fauna. Stone-age artefacts could be unearthed and damaged. Also associated with construction sites are visual impacts and nuisance impacts (such as noise and dust). Given the high number of tourists visiting Cape Point and their high sensitivity (as tourists) these potential visual and nuisance impacts would have to be well-managed. A comprehensive Environmental Management Plan (EMP) which focuses on managing construction phase-related impacts should suffice in managing the potential construction phase impacts.

### 7.2 Operational phase Impacts

The following potentially significant impacts have been identified as being associated with the operational phase:

- Soil and groundwater impacts;
- Flora impacts; and
- Visual impacts.

Soil and groundwater contamination is typically associated with the disposal of treated effluent via soak-away systems. This system of treated effluent disposal has been used at Cape Point since the first ablations came into operation. The efficacy of the existing soak-away system is however only as effective as the method of treatment associated with it and until now this has only involved a simple conservancy tank system combined with a soak-away which is regarded as effective for relatively low volumes of effluent. This system is successfully deployed at numerous lodges and accommodation facilities in protected areas throughout South Africa. The ongoing use of the system at Cape Point, given the number of visitors, would eventually become ineffective thereby resulting soil and groundwater contamination. The proposed installation of a new sewage treatment plant utilising a sequential batch reactor would be far more effective and would produce a higher quality treated effluent that could still be discharged into the environment via a soak-away system. In this way the proposed development can be regarded as generating a positive impact (i.e. an improvement on the status quo).

Flora impacts associated with the current system have been confirmed by a botanical specialist and further flora impacts may be identified if the deep well system has the potential to cause contaminated groundwater to daylight and thereby become exposed to flora and terrestrial biodiversity.

The potential visual impact associated with the proposed development is due to a number of factors including the following:

- The high sensitivity of the viewers, most of whom are foreign tourists who are visiting the area for sight-seeing purposes;
- The high visual sensitivity of the receiving visual landscape which is a national park characterised by open spaces of pristine vegetation and unspoilt rock formations; and
- The visual exposure of the site, particularly since it is located on the uppermost part of the striking rock formations of Cape Point.

Given the above a detailed (but not specialist) assessment of the potential visual impact associated with the proposed development will be undertaken in the EIA phase.

### 7.3 Closure and Decommissioning phase Impacts

Closure and decommissioning impacts are likely to be similar to the construction phase impacts and therefore should also be satisfactorily accommodated in the EMP. Note that the proposed plant should provide sufficient capacity for a number of years in the future and should the capacity be exceeded then it can be upgraded to well beyond its current capacity. It is therefore highly unlikely that the system will be decommissioned and closed in the foreseeable future.

## 8 PLAN OF STUDY FOR EIA

### 8.1 Description of EIA phase

The proposed process for the EIA phase will take place in two stages as several specialist studies will be undertaken. These stages are as follows:

- Commission specialist studies; and
- Preparation of the EIR and its review by IAPs.

Commissioning the specialist studies will involve providing the various specialists with a detailed and updated (i.e. with inputs from the Public Participation Process) Terms of Reference and then the specialists undertaking the respective analyses and issuing their reports. The preparation of the EIR and its review by the registered IAPs will involve the following activities:

- Identification and assessment of environmental impacts based on the results of the specialist studies. This will entail an assessment of the duration, extent, probability and intensity of the impacts to assess their significance;
- Identification of mitigation measures and recommendations for environmental management of the proposed project;
- Collation and drafting of the above information into an EIR;
- Compilation of an EMP based on the recommended mitigation measures;
- Circulation of the draft EIR (incorporating the EMP) for a 30 day comment period among registered IAPs only;
- Compilation of an EIA phase Comments & Responses Report;

- Submission of documentation to DEA (EIR, EMP, Comments & Responses Report, etc) for a decision<sup>1</sup>; and
- Notification of DEA Record of Decision (RoD) and appeal process.

## 8.2 Assessment of Impacts

The significance of the project's impacts will be assessed and rated using detailed impact assessment methodology. Simply stated the **significance** of an impact is defined as a combination of the **consequence** of the impact occurring and the **probability** that the impact will occur. A detailed set of criteria will be applied to determine the consequence ratings of potential impacts. Impact significance will be rated both before and after mitigation so as to demonstrate the efficacy of the proposed mitigation measures in minimising the potential impact.

## 8.3 Comparison of Alternatives

Each alternative will be assessed in a similar level of detail using the methodology described above. Thereafter a comparison of the environmental acceptability (i.e. whether the impacts are acceptable or not) of the various alternatives will be undertaken with the environmentally preferred alternative being indicated. This will include a brief synopsis motivating the choice of preferred alternative. A comparison between the "no development" alternative and the proposed development alternatives will form part of this analysis.

## 8.4 Public Participation and Review

The activities and provisional timetable for the EIA phase and its public participation component are summarised in the table below. The EIA Phase of the project will take approximately 3 months to complete. The competent authority will be engaged with at several stages as reflected in the shaded rows of the table below.

Task	Start	Finish
<b>SCOPING PHASE (will be completed)</b>	<b>Mid February 2012</b>	<b>Mid October 2013</b>
Final Scoping Report Public Comment Period	13 September 2013	4 October 2013
Submission (to DEA) Scoping Report and Plan of Study	Mid October 2013	
DEA decision on Scoping Report	End January 2014	
<b>EIA PHASE</b>	<b>January 2014</b>	<b>July 2014</b>
Draft EIR	Dec 2013	January 2014
Release Draft EIR to public	End Jan 2014	
Public Comment Period	±end Jan 2014	±early March 2014
Release Final EIR to public	End March 2014	
Submission of EIR to DEA	Mid April 2014	
Record of Decision by DEA	Mid July 2014 (assuming DEAT takes 105 days)	

<sup>1</sup> If as a result of the public participation process the documentation released for public review has to be substantially revised then additional public participation activities may be required.

## 9 KEY FINDINGS & WAY FORWARD

### 9.1 Key Findings

The key findings of the Scoping Study are as follows:

- Based on forecasts which show the number of visitors to Cape Point increasing, SANParks has identified a need to upgrade the sewage treatment capacity at Cape Point.
- The current system is inappropriate for the projected volumes of sewage that will be generated in the near future and therefore a new SBR sewage treatment plant is proposed.
- The plant, operating according to the activated sludge treatment process, will treat effluent to meet the standards required in terms of the National Water Act (Act 36 of 1998) that are considered acceptable for discharging treated effluent into the environment.
- The site for the new plant will form part of the parking area and restaurant complex a Cape Point which is previously disturbed. The area surrounding the site is environmentally sensitive.
- Several alternatives have been considered including:
  - Not commencing with the construction of a new plant (the No-Go alternative);
  - Connecting to the municipal sewerage network;
  - Four alternative sites, two within the parking and restaurant complex at the Cape Point precinct and two elsewhere in the Park.
  - Three options for discharging the treated effluent, including a marine discharge, a deep well discharge and subsurface discharge into the veld via a system of below-ground pipes.
- The following alternatives will be investigated in the EIA phase as the other alternatives have been screened out due to poor technical feasibility and/or cost and/or identified potential fatal flaws:
  - No Go alternative;
  - Disposal via the deep well system at the Cape Point parking area (preferred alternative); and
  - Disposal via the deep well system at the Rooikrans parking area (discharge site alternative).
- The proposed waste management activity may generate a suite of potentially significant environmental impacts. These are associated with the monitoring (as this is a likely pre-construction requirement), construction, operational and decommissioning and closure phases of the proposed activity.
- All the monitoring and construction phase-related impacts can be effectively mitigated through the effective implementation of a construction phase EMP.
- To determine whether the disposal of treated effluent will generate any groundwater impacts (and associated surface water impacts) a specialist geohydrological assessment will be undertaken.
- The disposal of treated effluent may impact on flora, particularly Fynbos, owing to poor attenuation which could result in contaminated groundwater day-lighting in the park. If the findings of the geohydrological investigation suggest that this may occur then an independent botanical specialist assessment may be required.
- The other potentially significant operational phase impact is the potential visual impact associated with the structure that will house the new sewage plant. This will be assessed in by the

