

EXECUTIVE SUMMARY

1. INTRODUCTION

1.1. Introduction

Polygon Environmental Planning CC was appointed by Mošomo Consulting Civil Engineers to undertake the necessary waste licence application for the Mopani District Municipality's (MDM's) proposed upgrading of the existing municipal sewage treatment plant on the premises of Sekgosese Secondary School in Senwamokgope. An Environmental Impact Assessment (EIA) is being conducted in compliance with the National Environmental Management: Waste Act (NEMWA, 2008).

This Environmental Impact Report (EIR) and Environmental Management Plan (EMP) were compiled following two phases of investigations and stakeholder engagement, viz. the scoping phase and the impact assessment phase. This draft EIR and EMP are currently available for public review and comment for a period of 30 days, and comments will be incorporated into the final EIR and EMP, which will then be submitted to the Department of Environmental Affairs (DEA) for review and decision making.

1.2. Project description

The **existing sewerage plant** on the site comprises six oxidation ponds, which are meant to receive raw sewage from a large part of Senwamokgope township. However, a suspected **blockage or break** in the main outfall sewer between Senwamokgope and Sekgosese Secondary School (on whose premises the sewerage plant is situated) has for the past ± 3 years **prevented sewage from Senwamokgope from reaching the plant**. Only sewage from Sekgosese Secondary School enters the primary pond of the treatment plant, whilst sewage from the township leaks out at the point of the blockage / break.

There are two aspects that need to be addressed:

- **Provide a waterborne sewerage system** to all the present households and ensure the reticulation of the system and main outfall is adequate to accommodate the total expected future peak flow (this component does not require a waste licence).
- **Upgrade the existing oxidation pond system** to treat the sewage to the standards set by the Department of Water Affairs (DWA). This is to entail an increasing the treatment capacity as well as upgrading the system to a type of treatment more suitable for handling this volume of sewage.

The 200 stands plus the school which are currently connected to the main sewer outfall yields an estimated effluent of 100 kl/day, and the school yields approximately 28.4 kl/day. This totals 128.4 kl/day, but presently only the estimated 28.4 kl/day from the school reaches the first pond, due to the blockage / break in the outfall sewer. The treatment works can be described as a facultative pond system consisting of primary, secondary and tertiary ponds with a combined capacity of 7 735 m³, covering a surface area of 5 156 m². A coarse screen and grit channels are housed in the inlet structure, and finally there is a pump station.

There is currently a **1 129 kl/day shortfall** in treatment capacity, which means that the system is 565% overloaded.

The type of sewage treatment being proposed is the **bio-filter (“Trickling Filter”) process**. This is a high-rate filter which is characterized by higher hydraulic loadings, and employs high recirculation whereby the filter effluent is returned to and reapplied onto the filter increasing the contact time of the waste with the microorganisms and also helping to seed the lower portion of the filter with active organisms. This process would be compatible with the existing site condition, as the existing primary pond can be converted to an anaerobic reactor digester to cover the function of the primary settling tank as well as a sludge digester. The sludge from the humus tank (final clarifier) is also collected and pumped to the anaerobic reactor for digestion.

2. PROJECT MOTIVATION

The existing sewage treatment facility on the site has a limited capacity and is not fully functional. Furthermore, due to a suspected blockage in the main sewer outfall, sewage from most of Senwamokgope which is reticulated does not reach the sewerage plant. As a result, untreated sewage from Senwamokgope drains into the soil, most likely at breaks along the outfall, and inadequately treated sewage runs from the existing treatment plant into a nearby stream. This poses a serious risk of pollution of groundwater and nearby rivers (notably the Senwamokgope River, Lebjelebore River and an unnamed stream).

In light of the fact that the residents of Senwamokgope township and surrounding communal areas do not have access to piped water but instead depend on groundwater (according to the GLM IDP 2010/11) and water from rivers (livestock were seen drinking from rivers), contamination of water sources by sewage constitutes a significant health risk to these community members as well as their livestock. It also constitutes an environmental hazard, as sensitive river ecosystems cannot accommodate unlimited pollution.

With this project, MDM aims to provide a **properly planned sewage system** that will not only provide **proper sanitation** for the current inhabitants of Senwamokgope, but also set the stage for future development of the Senwamokgope area. Effluent is to comply with the National Water Act (NWA, Act No 36 of 1998) and the requirements of both DWA and DEA in order to halt the current environmental pollution and the risk to the health of humans and livestock, which is ongoing as long as the existing semi-functional system remains in its current condition. The proposed upgrading is therefore anticipated to **reduce health risks and environmental degradation**.

The motivation for this proposed project is as follows:

- To **minimize** the possibility of **pollution** and contamination of groundwater and surface water resources and to reduce the risk of outbreak of waterborne diseases such as diarrhoeal disease.
- To **increase the re-useable potential** of the effluent.
- To empower the local municipality for sustainable development and **upliftment of living standards** through the development of an improved and properly planned sewage treatment system. This will allow the municipality to provide a sustainable and cost effective service to the community.

- To provide **accredited training programmes** to train treatment plant operators in the proposed treatment processes and to operate and maintain the sewage treatment plant.
- Provide **employment opportunities** in the project area by using labour intensive construction methods where feasible, and utilizing local contractors.

3. INVESTIGATION OF ALTERNATIVES

3.1. Project Alternatives

No project alternatives were investigated within the ambit of this EIA, as the express aim of the project is to provide the community of Senwamokgope with proper sewerage. Furthermore, the site is already utilized for sewage treatment, and this “brownfield” site is simply proposed to be upgraded.

3.2. Site Alternatives

No site alternatives were investigated, as a sewage treatment plant already exists on the proposed site. From both a financial and an environmental perspective, upgrading of the existing facilities (brownfield site) is preferable to establishment of new facilities on a greenfield site, as no new impacts will be introduced to an undeveloped site, but rather only the scale of already existing impacts (whether positive or negative) may be affected. The Mamaila Royal Council has also already given their consent for the use of this particular site.

3.2.1. Site description

The site consists of a fenced area of approximately 0.6 ha in extent, on the premises of Sekgosese Secondary School in Senwamokgope township. The site forms part of the farm Roerfontein 161-LT and is currently occupied by the existing sewerage plant, which consists of the primary, secondary and tertiary oxidation ponds as described in Section 1.2. The sections between and around the ponds are grassed, and vegetation on the site is degraded. Vegetation immediately around the site ranges from degraded to natural.

The Lebjelebore River runs just northwest of the site and a small unnamed tributary running right next to the plant flows into this river.

3.3. Technology Alternatives

Four different technology alternatives were investigated by Mošomo Consulting Civil Engineers; these are described in more detail within the EIR:

- Bio-filter (Trickling Filter)
- Rotating biological contactors
- Aerated lagoons
- Activated sludge process

The **Bio-filter** process was selected as the preferred alternative as it is a simple and reliable process and does not require a large surface area. It is appropriate for small to medium-sized communities

and effective in treating high concentrations of organic material, depending on the type of media. It furthermore has low power requirements and only a moderate level of skill and technical expertise is needed to manage and operate the system.

3.4. No-go Alternative

The 'no-go' alternative refers to the scenario in which the proposed activity does not take place and the site remains as it is.

If the no-go alternative is taken, the impacts that can be anticipated to be associated with the proposed upgrade of the sewerage plant would not come to pass and the conditions and trends on the property can be expected to remain as per the status quo. Impacts that can be expected to be experienced in case of the no-go alternative being selected are highlighted within the EIR.

4. APPLICABLE LEGISLATION

4.1. Environmental Legislation

- National Environmental Management Act EIA Regulations (2006)
- National Environmental Management: Waste Act (Act No. 59 of 2008)

Applicable listed activities, as published in Government Notice 718 (3 July 2009) in terms of NEMWA:

CATEGORY B ACTIVITY NR	ACTIVITY DESCRIPTION
4	The biological, physical or physico-chemical treatment of hazardous waste at a facility that has the capacity to receive in excess of 500kg of hazardous waste per day.
5	The treatment of hazardous waste using any form of treatment regardless of the size or capacity of such a facility to treat such waste.
6	The treatment of hazardous waste in lagoons.
7	The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000 m ³ or more.
9	The disposal of any quantity of hazardous waste to land.
11	The construction of facilities for activities listed in Category B of this Schedule (not in isolation to associated activity).

- National Water Act (Act No. 36 of 1998)

Applicable water uses (this projects is covered by the General Authorisation):

SECTION	WATER USE DESCRIPTION
21(a)	Taking water from a water resource.
21(e)	Engaging in a controlled activity identified as such in Section 37(1) or declared under Section 38(1).
21(f)	Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.
37(1)(a)	Irrigation of any land with waste or water containing waste generated through any industrial activity or by a waterwork.

4.2. Other Legislation

Other applicable legislation:

LEGISLATION	RELEVANT SECTIONS
The Constitution Act (No 108 of 1996)	Chapter 2, Section 24
Conservation of Agricultural Resources Act (1983)	Section 5
Fencing Act (No 31 of 1963)	Section 17
Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947)	Sections 3 – 10
Limpopo Environmental Management Act	Schedule 2, 3, 11 and 12
National Environmental Management Act (No 107 of 1998) and regulations	
National Environmental Management: Air Quality Act (No 39 of 2004)	Sections 32, 34 and 35
National Environmental Management: Biodiversity Act (No 10 of 2004)	Sections 57, 65–69, 71, 73 & 75
National Environmental Management: Waste Act (No 59 of 2008)	Chapter 4 Part 4; and Chapters 5 & 7
National Heritage Resources Act (No 25 of 1999)	Sections 34, 35 and 36
National Water Act (No 36 of 1998)	Sections 19 & 20; and Chapter 4 (Sections 21-55)
Water Services Act (No 108 of 1997)	Sections 3 and 4
Occupational Health and Safety Act (No 85 of 1993)	Sections 8 & 9
Municipal systems Act (No 32 of 2000)	Section 4

5. ENVIRONMENTAL SCOPING INVESTIGATION – BIO-PHYSICAL INVESTIGATIONS

Bio-physical investigations during the environmental scoping phase consisted of the following specialist studies:

- Ecological investigation conducted by Mr Jacques Moller of Bateleur Environmental Services;
- Limnological investigation conducted by Mr Cornell Vermaak of Endip Wildlife Laboratories;
- Geo-hydrological investigation conducted by Mr Carel Haupt of WSM Leshika Consulting.

During the more detailed impact assessment phase, the following specialist bio-physical investigation was undertaken:

- Geo-hydrological investigation (more detailed) conducted by Mr Carel Haupt of WSM Leshika Consulting.

Potential impacts in terms of climate, topography, soils, geology, hydrology and ecology were scored in terms of **status** (positive / negative / neutral), **extent** (local / sub-regional / regional / regional / national), **duration** (short- / medium- / long-term / permanent), **magnitude** (negligible / low / medium / high), **likelihood** (improbable / possible / highly probable / definite) and **significance** (negligible / low / medium / high).

5.1. Climate

5.1.1. Status quo

The regional climate can be defined in three distinct seasonal occurrences (WSM Leshika, 2010):

- May to July: dry with cool to warm, usually cloudless days and nights;
- August to October: daily temperatures begin to rise with day temperatures generally hot, though the nights still tend to be cool;
- November to April: this is the regional wet season, a hot period with heavy thundershowers. About 85 per cent of the annual rainfall occurs during these months.

Mean annual precipitation (MAP) is 623mm and the mean annual S-pan evaporation (MAE) is 1593 mm for the area (DWA WR2005) (WSM Leshika, 2010).

Rainfall and wind data was obtained from the South African Weather Service for the three nearest weather stations – Mara, Thohoyandou and Tzaneen – but the Tzaneen station (located on Westfalia Estate) only has data going back to 2007. Data is included in the EIR.

5.1.2. Potential impacts

The proposed project is not anticipated to impact upon climate. However, certain climatic factors may affect the impacts of the proposed upgraded sewerage plant. The main issue in which climate would play a role, is potential production of foul odours, and wind direction would be the main factor determining whether such odours would cause discomfort to neighbours.

For the most part, the area immediately surrounding the site consists of open veld, where odours would not cause any impact. The main odour-sensitive receptors would be Sekgosese Secondary School and Senwamokgope township. As wind direction differs greatly between the three nearest weather stations and no wind data are available for Senwamokgope itself, it is difficult to gauge whether the prevailing wind direction is such that possible odours would be transported in the direction of the township.

This proposed sewage treatment plant, in conjunction with the rest of the larger project (outfall sewer and expansion of reticulation) is anticipated to significantly aid in reduction of odour impacts at leaks in the existing outfall sewer and in areas where pit latrines are used due to a lack of functioning sewerage infrastructure, even though the risk of foul odours at the treatment plant itself may increase.

5.2. Topography, Soils, Geology and Geo-Hydrology

A scoping-level geo-hydrological investigation was undertaken by WSM Leshika during July and August 2010 to assess groundwater vulnerability and to evaluate the potential impact of the proposed project on groundwater resources. In February 2011, a more detailed geo-hydrological assessment was conducted, also by WSM Leshika, during which groundwater sampling and analysis was also done.

5.2.1. Topography, soils and geology

The site is located in the B82D quaternary catchment. The area consists of rolling hills with the site varying from about 640 mamsl (metres above mean sea level) at the Senwamokgope stream to about 660 mamsl at the road. No perennial streams exist on the property. Based on the 1:250 000-scale geological sheet, 2330 Tzaneen the site is underlain by Goudplaats Gneiss. The rocks consist mainly of leucocratic quartz rich gneiss. Some mafic amphibolitic zones and dolerite dykes may also occur. No specific mineral deposits seem to be present on or close to the site.

Soils were found by Bateleur Environmental Services to be of the Glenrosa and Witbank soil forms (BES, 2010). WSM Leshika describe the soils in the area as moist brown to grey brown loose sometimes granular silty sand overlain by moist reddish orange loose to medium dense intact clayey sand and gravelly clayey sand. The soils can be classified as SC according to the Unified Classification system. This material is generally only very slightly permeable, but evidence of seasonal perched water tables (i.e. weak ferruginisation) was observed. The soil is confirmed to be only very slightly permeable.

5.2.2. Geo-hydrology

As no monitoring borehole existed downstream of the sewage works a new borehole, H10-0880, was drilled to serve as a new monitoring site. The borehole was drilled to 74m depth and intersected water at 40m and 65m. The main aquifers in the area are thought to be fractured and weathered aquifers in the granite / gneisses. The aquifer storage is difficult to determine, but as the predominant aquifer type is known to be a fractured and weathered aquifer, the storage is estimated from DWA's GRA II (2003) to be about 0.002. Information from GRA II (2003) gives the average annual recharge as 15.6mm, of which 8.7mm contributes to base flow in the rivers for the B82D catchment.

The static water levels vary between 6 and 25 metres below surface in the area and flow is towards the stream in the south-east (Senwamokgope river). It is expected that groundwater contributes to the base flow in the stream; the natural piezometric gradient is therefore thought to be in a south-easterly direction at the site.

Results of water sample analysis show that the water quality varies over the area (class 0 – class 4). Problems include Nitrates, Hardness and salts. Please refer to Appendix G (Geo-hydrological report) for the water quality results.

5.2.3. Potential impacts and recommendations

During the construction phase, impacts may be experienced in the form of construction workers using the veld for ablutions, in the absence of toilet facilities. However, preventative and mitigation measures are recommended in the EMP.

Operational phase: The existing works has been operating for some time with no major apparent negative effects on the environment; however, no monitoring of the ground water has occurred and the real impacts are therefore not known. As the soils were found to be only slightly permeable the

risk of pollution from the sewage effluent plant is thought to be **low** if the extension to the works is constructed according to DWA's standards and all ponds or holding dams are sealed or lined.

A reduction is also anticipated in the current rate of groundwater and surface water contamination which results from the blockage / break in the main outfall sewer and from the fact that the sewerage plant is only partially functional. This positive impact is expected to be of medium to high significance.

5.3. Surface freshwater

An aquatic study was undertaken by Endip Wildlife Laboratories in July and August 2010 in order to:

- Assess the current ecological status of the aquatic macro invertebrates in the wetland upstream and downstream from the location of the sewerage plant;
- Assess the current chemical and bacterial status of the water in the wetland upstream and downstream from the location of the plant;
- To determine the level of toxicity of the wastewater before and after treatment.

5.3.1. Methodology

Due to the fact that the stream under discussion is seasonal and dry for the most months of the year, also during this study, it was decided to conduct these surveys on the waste water itself, before and after treatment, in order to determine the quality of water that is to be returned into the environment, thus feeding into the stream eventually.

Surveys were conducted on the raw- and treated waste water to get an idea of the aquatic ecological status of the system. The South African Scoring System (SASS 5) system was performed at the site and all the existing biotopes were sampled.

5.3.2. Status quo

The following biotopes occurred on site at the time of the survey:

- Marginal vegetation: Grasses, reeds and sedges on water's edge.
- Gravel and mud: The material that constitutes the bottom of the ponds.

Very poor SASS scores were measured and the final sample toxicity description is "Highly acute hazard with acute toxicity", with a toxicity unit of 8. Currently it is completely unacceptable that the waste water is seeping from numerous leaks from the ponds into the Senwamakgope River, which is a mere 400 meters downslope from the plant. The specific point of seepage was visited under the guidance of the plant maintenance worker, who also pointed out that the leak is getting worse.

No surveys could be done on the river, as it was dry, but if the seeping of the waste water is evident with algal growth on the soil surface due to eutrophication during dry months, groundwater contamination is anticipated to be significant.

Bacterial results show that there are levels of *E. coli* that are extremely hazardous to public human health, and the water as well as the grounds around the plant must be avoided by humans. The fact that the school's sanitation systems have been vandalized to the extent that there are not enough

toilet facilities left any more, results in people in high numbers using the bush around the school and plant as veld toilets.

All bacterial counts at 10 000 times dilutions of 1 mL resulted in bacterial growth too numerous to count. Chemical standards for the phosphate, nitrate and ammonia can never be complied with under the current treatment measures. The proposed upgrading of the treatment plant is a necessity in order to address the ticking time bomb of poor sewage treatment at the current plant.

5.3.3. *Potential impacts*

The proposed upgrading project is anticipated to impact positively on surface freshwater quality as compared with the current situation, as the proposed new system will ensure more effective sewage treatment and hence bring about a reduction in contamination of nearby water sources such as the Lebjelebore and Senwamokgope Rivers and an unnamed stream near the site.

The new system will still hold the risk of potential water contamination in case of leakage or spillage from the treatment plant; however, this potentially negative risk is felt to have a much lower significance than that of the positive impact of an immediate and long-term reduction in water pollution.

5.4. **Ecology**

An ecological assessment was conducted by Bateleur Environmental Services in May 2010 in order to assess the current status of fauna and flora on the site, gauge the likelihood of Red Data species occurring on the site, and identify potential impacts that may be associated with the proposed project.

5.4.1. *Vegetation*

Only one plant community was identified on site. Because of the small size of the site, the immediately surrounding area was also surveyed in order to attain a wider picture of the natural background of this area.

The plant community was divided into five vegetation units and classed according to the sensitivity of each. The current vegetation on sites ranges from degraded to natural.

Vegetation unit 1: *Diospyros mespiliforme* – *Philenoptera violacea* natural undisturbed veld.

Vegetation unit 2: Artificial wetland – overflow dams

Vegetation unit 3: Grass covered areas in between dams.

Vegetation unit 4: Water body – raw sewerage mixed with water.

Vegetation unit 5: Riparian vegetation.

5.4.2. *Fauna*

Because of the degraded ecosystem, biodiversity was found to be relatively low; very few species would actually occur on site.

5.4.3. Protected species

Plants

Protected tree species published in the National Forest Act that were found on the site were:

- Apple leaf (*Philenoptera violacea*)
- Marula (*Sclerocarya birrea*)

These species are not to be removed without relevant permits from the Forestry division of the Department of Agriculture, Forestry and Fisheries (DAFF).

Fauna

No red data frog species occur in the particular area. Only one protected reptile species may occur in the area, viz. the African Rock Python, but the probability of its occurrence onsite is low. Protected mammalian species that may occur in the area are the Pangolin, Spotted Hyena, Brown Hyena and Honey Badger, although the probability of their occurrence on the site is low. Ten protected bird species may occur in the area; all have a low probability of occurring on the site, due to the transformed state of the site.

5.4.4. Potential impacts

The collective ecological sensitivity of the site was rated as **medium-low**. The site of the existing sewage ponds, including both the ponds themselves and the grassed areas in between, is classified as having low sensitivity. The surrounding *Diospyros mespiliforme*, *Philenoptera violaceae* natural undisturbed veld is rated as medium-low sensitivity, and a small section of riparian vegetation to the south-east of the site is classified as medium sensitivity.

6. ENVIRONMENTAL SCOPING INVESTIGATION – SOCIO-ECONOMIC INVESTIGATIONS

The only specialist investigation conducted in terms of socio-economic aspects, consisted of a specialist heritage investigation conducted by Shasa Heritage Consultants. Other socio-economic parameters were investigated on a desktop level.

6.1. Heritage Assessment

A Phase 1 Heritage Impact Assessment (HIA) was conducted by Shasa Heritage Consultants in April 2010.

According to the most recent archaeological cultural distribution sequences by Huffman (2007), this area falls within the distribution area of various cultural groupings originating out of both the Urewé Tradition (eastern stream of migration) and the Kalundu Tradition (western stream of migration). However, **no archaeological remains or other heritage remains of importance were noted on the terrain. No archaeologically induced ecologically disturbed area was observed either.** However, the archaeological cultures referred to above **may** be present as obscured subterranean deposits.

6.1.1. *Potential impacts*

No impacts on heritage resources are anticipated to be associated with the proposed project, as no such resources were found on the site. However, the possibility of heritage resources being uncovered during construction cannot be precluded.

6.2. **Social Aspects**

The proposed development site forms part of the Greater Letaba Municipality within the Mopani District of the Limpopo Province. Senwamokgope is one of only three proclaimed towns within the GLM, the other two being Modjadjiskloof and Ga-Kgapane. The majority of residents within the municipal boundaries reside in rural villages, of which approximately 128 are scattered throughout the municipal area (GLM IDP 2010/11).

6.2.1. *Potential impacts*

The following **short-term** socio-economic impacts may be expected during the **construction phase** of the proposed project:

- Creation of employment opportunities, mostly in the form of unskilled labour hired on a short-term basis during the construction phase;
- Support of local job opportunities through support of local businesses in the procurement of materials, equipment and services to be used in the construction phase, as well as the support of local shops by construction workers who are likely to purchase items such as food locally;
- The possibility exists that workers may be rowdy and noisy; the risk of increased criminal activity also exists. Increased security will be required at Sekgosese Secondary School;
- Construction-related noise resulting mostly from construction machinery (particularly during earthworks), offloading of materials, and the rumble of heavy construction vehicles / plant on the road. This may disturb the academic atmosphere at Sekgosese Secondary School.

Socio-economic impacts over the **long term**, during the **operational phase**, may relate to the following:

- Homes that currently make use of pit latrines will be connected to the waterborne sewerage network. This is anticipated to raise the standard of living of the affected households;
- Sewage from homes that are currently connected to the sewerage network, does not reach the treatment plant due to the break or blockage. This will be remedied through the proposed project, and sewage from these homes will be treated at the upgraded plant;
- Reduction in health risks (for people and livestock) due to better treatment of sewage and associated reduction in pollution risk of groundwater and streams;
- Possible stimulation of development in Senwamokgope (for instance residential or commercial development) through the availability of sewerage infrastructure. Such possible development would, in turn, hold its own suite of impacts.

6.3. Visual Aspects

The site is already utilised for a sewerage plant and is surrounded by open field with natural vegetation to three sides and Sekgosese Secondary School directly to the east. The site is **not** located in a position of high visibility – it is situated out of sight of the main road (Lemondokop road) and is not abutted by any existing development. The site is also not visible from the school buildings themselves, but rather is situated on an outlying portion of the premises.

Very low construction-phase visual impacts can also be expected in the form of clearing of the site and construction activities themselves.

The proposed upgrading of the sewerage system will **not** introduce a new long-term visual impact into the landscape, as the site is already occupied by a sewerage plant. The impact of the proposed upgrading is therefore anticipated to be negligible in this regard.

6.4. Noise

Being situated in a rural setting, the current ambient noise levels in the vicinity of the site are relatively low. Noise is mostly associated with the voices of pupils at Sekgosese Secondary School, as well as some background noise from vehicles travelling on the nearby Lemondokop road.

Construction-phase impacts are anticipated to be mainly associated with construction activities themselves, including machinery involved in earthworks, off-loading of material from trucks, etc, and the voices of construction workers. These impacts will be short-term in duration, occurring only whilst construction is underway.

By its very nature, the proposed sewerage system will not generate significant long-term noise levels once it is operational. The system will operate relatively silently, and no operational-phase noise impacts are expected.

6.5. Cumulative impacts

As is the case for any activity, impacts are not limited to those directly or even indirectly associated with the proposed activity – potential cumulative impacts need to be considered as well, so that activities can be seen not as stand-alone entities but as part of the larger picture of which they inevitably form part. These impacts are highlighted within the EIR.

Should this proposed upgrading project be implemented, it may serve to stimulate further development in Senwamokgope, particularly (but not limited to) the area that will be newly served by waterborne sanitation. Such possible spin-off development would pose its own suite of impacts, both positive and negative.

7. PUBLIC PARTICIPATION PROCESS

7.1. Background Information Document and Comment and Registration Form

A Background Information Document (BID) was compiled in English and SePedi in order to provide a background and description of the proposed project and the EIA process being followed. The BID was distributed to stakeholders and adjacent landowners along with the locality map and comment and registration form. The comment and registration form provided I&APs and stakeholders with a convenient method of submitting their contact details to the consultants in order to register on the project database, as well as to raise any issues, comments or concerns that they had in terms of the proposed project.

7.2. Advertisement of Commencement of EIA Process

The commencement of the EIA process was advertised for a period of 31 days (15 July to 15 August 2010) in the following ways (please refer to Appendix I for copies of newspaper advertisements, photographs of site notices and the list of stakeholders who were directly notified):

- Placement of notices in the local newspapers the Letaba Herald (English notice) and the Mopani Herald (SePedi notice);
- Display of site notices (each containing both the English and the SePedi adverts) at Sekgosese Secondary School, Senwamokgope Primary School, GLM Sekgosese Sub-office and Mamaila tribal office;
- Direct notification of identified stakeholders via fax, e-mail and/or post.

7.3. Public Meetings

The first Public Meeting was held on Saturday, 31 July 2010 at Senwamokgope Primary School. The purpose of the Public Meeting was to afford stakeholders the opportunity to liaise with the project team to obtain information about the proposed project and to have their comments, queries and/or concerns addressed. During the meeting, the project team presented the proposed project and the EIA process being followed.

The second Public Meeting has been scheduled for Saturday, 12 March 2011, again at Senwamokgope Primary School. The purpose will be to provide stakeholders and the public with another opportunity to discuss queries regarding the project with members of the project team.

7.4. Issues Raised

Comments and issues raised during the Public Participation Process thus far have been incorporated into the Issues Trail (Appendix M). Stakeholders have been generally positive about the proposed project, as it is anticipated to raise the standard of living for the residents of Senwamokgope and reduce health risks associated with

7.5. Availability of Draft ESR for Review and Comment

The draft ESR was available for public review and comment for a period of 30 days, from 19 August to 19 September 2010. Copies of the report were available at the office of Mamaila Royal Council in Mamaila Village, Greater Letaba Municipality (GLM) Sekgosese sub-office and the offices of Polygon Environmental Planning in Tzaneen. Copies of the report (whether in hard copy or on CD) were submitted directly to a number of stakeholders for their comment (notably DWA, LIHRA, SAHRA, GLM and Mamaila Royal Council). All comments received with regards to the report within the comment period have been incorporated into the final ESR for submission to DEA.

7.6. Availability of Draft EIR and EMP for Review and Comment

This draft EIR and EMP are currently available for public review and comment for a period of 30 days, from 3 March to 2 April 2011. Copies of the report are available at the office of Mamaila Royal Council, GLM Sekgosese sub-office and the offices of Polygon Environmental Planning. Copies of the report have also been submitted directly to a number of stakeholders for their comment (notably DWA, LIHRA, SAHRA, GLM and Mamaila Royal Council).

8. CONCLUSIONS

No fatal flaw issues were identified during the EIA. Indeed, the investigations and public participation have led to the conclusion that the proposed upgrading of the sewerage treatment plant would in fact be an **improvement upon the current situation** of limited sewage treatment and dilapidated sewerage infrastructure, both from a bio-physical and a socio-economic perspective.

Measures for the prevention, mitigation and/or management of impacts that may be anticipated to be associated with the proposed project are contained in the attached EMP; these will need to be adhered to during both the construction and operational phases, as well as during potential future decommissioning of the system. **It is felt that adherence to these measures can sufficiently limit and manage potential impacts, so that the proposed upgrading of the sewage treatment system can be recommended from an environmental perspective.**