

# PROPOSED UPGRADE AND EXPANSION OF THE KAMEELMOND WASTEWATER TREATMENT WORKS IN UPINGTON, NORTHERN CAPE

## SCOPING REPORT IN SUPPORT OF A WASTE MANAGEMENT LICENCE

**DRAFT**

SEPTEMBER 2021

APPLICANT: DAWID KRUIPER MUNICIPALITY



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## TITLE AND APPROVAL PAGE

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## EXECUTIVE SUMMARY

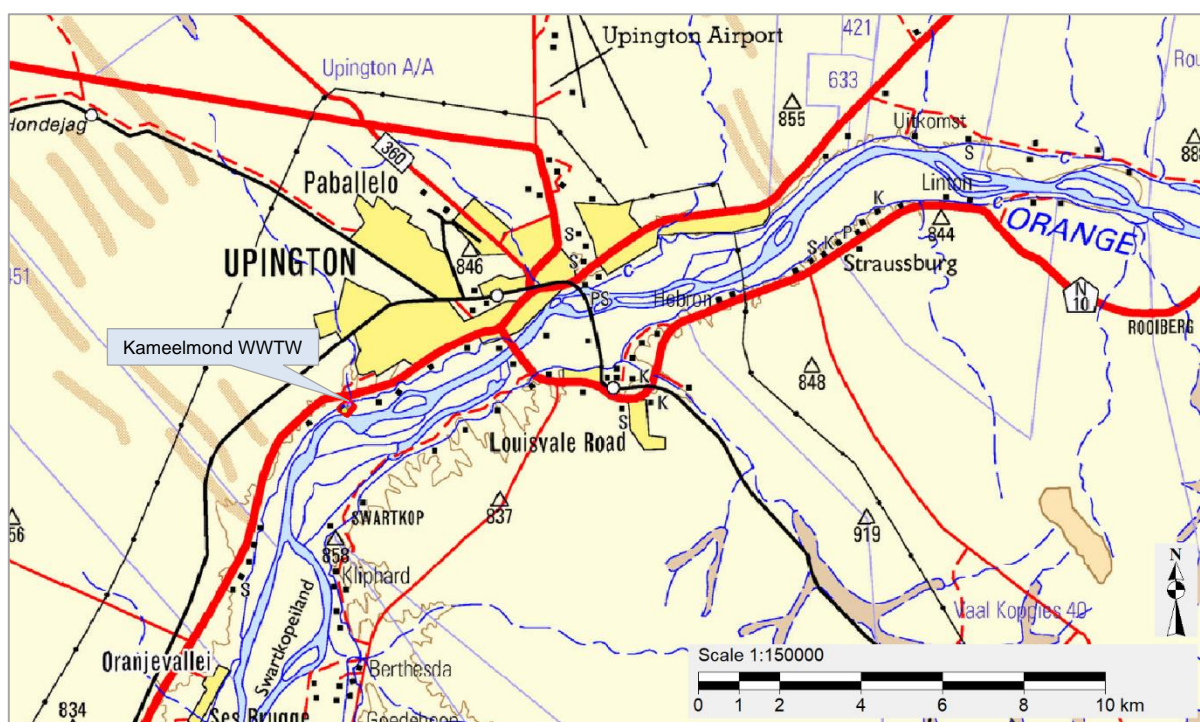
### A. PROJECT BACKGROUND AND MOTIVATION

The Dawid Kruiper Municipality (the Applicant) has proposed upgrade and expansion of the Kameelmond Wastewater Treatment Works (K-WWTW) (the Project), which is located on the south-western side of Upington in the Northern Cape. The K-WWTW is under ever increasing pressure to enhance serviceability of new residential and, to a lesser extent, industrial runoff located within the Works' planned drainage area. Effluent quality standards specified by the Department of Water and Sanitation (DWS) are also likely to increase beyond the current treatment efficiency that the Works' is able to achieve. Potential reuse of the Works' effluent, together with the above mentioned culminates in the requirement of the upgrade and expansion of the K-WWTW. The aim of the Project is to increase the capacity of the K-WWTW from 16 MI/d to 24 MI/d.

Various consents are required for the Project according to the environmental governance framework, one of which is a Waste Management Licence (WML) in terms of the National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM:WA). The need for a WML is triggered by the waste management activities associated with the proposed Project. This document serves as the Draft Scoping Report in support of the WML.

### B. PROJECT LOCATION

The K-WWTW is situated north of the Orange River, on the south-western side of Upington (centre point coordinates for plant: 28°28'41"S; 21°12'12"E) on the N14 between Upington and Keimoes, in the Northern Cape (see figure to follow).



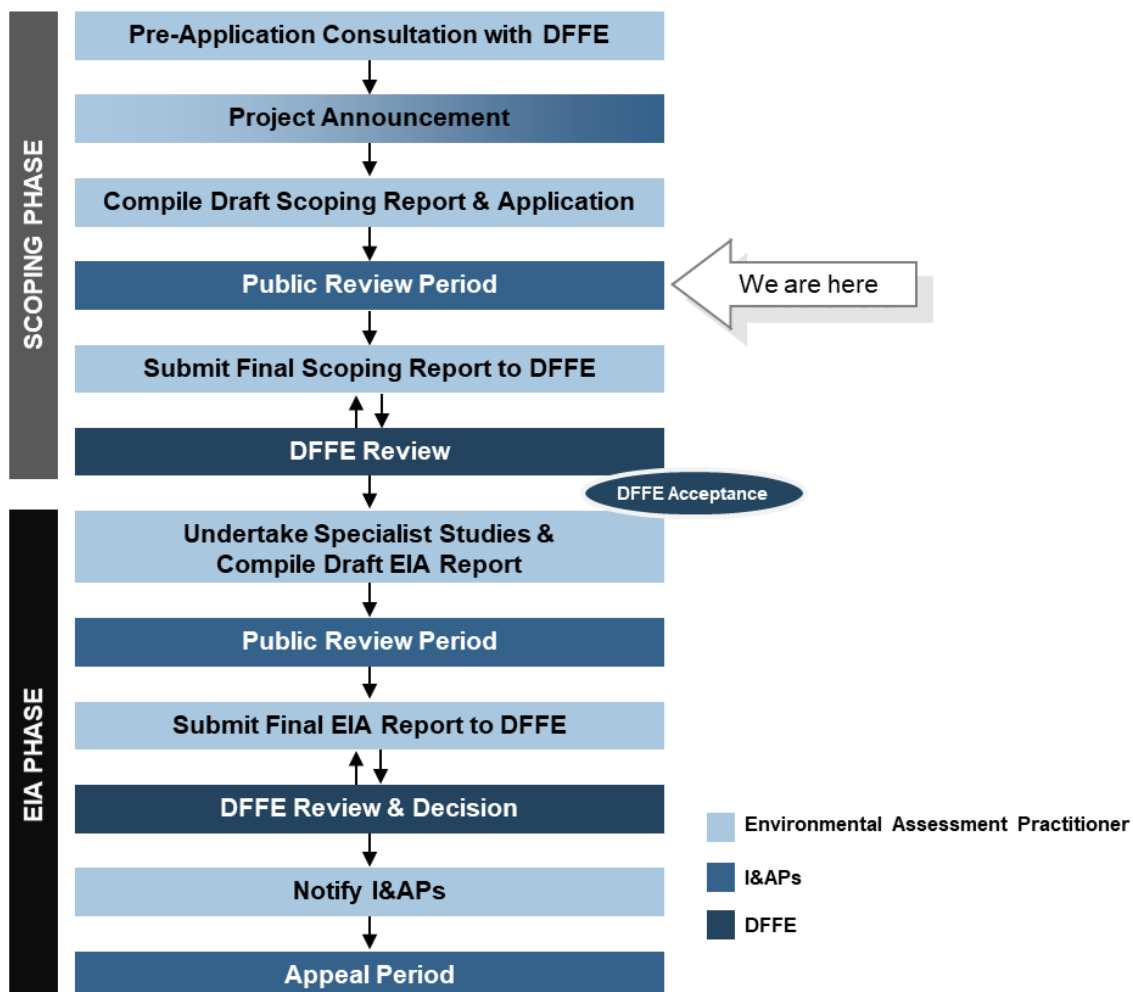
**Figure A: Locality map**

The proposed upgrade and expansion of the K-WWTW will take place within the confines of the plant's existing perimeter fence.

### C. SCOPING AND EIA PROCESS

Nemai Consulting (Pty) Ltd was appointed as the Environmental Assessment Practitioner (EAP) to undertake the following environmental processes to seek authorisation for the proposed Project:

- A Basic Assessment process in terms of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended) to seek Environmental Authorisation in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA), where the mandated authority is the Northern Cape Department of Environment and Nature Conservation (DENC).
- **A Scoping and Environmental Impact Reporting (S&EIR) process in terms of the EIA Regulations of 2014 (as amended) to seek a WML in terms of NEM:WA, where the mandated authority is the Department of Forestry, Fisheries and the Environment (DFFE);** An outline of the S&EIR process for the proposed Project is provided below.
- A Water Use Licence Application (WULA) in terms of the National Water Act (Act No. 36 of 1998) (NWA) for water uses associated with the K-WWTW. The mandated authority for this application is the Department of Water and Sanitation (DWS).



**Figure B: Overview of Scoping and EIA Process**

This Scoping Report is linked to the S&EIR process in support of the WML. The other environmental processes are being undertaken separately.

#### D. PROJECT'S TECHNICAL DESCRIPTION

The status quo treatment process requires major refurbishment as large sections of the K-WWTW have been in operation since the 1970s, with the last upgrade and expansion having taken place during the 1990s. It was therefore proposed that the overall scope of work for the K-WWTW be split into the following: (i) refurbishment of existing mechanical and electrical equipment; and (ii) upgrade and expansion of the K-WWTW. This Application focuses on the latter.

Key components of the K-WWTW associated with the upgrade and expansion works are shown in the figure to follow.



**Figure C: K-WWTW upgrade and expansion works (Google Earth image)**

The following waste management activities are associated with the proposed Project:

1. The primary sludge and Waste Activated Sludge (WAS) that is produced at the K-WWTW, will be treated at the proposed dewatering facility, mixed, and stockpiled on a proposed concrete slab for solar drying;
2. It is proposed to decommission and demolish K-WWTW's existing sludge drying beds to avail space for the new Activated Sludge Process (ASP) train; and
3. It is proposed to decommission the existing diesel-fired incinerator at the K-WWTW, which is currently used for the disposal of screenings.

The following options were considered for the Project:

- Sludge Treatment –
  - Sludge drying. With this option, the dried sludge cannot be used for agricultural or construction purposes due to the silica involved in the process;
  - Belt presses and linear screens. This option is more cost intensive and requires strict operational control; and
  - Sludge dewatering facility. The dewatering equipment are screw presses are easy to operate, durable and sufficient for the sludge treatment requirements at K-WWTW.
- Sludge management and disposal –
  - Sludge for agricultural use;
  - Sludge as fertiliser product;
  - Sludge for commercial products; and
  - Disposal of sludge at a landfill site.

## E. PROFILE OF THE RECEIVING ENVIRONMENT

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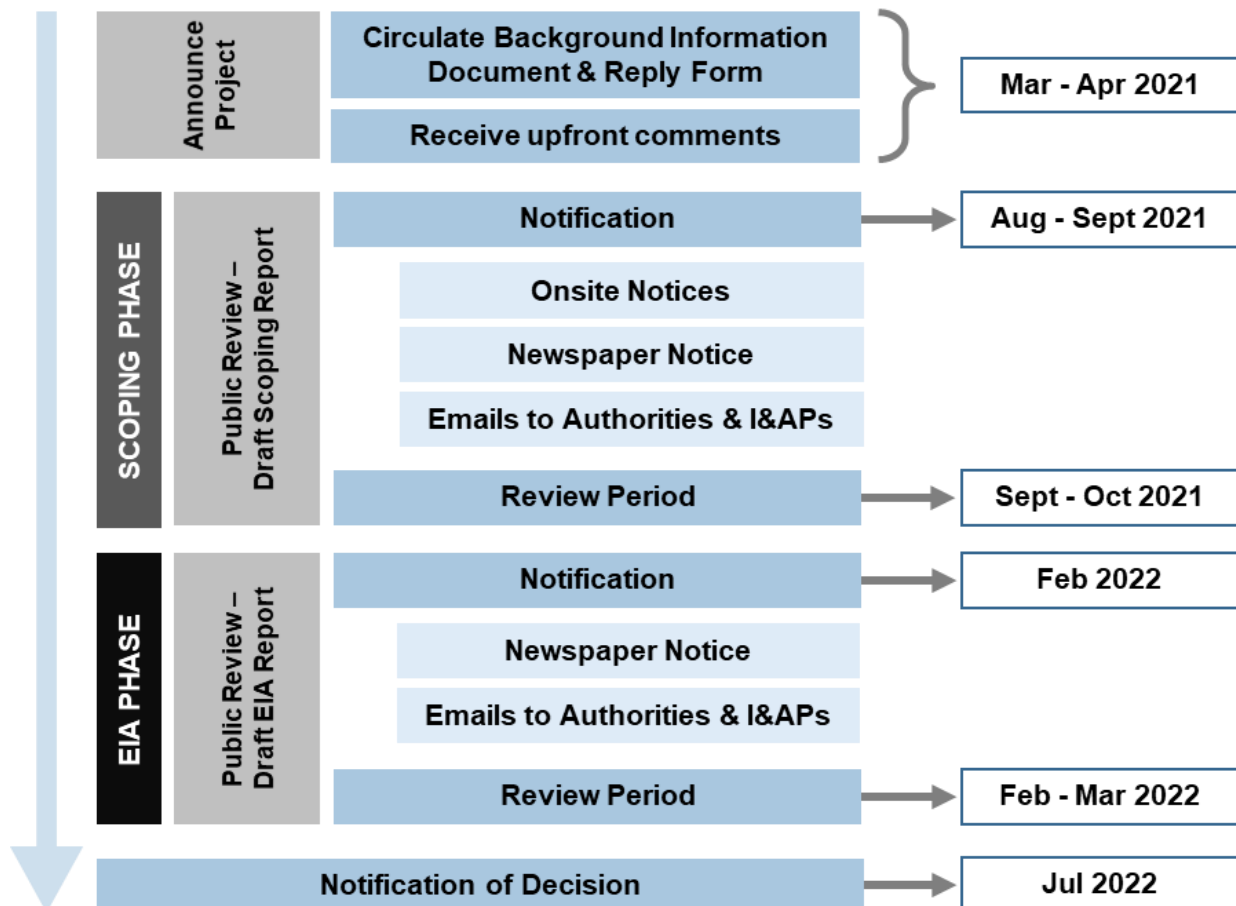
The Scoping Report provides a general description of the status quo of the receiving environment in the Project Area. This serves to provide the context within which the Scoping exercise is conducted. It also allows for an appreciation of sensitive environmental features and possible receptors of the effects of the proposed Project. A brief overview is also provided of the manner in which the environmental features may be affected (positively or negatively) by the proposed Project.

The receiving environment is explained in terms of the following:

- |  |  |
|--|--|
| <input type="checkbox"/> Land Use;                   | <input type="checkbox"/> Air quality;        |
| <input type="checkbox"/> Climate;                    | <input type="checkbox"/> Noise;              |
| <input type="checkbox"/> Geology and Soil;           | <input type="checkbox"/> Heritage;           |
| <input type="checkbox"/> Hydrogeology;               | <input type="checkbox"/> Planning;           |
| <input type="checkbox"/> Topography;                 | <input type="checkbox"/> Transportation;     |
| <input type="checkbox"/> Surface Water;              | <input type="checkbox"/> Visual quality; and |
| <input type="checkbox"/> Biodiversity;               | <input type="checkbox"/> Health.             |
| <input type="checkbox"/> Socio-Economic Environment; |  |

## F. PUBLIC PARTICIPATION

The diagram to follow outlines the public participation process for the upfront Announcement Phase (completed), Scoping Phase (current) and EIA Phase (pending). Note that the dates reflected in the diagram may change due to the dynamic nature of the EIA process.



***Figure D: Outline of Public Participation Process***

The Scoping Report explains the public participation tasks undertaken during the Scoping Phase, including the following

- Compiling the database of Interested and Affected Parties,
- Notification of review of the Draft Scoping Report;
- Accessing the Draft Scoping Report;
- Public Meeting to present the Draft Scoping Report; and
- Addressing comments received on the Draft Scoping Report.

## G. ENVIRONMENTAL ISSUES

In accordance with the purpose of the Scoping Phase, the Scoping Report identifies potentially significant environmental issues for further consideration and prioritisation during EIA Phase. This allows for a more efficient and focused impact assessment, where the analysis is largely limited to significant issues and reasonable alternatives.

Pertinent environmental issues, which will receive specific attention during the EIA Phase through a detailed quantitative assessment and relevant specialist studies (where deemed necessary), are tabulated below.

***Table A: Potentially significant environmental issues for prioritisation during the EIA Phase***

<b>Environmental Factor</b>	<b>Construction Phase Potential Issues / Impacts</b>	<b>Operational Phase Potential Issues / Impacts</b>	<b>Investigations / EIA Provisions</b>
<b>Climate</b>	<ul style="list-style-type: none"> <li>Greenhouse gas emissions during construction.</li> </ul>	<ul style="list-style-type: none"> <li>Greenhouse gas emissions from biological processes at the Works.</li> <li>Climate change may lead to increased inflows, which can cause more frequent bypassing at the K-WWTW.</li> <li>The K-WWTW is located alongside the Orange River and may be at risk from extreme floods.</li> </ul>	<ul style="list-style-type: none"> <li>Flood risks to be determined based on the 1:100 year floodline of the Orange River.</li> <li>Operational adaptations to climate change.</li> <li>Environmental Management Programme (EMPr).</li> </ul>
<b>Land Use &amp; Planning</b>	<ul style="list-style-type: none"> <li>The upgrade and expansion of the K-WWTW will take place within the confines of the plant's existing perimeter fence. No significant adverse impacts are thus anticipated in terms of immediate land use during construction.</li> <li>Setbacks / conditions associated with surrounding land and infrastructure (as relevant).</li> </ul>	<ul style="list-style-type: none"> <li>Setbacks / conditions associated with surrounding land and infrastructure (as relevant).</li> <li>Land use requirements and restrictions associated with the buffer zone of the K-WWTW will need to be enforced from a planning perspective.</li> <li>The Project aims to enhance the operation of the K-WWTW, which will manage impacts to surrounding land uses (such as odour control) and water users downstream of the plant (improved effluent quality) (<i>positive impact</i>).</li> </ul>	<ul style="list-style-type: none"> <li>EMPr.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li>Suitability of geological conditions to support the proposed structures and infrastructure.</li> </ul>		<ul style="list-style-type: none"> <li>Geotechnical Study.</li> <li>EMPr.</li> </ul>
<b>Geohydrology</b>	<ul style="list-style-type: none"> <li>Groundwater pollution due to spillages and poor construction practices.</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater pollution due to poor operation and maintenance practices. This may include the inadequate management of sludge and screenings.</li> </ul>	<ul style="list-style-type: none"> <li>Hydrogeological Study</li> <li>EMPr.</li> </ul>
<b>Soil</b>	<ul style="list-style-type: none"> <li>Encountering historically contaminated soil.</li> <li>Soil erosion due to clearance and inadequate stormwater management</li> <li>Soil compaction.</li> <li>Soil contamination due to spillages and poor construction practices.</li> </ul>	<ul style="list-style-type: none"> <li>Soil erosion due to inadequate stormwater management.</li> <li>Soil contamination due to poor operation and maintenance practices. This may include inadequate management of sludge and screenings.</li> </ul>	<ul style="list-style-type: none"> <li>EMPr</li> </ul>
<b>Surface Water</b>	<ul style="list-style-type: none"> <li>Alteration of drainage over the site.</li> </ul>	<ul style="list-style-type: none"> <li>Sedimentation and contamination of the Orange River through runoff, caused by</li> </ul>	<ul style="list-style-type: none"> <li>Aquatic Impact Assessment and Delineation.</li> </ul>



Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts	Investigations / EIA Provisions
	<ul style="list-style-type: none"> <li>▪ Surface water pollution due to spillages and poor construction practices.</li> <li>▪ Encroachment of construction activities into regulated area of the Orange River.</li> <li>▪ Reduction in biodiversity of aquatic biota as a result of the abovementioned drivers.</li> </ul>	<p>inadequate stormwater management on the site.</p> <ul style="list-style-type: none"> <li>▪ Damage to the K-WWTW from major flood events.</li> <li>▪ The Orange River could be contaminated through inadequate storage and handling of dangerous goods (e.g. chlorine) and poor management of sludge and screenings.</li> <li>▪ The proposed upgrade and expansion aim to ensure that the K-WWTW will discharge effluent of suitable quality, which will benefit the receiving river and downstream water users, including irrigators (<i>positive impact</i>).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Flood risks to be determined based on the 1:100 year floodline of the Orange River.</li> <li>▪ Stormwater Management Plan.</li> <li>▪ EMPr</li> </ul>
<b>Flora &amp; Fauna</b>	<ul style="list-style-type: none"> <li>▪ Noise and vibration impacts to fauna.</li> <li>▪ Nights lights may affect nocturnal faunal species.</li> <li>▪ Illegal harvesting and poaching of faunal and floral species by construction workers.</li> <li>▪ Pollution of the biophysical environment from poor construction practices.</li> <li>▪ Proliferation of invasive alien species in disturbed areas.</li> <li>▪ Human - animal conflicts.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Proliferation of invasive alien species in disturbed areas.</li> <li>▪ Environmental pollution caused by inadequate management of waste (sludge and screenings).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Terrestrial Ecological Impact Assessment.</li> <li>▪ EMPr.</li> </ul>
<b>Socio-economic Environment</b>	<ul style="list-style-type: none"> <li>▪ Influx of people seeking employment and associated impacts (e.g. foreign workforce, cultural conflicts, squatting, demographic changes).</li> <li>▪ Safety and security risks to surrounding communities.</li> <li>▪ Use of local road network.</li> <li>▪ Nuisance from dust and noise to surrounding communities.</li> <li>▪ Consideration of local labourers and suppliers in area – stimulation of local economy (<i>positive impact</i>).</li> <li>▪ Transfer of skills (<i>positive impact</i>).</li> </ul>	<ul style="list-style-type: none"> <li>▪ A wastewater treatment plant is an odorous facility that may cause a nuisance to surrounding communities.</li> <li>▪ The pollution caused to the Orange River from sub-standard effluent quality impacts on agricultural practices such as downstream irrigators.</li> <li>▪ Groundwater contamination from poor waste management practices at the K-WWTW may impact on other groundwater users.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design specifications for odour control.</li> <li>▪ EMPr.</li> </ul>
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>▪ Dust from the use of dirt roads by construction vehicles.</li> <li>▪ Dust from bare areas that have been cleared for construction purposes.</li> <li>▪ Emissions from construction equipment and machinery.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Air emissions from wastewater treatment operations, which can also be a nuisance to workers and the surrounding community.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design specifications for odour control.</li> <li>▪ EMPr.</li> </ul>

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts	Investigations / EIA Provisions
	<ul style="list-style-type: none"> <li>Tailpipe emissions from construction vehicles.</li> </ul>		
<b>Noise</b>	<ul style="list-style-type: none"> <li>Localised increases in noise may be caused by construction activities, which may pose a nuisance to workers, operational staff at the plant and the surrounding community.</li> </ul>	N/A	<ul style="list-style-type: none"> <li>EMPr.</li> </ul>
<b>Historical and Cultural Features</b>	<ul style="list-style-type: none"> <li>Possible direct impacts on below-ground archaeological deposits and fossils as a result of ground disturbance.</li> </ul>	N/A	<ul style="list-style-type: none"> <li>Heritage Impact Assessment.</li> <li>EMPr.</li> </ul>
<b>Transportation</b>	<ul style="list-style-type: none"> <li>Transportation of materials and construction personnel to site.</li> <li>Impacts to road conditions.</li> <li>Speeding and reckless driving by construction personnel.</li> <li>Construction vehicles accessing and leaving the gravel road to the site via the N14.</li> <li>Risks to other road users.</li> </ul>	<ul style="list-style-type: none"> <li>Safe access, taking into consideration the high-speed environment along the N14.</li> </ul>	<ul style="list-style-type: none"> <li>EMPr.</li> </ul>
<b>Aesthetics</b>	<ul style="list-style-type: none"> <li>Visual impacts associated with construction activities (e.g. poor housekeeping).</li> <li>Inadequate reinstatement and rehabilitation of construction footprint.</li> </ul>	N/A	<ul style="list-style-type: none"> <li>EMPr.</li> </ul>
<b>Health</b>	<ul style="list-style-type: none"> <li>Hazards related to construction work.</li> <li>Risks posed by working inside an operational wastewater treatment plant.</li> <li>Increased levels of dust and particulate matter.</li> <li>Increased levels of noise.</li> <li>Poor water and sanitation.</li> <li>Communicable diseases.</li> <li>Psychosocial disorder (e.g. social disruptions).</li> <li>Safety and security.</li> <li>Lack of suitable health services.</li> </ul>	<ul style="list-style-type: none"> <li>Hazards related to operation and maintenance work.</li> </ul>	<ul style="list-style-type: none"> <li>EMPr.</li> </ul>
<b>Waste</b>	<ul style="list-style-type: none"> <li>Environmental impacts caused by improper management of construction waste, sludge contained in old drying beds and wastewater.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental impacts caused by improper management of sludge and screenings produced at the plant.</li> </ul>	<ul style="list-style-type: none"> <li>EMPr.</li> </ul>

Cumulative impacts are identified by combining the potential environmental implications of the proposed Project with the impacts of other projects and activities that have occurred in the past, are currently occurring, or are proposed in the future within the Project area. The following potential cumulative impacts are discussed in the Scoping Report:

- Cumulative land use impacts;
- Cumulative soil impacts;
- Cumulative water resources impacts;
- Cumulative terrestrial biodiversity impacts;
- Cumulative heritage impacts;
- Cumulative transportation impacts;
- Cumulative air quality impacts;
- Cumulative noise impacts; and
- Cumulative services and utilities impacts.

A methodology to quantitatively assess the potential impacts is also provided in the Scoping Report, which will be employed during the EIA Phase.

## **H. PLAN OF STUDY FOR EIA**

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The Scoping Report is concluded with a Plan of Study, which explains the approach to be adopted to conduct the EIA for the proposed Project in accordance with the following pertinent tasks and considerations:

- Potentially significant environmental issues identified during the Scoping Phase;
- Feasible alternatives to be assessed during the EIA Phase;
- Specialist studies to be undertaken, which include –
  - Terrestrial Ecological Opinion;
  - Aquatic Assessment; and
  - Heritage Impact Assessment.
- Public Participation process to be undertaken for the EIA Phase;
- Contents of the EIA Report;
- Consultation with authorities; and
- Timeframes associated with the EIA Phase.

## **I. CONCLUSION**


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Key outcomes of the Scoping Phase for the proposed Project are as follows:

- Alternatives for achieving the objectives of the proposed activity were considered;
- Potentially significant issues pertaining specifically to the construction and operational phases of the Project were identified;
- Sensitive elements of the environment that may be affected by the Project were identified;
- Stakeholders were identified and notified of the review of the Draft Scoping Report;
- A Plan of Study was developed to explain the approach to executing the EIA Phase; and
- The scoping exercise set the priorities for the ensuing EIA Phase.

No fatal flaws were identified in terms of the proposed activities and the receiving environment that would prevent the environmental assessment from proceeding beyond the Scoping Phase. It is the opinion of the EIA team that Scoping was executed in an objective manner and that the process and report conform to the requirements of Regulation 21 and Appendix 2 of GN No. R 982 of 4 December 2014 (as amended), respectively. It is also believed that the Plan of Study for EIA is comprehensive and will be adequate to address the significant issues identified during Scoping, to select the Best Practicable Environmental Option (BPEO), and to ultimately allow for informed decision-making.

**AMENDMENTS PAGE**

<b>Date</b>	<b>Nature of Amendment</b>	<b>Amendment No.</b>	<b>Signature</b>
September 2021	Draft for Review by Authorities and the Public	0	

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## LIST OF ACRONYMS & ABBREVIATIONS

<b>ADWF</b>	Average Dry Weather Flow
<b>ADF</b>	Annual Daily Flow
<b>AEL</b>	Atmospheric Emission Licence
<b>ASP</b>	Activated Sludge Process
<b>AWWF</b>	Average Wet Weather Flow
<b>BPEO</b>	Best Practicable Environmental Option
<b>BTF</b>	Biological Trickling Filter
<b>CBAs</b>	Critical Biodiversity Areas
<b>DALRRD</b>	Department of Agriculture, Land Reform and Rural Development
<b>DEA</b>	Department of Environmental Affairs
<b>DEA&amp;DP</b>	Department of Environmental Affairs and Development Planning
<b>DEAT</b>	Department of Environmental Affairs and Tourism
<b>DENC</b>	Department of Environment and Nature Conservation
<b>DFFE</b>	Department of Forestry, Fisheries and the Environment
<b>DMRE</b>	Department of Mineral Resources and Energy
<b>DWS</b>	Department of Water and Sanitation
<b>EAP</b>	Environmental Assessment Practitioner
<b>EIA</b>	Environmental Impact Assessment
<b>EIS</b>	Environmental Importance and Sensitivity
<b>EMF</b>	Environmental Management Framework
<b>EMPr</b>	Environmental Management Programme
<b>ESAs</b>	Ecological Support Areas
<b>GIS</b>	Geographical Information System
<b>GN</b>	Government Notice
<b>GUDWS</b>	Guidelines for Utilisation and Disposal of Wastewater Sludge
<b>HoW</b>	Head of Works
<b>HPF</b>	Hourly Peak Flow
<b>I&amp;APs</b>	Interested and Affected Parties
<b>ISO</b>	International Organization for Standardization
<b>IDP</b>	Integrated Development Plan
<b>K-WWTW</b>	Kameelmond Wastewater Treatment Works
<b>KZN</b>	KwaZulu-Natal
<b>NEMA</b>	National Environmental Management Act (No. 107 of 1998)
<b>NEM:AQA</b>	National Environmental Management: Air Quality Act (Act No. 39 of 2004)
<b>NEM:BA</b>	National Environmental Management: Biodiversity Act (Act 10 of 2004)
<b>NEM:PAA</b>	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
<b>NEM:WA</b>	National Environmental Management: Waste Act (Act No. 59 of 2008)
<b>NHRA</b>	National Heritage Resources Act (Act No. 25 of 1999)
<b>NWA</b>	National Water Act (Act No. 36 of 1998)
<b>NWMS</b>	National Waste Management Strategy
<b>OHS</b>	Occupational Health and Safety
<b>PES</b>	Present Ecological Status

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<b>PS</b>	Primary Sludge
<b>RAS</b>	Return Activated Sludge
<b>S&amp;EIR</b>	Scoping and Environmental Impact Reporting
<b>SA</b>	South Africa
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SAHRIS</b>	South African Heritage Resources Information System
<b>SANBI</b>	South African National Biodiversity Institute
<b>SANRAL</b>	South African National Roads Agency
<b>SANS</b>	South African National Standard
<b>SDF</b>	Spatial Development Framework
<b>SOTER</b>	Soil and Terrain Databases
<b>SST</b>	Secondary Sedimentation Tanks
<b>WAS</b>	Waste Activated Sludge
<b>WML</b>	Waste Management Licence
<b>WRC</b>	Water Research Commission
<b>WUL</b>	Water Use Licence
<b>WULA</b>	Water Use Licence Application

## UNITS OF MEASUREMENT

<b>°C</b>	Degrees Celsius
<b>ha</b>	Hectare
<b>kg</b>	Kilogram
<b>kl</b>	Kilolitre
<b>km</b>	Kilometre
<b>l/s</b>	Litre Per Second
<b>m</b>	Metre
<b>m<sup>2</sup></b>	Square metre
<b>m<sup>3</sup></b>	Cubic metre
<b>m<sup>3</sup>/hr</b>	Cubic metre per hour
<b>MI/d</b>	Megalitre per day
<b>mg/l</b>	milligrams per litre
<b>MI/d</b>	Megalitres per day
<b>mm</b>	Millimetre
<b>tonnes/d</b>	Tonnes per day
<b>%</b>	Percentage



## 1 PURPOSE OF THIS DOCUMENT

Nemai Consulting was appointed by the Dawid Kruiper Municipality (the Applicant) to conduct the Environmental Impact Assessment (EIA) for the **proposed Upgrade and Expansion of the Kameelmond Wastewater Treatment Works in Upington, Northern Cape** (the Project). The EIA process is being undertaken according to the process prescribed in Government Notice (GN) No. R. 982 of 4 December 2014 (as amended), promulgated in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA).

Various consents are required for the Project according to the environmental governance framework, one of which is a Waste Management Licence (WML) in terms of the National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM:WA). The need for a WML is triggered by the **waste management activities** associated with the proposed Project.

This document serves as the **Draft Scoping Report** in support of the WML. The purpose of the Scoping phase, which constitutes the first phase of the overall EIA process, includes the following (but not limited to):

- ❑ Determine the Project's environmental legal framework;
- ❑ Identify and engage with Interested and Affected Parties (I&APs) and allow for adequate participation in the EIA process;
- ❑ Assess the receiving environment in terms of current state and potential positive or negative impacts that may be caused by the Project;
- ❑ Consider alternatives for achieving the Project's objectives;
- ❑ Identify significant issues to be investigated further during the execution of the EIA Phase;
- ❑ Determine the scope of the ensuing EIA Phase, in terms of specialist studies, public participation, assessment of impacts and appraisal of alternatives; and
- ❑ Allow for informed decision-making with regards to the EIA process.

## 2 DOCUMENT ROADMAP

As a minimum, the Scoping Report aims to satisfy the requirements stipulated in Appendix 2 of GN No. R 982 of 4 December 2014 (as amended). **Table 1** presents the document's composition in terms of the aforementioned regulatory requirements.

**Table 1: Scoping Report Roadmap**

Chapter	Title	Correlation with GN No. R 982, Appendix 2	Description of content of GN No. R 982, Appendix 2
1	Purpose of this Document	–	–
2	Document Roadmap	–	–
3	Introduction	2(1)(f)	A motivation for the need and desirability for the proposed development.
4	Project Location	2(1)(b) & 2(1)(c)	A description of the location of the activity.
5	Legislation and Guidelines Considered	2(1)(e)	A description of the policy and legislative context within which the development is proposed.
6	Scoping and EIA Process	2(1)(a)	Details of Environmental Assessment Practitioner (EAP) who prepared the report and the expertise of the EAP.
7	Assumptions and Limitations	–	–
8	Need and Desirability	2(1)(f)	A motivation for the need and desirability for the proposed development.
9	Project Description	2(1)(c) & 2(1)(d)	A description of the scope of the proposed activity.
10	Alternatives	2(1)(g)(i)	Details of all the alternatives considered.
		2(1)(g)(vii)	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected.
11	Profile of the Receiving Environment	2(1)(g)(iv)	Environmental attributes associated with the alternatives.
		2(1)(g)(vii)	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected.
12	Public Participation	2(1)(g)(ii)	Details of the public participation process.
		2(1)(g)(iii)	A summary of the issues raised by I&APs.
13	Potentially Significant Environmental Issues	2(1)(g)(v)	Impacts and risks identified for each alternative.
		2(1)(g)(vii)	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected.
		2(1)(g)(vi)	The methodology used in identifying and ranking the potential environmental impacts and risks associated with the alternatives.
14	Plan of Study for EIA	2(1)(h)	A plan of study for undertaking the environmental impact assessment process.

Chapter	Title	Correlation with GN No. R 982, Appendix 2	Description of content of GN No. R 982, Appendix 2
	Appendix G	2(1)(i) and 2(1)(j)	An undertaking under oath or affirmation by the EAP.
	N/A	2(1)(k)	Where applicable, any specific information required by the competent authority.
	N/A	2(1)(l)	Any other matter required in terms of section 24(4)(a) and (b) of the Act.

Note that the following sections of Appendix 2 of GN No. R 982 of 4 December 2014 (as amended) will be investigated further and reported on in the EIA Report, following the execution of the relevant specialist studies and public participation:

- Section 2(1)(g)(v) - *The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-*

  - (a) can be reversed;*
  - (b) may cause irreplaceable loss of resources; and*
  - (c) can be avoided, managed or mitigated.*

*The impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts -*

  - (a) can be reversed;*
  - (b) may cause irreplaceable loss of resources; and*
  - (c) can be avoided, managed or mitigated.*
- Section 2(1)(g)(vii) - *Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.*
- Section 2(1)(g)(viii) - *The possible mitigation measures that could be applied and level of residual risk.*
- Section 2(1)(g)(ix) - *The outcome of the site selection matrix.*
- Section 2(1)(g)(xi) - *A concluding statement indicating the preferred alternatives, including preferred location of the activity.*

## 3 INTRODUCTION

### 3.1 Project Background and Motivation

The Kameelmond Wastewater Treatment Works (K-WWTW) is located on the south-western side of Upington, in the Northern Cape.

According to DWS (2016), the existing Works was originally constructed during the 1970's as a biological filter plant with an average dry weather flow (ADWF) of 3,672 kl/d. The works was extended in 1984 to 8,000 kl/d ADWF. During 1990 the works was again extended to a capacity of 16,000 kl/d ADWF by the addition of an activated sludge process downstream of the biological filters.

According to the Preliminary Design Report (Bigen, 2021), the K-WWTW is under ever increasing pressure to enhance serviceability of new residential and, to a lesser extent, industrial runoff located within the Works' planned drainage area. Effluent quality standards specified by the Department of Water and Sanitation (DWS) are also likely to increase beyond the current treatment efficiency that the Works' is able to achieve. Potential reuse of the Works' effluent, together with the above mentioned culminates in the requirement of the upgrade and expansion of the K-WWTW.

The aim of the Project is to increase the capacity of the K-WWTW from 16 MI/d to 24 MI/d. The upgrade and expansion of the K-WWTW will take place within the confines of the plant's existing perimeter fence.

### 3.2 Environmental Processes

Nemai Consulting (Pty) Ltd (Nemai Consulting) was appointed as the Environmental Assessment Practitioner (EAP) to undertake the following environmental processes to seek authorisation for the proposed Project:

- ❑ A Basic Assessment process in terms of the EIA Regulations of 2014 (as amended) to seek Environmental Authorisation in terms of NEMA, where the mandated authority is the Northern Cape Department of Environment and Nature Conservation (DENC);
- ❑ **A Scoping and Environmental Impact Reporting (S&EIR) process in terms of the EIA Regulations of 2014 (as amended) to seek a WML in terms of NEM:WA, where the mandated authority is the Department of Forestry, Fisheries and the Environment (DFFE); and**
- ❑ A Water Use Licence Application (WULA) in terms of the National Water Act (Act No. 36 of 1998) (NWA) for water uses associated with the K-WWTW. The mandated authority for this application is the Department of Water and Sanitation (DWS).

This Scoping Report is linked to the S&EIR process in support of the WML. The other environmental processes are being undertaken separately.

### **3.3 The Project's Waste Management Activities**

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The following waste management activities are associated with the proposed Project, which are explained further in **Section 9.4.3** below:

1. The primary sludge and Waste Activated Sludge (WAS) that is produced at the K-WWTW, will be treated at the proposed dewatering facility, mixed, and stockpiled on a proposed concrete slab for solar drying;
2. It is proposed to decommission and demolish K-WWTW's existing sludge drying beds to avail space for the new Activated Sludge Process (ASP) train; and
3. It is proposed to decommission the existing diesel-fired incinerator at the K-WWTW, which is currently used for the disposal of screenings.

The Licensing Authority for a WML application related to hazardous waste is the DFFE.

## 4 PROJECT LOCATION

The K-WWTW is situated north of the Orange River, on the south-western side of Upington (centre point coordinates for plant: 28°28'41"S; 21°12'12"E) on the N14 between Upington and Keimoes, in the Northern Cape. The locality map is provided in **Figure 1** below, and is also contained in **Appendix A**.

The K-WWTW falls within the Dawid Kruiper Municipality and the ZF Mgcawu District Municipality, and is situated within Ward 1. The plant is located on Erf 18896, Upington (refer to the Surveyor General Diagram provided in **Figure 2** below).

As mentioned, the upgrade and expansion of the K-WWTW will take place within the confines of the plant's existing perimeter fence. The coordinates of the plant's corner points are listed in **Table 2** and shown in **Figure 3** below.

**Table 2: Coordinates of the K-WWTW's corner points**

	Latitude (S)	Longitude (E)
North-eastern Point	28°28'34.86"S	21°12'12.84"E
South-eastern Point	28°28'38.67"S	21°12'17.90"E
North-western Point	28°28'41.04"S	21°12'05.55"E
South-western Point	28°28'45.62"S	21°12'11.95"E

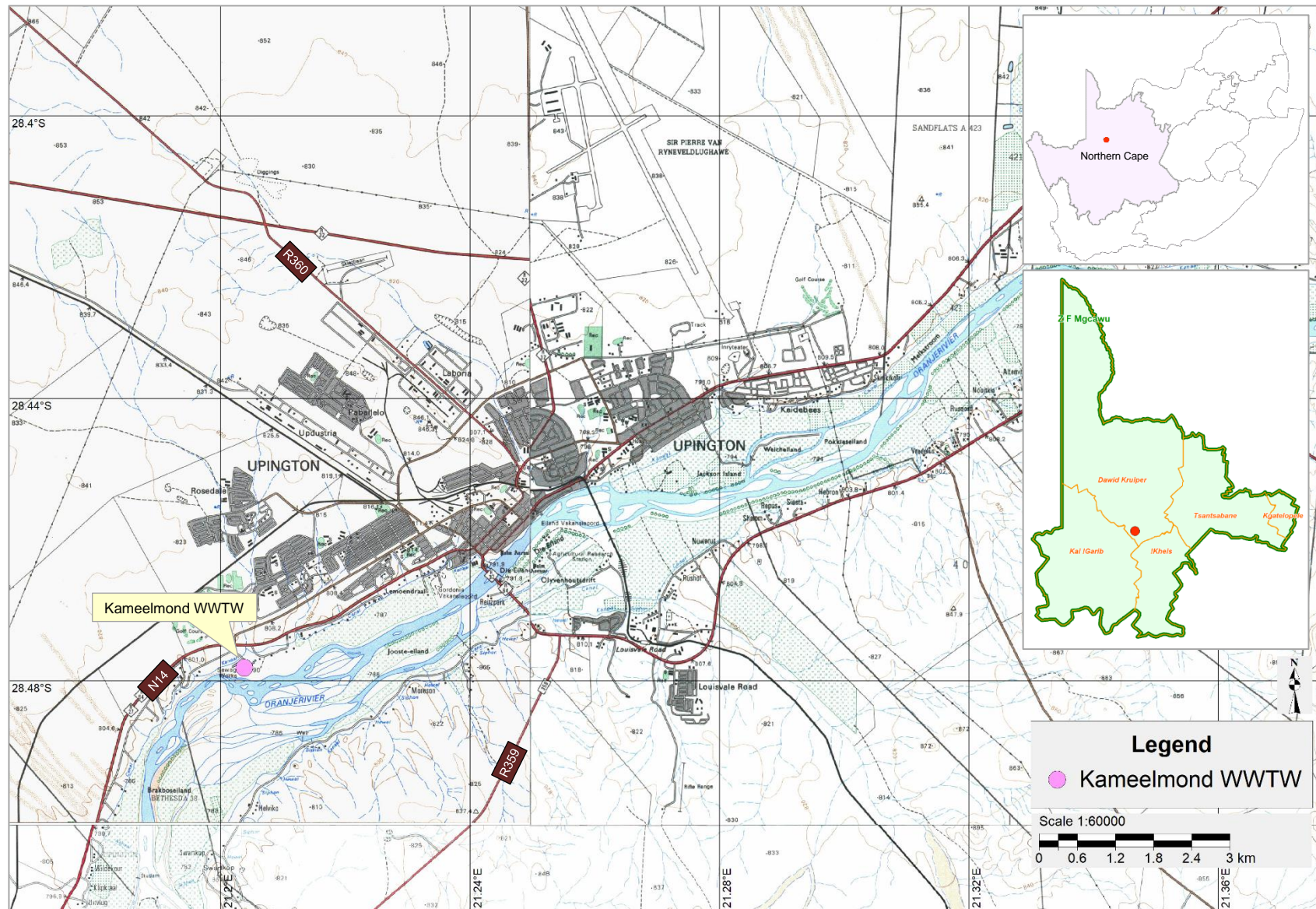


Figure 1: Locality map

DIAGRAM VIR VERENIGDE TITEL		L. G. No. 1275/2005
<b>KOMPONENTE</b> 1) Die figuur h i binnewal van watervoor d e f g binnewal van Dranjerivier h j i synde die Restant van Erf 3102 Upington Volgens Kaart LG No F4949/1914 Geheg aan Grondbrief No Gor.Fr.6-20 2) Die figuur e f binnewal van voor h i j binnewal van Dranjerivier k f i synde Erf 3103 Upington Volgens Kaart LG No F 4321/1976 Geheg aan Transportakte No 424/1977 3) Die figuur a i g l m regterwal van Dranjerivier d i c i synde Erf 3104 Upington Volgens Kaart LG No F 696 /1946 Geheg aan Transportakte No 694/1947 4) Die figuur c binnewal van watervoor e f i g l a i z y synde die Restant van Erf 3105 Upington Volgens Kaart LG No FB 2013/1917 Geheg aan Grondbrief No Gor.Fr.7-8 5) Die figuur B y z a i b i synde die Restant van Erf 3106 Upington Volgens Kaart LG No FB 527/1897 Geheg aan Grondbrief No Gor.Fr.4-34 6) Die figuur p B r q synde Erf 3109 Upington Volgens Kaart LG No F 697/1946 Geheg aan Transportakte No 667/1946 7) Die figuur b i a i c i d i regterwal van Dranjerivier s synde Erf 3110 Upington Volgens Kaart LG No F 695/1946 Geheg aan Transportakte No 694/1946 8) Die figuur A p q r s binnewal van Dranjerivier n synde die Restant van Erf 3111 Upington Volgens Kaart LG No FB 527(a)/1897 Geheg aan Grondbrief No Gor.Fr.4-35  Die figuur A B c binnewal van watervoor e f binnewal van voor h i binnewal van watervoor d e f g binnewal van Dranjerivier h j binnewal van Dranjerivier k m regterwal van Dranjerivier s binnewal van Dranjerivier n  Stel voor 25,0126 hektaar grond, synde Erf 18896 Upington en bevat (1) tot (8) hierbo aangehaal geleë in die Munisipaliteit //Khara Hais Administratiewe Distrik Gordonia Provinsie Noord-Kaap  Saamgestel in Oktober 2005 deur my		Goedgekeur  nms. LANDMETER- GENERAAL 2005.11.13. VEL 1 VAN 2 VELLE
Hierdie kaart is geheg aan No. ged. t.g.v.	Die oorspronklike kaarte is soos hierbo aangehaal.	L. G. No. S/1219/1 M.S. Saamgestel A.P. Komp. GKNV-443 (6870) GKNV-317 (6839) GKNV-331 (8873)

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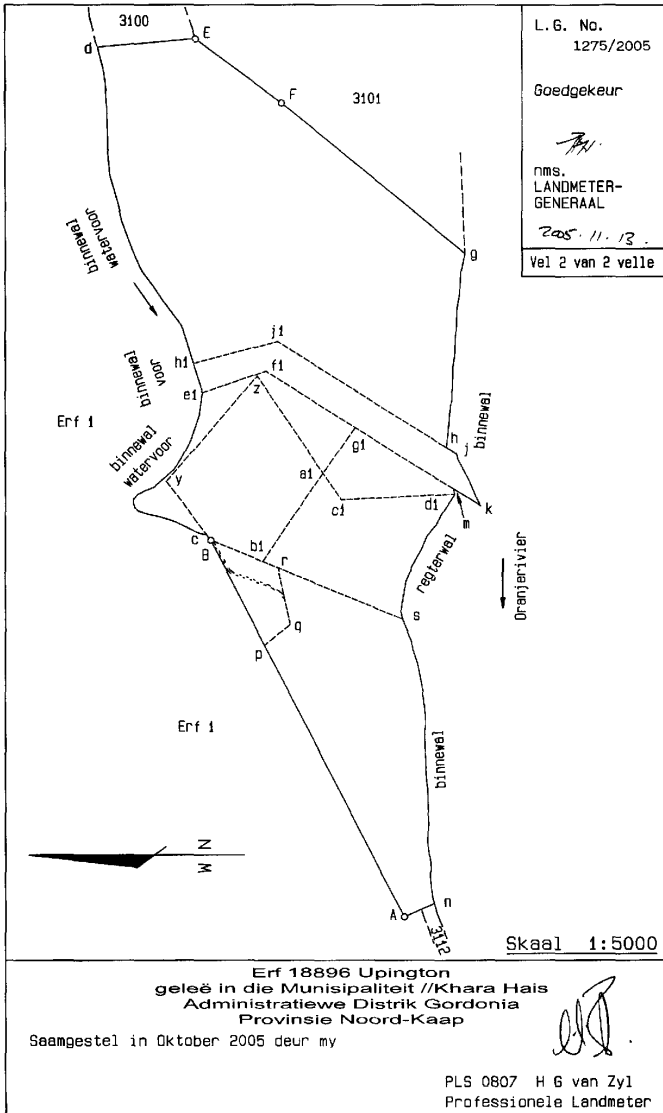


Figure 2: Surveyor General Diagram (Erf 18896, Upington)





**Figure 3:** Coordinates of the K-WWTW's corner points (Google Earth image)

## 5 LEGISLATION AND GUIDELINES CONSIDERED

### 5.1 Legislation

#### 5.1.1 Environmental Statutory Framework

The legislation that has possible bearing on the proposed Project from an environmental perspective is captured in **Table 3** below. **Note:** *this list does not attempt to provide an exhaustive explanation, but rather represents an identification of some of the most appropriate sections from pertinent pieces of legislation.*

**Table 3: Environmental Statutory Framework**

Legislation	Description and Relevance
Constitution of the Republic of South Africa, (No. 108 of 1996)	<ul style="list-style-type: none"> <li>▪ Chapter 2 – Bill of Rights.</li> <li>▪ Section 24 – Environmental Rights.</li> </ul>
National Environmental Management Act (Act No. 107 of 1998)	<ul style="list-style-type: none"> <li>▪ Key sections (amongst others):               <ul style="list-style-type: none"> <li>○ Section 24 – Environmental Authorisation (control of activities which may have a detrimental effect on the environment).</li> <li>○ Section 28 – Duty of care and remediation of environmental damage.</li> </ul> </li> <li>▪ Environmental management principles.</li> <li>▪ Authorisation type – A separate process is being undertaken to apply for Environmental Authorisation under NEMA for the Project.</li> <li>▪ Authorities – DFFE (national) and DENC (provincial).</li> </ul>
National Environmental Management: Waste Act (Act No. 59 of 2008)	<ul style="list-style-type: none"> <li>▪ Management of waste.</li> <li>▪ Key sections (amongst others):               <ul style="list-style-type: none"> <li>○ Section 16 – General duty in respect of waste management.</li> <li>○ Chapter 5 – licensing of waste management activities (listed in GN No. R. 921 of 29 November 2013 (as amended)).</li> </ul> </li> <li>▪ Authorisation type – Waste Management Licence (<i>topic of this Scoping Report</i>).</li> <li>▪ Authority – DFFE (national) and DENC (provincial).</li> </ul>
National Water Act (Act No. 36 of 1998)	<ul style="list-style-type: none"> <li>▪ Sustainable and equitable management of water resources.</li> <li>▪ Key sections (amongst others):               <ul style="list-style-type: none"> <li>○ Chapter 3 – Protection of water resources.</li> <li>○ Section 19 – Prevention and remedying effects of pollution.</li> <li>○ Section 20 – Control of emergency incidents.</li> <li>○ Chapter 4 – Water use.</li> </ul> </li> <li>▪ Authorisation type – A separate process is being undertaken to apply for a Water Use Licence for the Project.</li> <li>▪ Authority – Department of Water and Sanitation (DWS).</li> </ul>
National Environmental Management Air Quality Act (Act No. 39 of 2004)	<ul style="list-style-type: none"> <li>▪ Air quality management</li> <li>▪ Key sections (amongst others):               <ul style="list-style-type: none"> <li>○ Section 22A – Illegal emissions.</li> <li>○ Section 29 – Pollution prevention plans.</li> <li>○ Section 32 – Dust control.</li> <li>○ Section 34 – Noise control.</li> <li>○ Section 35 – Control of offensive odours.</li> </ul> </li> <li>▪ Authorisation type – Atmospheric Emission License.</li> <li>▪ Authority – DFFE (national), DENC (provincial) and municipalities.</li> </ul>
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	<ul style="list-style-type: none"> <li>▪ Management and conservation of the country's biodiversity.</li> <li>▪ Protection of species and ecosystems.</li> <li>▪ Authorisation type – Permit (<i>relevance to the Project to be confirmed</i>).</li> <li>▪ Authority – DFFE (national) and DENC (provincial).</li> </ul>

Legislation	Description and Relevance
National Environmental Management: Protected Areas Act (Act No. 57 of 2003)	<ul style="list-style-type: none"> <li>▪ Protection and conservation of ecologically viable areas representative of South Africa's biological diversity and natural landscapes.</li> </ul>
National Forests Act (Act No. 84 of 1998)	<ul style="list-style-type: none"> <li>▪ Supports sustainable forest management and the restructuring of the forestry sector, as well as protection of indigenous trees in general.</li> <li>▪ Section 15 – Authorisation required for impacts to protected trees.</li> <li>▪ Authorisation type – Licence (<i>relevance to the Project to be confirmed</i>).</li> <li>▪ Authority – DFFE.</li> </ul>
Minerals and Petroleum Resources Development Act (Act No. 28 of 2002)	<ul style="list-style-type: none"> <li>▪ Equitable access to and sustainable development of the nation's mineral and petroleum resources and to provide for matters related thereto.</li> <li>▪ Key sections (amongst others): <ul style="list-style-type: none"> <li>○ Section 22 – Application for mining right.</li> <li>○ Section 27 – Application for, issuing and duration of mining permit.</li> <li>○ Section 53 – Use of land surface rights contrary to objects of Act.</li> </ul> </li> <li>▪ Authorisation type – Mining Permit / Mining Right (<i>not required for the Project</i>).</li> <li>▪ Authority – Department of Mineral Resources and Energy (DMRE).</li> </ul>
Occupational Health & Safety Act (Act No. 85 of 1993)	<ul style="list-style-type: none"> <li>▪ Provisions for Occupational Health &amp; Safety.</li> <li>▪ Authority – Department of Employment and Labour (DEL).</li> <li>▪ Relevant regulations, such as Construction Regulations, etc.</li> </ul>
National Heritage Resources Act (Act No. 25 of 1999)	<ul style="list-style-type: none"> <li>▪ Key sections: <ul style="list-style-type: none"> <li>○ Section 34 – protection of structure older than 60 years.</li> <li>○ Section 35 – protection of heritage resources.</li> <li>○ Section 36 – protection of graves and burial grounds.</li> <li>○ Section 38 – Heritage Impact Assessment for linear development exceeding 300m in length; development exceeding 5 000m<sup>2</sup> in extent, etc.</li> </ul> </li> <li>▪ Authorisation type – Permit (<i>relevance to the Project to be confirmed</i>).</li> <li>▪ Authority – South African Heritage Resources Agency (SAHRA) and Northern Cape Provincial Heritage Resources Authority (Ngwao-Boswa Jwa Kapa Bokone).</li> </ul>
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	<ul style="list-style-type: none"> <li>▪ Control measures for erosion.</li> <li>▪ Control measures for alien and invasive plant species.</li> <li>▪ Authority – Department of Agriculture.</li> </ul>
Northern Cape Conservation Act (Act No. 9 of 2009)	<ul style="list-style-type: none"> <li>▪ Protected and Specially Protected Species.</li> <li>▪ Permit (<i>relevance to the Project to be confirmed</i>)</li> <li>▪ Authority – DENC.</li> </ul>

The relationship between the Project and certain key pieces of environmental legislation is discussed in the subsections to follow.

### 5.1.2 National Environmental Management Act

NEMA is the framework legislation regulating the environment in South Africa (SA). According to Section 2(3) of NEMA, “*development must be socially, environmentally and economically sustainable*”, which means the integration of these three factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

The proposed Project requires Environmental Authorisation in terms of NEMA. It triggers activities under Listing Notices 1 and 3, and thus needs to be subjected to a Basic Assessment process. A separate process is being undertaken to seek Environmental Authorisation for the Project from DENC. This approach is in accordance with the separate pre-application meetings that were held with DENC and DFFE.

### 5.1.3 National Environmental Management: Waste Act

Amongst others, the purpose of NEM:WA includes the following:

1. To reform the law regulating waste management in the country by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development;
2. To provide for institutional arrangements and planning matters;
3. To provide for specific waste management measures;
4. To provide for the licensing and control of waste management activities;
5. To provide for the remediation of contaminated land; and
6. To provide for compliance and enforcement.

“Waste” is defined in NEM:WA as “any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act”.

Schedule 3 of the NEM:WA groups waste into two categories, namely hazardous waste and general waste. The classification of waste determines the associated management and licencing requirements.

“Hazardous waste” is defined as “any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles”.

The following hazardous waste is associated with the Project:

- ❑ As shown in **Table 10** below, the sludge produced at the K-WWTW is classified as low hazardous material; and
- ❑ Screenings, which are nuisance items (typically non-degradable solids such as plastics, wood chips and rags) that are removed by the screens at the inlet works of K-WWTW, are classified as hazardous.

GN No. R. 921 of 29 November 2013 (as amended) contains a list of waste management activities that have, or are likely to have, a detrimental impact on the environment. If any of the waste management activities are triggered in Category A and Category B, a WML is required. Activities listed in Category C need to comply with the relevant National Norms and Standards.

**Table 4** below lists the waste management activities triggered by the Project in terms of GN No. R. 921 of 29 November 2013 (as amended), for which the WML is being applied for.

**Table 4: Waste management activities triggered by the Project in terms of GN No. R. 921 of 29 November 2013 (as amended)**

Category	Activity No.	Activity Wording	Relevance to Project
A	14	The decommissioning of a facility for a waste management activity listed in Category A or B of this Schedule	The proposed decommissioning of the existing sludge drying beds and the diesel-fired incinerator (used for disposal of screenings) at K-WWTW.
B	4	The treatment of hazardous waste in excess of 1 ton per day calculated as a monthly average; using any form of treatment excluding the treatment of effluent, wastewater or sewage.	<p>The proposed sludge handling facility, consisting of the following systems:</p> <ul style="list-style-type: none"> <li>▪ Mechanical dewatering units;</li> <li>▪ Poly electrolyte dosing system;</li> <li>▪ Solar-drying/stockpiling slab with associated sludge handling equipment.</li> </ul> <p>The estimated maximum sludge production is 1 566 kg/day.</p> <p>Based on discussions held with DFFE during the pre-application meeting, the exclusion related to sewage does not apply to the Project.</p>
B	10	The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).	The proposed construction of the new sludge dewatering facility to treat sludge in excess of 1 tonnes/day.

As the Project triggers waste management activities listed in Categories A and B of GN No. R. 921 of 29 November 2013 (as amended), a S&EIR process is being undertaken in terms of the EIA Regulations of 2014 (as amended) to seek a WML. As the waste type under consideration, which includes sludge and screenings, is classified as hazardous the mandated authority is the National DFFE.

#### 5.1.4 National Water Act

The purpose of the National Water Act (Act No. 36 of 1998) (NWA) is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors:

- Meeting the basic human needs of present and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial and gender discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Facilitating social and economic development;
- Providing for growing demand for water use; protecting aquatic and associated ecosystems and their biological diversity;
- Reducing and preventing pollution and degradation of water resources;
- Meeting international obligations;
- Promoting dam safety; and

- ❑ Managing floods and droughts.

The DWS is the custodian of SA's water resources.

Some key definitions from this Act include:

- "Pollution" means – the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it (a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or (b) harmful or potentially harmful;
- "Waste" – includes any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water resource in such volume, composition or manner as to cause, or to be reasonably likely to cause, the water resource to be polluted; and
- "Water resource" – includes a watercourse, surface water, estuary, or aquifer.

The water uses that are associated with the Project, in terms of Section 21 of the NWA, are listed in **Table 5** below.

**Table 5: Water uses associated with the Project in terms of Section 21 of the NWA**

	Water Use Type	Project-related Activities
<b>Section 21(e)</b>	Engaging in a controlled activity.	The reuse of some of the treated effluent from the works for irrigation purposes.
<b>Section 21(f)</b>	Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.	The discharge of effluent into the Orange River.
<b>Section 21(c)</b>	Impeding or diverting the flow of water in a watercourse.	Encroachments of Project infrastructure and activities into the regulated areas of watercourses.
<b>Section 21(i)</b>	Altering the bed, banks, course or characteristics of a watercourse.	

#### 5.1.5 National Environmental Management: Air Quality Act

The purpose of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) (NEM:AQA) is to reform the law regulating air quality by providing measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. This Act aims to promote justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government, and for specific air quality measures.

Some key definitions from this Act include:

- ❑ "Air pollution" – any change in the composition of the air caused by smoke, soot, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, aerosols and odorous substances.
- ❑ "Atmospheric emission" or "emission" – any emission or entrainment process emanating from a point, non-point or mobile source that results in air pollution.

- ❑ “Non-point source” – a source of atmospheric emissions which cannot be identified as having emanated from a single identifiable source or fixed location, and includes veld, forest and open fires, mining activities, agricultural activities and stockpiles.
- ❑ “Point source” – single identifiable source and fixed location of atmospheric emission, and includes smoke stacks and residential chimneys.

This Act provides for the listing of activities which result in atmospheric emissions that pose a threat to health or the environment. No person may conduct any such listed activity without an Atmospheric Emission Licence (AEL).

It was confirmed, in consultation with DENC, that a Section 22A (consequences of unlawful conduct of listed activity resulting in atmospheric emission) is required for the K-WWTW in terms of the NEM:AQA. This is required for the diesel-fired incinerator which is used for the disposal of screenings at the plant. A separate process will need to be undertaken in this regard.

Section 35(2) of NEM:AQA places an obligation on the occupier of any premises to “take all reasonable steps to prevent the emission of any offensive odour caused by any activity on such premises”. The Project will include measures to control odour at the K-WWTW, which are discussed further in **Section 11.10** below.

#### 5.1.6 National Environmental Management: Biodiversity Act

The purpose of the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEM:BA) is to provide for the management and conservation of SA’s biodiversity within the framework of NEMA.

The Act allows for the publication of provincial and national lists of ecosystems that are threatened and in need of protection. The list should include:

- ❑ **Critically Endangered Ecosystems**, which are ecosystems that have undergone severe ecological degradation as a result of human activity and are at extremely high risk of irreversible transformation.
- ❑ **Endangered Ecosystems**, which are ecosystems that, although they are not critically endangered, have nevertheless undergone ecological degradation as a result of human activity.
- ❑ **Vulnerable Ecosystems**, which are ecosystems that have a high risk of undergoing significant ecological degradation.
- ❑ **Protected Ecosystems**, which are ecosystems that are of a high conservation value or contain indigenous species at high risk of extinction in the wild in the near future.

Similarly, the Act allows for the listing of endangered species, including critically endangered species, endangered species, vulnerable species and protected species. A person may not carry out a restricted activity (including trade) involving listed threatened or protected species without a permit.

The Regulations on the management of Listed Alien and Invasive Species were promulgated on 1 August 2014. The Listed Invasive Species were also published on this date and were subsequently amended in GN 864 of 29 July 2016.

Some key definitions from this Act include:

- ❑ “Alien species” –
  - A species that is not an indigenous species; or
  - An indigenous species translocated or intended to be translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention.
- ❑ “Biological diversity” or “biodiversity” – the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems.
- ❑ “Indigenous species” – a species that occurs, or has historically occurred, naturally in a free state in nature within the borders of the Republic, but excludes a species that has been introduced in the Republic as a result of human activity.
- ❑ “Invasive species” – any species whose establishment and spread outside of its natural distribution range -
  - Threaten ecosystems, habitats or other species or have demonstrable potential; and
  - May result in economic or environmental harm or harm to human health.
- ❑ “Species” – a kind of animal, plant or other organism that does not normally interbreed with individuals of another kind, and includes any sub-species, cultivar, variety, geographic race, strain, hybrid or geographically separate population.

The implications of this Act for the Project *inter alia* include the requirements for managing invasive and alien species, protecting threatened ecosystems and species, as well as for rehabilitation.

Terrestrial and Aquatic Ecological Impact Assessments will be undertaken for the Project, which will be included in the EIA Report.

#### 5.1.7 National Heritage Resources Act

The purpose of the National Heritage Resources Act (Act No. 25 of 1999) (NHRA) is to protect and promote good management of SA's heritage resources, and to encourage and enable communities to nurture and conserve their legacy so it is available to future generations.

In terms of Section 38 of the NHRA, certain listed activities require authorisation from provincial agencies, which include the following:



- The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- The construction of a bridge or similar structure exceeding 50 m in length;
- Any development or other activity which will change the character of a site -
  - Exceeding 5 000 m<sup>2</sup> in extent; or
  - Involving three or more existing erven or subdivisions thereof; and
- The re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent.

A Heritage Impact Assessment will be undertaken for the Project, which will be included in the EIA Report.

## 5.2 Governance of Waste in SA

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Some of the key policies, strategies, plans and programmes that govern and guide waste management in SA include:

- National Waste Management Strategy (NWMS) 2020;
- The Waste Act National Domestic Waste Collection Standards 2009;
- Industry Waste Management Plans;
- The Regulations regarding the control of the import or export of waste 2008;
- Norms and Standards for the assessment of waste for landfill disposal;
- Norms and Standards for the disposal of waste to landfill, 2013;
- National Standards for the extraction, flaring or recovery of landfill gas, 2013;
- Regulations regarding the exclusion of a waste stream or a portion of a waste stream from the definition of waste;
- National Waste Information Regulations, 2012;
- Waste Classification and Management Regulations, 2013;
- Regulations regarding the planning and management of residue stockpiles and residue deposits, 2015; and
- National Pricing Strategy for Waste Management, 2016.

## 5.3 EIA-related Guidelines

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The following guidelines were considered during the preparation of the Scoping Report:

- Integrated Environmental Management Information Series, in particular Series 2 – Scoping (DEAT, 2002);
- Guideline on Alternatives, EIA Guideline and Information Document Series (DEA&DP, 2010a);
- Guideline on Need and Desirability, EIA Guideline and Information Document Series (DEA&DP, 2010b);
- Integrated Environmental Management Guideline Series 7: Public Participation in the EIA Process (DEA, 2010); and

- ❑ Guidelines for Involving Specialists in the EIA Processes Series (Brownlie, 2005).

#### **5.4 National and Regional Plans**

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The following regional plans were considered during the execution of the Scoping Phase (amongst others):

- ❑ Municipal Spatial Development Framework (SDF);
- ❑ Municipal Integrated Development Plan (IDP);
- ❑ Northern Cape Critical Biodiversity Areas Map (2016);
- ❑ Environmental Management Framework (EMF) for the previous Siyanda District Municipality, which is now known as the ZF Mgcawu District Municipality; and
- ❑ Relevant national, provincial, district and local policies, strategies, plans and programmes.

## 6 SCOPING AND EIA PROCESS

### 6.1 Environmental Assessment Authorities

The Licensing Authority for a WML application is determined by the classification of the waste type in question, which is either general or hazardous. In the case of the Project, where the waste management activities include hazardous waste, the DFFE is the Licensing Authority.

In terms of the geographic location of the K-WWTW, the DENC is regarded as one of the key commenting authorities in terms of NEM:WA during the execution of the EIA, and all documentation will thus be copied to this Department (amongst others).

Various other authorities with jurisdiction over elements of the receiving environment or project activities (refer to **Section 5.1** above) will also be consulted during the course of the EIA. Refer to the database of I&APs contained in **Appendix E** for a list of the government departments that were notified of the Project.

### 6.2 Environmental Assessment Practitioner

Nemai Consulting was appointed as the independent EAP to undertake the environmental assessment for the proposed Project.

In accordance with Section 2(1)(a) of Appendix 2 of GN No. R 982 of 4 December 2014 (as amended), this section provides an overview of Nemai Consulting and the company's experience with EIAs, as well as the details and experience of the EAPs that form part of the Scoping and EIA team.

Nemai Consulting is an independent, specialist environmental, social and Occupational Health and Safety (OHS) consultancy, which was founded in December 1999. The company is a 100% black female owned company, with a level 1 BBBEE rating. The company is directed by a team of experienced and capable environmental engineers, scientists, ecologists, sociologists, economists and analysts. The company has offices in Randburg (Gauteng) and Durban (KZN).

The core members of Nemai Consulting that are involved with the Scoping and EIA process for the Project are captured in **Table 6** below, and their respective Curricula Vitae are contained in **Appendix C**. The oath of the EAP is contained in **Appendix G**.

**Table 6: Scoping and EIA Core Team Members**

Name	Qualifications	Experience
D. Henning	MSc (River Ecology)	<ul style="list-style-type: none"> <li>• 20 years' experience.</li> <li>• EAP for various bulk sewer and WWTW projects, including:               <ul style="list-style-type: none"> <li>○ Expansion of the Sunderland Ridge WWTW, Gauteng.</li> <li>○ Zandspruit Pump Station and Bulk Sewer Rising Main, Gauteng.</li> <li>○ Sewer inspection programme and the replacement of damaged sewer pipes, Gauteng.</li> <li>○ Realignment of a sub-outfall sewer, Gauteng.</li> <li>○ Remedial measures to eliminate sewer surcharging at Leeukop Prison, Gauteng.</li> <li>○ Upgrade of undersize collector sewer in Bryanston, Gauteng.</li> <li>○ Sewer upgrade in the Klipspruit Sewer Basin, Gauteng.</li> </ul> </li> </ul>
D. Naidoo	BSc Eng (Chem)	<ul style="list-style-type: none"> <li>• 25 years' experience.</li> <li>• Project Manager for various bulk sewer and WWTW projects, including:               <ul style="list-style-type: none"> <li>○ Development of a new 150 M<sup>3</sup>/d WWTW in Lanseria, Gauteng.</li> <li>○ Development of a new WWTW on the Hennops River, Gauteng.</li> <li>○ Construction of Northern WWTW: Unit 5, Gauteng.</li> <li>○ Empangeni Bulk Outfall Sewer, 40 km pipeline, KZN.</li> <li>○ Replacement of the existing Anthea Nancefield Sewer Pipeline, Gauteng.</li> <li>○ Increase in sludge treatment capacity including a new lime dosing plant at the Northern WWTW, Gauteng.</li> <li>○ Construction of sludge thickeners at Goudkoppies WWTW, Gauteng.</li> </ul> </li> </ul>

### 6.3 Environmental Screening

According to GN 960 of 5 July 2019, an application for Environmental Authorisation must be accompanied by a report generated by the National Web Based Environmental Screening Tool, as contemplated in Regulation 16(1)(b)(v) of the EIA Regulations of 2014 (as amended).

The aims of the National Web Based Environmental Screening Tool include the following:

- To screen a proposed site for any environmental sensitivity;
- To provide site specific EIA process and review information;
- To identify related exclusions and/or specific requirements including specialist studies applicable to the proposed site and/or development, based on the national sector classification and the environmental sensitivity of the site; and
- To allow for a Screening Report to be generated.

The Screening Report for the proposed Project is appended to the Application Form, which is included in **Appendix B**.

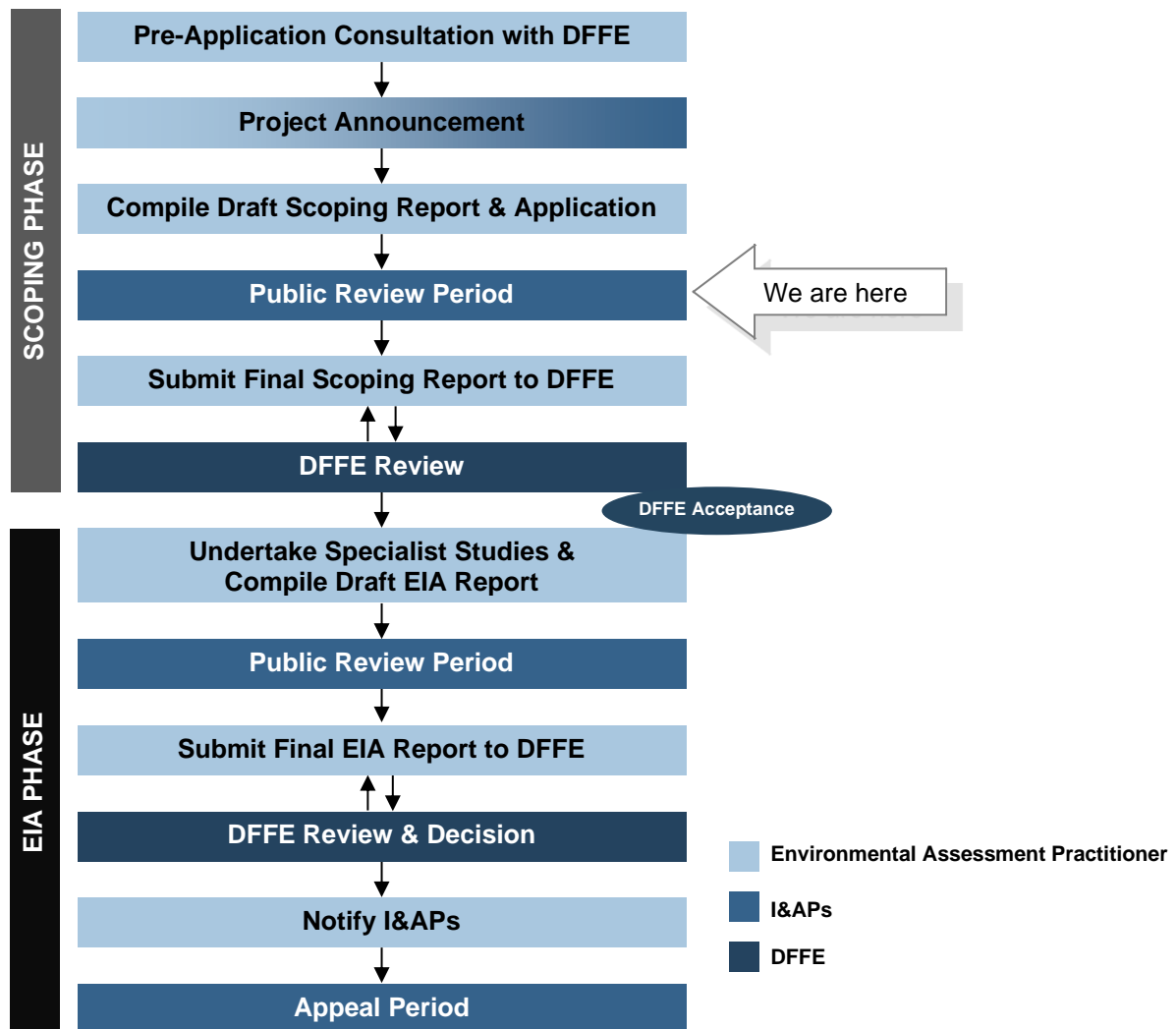
### 6.4 Environmental Assessment Triggers

As indicated in **Section 5.1.3** above, the Project triggers waste management activities listed in Categories A and B of GN No. R. 921 of 29 November 2013 (as amended) and a S&EIR process thus needs to be undertaken in terms of the EIA Regulations of 2014 (as amended) to seek a WML. A copy of the Application Form is contained in **Appendix B**.

## 6.5 S&EIR Process

### 6.5.1 Formal Process

An outline of the S&EIR process for the proposed Project is provided in **Figure 4** below.



**Figure 4:** Outline of S&EIR Process

The purpose of the Scoping phase, which constitutes the first phase of the formal EIA process, is as follows:

- To identify the legal framework in terms of the proposed Project;
- To identify and engage with I&APs and allow for adequate participation in the process;
- To consider alternatives for achieving the Project's objectives;
- To identify significant issues to be investigated further during the execution of the EIA Phase;
- To clarify the roles and responsibilities of various stakeholders in the process;
- To determine the scope of the ensuing EIA Phase, in terms of specialist studies, public participation, assessment of impacts and appraisal of alternatives; and

- To allow for informed decision-making by DFFE and other authorities regarding the EIA process.

#### 6.5.2 Landowner Consent & Landowner Notification

According to Regulation 39(1) of GN No. R 982 of 4 December 2014 (as amended), if the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an Environmental Authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land.

The project location is described in **Section 4** above. The land on which the K-WWTW is located belongs to the Dawid Kruiper Municipality, who is also the Applicant for the WML.

#### 6.5.3 Application Form

A copy of the Application Form for the WML, which will be submitted to DFFE together with the Draft Scoping Report, is provided in **Appendix B**.

#### 6.5.4 Screening of Alternatives

Alternatives are the different ways in which a project can be executed to ultimately achieve its objectives. Examples could include carrying out a different type of action, choosing an alternative location or adopting a different technology or design for a project.

A write-up on alternatives for the Project is provided in **Section 10** below. A motivation for the Best Practicable Environmental Option (BPEO) will be provided in the EIA Report.

#### 6.5.5 Impact Prediction

The potential environmental impacts associated with the Project were identified during the Scoping Phase through an appraisal of the following (amongst others):

- Proposed footprint of the project infrastructure and components in relation to the receiving environment;
- Activities associated with the project life-cycle (i.e. pre-construction, construction, operation and decommissioning);
- Profile of the receiving environment and the potential sensitive environmental features and attributes; and
- Legal and policy context.

The Scoping exercise aimed to identify and qualitatively predict potentially significant environmental issues for further consideration and prioritisation during the EIA stage (see **Section 13** below). Note

that “significance” relates to whether the effect (i.e. change to the environmental feature / attribute) is of sufficient importance that it ought to be considered and have an influence on decision-making.

During the EIA stage a detailed quantitative impact assessment will be conducted via contributions from the project team and requisite specialist studies, and through the application of the impact assessment methodology contained in **Section 13.4** below. Suitable mitigation measures will be identified to manage (i.e. prevent, reduce, rehabilitate and/or compensate) the environmental impacts, and will be included in the Environmental Management Programme (EMPr).

## 7 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations accompany the Scoping exercise that was undertaken for the Project:

- ❑ In accordance with the purpose of Scoping, this report does not include detailed specialist investigations on the receiving environment, which will only form part of the EIA Phase. The environment in the Project Area was primarily assessed in the Scoping Phase through site investigations, desktop screening, incorporating existing information from previous studies, and input received from authorities and I&APs. A refinement of all maps will also be undertaken in the EIA Phase, if necessary.
- ❑ As the design of the project components is still in feasibility stage, and due to the dynamic nature of the planning environment, the dimensions and layout of the infrastructure may change during the detailed design phase. Subsequent project modifications that emanate from discussions with the I&APs, findings from specialist studies and technical considerations will be conveyed during the public participation of the EIA Phase and will be incorporated into the Draft EIA Report, which will be lodged in the public domain.



## 8 NEED AND DESIRABILITY

This section serves to expand on the background and motivation to the Project, as provided in **Section 3.1** above.

The format contained in the Guideline on Need and Desirability (DEA&DP, 2010b) was used in **Table 7** below. Need (time) and desirability (place) relate to, amongst others, the nature, scale and location of development being proposed, as well as the wise use of land.

**Table 7: Need and Desirability**

No.	Question	Response
<b>NEED ('timing')</b>		
1.	Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the relevant environmental authority? (i.e. is the proposed development in line with the projects and programmes identified as priorities within the IDP).	<p>Yes. In terms of land use, the Project proposes the upgrade and expansion of the existing K-WWTW. The proposed activities associated with the Project will take place within the confines of the plant's existing perimeter fence.</p> <p>Dawid Kruijer Municipality's SDF of 2017 designates the area encompassed by the K-WWTW as a 'sewage plant'. The SDF further shows a 1000m risk zone around the plant.</p> <p>The Dawid Kruijer Municipality's IDP for 2020/2021 lists the Upgrading of the K-WWTW as one of the capital projects.</p>
2.	Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?	<p>Yes. According to the Preliminary Design Report (Bigen, 2021), the K-WWTW is under ever increasing pressure to enhance serviceability of new residential and, to a lesser extent, industrial runoff located within the Works' planned drainage area. Effluent quality standards specified by the DWS are also likely to increase beyond the current treatment efficiency that the Works' is able to achieve. Potential reuse of the Works' effluent, together with the above mentioned culminates in the requirement of the upgrade and expansion of the K-WWTW.</p>
3.	Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate)	<p>Yes. The Dawid Kruijer Municipality is under great pressure from the downstream users of the water, to improve on the quality of the effluent. The users apply the water from the Orange river for the irrigation of agricultural products for local and international markets. Due to the poor quality of the effluent, these markets could be compromised. The standards imposed by the European Union are very strict regarding possible contact between edible products and treated sewage effluent. It is thus of importance that the Dawid Kruijer Municipality undertake concrete measures to improve on the existing situation.</p> <p>The Project will also enhance the operation of the K-WWTW, which will manage impacts to surrounding land uses (such as odour control).</p>

No.	Question	Response
4.	Are the necessary services with appropriate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?	Yes. Related factors were taken into consideration in the Preliminary Design Report (Bigen, 2021).  The services required for the development are explained in <b>Section 9.7</b> below.
5.	Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services)?	Yes. Refer to response to no. 1 above.
6.	Is this project part of a national programme to address an issue of national concern or importance?	Yes. The K-WWTW is scored against the Green Drop Programme.
<b>DESIRABILITY ('placing')</b>		
7.	Is the development the Best Practicable Environmental Option (BPEO) for this land/site?	The proposed project entails the upgrading and expansion of the existing K-WWTW.  Options considered for the Project are explained in <b>Section 10</b> below. The BPEO will be identified in the EIA Report.
8.	Would the approval of this application compromise the integrity of the existing approved municipal IDP and SDF as agreed to by the relevant authorities?	No. The proposed Project does not contradict, nor is it in conflict, with the municipal IDP and SDF (refer to response to no. 1 above).
9.	Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	No. The proposed upgrade and expansion aim to ensure that the K-WWTW will discharge effluent of suitable quality, which will benefit the receiving river and downstream water users.
10.	Do location factors favour this land use (associated with the activity applied for) at this place? (this relates to the contextualisation of the proposed land use on this site within its broader context).	Yes. The proposed project entails the upgrading and expansion of the existing K-WWTW.  The specialist studies, as part of the EIA phase, will further investigate the location based on sensitive environmental features and receptors.
11.	How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	See compilation of significant environmental issues associated with the proposed project contained in <b>Section 13</b> below.
12.	How will the development impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc.)?	See compilation of significant environmental issues associated with the proposed project contained in <b>Section 13</b> below.
13.	Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?	No. Opportunity costs are associated with the net benefits forgone for the development alternative. As the Project proposes the upgrade and expansion of the existing K-WWTW, it is not expected that there will be unacceptable opportunity costs.
14.	Will the proposed land use result in unacceptable cumulative impacts?	Cumulative impacts, as considered in <b>Section 13.3</b> below, will be evaluated in the EIA phase.

## 9 PROJECT DESCRIPTION

The information presented in this section was primarily sourced from the following technical reports:

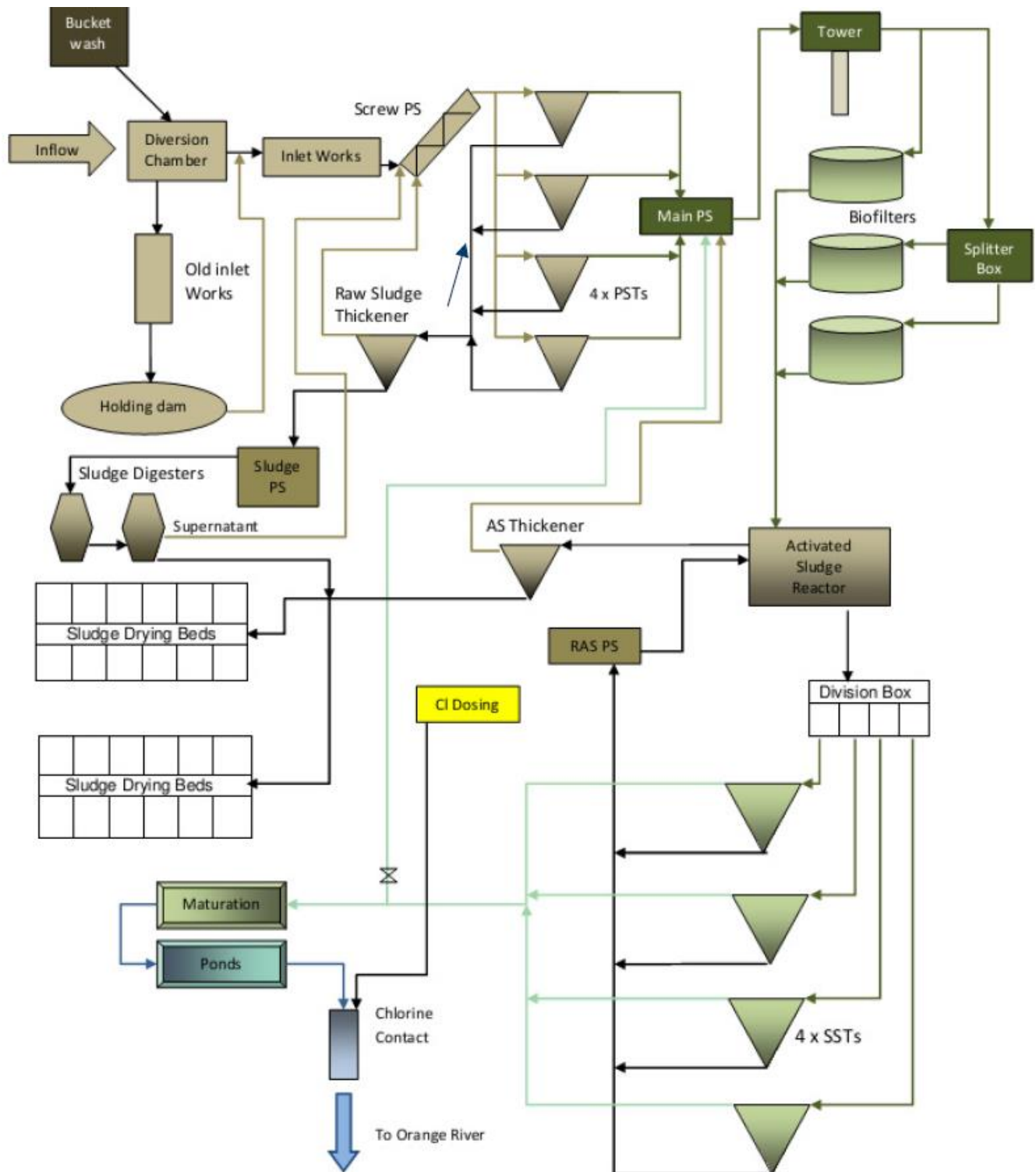
1. K-WWTW Implementation Readiness Study (Element Consulting Engineers, 2016);
2. Report on the Status Quo of the Works and the Refurbishment Requirements (Bigen, 2020);  
and
3. Preliminary Design Report (Bigen, 2021).

### 9.1 K-WWTW'S Status Quo Treatment Process

The K-WWTW consists of the following process elements:

- Night soil discharge and bucket washing system;
- Inlet works -
  - Screen;
  - Degritting;
  - Flow measurement;
- Incinerator;
- Screw pump station;
- Primary settling tank;
- Raw sludge pumps (to thickener);
- Main pump station;
- Biological filters;
- Biological reactor;
- Return activated sludge pumps;
- Thickeners;
- Sludge pumps;
- Anaerobic digesters;
- Sludge drying beds;
- Maturation pond;
- Disinfection;
- Chlorination system;
- Chlorine contact tank;
- Emergency pond; and
- Return pump station.

The schematic process diagram showing the inter-relationship between the process units at the K-WWTW is provided in **Figure 5** below.



**Figure 5:** Schematic diagram of works (Bigen, 2020)

## 9.2 Design Characterisation

### 9.2.1 Design Sewage Characterisation

The proposed design concentrations for the upgrade and expansion of the K-WWTW are as follows:

- Chemical oxygen demand: 450 mg/l;

- ❑ Total Kjeldahl Nitrogen: 49 mg/l;
- ❑ Ammonia: 39 mg/l;
- ❑ Total Phosphate: 10 mg/l;
- ❑ Ortho-Phosphate: 4 mg/l; and
- ❑ Total suspended solids: 194 mg/l.

### 9.2.2 Design Hydraulic Characterisation

The hydraulic parameters for the proposed upgrading and expansion of the K-WWTW are presented in **Table 8** below.

**Table 8: Design hydraulic loading for the upgrade & expansion of K-WWTW**

Description	Unit	Design flow
<b>Ultimate influent design flows</b>		
Average Dry Weather Flow	MI/d	24
Average Wet Weather Flow	MI/d	24
Peak Wet Weather Flow	MI/d	48
Hourly Peak Flow <small>Calculated</small>	m <sup>3</sup> /hr	3 000
Hourly Peak Flow <small>Extreme event</small>	m <sup>3</sup> /hr	3 500
<b>Assumed start-up influent design flows</b>		
Average Dry Weather Flow	MI/d	16
Minimum hydraulic design flow	m <sup>3</sup> /hr	767

### 9.2.3 Design Discharge Limits

It is noted that the K-WWTW measures its effluent discharge standards in relation to the general limits as specified by the DWS. The Dawid Kruiper Municipality is in process of applying for a Water Use Licence (WUL) for the K-WWTW. The WUL generally provides the discharge standards which the Works must conform to. Until this process is finalised, it will be assumed that General Limits will remain as the specified discharge standard. This assumption will be verified once the WUL has been issued and the discharge limits have been confirmed.

It is also noted that Dawid Kruiper Municipality intends to reuse some of the treated effluent for irrigation purposes. The International Organization for Standardization Guidelines for treated wastewater use for irrigation projects (ISO/DIS Standard No. 16075) provides quality criteria for this activity. Due to the planned reuse at school yards it has been assumed that the reuse limits shall have to adhere to the standards specified under category A of these standards (i.e. unrestricted irrigation).

### 9.3 Process Design Philosophy

**Table 9** below provides a summary of the design philosophy applied to produce treated effluent quality at K-WWTW which complies with the relevant standards.

**Table 9: Process design philosophy for K-WWTW**

Parameter	Design philosophy	Technique, codes and standards applied
Emergency Storage	<ul style="list-style-type: none"> <li>▪ Flow attenuation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use of available infrastructure.</li> </ul>
Biological activated sludge treatment	<ul style="list-style-type: none"> <li>▪ Substrate (e.g. Chemical Oxygen Demand) removal</li> <li>▪ Achieve biological nitrification, denitrification.</li> <li>▪ Supplement Phosphate removal with chemical precipitation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Water Research Commission (WRC) theory, design and operation of nutrient removal AS plants.</li> <li>▪ Biowin simulation model.</li> </ul>
Secondary Sedimentation	<ul style="list-style-type: none"> <li>▪ Design tanks for non-bulking sludge up to a diluted sludge volume index of 150ml/g</li> <li>▪ Acceptable up flow velocity.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Flux theory at 80% optimum recycle flow.</li> <li>▪ WRC theory, design and operation of sedimentation tanks.</li> </ul>
Disinfection	<ul style="list-style-type: none"> <li>▪ Inactivation of pathogenic microorganisms.</li> </ul>	<ul style="list-style-type: none"> <li>▪ WRC theory, design and operation of chlorine contact tanks.</li> </ul>

### 9.4 Scope of Work for the K-WWTW

#### 9.4.1 Introduction

The status quo treatment process requires major refurbishment as large sections of the Works' have been in operation since the 1970s, with the last upgrade and expansion having taken place during the 1990s. It was therefore proposed that the overall scope of work for the K-WWTW be split into the following: (i) refurbishment of existing mechanical and electrical equipment; and (ii) upgrade and expansion of the K-WWTW.

This Application focuses on the waste management activities associated with the upgrade and expansion of the K-WWTW, as it was understood that the refurbishment activities would not trigger any listed activities. This was discussed during the respective pre-application meetings that were held with the DENC and DFFE.

An overview of the scope of work for the refurbishment and upgrade components follows below.

#### 9.4.2 Refurbishment

Although the refurbishment component is excluded from the Application, an overview is still provided in this Section to convey the full scope of the work to be undertaken at the K-WWTW.

The aims of the refurbishment activities include the following:

- To ensure systems/equipment remain operational until such time when the main upgrade and expansion of K-WWTW is commissioned; and

- To ensure the relevant system/equipment can be integrated and remain functional as part of the future treatment strategy.

A map of the general layout of the existing infrastructure to be refurbished is shown in **Figure 6** below and is also contained in **Appendix D**.

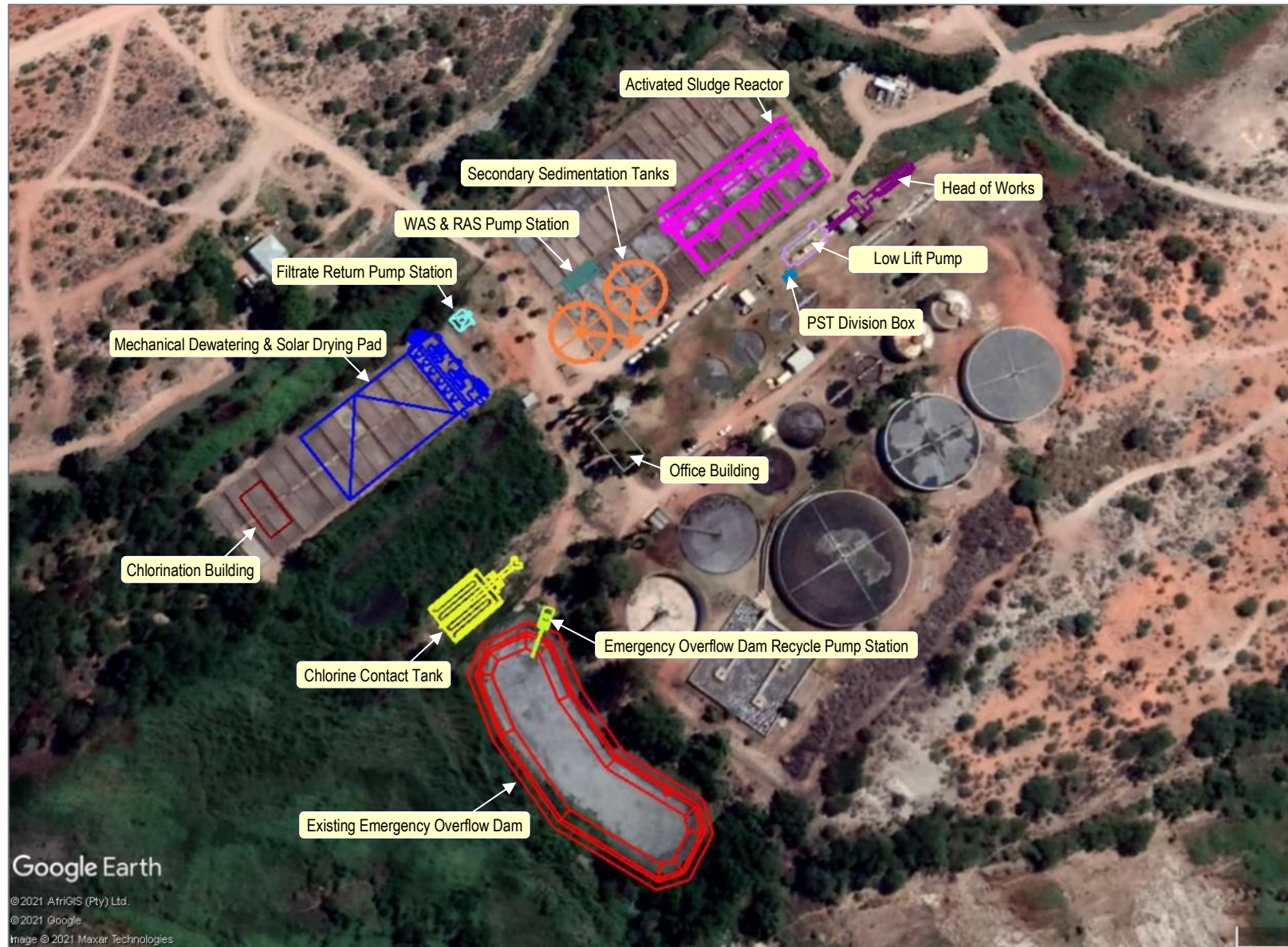


**Figure 6:** K-WWTW existing infrastructure to be refurbished (Google Earth image)  
(Not all infrastructure is labelled in the map above due to scale – see full details in map in **Appendix D**)

#### 9.4.3 Upgrade and Expansion

A map of the general layout of the upgrade and expansion works is shown in **Figure 7** below and is also contained in **Appendix D**.

Key components of the K-WWTW associated with the upgrade and expansion works are discussed further in the sub-sections to follow.



**Figure 7:** K-WWTW upgrade and expansion works (Google Earth image)



#### 9.4.3.1 Head of Works

A mothballed structure, previously used as the inlet works (shown in **Figure 8** below) will be demolished to avail space for the newly proposed Head of Works (HoW). The new HoW will comprise of two (2) trains operating in a duty standby configuration.

The new inlet works will be designed to accommodate an ADWF of 24 MI/d and an Hourly Peak Flow (HPF) of 84 MI/d (3 500 m<sup>3</sup>/hr). The new inlet works will be fully equipped for this capacity and will comprise of the following components:

- ❑ Two (2) mechanical front rake coarse screens (25 mm aperture);
- ❑ Two (2) mechanical front rake fine screens (6 mm aperture);
- ❑ Two (2) vortex degritters;
- ❑ One (1) bypass channel equipped with manual screen (50 mm aperture); and
- ❑ One (1) Parshall flume for flow measurement downstream of degritters.



**Figure 8:** Obsolete “old” inlet works

A diesel-fired incinerator (shown in **Figure 9** and **Figure 10** below), which is located next to the inlet works structure, is currently used for the disposal of screenings at the K-WWTW. The incinerator is fitted with two Bentone B 30A burners each having a fuel burning capacity of 6 – 17 kg per hour. It is proposed to discontinue the incinerator as part of the upgrade and expansion works.



**Figure 9:** Incinerator at K-WWTW



**Figure 10:** Incinerator bed (top left), incinerator bed being raked manually (top right), temperature gauges (bottom left) and smoking chimney after loading of incinerator (bottom right) (Bigen, 2020)

#### 9.4.3.2 Emergency Storage

An existing emergency overflow pond (shown in **Figure 11** below), which is located next to the existing aeration tank, intercepts high peak flows that cannot be handled by the installed equipment. It has a storage capacity of 4 375 m<sup>3</sup>. Based on this volume and a design emergency overflow rate of 500 m<sup>3</sup>/hr, the pond can provide a retention period of ±8 hrs during a peak influent event of 3500 m<sup>3</sup>/hr.



**Figure 11: Emergency pond at K-WWTW**

A new recycle pump station will be installed to supply the content of the storage tank over an 8-hour period. Two pumps will be installed with a duty-standby configuration, each with a rated delivery of 76 l/s.

In the event that the overflow volume exceeds the storage capacity of the emergency overflow tank, excess flow will be diverted from the recycle pump station via an overflow weir to the chlorine contact tank for disinfection and discharged into the natural water course. The overflow system will be sized for hydraulic capacity of 500 m<sup>3</sup>/hr.

#### 9.4.3.3 Low Lift Pump Station

Flow from the HoW will collect in sump from where it will be pumped to the existing and new modules. The flow will be split between the existing and the proposed modules via overflow weirs. The flow rate to the new module will be measured via an ultrasonic flow meter.

A new low lift pump station is proposed for the upgrade and expansion of the K-WWTW. A total of four (4) screw pumps will be installed. Each pump will have a design capacity of 1000 m<sup>3</sup>/hr, whereby three (3) pumps will have to be operational in order to accommodate instantaneous peak flow of 3000 m<sup>3</sup>/hr. The estimated design head for the low lift pump station is 6 m. This will allow the flow to gravitate through the remainder of the process units.

#### 9.4.3.4 Activated Sludge Train

A new 12 MI/d (ADWF) ASP is proposed for the upgrade and expansion of the K-WWTW. The ASP consists of a single biological reactor equipped with mixers and aerators, Secondary Sedimentation Tanks (SST) for solids separation and multiple internal recycles.

The ASP design is based on 3 main objectives, namely:

- Substrate removal;
- Conversion of ammonia to nitrate; and
- Biological Nitrogen Removal (specifically nitrogen and phosphate).

Sludge age will be controlled by wasting mixed liquor via a dedicated Waste Activated Sludge (WAS) pump station located next to the biological reactor. The Plant Operator will have the option to waste activated sludge from the aerobic zone directly or via the Return Activated Sludge (RAS) stream. Two (2) solids handling centrifugal type pumps will be installed in a duty-standby configuration, pumping the WAS directly to a dewatering facility. The WAS and RAS pump station will be combined in a single building.

Two new 23.1 m diameter, scraped conically bottomed circular SSTs equipped with peripherally driven rotating half bridges will be provided for the Project. The sludge removal system for the new SSTs will be scraped along the sloped floors towards a central hopper from where it is removed by the RAS pumps and recycled back to the biological reactor.

The maximum volume to be wasted per day, if done from the reactor, will be 382 m<sup>3</sup>/d.

#### 9.4.3.5 Disinfection & Reuse

It is proposed that a dual chlorination channel be provided to treat the total effluent from the K-WWTW. The tank will be sized to ensure a minimum contact period of 20 min at ADWF (i.e. 24 MI/d). This equates to a total volume of 333 m<sup>3</sup>. The condition and configuration of the existing chlorine contact tank is not considered feasible for use in the upgraded and expanded works. A new tank will therefore be provided.

The dosing system will be installed in terms of the SANS 10298:2009 and be based on one (1)-tonne drum cylinders. Based on a dosing rate of 5 mg/l, one cylinder will remain

operational for 8-days. This equates to a usage of 3.1-tonnes gas cylinders per month. The chlorine dosing and storage facility will make allowance for a total of 9 gas cylinders to limit delivery cycles to the K-WWTW.

#### 9.4.3.6 Sludge Stabilisation & Dewatering

Sludge generated at the K-WWTW was classified in terms of the Guidelines for Utilisation and Disposal of Wastewater Sludge (GUDWS) and the results are summarised in **Table 10** below. It is predicted that the future sludge classification associated with the K-WWTW will remain B1a or be better (i.e. A1a).

**Table 10: Sludge classification of K-WWTW (2017 to 2018)**

Description	Sample 1	Sample 2	Sample 3	Sample 4
Sample date	July 2017	July 2018	Sept 2018	Nov 2018
Sludge type	Composted sludge			
Sampling point	Stockpile			
Microbiological parameters	B	B	B	B
Vector attraction reduction	1	2	1	1
Pollutant class	a	a	a	a
Classification	B1a	B2a	B1a	B1a

Sludge will be produced from two sludge trains, namely the existing Biological Trickling Filter (BTF) train and the new ASP train. The sludge from both trains will be treated at a new dewatering facility. The main processes associated with the sludge management are:

- Anaerobic digestion of Primary Sludge (PS) and WAS (status quo);
- Extended sludge age in activated sludge processes (new ASP); and
- Mechanical sludge dewatering.

According to the sludge mass balance (shown in **Figure 12** below), the anticipated minimum solids loading rates for WAS from the existing module, PS and WAS from the new module streams will be 0.9, 1.0 and 1.6 tonnes/d, respectively. The anticipated maximum solids loading rates for these streams will be 0.6, 1.6 and 1.8 tonnes/d, respectively.

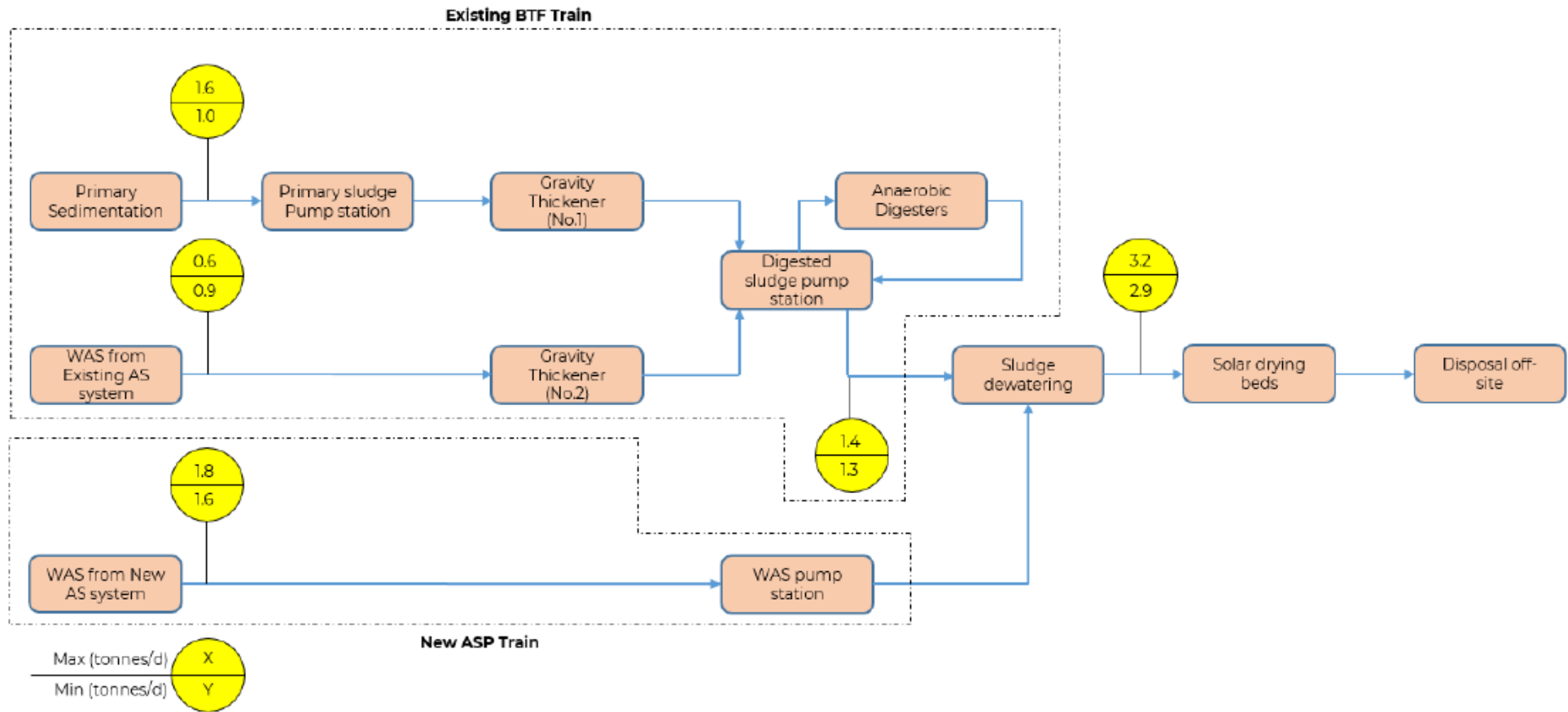


Figure 12: Sludge mass balance diagram (Bigen, 2021)

Currently, sludge drying beds are provided for the solar drying of the thickened WAS and the digested sludge. Each drying bed is 15.22 m x 6.1 m, giving a total surface area of 8 913 m<sup>2</sup> (some of the drying beds are shown in **Figure 13** below). These sludge drying beds will be decommissioned and demolished to avail space for the new ASP train. Therefore, a new, small footprint, sludge dewatering facility will be required to ensure effective sludge handling and disposal is maintained at the plant.



**Figure 13:** Sludge drying beds Set No 3 (top left), supernatant decanting Sets 1 & 2 (top right), Sludge drying beds Set 1 & 2 supernatant decanting (bottom left) and typical sludge drying bed (bottom right) (Bigen, 2020)

An option evaluation (refer to **Section 10.3.1** below) was done for the specific case of K-WWTW which concluded that the most favourable solution is to generate sludge conforming to the requirements associated with beneficial use (i.e. source for fertilizer).

The proposed sludge handling facility will consist out of the following systems (shown in **Figure 7** above):

- Mechanical dewatering units;
- Poly electrolyte dosing system; and
- Solar-drying/stockpiling slab with associated sludge handling equipment.

**Table 11** below provides a summary of the design aspects associated with the sludge management facility.

**Table 11: Design summary of sludge management facility**

Description	Unit	Value
<b>Dewatering units</b>		
Type of units	-	Screw-press units
Design flow rate	m <sup>3</sup> /hr	56+5.4
No. of units	No.	5
Installed standby availability	%	67
Guaranteed sludge cake concentration (m/v)	%	18
<b>Poly make system</b>		
Poly make up system	-	Continuous make up
No of poly make up system	No.	2
Poly dosing pump	-	PC Pumps
No of poly dosing pumps	No.	5
<b>Filtrate return pump station</b>		
Pump installation	-	Submersible
Pumps	No.	2
Duty per pump	l/s	16
Discharge pressure	m	6
Installed standby availability	%	100
Discharge pipe diameter	mm	150 NB
Discharge manifold	mm	150 NB
<b>Solar drying slab</b>		
Slab material	-	Concrete
Total Area required for drying	m <sup>2</sup>	1429
Turn-over rate for drying	days	9
Total area required for stockpiling	m <sup>2</sup>	95.3
Turnover rate for stockpiling	days	30
Total area	m <sup>2</sup>	1525

## 9.5 Summary of Sludge & Screenings

A summary of the sludge and screenings to be produced at K-WWTW is provided in **Table 12** below.

**Table 12: Summary of sludge and screenings (based on ultimate capacity ADWF of 24 MI/day)**

Characteristics	Screenings	Sludge
<b>Volumes produced (estimated)</b>	<ul style="list-style-type: none"> <li>▪ 0.418 tonnes/day</li> <li>▪ 152.6 tons/year</li> </ul>	<ul style="list-style-type: none"> <li>▪ 3.1 tons/day</li> <li>▪ 1 131.5 tons/year</li> </ul>
<b>Description</b>	Mostly rags, plastics, rubber, unbiodegradable material, etc., as expected to be found in general municipal raw sewage.	Residual, semi-solid material produced as a by-product during sewage treatment.
<b>Classification</b>	Assumed to be hazardous.	B1a (GUDWS).
<b>Disposal</b>	Offsite at an appropriate landfill site.	Offsite at an appropriate landfill site.



## 9.6 Project Life Cycle

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The typical project life cycle for the upgrade and expansion of a WWTW includes the following primary activities (high level outline only):

❖ Design phase –

- Confirming key design features and specifications for the components of the WWTW to be upgraded and expanded;
- Preparing detailed designs;
- Preparing the Project schedule; and
- Procurement process for Contractors.

❖ Construction phase –

- Establishing temporary access roads, where needed;
- Preparing the site (clearing, levelling, grading, etc.);
- Decommissioning and demolishing structures and infrastructure, as relevant;
- Establishing the site office;
- Establishing laydown areas and storage facilities;
- Transporting equipment to site;
- Undertaking civil, mechanical and electrical work; and
- Reinstating the working areas outside of permanent development footprint.

❖ Operational phase –

- Testing and commissioning of the upgraded and expanded components;
- Managing stormwater and waste;
- Producing and discharging compliant effluent;
- Producing and managing compliant sludge;
- Conducting preventative and corrective maintenance; and
- Monitoring of the Works' performance.

❖ Decommissioning –

It is envisaged that the K-WWTW will be used indefinitely, under suitable maintenance. Decommissioning is thus not considered applicable to the K-WWTW, apart from the decommissioning of old and redundant structures and infrastructure associated with the upgrading and expansion of the plant.

## 9.7 Resources and Services required for Construction and Operation

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This section briefly outlines the resources that will be required to execute the Project. Note that provision will be made in the EMP to manage impacts associated with aspects listed below, as relevant.

### 9.7.1 Water

#### **Construction**

All water required during the construction phase will be obtained from a municipal source.

#### **Operation**

All water required during the operational phase (e.g. drinking water, water for toilets, water for cleaning purposes etc.) will be obtained from a municipal source.

### 9.7.2 Sanitation

#### **Construction**

Sanitation services will be required for construction workers in the form of chemical toilets, which will be serviced at regular intervals by the supplier.

#### **Operation**

Ablution facilities are available at the K-WWTW for operational staff and visitors. Sewage from ablution facilities will be disposed of at the bucket washing facilities.

### 9.7.3 Waste

#### **Construction**

Solid waste generated during the construction phase will be temporarily stored at a suitable location (e.g. at the construction camp) and will be removed at regular intervals and be disposed of at a permitted waste disposal site. All the waste disposed of will be recorded.

According to the municipal IDP (Dawid Kruiper Municipality, 2020), the municipality has ten landfill sites namely, Leerkrans, De Duine, Askham, Welkom, Groot Mier, Loubos, Rietfontein, Philandersbron, Noenieput and Swartkop Dam.

Wastewater, which refers to any water adversely affected in quality through construction-related activities and human influence, will include the following:

- Sewage;
- Water used for washing purposes (e.g. equipment, staff); and
- Drainage over contaminated areas (e.g. workshop, equipment storage areas).

Suitable measures will be implemented to manage all wastewater generated during the construction period.

#### **Operation**

Domestic waste generated during the operational phase will be removed on a regular basis and will be disposed of at a permitted waste disposal site. The management of sludge and screenings will be in accordance with the descriptions provided in **Section 9.4.3** above.

#### 9.7.4 Roads & Stormwater

The existing access road to the K-WWTW, which is a gravel road, is directly from the N14 (shown in **Figure 14** below).



**Figure 14:** Access road to the K-WWTW from the N14 (Google Earth image)

Approximately 1100 m of fence will be located around the boundary of the K-WWTW.

#### 9.7.5 Storm Water

##### **Construction**

Best environmental practices will be implemented during construction to manage storm water.

##### **Operation**

Storm water run-off from areas of higher elevation than the K-WWTW will be cut off and diverted by dished berms strategically placed to divert the water towards the river. The natural flow of storm water over the site will be handled at ground level in a manner that ensures no concentration or pooling of water and that the natural flow of the water is not accelerated off the site. Contamination of stormwater by the works will be prevented.

### 9.7.6 Electricity

#### **Construction**

During the construction phase electricity will be obtained from diesel generators and / or municipal supply.

#### **Operation**

Power for the operational phase will be obtained from Eskom. Provision is also made for a standby power generator at the K-WWTW.

### 9.7.7 Laydown Areas

#### **Construction**

A laydown area will be required during the construction phase. Further details will be provided in the EIA Report.

### 9.7.8 Construction Workers

#### **Construction**

The appointed Contractor will mostly make use of skilled labour. In those instances where casual labour is required, the Applicant will request that such persons are sourced from local communities as far as possible.

## 10 ALTERNATIVES

### 10.1 Introduction

According to GN No. R. 982 of 4 December 2014 (as amended), “alternatives” in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, as well as the option of not implementing the activity (referred to as the no-go option). Alternatives may be considered for the following:

- The property on which or location where the activity is proposed to be undertaken;
- The type of activity to be undertaken;
- The design or layout of the activity;
- The technology to be used in the activity; or
- Operational aspects of the activity.

### 10.2 Location and Layout Alternatives

No location or layout alternatives were considered for the Project, as the proposed works entail the upgrading and expansion of existing structures at the K-WWTW.

### 10.3 Technology Alternative

#### 10.3.1 Sludge Treatment

The following options were considered for sludge treatment at K-WWTW:

- Sludge drying.** With this option, the dried sludge cannot be used for agricultural or construction purposes due to the silica involved in the process.
- Belt presses and linear screens.** This option is more cost intensive and requires strict operational control.
- Sludge dewatering facility.** The dewatering equipment are screw presses are easy to operate, durable and sufficient for the sludge treatment requirements at K-WWTW.

### 10.4 Waste Disposal Options

#### 10.4.1 Disposal of Screenings

The use of the incinerator as an option for the disposal of screenings was considered. However, after combining the high costs for usage of an incinerator, the complexity of operational usage, as well as the high likelihood for failure of components, it was concluded that the disposal of screenings off-site at a landfill site is the most suitable solution (Bigen, 2021).

#### 10.4.2 *Sludge Management & Disposal*

The key driver for selecting an appropriate disposal strategy is the sludge classification achievable by the WWTW. The sludge generated at the K-WWTW is classified as B1a, in terms of the GUDWS (see **Table 10** above), and it is thus regarded as low hazardous material. It is predicted that the future sludge classification associated with the K-WWTW will remain B1a or be better (i.e. A1a).

Four sludge management options were evaluated in the Preliminary Design Report (Bigen, 2021), namely:

- Sludge for agricultural use;
- Sludge as fertiliser product;
- Sludge for commercial products; and
- Disposal of sludge at a landfill site.

The proposed dewatering facility will facilitate a screw press and stockpile, resulting in a sludge viable for commercial and agricultural use. It was thus proposed that the agricultural/commercial strategies be implemented.

It is noted that the current WML Application only focuses on the proposed upgrade and expansion of the existing K-WWTW and does not include activities associated with agricultural/commercial use of the sludge. The preferred option to be pursued by the Dawid Kruiper Municipality at a later stage will need to be screened against the relevant environmental legislation to determine the consents required.

At this stage, it is assumed that the option of disposing the sludge and screenings at a waste disposal site is the current preferred alternative. Depending on the classification, this will either mean disposal at a hazardous waste disposal site (such as Vissershok Landfill in the Western Cape or Holfontein Landfill in Gauteng) or at a general waste disposal site (refer to municipal landfills in **Section 9.7.3** above).

### 10.5 No-Go Option

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As standard practice and to satisfy regulatory requirements, the option of not proceeding with the Project is included in the evaluation of the alternatives.

The no-go alternative can be regarded as the baseline scenario against which the impacts of the Project are evaluated. This implies that the current status and conditions associated with the K-WWTW will be used as the benchmark against which to assess the possible changes (impacts) associated with the Project.

In contrast, should the proposed Project not go ahead, any potentially significant environmental issues associated with the Project's scope would be irrelevant, and the status quo will remain. The objectives of the Project, including the benefits (such as improving the quality of the effluent and overall enhancement of the K-WWTW's operations), will not materialise.

The no-go alternative will be assessed during the EIA Phase, taking into consideration the findings of the specialist studies and the outcomes of public participation (amongst others).

## 11 PROFILE OF THE RECEIVING ENVIRONMENT

### 11.1 General

This section provides a general description of the current state of the receiving environment in the Project Area. This serves to provide the context within which the Scoping exercise was conducted. It also allows for an appreciation of sensitive environmental features and possible receptors of the effects of the proposed Project and provides a baseline against which impacts can be determined.

A brief overview is also provided of the manner in which the environmental features may be affected (positively or negatively) by the proposed Project during its life-cycle. Significant environmental issues are discussed further in **Section 13** below. These preliminary impacts are only discussed on a qualitative level, as part of the Scoping Phase. The EIA Report will provide a comprehensive evaluation of the potential impacts and will quantify the effects to the environment based on the methodology presented in **Section 13.4** below.

It is noted that the areas earmarked for the Project components (shown in **Figure 7** above) are degraded, as they occur within the K-WWTW site and most relate to existing structures and infrastructure that are intended to be upgraded and expanded.

### 11.2 Land Use

#### Status Quo

Dawid Kruiper Municipality's SDF of 2017 designates the area encompassed by the K-WWTW as a 'sewage plant'. The SDF further shows a 1000 m risk zone around the plant.

The land surrounding the K-WWTW is vacant and rural in nature. Agriculture is encountered approximately 200 m to the east of the site, in the area of Lemoendraai. Residential areas are located approximately 700 m and 580 m to the west and north of the site, respectively. The Kameelboom Cemetery is located approximately 600 m to the north-west of the K-WWTW.

#### Potential Impacts / Implications

- ❑ The upgrade and expansion of the K-WWTW will take place within the confines of the plant's existing perimeter fence.
- ❑ Land use requirements and restrictions associated with the buffer zone of the K-WWTW will need to be enforced from a planning perspective.
- ❑ The proposed upgrade and expansion aim to ensure that the K-WWTW will discharge effluent of suitable quality, which will benefit the receiving river and downstream water users, including irrigators.



- The Project aims to enhance the operation of the K-WWTW, which will manage impacts to surrounding land uses (such as odour control).

### Specialist Study Triggered / Additional Investigations

The EMPr will contain measures to mitigate against impacts to the surrounding land use, as relevant to the scope of the Project.

## 11.3 Climate

### Status Quo

The climate in Upington is classified as BWh by the Köppen-Geiger system. The average temperature for the year is 21.1°C. On average, the warmest month is January and the coolest month is July. The average precipitation for the year is 188 mm (<https://www.weatherbase.com>).

Average climatic information for Upington is provided in **Table 13** below.

**Table 13: Average rainfall in Upington (South African Weather Service)**

Position of Upington in DKLM: 28° 24' S 21° 16' E

Height above sea-level: 836m, Period: 1961-1990

Month	Temperature (* C)				Precipitation		
	Highest Recorded	Average Daily Maximum	Average Daily Minimum	Lowest Recorded	Average Monthly (mm)	Average Number of days with >= 1mm	Highest 24 Hour Rainfall (mm)
January	42	36	20	10	24	4	33
February	42	34	20	9	35	6	59
March	41	32	18	5	37	6	46
April	38	28	13	2	26	5	52
May	34	24	8	-2	10	2	26
June	29	21	5	-5	4	2	13
July	29	21	4	-6	2	1	7
August	33	23	6	-7	4	1	40
September	39	27	9	-2	4	2	19
October	40	30	13	2	9	3	22
November	41	33	16	5	17	3	51
December	43	35	19	6	17	4	42

### Potential Impacts / Implications

- There is not significant seasonal variation to consider, which can be expected from a region with such a low annual rainfall. This neglects the requirement for a seasonal adjustment in the

design flow which implies that the design Annual Daily Flow (ADF), ADWF and Average Wet Weather Flow (AWWF) will be similar.

- ❑ Solar drying slabs are widely used in SA and are especially recommended in climatic conditions associated with Upington (i.e. high sunshine, low rainfall and low humidity). The Project thus proposes for sludge cake from the dewatering units to be spread out on a dedicated solar drying slab for further processing.
- ❑ Greenhouse gas emissions during construction and operational phases at the plant.
- ❑ Climate change may lead to increased inflows, which can cause more frequent bypassing at the K-WWTW.
- ❑ The K-WWTW is located alongside the Orange River and may be at risk from extreme floods.

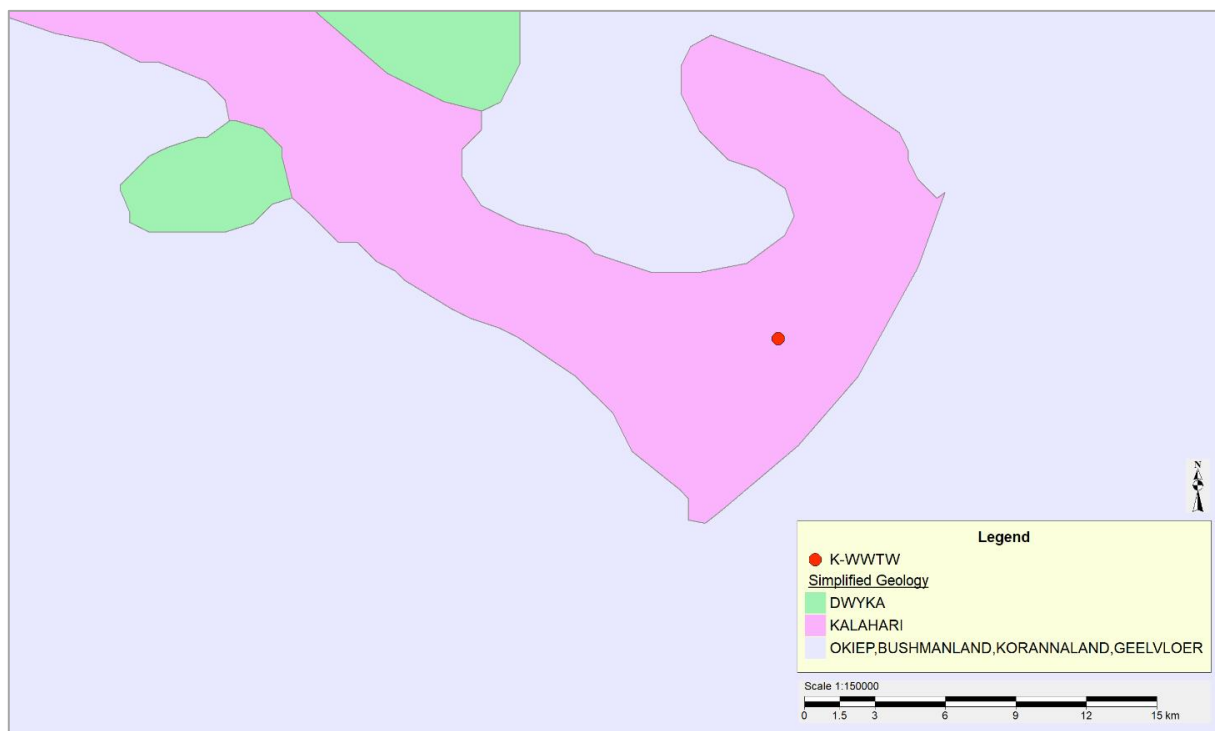
### Specialist Study Triggered / Additional Investigations

- ❑ The design of the upgrade and expansion will cater for climate change factors.
- ❑ The K-WWTW will need to be adequately safeguarded from extreme floods.

## 11.4 Geology and Soil

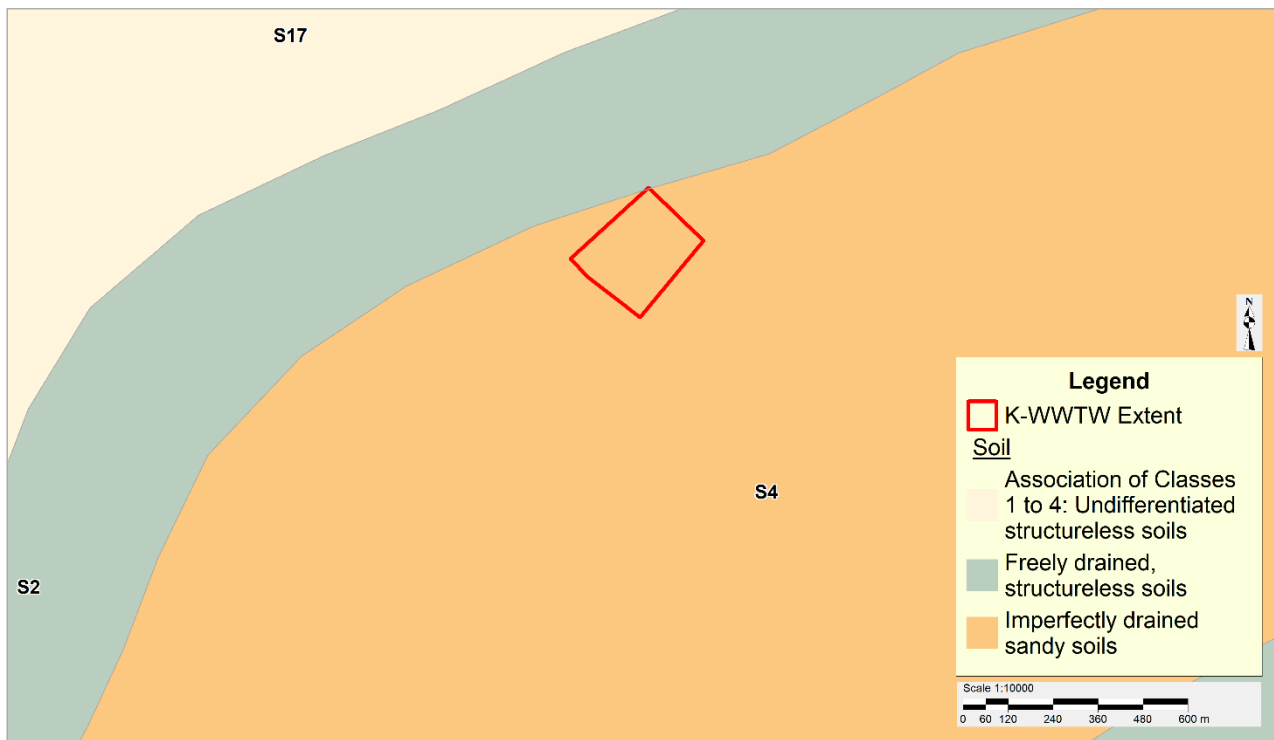
### Status Quo

The K-WWTW is underlain by red-brown, wind-blown sand and dunes of the Kalahari Group (Gordonia Formation) (see **Figure 15** below). Underlying these rocks are rocks of the Precambrian Transvaal Supergroup.



**Figure 15:** Simplified geology

The youngest formation of the Kalahari Group is the Gordonia Formation which is generally termed Kalahari sand and comprises of red aeolian sands that covers most of the Kalahari Group sediments. As shown in **Figure 16** below, the site is located in an area with imperfectly drained, sandy soils.



**Figure 16:** Soil description

### Potential Impacts / Implications

- ❑ The geotechnical characteristics determine the suitability of the site in terms of foundations for structures and infrastructure. It is noted that the Project entails the upgrade and expansion of existing components of the plant.
- ❑ Construction phase:
  - Soil could be contaminated through inadequate storage and handling of hazardous materials, spillages from equipment and plant and poor management of waste, wastewater and cement mixing.
  - Erosion may take place if stormwater is not adequately managed.
- ❑ Operational phase:
  - Erosion may take place if stormwater is not adequately managed.
  - Soil could be contaminated through inadequate management of sludge and screenings.

### Specialist Study Triggered / Additional Investigations

- ❑ Information from the Geotechnical Report will be included in the EIA Report.
- ❑ The EMPr will contain measures to mitigate against impacts to soil, such as preventing soil contamination during construction, etc.

## 11.5 Hydrogeology

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### Status Quo

The region falls within an area of complex pre-Cambrian basement geology, including volcanic, igneous and metamorphic rocks. Groundwater is stored and transmitted mainly via secondary features such as fractures, although some intergranular porosity and permeability is present in certain areas.

### Potential Impacts / Implications

- ❑ Construction phase:
  - Groundwater could be contaminated through inadequate storage and handling of hazardous materials, spillages from equipment and plant and poor management of waste, wastewater and cement mixing.
- ❑ Operational phase:
  - Groundwater could be contaminated through inadequate management of waste (sludge and screenings).

### Specialist Study Triggered / Additional Investigations

- ❑ The EIA Phase will investigate potential impacts to groundwater (e.g. pollution during construction) and suitable mitigation measures will be identified to manage these impacts.
- ❑ Groundwater monitoring to be undertaken at the K-WWTW to determine potential impacts of the works on groundwater quality.
- ❑ The EMPr will include mitigation measures to safeguard groundwater.

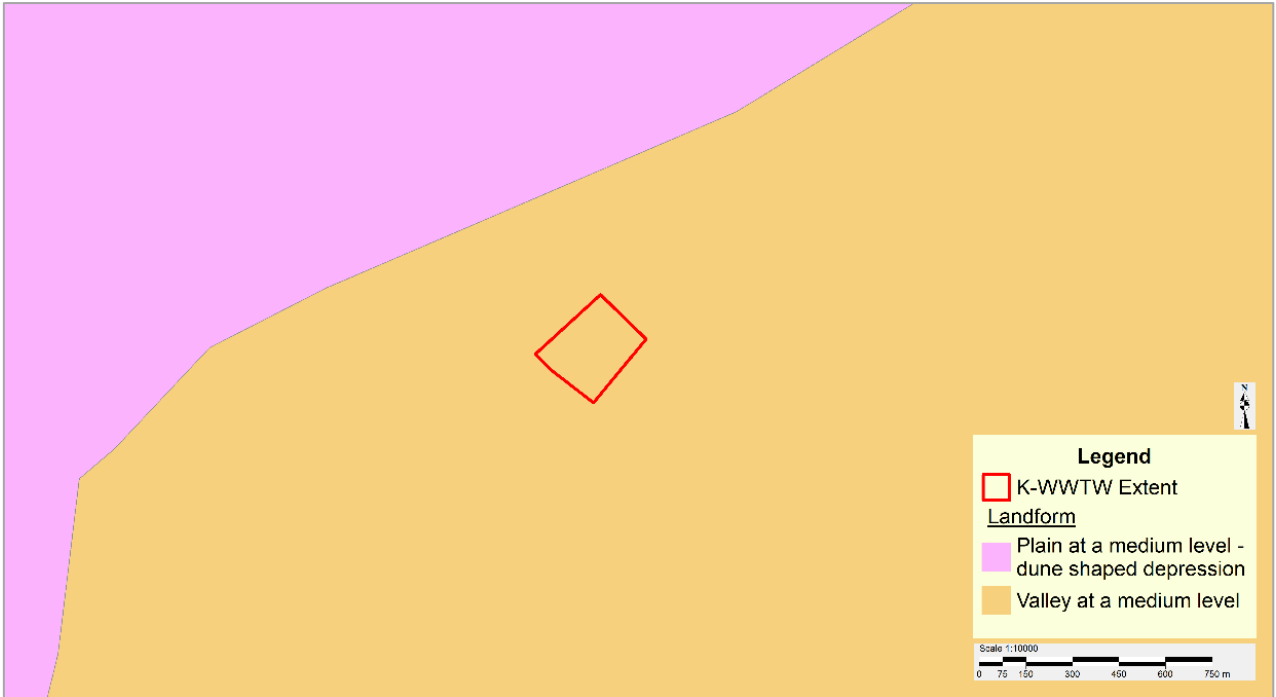
## 11.6 Topography

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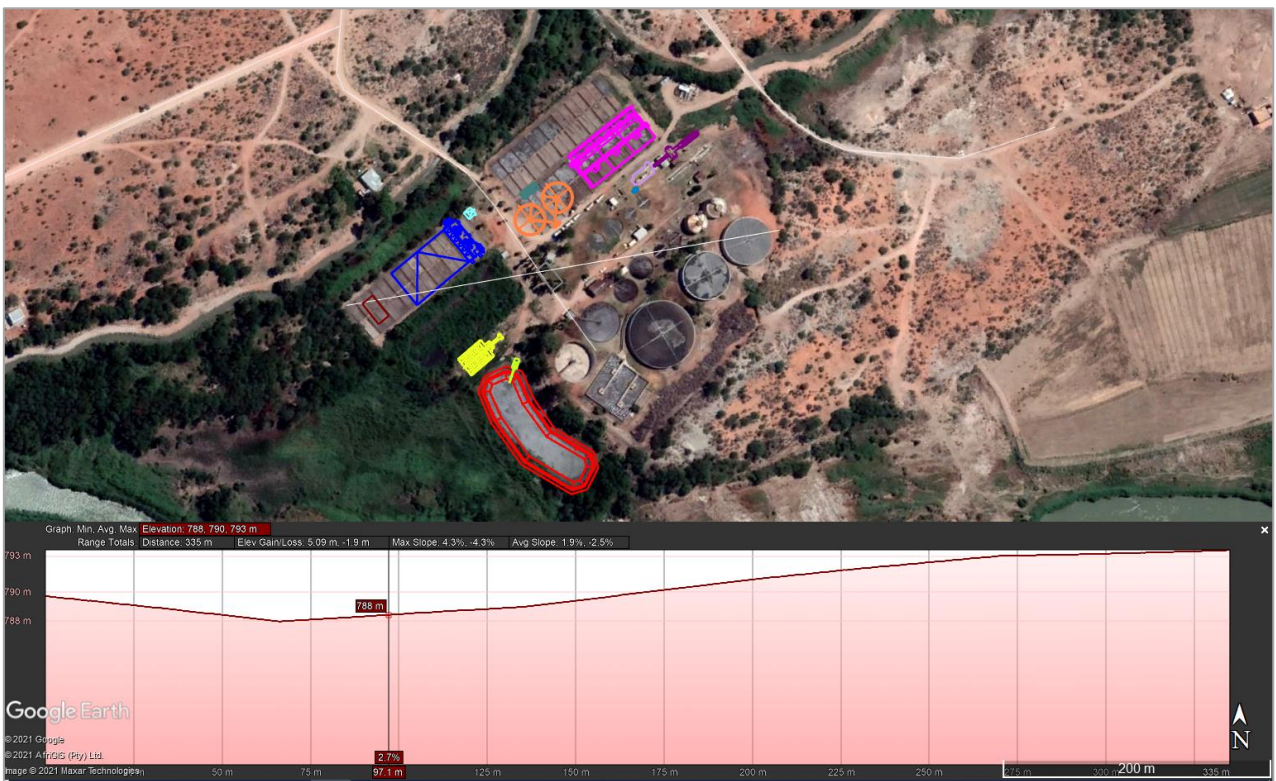
### Status Quo

Uppington is 803 m above sea level, and the topography in the greater area can be described as large sandy plans with windblown sand dunes and low hills breaking the flat relief.

In terms of the SOTER database, the landform encountered at the site is described as a valley at a medium level (see **Figure 17** below). The K-WWTW site predominantly slopes from east to west. The change in elevation from the most easterly point to the most westerly point is approximately 5 m (see **Figure 18** below). The Orange River is a significant topographical feature, which is located to the south of the site.



**Figure 17:** SOTER Landforms



**Figure 18:** Elevation Profile (Google Earth Image)

**Potential Impacts / Implications**

- The terrain is generally flat and suitable for the K-WWTW.

- Erosion may take place if stormwater is not adequately managed during the construction and operational phases of the Project.

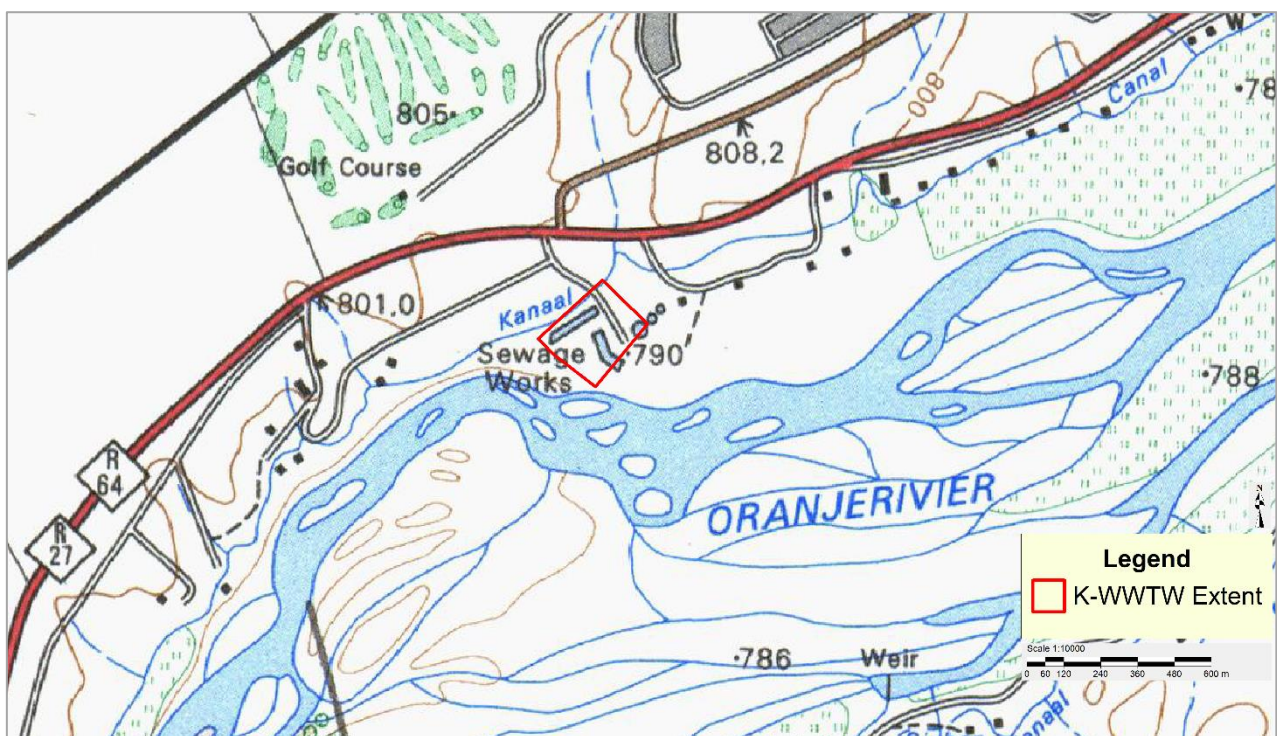
### Specialist Study Triggered / Additional Investigations

- The EMPr will make provision for managing stormwater.

## 11.7 Surface Water

### Status Quo

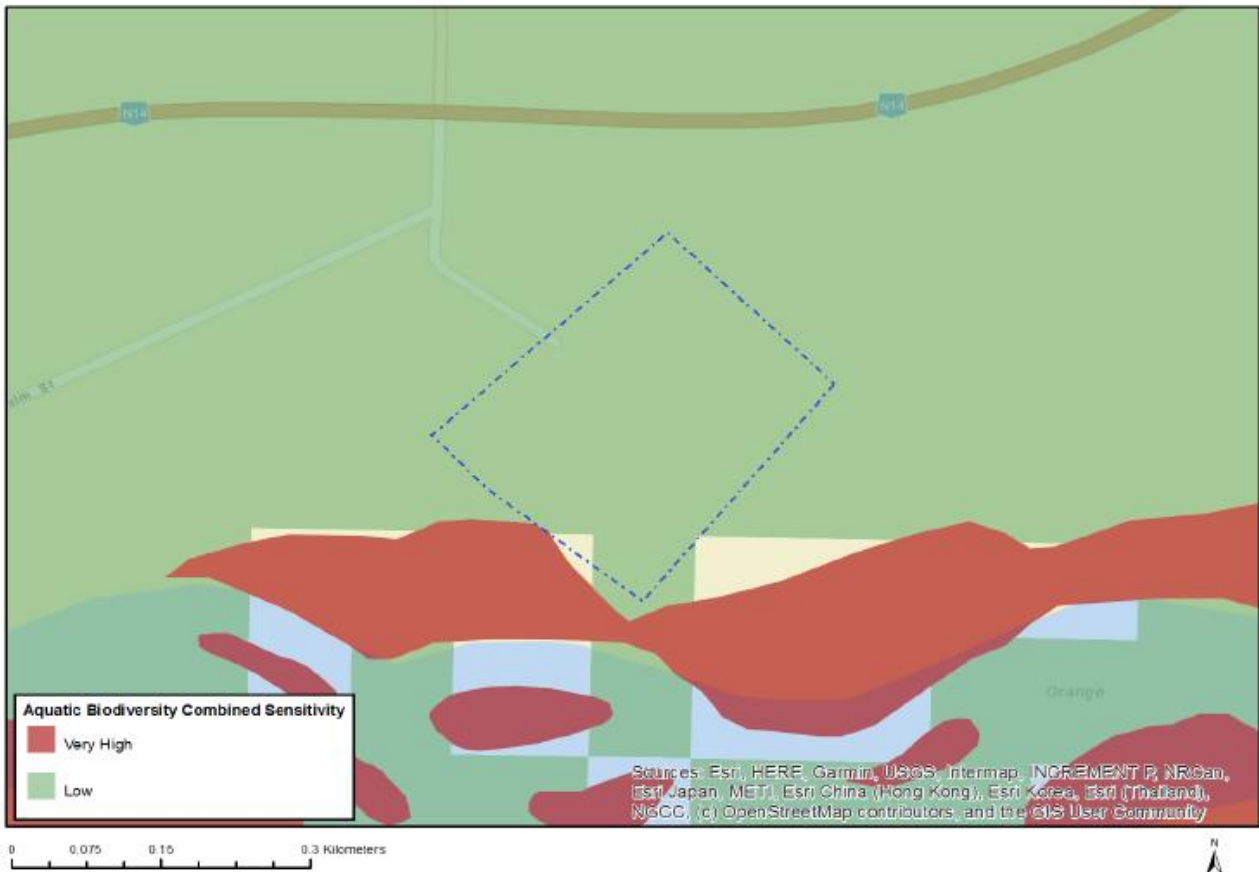
The K-WWTW falls within Quaternary Catchment D73F, which drains into the Orange River located to the south of the site (see **Figure 19** below). A storm water channel runs to the north of the site.



**Figure 19:** Topographical Map showing watercourses in the Project Area

The Orange River is extensively used for irrigation, with cultivated land occurring along its banks. The discharge of substandard and non-compliant effluent from the K-WWTW will adversely affect the river's aquatic health and its fitness for use for irrigation and other water uses. Addressing the quality of the work's effluent is one of the Project's key drivers.

According to the findings from the National Web Based Environmental Screening Tool, areas of high sensitivity in terms of aquatic biodiversity occur to the south of the site (see **Figure 20** below). These areas relate to wetlands that form part of the Orange River system.



**Figure 20: Map of Relative Aquatic Biodiversity Theme Sensitivity**

## Potential Impacts / Implications

- ❑ **Construction phase:**
  - Reduction of water quality through sedimentation (e.g. silt from the construction site transported via runoff) and poor construction practices (e.g. improper management of wastewater, incorrect storage of material, spillages, etc.).
  - Reduction in biodiversity of aquatic biota as a result of the abovementioned drivers.
  - Alteration of site drainage.
- ❑ **Operational phase:**
  - Sedimentation through silt-laden runoff, caused by inadequate stormwater management.
  - The Orange River could be contaminated through inadequate management of waste (sludge and screenings) and the discharge of sub-standard effluent from the plant.
  - Damage to the facility from major flood events.
  - Alteration of site drainage.
- ❑ The water uses that are associated with the Project, in terms of Section 21 of the NWA, are listed in **Table 5** above.

## Specialist Study Triggered / Additional Investigations

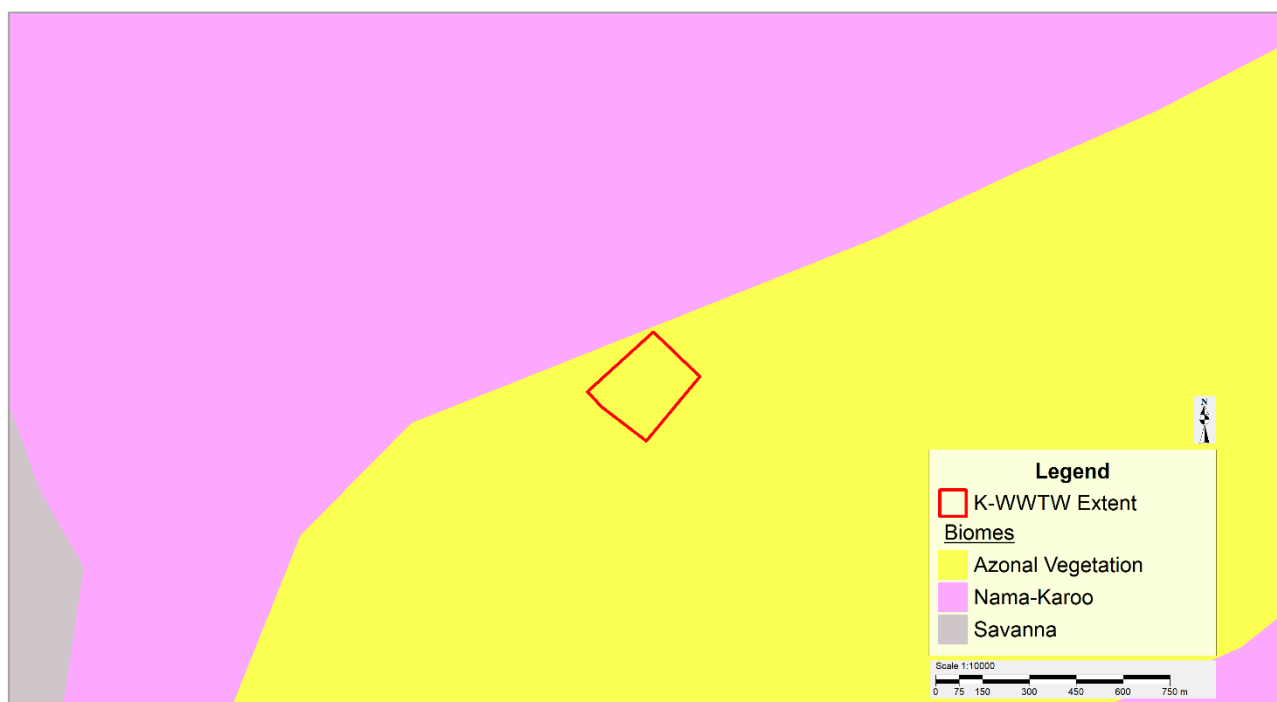
- ❑ The findings of the Aquatic Impact Assessment and Delineation will be included in the EIA Report.
- ❑ The K-WWTW will need to be adequately safeguarded from extreme floods and will need to be located outside of the 1:100 year floodline of the Orange River.
- ❑ Best practices to mitigate impacts to watercourses and to manage stormwater will be included in the EMPr.

## 11.8 Biodiversity

### Status Quo

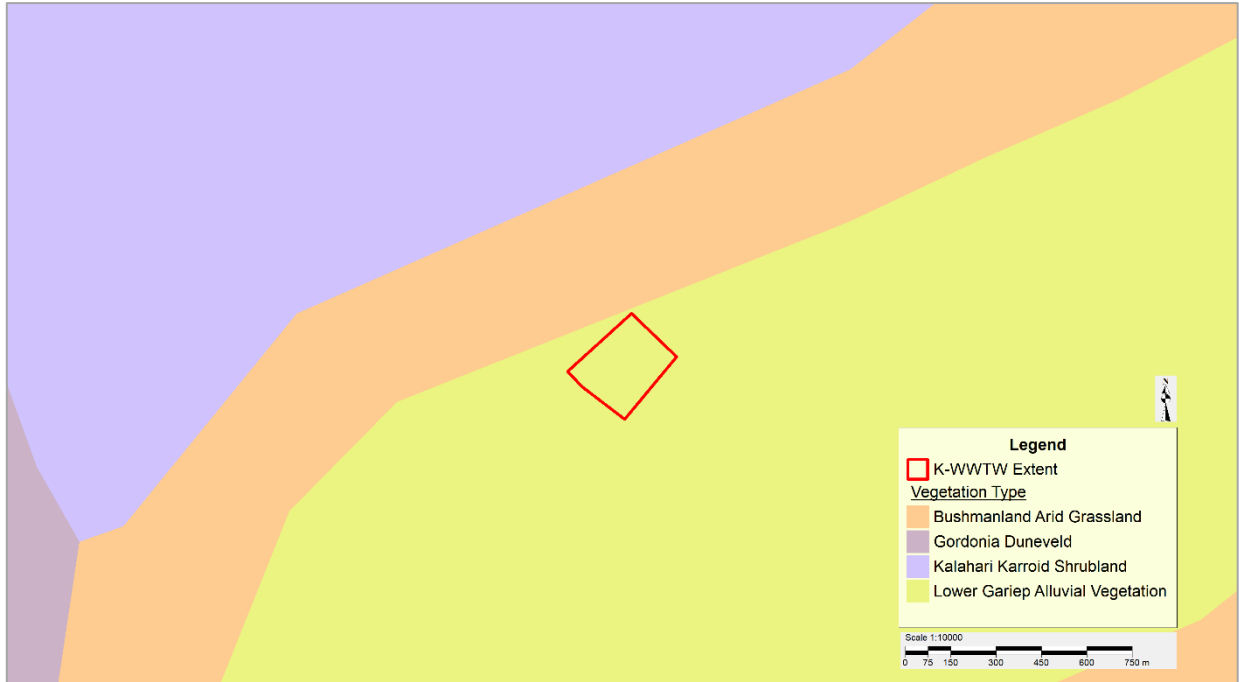
#### 11.8.1 *Biomes and Vegetation Types*

According to Mucina and Rutherford (2018), the K-WWTW falls within the Azonal Vegetation Biome (see **Figure 21** below). Based on the VEGMAP (2018) produced by the South African National Biodiversity Institute (SANBI), the vegetation type encountered at the site includes the Lower Gariep Alluvial Vegetation (see **Figure 22** below), which occurs within the riparian zone situated within the macro-channel banks and flood benches of the adjacent Orange River.



**Figure 21:** Biomes in relation to the K-WWTW





**Figure 22:** Vegetation types in relation to the K-WWTW

As mentioned, the areas earmarked for the Project components are degraded, as they occur within the K-WWTW site and most relate to existing structures and infrastructure that are intended to be upgraded and expanded. Refer to the photographs of the K-WWTW provided in **Figure 23** below.

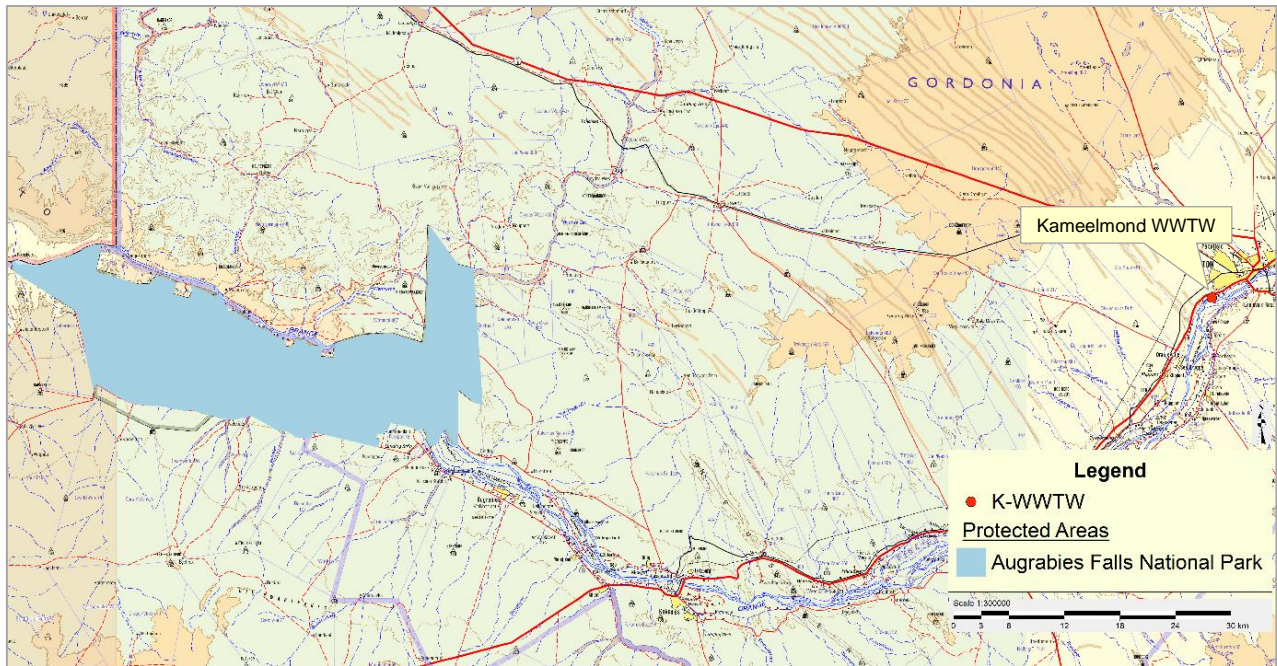


**Figure 23:** Photographs of the K-WWTW showing the degraded state of the vegetation

### 11.8.2 Protected Areas

The aim of the National Environmental Management: Protected Areas Act (Act No. 57 of 2003) (NEM:PAA) is to provide for the protection and conservation of ecologically viable areas representative of SA's biological diversity and natural seascapes.

As shown in **Figure 24** below, the nearest protected area to the site is the Augrabies Falls National Park, which is located approximately 78 km to the west.

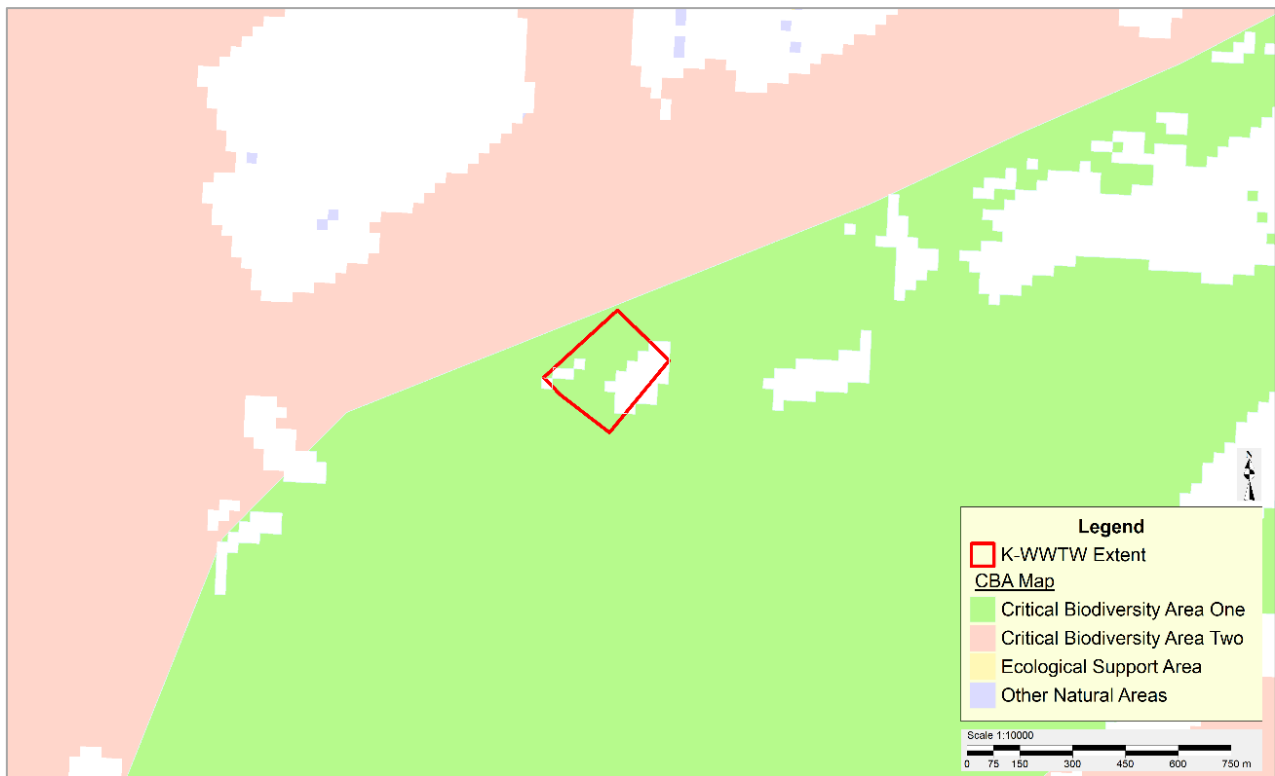


**Figure 24:** Protected areas in relation to the K-WWTW

### 11.8.3 Northern Cape Critical Biodiversity Areas Map

The Northern Cape Critical Biodiversity Areas (CBA) Map (Oosthuysen and Holness, 2016) identifies biodiversity priority areas, called CBAs and Ecological Support Areas (ESAs), which, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species to ensure the long-term ecological functioning of the landscape as a whole.

The site falls within CBA One area, as shown in **Figure 25** below. The areas where the waste management activities are proposed on the K-WWTW site have been transformed (refer to photographs of the K-WWTW provided in **Figure 23** above).



**Figure 25:** CBAs in relation to the K-WWTW

#### 11.8.4 Environmental Management Framework

From an interpretation of the Siyanda District Municipality's EMF (Environomics, 2008), the site falls within the following demarcated areas:

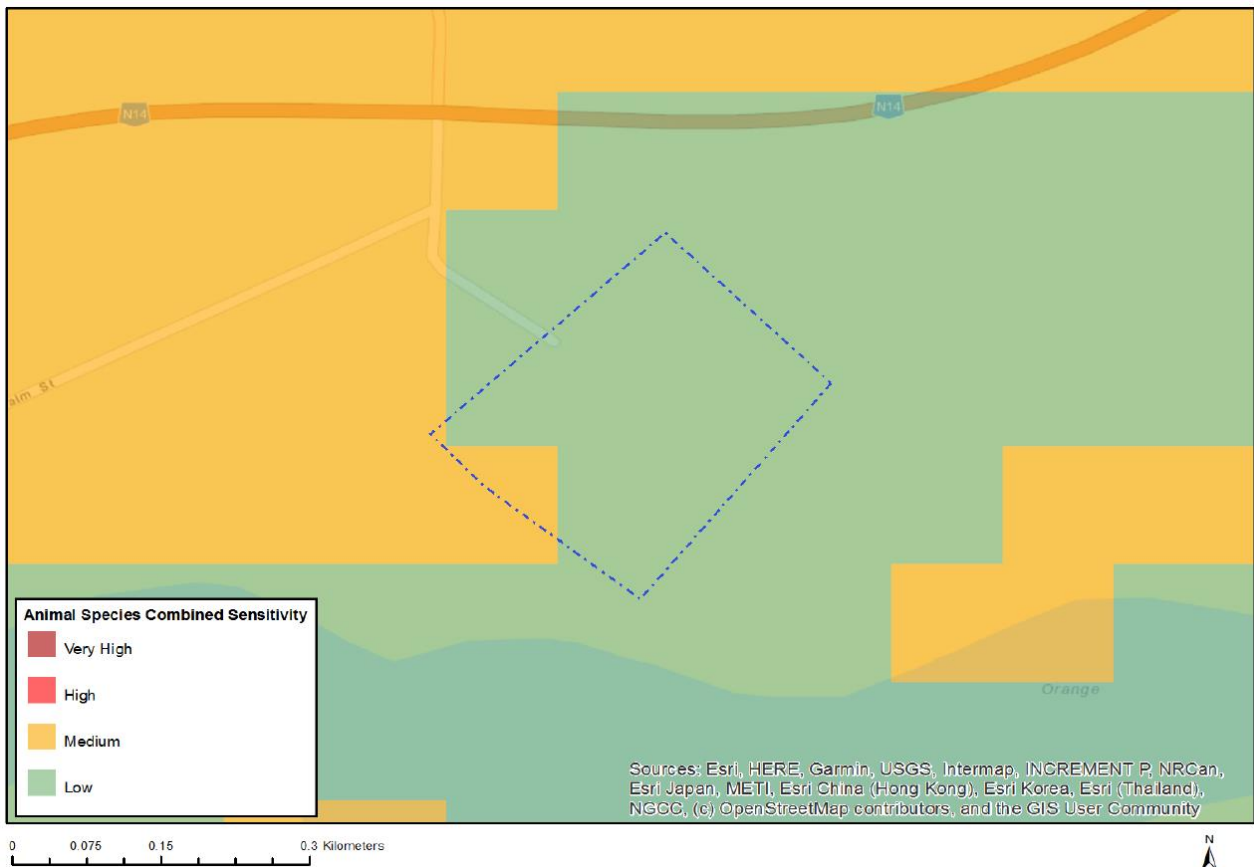
- ❑ Environmental Control Zone 3 - potential high to very high vegetation conservation areas; and
- ❑ Geographical Area B - where activities may affect vegetation cover negatively that could lead to significant impacts on the environment.

The relevance of the Project site's location in terms of the above EMF areas, which relate to vegetation conservation and cover, needs to be interpreted within the transformed nature of the areas where the waste management activities are proposed within the K-WWTW.

The EMF notes that the Orange River is the most important element in the area in terms of natural and economic services that depend on it, and that it is a dynamic and complex system. This links to the Project's primary aim, which is to improve the quality of the K-WWTW's effluent that is discharged to the Orange River.

#### 11.8.5 Sensitive Species

According to the findings from the National Web Based Environmental Screening Tool, the site includes an area with medium sensitivity which is linked to the Ludwig's bustard (*Neotis ludwigii*) (refer to **Figure 26** below).



**Figure 26: Map of Relative Animal Species Theme Sensitivity**

## Potential Impacts / Implications

- ☐ Construction phase:
  - Noise and vibration.
  - Nights lights may affect nocturnal faunal species.
  - Illegal harvesting and poaching of faunal and floral species by construction workers.
  - Pollution of the biophysical environment from poor construction practices.
  - Proliferation of invasive alien species in disturbed areas.
- ☐ Operational phase:
  - Proliferation of invasive alien species in disturbed areas.
  - Environmental pollution caused by inadequate management of waste (sludge and screenings) and the discharge of sub-standard effluent from the plant.

## Specialist Study Triggered / Additional Investigations

- ☐ A Terrestrial Ecological Impact Assessment and Aquatic Impact Assessment will be undertaken for the Project and the findings will be incorporated into the EIA Report. Suitable mitigation measures will be identified to address potential impacts to the terrestrial and aquatic ecology of the receiving environment.

## 11.9 Socio-Economic Environment

### Status Quo

The information to follow was primarily sourced from the IDP (Dawid Kruiper Municipality, 2020).

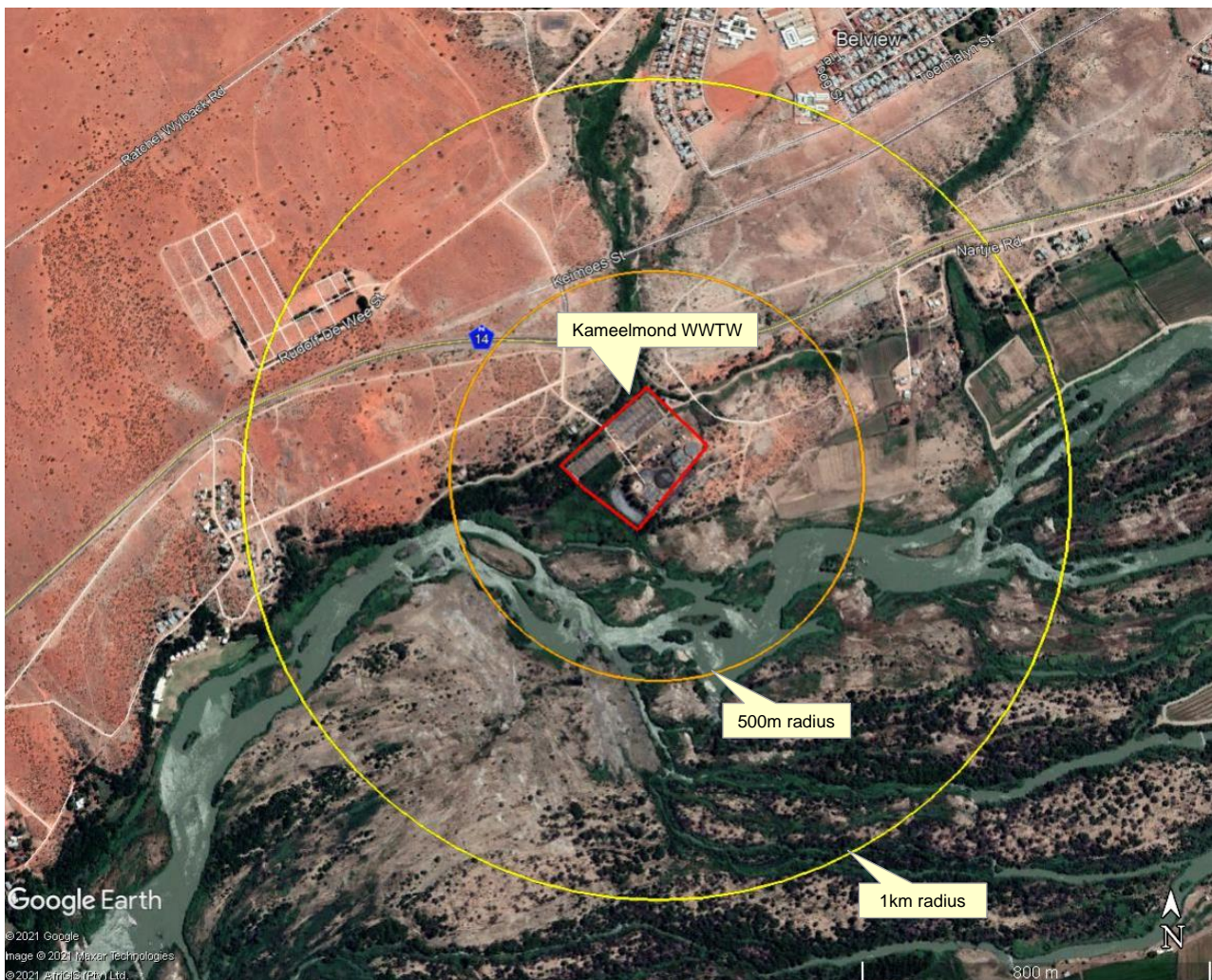
Dawid Kruiper Municipality is a Local (Category B) Municipality (NC087) located within the ZF Mcgawu District Municipality (DC8). The Municipality is approximately 344 446 ha in extent and straddles the Orange River. Upington is the main town of the Dawid Kruiper Municipality and it has a well-defined business centre with numerous residential areas, with a mixture of densifications present. Secondary activities in the municipality are mainly light industrial, warehousing, processing facilities and light engineering works.



**Figure 27:** Aerial view of Upington's central business district  
(<https://commons.wikimedia.org/wiki/File:Upington.jpg>)

Based on municipal statistics, the municipality's population was 107 162 in 2016. This reflects an overall population growth of 1.82% between 2011 up to 2016. The unemployment rate decreased significantly from 34% in 2001 to 22.1% in 2011. Although approximately 44.7% of the population is aged between 14 and 35 years old, the youth remains relatively marginalised. All municipal services except sewerage increased since 2001.

**Figure 28** below shows residential areas surrounding the K-WWTW. The land surrounding the plant is vacant and rural in nature. The residential areas of Lemoendraai and Belview are located approximately 700 m and 580 m to the west and north of the site, respectively. Land used for commercial agriculture is encountered approximately 200 m to the east of the site.



**Figure 28:** Residential areas within a 500m radius (orange line) and 1km radius (yellow line) of the centre point of the K-WWTW (Google Earth image)

## Potential Impacts / Implications

### □ Construction phase:

- Influx of people seeking employment and associated impacts (e.g. foreign workforce, cultural conflicts, squatting, demographic changes).
- Safety and security.
- Use of local road network.
- Nuisance from dust and noise.
- Consideration of local labourers and suppliers in area – stimulation of local economy (positive impact).
- Transfer of skills (positive impact).

Operational phase:

- A wastewater treatment plant is an odorous facility that may cause a nuisance to surrounding communities.
- The pollution caused to the Orange River from sub-standard effluent quality impacts on agricultural practices such as downstream irrigators.
- Groundwater contamination from poor waste management practices at the K-WWTW may impact on other groundwater users.

### Specialist Study Triggered / Additional Investigations

- Mitigation measures will be identified to manage the impacts to the local social and economic environments, which will be included in the EIA Report and EMP.

## 11.10 Air quality

### Status Quo

Potential sources of air pollution in the region include the following:

- Fugitive dust emissions from agricultural activities;
- Vehicle exhaust emissions from vehicles travelling on paved and unpaved roads, including on the N14, N10, R359 and other surrounding roads as well as on roads inside the town of Upington;
- Biomass burning (veld fires);
- Domestic fuel burning;
- Industrial operations in Upington;
- Waste treatment and disposal;
- Wastewater treatment and sludge disposal; and
- Other fugitive dust sources such as wind erosion from exposed areas.

### Potential Impacts / Implications

- The land surrounding the K-WWTW is vacant and rural in nature. The nearest receptors of malodour and other forms of air pollution include residential areas referred to in **Section 11.9** above.
- It is noted that the Project includes the proposed decommissioning of the existing diesel-fired incinerator at the K-WWTW, which is currently used for the disposal of screenings.
- Construction phase:
  - Dust from the use of dirt roads by construction vehicles.
  - Dust from bare areas that have been cleared for construction purposes.
  - Emissions from construction equipment and machinery.
  - Tailpipe emissions from construction vehicles.
- Operational phase:

- According to Bigen (2021), the K-WWTW includes the following potential sources of malodour –
  - The HoW (including the bucket wash system inlet) is a likely source of odour pollution, as it comprises of screening, grit removal and a raw sewage pump station. All these unit processes promote turbulent flow which result in the escape of odour gasses from the liquid.
  - It is predicted that the emergency storage dam will not be particularly odorous operation. Care will be taken to ensure turbulent flows are limited in this unit, thus limiting the generation of odour (i.e. escape of gasses). It is also expected that the dam will not be active for the majority of the time (i.e. only during emergency conditions), which negates the requirement for full time odour control.
  - The dewatering facility is a likely source of odour pollution, as it comprises of both digested sludge and WAS treatment. Dewatering of the sludge results in the release of odour gasses from the sludge.
  - The solar drying unit is another likely source of odour pollution.
- Other impacts to air quality caused by the operation and maintenance of the plant include dust from the use of dirt roads and tailpipe emissions from vehicles.

### Specialist Study Triggered / Additional Investigations

- ❑ Mitigation measures will be included in the EMP to ensure that the air quality impacts during the construction phase are suitably managed and that regulated thresholds are not exceeded.
- ❑ Effective odour management is required at the K-WWTW. According to Bigen (2021), the final design for odour control (should it be required) will be done on a design supply type solution, whereby a performance and material specification with predicted odorous locations will be specified for scrubbing/masking. These aspects will be analysed for areas such as the HoW, emergency storage dam, and dewatering facility.

## 11.11 Noise

### Status Quo

In terms of the local acoustical environment, the background noise levels are expected to be typical of a rural area.

Noise in the greater area emanates primarily from farming operations (e.g. use of farming equipment), vehicles on the surrounding road network, human activities in surrounding settlements and trains passing on the railway.

### Potential Impacts / Implications

- ❑ Construction phase:
  - Localised increases in noise may be caused by –



- Construction equipment, machinery and vehicles;
  - Construction material delivery vehicles; and
  - General activities at the construction camp.
- ❑ Operational phase:
- Operation and maintenance vehicles and activities.

### Specialist Study Triggered / Additional Investigations

- ❑ Noise that emanates from construction and operational activities will be addressed through targeted best practices for noise monitoring and management in the EMP. The associated regulated standards need to be adhered to.

## 11.12 Heritage

### Status Quo

#### 11.12.1 General

The town of Upington, originally known as Olijvenhoutsdrift, was founded in 1871 as part of a mission station by the German missionary Rev Schröder. The town was renamed in 1884 after Sir Thomas Upington, who was the Prime Minister of the Cape Colony and who visited the town in 1884.

According to the findings from the National Web Based Environmental Screening Tool, the K-WWTW falls within an area of high sensitivity in terms of archaeological and cultural heritage, as it is located within 5km of a Grade I Heritage site.

#### 11.12.2 Built Environment

According to Section 34 of the NHRA, no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority. It is noted that the K-WWTW was constructed during the 1970's. It will need to be confirmed as part of the Heritage Impact Assessment whether any structures may be older than 60 years on the site, which may have been built prior to the Works.

#### 11.12.3 Graves and Cemeteries

Due to the developed and disturbed nature of the site, it is not anticipated that graves will be encountered.

#### 11.12.4 Palaeontology

The fossil assemblages of the Kalahari Group are generally low in diversity and occur over a wide range and thus the palaeontological diversity of this Group is low (SAHRIS website). These fossils

represent terrestrial plants and animals with a close resemblance to living forms. Fossil assemblages include bivalves, diatoms, gastropod shells, ostracods, and trace fossils. The palaeontology of the Quaternary superficial deposits has been relatively neglected in the past. Late Cenozoic calcrete may comprise of bones, horn cores as well as mammalian teeth. Tortoise remains have also been uncovered as well as trace fossils which includes termite and insect's burrows and mammalian trackways. Amphibian and crocodile remains have been uncovered where the depositional settings in the past were wetter.

#### 11.12.5 Landscape

The upgrade and expansion of the K-WWTW will take place within the confines of the plant's existing perimeter fence. It is not anticipated that the landscape will be adversely affected.

#### Potential Impacts / Implications

- ❑ Construction phase:
  - Possible direct impacts on below-ground archaeological deposits and fossils as a result of ground disturbance.

#### Specialist Study Triggered / Additional Investigations

- ❑ The findings of the Heritage Impact Assessment will be incorporated into the EIA Report.

### 11.13 Planning

#### Status Quo

The land on which the K-WWTW is situated is owned by the Dawid Kruiper Municipality.

The municipal SDF of 2017 designates the area encompassed by the K-WWTW as a 'sewage plant' (see **Figure 29** below). The SDF further shows a 1000 m risk zone around the plant.

#### Potential Impacts / Implications

As explained in **Table 7** above, the Project is aligned with the municipal SDF and IDP.

#### Specialist Study Triggered / Additional Investigations

The Applicant will adhere to the regulatory planning requirements pertaining to the Project, as well as to the setbacks and conditions required by authorities (where relevant).

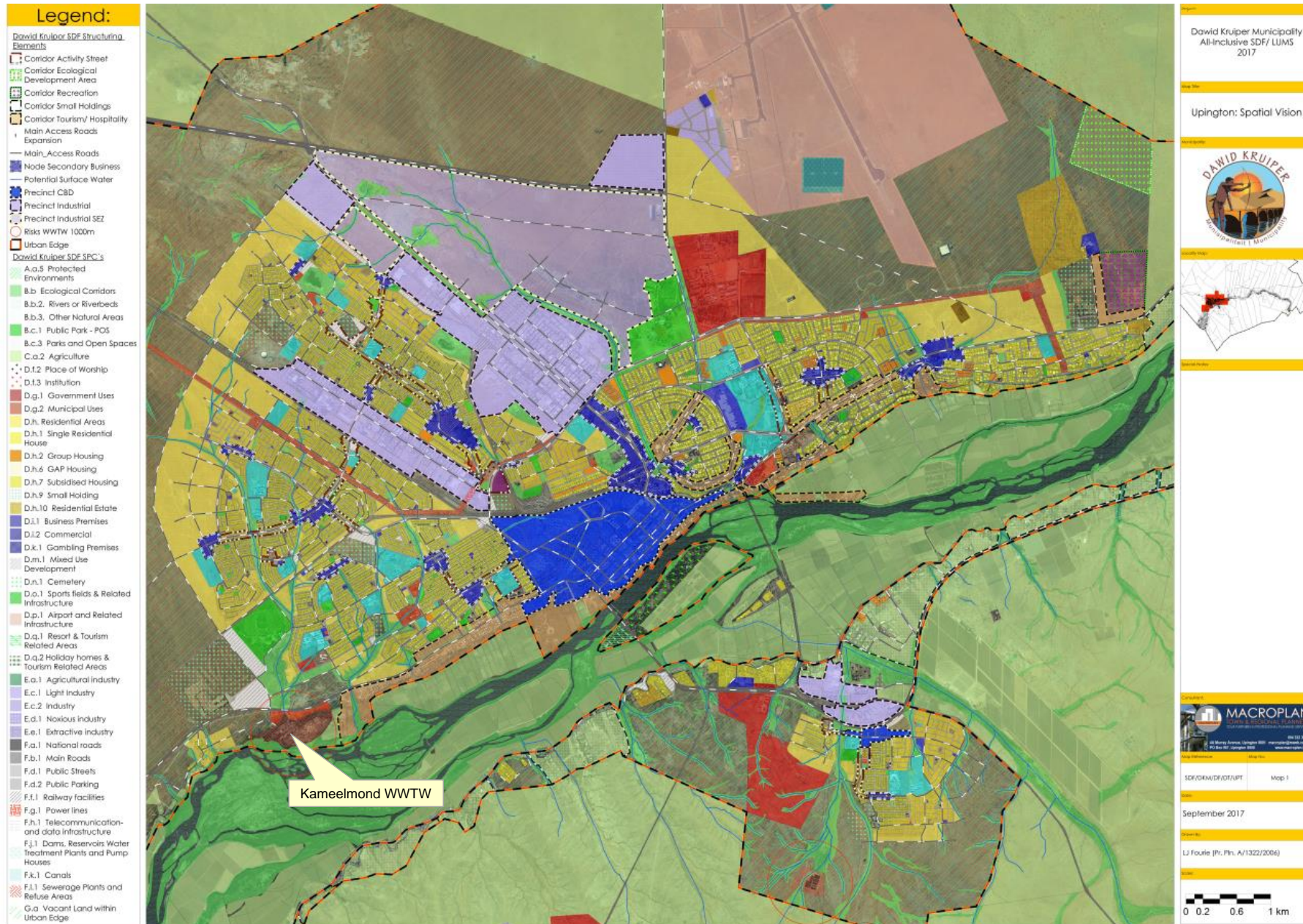


Figure 29: Dawid Kruijer Municipality's SDF (2017)

### 11.14 Transportation

#### Status Quo

The transportation network in the greater area is shown in **Figure 30** below.



**Figure 30:** Transportation network in the Project Area

The existing access road to the K-WWTW, which is a gravel road, is directly from the N14. A railway line runs approximately 1.2 km to the north of the plant. The Upington International Airport is located approximately 9 km to the north-west of the K-WWTW.

### Potential Impacts / Implications

- Construction phase:
  - Transportation of materials and construction personnel to site.
  - Impacts to road conditions.
  - Speeding and reckless driving by construction personnel.
  - Construction vehicles accessing and leaving the gravel road to the site via the N14.
- Operational phase:
  - Safe access, taking into consideration the high-speed environment along the N14.
  - Transportation of maintenance materials, and operational and maintenance staff, to site.

### Specialist Study Triggered / Additional Investigations

- The Project will need to comply with the requirements of SANRAL.
- Suitable mitigation measures in terms of traffic and the use of roads will be included in the EMPr.

## 11.15 Visual Quality

### Status Quo

The Project's footprint is within the existing K-WWTW. The area surrounding the plant is rural in nature and is afforded scenic value by the Orange River that flows to the immediate south. The K-WWTW is partially screened from the N14 and surrounding communities by vegetation and the terrain.

### Potential Impacts / Implications

- No anticipated impacts to visual quality or sense of place, as the proposed upgrade and expansion of the K-WWTW will take place within the confines of the plant's existing perimeter fence, and the plant has been in existence since the 1970's.

### Specialist Study Triggered / Additional Investigations

- Visual impacts (e.g. poor housekeeping during the construction phase) will be managed through the provisions in the EMPr.

## 11.16 Health

### Status Quo

According to the IDP (Dawid Kruijer Municipality, 2020), the municipality has two hospitals (one public and one private hospital), two Community Healthcare Centres, six Fixed Primary Healthcare Clinics, and five Satellite Healthcare Clinics.

### Potential Impacts / Implications

- Construction phase:
  - Hazards related to construction work.
  - Risks posed by working inside an operational wastewater treatment plant.
  - Increased levels of dust and particulate matter.
  - Increased levels of noise.
  - Water (surface and ground) contamination.
  - Poor water and sanitation.
  - Communicable diseases.
  - Psychosocial disorder (e.g. social disruptions).
  - Safety and security.
  - Lack of suitable health services.
- Operational Phase:
  - Hazards related to operation and maintenance work.
  - Health risks associated with exposure to sewage or sludge.

### Specialist Study Triggered / Additional Investigations

- The Project is to comply with the necessary design standards.
- Health-related risks will be addressed through mitigation measures that will be identified under other environmental features, such as socio-economic environment, surface water, air quality, noise, as well as best practices included in the EMPr.
- Additional management requirements will be included in the Project's Occupational Health and Safety System.

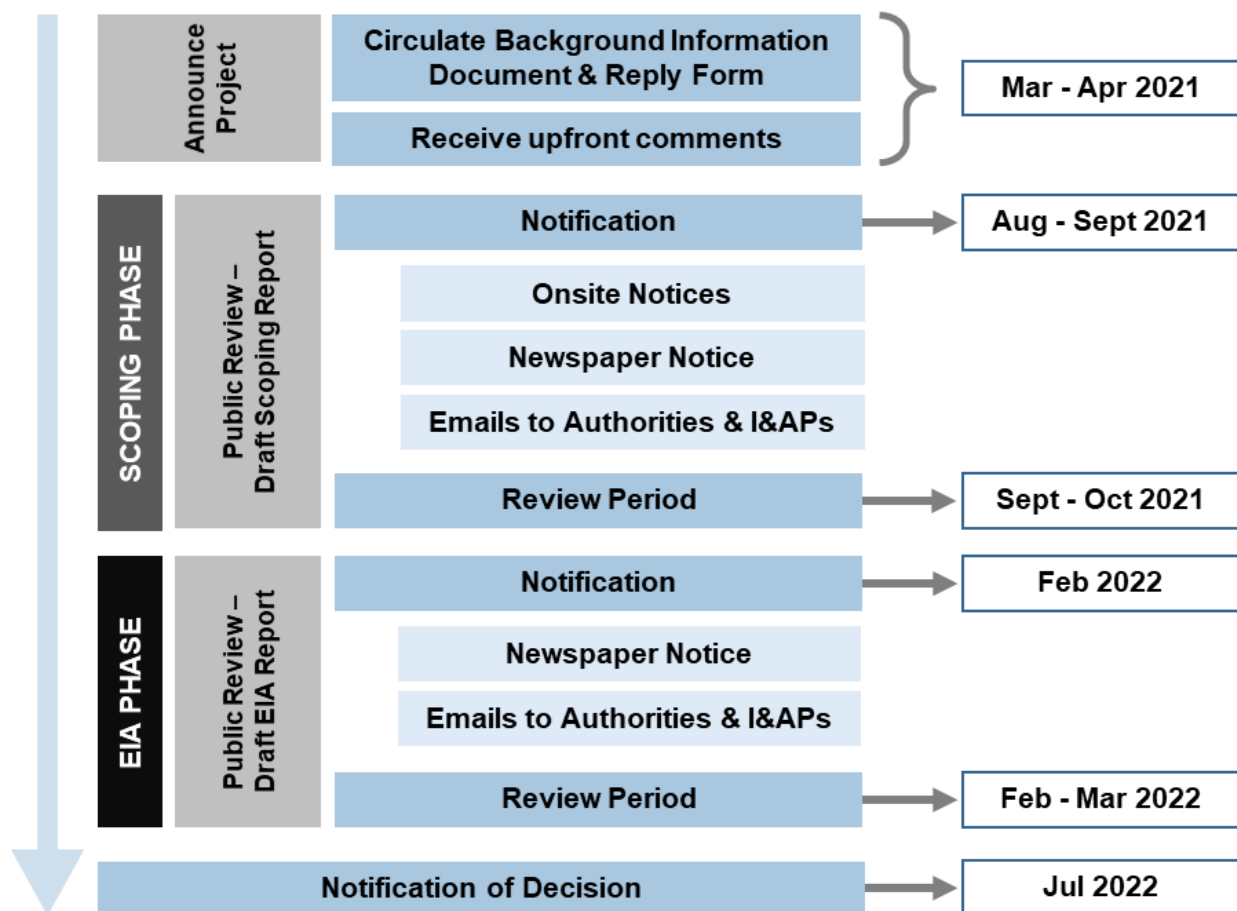
## 12 PUBLIC PARTICIPATION

### 12.1 General

The purpose of public participation includes the following:

1. To provide I&APs with an opportunity to obtain information about the Project;
2. To allow I&APs to express their views, issues and concerns with regard to the Project;
3. To grant I&APs an opportunity to recommend measures to avoid or reduce adverse impacts and enhance positive impacts associated with the Project; and
4. To enable the Applicant to incorporate the needs, concerns and recommendations of I&APs into the Project, where feasible.

The public participation process followed for the EIA is governed by NEMA and GN No. R 982 of 4 December 2014 (as amended). **Figure 31** below outlines the public participation process for the upfront Announcement Phase (completed), Scoping Phase (current) and EIA Phase (pending). Note that the dates reflected in the diagram may change due to the dynamic nature of the EIA process.



**Figure 31:** Outline of Public Participation Process (*note: dates are subject to change*)

## 12.2 Database of I&APs

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A database of I&APs, which includes authorities, different spheres of government (national, provincial and local), parastatals, ward councillor, stakeholders, interest groups and members of the general public, was prepared for the Project and is contained in **Appendix E**. This database will be updated and maintained during the course of the EIA.

## 12.3 Landowner Consent

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According to Regulation 39(1) of GN No. R 982 of 4 December 2014 (as amended), if the Proponent is not the owner or person in control of the land on which the activity is to be undertaken, the Proponent must, before applying for an Environmental Authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land.

The land on which the K-WWTW is located belongs to the Dawid Kruiper Municipality, who is also the Project Proponent.

## 12.4 Announcement of Project

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The Announcement Phase served to obtain upfront comments from I&APs regarding the proposed Project, in order to understand potential concerns and to guide the environmental assessment.

The Project was announced through the circulation of a Background Information Document and Reply Form (contained in **Appendix F**) to the I&APs contained in the database. Copies of comments received during the Announcement Phase are also contained in **Appendix F**.

## 12.5 Review of Draft Scoping Report

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### 12.5.1 *Review Period*

In accordance with Regulation 43 of GN No. R 982 of 4 December 2014 (as amended), I&APs are granted an opportunity to review and comment on the Draft Scoping Report. A 30-day review period, from 21 September until 22 October 2021, is provided.

### 12.5.2 *Notification of Review of Draft Scoping Report*

The following notifications regarding the review of the Draft Scoping Report were provided (proof to be included in the Final Scoping Report):

- Authorities and I&APs contained in the database were notified via email;
- A notice was placed in a local newspaper; and



- ❑ Onsite notices were placed at the K-WWTW.

### 12.5.3 Accessing the Draft Scoping Report

A hardcopy of the Draft Scoping Report was placed at the Library in Upington. The document was also uploaded to the following website, for downloading purposes - <https://nemai.co.za/environmental/downloadable-documents/>.

Copies of the Draft Scoping Report were provided to the following parties, which include key regulatory and commentary authorities:

- ❑ DFFE;
- ❑ DENC;
- ❑ DWS: Northern Cape Region;
- ❑ Department of Agriculture, Land Reform and Rural Development (DALRRD);
- ❑ Northern Cape Provincial Heritage Resources (Ngwao-Boswa Jwa Kapa Bokone);
- ❑ SANRAL;
- ❑ ZF Mgcawu District Municipality; and
- ❑ Dawid Kruiper Municipality.

### 12.5.4 Public Meeting to Present the Draft Scoping Report

Anyone that has an interest in attending a virtual public meeting will need to inform Nemai Consulting in writing by 30 September 2021 and will need to provide an email address. Only pre-registered parties that confirmed interest will receive an invitation to the public meeting.

### 12.5.5 Adherence to COVID-19-related Requirements

All I&APs accessing the hardcopy of the Draft Scoping Report will need to comply with the prevailing COVID-19-related protocols and requirements.

### 12.5.6 Commenting on the Draft Scoping Report

Comments on the Draft Scoping Report need to be provided in writing to the EAP, whose contact details are as follows:

<b>Contact Person:</b>	<i>Donavan Henning</i>
<b>Tel:</b>	<i>(011) 781 1730</i>
<b>Fax:</b>	<i>(011) 781 1731</i>
<b>Email:</b>	<i>donavanh@nemai.co.za</i>
<b>Postal Address:</b>	<i>PO Box 1673, Sunninghill, 2157</i>

A Comment Sheet is provided in **Appendix H**, which can be used to provide comments on the Draft Scoping Report.

### *12.5.7 Comments Received on the Draft Scoping Report*

The Scoping Phase serves to identify and prioritise issues for further assessment during the EIA Phase. Accordingly, the comments received from authorities and I&APs during public participation as part of Scoping will be afforded due consideration and further investigation during the pending EIA stage. A Comments and Responses Report will be included in the Final Scoping Report, which will capture the comments received on the Draft Scoping Report.

## 13 POTENTIALLY SIGNIFICANT ENVIRONMENTAL ISSUES

In accordance with the purpose of the Scoping exercise, as part of the overall environmental assessment, this section aims to identify potentially significant environmental issues for further consideration and prioritisation during the EIA stage. This allows for a more efficient and focused impact assessment in the ensuing EIA Phase, where the analysis is largely limited to significant issues and reasonable alternatives.

### 13.1 Approach

#### 13.1.1 *Predicting Significant Environmental Issues*

The potential environmental issues associated with the proposed Project were identified during the Scoping Phase through an appraisal of the following:

- ❑ Legal and policy context (see **Section 5** above);
- ❑ Project-related components and infrastructure, as well as activities associated with the Project's life-cycle (see **Section 9** above);
- ❑ Resources required for construction and operation;
- ❑ Nature and profile of the receiving environment and potential sensitive environmental features and attributes (see **Section 11** above); and
- ❖ Input received during public participation from authorities and I&APs.

Apart from explaining the receiving environment, **Section 11** above succinctly discusses possible impacts during the construction and operational phases of the Project. The significant environmental issues were distilled from this information and are summarised in **Section 13.2** below. Cumulative impacts that were identified during the Scoping Phase are presented in **Section 13.3** below.

#### 13.1.2 *Mitigation of Impacts*

During the EIA Phase a detailed assessment will be conducted to evaluate potential impacts, with input from the project team, environmental specialist and I&APs and through the application of the impact assessment methodology contained in **Section 13.4** below.

Suitable mitigation measures will be identified to manage the environmental impacts according to the following hierarchy:

1. Initial efforts will strive to **prevent** the occurrence of the impact;
2. If this is not possible, mitigation will include measures that reduce or **minimise** the significance of the impact to an acceptable level;

3. **Remediation** and **rehabilitation** will take place if measures cannot suitably prevent or reduce the impacts, or to address the residual impacts; and
4. As a last measure, **compensation** will be employed as a form of mitigating the impacts associated with the Project.

The mitigation measures will be incorporated into the EMPr, which will form part of the EIA Report. The EMPr can act as standalone document that can be used to *inter alia* monitor compliance of the Project with its pre-determined objectives, targets and management actions.

### 13.2 Summary of Potentially Significant Environmental Issues

Pertinent environmental issues, which will receive specific attention during the EIA Phase through a detailed quantitative assessment and relevant specialist studies (where deemed necessary), are listed in **Table 14** below.

It is emphasized that the current WML Application only focuses on the proposed upgrade and expansion of the existing K-WWTW and does not include activities associated with agricultural/commercial use of the sludge. The preferred option to be pursued by the Dawid Kruiper Municipality at a later stage will need to be screened against the relevant environmental legislation to determine the consents required. At this stage, it is assumed that the option of disposing the sludge and screenings at a licenced waste disposal site will be pursued.

**Table 14: Potentially Significant Environmental Issues for prioritisation during the EIA Phase**

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts	Investigations / EIA Provisions
<b>Climate</b>	<ul style="list-style-type: none"> <li>▪ Greenhouse gas emissions during construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Greenhouse gas emissions from biological processes at the Works.</li> <li>▪ Climate change may lead to increased inflows, which can cause more frequent bypassing at the K-WWTW.</li> <li>▪ The K-WWTW is located alongside the Orange River and may be at risk from extreme floods.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Flood risks to be determined based on the 1:100 year floodline of the Orange River.</li> <li>▪ Operational adaptations to climate change.</li> <li>▪ EMPr.</li> </ul>
<b>Land Use &amp; Planning</b>	<ul style="list-style-type: none"> <li>▪ The upgrade and expansion of the K-WWTW will take place within the confines of the plant's existing perimeter fence. No significant adverse impacts are thus anticipated in terms of immediate land use during construction.</li> <li>▪ Setbacks / conditions associated with</li> </ul>	<ul style="list-style-type: none"> <li>▪ Setbacks / conditions associated with surrounding land and infrastructure (as relevant).</li> <li>▪ Land use requirements and restrictions associated with the buffer zone of the K-WWTW will need to be enforced from a planning perspective.</li> <li>▪ The Project aims to enhance the operation of</li> </ul>	<ul style="list-style-type: none"> <li>▪ EMPr.</li> </ul>

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts	Investigations / EIA Provisions
	surrounding land and infrastructure (as relevant).	the K-WWTW, which will manage impacts to surrounding land uses (such as odour control) and water users downstream of the plant (improved effluent quality) ( <i>positive impact</i> ).	
<b>Geology</b>	<ul style="list-style-type: none"> <li>Suitability of geological conditions to support the proposed structures and infrastructure.</li> </ul>		<ul style="list-style-type: none"> <li>Geotechnical Study.</li> <li>EMPr.</li> </ul>
<b>Geohydrology</b>	<ul style="list-style-type: none"> <li>Groundwater pollution due to spillages and poor construction practices.</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater pollution due to poor operation and maintenance practices. This may include the inadequate management of sludge and screenings.</li> </ul>	<ul style="list-style-type: none"> <li>Hydrogeological Study</li> <li>EMPr.</li> </ul>
<b>Soil</b>	<ul style="list-style-type: none"> <li>Encountering historically contaminated soil.</li> <li>Soil erosion due to clearance and inadequate stormwater management</li> <li>Soil compaction.</li> <li>Soil contamination due to spillages and poor construction practices.</li> </ul>	<ul style="list-style-type: none"> <li>Soil erosion due to inadequate stormwater management.</li> <li>Soil contamination due to poor operation and maintenance practices. This may include inadequate management of sludge and screenings.</li> </ul>	<ul style="list-style-type: none"> <li>EMPr</li> </ul>
<b>Surface Water</b>	<ul style="list-style-type: none"> <li>Alteration of drainage over the site.</li> <li>Surface water pollution due to spillages and poor construction practices.</li> <li>Encroachment of construction activities into regulated area of the Orange River.</li> <li>Reduction in biodiversity of aquatic biota as a result of the abovementioned drivers.</li> </ul>	<ul style="list-style-type: none"> <li>Sedimentation and contamination of the Orange River through runoff, caused by inadequate stormwater management on the site.</li> <li>Damage to the K-WWTW from major flood events.</li> <li>The Orange River could be contaminated through inadequate storage and handling of dangerous goods (e.g. chlorine) and poor management of sludge and screenings.</li> <li>The proposed upgrade and expansion aim to ensure that the K-WWTW will discharge effluent of suitable quality, which will benefit the receiving river and downstream water users, including irrigators (<i>positive impact</i>).</li> </ul>	<ul style="list-style-type: none"> <li>Aquatic Impact Assessment and Delineation.</li> <li>Flood risks to be determined based on the 1:100 year floodline of the Orange River.</li> <li>Stormwater Management Plan.</li> <li>EMPr</li> </ul>
<b>Flora &amp; Fauna</b>	<ul style="list-style-type: none"> <li>Noise and vibration impacts to fauna.</li> <li>Nights lights may affect nocturnal faunal species.</li> <li>Illegal harvesting and poaching of faunal and floral species by construction workers.</li> </ul>	<ul style="list-style-type: none"> <li>Proliferation of invasive alien species in disturbed areas.</li> <li>Environmental pollution caused by inadequate management of waste (sludge and screenings).</li> </ul>	<ul style="list-style-type: none"> <li>Terrestrial Ecological Impact Assessment.</li> <li>EMPr.</li> </ul>

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts	Investigations / EIA Provisions
	<ul style="list-style-type: none"> <li>▪ Pollution of the biophysical environment from poor construction practices.</li> <li>▪ Proliferation of invasive alien species in disturbed areas.</li> <li>▪ Human - animal conflicts.</li> </ul>		
<b>Socio-economic Environment</b>	<ul style="list-style-type: none"> <li>▪ Influx of people seeking employment and associated impacts (e.g. foreign workforce, cultural conflicts, squatting, demographic changes).</li> <li>▪ Safety and security risks to surrounding communities.</li> <li>▪ Use of local road network.</li> <li>▪ Nuisance from dust and noise to surrounding communities.</li> <li>▪ Consideration of local labourers and suppliers in area – stimulation of local economy (<i>positive impact</i>).</li> <li>▪ Transfer of skills (<i>positive impact</i>).</li> </ul>	<ul style="list-style-type: none"> <li>▪ A wastewater treatment plant is an odorous facility that may cause a nuisance to surrounding communities.</li> <li>▪ The pollution caused to the Orange River from sub-standard effluent quality impacts on agricultural practices such as downstream irrigators.</li> <li>▪ Groundwater contamination from poor waste management practices at the K-WWTW may impact on other groundwater users.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design specifications for odour control.</li> <li>▪ EMPr.</li> </ul>
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>▪ Dust from the use of dirt roads by construction vehicles.</li> <li>▪ Dust from bare areas that have been cleared for construction purposes.</li> <li>▪ Emissions from construction equipment and machinery.</li> <li>▪ Tailpipe emissions from construction vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Air emissions from wastewater treatment operations, which can also be a nuisance to workers and the surrounding community.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design specifications for odour control.</li> <li>▪ EMPr.</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>▪ Localised increases in noise may be caused by construction activities, which may pose a nuisance to workers, operational staff at the plant and the surrounding community.</li> </ul>	N/A	<ul style="list-style-type: none"> <li>▪ EMPr.</li> </ul>
<b>Historical and Cultural Features</b>	<ul style="list-style-type: none"> <li>▪ Possible direct impacts on below-ground archaeological deposits and fossils as a result of ground disturbance.</li> </ul>	N/A	<ul style="list-style-type: none"> <li>▪ Heritage Impact Assessment.</li> <li>▪ EMPr.</li> </ul>
<b>Transportation</b>	<ul style="list-style-type: none"> <li>▪ Transportation of materials and construction personnel to site.</li> <li>▪ Impacts to road conditions.</li> <li>▪ Speeding and reckless driving by construction personnel.</li> <li>▪ Construction vehicles accessing and leaving the gravel road to the site via the N14.</li> <li>▪ Risks to other road users.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Safe access, taking into consideration the high-speed environment along the N14.</li> </ul>	<ul style="list-style-type: none"> <li>▪ EMPr.</li> </ul>

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts	Investigations / EIA Provisions
<b>Aesthetics</b>	<ul style="list-style-type: none"> <li>▪ Visual impacts associated with construction activities (e.g. poor housekeeping).</li> <li>▪ Inadequate reinstatement and rehabilitation of construction footprint.</li> </ul>	N/A	<ul style="list-style-type: none"> <li>▪ EMPr.</li> </ul>
<b>Health</b>	<ul style="list-style-type: none"> <li>▪ Hazards related to construction work.</li> <li>▪ Risks posed by working inside an operational wastewater treatment plant.</li> <li>▪ Increased levels of dust and particulate matter.</li> <li>▪ Increased levels of noise.</li> <li>▪ Poor water and sanitation.</li> <li>▪ Communicable diseases.</li> <li>▪ Psychosocial disorder (e.g. social disruptions).</li> <li>▪ Safety and security.</li> <li>▪ Lack of suitable health services.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Hazards related to operation and maintenance work.</li> </ul>	<ul style="list-style-type: none"> <li>▪ EMPr.</li> </ul>
<b>Waste</b>	<ul style="list-style-type: none"> <li>▪ Environmental impacts caused by improper management of construction waste, sludge contained in old drying beds and wastewater.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Environmental impacts caused by improper management of sludge and screenings produced at the plant.</li> </ul>	<ul style="list-style-type: none"> <li>▪ EMPr.</li> </ul>

### 13.3 Cumulative Impacts

#### 13.3.1 Introduction

A cumulative impact, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

Cumulative impacts can be identified by combining the potential environmental implications of the Project with the impacts of projects and activities that have occurred in the past, are currently occurring, or are proposed in the future within the Project Area. It is noted that the accurate characterization of the future state of the Project Area is inherently speculative to an extent, due to the dynamic nature of future decisions related to land use and growth, water use (consumptive, waste-related and encroachments), protection of terrestrial and aquatic biological resources, etc.

#### 13.3.2 Cumulative Land Use Impacts

Cumulative impacts need to be considered in light of the Project's aim to upgrade and expand the current K-WWTW, which was already built in the 1970's, to increase its capacity to allow for the

efficient operation of the plant according to the relevant standards. This also includes improving the quality of the effluent discharged by the plant to satisfy DWS' effluent quality standards.

As mentioned, the municipal SDF of 2017 designates the area encompassed by the K-WWTW as a 'sewage plant' (see **Figure 29** above) and further shows a 1000 m risk zone around the plant. The future planning for this area should aim to enforce the K-WWTW's risk zone and to be aligned with the SDF. If this is the case, certain cumulative impacts that relate to the immediate vicinity of the K-WWTW and its surrounding environment may be avoided.

### 13.3.3 Cumulative Soil Impacts

Developments in the surrounding area will disturb surface soils, which may cause cumulative impacts in terms of erosion. The respective developments will need to implement the recommendations from geotechnical studies and make provision for suitable stormwater management and rehabilitation. Measures to manage impacts to soil will be included in the EMP.

### 13.3.4 Cumulative Water Resources Impacts

Although the focus of the WML is not on the quality of the effluent, which is addressed through the Water Use Licence Application, it is recognised that the effluent from a wastewater treatment plant may contribute significantly towards the deterioration of the water quality in a receiving watercourse.

From the perspective of the Orange River, cumulative impacts from the discharge of sub-standard effluent from the K-WWTW may include increased nutrient loading and inputs of toxic organic contaminants. This will lead to the alteration/degradation of aquatic habitat and biota. It will also impact on downstream water users, such as irrigators. It is emphasised that the proposed Project aims to ensure that the K-WWTW will discharge effluent of suitable quality, which will benefit the receiving river and downstream water users. Cumulative impacts to surface water resources will be determined as part of the Aquatic Assessment to be undertaken as part of the EIA.

### 13.3.5 Cumulative Terrestrial Biodiversity Impacts

The area earmarked for the waste management activities have been historically transformed/disturbed. The Project's contribution to cumulative impacts to terrestrial biodiversity are thus not anticipated to be significant. This will be confirmed as part of the Terrestrial Biodiversity Opinion to be undertaken as part of the EIA.

### 13.3.6 Cumulative Heritage Impacts

Due to the disturbed nature of the areas where the waste management activities are planned at the existing K-WWTW, it is anticipated that the Project's contribution to cumulative heritage impacts will not be significant. This will be confirmed as part of the Heritage Impact Assessment to be undertaken as part of the EIA.



### 13.3.7 Cumulative Transportation Impacts

The construction period may cause traffic-related impacts in terms of the local road network, which will be associated with heavy vehicle construction traffic for the delivery of material and the transportation of construction workers. This may compound traffic impacts if other large-scale projects are planned during the same period.

### 13.3.8 Cumulative Air Quality Impacts

The land surrounding the K-WWTW is vacant and rural in nature. The nearest receptors of malodour and other forms of air pollution include the residential areas of Lemoendraai and Belview that are located approximately 700 m and 580 m to the west and north of the site, respectively, as well as land used for commercial agriculture that is located approximately 200 m to the east of the site.

Odour control measures at the K-WWTW will be identified during detail design phase, which will serve to manage cumulative air quality impacts.

### 13.3.9 Cumulative Noise Impacts

Construction of the proposed facilities along with construction activities of other developments in the Project Area could potentially increase noise impacts on surrounding land uses. This impact will be temporary in nature. It is further noted that noise is a localised issue that diminishes in intensity with distance from the source. Sensitive receptors to noise are similar to those that may be adversely affected by air pollution. Refer to a description of these receptors, in terms of surrounding residential areas, in **Section 13.3.8** above.

The Project's contribution to cumulative noise impacts are thus not anticipated to be significant. Measures will be included in the EMP to manage noise impacts that may be caused by the Project.

### 13.3.10 Cumulative Services & Utilities Impacts

Developments in the area, including in the town of Upington, will increase the demand on public services and utilities. It will need to be determined whether adequate capacity exists to cater for each development, through consultation with and applications (where relevant) to the relevant service providers, including the Dawid Kruiper Municipality and Eskom.

## **13.4 Methodology to Assess the Identified Impacts**

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The EIA quantitative impact assessment will further focus on the direct and indirect impacts associated with the Project. Impacts will be analysed with regard to their nature, extent, magnitude, duration, probability and significance, based on the definitions and criteria below.

**Nature (/Status)**

The project could have a positive, negative or neutral impact on the environment.

**Extent**

- Local - extend to the site and its immediate surroundings.
- Regional - impact on the region but within the province.
- National - impact on an interprovincial scale.
- International - impact outside of South Africa.

**Magnitude**

Degree to which impact may cause irreplaceable loss of resources.

- Low - natural and social functions and processes are not affected or minimally affected.
- Medium - affected environment is notably altered; natural and social functions and processes continue albeit in a modified way.
- High - natural or social functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.

**Duration**

- Short term - 0-5 years.
- Medium term - 5-11 years.
- Long term - impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention.
- Permanent - mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

**Probability**

- Almost certain - the event is expected to occur in most circumstances.
- Likely - the event will probably occur in most circumstances.
- Moderate - the event should occur at some time.
- Unlikely - the event could occur at some time.
- Rare/Remote - the event may occur only in exceptional circumstances.

**Significance**

Provides an overall impression of an impact's importance, and the degree to which it can be mitigated.

The range for significance ratings is as follows-

- 0 – Impact will not affect the environment. No mitigation necessary.
- 1 – No impact after mitigation.
- 2 – Residual impact after mitigation.
- 3 – Impact cannot be mitigated.

## 14 PLAN OF STUDY FOR EIA

### 14.1 General

This Plan of Study, which explains the approach to be adopted to conduct the EIA Phase for the proposed Project, was prepared in accordance with Appendix 2 of GN No. R 982 of 4 December 2014 (as amended).

### 14.2 Potentially Significant Environmental Issues identified during Scoping Phase

The Scoping exercise aimed to identify and qualitatively predict potentially significant environmental issues for further consideration and prioritisation. During the EIA stage a detailed quantitative impact assessment will be conducted via contributions from the project team and requisite specialist studies, and through the application of the impact assessment methodology contained in **Section 13.4** above. Suitable mitigation measures will be identified to manage (i.e. prevent, reduce, rehabilitate and/or compensate) the environmental impacts, which will be incorporated into an EMPr.

Pertinent environmental issues identified during Scoping, which will receive specific attention during the EIA Phase, are listed in **Table 14** above (construction and operational phases).

### 14.3 Feasible Alternatives to be assessed during EIA Phase

The EIA Phase will include a detailed comparative analysis of the Project's feasible alternatives for sludge treatment. This will include understanding the advantages and disadvantages associated with these alternatives and identifying the Best Practicable Environmental Option (BPEO).

### 14.4 Specialist Studies

#### 14.4.1 *Triggered Specialist Studies*

According to Münster (2005), a 'trigger' is "*a particular characteristic of either the receiving environment or the proposed project which indicates that there is likely to be an issue and/or potentially significant impact associated with that proposed development that may require specialist input*".

The specialist studies 'triggered' by the nature of the proposed development and its receiving environment include the following:

1. Aquatic Impact Assessment;
2. Terrestrial Ecological Opinion; and

### 3. Heritage Impact Assessment.

For the inclusion of the findings of the specialist studies into the EIA Rreport, the following guideline will be used: *Guideline for the review of specialist input in EIA processes* (Keatimilwe & Ashton, 2005). Key considerations will include:

- ❑ Ensuring that the specialists have adequately addressed I&APs' issues and specific requirements prescribed by environmental authorities;
- ❑ Ensuring that the specialists' input is relevant, appropriate and unambiguous; and
- ❑ Verifying that information regarding the receiving ecological, social and economic environment has been accurately reflected and considered.

#### 14.4.2 Exclusion of Certain Specialist Studies identified during Environmental Screening

As mentioned in **Section 6.3** above, a report was compiled by means of the National Web Based Environmental Screening Tool, which is appended to the Application Form (contained in **Appendix B**). **Table 15** below lists the specialist studies that were identified in the Screening Report, but which were not deemed to be necessary.

**Table 15: Specialist studies identified in the Screening Report that are deemed unnecessary**

Specialist Study identified in Screening Report	Reason for not undertaking the Specialist Study
<b>Agricultural Impact Assessment</b>	The map that was created by the Environmental Screening Tool showed the agriculture theme to have medium sensitivity. The areas with medium sensitivity are located within the K-WWTW and have been transformed by structures associated with the plant. It was thus not deemed necessary to undertake this study.
<b>Palaeontology Impact Assessment</b>	The map that was created by the Environmental Screening Tool showed the palaeontology theme to have medium sensitivity.  The fossil assemblages of the Kalahari are generally low in diversity and occur over a wide range and thus the palaeontological diversity of this Group is low (SAHRIS). It was thus not deemed necessary to undertake this study.
<b>Hydrology Assessment</b>	The flood risks to the K-WWTW, based on the 1:100 year floodline of the Orange River, will be addressed in the EIA Report.
<b>Noise Impact Assessment</b>	Based on the anticipated noise impacts associated with the construction and operational phases, and the location of sensitive receptors, it was not deemed necessary to undertake this study.
<b>Traffic Impact Assessment</b>	Based on the anticipated impacts to traffic associated with the construction and operational phases, and taking into consideration that access is already provided to the K-WWTW from the N14, it was not deemed necessary to undertake this study.
<b>Health Impact Assessment</b>	The Project entails the proposed upgrade and expansion of the existing K-WWTW to improve its operation efficiency and to ensure compliance with the relevant standards. It was not deemed necessary to undertake

Specialist Study identified in Screening Report	Reason for not undertaking the Specialist Study
	this study. If the Dawid Kruiper Municipality decides to pursue the option of agricultural/commercial use of the sludge, then a Health Impact Assessment may be triggered.
<b>Socio-Economic Assessment</b>	Considering the nature of the Project to improve the K-WWTW and the distance of the proposed waste management activities to surrounding land uses, it was deemed that this study is not necessary.
<b>Ambient Air Quality Impact Assessment</b>	Air quality studies will form part of the process to seek compliance with NEM:AQA, which is a separate process.
<b>Air Quality Impact Assessment</b>	Odour control measures at the K-WWTW will be identified during detail design phase
<b>Plant Species Assessment</b>	The map that was created by the Environmental Screening Tool showed the plant species theme to have low sensitivity. The area earmarked for the waste management activities have been historically transformed/disturbed. It was thus not deemed necessary to undertake this study.
<b>Animal Species Assessment</b>	The map that was created by the Environmental Screening Tool showed the animal species theme to have a medium sensitivity. The area with medium sensitivity is located in the south-western part of the K-WWTW. A Terrestrial Biodiversity Opinion will be obtained for the Project, which will be included in the EIA Report.

#### 14.4.3 Terms of Reference - General

The following general ToR apply to all the EIA specialist studies to be undertaken for the proposed Project:

1. Address all triggers for the specialist studies, based on the findings of the Scoping phase.
2. Address issues raised by I&APs and conduct an assessment of all potentially significant impacts.
3. Ensure that the requirements of the environmental authorities that have specific jurisdiction over the various disciplines and environmental features are satisfied.
4. Approach to include desktop study and site visits, as deemed necessary, to understand the affected environment and to adequately investigate and evaluate salient issues. Indigenous knowledge (i.e. targeted consultation) should also be regarded as a potential information resource.
5. Assess the impacts (direct, indirect and cumulative) in terms of their significance (using suitable evaluation criteria) and suggest suitable mitigation measures. In accordance with the mitigation hierarchy, negative impacts should be avoided, minimised, rehabilitated (or reinstated) or compensated for, whereas positive impacts should be enhanced. A risk-averse and cautious approach should be adopted under conditions of uncertainty.

6. Consider time boundaries, including short to long-term implications of impacts for project life-cycle (i.e. pre-construction, construction, operation and decommissioning).
7. Consider spatial boundaries, including:
  - a. Broad context of the proposed Project (i.e. beyond the boundaries of the specific site);
  - b. Off-site impacts; and
  - c. Local, regional, national or global context.
8. The provision of a statement of impact significance for each issue, which specifies whether or not a pre-determined threshold of significance (i.e. changes in effects to the environment which would change a significance rating) has been exceeded, and whether or not the impact presents a potential fatal flaw or not. This statement of significance should be provided for anticipated project impacts both before and after application of impact management actions.
9. Recommend a monitoring programme to implement mitigation measures and measure performance. List indicators to be used during monitoring.
10. Appraisal of alternatives (including the no-go option) by identifying the preferred option with suitable justification.
11. Engage with other specialists whose studies may have bearing on your specific investigation.
12. Present findings and participate at public meetings, as necessary.
13. Information provided to the EAP needs to be signed off.
14. Sign a declaration stating independence.
15. The appointed specialists must take into account the policy framework and legislation relevant to their particular studies.
16. All specialist reports must adhere to Appendix 6 of GN No. R 982 of 4 December 2014 (as amended) or to the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes (GN No. 1150 in Government Gazette No. 43855 of 30 October 2020), as relevant.

#### 14.4.4 Terms of Reference – Specific

##### 14.4.4.1 Aquatic Impact Assessment

#### **Summary of Key Issues & Triggers Identified During Scoping**

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- ❑ According to the Environmental Screening Tool, the aquatic biodiversity theme has a “very high sensitivity”.
- ❑ Proximity of the K-WWTW in relation to the Orange River to the immediate south of the site.
- ❑ Potential impacts to watercourses during the Project’s construction and operational phases (refer to **Table 14** above).

## Approach

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- ❑ Undertake desktop study (literature review, topographical maps and aerial photographs) and baseline aquatic survey and describe affected aquatic environments/watercourses within the Project Area.
- ❑ Delineate riparian habitat and all wetlands in accordance with the guideline: A practical field procedure for identification and delineation of wetlands and riparian areas (DWAF, 2005) (or any prevailing guidelines prescribed by DWS). This includes assessing terrain, soil form, soil wetness and vegetation unit indicators to delineate permanent, seasonal and temporary zones of the wetlands.
- ❑ Determining the Present Ecological Status (PES) of the local watercourses.
- ❑ Determine the Environmental Importance and Sensitivity (EIS) of watercourses.
- ❑ Undertake an impact assessment for the proposed activities associated with the Project with regards to watercourses and identify mitigation measures and recommendations for identified risks.

## Nominated Specialist

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<b>Organisation:</b>	The Biodiversity Company
<b>Name:</b>	D. Kindler
<b>Qualifications:</b>	MSc Aquatic Health
<b>No. of years experience:</b>	8
<b>Affiliation (if applicable):</b>	SACNASP Pr. Sci. Nat. registered (114743)

### 14.4.4.2 Terrestrial Ecological Opinion

#### Summary of Key Issues & Triggers Identified During Scoping

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- ❑ According to the Environmental Screening Tool, the terrestrial biodiversity theme has a “very high sensitivity”.
- ❑ Encroachment of the Project footprint into a CBA One area.
- ❑ Potential impacts to terrestrial ecology during the Project’s construction and operational phases (refer to **Table 14** above).

## Approach

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- ❑ The area earmarked for the waste management activities have been historically transformed/disturbed. Hence, only a Terrestrial Ecological Opinion is proposed.
- ❑ Identify ‘significant’ terrestrial ecological features within the Project Area.
- ❑ Identify conservation significant habitats around the Project Area which might be impacted.

- Undertake an impact assessment for the proposed activities associated with the Project with regards to terrestrial ecology and identify mitigation measures and recommendations for identified risks.
- Comply with specific requirements and guidelines of DFFE and DENC.
- Consider the Northern Cape CBA Map and other relevant policies, strategies, plans and programmes.

### Nominated Specialist

<b>Organisation:</b>	The Biodiversity Company
<b>Name:</b>	A. Husted
<b>Qualifications:</b>	MSc Aquatic Health
<b>No. of years experience:</b>	14
<b>Affiliation (if applicable):</b>	SACNASP Pr. Sci. Nat. (400213/11)

#### 14.4.4.3 Heritage Impact Assessment

### Summary of Key Issues & Triggers Identified During Scoping

- According to the Environmental Screening Tool, the archaeological and cultural heritage theme has a “very high sensitivity”.
- Possible direct impacts on below-ground archaeological deposits and fossils as a result of ground disturbance.

### Approach

- Undertake a Heritage Impact Assessment in accordance with the National Heritage Resources Act (Act No. 25 of 1999).
- Identify and map all heritage resources in the area affected, as defined in Section 2 of the NHRA.
- Assess the significance of heritage resources in terms of the heritage assessment criteria as set out in the regulations.
- Assessment the impact of the Project on such heritage resources.
- Comply with specific requirements and guidelines of SAHRA and Northern Cape Provincial Heritage Resources Authority.

### Nominated Specialist

<b>Name:</b>	J. van Schalkwyk
<b>Qualifications:</b>	D Litt et Phil
<b>No. of years experience:</b>	44
<b>Affiliation (if applicable):</b>	Heritage Consultant: ASAPA Registration No.: 164 - Principal Investigator: Iron Age, Colonial Period, Industrial Heritage.



## 14.5 Public Participation – EIA Phase

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### 14.5.1 Updating of Database of I&APs

The database of I&APs will be updated as and when necessary during the course of the EIA.

### 14.5.2 Review of Draft EIA Report

A 30-day period will be provided to authorities and I&APs to review the Draft EIA Report. A hardcopy of the document will be lodged for public review at the Library in Uppington. An electronic copy will be uploaded to the following website for downloading purposes: <https://nema.co.za/environmental/downloadable-documents/>.

Copies of the Draft EIA Report will be provided to the regulatory and commenting authorities listed in **Section 12.5.3** above.

All parties on the I&APs database will be notified via email, post or SMS of the opportunity to review the Draft EIA Report, how to access the report, the review period and the process for submitting comments. The public will also be notified via a notice in a local newspaper.

All comments received from authorities and I&APs and the responses thereto will be included in the Final EIA Report, which will be submitted to DFFE.

### 14.5.3 Public Meeting

It will be determined whether a public meeting can be held based on the prevailing COVID-19 regulations and restrictions. Alternatively, a virtual public meeting may be convened.

### 14.5.4 Comments and Responses Report

A Comments and Responses Report will be compiled and included in the EIA Report, which will record the date that issues were raised, a summary of each issue, and the response of the team to address the issue.

In addition, any unattended comments from the Scoping Phase or where the status of the previous responses has changed, will also be addressed in the Comments and Responses Report for the EIA Phase.

### 14.5.5 Notification of DFFE's Decision

Registered I&APs will be notified in writing of DFFE's decision and of the appeal process, in accordance with the National Appeal Regulations, 2014.

## 14.6 EIA Report

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The EIA Report will contain the information that is necessary for DFFE to consider and come to a decision on the application. As a minimum, the EIA Report will contain the information stipulated in Appendix 3 of GN No. R 982 of 4 December 2014 (as amended).

The following critical components of the EIA Report are highlighted:

- ❑ A description of the policy and legislative context;
- ❑ A detailed description of the proposed development (full scope of activities);
- ❑ A detailed description of the proposed development site, which will include a plan that locates the proposed activities applied for as well as the associated structures and infrastructure;
- ❑ A description of the environment that may be affected by the activity and the manner in which physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed development;
- ❑ The methodology of the stakeholder engagement process;
- ❑ The Comments and Responses Report and I&APs Database will be appended to the EIA Report;
- ❑ A description of the need and desirability of the proposed development and the identified potential alternatives to the proposed activity;
- ❑ A summary of the methodology used in determining the significance of potential impacts;
- ❑ A description and comparative assessment of the project alternatives;
- ❑ A summary of the findings of the specialist studies;
- ❑ A detailed assessment of all identified potential impacts;
- ❑ A list of the assumptions, uncertainties and gaps in knowledge;
- ❑ An environmental impact statement;
- ❑ Any aspects which were conditional to the findings of the assessment either by the EAP or specialists which are to be included as conditions of authorisation;
- ❑ A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- ❑ An EMP that complies with Appendix 4 of GN No. R 982 of 4 December 2014 (as amended);
- ❑ A Closure Plan, which is required for the decommissioning or closure of a facility, that complies with Appendix 5 of GN No. R 982 of 4 December 2014 (as amended);
- ❑ Copies of all specialist reports will be appended to the EIA Report; and
- ❑ Any further information that will assist DFFE during decision making.

## 14.7 Authority Consultation

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The EIA will only commence if DFFE accepts the Scoping Report and the Plan of Study for the EIA. If relevant, the necessary revisions will be made if requested by this Department.

An authorities meeting will be scheduled during the EIA public participation process to present the Draft EIA Report and salient findings from the EIA Phase. In addition, copies of the Draft EIA Report will be provided to the regulatory and commenting authorities listed in **Section 12.5.3** above.

The Final EIA Report will be submitted to DFFE. Any requested amendments will be discussed with the Department to ensure that their queries are adequately and timeously attended to.

For the remainder of the Scoping and EIA process, DFFE will be engaged with as follows:

- Submission of the Final Scoping Report;
- Meet with designated DFFE Environmental Officer to explain the Project and arrange a site visit (if required by DFFE);
- Address comments on Scoping Report;
- Arrange an authorities' meeting during the EIA Phase;
- Submit Draft EIA Report;
- Address comments on Draft EIA Report;
- Obtain a decision; and
- Notify I&APs of the appeal process through DFFE's Appeals Unit.

## 14.8 EIA Timeframes

**Table 16** below presents the proposed timeframes for the EIA process. *Note that these dates are subject to change as the EIA process unfolds.*

**Table 16: EIA Timeframes**  
(Note: dates may change during the course of the EIA)

EIA Milestone	Start	Finish
Submit Application Form and Draft Scoping Report to DFFE	14-09-2021	
Review of Draft Scoping Report by authorities & I&APs	21-09-2021	22-10-2021
DFFE Review and Decision	03-11-2021	06-01-2022
Review of Draft EIA Report by authorities & I&APs	08-02-2022	10-03-2022
Submit Final EIA Report & EMPr to DFFE	22-03-2022	
DFFE Review and Decision	23-03-2022	14-07-2022

## 15 CONCLUSION

The scope of an environmental assessment is defined by the range of issues and alternatives it considers, the nature of the receiving environment, and the approach towards the assessment.

Key outcomes of the Scoping Phase for the proposed Project are as follows:

- ❑ Alternatives for achieving the objectives of the proposed activity were considered;
- ❑ Potentially significant issues pertaining specifically to the construction and operational phases of the Project were identified;
- ❑ Sensitive elements of the environment that may be affected by the Project were identified;
- ❑ Stakeholders were identified and notified of the review of the Draft Scoping Report;
- ❑ A Plan of Study was developed to explain the approach to executing the EIA Phase; and
- ❑ The scoping exercise set the priorities for the ensuing EIA Phase.

No fatal flaws were identified in terms of the proposed activities and the receiving environment that would prevent the environmental assessment from proceeding beyond the Scoping Phase. It is the opinion of the EIA team that Scoping was executed in an objective manner and that the process and report conform to the requirements of Regulation 21 and Appendix 2 of GN No. R 982 of 4 December 2014 (as amended), respectively. It is also believed that the Plan of Study for EIA is comprehensive and will be adequate to address the significant issues identified during Scoping, to select the BPEO, and to ultimately allow for informed decision-making.

## 16 REFERENCES

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Websites:

<https://commons.wikimedia.org/wiki/File:Upington.jpg>

# APPENDICES

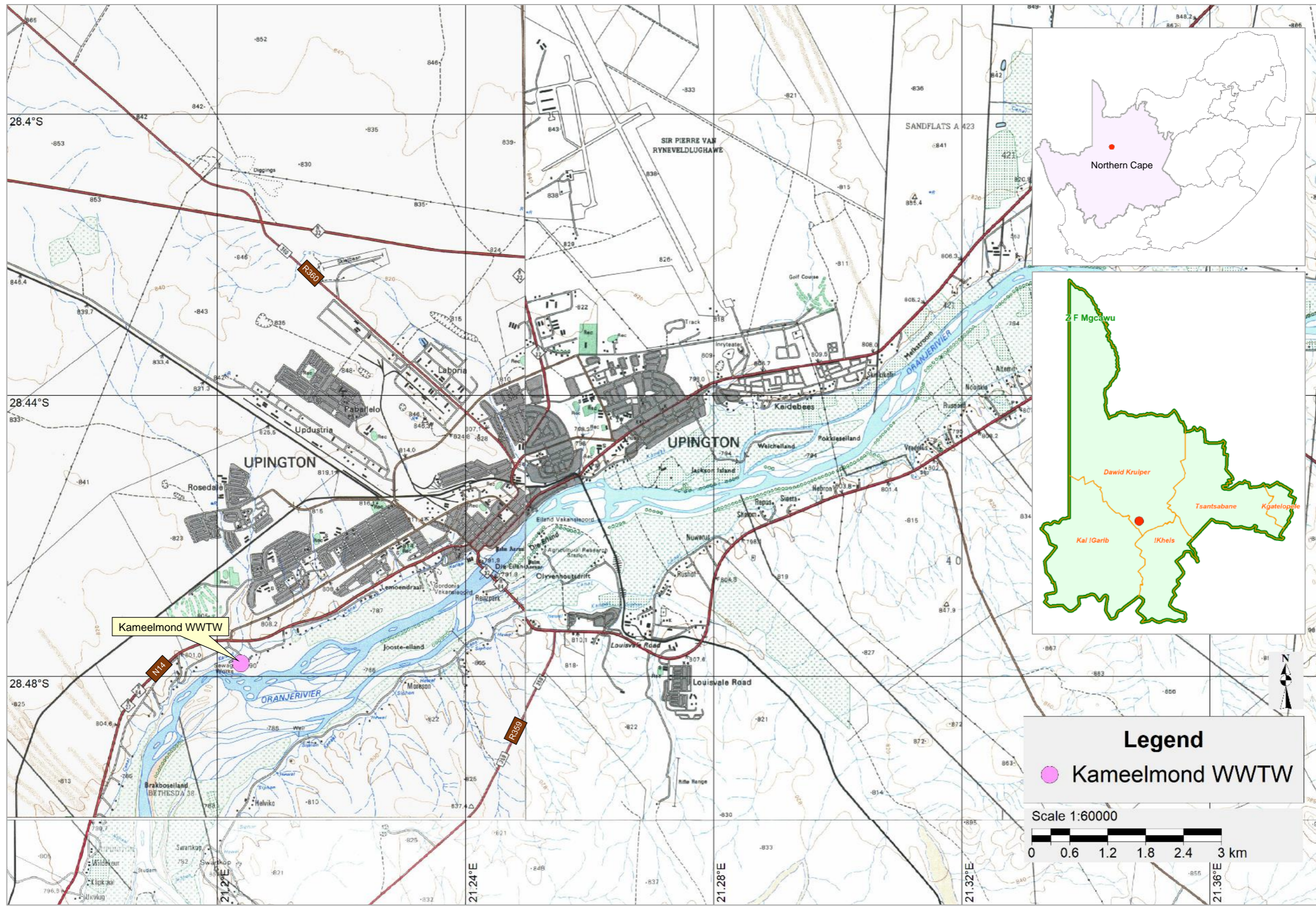
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# APPENDIX A

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## MAPS





**PREPARED FOR:**

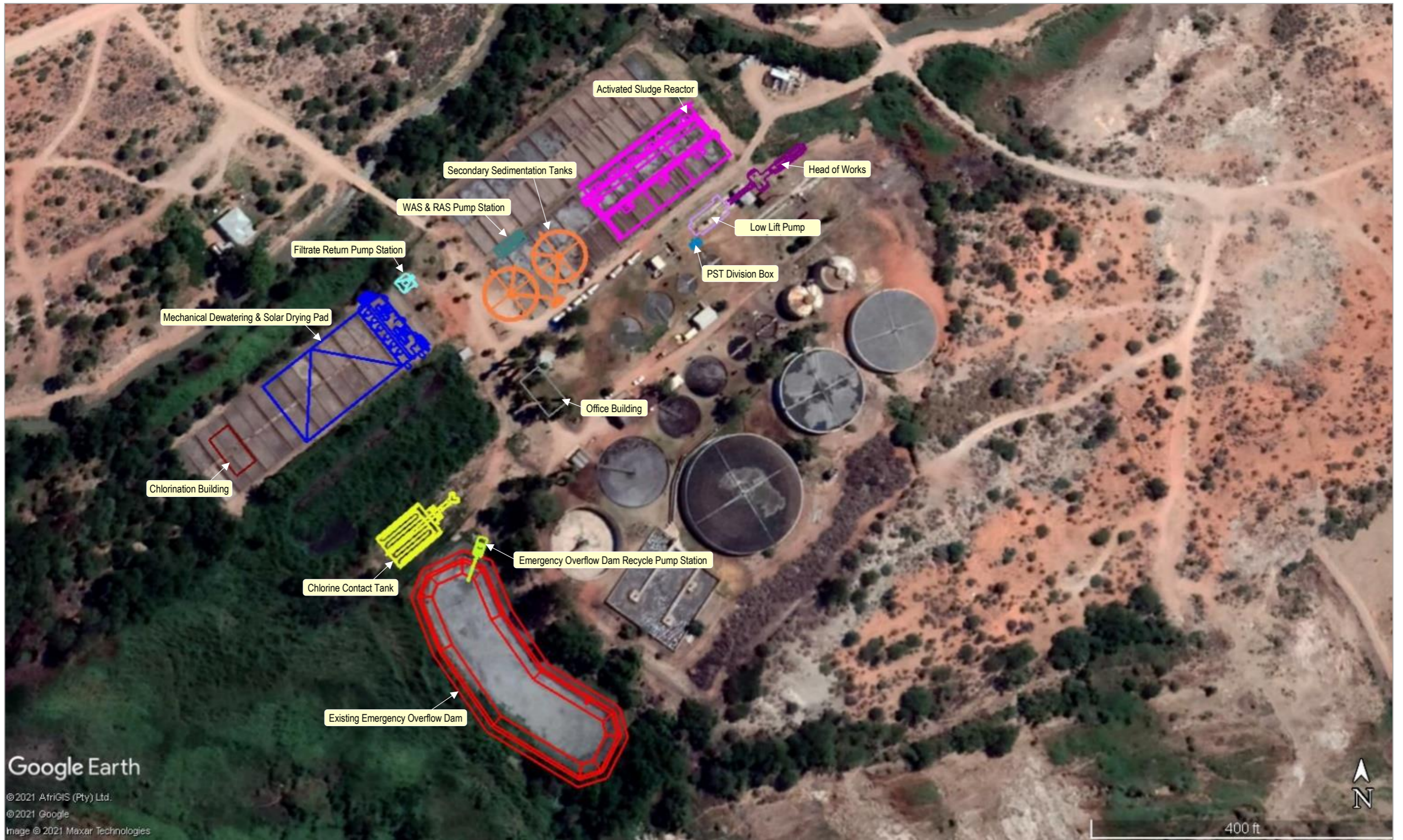


**PROPOSED UPGRADE AND EXPANSION OF THE KAMEELMOND WASTEWATER TREATMENT WORKS IN UPINGTON, NORTHERN CAPE**

**PREPARED BY:**



**LOCALITY MAP**



Google Earth

© 2021 AfriGIS (Pty) Ltd.  
 © 2021 Google  
 Image © 2021 Maxar Technologies

**PREPARED FOR:**



**PROPOSED UPGRADE AND EXPANSION OF THE KAMEELMOND WASTEWATER TREATMENT WORKS IN UPINGTON, NORTHERN CAPE**

**PREPARED BY:**



**K-WWTW UPGRADE AND EXPANSION WORKS (Google Earth image)**

# APPENDIX B

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## APPLICATION FORM



environment, forestry  
& fisheries

Department: Environment, Forestry  
and Fisheries  
REPUBLIC OF SOUTH AFRICA

APPLICATION FORM FOR WASTE MANAGEMENT LICENCE

	(For official use only)
File Reference Number:	12/9/11
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management: Waste Act, 2008(Act No.59 of 2008), as amended and the Environmental Impact Assessment Regulations, 2017, as amended

**NB: PLEASE TAKE NOTE: Should your activity(ies) include "Storage of general or hazardous waste in a lagoon; Disposal of Inert or general or Hazardous waste to land", please ensure that you complied with all the requirements of the attached checklist (APPENDIX 1) when submitting the Final Report (BAR or EIR) for the processing of RoD by DWS.**

**COMMENCEMENT: Has the activity (ies) commenced: No**

**If yes, When (provide the Year, Month and Date):**



**Note:** *The existing Kameelmond Wastewater Treatment Works was originally constructed during the 1970's. This application deals specifically with the decommissioning of the existing sludge drying beds and the diesel-fired incinerator (used for disposal of screenings), as well as the construction of a new mechanical dewatering system to treat the sludge at the works*

**PROJECT TITLE**

Proposed Upgrade and Expansion of the Kameelmond Wastewater Treatment Works in Upington, Northern Cape

**PROJECT DESCRIPTION**

**A. SITE LOCATION**

The Kameelmond Wastewater Treatment Works (K-WWTW) is situated north of the Orange River, on the south western side of Upington on the N14 between Upington and Keimoes, in the Northern Cape. The site is located in the Dawid Kruiper Municipality (DKM) and in the ZF Mgcawu District Municipality.

## **B. PROJECT MOTIVATION**

The K-WWTW is under ever increasing pressure to enhance serviceability of new residential and, to a lesser extent, industrial runoff located within the Works' planned drainage area. Effluent quality standards specified by the Department of Water and Sanitation (DWS) are also likely to increase beyond the current treatment efficiency that the Works' is able to achieve. Potential reuse of the Works' effluent, together with the above mentioned culminates in the requirement of the upgrade and expansion of the K-WWTW.

The aim of the project is to increase the capacity of the K-WWTW from 16 MI/d to 24 MI/d. The upgrade and expansion of the K-WWTW will take place within the confines of the existing perimeter fence.

## **C. K-WWTW'S STATUS QUO TREATMENT PROCESS**

The works consists of the following process elements:

- Night soil discharge and bucket washing system;
- Inlet works -
  - Screen;
  - Degritting;
  - Flow measurement;
- Incinerator;
- Screw pump station;
- Primary settling tank;
- Raw sludge pumps (to thickener);
- Main pump station;
- Biological filters;
- Biological reactor;
- Return activated sludge pumps;
- Thickeners;
- Sludge pumps;
- Anaerobic digesters;
- Sludge drying beds;
- Maturation pond;
- Disinfection;
- Chlorination system;
- Chlorine contact tank;
- Emergency pond; and
- Return pump station.

The schematic process diagram showing the inter-relationship between the process units at the K-WWTW is provided in **Figure 1** below.

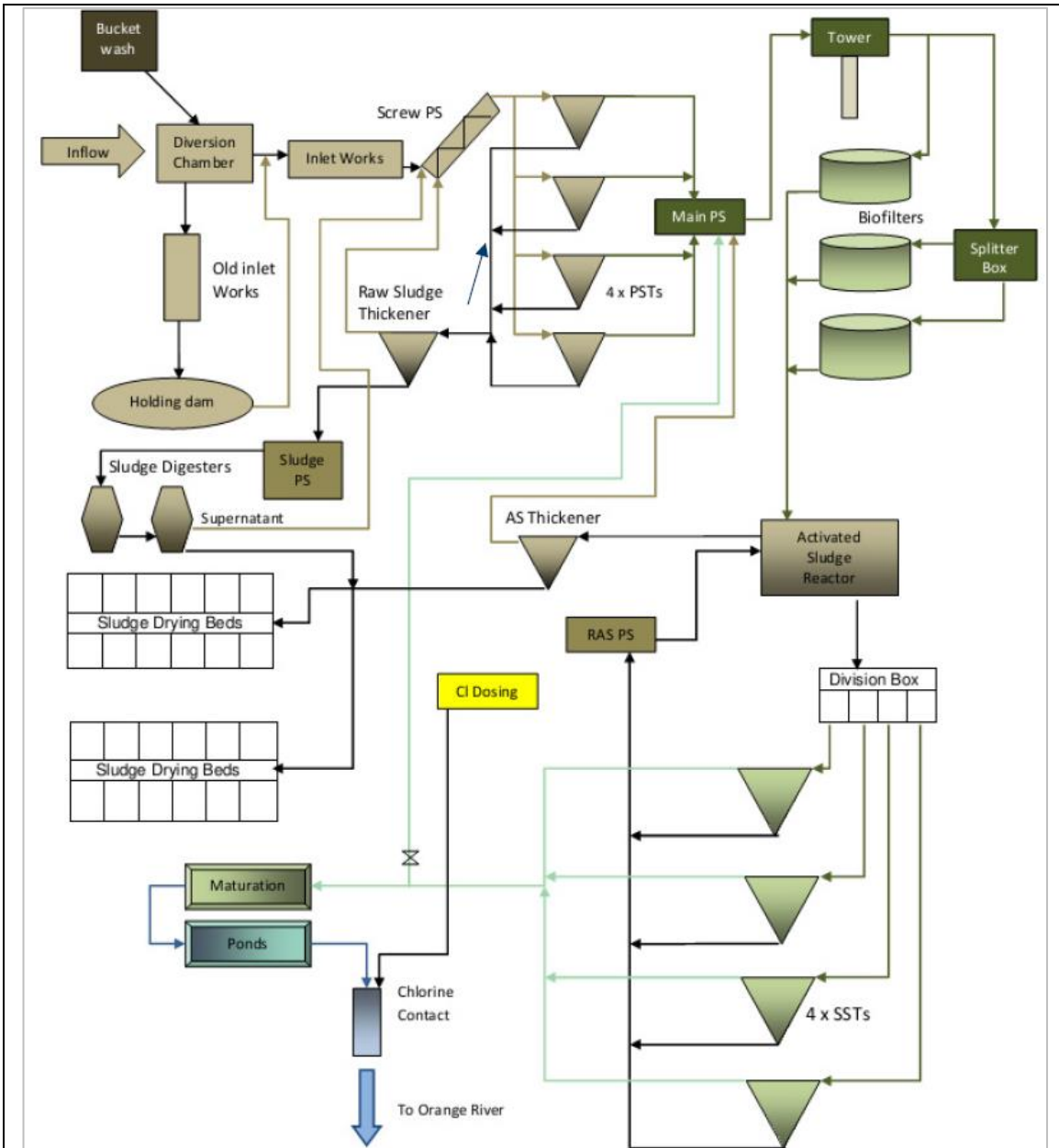


Figure 1: Schematic diagram of works

## D. DESIGN CHARACTERISATION

### 1) Design Sewage Characterisation

The proposed design concentrations for the upgrade and expansion of the K-WWTW are as follows:

- Chemical oxygen demand: 450 mg/l
- Total Kjeldahl Nitrogen: 49 mg/l
- Ammonia: 39 mg/l
- Total Phosphate: 10 mg/l
- Ortho-Phosphate: 4 mg/l
- Total suspended solids: 194 mg/l

### 2) Design Hydraulic Characterisation

The hydraulic parameters for the proposed upgrading and expansion of the K-WWTW are presented in **Table 1** below.

**Table 1: Design hydraulic loading for the upgrade & expansion of K-WWTW**

Description	Unit	Design flow
<b>Ultimate influent design flows</b>		
Average Dry Weather Flow	MI/d	24
Average Wet Weather Flow	MI/d	24
Peak Wet Weather Flow	MI/d	48
Hourly Peak Flow <small>Calculated</small>	m <sup>3</sup> /hr	3 000
Hourly Peak Flow <small>Extreme event</small>	m <sup>3</sup> /hr	3 500
<b>Assumed start-up influent design flows</b>		
Average Dry Weather Flow	MI/d	16
Minimum hydraulic design flow	m <sup>3</sup> /hr	767

### 3) Design Discharge Limits

It is noted that the K-WWTW measures its effluent discharge standards in relation to the general limits as specified by the DWS. DKM is in process of applying for a Water Use Licence (WUL) for the K-WWTW. The WUL generally provides the discharge standards which the Works must conform to. Until this process is finalised, it will be assumed that General Limits will remain as the specified discharge standard. This assumption will be verified once the WUL has been issued and the discharge limits have been confirmed.

It is also noted that DKM intends to reuse some of the treated effluent for irrigation purposes. The International Organization for Standardization Guidelines for treated wastewater use for irrigation projects (ISO/DIS Standard No. 16075) provides quality criteria for this activity. Due to the planned reuse at school yards it has been assumed that the reuse limits shall have to adhere to the standards specified under category A of these standards (i.e. unrestricted irrigation).

## **E. SCOPE OF WORK FOR THE K-WWTW**

The status quo treatment process requires major refurbishment as large sections of the Works' have been in operation since the 1970s, with the last upgrade and expansion having taken place during the 1990s. It was therefore proposed that the overall scope of work for the K-WWTW be split into the following: (i) refurbishment of existing mechanical and electrical equipment; and (ii) upgrade and expansion of the K-WWTW.

This Application for a Waste Management Licence (WML) focuses on the upgrade and expansion of the K-WWTW, as it was understood that the refurbishment activities would not trigger any listed waste management activities. This was discussed during the pre-application meeting held with the Department of Environment, Forestry and Fisheries (DEFF) on 19 November 2019.

An overview of the scope of work for the refurbishment and expansion components follows below.

### 1) Refurbishment

A map of the general layout of the existing infrastructure to be refurbished is shown in **Figure 2** below.



**Figure 2: K-WWTW existing infrastructure to be refurbished (Google Earth image)**  
 (Note: not all infrastructure is labelled in the map above due to scale)

The refurbishment activities aim to ensure the following:

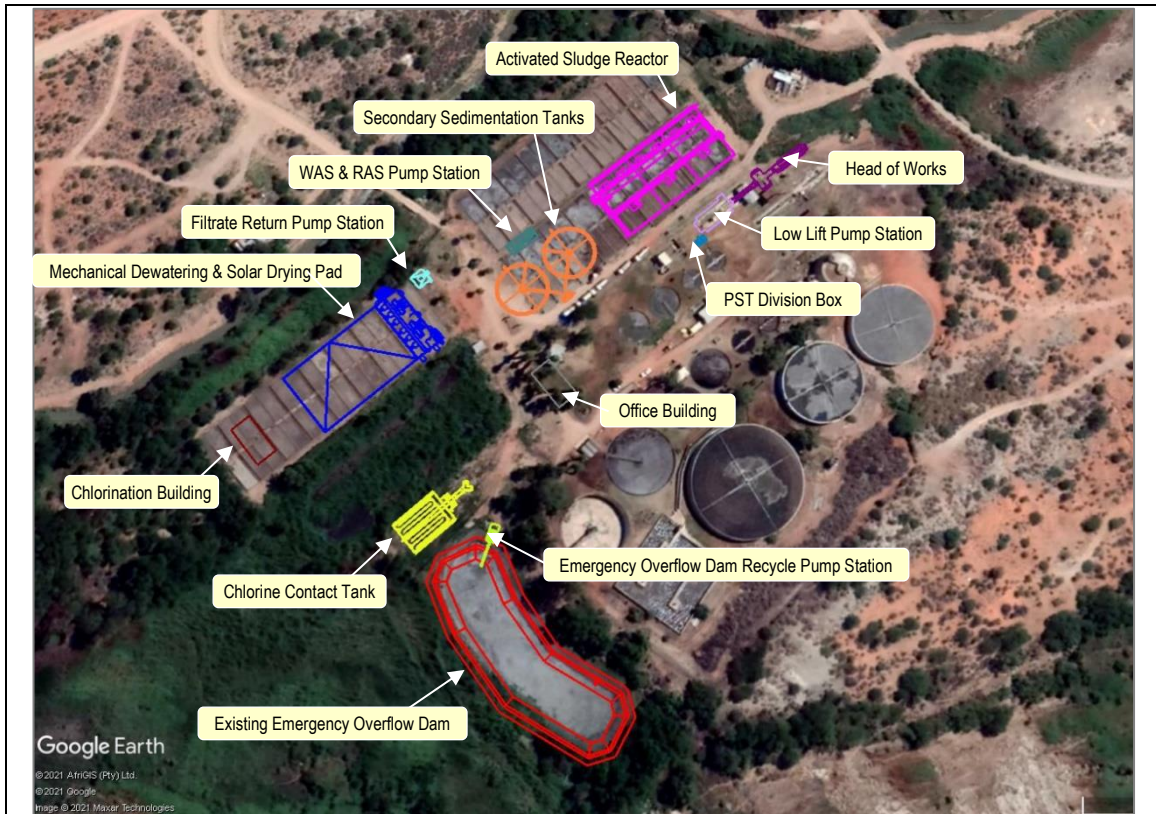
- To ensure systems/equipment remain operational until such time when the main upgrade and expansion of K-WWTW is commissioned; and
- To ensure the relevant system/equipment can be integrated and remain functional as part of the future treatment strategy.

As noted, the refurbishment activities do not form part of this application.

## 2) Upgrade and Expansion

A map of the general layout of the upgrade and expansion works is shown in **Figure 3** below.





**Figure 3: K-WWTW Upgrade and expansion works (Google Earth image)**

## **F. WASTE MANAGEMENT ACTIVITIES**

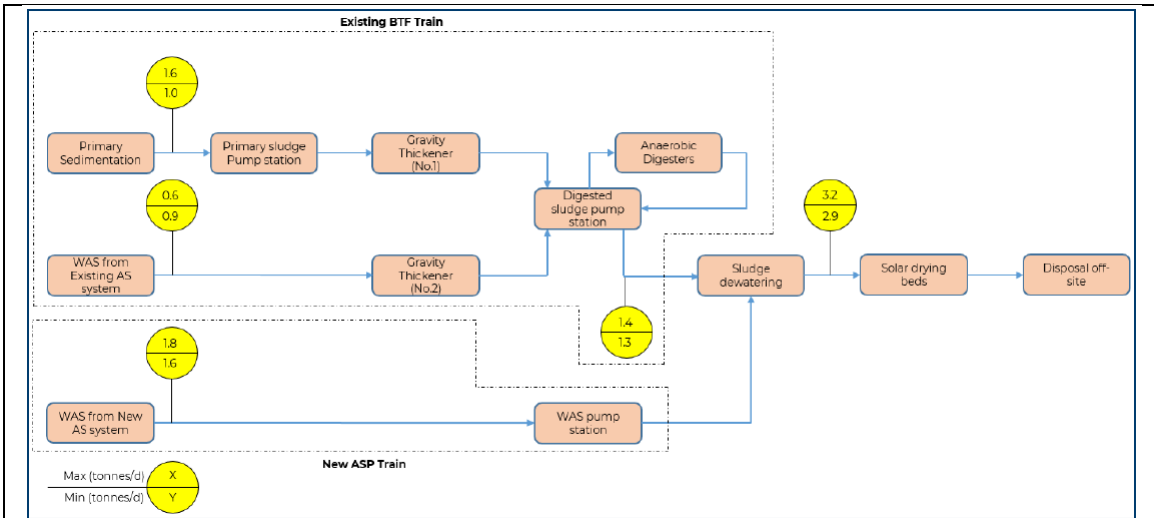
### **1) Sludge Management**

During the pre-application meeting that was held with DEFF on 19 November 2019 (refer to the minutes contained in Appendix 2), the treatment of sludge was highlighted as the primary trigger for the WML.

Based on the Preliminary Design Report, which was compiled by Bigen Africa Services (Pty) Ltd in February 2021, sludge at K-WWTW will be produced from two sludge trains, namely the existing Biological Tricking Filter (BTF) train and the new Activated Sludge Process (ASP) train. The sludge from both trains will be treated at a new dewatering facility. The main processes associated with the sludge management are:

- Anaerobic digestion of Primary Sludge (PS) and Waste Activated Sludge (WAS) (status quo);
- Extended sludge age in activated sludge processes (new ASP); and
- Mechanical sludge dewatering.

According to the sludge mass balance (shown in **Figure 4** below), the anticipated minimum solids loading rates for WAS from the existing module, PS and WAS from the new module streams will be 0.9, 1.0 and 1.6 tonnes/d, respectively. The anticipated maximum solids loading rates for these streams will be 0.6, 1.6 and 1.8 tonnes/d, respectively.



**Figure 4: Sludge mass balance diagram**

K-WWTW currently has 96 drying beds (shown in **Figure 2** above and **Figure 5** below) which will be decommissioned and demolished to avail space for the new ASP train. Therefore, a new, small footprint, sludge dewatering facility will be required to ensure effective sludge handling and disposal is maintained at the plant.



**Figure 5: Existing sludge drying beds at K-WWTW**

The proposed sludge handling facility will consist out of the following systems (shown in **Figure 3** above):

- Mechanical dewatering units;
- Poly electrolyte dosing system; and
- Solar-drying/Stockpiling slab with associated sludge handling equipment.

**Table 2** below provides a summary of the design aspects associated with the sludge management facility.

**Table 2: Design summary of sludge management facility**

Description	Unit	Value
<b>Dewatering units</b>		
Type of units	-	Screw-press units
Design flow rate	m <sup>3</sup> /hr	56+5.4
No. of units	No.	5
Installed standby availability	%	67
Guaranteed sludge cake concentration (m/v)	%	18
<b>Poly make system</b>		
Poly make up system	-	Continuous make up
No of poly make up system	No.	2
Poly dosing pump	-	PC Pumps
No of poly dosing pumps	No.	5
<b>Filtrate return pump station</b>		
Pump installation	-	Submersible
Pumps	No.	2
Duty per pump	l/s	16
Discharge pressure	m	6
Installed standby availability	%	100
Discharge pipe diameter	mm	150 NB
Discharge manifold	mm	150 NB
<b>Solar drying slab</b>		
Slab material	-	Concrete
Total Area required for drying	m <sup>2</sup>	1429
Turn-over rate for drying	days	9
Total area required for stockpiling	m <sup>2</sup>	95.3
Turnover rate for stockpiling	days	30
Total area	m <sup>2</sup>	1525

## 2) Sludge Disposal

Sludge generated at the K-WWTW was classified in terms of the Guidelines for Utilisation and Disposal of Wastewater Sludge (GUDWS) and the results are summarised in **Table 3** below.

**Table 3: Sludge classification of K-WWTW (2017 to 2018)**

Description	Sample 1	Sample 2	Sample 3	Sample 4
Sample date	July 2017	July 2018	Sept. 2018	Nov. 2018
Sludge type	Composted sludge			
Sampling point	Stockpile			
Microbiological parameters	B	B	B	B
Vector attraction reduction	1	2	1	1
Pollutant class	a	a	a	a
Classification	B1a	B2a	B1a	B1a

It is predicted that the future sludge classification associated with the K-WWTW will remain B1a or be better (i.e. A1a).

Four sludge management options were evaluated, namely sludge for agricultural use, sludge as fertiliser product, sludge for commercial products, and disposal of sludge at a landfill site. From the Preliminary Design Report, the proposed dewatering facility will facilitate a screw press and

stockpile, resulting in a sludge viable for commercial and agricultural use. It was thus proposed that the agricultural/commercial strategies be implemented.

### 3) Diesel-Fired Incinerator

Screens at the inlet works serve to remove nuisance items (typically non-degradable solids such as plastics, wood chips and rags).

A diesel-fired incinerator (shown in **Figure 6** below) is currently used for the disposal of screenings at the K-WWTW. The incinerator will be discontinued as part of the upgrade and expansion of the works.



**Figure 6:** Existing incinerator at K-WWTW

#### **Kindly note that:**

1. This application form is current as of 15 November 2017. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
2. The application must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. Spaces are provided in tabular format and will extend automatically when each space is filled with typing.
3. Where applicable **black out** the boxes that are not applicable in the form.

4. Incomplete applications may be returned to the applicant for revision.
5. The use of the phrase “not applicable” in the form must be done with circumspection. Should it be done in respect of material information 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 application must be handed in at the offices of the relevant competent authority as determined by the Act and regulations.
7. Unless protected by law, all information filled in on this application will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this application on request, during any stage of the application process.
8. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
9. The payment of a fee for the processing of environmental impact assessment applications in terms of sections 24(5)(c), 24M and 44 the National Environmental Management Act, 1998 (Act No. 107 of 1998) (“NEMA”) will be applicable from July 2012.

Queries must be addressed to the contact hereunder:

**Departmental Details**

**Postal address:**

Department of Environment, Forestry and Fisheries  
Attention: Director: Licensing  
Private Bag X447  
Pretoria  
0001

**Physical address:**

Department of Environment, Forestry and Fisheries  
Environment House (473 Steve Biko Rd, corner: Steve Biko and Soutpansberg Rds)  
Arcadia X6  
PRETORIA  
0002

Application queries should be directed to the Sub-Directorate: Waste Licensing Systems Management on:

Tel :012 3999791: Email: lmahlangu@environment.gov.za

**FEES<sup>1</sup>**

**Department of Environment, Forestry and Fisheries details for the payment of application fees**

**Banking details:**

ABSA Bank  
Branch code: 632005  
Account number: 1044 2400 72  
Current account  
Reference number :Waste License (important to quote this when making payment)

**Attach proof of payment to this Application form:**

**Payment Enquiries:**

Contact person: Lucas Mahlangu

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<sup>1</sup>Applicants must pay a fee for the processing of environmental impact assessment in terms of sections 24(5)(c), 24M and 44 the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"). A flat rate of **R2 000** is charged for basic assessment (BA), transfer of Ownership and Renewal of validity of WML and **R10 000** for scoping and an environmental impact assessment applications (Scoping EIA)

Tel: 012 3999 791: Email: Imahlangu@environment.gov.za

**Tax exemption status:**

Status: Tax exempted

Exclusions:

**An applicant is excluded from paying fees if:**

- The activity is a community based project funded by a government grant; or
- The applicant is an organ of state.

**Applicants are required to tick the appropriate box below and ensure that the application form is accompanied by proof of payment OR proof and motivation if an exclusion applies:**

Proof attached



Exclusion



applies

Type of exclusion	Tick which exclusion is applicable. Proper motivation must be provided if any option is chosen.
The activity is a community based project funded by a government grant	<input type="checkbox"/>
The applicant is an organ of state.	<input checked="" type="checkbox"/>

**SITE IDENTIFICATION AND LINKAGE**

Please indicate all the Surveyor-general 21 digit site (erf/farm/portion) reference numbers for all sites (including portions of sites) that are part of the application.

C 0 2 8 0 0 0 7 0 0 0 1 8 8 9 6 0 0 0 0 0

(if there are more than 6, please attach a list with the rest of the numbers)

(These numbers will be used to link various different applications, authorisations, permits etc. that may be connected to a specific site)

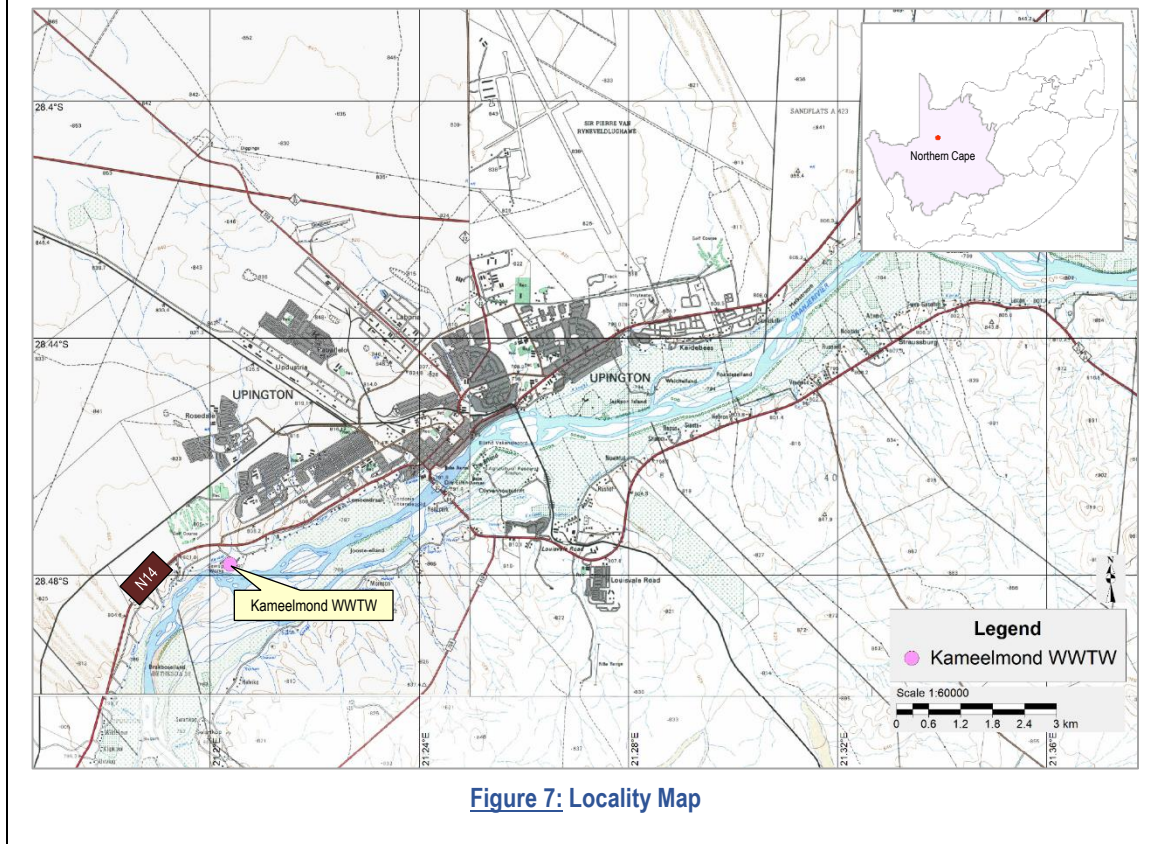
## SITE CO-ORDINATES

Please provide the geographic co-ordinates of all corners of the site; in degrees, decimal minutes, and seconds for all sites (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site). Provide geographic coordinates for all corners of the facility (ies)

Latitude (S) (DDMMSS)			Longitude (E) (DDMMSS)		
28°	28'	34.86"S	21°	12'	12.84"E
28°	28'	38.67"S	21°	12'	17.90"E
28°	28'	41.04"S	21°	12'	05.55"E
28°	28'	45.62"S	21°	12'	11.95"E

## SITE AND LOCALITY PLAN DIRECTIONS

The K-WWTW is situated north of the Orange River, on the south western side of Upington (centre point coordinates: 28°28'41"S; 21°12'12"E) on the N14 between Upington and Keimoes, in the Northern Cape (refer to the locality map in **Figure 7** below).



**Figure 7: Locality Map**



## CAPITAL VALUE AND JOB CREATION ESTIMATES (If applicable)

Capital value	Job estimates
<b>R 170 000 000.00</b>	Unknown at this stage

## PROJECT TITLE

Proposed Upgrade and Expansion of the Kameelmond Wastewater Treatment Works in Upington, Northern Cape

### 1. BACKGROUND INFORMATION

Project applicant:	Dawid Kruiper Municipality		
Trading name (if any):	-		
Contact person:	Mr E Ntoba (Municipal Manager)		
Physical address:	Civic Centre, Mutual Street, Upington, 8800		
Postal address:	Private Bag X6003, Upington		
Postal code:	8800	Cell:	
Telephone:	054 338 7001	Fax:	054 338 7350
E-mail:	manager@dkm.gov.za		
Provincial Authority:	Northern Cape Department of Environment and Nature Conservation (DENC)		
Reference No. (if any)	N/A		
Contact person:	Dineo Moleko		
Postal address:	Private Bag X6102, KIMBERLEY		
Postal code:	8300	Cell:	079 695 0776
Telephone:	053 807 7430	Fax:	053 831 3530
E-mail:	dmoleko@ncpg.gov.za		
EAP Company	Nemai Consulting (Pty) Ltd		
Contact person:	Donavan Henning		
Postal address:	P.O. Box 1673, SUNNINGHILL		
Postal code:	2157	Cell:	082 891 0604
Telephone:	011 781 1730	Fax:	011 781 1731
E-mail:	donavanh@nemai.co.za		
Landowner:	Dawid Kruiper Municipality		
Contact person:	Mduduzi Mnganga		
Postal address:	Private Bag X6003, Upington		
Postal code:	8800	Cell:	081 552 4469
Telephone:	054 338 7061	Fax:	054 338 7350
E-mail:	mduduzi.mnganga@dkm.gov.za		

In instances where there is more than one landowner, please attach a list of landowners with their contact details to this application.

Local authority in whose jurisdiction the proposed activity will fall:	Dawid Kruiper Municipality		
District authority in whose jurisdiction the proposed activity will fall:	ZF Mgcawu District Municipality		
Nearest town or districts:	Upington		
Contact person:	Mduduzi Mnganga		
Postal address:	Private Bag X6003, Upington		
Postal code:	8800	Cell:	081 552 4469
Telephone:	054 338 7061	Fax:	054 338 7350
E-mail:	mduduzi.mnganga@dkm.gov.za		

In instances where there is more than one local authority involved, please attach a list of local authorities with their contact details to this application.

## 2. ACTIVITIES APPLIED FOR TO BE AUTHORISED

2.1 For an application for authorisation that involves more than one listed or specified activity that, together, make up one development proposal, all the listed activities pertaining to this application must be indicated.

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per project description <sup>2</sup> :	Process indicated by regulations (Scoping or Basic Assessment)
e.g. GN 921 of 2013	A(1)	Storage of general waste in lagoons	Basic Assessment
GN 921 of 2013	A(14)	The proposed decommissioning of the existing sludge drying beds and the diesel-fired incinerator (used for disposal of screenings) at K-WWTW.	Basic Assessment
GN 921 of 2013	B(4)	The proposed treatment of sludge by means of the new sludge dewatering facility. The estimated maximum sludge production is 1 566 kg/day.	S&EIR

<sup>2</sup>Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description



### 3. OTHER AUTHORISATIONS REQUIRED

#### 3.1 DO YOU NEED ANY AUTHORISATIONS IN TERMS OF ANY OF THE FOLLOWING LAWS?

3.1.1 National Environmental Management Act	Yes
3.1.2 National Environmental Management: Air Quality Act	Yes
3.1.3 National Environmental Management: Protected Areas Act	No
3.1.4 National Environmental Management: Biodiversity Act	No
3.1.5 National Environmental Management: Integrated Coastal Management Act <sup>3</sup>	No
3.1.6 National Water Act	Yes
3.1.7 National Heritage Resources Act	No
3.1.8 Mineral Petroleum Development Resources Act	No
3.1.9 Other (please specify)	

3.2 Have such applications been lodged already? No  
 If Yes, please attach the application and provide a status update.

### 4. SECTORS

Please indicate, by marking the appropriate box below, the sector and sub-sector applicable to the main development which forms the subject of this application:

Sector 1: Energy infrastructure

Subsector 1.1: Green economy + 'green' and energy saving industries	Subsector 1.5: Nuclear
Subsector 1.2: Infrastructure – electricity (generation, transmission & distribution)	Subsector 1.6: Basic services (local government) - electricity and electrification
Subsector 1.3: Oil and gas	Subsector 1.7: Basic services (local government) - area lighting
Subsector 1.4: Biofuels	

Sector 2: Transport infrastructure

Subsector 2.1: Infrastructure-transport (ports, rail and road)	
Subsector 2.2: Basic services (local government) access roads)	
Subsector 2.3: Basic services (local government) - public transport	

<sup>3</sup>Where an environmental authorization in terms of chapter 5 of the National Environmental Management Act is required for coastal activities, the competent authority must take into account all the relevant factors including those listed in section 63(1) of the National Environmental Management: Integrated Coastal Management Act.

Sector 3: Bulk services infrastructure	✓
Subsector 3.1: Infrastructure - water (bulk and reticulation)	
Subsector 3.2: Basic services (local government) - sanitation	✓
Subsector 3.3: Basic services (local government) -waste management	
Subsector 3.4: Basic services (local government) water	
Sector 4: Water impoundments	
Subsector 4.1: Basic services (Local Government) water	
Sector 5: Agriculture and forestry (including agri-industry, etc)	
Subsector 5.1: Agricultural value chain + agro-processing (linked to food security and food pricing imperatives)	
Subsector 5.2: Forestry, paper, pulp and furniture	
Sector 6: Communication infrastructure	
Subsector 6.1: 1 Infrastructure - information and communication technology	
Sector 7: Recreation and hospitality industry related infrastructure	
Subsector 7.1: Tourism+ strengthening linkages between cultural industries & tourist	
Subsector 7.2: Basic services (local government) - public open spaces and recreational facilities	
Sector 8 Greenfield transformation to urban or industrial form(including mining)	
Sector 9: Biodiversity or sensitive area related activities	
Sector 10: Other services	

Subsector 10.1: Mining value chain	Subsector 10.8: Business process servicing
Subsector 10.2: Potential of metal fabrication capital & transport equipment - arising from large public investments	Subsector 10.9: Advanced materials
Subsector 10.3: Boat building	Subsector 10.10: Aerospace
Subsector 10.4: Manufacturing - automotive products and components, and medium and heavy commercial vehicles	Subsector 10.11: Basic services (Local Government) Education
Subsector 10.5: Manufacturing - plastics, pharmaceuticals & chemicals	Subsector 10.12: Basic services (Local Government) - health
Subsector 10.6: Manufacturing - clothing textiles, footwear & leather	Subsector 10.13: Basic services (Local Government) Housing
Subsector 10.7: Forestry, paper, pulp & furniture	Subsector 10.14: Basic services (Local Government) security of tenure
	Subsector 10.15: Other

## 5. DECLARATIONS

### 5.1 The Applicant

I, ELIAS NTOBA, declare that I -

- am, or represent<sup>4</sup>, the applicant in this application;
- have appointed /will appoint(delete that which is not applicable) an environmental assessment practitioner to act as the independent environmental assessment practitioner for this application / will obtain exemption from the requirement to obtain an environmental assessment practitioner<sup>5</sup>;
- will provide the environmental assessment practitioner and the competent authority with access to all information at my disposal that is relevant to the application;
- will be responsible for the costs incurred in complying with the Environmental Impact Assessment Regulations, 2010, including but not limited to –
  - costs incurred in connection with the appointment of the environmental assessment practitioner or any person contracted by the environmental assessment practitioner;
  - costs incurred in respect of the undertaking of any process required in terms of the Regulations;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the Regulations;
  - costs in respect of specialist reviews, if the competent authority decides to recover costs; and
  - the provision of security to ensure compliance with conditions attached to an environmental authorisation, should it be required by the competent authority;
- will ensure that the environmental assessment practitioner is competent to comply with the requirements of these Regulations and will take reasonable steps to verify whether the EAP complies with the Regulations;
- will inform all registered interested and affected parties of any suspension of the application as well as of any decisions taken by the competent authority in this regard;
- am responsible for complying with the conditions of any environmental authorisation issued by the competent authority;
- hereby indemnify the Government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action which the applicant or environmental assessment practitioner is responsible for in terms of these Regulations;
- will not hold the competent authority responsible for any costs that may be incurred by the applicant in proceeding with an activity prior to obtaining an environmental authorisation or prior to an appeal being decided in terms of these Regulations;
- will perform all other obligations as expected from an applicant in terms of the Regulations;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

<sup>4</sup>If this is signed on behalf of the applicant, proof of such authority from the applicant must be attached.

<sup>5</sup>If exemption is obtained from appointing an EAP, the responsibilities of an EAP will automatically apply to the person conducting the environmental impact assessment in terms of the Regulations.

  
Signature of the applicant/ Signature on behalf of the applicant:

DAVID KRUIDER MUNICIPALITY  
Name of company (if applicable):

16/08/2021  
Date:

  
Signature of the Commissioner of Oaths:

2021 . 08 . 18  
Date:

CS T  
Designation:

Official Stamp



<sup>6</sup>If the applicant is a juristic person, a signature on behalf of the applicant is required as well as proof of such authority. An EAP may not sign on behalf of an applicant.



6. The independent Environmental Assessment Practitioner

I, Donovan Henning, declare under oath that I –

- act as the independent environmental assessment practitioner in this application ;
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010;
- have and will not have no vested interest in the proposed activity proceeding;
- have no, and will not engage in, conflicting interests in the undertaking of the activity;
- undertake to disclose, to the competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2006;
- will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- will keep a register of all interested and affected parties that participated in a public participation process; and
- will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

  
Signature of the Environmental Assessment Practitioner:

Nemai Consulting  
Name of company:

23/08/2021  
Date:

  
Signature of the Commissioner of Oaths:

23/08/2021  
Date:

Practising Attorney  
Designation:

Official stamp (Above)

**Colette Henning**  
Commissioner of Oaths  
Ex Officio - Practising Attorney  
7 Katbos Avenue  
Bassonia, Johannesburg  
082 463 5547

**The Land owner (If the landowner is different from the Applicant)**

I, \_\_\_\_\_ declare under oath that I -

- Am, aware of the waste management activity (ies) to take place or taking place in my property
- Consented to this/ these activity (ies) taking / to take place in my property hereby indemnify, the government of **the** Republic, the competent authority and all its officers, agents and employees, from **any** liability arising out of the content of any report, any procedure or any action for which the applicant or environmental assessment practitioner is responsible in terms of these regulations; and
- **will** not hold the competent authority responsible for any costs that may be incurred by the applicant in proceeding with an activity prior to an appeal being decided in terms of these regulations.

\_\_\_\_\_  
Signature of Landowner

\_\_\_\_\_  
Name of company:

\_\_\_\_\_  
Date:

\_\_\_\_\_  
Signature of the Commissioner of Oaths:

\_\_\_\_\_  
Date:

\_\_\_\_\_  
Designation:

Official stamp (Above)

## APPENDIX 1




In order for the RoD to be processed the following information must have been submitted:

NO	DOCUMENT		
		YES	NO
1	<b>Waste management licence application form</b>		
2	<b>Classification of waste</b>		
3	<b>Hydrogeological study</b>		
3.1	Hydrocensus		
3.2	Geophysical investigation		
3.3	Description of geology		
3.4	Aquifer type and aquifer classification		
3.5	Aquifer vulnerability assessment		
3.6	Aquifer characterisation		
3.7	Groundwater quality		
3.8	Groundwater flow		
3.9	Groundwater monitoring		
4	<b>Stormwater management plan</b>		
5	<b>Wetland delineation report (If applicable)</b>		
5.1	<b>Methodology</b>		
5.1.1	Wetland identification and mapping		
5.1.2	Wetland delineation		
5.1.3	Wetland functional assessment		
5.1.4	Determining the ecological integrity of the wetlands		
5.1.5	Determining the Present Ecological State of wetlands		
5.1.6	Determining the Ecological Importance and Sensitivity of wetlands		
5.1.7	Ecological classification and description		
5.2	<b>Results</b>		
5.2.1	Wetland delineation		
5.2.2	Wetland unit identification		
5.2.3	Wetland unit setting		
5.2.4	Wetlands soils		
5.2.5	Description of wetland type		
5.2.6	General functional description of wetland types		
5.2.7	Wetland ecological functional assessment		
5.2.8	The ecological health assessment of the opencast mining area		
5.2.9	The PES assessment of the remaining wetland areas		
5.2.10	The EIS assessment of the remaining wetland areas		
5.3	<b>Impact assessment discussions</b>		
5.3.1	Conclusions and recommendations		

NO	DOCUMENT		
		YES	NO
5.3.2	References		
6	<b>Design report</b>		
6.1	Drawings signed by Professional Engineer		
6.2	Liner layers specified		
6.3	Construction Quality Assurance Plan (CQA)		

APPENDIX 2

**Minutes of DEFF Pre-Application Meeting**

	<b>DRAFT MINUTES</b> DEFF Pre-Application Meeting	<b>Queries:</b>	Donavan Henning ☎ 011 781 1730 ☎ 011 781 1731 ✉ donavanh@nemai.co.za
<b>Clients:</b>	 	<b>Project Name:</b>	Proposed Upgrade and Expansion of the Kameelmond WWTW
		<b>Project No.:</b>	10709
<b>Date:</b>	19 November 2019	<b>Time:</b>	10:00 – 12:00
<b>Facilitator:</b>	D. Henning	<b>Place:</b>	DEFF Offices (Environment House), 473 Steve Biko Rd, Pretoria

*Note: These minutes are not intended as a verbatim transcript of the meeting, but rather as a summary of the salient discussions which took place.*

### **Attendance**

A copy of the Attendance Register is attached in Appendix A.

### **Discussions**

Item.	Description	Action	Target Date
<b>1.</b>	<b>OPENING &amp; WELCOME</b>		
1.1	The Pre-Application Consultation Meeting with the Department of Environment, Forestry and Fisheries (DEFF) for the proposed upgrade and expansion of the Kameelmond Wastewater Treatment Works (WWTW) commenced at approximately 10H00.	-	-
<b>2.</b>	<b>MEETING OBJECTIVES</b>		
2.1	D. Henning indicated that the objectives of the meeting, as captured on the agenda, included the following: <ul style="list-style-type: none"> <li>To provide an overview of the proposed upgrade and expansion of the Kameelmond WWTW;</li> <li>To seek clarification regarding certain matters that pertain to Environmental Impact Assessment (EIA) process;</li> <li>To discuss the need for a Waste Management Licence (WML); and</li> <li>To determine DEFF's requirements.</li> </ul>	-	-
<b>3.</b>	<b>CONFIRMATION OF AGENDA</b>		
3.1	The agenda was accepted without any changes.	-	-
<b>4.</b>	<b>PROJECT OVERVIEW</b>		
4.1	C. Marx provided an overview of the project. He indicated that the aim of the project is to increase the capacity of the WWTW from 16,000 kℓ/d to 24,000 kℓ/d. He presented the preliminary layout.	-	-
4.2	D. Henning mentioned that the WWTW is located within the urban edge of Upington, based on the municipal Spatial Development Framework.		

Item.	Description	Action	Target Date
4.3	<p>L. Poll-Jonker enquired about the incinerator at the plant.</p> <p>D. Henning indicated that the WWTW has a diesel fired incinerator which is used for the thermal treatment of screenings.</p> <p>C. Marx explained the process whereby screenings are collected as the head of works at the plant.</p>	-	-
4.4	<p>L. Poll-Jonker asked whether the incinerator treats more than the regulated threshold of 500kg per day.</p> <p>D. Henning indicated that it is expected to be less than 500kg per day. He noted that other options of managing the screenings are being explored, which may include <i>inter alia</i> the temporary storage of the screenings, compaction and transportation for disposal at a permitted site.</p> <p>L. Poll-Jonker stated that it will not be regarded as temporary storage. She indicated that this activity will need to adhere to the Norms and Standards for Storage of Waste (2013).</p>	-	-
4.5	<p>L. Poll-Jonker mentioned that another option that could be explored is the incineration of the screenings at kilns of cement manufacturing plants.</p> <p>C. Marx indicated that the various viable options will be investigated.</p>	-	-
<b>5.</b>	<b>EIA MATTERS</b>		
<b>5.1</b>	<b>Listed Activities</b>		
5.1.1	D. Henning presented the listed activities that are assumed to be triggered by the project in terms of the EIA Regulations of 2014 (as amended), promulgated under the National Environmental Management Act (No. 107 of 1998) (NEMA). He noted that, based on the current understanding, the project needs to be subjected to a Basic Assessment.	-	-
5.1.2	<p>D. Henning noted that it is intended to split the project into a refurbishment contract and an expansion contract, with the prioritisation of the former. He noted that it is not anticipated that the refurbishment activities will trigger the need for Environmental Authorisation. Further information related to the refurbishment activities will be provided to DEFF.</p> <p>C. Marx explained the activities associated with refurbishment.</p>	Bigen & Nema Consulting	TBD
5.1.3	M. Litsoane noted that it needs to be determined whether any parts of the WWTW will be decommissioned and whether this will trigger a listed activity.	Bigen & Nema Consulting	TBD
5.1.4	<p>D. Henning presented the sludge classification.</p> <p>L. Poll-Jonker questioned the sludge type, which was shown as "composted sludge".</p> <p>C. Marx indicated that the option of composting the sludge is under consideration.</p>	-	-
5.1.5	D. Henning presented the sludge management options that are being investigated. He noted that the preferred option at this	-	-

Item.	Description	Action	Target Date
	stage is the agricultural use of the sludge, where it will be disposed of off-site.		
5.1.6	<p>D. Henning indicated that the regulatory requirements associated with the management of the screenings will need to be confirmed.</p> <p>L. Poll-Jonker asked whether the volume of screenings to be stored will exceed the regulated threshold of 80m<sup>3</sup>.</p> <p>C. Marx indicated that this volume will not be exceeded.</p> <p>L. Poll-Jonker indicated that the storage of screenings will then not need to comply with the Norms and Standards for Storage of Waste (2013). The waste disposal site where the screenings are to be disposed of will need to be licenced.</p>	-	-
5.1.7	<p>D. Henning presented the waste management activities that are assumed to be triggered by the project in terms of Government Notice (GN) No. 921 of 29 November 2013 (as amended), promulgated under the National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM:WA).</p> <p>L. Poll-Jonker stated that the following waste management activity will be triggered by the treatment of the sludge, which is associated with the sludge drying beds: <i>Category B, Activity no. 4 - The treatment of hazardous waste in excess of 1 ton per day calculated as a monthly average; using any form of treatment excluding the treatment of effluent, wastewater or sewage.</i> She explained the confusion with the interpretation of the term "sewage" in the description of the activity.</p> <p>L. Poll-Jonker further stated that the agricultural use of the sludge will not trigger activities related to recycling, reuse or recovery.</p>	-	-
5.1.8	<p>L. Poll-Jonker asked whether the sludge drying beds are excavations.</p> <p>C. Marx explained the nature of the drying beds.</p> <p>D. Henning indicated that it needs to be confirmed whether the sludge drying beds are regarded as "lagoons", as referred to in the Waste Management Regulations.</p>	Bigen & Nemai Consulting	TBD
5.1.9	<p>C. Marx noted that another option that could be explored is for the sludge to be removed by a waste contractor for treatment and beneficial use.</p> <p>L. Poll-Jonker indicated that in this instance, the waste contractor will need to be in possession of a WML.</p>	-	-
5.1.10	D. Henning mentioned that there have been engagements with the Northern Cape Department of Environment and Nature Conservation (DENC), which included determining the legal requirements for the incinerator at the WWTW in terms of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) (NEM:AQA).	-	-
<b>5.2</b>	<b>Application(s)</b>		
5.2.1	D. Henning reiterated DKM's intention to split the contracts for refurbishment and expansion.	-	-



Item.	Description	Action	Target Date
5.2.2	L. Poll-Jonker explained the meaning of “expansion”, as defined in GN No. 921 of 29 November 2013 (as amended). She noted that this would be linked to any proposed expansion of the sludge drying beds, which would increase capacity.  C. Marx indicated that the capacity of the sludge drying beds will not be increased.	-	-
5.2.3	L. Poll-Jonker stated that in the end, DEFF wants the plant to operate properly.	-	-
5.2.4	C. Marx noted that the refurbishment contract aims to restore the WWTW's functionality.	-	-
5.2.5	D. Henning indicated that it needed to be confirmed whether an Integrated Application in terms of NEMA and NEM:WA will be submitted to DEFF or if separate applications will be submitted to DEFF (NEM:WA) and DENC (NEMA).  L. Poll-Jonker and S. Dlamini indicated that it will be more beneficial to split the applications as follows, rather than submitting an Integrated Application that will hold up the expansion contract: <ol style="list-style-type: none"> <li>1. Apply to DENC for Environmental Authorisation in terms of NEMA and the EIA Regulations. This will be a Basic Assessment.</li> <li>2. Apply to DEFF for the WML in terms of NEM:WA. This will be a Scoping and EIA process.</li> </ol>	-	-
<b>5.3</b>	<b>Alternatives</b>		
5.3.1	D. Henning mentioned that the project entails the upgrading of an existing WWTW and that it is anticipated that only layout alternatives will be considered during the EIA.	-	-
<b>5.4</b>	<b>Specialist Studies</b>		
5.4.1	D. Henning indicated that it is anticipated that the following specialist studies will be undertaken as part of the requisite environmental assessments: <ul style="list-style-type: none"> <li>• Terrestrial Ecological Impact Assessment;</li> <li>• Phase 1 Heritage Impact Assessment;</li> <li>• Aquatic Impact Assessment &amp; Delineation; and</li> <li>• Air Quality Impact Assessment.</li> </ul> <p>He mentioned that certain studies will also be undertaken by the technical team, such as the geotechnical and geohydrological investigations.</p>	-	-
<b>5.5</b>	<b>Public Participation Process</b>		
5.5.1	D. Henning indicated that public participation will either be undertaken as part of an integrated process or run separately for the various applications.	-	-
5.5.2	D. Henning mentioned that the approach to public participation will include an upfront Announcement Phase, which will allow for the registration of Interested and Affected Parties. A Background Information Document will also be circulated. During the follow up round of public participation, notification will be provided of the review of the draft reports.	-	-
<b>5.6</b>	<b>Timeframes</b>		

Item.	Description	Action	Target Date
5.6.1	D. Henning indicated that the regulated timeframes will be adhered to for the EIA.	-	-
<b>5.7</b>	<b>Environmental Authorities Meeting</b>		
5.7.1	D. Henning noted that an Environmental Authorities Meeting will be scheduled during the course of the environmental assessments.	Nemai Consulting	TBD
<b>5.8</b>	<b>Site Visit</b>		
5.8.1	D. Henning indicated that a site visit can be arranged with DEFF, if required.	-	-
<b>6.</b>	<b>CLOSE</b>		
6.1	The meeting was concluded at approximately 11h30.	-	-

Minutes Compiled By:

**Nemai Consulting**



6 December 2019

\_\_\_\_\_  
D. Henning

\_\_\_\_\_  
Date

Minutes Accepted By:

**Department of Environment, Forestry and Fisheries**

\_\_\_\_\_  
L. Poll-Jonker



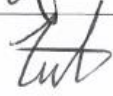


\_\_\_\_\_  
Date

APPENDIX A

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ATTENDANCE REGISTER

	<b>ATTENDANCE REGISTER</b> <b>DEFF Pre-Application Meeting</b>		<b>Queries:</b> ☎ 011 781 1730 ☎ 011 781 1731 ✉ donavanh@nemai.co.za
	<b>Clients:</b>  	<b>Project Name:</b> Proposed Upgrade and Expansion of the Kameelmond WWTW <b>Date:</b> 19 November 2019 <b>Time:</b> 10:00 – 11:30 <b>Venue:</b> DEFF Offices (Environment House), 473 Steve Biko Rd, Pretoria	

Representative Name and Surname	Name of Organisation	Designation	Contact Details	Sign	Apologies
Leoné Sago	Dawid Kruijer Municipality	Applicant	☎ 054 338 7061 ☎ 079 839 8403 ✉ leone.sago@dkm.gov.za		✓
Marco Slabbert	Bigen	Engineer	☎ 021 919 6976 ☎ 082 556 4787 ✉ Marco.Slabbert@bigengroup.com		✓
Gideon de Villiers	Bigen	Engineer	☎ 021 919 6976 ☎ 083 308 1249 ✉ Gideon.deVilliers@bigengroup.com		✓
Corrie Marx	Bigen	Engineer	☎ 012 842 8700 ☎ 082 881 7853 ✉ Corrie.Marx@bigengroup.com		
Donavan Henning	Nemai Consulting	Environmental Assessment Practitioner	☎ 011 781 1730 ☎ 082 891 0604 ✉ donavanh@nemai.co.za		
Christian Van Der Hoven	Nemai Consulting	Environmental Assessment Practitioner	☎ 011 781 1730 ✉ ChristianVdH@nemai.co.za		
Sonkeliwe Dlamini	DEA	Environmental officer	☎ 012 399 9379 ✉ sDlamini@environment.gov.za.		
LINDA POLL-JONKER	DEFF	CEO: GRA Licensee	☎ 012 399 2785 ✉ lpolljonker@environment.gov.za		

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1 | 2

Representative Name and Surname	Name of Organisation	Designation	Contact Details	Sign
Masina Litsokane	DEA: IEA	CEO: IEA	☎ 012 399 9375 📞 073 932 7843 ✉ MLitsokane@environment.gov.za	
			☎ 📞 ✉	
			☎ 📞 ✉	
			☎ 📞 ✉	
			☎ 📞 ✉	
			☎ 📞 ✉	
			☎ 📞 ✉	
			☎ 📞 ✉	

APPENDIX B

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PRESENTATION

# PROPOSED UPGRADE & EXPANSION OF THE KAMEELMOND WASTEWATER TREATMENT WORKS WWTW



## DEFF Pre-Application Meeting

19 November 2019



Google Earth  
Image © 2019 Google, Imagery © 2019

# MEETING OBJECTIVES

- ❖ To provide an overview of the proposed upgrade and expansion of the Kameelmond WWTW.
- ❖ To seek clarification regarding certain matters that pertain to EIA process.
- ❖ To discuss the need for a Waste Management Licence (WML).
- ❖ To determine DEFF's requirements.
- ❖ To provide a platform for project-related discussions.

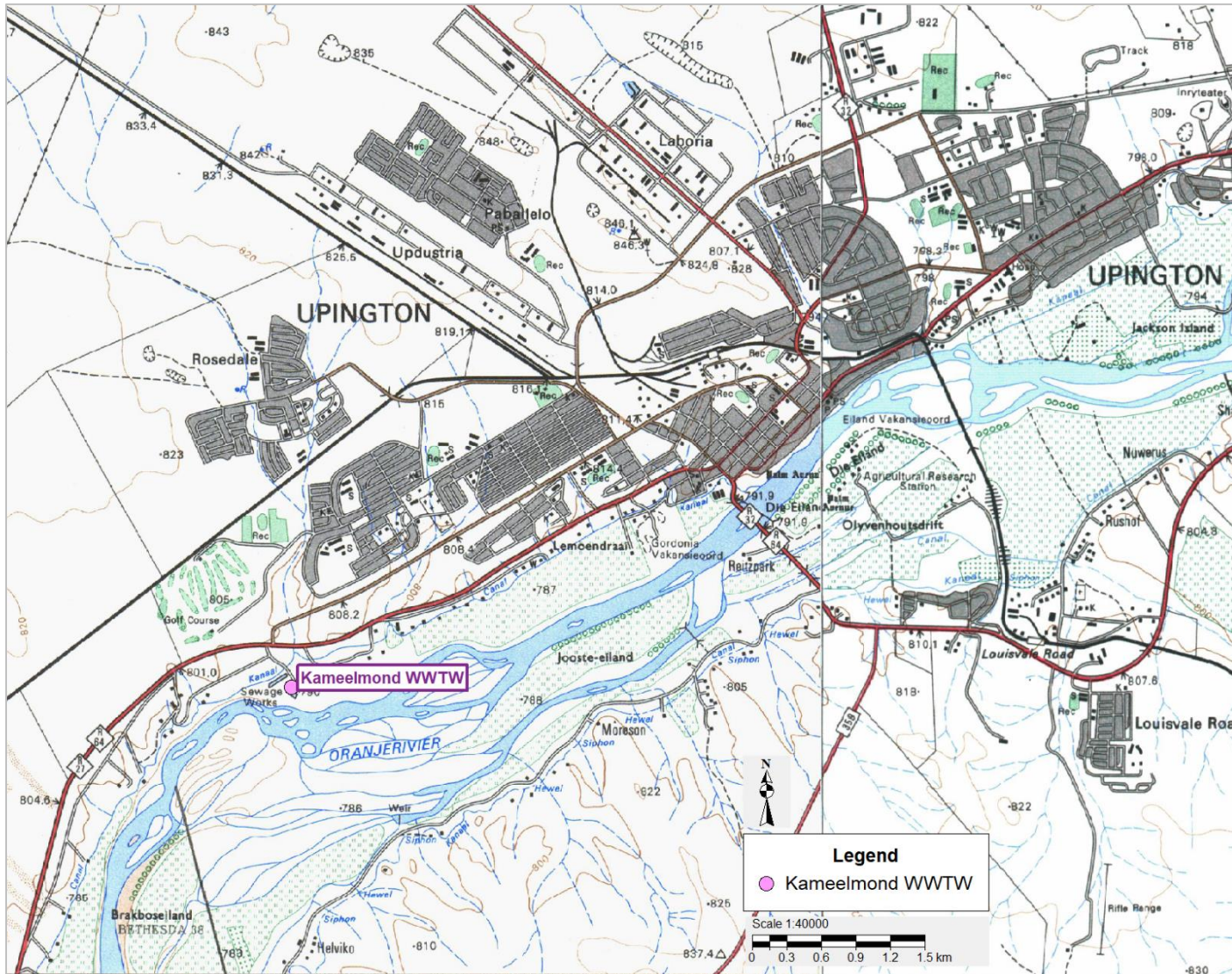




# 3) AGENDA

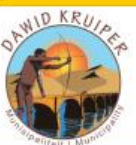
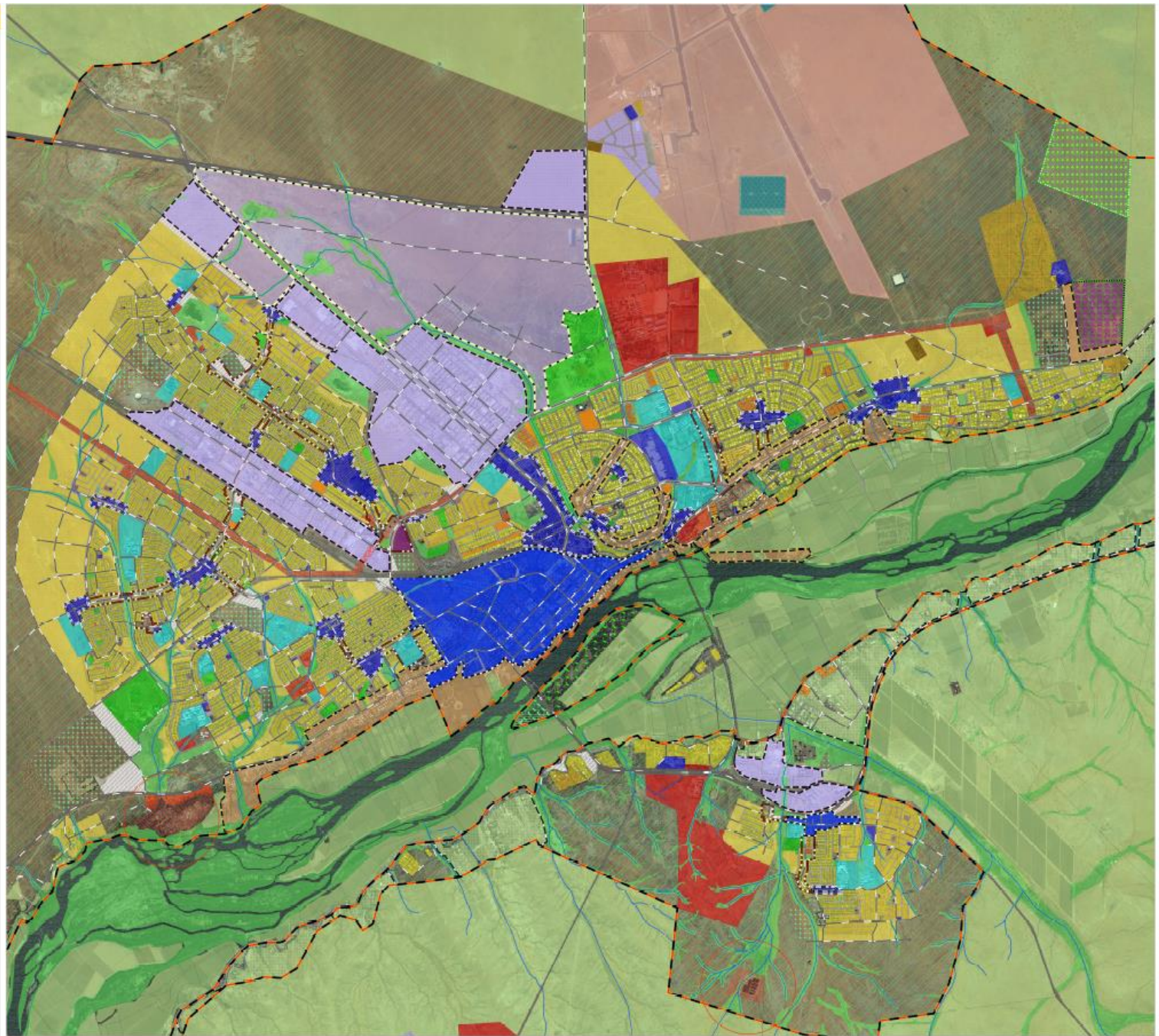
1. **Welcome and Introduction**
2. **Attendance Register**
3. **Confirmation of Agenda**
4. **Project Overview**
5. **EIA Matters**
  - a) Listed Activities
    - i. *NEMA*
    - ii. *NEM:WA (WML)*
    - iii. *NEM:AQA (AEL)*
  - b) Application(s)
  - c) Alternative(s)
  - d) Specialist Studies
  - e) Public Participation Process
  - f) Timeframes
  - g) Environmental Authorities Meeting
  - h) Site Visit
6. **DENC's Requirements**
7. **General**
8. **Closure and Way Forward**

# 4) PROJECT OVERVIEW



# Legend:

- David Krüper SDF Structuring Elements**
- Corridor Activity Street
  - Corridor Ecological Development Area
  - Corridor Recreation
  - Corridor Small Holdings
  - Corridor Tourism/ Hospitality
  - Main Access Roads Expansion
  - Main Access Roads
  - Node Secondary Business
  - Potential Surface Water
  - Precinct CBD
  - Precinct Industrial
  - Precinct Industrial SEZ
  - Risks WWTW 1000m
  - Urban Edge
- David Krüper SDF SPC's**
- A.a.5 Protected Environments
  - B.b. Ecological Corridors
  - B.b.2. Rivers or Riverbeds
  - B.b.3. Other Natural Areas
  - B.c.1 Public Park - POS
  - B.c.3 Parks and Open Spaces
  - C.a.2 Agriculture
  - D.i.2 Place of Worship
  - D.i.3 Institution
  - D.g.1 Government Uses
  - D.g.2 Municipal Uses
  - D.h. Residential Areas
  - D.h.1 Single Residential House
  - D.h.2 Group Housing
  - D.h.4 GAP Housing
  - D.h.7 Subsidised Housing
  - D.h.9 Small Holding
  - D.h.10 Residential Estate
  - D.i.1 Business Premises
  - D.i.2 Commercial
  - D.k.1 Gambling Premises
  - D.m.1 Mixed Use Development
  - D.n.1 Cemetery
  - D.o.1 Sports fields & Related Infrastructure
  - D.p.1 Airport and Related Infrastructure
  - D.q.1 Resort & Tourism Related Areas
  - D.q.2 Holiday homes & Tourism Related Areas
  - E.a.1 Agricultural Industry
  - E.c.1 Light Industry
  - E.c.2 Industry
  - E.o.1 Noxious Industry
  - E.e.1 Extractive Industry
  - F.a.1 National roads
  - F.b.1 Main Roads
  - F.a.1 Public Streets
  - F.a.2 Public Parking
  - F.1.1 Railway facilities
  - F.g.1 Power lines
  - F.h.1 Telecommunication and data infrastructure
  - F.j.1 Dams, Reservoirs Water Treatment Plants and Pump Houses
  - F.k.1 Canals
  - F.1.1 Sewerage Plants and Refuse Areas
  - G.a. Vacant land within Urban Edge





**LEGEND:**  
 NEW STRUCTURES

**NOTE:**  
 LAYOUT SUBJECT TO CHANGE BASED ON FINALISATION OF THE PRELIMINARY DESIGN.

ISSUE DATE:

VERSION / AMENDMENTS			
NO.	DATE	DESCRIPTION	AUTH. BY



**PROJECT TITLE**  
 REFURBISHMENT AND UPGRADING OF KAMELMOND WASTEWATER TREATMENT WORKS

**DRAWING TITLE**  
 PRELIMINARY SITE LAYOUT



www.bigen.com  
 Asset Building  
 3rd Floor North Block  
 Cat Creek Drive  
 Brisbane  
 Phone + 61 7 518 9870  
 assetteam@bigen.com

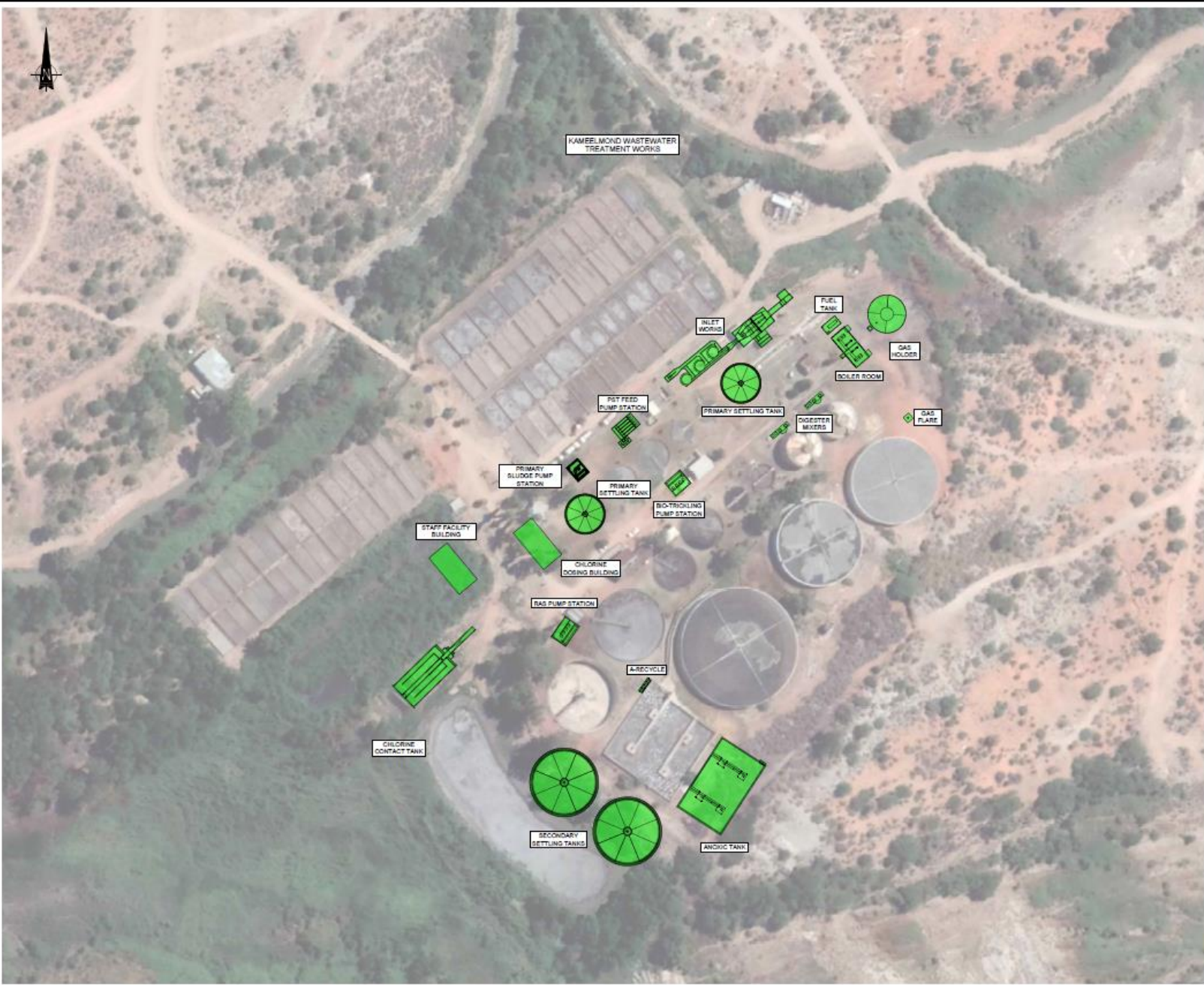


ORIGINAL DRAWING SCALE: 1:750 ORIGINAL DRAWING DATE: 2022/02/02

DESIGNED BY	NA	CHECKED BY	M GLABBERT
DRAWN BY	W WILBERG	CHECKED DATE	M GLABBERT
ISSUED BY	NA	DATE	SEPTEMBER 2022

APPROVED ON BEHALF OF BIRGO:

DRAWING NO.: 3287.00.00.AAA.10.U001  
 WORK: A.0



# 5) EIA MATTERS

## 5.1) Listed Activities

### 5.1.1. NEMA –

- Activities not deemed to be relevant (?)



# NEMA – EIA Regulations

## Listing Notice 1

Listing Notice & Activity No.	Description of Listed Activity	Reasons why it is not deemed to be triggered
LN 1 – 10	<p>The <b>development</b> and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes:</p> <p>(i) with an internal diameter of 0,36 metres or more; or</p> <p>(ii) with a peak throughput of 120 litres per second or more.</p> <p>excluding where-</p> <p>(a) inside a road reserve; or</p> <p>(b) where such development will occur within an <u>urban area</u>.</p>	<p>The project entails the proposed refurbishment and expansion of an existing WWTW. It is assumed that this activity does not need to be applied for based on our interpretation of the following terms (as defined in the EIA Regulations of 2014, as amended) –</p> <ul style="list-style-type: none"> <li>• “development”, which excludes inter alia any modification, alteration or expansion;</li> <li>• “expansion”, which includes the increase of the capacity of the facility or the footprint of the activity.</li> </ul> <p>In addition, the site is located within the urban edge.</p>
LN 1 – 12	<p>The <b>development</b> of-</p> <p>(ii) infrastructure or structures with a physical footprint of 100 square metres or more.</p> <p>where such development occurs-</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding-</p> <p>(dd) where such development occurs within an <u>urban area</u>; or</p> <p>(ee) where such development occurs within existing roads or road reserves.</p>	<p>The site is located within the urban edge.</p>
LN 1 – 25	<p>The <b>development</b> and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than <u>15 000 cubic metres</u>.</p>	<p>It is assumed that this activity does not need to be applied for based on our interpretation of “development” and “expansion”, as explained above.</p>

# NEMA – EIA Regulations

## Listing Notice 1

Listing Notice & Activity No.	Description of Listed Activity	Reasons why it is not deemed to be triggered
LN 1 – 27	<p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	The area to be cleared for the expansion is already disturbed and less than 1 hectare of indigenous vegetation will be cleared.



# NEMA – EIA Regulations

## Listing Notice 1

Listing Notice & Activity No.	Description of Listed Activity	Reasons why it is not deemed to be triggered
LN 1 – 34	<p><i>The expansion of existing facilities or infrastructure for any process or activity where such expansion will result in the need for a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the release of emissions, effluent or pollution, excluding—</i></p> <p><i>(i) where the facility, infrastructure, process or activity is included in the list of waste management activities published in terms of section 19 of NEM:WA</i></p> <p><i>(ii) the expansion of existing facilities or infrastructure for the treatment of effluent, wastewater, polluted water or sewage where the capacity will be increased by less than <u>15 000 cubic metres per day</u>.</i></p>	<p>The capacity of the WWTW will be increased by less than 15 000 cubic metres per day.</p>
LN 1 – 46	<p><i>The expansion and related operation of infrastructure for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes where the existing infrastructure—</i></p> <p><i>(i) has an internal diameter of 0,36 metres or more; or</i></p> <p><i>(ii) has a peak throughput of 120 litres per second or more; and</i></p> <p><i>(a) where the facility or infrastructure is expanded by more than 1 000 metres in length; or</i></p> <p><i>(b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more;</i></p> <p><i>excluding where such expansion—</i></p> <p><i>(aa) within a road reserve or railway line reserve; or</i></p> <p><i>(bb) will occur within an <u>urban area</u>.</i></p>	<p>The site is located within the urban edge.</p>
LN 1 – 51	<p><i>The expansion and related operation of facilities for the storage, or storage and handling, of a dangerous good, where the capacity of such storage facility will be expanded by more than <u>80 cubic metres</u>.</i></p>	<p>The combined capacity of containers associated with the storage, or storage and handling of a dangerous good (including the new chlorine dosing facility), will not exceed 80 cubic metres.</p>
LN 1 – 57	<p><i>The expansion and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage where the capacity will be increased by <u>15 000 cubic metres</u> or more per day and the development footprint will increase by 1 000 square meters or more.</i></p>	<p>The capacity of the WWTW will be increased by less than 15 000 cubic metres per day.</p>



# NEMA – EIA Regulations

## Listing Notice 2

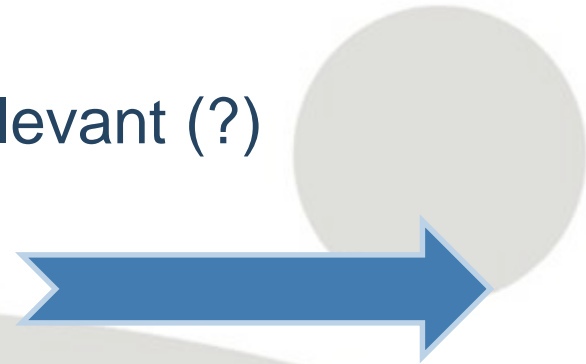
Listing Notice & Activity No.	Description of Listed Activity	Reasons why it is not deemed to be triggered
LN 2 – 6	<p><i>The <b>development</b> of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding—</i></p> <ul style="list-style-type: none"> <li><i>(i) activities which are identified and included in Listing Notice 1 of 2014;</i></li> <li><i>(ii) activities which are included in the list of waste management activities published in terms of section 19 of NEM:WA;</i></li> <li><i>(iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less.</i></li> </ul>	<p>It is assumed that this activity does not need to be applied for based on our interpretation of “development” and “expansion”, as explained above.</p>
LN 2 – 25	<p><i>The <b>development</b> and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of 15 000 cubic metres or more.</i></p>	<p>It is assumed that this activity does not need to be applied for based on our interpretation of “development” and “expansion”, as explained above.</p>

# 5) EIA MATTERS

## 5.1) Listed Activities

### 5.1.1. NEMA –

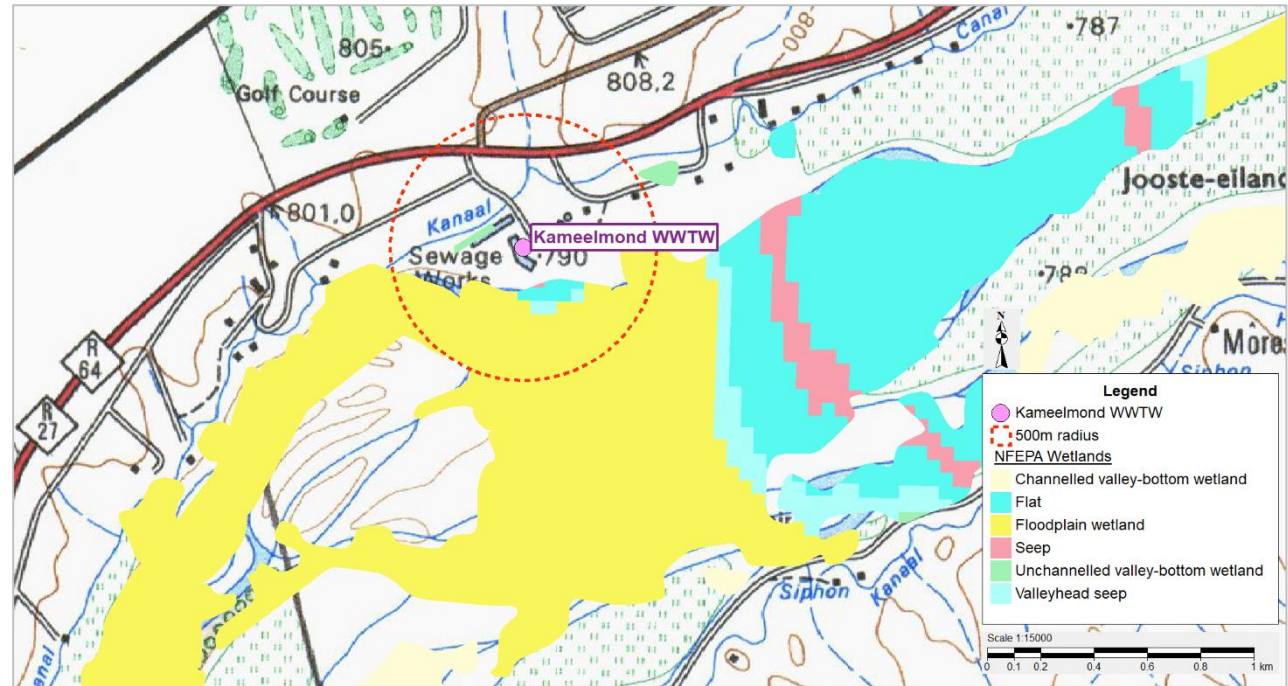
- Activities deemed to be relevant (?)



# NEMA – EIA Regulations

## Listing Notice 1

Listing Notice & Activity No.	Description of Listed Activity	Reasons why it is not deemed to be triggered
LN 1 – 19	<p><i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse but excluding where such infilling, depositing, dredging, excavation, removal or moving—</i></p> <p><i>(a) will occur behind a development setback;</i></p> <p><i>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</i></p> <p><i>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.</i></p>	Expansion of the WWTW within watercourse(s). All watercourses will be delineated.



# NEMA – EIA Regulations

## Listing Notice 1

Listing Notice & Activity No.	Description of Listed Activity	Reasons why it is not deemed to be triggered
LN 1 – 31	<p><i>The decommissioning of existing facilities, structures or infrastructure for -</i></p> <ul style="list-style-type: none"> <li><i>(i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</i></li> <li><i>(ii) any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</i></li> <li><i>(iii) .....</i></li> <li><i>(iv) any phased activity or activities for development and related operation activity or expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or</i></li> <li><i>(v) any activity regardless the time the activity was commenced with, where such activity:</i> <ul style="list-style-type: none"> <li><i>(a) is similarly listed to an activity in (i) or (ii) above; and</i></li> <li><i>(b) is still in operation or development is still in progress;</i></li> </ul> </li> </ul> <p><i>....</i></p>	Possible decommissioning of incinerator, depending on preferred option for management of screenings.

Added after meeting

# NEMA – EIA Regulations

## Listing Notice 3

- 4 The development of a road wider than 4 metres with a reserve less than 13,5 metres.
- 10 The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.
- 12 The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.
- 14 The development of - (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—  
(a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse.
- 18 The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometer.
- 22 The expansion and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage facilities or infrastructure will be expanded by 30 cubic metres or more but no more than 80 cubic metres.
- 23 The expansion of - (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs—  
(a) within a watercourse; (b) in front of a development setback adopted in the prescribed manner; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse.

*Sensitive geographical areas in NC*



# 5) EIA MATTERS

## 5.1) Listed Activities

### 5.1.1. NEMA -

#### ❖ Assumptions –

- ❑ The combined capacity of containers associated with the storage, or storage and handling of a dangerous good (including the new chlorine dosing facility), will not exceed 80 cubic metres.
- ❑ As part of the upgrade of the WWTW, the increase in capacity will not be equal to or more than 15 000 cubic metres per day.
- ❑ The Project does not entail any new development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent.

# 5) EIA MATTERS

## 5.1) Listed Activities

### 5.1.2. NEM:WA (WML) –

- ❑ Sludge Classification (Guidelines for Utilisation and Disposal of Wastewater Sludge)

*Table 5.4.1: Sludge classification of K-WWTW (2017 to 2018)*

Description	Sample 1	Sample 2	Sample 3	Sample 4
Sample date	July 2017	July 2018	Sept. 2018	Nov. 2018
Sludge type	Composted sludge			
Sampling point	Stockpile			
Microbiological parameters	B	B	B	B
Vector attraction reduction	1	2	1	1
Pollutant class	a	a	a	a
Classification	B1a	B2a	B1a	B1a

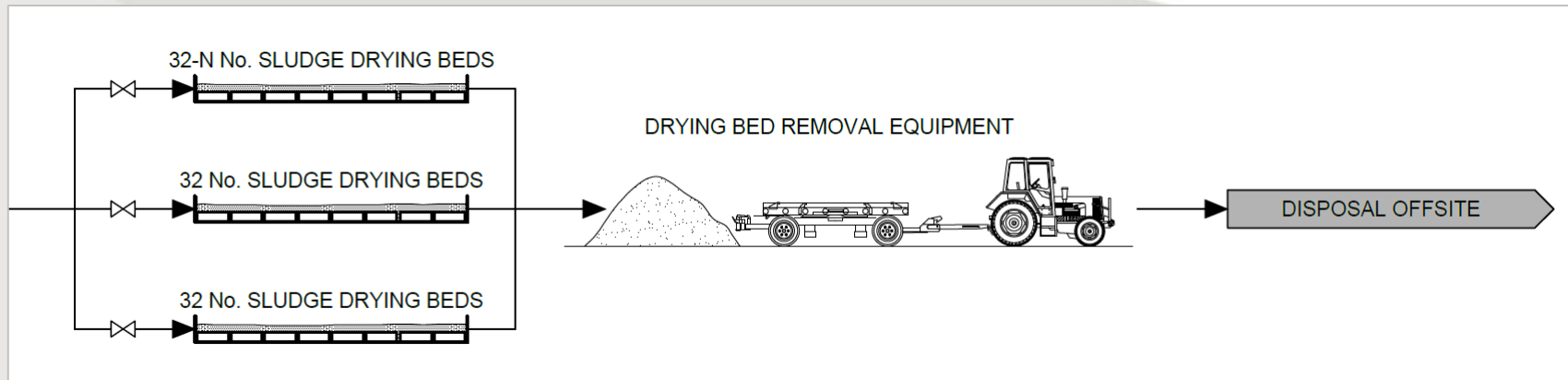


# 5) EIA MATTERS

## 5.1) Listed Activities

### 5.1.2. NEM:WA (WML) –

- ❑ Sludge Classification
- ❑ Sludge management options –
  - Agricultural use at agronomic rates





# 5) EIA MATTERS

## 5.1) Listed Activities

### 5.1.2. NEM:WA (WML) –

- Sludge Classification
- Sludge management options –
  - Agricultural use at agronomic rates
  - On-site or off-site disposal
  - Beneficial use (other than agricultural use at agronomic rates)
  - Thermal treatment methods
  - Produce saleable products



# 5) EIA MATTERS

## 5.1) Listed Activities

### 5.1.2. NEM:WA (WML) –

- Sludge Classification
- Sludge management options
- Management of screenings



# 5) EIA MATTERS

## 5.1) Listed Activities

### 5.1.2. NEM:WA (WML) –

- Sludge Classification
- Sludge management options
- Management of screenings
- General waste management (e.g. spoiling of inert construction waste)

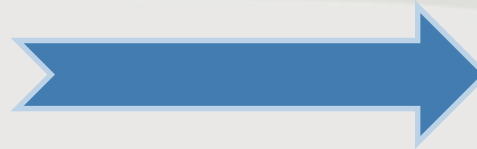


# 5) EIA MATTERS

## 5.1) Listed Activities

### 5.1.2. NEM:WA (WML) –

- Sludge Classification
- Sludge management options
- Management of screenings
- General waste management (e.g. spoiling of inert construction waste)
- Waste Management Activities:



# NEM:WA – Waste Management Activities

## Category A

- 4 The recycling of hazardous waste in excess of 500kg but less than 1 ton per day calculated as a monthly average, excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises
- 7 The treatment of hazardous waste using any form of treatment at a facility that has the capacity to process in excess of 500kg but less than 1 ton per day excluding the treatment of effluent, wastewater or sewage

## Category B

- 2 The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises
- 3 The recovery of waste including the refining, utilisation, or co-processing of the waste at a facility that processes in excess of 100 tons of general waste per day or in excess of 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises
- 4 The treatment of hazardous waste in excess of 1 ton per day calculated as a monthly average; using any form of treatment excluding the treatment of effluent, wastewater or sewage
- 7 The disposal of any quantity of hazardous waste to land

# 5) EIA MATTERS

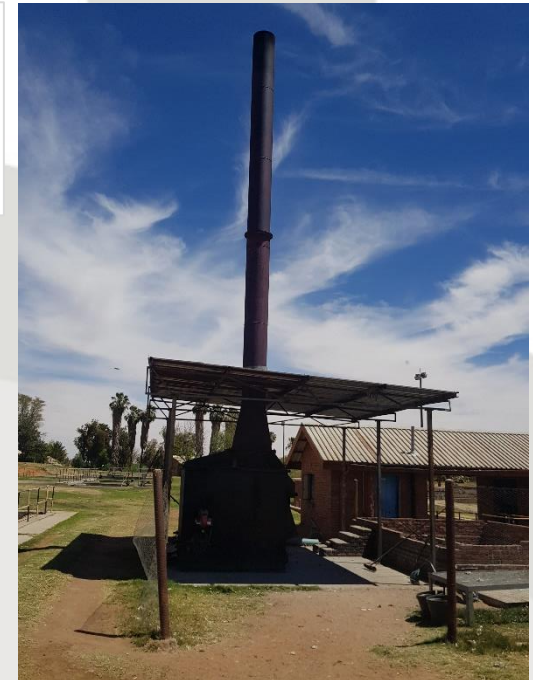
## 5.1) Listed Activities

### 5.1.3. NEM:AQA (AEL) –

#### Listed Activities related to **incinerator**:

(1) *Subcategory 8.1: Thermal Treatment of General and Hazardous Waste*

<b>Description:</b>	Facilities where general and hazardous waste are treated by the application of heat.
<b>Application:</b>	All installations treating 10 Kg per day of waste.



# 5) EIA MATTERS

## 5.2) Application(s)

### ❖ Refurbishment vs. Expansion



# 5) EIA MATTERS

## 5.2) Application(s)

- ❖ Refurbishment vs. Expansion
- ❖ Integrated Application / separation of Applications
  - ❑ BA and S&EIA; or
  - ❑ Single S&EIA



# 5) EIA MATTERS

## 5.3) Alternative(s)

- ❖ Upgrade of existing WWTW
- ❖ Layout alternatives under consideration



# 5) EIA MATTERS

## 5.4) Specialist Studies

### ❖ EIA –

- Terrestrial Ecological Impact Assessment
- Phase 1 Heritage Impact Assessment
- Aquatic Impact Assessment & Delineation
- Air Quality Impact Assessment

# 5) EIA MATTERS

## 5.4) Specialist Studies

### ❖ EIA

### ❖ Technical –

- Geotechnical & Geohydrological
- Classification
- Other...*



# 5) EIA MATTERS

## 5.5) Public Participation Process

- ❖ Concurrent processes / separation of Applications
- ❖ Upfront Announcement Phase (notices & BID) – registration of I&APs
- ❖ Notification of review of draft reports

# 5) EIA MATTERS

## 5.6) Timeframes

- ❖ Regulated timeframes
- ❖ Reliant on type of activities (BA / S&EIA) & integrated / separate Applications

# 5) EIA MATTERS

## 5.7) Environmental Authorities Meeting

## 5.8) Site Visit



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## 6) DEFF Requirements

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# Thank you



**Company:** Nemai Consulting  
**Contact Person:** Donovan Henning  
**Tel:** (011) 781 1730  
**Fax:** (011) 781 1731  
**Email:** [donavanh@nemai.co.za](mailto:donavanh@nemai.co.za)  
**Postal Address:** PO Box 1673, Sunninghill, 2157



# APPENDIX C

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## CURRICULA VITAE OF EAPs



## 1 Personal Particulars

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**Date of Birth:** 1976-12-06  
**Name of Staff:** Donovan Henning  
**Years of Experience:** 20  
**Nationality:** RSA

## 2 Position in the firm and within the organization of this assignment

---

Registered Environmental Assessment Practitioner.

## 3 Education

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Institution (Date from – Date to)	Degree(s) or Diploma(s) obtained
RAU (1995 – 1997)	B.Sc. Zoology and Biochemistry
RAU (1998)	B. Sc. Hons. Zoology
RAU (1999 – 2000)	M. Sc. Freshwater Ecology

## 4 Membership of professional bodies

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- Environmental Assessment Practitioners Association of South Africa (EAPASA) (2020/1217).
- South African Council for Natural Scientific Professions (SACNASP) (400108/17).

## 5 Summary

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Donavan Henning has been employed with Nemai Consulting since 2001, with 20 years' experience in the environmental field. During this time, he has applied, developed and implemented a host of environmental planning, assessment, management and monitoring tools.

## 6 Relevant Experience

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1.	<b>Project Name:</b>	<b>Upgrade and Expansion of the Kameelmond WWTW</b>
	<b>Client:</b>	Dawid Kruiper Municipality
	<b>Position held:</b>	Environmental Assessment Practitioner
	<b>Actual duties performed:</b>	Environmental Impact Assessment (EIA), Water Use Licence Application (WULA) and Waste Management Licence (WML). The scope included increasing the capacity of the Kameelmond WWTW from 16 MI/d to 24 MI/d.
	<b>Location:</b>	Upington, Northern Cape, RSA
	<b>Dates &amp; duration:</b>	2020 - current
2.	<b>Project Name:</b>	<b>Sunderland Ridge WWTW and Bulk Sewer Line</b>
	<b>Client:</b>	City of Tshwane
	<b>Position held:</b>	Assistant Environmental Assessment Practitioner
	<b>Actual duties performed:</b>	Environmental Impact Assessment (EIA) for the proposed expansion of the Sunderland Ridge WWTW, in Centurion. The new WWTW occupies an area of approximately 60 hectares. This will allow for future expansion to a total capacity of 113MI/d. The scope included a new 2.5km bulk sewer line between the existing Sunderland Ridge WWTW and the proposed extension.
	<b>Location:</b>	Centurion, Gauteng Province, RSA

	<b>Dates &amp; duration:</b>	2012 - 2014.
3.	<b>Project Name:</b>	<b>uMkhomazi Water Project Phase 1</b>
	<b>Client:</b>	Department of Water and Sanitation
	<b>Position held:</b>	Environmental Assessment Practitioner
	<b>Actual duties performed:</b>	Environmental Impact Assessment (EIA), Water Use Licence Application (WULA) and mining applications (quarries and borrow areas). The scope included a large storage dam (81 m high) on the uMkhomazi River, tunnel (32 km), gauging weir, balancing dam (46 m high) on Mbangweni River and raw water pipeline (5 km).
	<b>Location:</b>	Bulwer, KwaZulu-Natal Province, RSA
	<b>Dates &amp; duration:</b>	Aug 2013 – Nov 2020, 7 years
4.	<b>Project Name:</b>	<b>Vaal Gamagara Regional Water Supply Scheme Phase 2</b>
	<b>Client:</b>	Sedibeng Water
	<b>Position held:</b>	Environmental Assessment Practitioner
	<b>Actual duties performed:</b>	EIA and WULA. The scope included a bulk water pipeline (190 km), pump stations and reservoirs.
	<b>Location:</b>	Delportshoop to Olifantshoek, Northern Cape Province, RSA
	<b>Dates &amp; duration:</b>	Aug 2019 – Mar 2020, 7 months
5.	<b>Project Name:</b>	<b>Mokolo Crocodile River West Water Augmentation Project Phase 2</b>
	<b>Client:</b>	Department of Water and Sanitation
	<b>Position held:</b>	Environmental Assessment Practitioner
	<b>Actual duties performed:</b>	EIA and borrow pit applications. The scope included a weir on the Crocodile River, abstraction infrastructure (balancing dam, desilting works, high-lift pumping station), transfer system (100 km), reservoirs, gravity pipeline (30 km) and gauging weirs.
	<b>Location:</b>	Thabazimbi to Lephalale, Limpopo Province, RSA
	<b>Dates &amp; duration:</b>	Feb 2018 – Sept 2019, 19 months
6.	<b>Project Name:</b>	<b>Lower uMkhomazi Bulk Water Supply Scheme</b>
	<b>Client:</b>	Umgeni Water
	<b>Position held:</b>	Environmental Assessment Practitioner
	<b>Actual duties performed:</b>	EIA and WULA. The scope included abstraction works, low-lift pipeline, rising main to Reservoir, gravity main and water treatment plant.
	<b>Location:</b>	Craigie Burn, KwaZulu-Natal Province, RSA
	<b>Dates &amp; duration:</b>	Aug 2017 – Sept 2018, 13 months
7.	<b>Project Name:</b>	<b>Augmentation of the Western Cape Water Supply System (Voëlvelei Dam)</b>
	<b>Client:</b>	Department of Water and Sanitation
	<b>Position held:</b>	Environmental Assessment Practitioner
	<b>Actual duties performed:</b>	EIA and WULA. The scope included a low level weir on the Berg River, abstraction works, pump station, rising main pipeline from the Berg River to Voëlvelei Dam, and a potential new summer release connection at the existing Swartland Water Treatment Works.
	<b>Location:</b>	Gouda, Western Cape, RSA
	<b>Dates &amp; duration:</b>	Sept 2016 – Jul 2017, 10 months
8.	<b>Project Name:</b>	<b>Ncwabeni Off-Channel Storage Dam and associated infrastructure</b>
	<b>Client:</b>	Department of Water and Sanitation
	<b>Position held:</b>	Environmental Assessment Practitioner
	<b>Actual duties performed:</b>	EIA and WULA. The scope included an Off-Channel Storage Dam and outlet infrastructure to make measured releases back to the Mzimkhulu River, abstraction / gauging weir, abstraction works, pump station and pipeline.
	<b>Location:</b>	Port Shepstone, KwaZulu-Natal Province, RSA
	<b>Dates &amp; duration:</b>	Oct 2011 – Mar 2014, 2.5 years

## 7 Language Proficiency

---

English & Afrikaans - excellent speaking, reading, and writing.

## 8 References

---

<b>Company Name:</b>	Department of Water and Sanitation
<b>Individual Name:</b>	Mr. Kobus Bester
<b>Position Held:</b>	Chief Engineer: Options Analysis
<b>Contact Details:</b>	Tel: 012 336 8071; Email: besterk@dws.gov.za

<b>Company Name:</b>	Umgeni Water
<b>Individual Name:</b>	Mr. Kevin Meier
<b>Position Held:</b>	Manager: Planning Services
<b>Contact Details:</b>	Tel: 033 341 1111; Email: kevin.meier@umgeni.co.za

<b>Company Name:</b>	Sedibeng Water
<b>Individual Name:</b>	Mr. Ian Hasenjager
<b>Position Held:</b>	New Business Development
<b>Contact Details:</b>	Tel: 053 562 9300; Email: lhasenjager@sedibengwater.co.za

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**Curriculum Vitae**


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- |                   |                    |
|-------------------|--------------------|
| 1. Family Name:   | Naidoo             |
| 2. First Name:    | Dhanashree (Nicky) |
| 3. Date of Birth: | 1973-03-27         |
| 4. Nationality:   | South African      |
| 5. Education:     |                    |

Institution (Date from – Date to)	Degree(s) or Diploma(s) obtained
University of Natal 1991 to 1994	B.Sc. Chemical Eng

- |   |   |
|---|---|
| 6. Membership of professional bodies:             | IAIA, SAICheEng                                   |
| 7. Other skills (e.g. computer literacy, etc.):   | Computer Literate, Training, chemical engineering |
| 8. Present position:                              | Director  |
| 9. Years within the organisation:                 | 11  |
| 10. Key qualifications (relevant to the project): | B.Sc. Chemical Eng                                |
| 11. Professional experience:                      |   |

Date (From – To) (mm/yy)	95 - 03/98
Organisation	ESKOM
Location	Jhb
Position	Engineer
Description of duties	Waste Water Treatment Power Stations Social Engagement with communities around Power Stations to determine service delivery needs. Responsible for various research project throughout the country

Date (From – To) (mm/yy)	04/98 – 12/99
Organisation	Bergman Ingerop
Location	Jhb
Position	Environmental and Social Engineer
Description of duties	Manager of the Environmental and Social Unit of the company which is a French company. Worked throughout Africa on Environmental Projects.

Date (From – To) (mm/yy)	01/00 to date
Organisation	Nemai Consulting
Location	Jhb, Durban, Rustenburg
Position	Director
Description of duties	Project Manager of all strategic and large-scale projects.

## **12. Selected experience:**

- EIA Project Manager for the construction of a pump station at Dam 02 - Bushkoppies Waste Water Treatment Works, for Johannesburg Water.
- EIA Project Manager for the increase in sludge treatment capacity including new lime dosing plant at Northern WWTW, for Johannesburg Water.
- EIA Project Manager for a new WWTW on the Hennops River and the upgrade of the Sunderland Ridge WWTW, for the City of Tshwane (currently underway).
- EIA Project Manager for the construction of new treatment unit including sedimentation tanks, BNR activated sludge treatment and chemical dosing facility at Northern WWTW, for Johannesburg Water.
- EIA Project Manager for the construction of thickeners at the Goudkoppies WWTWs, for Johannesburg Water.
- EIA Project Manager for the upgrade of the Zandspruit Pump Station, for Johannesburg Water.
- EIA for the Ivory Park Sewerage Network (phases 9 to 14), for Johannesburg Water.
- EIA Project Manager - blanket environmental consultant to Johannesburg Water on all EIA applications (water and sanitation) for the 2003/2004 and 2004/2005 financial years.
- Project Manager - Environmental compliance monitoring for the construction of Unit 5 at Northern Water Treatment Works, for Johannesburg Water
- Project Manager - EIA for the 300km Eskom Powerline – North South Strengthening EIA, Mpumalanga
- Project Manager - EIA for the Ivory Park Sewerage Network (phases 9 to 14), for Johannesburg Water.
- EIA Project Manager for the construction and upgrade of the water supply pipeline from Country View Reservoir, for Johannesburg Water.
- EIA Project Manager for the upgrade of the Helderkruijn Reservoir, for Johannesburg Water.
- Project Manager - EIA for the Modderfontein Outfall Sewer, for Johannesburg Water.
- Project Manager - EIA for Slangfontein to Mapleton Pipeline, for Rand Water.
- Project Manager - EIA for the Fischer Tropsch Wax Expansion project, for Sasol Technology.
- Project Manager - EIA for the de-bottlenecking of the Acrylic Acid and Acrylates (AAA) complex, for Sasol Technology.
- Environmental design review of the Naphta Tar Extraction Plant at Sasol.
- Environmental design review of the upgrade of certain process at SAPREF Plant.
- Environmental design of the Total Gas Bottling Plant in Senegal.

# APPENDIX D

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## LAYOUTS



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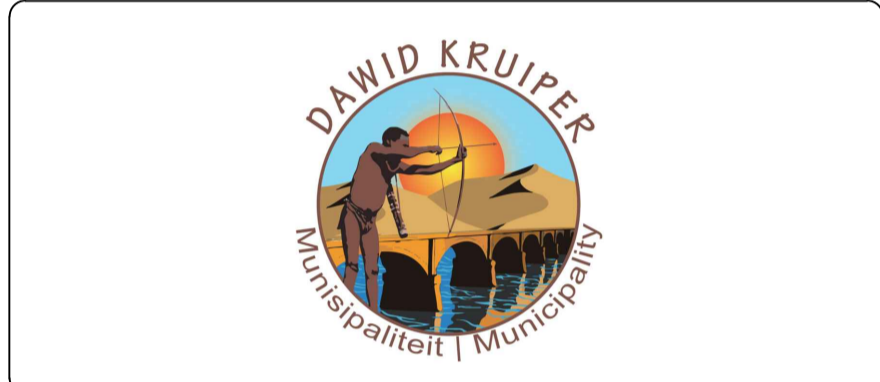
REFURBISHED STRUCTURES

**NOTE:**

LAYOUT SUBJECT TO CHANGE BASED ON FINALISATION OF THE PRELIMINARY DESIGN.

SURVEY DATUM:

VERSION / AMENDMENTS		
No.	DATE	DESCRIPTION



PROJECT TITLE:

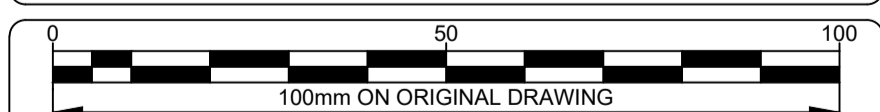
**REFURBISHMENT AND UPGRADING OF KAMEELMOND WASTEWATER TREATMENT WORKS**

DRAWING TITLE:

**INFRASTRUCTURE TO REFURBISH**



www.bigengroup.com  
 Avanti Building  
 3rd Floor North Block  
 Carl Cronjé Drive  
 Bellville  
 Phone: + 27 (0) 21 919 6976  
 capetown@bigengroup.com

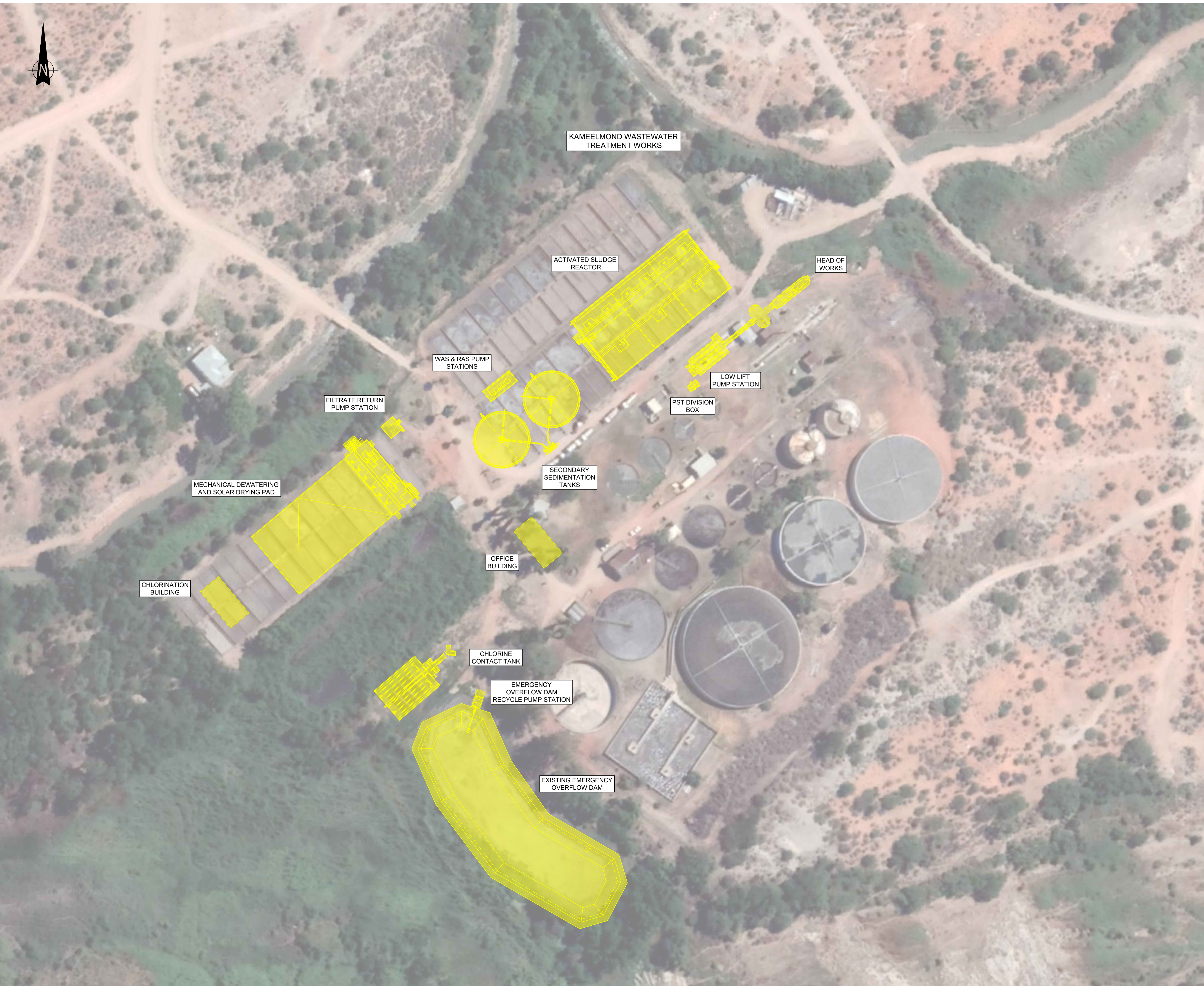


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DRAWN	J DU TOIT	CHECKED	M SLABBERT
COORD SYSTEM	N/A	DATE	SEPTEMBER 2019


APPROVED ON BEHALF OF BIGEN:

DRAWING No.: **3287.00.00.AAA.10.U001**      VERSION: **A.0**





**LEGEND:**

 NEW STRUCTURES - MODULE 1

**NOTE:**

LAYOUT SUBJECT TO CHANGE BASED ON FINALISATION OF THE PRELIMINARY DESIGN.

SURVEY DATUM:

**VERSION / AMENDMENTS**

No.	DATE	DESCRIPTION	AUTH. BY



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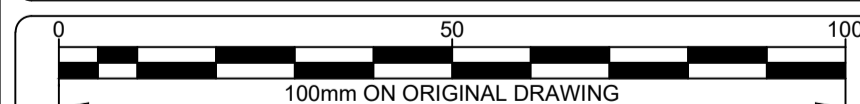
DRAWING TITLE:

**PROPOSED SITE LAYOUT**



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Bellville  
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capetown@bigengroup.com

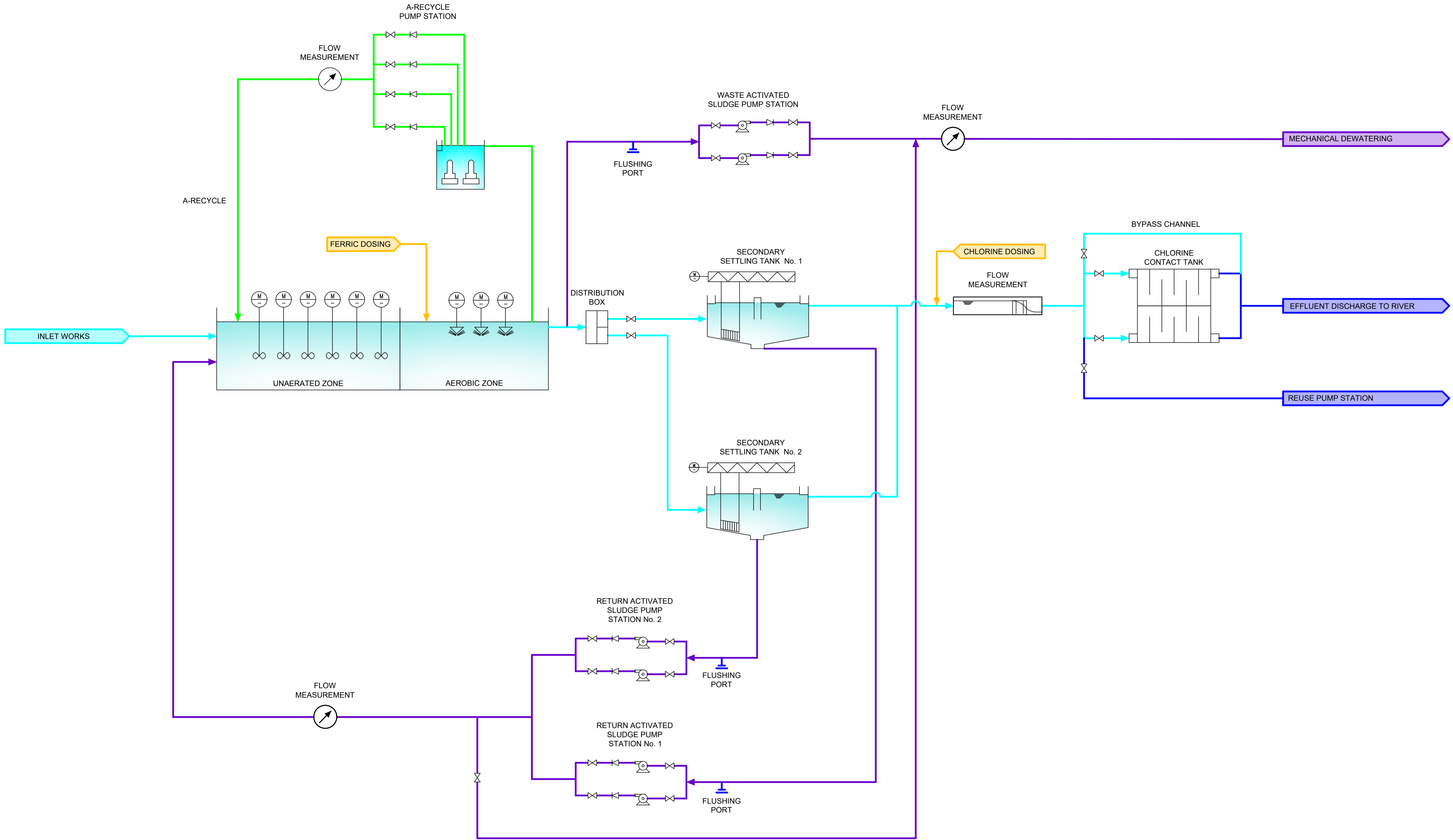


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DRAWN	M ZIETSMAN	CHECKED	G DE VILLIERS
COORD SYSTEM	N/A	DATE	FEBRUARY 2021

APPROVED ON BEHALF OF BIGEN:

DRAWING No.: **3287.00.00.AAA.10.U002** VERSION: **A.0**

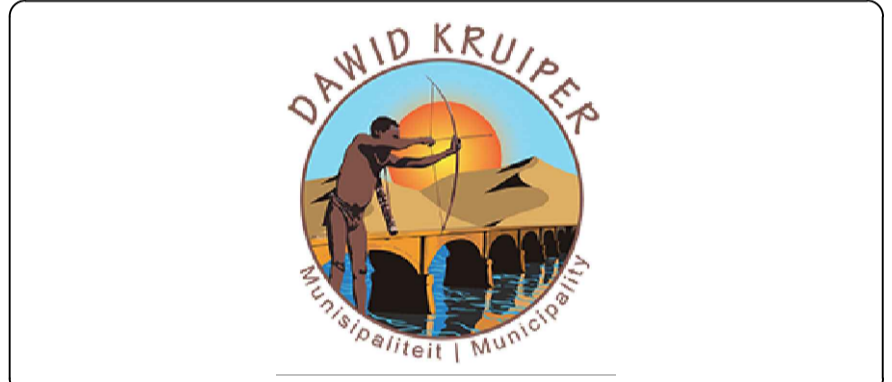


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SURVEY DATUM:

VERSION / AMENDMENTS			
No.	DATE	DESCRIPTION	AUTH. BY

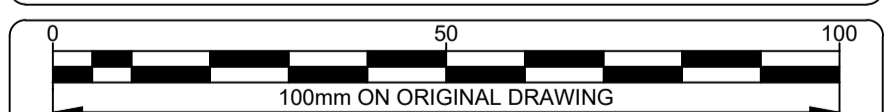


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**REFURBISHMENT AND UPGRADING OF KAMEELMOND WASTEWATER TREATMENT WORKS**

DRAWING TITLE:  
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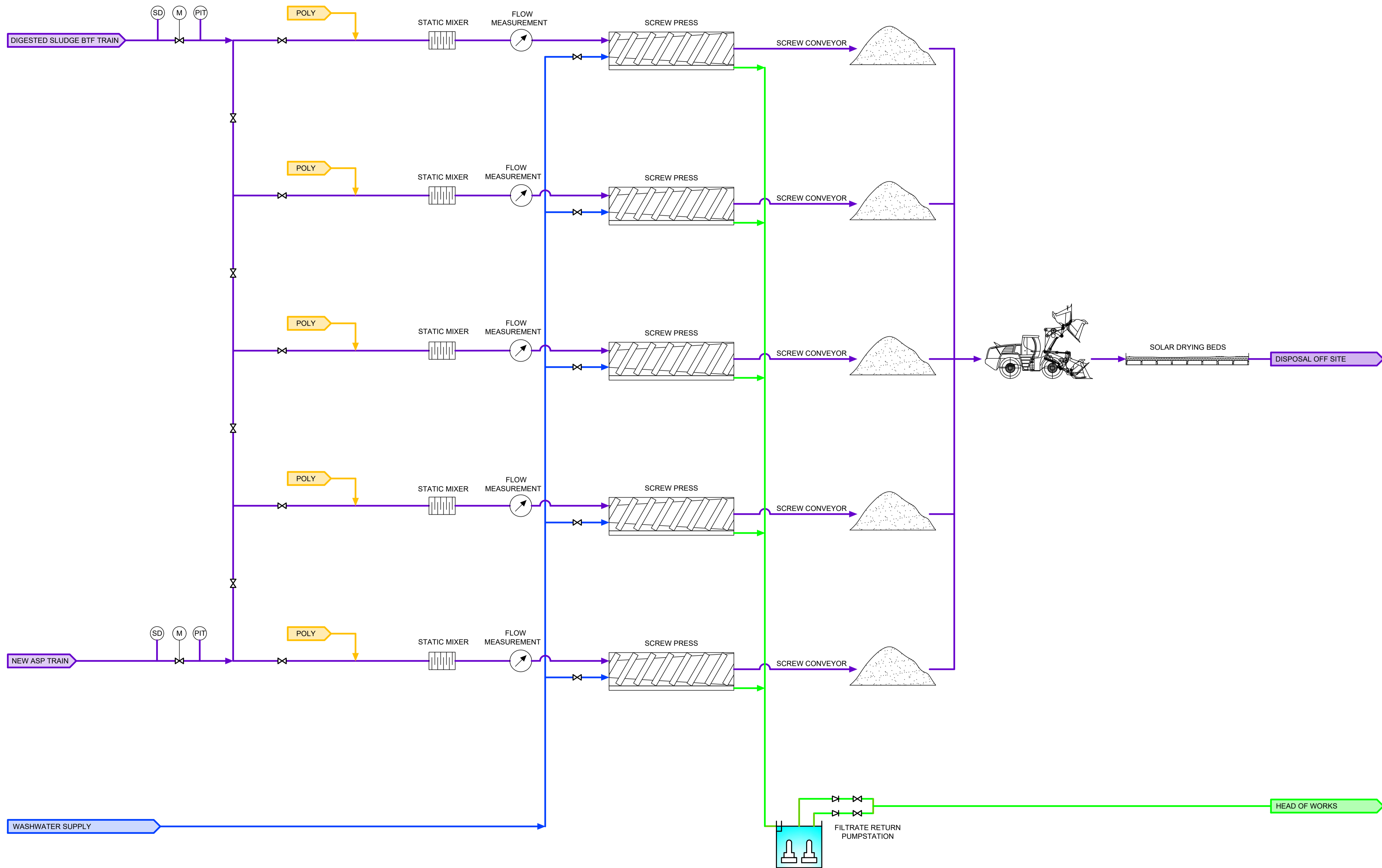
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 Phone: + 27 (0) 21 919 6976  
 capetown@bigengroup.com



ORIGINAL DRAWING SCALE:	AS SHOWN	ORIGINAL DRAWING SHEET SIZE:	A1
SURVEYED	N/A	DESIGNED	M SLABBERT
DRAWN	J DU TOIT	CHECKED	G DE VILLIERS
COORD SYSTEM	N/A	DATE	FEBRUARY 2021

APPROVED ON BEHALF OF BIGEN:

DRAWING No.: **3287.00.00.AAA.13.A002**      VERSION: **A.0**



**LEGEND:**

- SLUDGE PROCESS STREAM
- WASHWATER STREAM
- DOSING STREAM
- RECYCLE STREAM

SURVEY DATUM:

VERSION / AMENDMENTS			
No.	DATE	DESCRIPTION	AUTH. BY

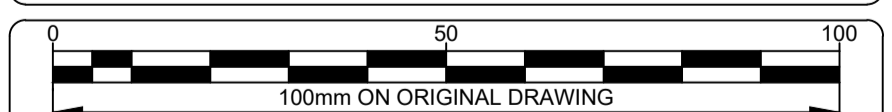


PROJECT TITLE:  
**REFURBISHMENT AND UPGRADING OF KAMEELMOND WASTEWATER TREATMENT WORKS**

DRAWING TITLE:  
**MECHANICAL FLOW DIAGRAM  
 SLUDGE MANAGEMENT TRAIN**



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 Belville  
 Phone: + 27 (0) 21 919 6976  
 capetown@bigengroup.com



ORIGINAL DRAWING SCALE:	AS SHOWN	ORIGINAL DRAWING SHEET SIZE:	A1
SURVEYED	N/A	DESIGNED	M SLABBERT
DRAWN	J DU TOIT	CHECKED	G DE VILLIERS
COORD SYSTEM	N/A	DATE	JANUARY 2021

APPROVED ON BEHALF OF BIGEN:

DRAWING No.: **3287.00.00.AAA.13.A003**      VERSION: **A.0**

# APPENDIX E

---

## DATABASE OF AUTHORITIES, STAKEHOLDERS & IAPs

## AUTHORITIES

Organisation	Name
Department of Forestry, Fisheries and the Environment (DFFE)	Samkelisiwe Dlamini
DFFE: IEA	Masina Litsoane
DFFE: Waste	Linda Poll-Jonker
DEFF: Waste	Lucas Mahlangu
DFFE: Biodiversity Conservation	Stanley Tshitwamulomoni
DFFE: Biodiversity Conservation	Mmatlala Rabothata
DFFE: Biodiversity Conservation	Seoka Lekota
DFFE: Biodiversity Conservation	Aulicia Maifo
Department of Water & Sanitation (DWS)	Piet Ackerman
DWS	Roets Wietsche
Department of Agriculture	Anneliza Collett
South African Heritage Resource Agency (SAHRA)	Lynette Sbondile Van Damme
SAHRA	Mary Leslie
SAHRA	Dr Ragna Redelstorff
SAHRA	Natasha Higgitt
SAHRA	Phillip Hine
McGregor Museum	Colin Fortune
McGregor Museum	Dr D. Morris
McGregor Museum	Annemarie van Heerden
South African National Roads Agency SOC Ltd	Nicole Abrahams
South African National Roads Agency SOC Ltd	S. Dyers
South African National Roads Agency SOC Ltd	Rene de Kock
National Dept of Tourism	Palesa Kadi
National Dept of Tourism	Kingsley Makhubela
Water Institution Of Southern Africa (WISA)	Evelyn
Dept of Land Affairs	Mr Eddie Mohoebi
Department of Cooperative Governance	Elroy Africa
Department of Rural Development and Land Reform	Mr. S. Ogunronbi
South African National Biodiversity Institute (SANBI)	Kristal Maze
SANParks	Paul Daphney
Dept of Trade and Industry	Mrs M. Sebotse
Chamber of Mines	Mr Niks Lesufi
South African Local Government Association (SALGA)	William Moraka
SALGA	I Chauke
Northern Cape Department of Environment and Nature Conservation (DENC)	B Fisher
DENC	Ms. Martha Molokwane
DENC	Ms. Thandeka Mlatha
DENC	Olebile Seshupo
DENC	Naomi Mokonopi
DENC	Dineo Moleko
DENC	Dineo Kgosi
DENC	Elsabe Swart
DENC	Peter Cloete
DENC	Conrad Geldenhuys
DENC	Enrico Oosthuyzen
DENC	G. Letimela
DENC	JC Kalakgosi
DWS: Northern Cape Region	Abe Abrahams
DWS: Northern Cape Region	Alexia Hlengani
DWS: Northern Cape Region	Shaun Cloete
DWS: Northern Cape Region	Abenathi Mthintelwa
DWS: Northern Cape Region	Gawie van Dyk
DWS: Northern Cape Region	Feni Ntombizanele

Organisation	Name
DWS: Northern Cape Region	Mokhoantle Lerato
DWS: Northern Cape Region	Kgaphola Mashudu
Department of Mineral Resources & Energy (DMRE): Northern Cape	Pieter Swart
DMR: Northern Cape Region	Johannes Nematatani
DMR: Northern Cape Region	Vincent Muila
Department of Agriculture, Forestry and Fisheries (DAFF)	Jacoline Mans
DAFF	Mashudu Marubini
DAFF	Christo Smit
Department of Agriculture	Cynthia Fortune
Department of Agriculture, Land Reform & Rural Development	Dimakatso Viljoen Mothibi
Department of Agriculture & Land Reform	Dr. P Kegakilwe
Department of Agriculture & Land Reform	Nico Toerien
Department of Agriculture & Land Reform	Nadia Goltz
Northern Cape Provincial Heritage Resources (Ngwao-Boswa Jwa Kapa Bokone)	R Timothy
Department of Cooperative Governance, Human Settlement & Traditional Affairs	Gladys Botha
COGHSTA	Mantefeleng Booyesen
Department of Roads & Public Works	M Sithole
Department of Roads & Public Works	Kholekile Nogwili
Department of Roads & Public Works	Sylvia Moholo
Department of Health Services	Gugulethu Matlaopane
Department of Transport, Safety and Liaison	Lesego Wolfe
Northern Cape Department of Health	Danie Stander
Northern Cape Office of the Premier	Z. Langeveldt
Northern Cape Office of the Premier	Cynthia Joseph
ZF Mgcawu District Municipality	Gilbert Lategan
ZF Mgcawu District Municipality	Tinus Galloway
ZF Mgcawu District Municipality	Godfrey Kuun
ZF Mgcawu District Municipality	Thalita Skei
ZF Mgcawu District Municipality	Frikkie Ruppen
ZF Mgcawu District Municipality	Technical Manager
Dawid Kruiper Local Municipality (DKLM)	E Ntoba
DKLM	Suzzelle Coetzee
DKLM	Jeremy du Plessis
DKLM	Conrad Geldenhuys
DKLM	Leoné Sago
DKLM	Mduduzi Mnganga
DKLM	Hendry Christians
DKLM	Simon May
DKLM	Padwald Jonker
DKLM	Elize Mnyaka
DKLM	Gaylene Schreiner
DKLM	Muriel Sishuba
DKLM	Nombulelo Mhlaba
DKLM	Lizelle Adams
DKLM	Ina Engelbrecht
DKLM	Mr Smith

**GENERAL**

<b>Organisation / Affiliation</b>	<b>Name</b>
Eskom	John Geeringh
Eskom	Justine Wyngaardt
Eskom	M Mabitsi
Eskom	Nondwe Nongauza
Transnet	Andre Bodenstein
Transnet Pipelines	Thami Hadebe
Transnet	Raymond Lehloma
Transnet Corporate	Vincent Matabane
Transnet Freight Rail	Maureen Kunene
Transnet Freight Rail	Nsumbulana Mtsenga
Transnet Freight Rail	Zanoxolo Pama
Transnet Freight Rail	Patric Segone
Telkom	Wayleaves
Openseve	Greg Green
South African National Roads Agency SOC Ltd	Rene De Kock
South African National Roads Agency SOC Ltd	Nicole Abrahams
South African National Roads Agency SOC Ltd	Thobile Duma
South African National Roads Agency SOC Ltd	Victoria Botha
Sasol	Wayleaves
Lemoendraai Agricultural Cooperative	Rudolph Saal
Lemoendraai Agricultural Cooperative	James Esterhuizen
Upington Irrigation Board	Barend Louw
AgriWatch	Ferdi Botha
Gariep Watch	Fritz Bekker
Orange River Cellars	Charl du Plessis
Orange River Cellars	Chris Venter
Agri SA	
Agri Northern Cape	Wilco Fourie
Agri Northern Cape	Henning Myburgh
Agri Northern Cape	Dirk Krapohl
Agri Northern Cape	Wiaan van Rensburg
Agri Northern Cape	H. de Wet
OWK	Chris Venter
The Endangered Wildlife Trust (EWT)	Constant Hoogstad
WESSA	Delana Eksteen
WESSA	Morgan Griffiths
WESSA	Suzanne Erasmus
Birdlife South Africa	Hanneline Smit-Robinson
Birdlife South Africa	Daniel Marnewick
Birdlife South Africa	Simon Gear
Water Research Commission	Wandile Nomqophu
Water Research Commission	Bonani Madikizela
Water Research Commission	Eberhard Braune
Kalahari-West	J.C. Nel
Brackbosheiland IB	R.S. Brink
Friersdale IB	Frikkie de Wet
Friersdale IB	Lizelle Loxton
Upington IB	K. Bekker
Keimoes IB	Awie van Wyk
Kousas IB	J.J. Hanekom
Malanshoek IB	D.J. Malan
Malanshoek IB	Koos Brink
Neilersdrift IB	W.J. Hanekom
Olyvenhoutsdrift IB	S.A Chamberlain
Onderstekonseiland IB	Mariette van Zyl
Rooikopeiland IB	Nico Visser
Skanskopeiland IB	GP du Plessis
Straussburg IB	Sterling Strauss
Swartkop IB	J.A. Luttig
Adjacent Landowner (Erf 21888)	DJW Gilbert
Adjacent Landowner (Erf 3100 & 3101)	JL Julie Boerdery BK
Adjacent Landowner (Erf 3100 & 3101)	JL Julie Boerdery BK
Adjacent Landowner (Olyvenhoutsdrift 452)	REP VAN SUID-AFRIKA

# APPENDIX F

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## BACKGROUND INFORMATION DOCUMENT



# BACKGROUND INFORMATION DOCUMENT



March 2021

## PROPOSED UPGRADE & EXPANSION OF THE KAMEELMOND WASTEWATER TREATMENT WORKS IN UPINGTON, NORTHERN CAPE

### PROJECT ANNOUNCEMENT

#### Project Team:

Proponent:  
**Dawid Kruiper Municipality**

Engineering Team:  
**Bigen Africa Services (Pty) Ltd**

Environmental Assessment Practitioner:  
**Nemai Consulting (Pty) Ltd**

#### CONTENT

1. Purpose of this Document
2. Background & Motivation
3. Status Quo Treatment Process
4. Scope of Work for K-WWTW
5. Environmental Assessments
6. Contact Details

## 1. PURPOSE OF THIS DOCUMENT

The purpose of this **Background Information Document (BID)** is as follows:

1. It serves to provide an overview of the proposed upgrade and expansion of the Kameelmond Wastewater Treatment Works (K-WWTW) in Upington, Northern Cape Province (the Project);
2. It provides an outline of the environmental assessments that will be undertaken for the Project; and
3. It allows for comments to be raised by Interested and Affected Parties (I&APs) regarding the proposed Project (refer to the attached Reply Form).

## 2. BACKGROUND & MOTIVATION

The K-WWTW is situated north of the Orange River, on the south western side of Upington on the N14 between Upington and Keimoes, in the Northern Cape. The site is located in the Dawid Kruiper Municipality (refer to the locality map in **Figure 1** below).

The K-WWTW is under ever increasing pressure to enhance serviceability of new residential and, to a lesser extent, industrial runoff located within the Works' planned drainage area. Effluent quality standards specified by the Department of Water and Sanitation (DWS) are also likely to increase beyond the current treatment efficiency that the Works' is able to achieve. Potential reuse of the Works' effluent, together with the above mentioned culminates in the requirement of the upgrade and expansion of the K-WWTW.

The aim of the project is to increase the capacity of the K-WWTW from 16 to 24 Megalitres per day. The upgrade and expansion of the K-WWTW will take place within the confines of the existing perimeter fence.



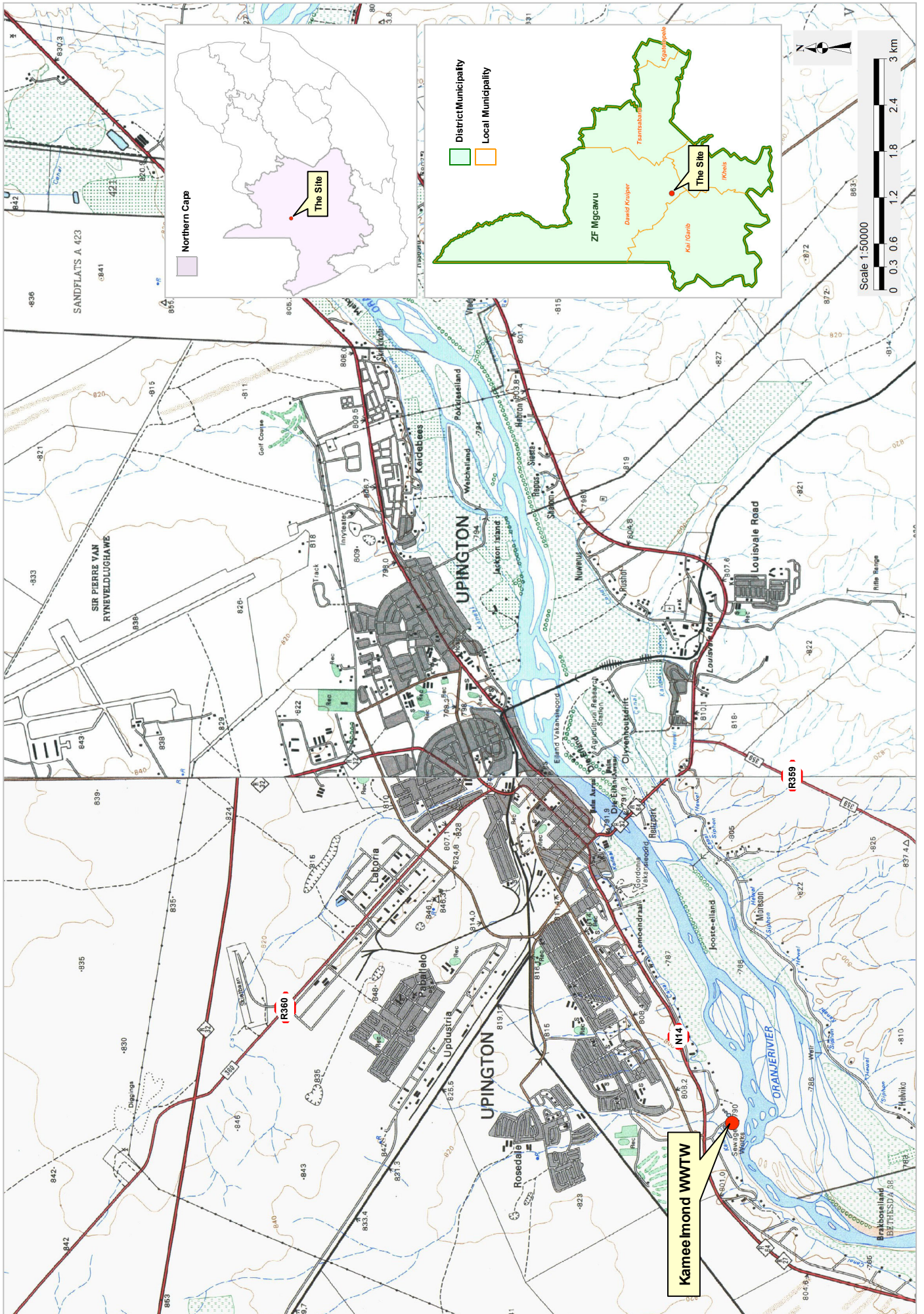
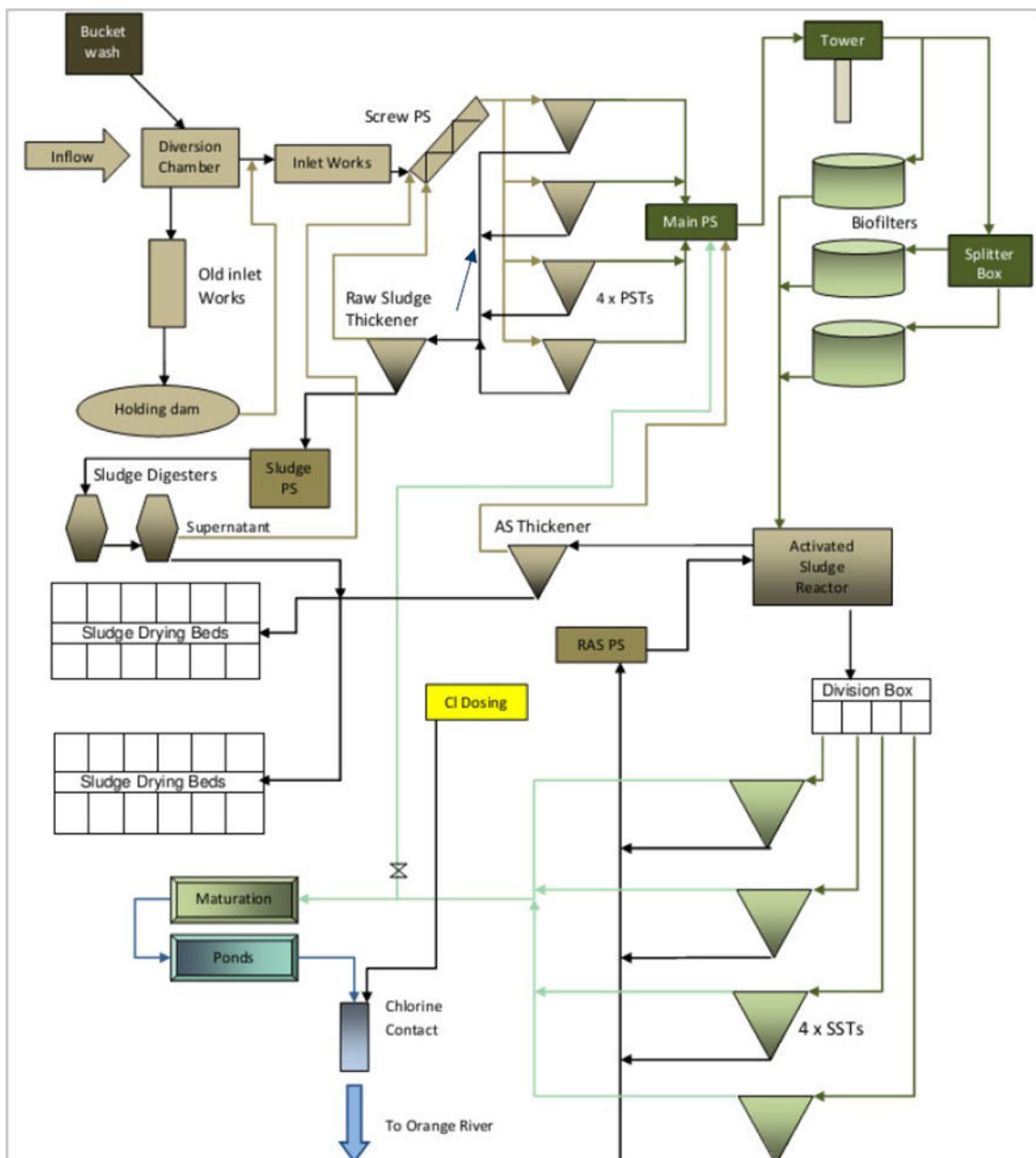


Figure 1: Locality map

### 3. STATUS QUO TREATMENT PROCESS

The K-WWTW consists of the following process elements (as shown in **Figure 2** below):

- Night soil discharge & bucket washing system
- Inlet works (screen, degritting & flow measurement)
- Incinerator
- Screw pump station
- Primary settling tank
- Raw sludge pumps (to thickener)
- Main pump station
- Biological filters
- Biological reactor
- Return activated sludge pumps
- Thickeners
- Sludge pumps
- Anaerobic digesters
- Sludge drying beds
- Maturation pond
- Disinfection
- Chlorination system
- Chlorine contact tank
- Emergency pond
- Return pump station



**Figure 2:** Schematic process diagram of works

## 4. SCOPE OF WORK FOR K-WWTW

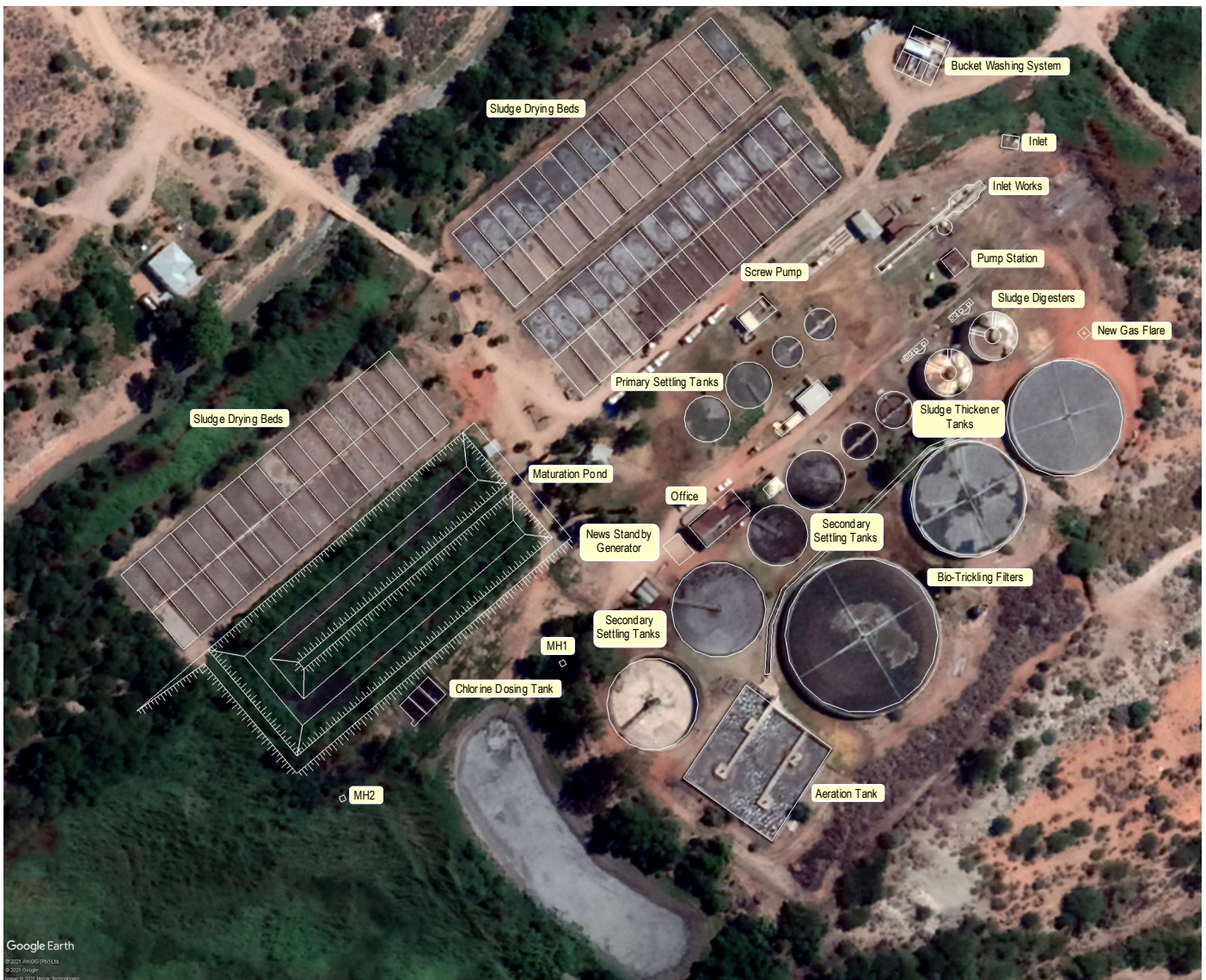
The status quo treatment process requires major refurbishment as large sections of the K-WWTW have been in operation since the 1970s, with the last upgrade and expansion having taken place during the 1990s. It was therefore proposed that the overall scope of work for the K-WWTW be split into the following: (i) refurbishment of existing mechanical and electrical equipment; and (ii) upgrade and expansion of the K-WWTW.

### 4.1 Refurbishment

The refurbishment activities aim to ensure the following:

- That the systems/equipment remain operational until such time when the main upgrade and expansion of K - WWTW is commissioned; and
- That the relevant system/equipment can be integrated and remain functional as part of the future treatment strategy.

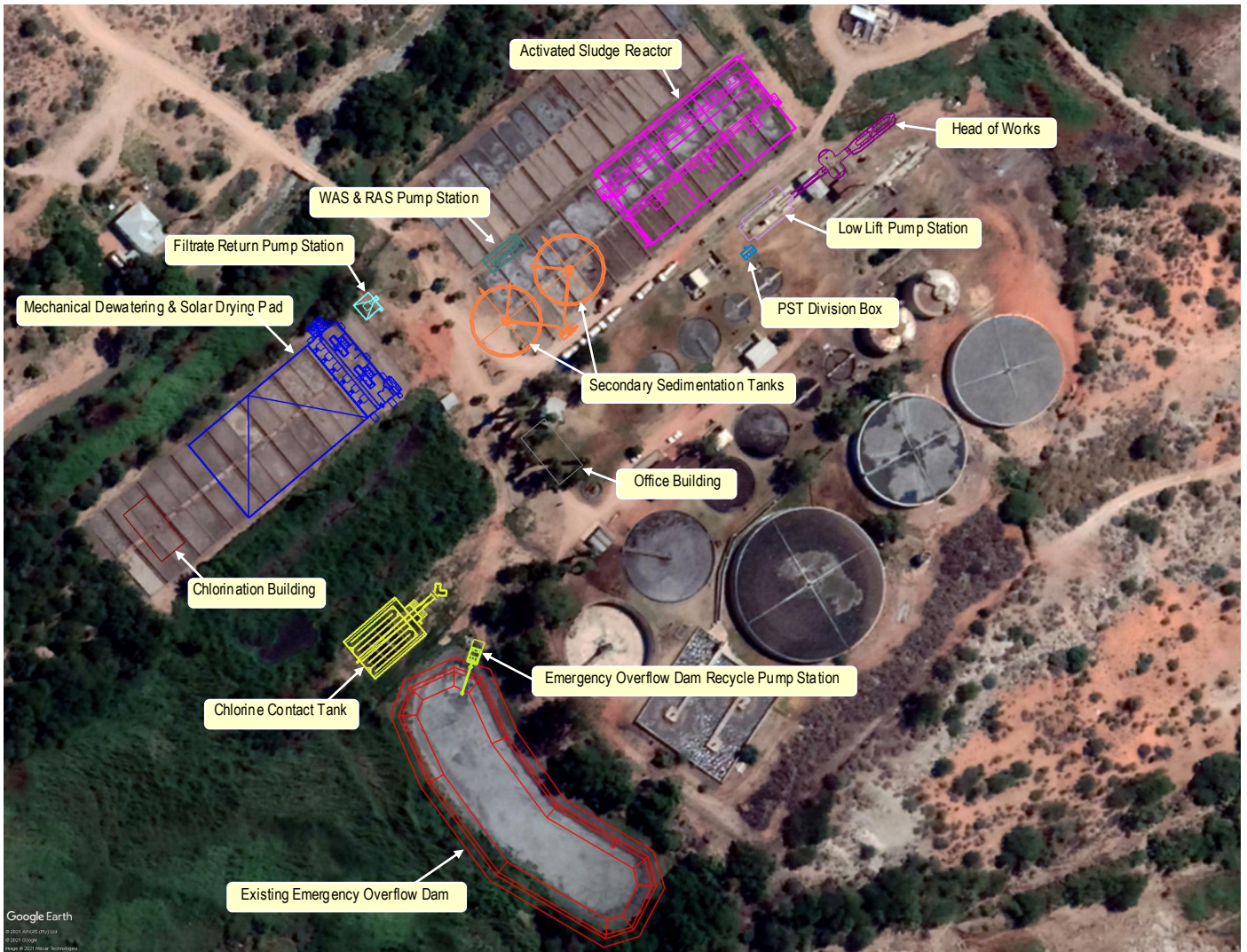
A map of the general layout of the existing infrastructure to be refurbished is shown in **Figure 3** below.



**Figure 3: K-WWTW existing infrastructure to be refurbished (Google Earth image)**

### 4.2 Upgrade & Expansion

A map of the general layout of the upgrade and expansion works is shown in **Figure 4** below.



**Figure 4: K-WWTW Upgrade and expansion works (Google Earth image)**

Based on the Preliminary Design Report, which was compiled by Bigen Africa Services (Pty) Ltd in February 2021, the following components of the K-WWTW are to be upgraded and expanded:

**1) Head of Works**

A mothballed structure, previously used as the inlet works (shown in **Figure 5** below) will be demolished to avail space for the newly proposed Head of Works (HoW). The new HoW will comprise of two (2) trains operating in a duty standby configuration. The new inlet works will be designed to accommodate an Average Dry Weather Flow (ADWF) of 24 Megalitres per day and an Hourly Peak Flow (HPF) of 84 Megalitres per day (3 500 m<sup>3</sup>/hr).



**Figure 5: Obsolete “old” inlet works**

A diesel-fired incinerator is currently used for the disposal of screenings at the K-WWTW. The incinerator will be discontinued as part of the upgrade and expansion works.

## 2) Emergency Storage

An existing emergency overflow pond (shown in **Figure 6**), which is located next to the existing aeration tank, intercepts high peak flows that cannot be handled by the installed equipment. It has a storage capacity of 4 375 m<sup>3</sup>. Based on this volume and a design emergency overflow rate of 500 m<sup>3</sup>/hr, the pond can provide a retention period of ±8 hrs during a peak influent event of 3500 m<sup>3</sup>/hr.

Based on the engineering investigations, it appears that a significant amount of sludge has accumulated in the pond. This sludge needs to be removed to create additional capacity.

A new recycle pump station will be installed to supply the content of the storage tank over an 8-hour period.



**Figure 6: Emergency pond at K-WWTW**

## 3) Low Lift Pump Station

Flow from the HoW will collect in sump from where it will be pumped to the existing and new modules. The flow will be split between the existing and the proposed modules via overflow weirs. The flow rate to the new module will be measured via an ultrasonic flow meter.

A new low lift pump station is proposed for the upgrade and expansion of the K -WWTW.

## 4) Activated Sludge Train

A new 12 Megalitres per day (ADWF) Activated Sludge Process (ASP) is proposed for the upgrade and expansion of the K-WWTW. The ASP consists of a single biological reactor equipped with mixers and aerators, Secondary Sedimentation Tanks for solids separation and multiple internal recycles.

The ASP design is based on 3 main objectives, namely (1) substrate removal; (2) conversion of ammonia to nitrate; and (3) Biological Nitrogen Removal (specifically nitrogen and phosphate).

## 5) Disinfection & Reuse

It is proposed that a dual chlorination channel be provided to treat the total effluent from the K-WWTW. The tank will be sized to ensure a minimum contact period of 20 min at ADWF. This equates to a total volume of 333 m<sup>3</sup>. The condition and configuration of the existing chlorine contact tank is not considered feasible for use in the upgraded and expanded works. A new tank will therefore be provided.

The dosing system will be installed in terms of the SANS 10298:2009 and be based on one (1)-tonne drum cylinders. Based on a dosing rate of 5 mg/l, one cylinder will remain operational for 8-days. This equates to a usage of 3.1-tonnes gas cylinders per month. The chlorine dosing and storage facility will make allowance for a total of 9 gas cylinders to limit delivery cycles to the K-WWTW.

## 6) Sludge Stabilisation & Dewatering

Sludge will be produced from two sludge trains, namely the existing Biological Trickling Filter train and the new ASP train. The sludge from both trains will be treated at a new dewatering facility. The main processes associated with the sludge management are:

- Anaerobic digestion of Primary Sludge and Waste Activated Sludge (WAS) (status quo);
- Extended sludge age in activated sludge processes (new ASP); and
- Mechanical sludge dewatering.

K-WWTW currently has 96 drying beds (refer to **Figure 7**), which will be decommissioned and demolished to avail space for the new ASP train. Therefore, a new, small footprint, sludge dewatering facility will be required to ensure effective sludge handling and disposal is maintained at the plant.

An option evaluation was done for the specific case of K-WWTW which concluded that that the most favourable solution is to generate sludge conforming to the requirements associated with beneficial use (i.e. source for fertilizer).

The proposed sludge handling facility will consist out of the following systems:

- Mechanical dewatering units;
- Poly electrolyte dosing system; and
- Solar-drying/Stockpiling slab with associated sludge handling equipment.



**Figure 7: Sludge drying beds at K-WWTW**

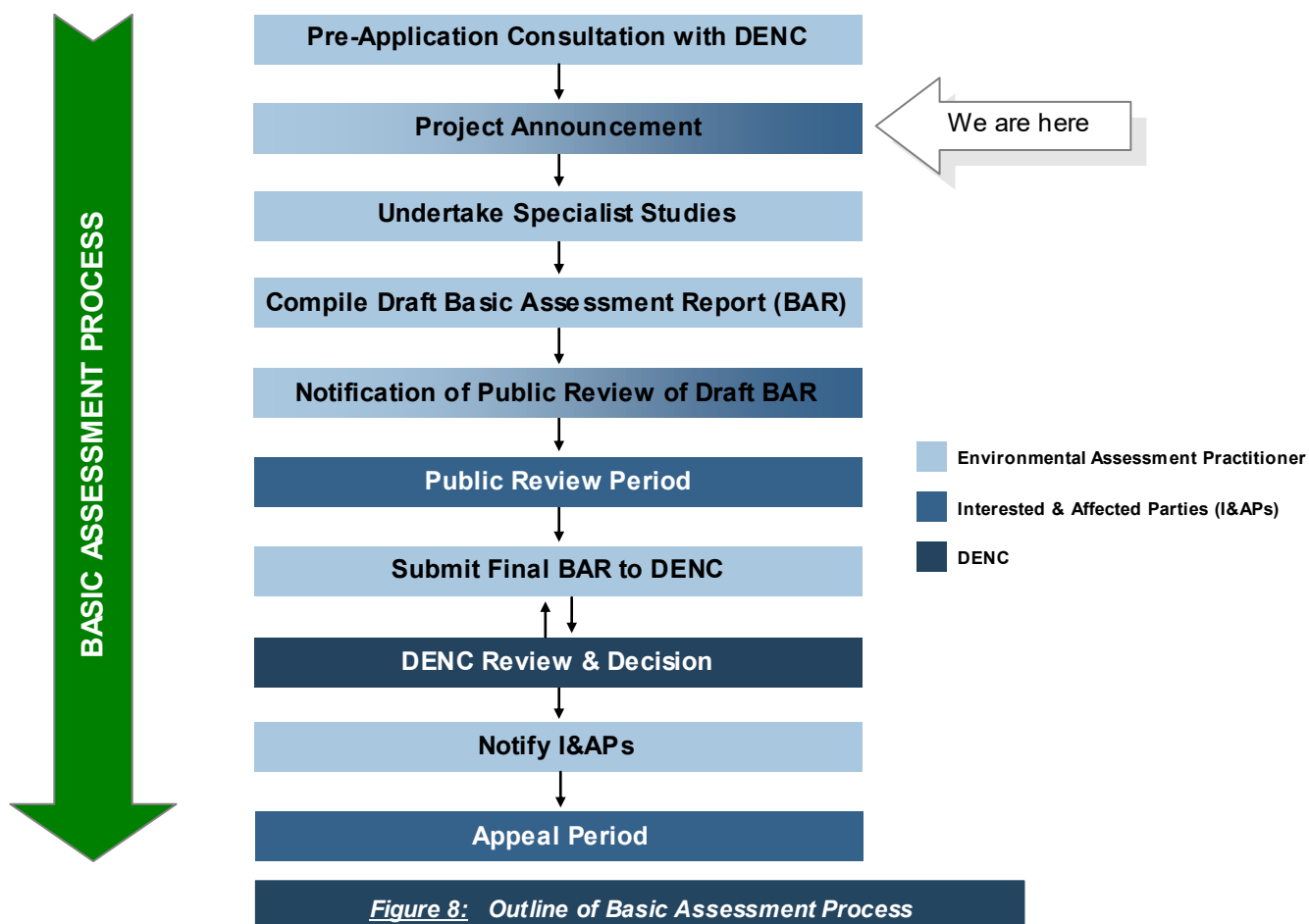
# 5. ENVIRONMENTAL ASSESSMENTS

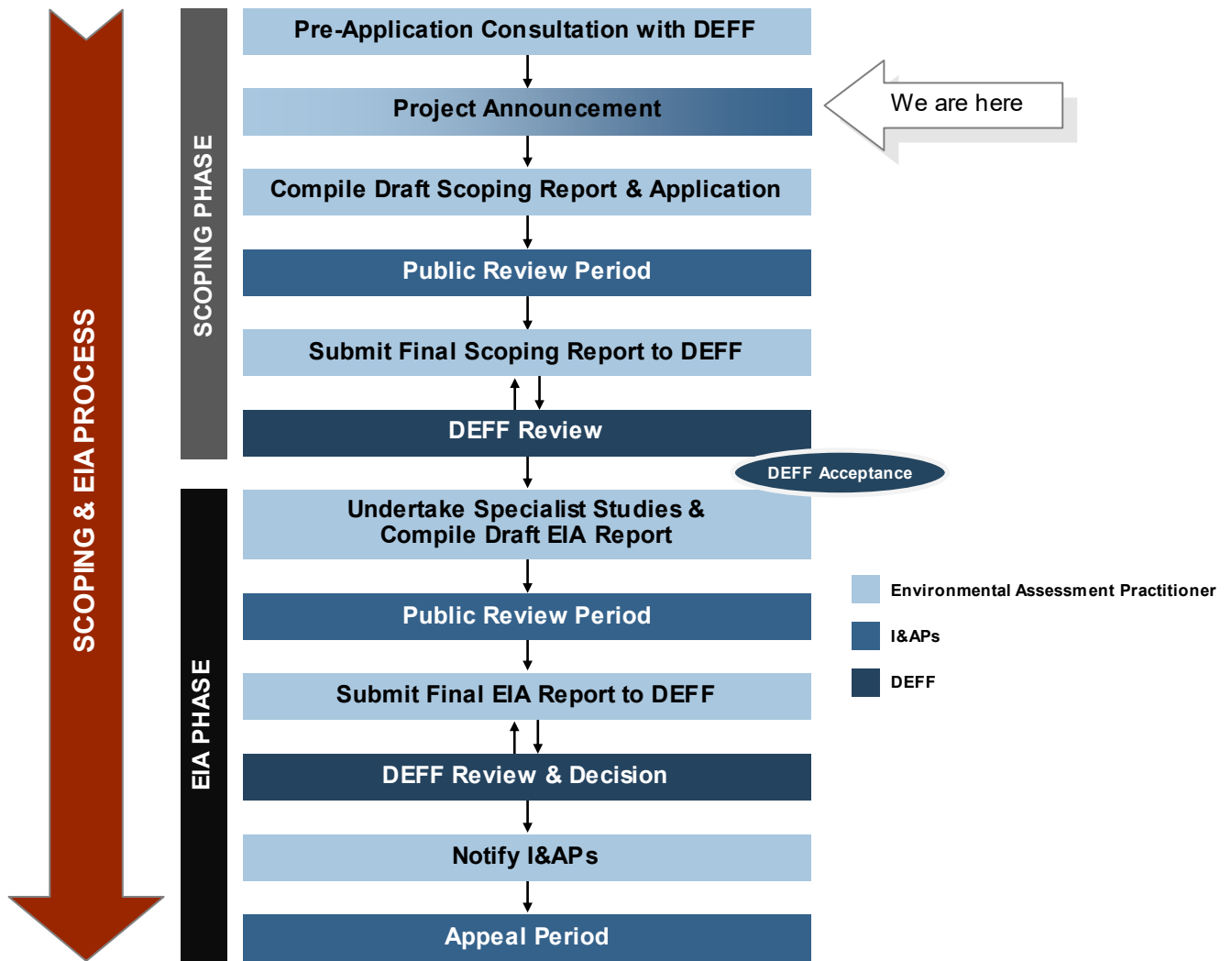
## 5.1 ENVIRONMENTAL PROCESSES

Nemai Consulting was appointed as the Environmental Assessment Practitioner (EAP) to undertake the following environmental processes to seek authorisation for the proposed Project:

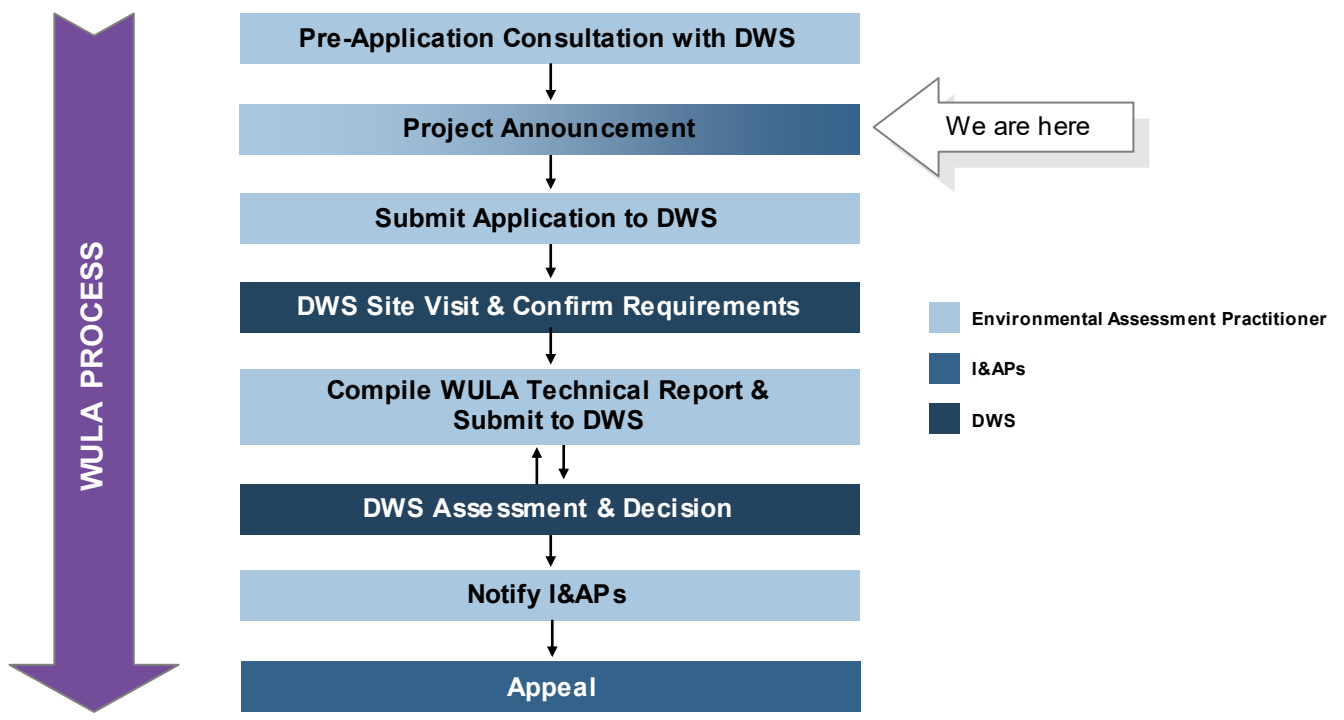
- Undertake a **Basic Assessment** (refer to **Figure 8** below) in terms of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), promulgated under the National Environmental Management Act (Act No. 107 of 1998). The mandated authority for this application is the Northern Cape Department of Environment and Nature Conservation (DENC).
- Undertake a **Scoping and EIA** process (refer to **Figure 9** below), in terms of the EIA Regulations of 2014 (as amended), to apply for a **Waste Management Licence** (WML) in terms of the National Environmental Management: Waste Act (Act No. 59 of 2008). The need for the WML is linked to the proposed management of sludge at the K-WWTW. The mandated authority for this application is the Department of Environment, Forestry and Fisheries (DEFF).
- Compile a **Water Use Licence Application** (WULA) (refer to **Figure 10** below) in terms of the National Water Act (Act No. 36 of 1998) for water uses associated with the K-WWTW. The mandated authority for this application is the Department of Water and Sanitation (DWS).

Note that there are also other pieces of legislation and mandated authorities governing specific environmental management topics (e.g. air quality) and features (e.g. heritage and cultural resources, biodiversity, etc.), which will be considered further as the environmental assessments unfold.





*Figure 9: Outline of Scoping and EIA process*



*Figure 10: Outline of WULA Process*



## 5.2 PUBLIC PARTICIPATION

### 5.3.1 *Overview of Public Participation Process*

Public Participation will be undertaken in accordance with Chapter 6 of the EIA Regulations of 2014 (as amended). Some of the key tasks that form part of the Public Participation Process include the following (amongst others):

- Compile and maintain a database of authorities and I&APs;
- Announce the Project and allow for I&APs to raise comments (*note: this is where we currently are in the process*);
- Grant authorities and I&APs a period of 30 days to review and submit comments on the draft environmental reports; and
- Provide notification of the decision and explain the appeal process.

All measures necessary to contain the spread of COVID -19 will need to be taken during the Public Participation

### 5.3.2 *Comments from I&APs*

To raise any comments or concerns regarding the proposed Project during the announcement phase, please complete the attached Reply Form and return to Nemai Consulting by 28 April 2021.

## 6. CONTACT DETAILS

For any queries, please contact the Environmental Assessment Practitioner below:



**Contact Person:** *Donavan Henning*  
**Tel:** *(011) 781 1730*  
**Fax:** *(011) 781 1731*  
**Email:** *donavanh@nemai.co.za*  
**Postal Address:** *PO Box 1673, Sunninghill, 2157*

# APPENDIX G

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## OATH OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

# OATH OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

## Proposed Upgrade and Expansion of the Kameelmond Wastewater Treatment Works in Upington, Northern Cape – Draft Scoping Report

I (name and surname) Donovan Henning  
Of (address) 147 Bram Fischer Drive, Ferndale, 2195  
ID No. 767206 5067080 Contact No. 011 781 1730

I hereby make an oath and state that:

In accordance with Appendix 2 of Government Notice No. R. 982 of 4 December 2014 (as amended), this serves as an affirmation by the Environmental Assessment Practitioner (EAP) in relation to:

1. The correctness of the information provided in this report;
2. The inclusion of comments and inputs from stakeholders and interested and affected parties;
3. Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties; and
4. The level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment.

1. I know and understand the contents of this declaration.
2. I do not have any objection in taking prescribed oath.
3. I consider the prescribed oath to be binding on my conscience.



Signature [Signature] Date: 14 September 2021

I certify that the deponent has acknowledged that he/she knows and understands the contents of the statement and the deponent signature was placed there on in my presence.

[Signature] 7652733  
COMMISSIONER OF OATH  
[Signature]  
FULL NAME  
[Signature]  
DESIGNATION

# APPENDIX H

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## COMMENT SHEET



P.O. Box 1673  
SUNNINGHILL  
2157

147 Bram Fischer Drive  
Ferndale  
2194

Tel: (011) 781 1730  
Fax: (011) 781 1731  
Email: donavanh@nemai.co.za

**PROPOSED UPGRADE AND EXPANSION OF THE KAMEELMOND WASTEWATER TREATMENT WORKS IN UPINGTON, NORTHERN CAPE**

**COMMENT SHEET – Draft Scoping Report**

<b>Official use</b>	<b>Date received:</b>	<b>Our reference:</b>	<b>Status:</b>

**1) GENERAL INFORMATION**

<b>Name of organisation (if applicable)</b>	
<b>Name &amp; Surname</b>	
<b>Postal Address</b>	
<b>Physical Address</b> <i>(please provide full farm description, if applicable)</i>	
<b>Telephone No.</b>	
<b>Mobile No.</b>	
<b>Fax No.</b>	
<b>Email Address</b>	
<b>Manner in which the report was accessed (e.g. project website, library, etc.):</b>	

Signature \_\_\_\_\_

Date \_\_\_\_\_

**2) COMMENTS**

*(Note - additional pages may be included if the space provided is insufficient)*

**VOORGESTELDE OPGRADERING EN UITBREIDING VAN DIE  
KAMEELMOND-RIOOLWATERSUIWERINGSAAANLEG TE UPINGTON,  
NOORD-KAAPSE PROVINSIE**

**KOMMENTAARBLAD – Konsep Omvangsbepalingsverslag**

Amptelike  
Gebruik

Datum ontvang:

Ons verwysing:

Status:

**1) ALGEMENE INLIGTING**

<b>Organisasie se Naam:</b> <i>(indien toepaslik)</i>	
<b>Naam en Van:</b>	
<b>Posadres:</b>	
<b>Fisiese Adres:</b> <i>(dui asb. volle plaasnaam aan, indien toepaslik)</i>	
<b>Telefoon-nommer:</b>	
<b>Selfoon-nommer:</b>	
<b>Faks-nommer:</b>	
<b>e-posadres:</b>	
<b>Plek waar verslag besigtig was:</b>	

Handtekening \_\_\_\_\_

Datum \_\_\_\_\_

**2) KOMMENTAAR**

*(L.W. bykomende bladsye mag ingesluit word indien die ruimte wat voorsien word, te min is)*

