

**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
DRAFT BASIC ASSESSMENT REPORT**

**WASTEWATER DAM AND PIPELINE FOR MKUZE
BIOMASS POWER PLANT, NEAR MKUZE, JOZINI
LOCAL MUNICIPALITY, KWAZULU-NATAL**

**DRAFT BASIC ASSESSMENT REPORT
FOR PUBLIC REVIEW
FEBRUARY 2015**

Prepared for:

Navosync (Pty) Ltd

Unit B 103a
The Piazza, Cape Quarter
72 Waterkant Street
Cape Town
8001

Prepared by:

Savannah Environmental Pty Ltd

5 WOODLANDS DRIVE OFFICE PARK
CNR WOODLANDS DRIVE &
WESTERN SERVICE ROAD,
WOODMEAD, GAUTENG
P.O. BOX 148, SUNNINGHILL, 2157
TELEPHONE : +27 (0)11 656 3237
FACSIMILE : +27 (0)86 684 0547
EMAIL : INFO@SAVANNAHSA.COM
WWW.SAVANNAHSA.COM





edtea

Department :
Economic Development, Tourism and
Environmental Affairs
PROVINCE OF KWAZULU-NATAL

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EIA File Reference Number:

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Waste Management Licence Number:
(if applicable)

Date Received:

BASIC ASSESSMENT REPORT

Submitted in terms of the Environmental Impact Assessment Regulations, 2010
promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107
of 1998)

This template may be used for the following applications:

- **Environmental Authorization** subject to basic assessment for an activity that is listed in Listing Notices 1 or 3, 2010 (Government Notices No. R 544 or No. R 546 dated 18 June 2010); or
- **Waste Management Licence** for an activity that is listed in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) for which a basic assessment process as stipulated in the EIA Regulations must be conducted as part of the application (refer to the schedule of waste management activities in Category A of Government Notice No. 718 dated 03 July 2009).

Kindly note that:

1. This **basic assessment report** meets the requirements of the EIA Regulations, 2010 and is meant to streamline applications. This report is the format prescribed by the KZN Department of Economic Development, Tourism & Environmental Affairs. Please make sure that this is the latest version.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with text.
3. Where required, place a cross in the box you select.
4. An incomplete report will be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it will result in the rejection of the application as provided for in the regulations.
6. No faxed or e-mailed reports will be accepted.
7. The report must be compiled by an independent environmental assessment practitioner ("EAP").

8. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
 9. The KZN Department of Economic Development, Tourism & Environmental Affairs may require that for specified types of activities in defined situations only parts of this report need to be completed.
 10. The EAP must submit this basic assessment report for comment to all relevant State departments that administer a law relating to a matter affecting the environment. This provision is in accordance with Section 24 O (2) of the National Environmental Management Act 1998 (Act 107 of 1998) and such comments must be submitted within 40 days of such a request.
 11. **Please note that this report must be handed in or posted to the District Office of the KZN Department of Economic Development, Tourism & Environmental Affairs to which the application has been allocated (please refer to the details provided in the letter of acknowledgement for this application)**
-

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- » Appendix D3: Wetland Delineation Study
- » Appendix D4: Geohydrological Study

Appendix E: Public Participation Information & Comments and responses report

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information

PROJECT DETAILS

- Title** : Environmental Basic Assessment Process
Draft Basic Assessment Report: Wastewater dam
and pipeline for Mkuze Biomass Power Plant, near
Mkuze, Jozini Local Municipality
- Authors** : Savannah Environmental
Steven Ingle
Karen Jodas
- Sub-consultants** : Jaco van de Walt (Heritage Contracts and
Archaeological Consulting)
Theo Mostert (Karos Environmental Services cc)
Martiens Prinsloo (Future Flow)
Patsy Scherman (Schermann Collotty and
Associates)
- Client** : Navosync (Pty) Ltd
- Report Status** : Draft Basic Assessment Report for public review
- Review Period** : 27 February 2015 – 30 March 2015

When used as a reference this report should be cited as: Savannah Environmental (2015) Draft Basic Assessment Report: Proposed wastewater dam and pipeline for Mkuze Biomass Power Plant, Jozini Local Municipality.

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SUMMARY AND OVERVIEW OF THE PROJECT

Navosync (Pty) Ltd, an Independent Power Producer (IPP), is proposing the establishment of a wastewater dam and associated discharge water pipeline infrastructure as well as a pump station as essential infrastructure required for the operation of the authorised Mkuze Biomass Central Power Station. Contemplating the above activities require an application for Environmental Authorisation and a Waste Management License through an integrated application.

The site where the above-mentioned infrastructure is proposed to be located is approximately 2.5 km south west of Mkuze on the Farm Alkmaar 13434 and the Remainder of the farm Clerkness 13459, in KwaZulu-Natal (refer to Figure 1). The proposed infrastructure is essential infrastructure required for the operation of the authorised Mkuze Biomass Central Power Station, which was authorised by the Department of Environmental Affairs and obtained Preferred Bidder status in the Department of Energy's (DoE) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme (Round 3). The REIPPP Programme has been designed to contribute towards the South African government's renewable energy target of 17GW by 2030, and to stimulate the renewable industry in South Africa. Construction of the power plant is scheduled to commence in the second half of 2015.

The following essential water-related infrastructure is required in order to ensure the successful operation of the Mkuze Biomass Power Plant:

Freshwater infrastructure

1. A pump station located adjacent to the existing abstraction infrastructure at the Clerkness Dam in order to pump raw water from the existing abstraction pipeline for supply to the biomass plant.
2. An inlet water pipeline from the pump station at Clerkness Dam to the biomass power plant¹.

Wastewater infrastructure

3. A wastewater discharge outlet pipeline between the power plant and a new proposed wastewater dam located west of the biomass power plant.
4. A lined wastewater dam located west of the biomass power plant.

¹ The inlet water pipeline does not exceed the Listed Activity thresholds, and was authorised under the Mkuze Biomass Power Station Environmental Authorisation, but is described here to allow the reader to form an overall picture of the movement of water within the process.

The proposed construction of the abovementioned infrastructure is the subject of this Basic Assessment Report however only the wastewater dam triggers the requirement for an Environmental Authorisation. A biomass stockpile area south of the road, plus water pipeline infrastructure from the new dam for use of the water at the stockpile area is the subject of a separate application for Environmental Authorisation.

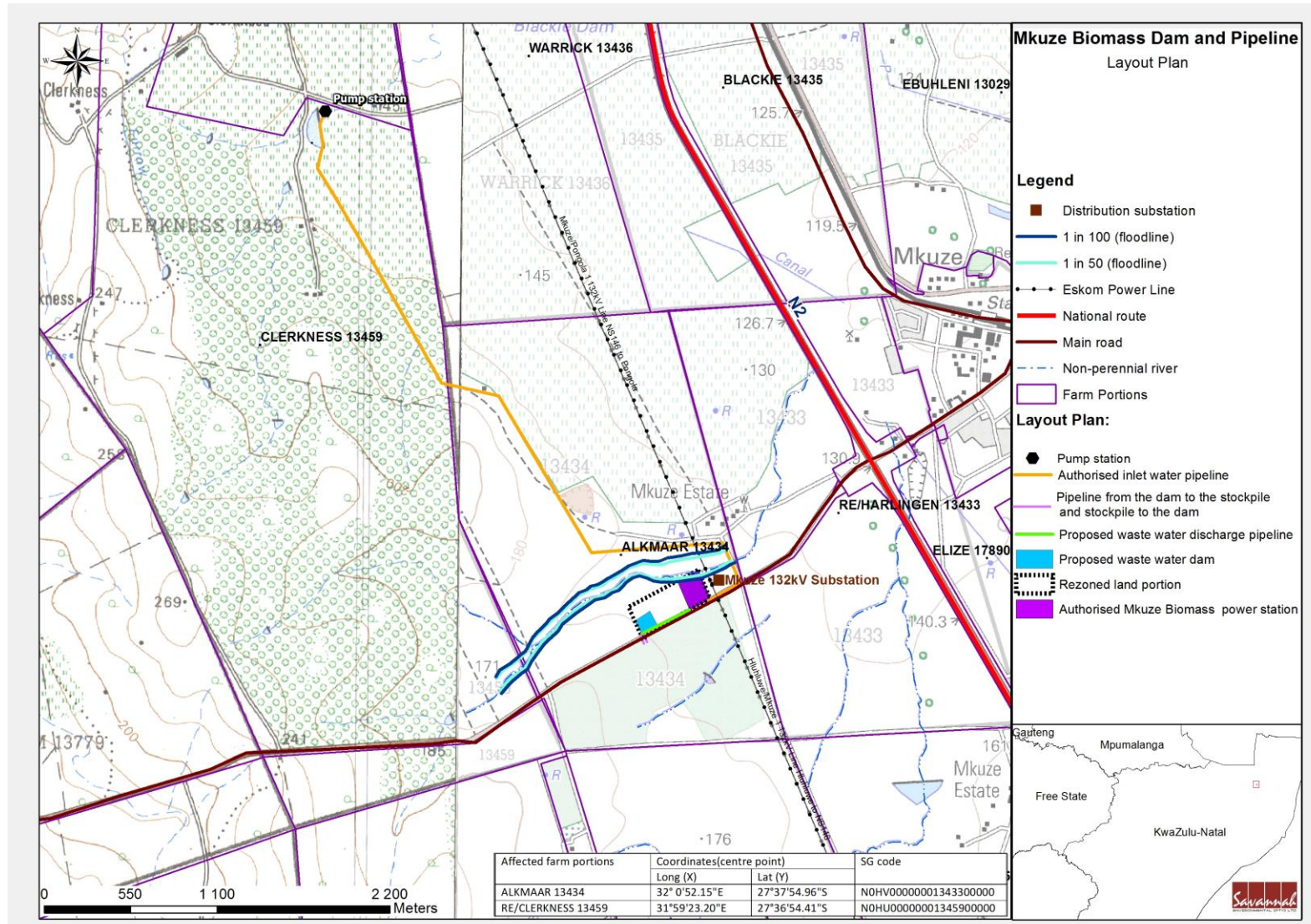


Figure 1: Locality map for proposed wastewater dam and wastewater pipeline for the authorised Mkuze Biomass Power Plant. The map includes the position of the proposed biomass storage area (separate application for EA). Refer to Appendix A for further plans.

DRAFT BASIC ASSESSMENT REPORT FOR REVIEW

This Draft Basic Assessment Report has been prepared by Savannah Environmental in order to assess the potential environmental impacts associated with the proposed wastewater dam and pipeline infrastructure. The report is available for public review at the following locations:

- » Jozini Local Municipality
- » www.savannahsa.com

The 30-day period for public review of the draft Basic Assessment Report is **27 February 2015 to 30 March 2015**.

To obtain further information, register on the project database, or submit written comment please contact:

Please submit your comments to:
Gabriele Wood of Savannah Environmental Post: PO Box 148, Sunninghill, Johannesburg, 2157 Telephone: 011 656 3237 Fax: 086 684 0547 Email: gabriele@savannahsa.com
The due date for comments on the draft Basic Assessment Report is 30 March 2015

DEPARTMENTAL REFERENCE NUMBER(S)

File reference number (EIA):	
File reference number (Waste Management Licence):	

SECTION A: DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS

1. NAME AND CONTACT DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Name and contact details of the EAP who prepared this report:

Business name of EAP:	Savannah Environmental (Pty) Ltd		
Physical address:	First floor, Block 2, 5 Woodlands Drive Office Park, Cnr of Woodlands Drive and Western Service Road, Woodmead, Johannesburg		
Postal address:	PO Box 148 Sunninghill		
Postal code:	2157	Cell:	082 665 1935
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	karen@savannahsa.com		

2. NAMES AND EXPERTISE OF REPRESENTATIVES OF THE EAP

Names and details of the expertise of each representative of the EAP involved in the preparation of this report:

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
Karen Jodas	MSc in Geography	SACNASP (400106/99)	16
Steven Ingle	BA Environmental Management	-	8
Charlotte Pienaar	BA Development	-	7

	and Environmental Studies		
Gabriele Wood	BSc Hons Anthrolopology-	-	7

3. NAMES AND EXPERTISE OF SPECIALISTS

Names and details of the expertise of each specialist that has contributed to this report:

Name of specialist	Education qualifications	Field of expertise	Section/ s contribute d to in this basic assessme nt report	Title of specialist report/ s as attached in Appendix D
Jaco van der Walt	Member of ASAPA, accredited in Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation	Heritage	Section C and Section E	Archaeological Impact Assessment for the Mkuze Biomass Storage Area, Near Mkuze, Kwazulu Natal.
Theo Mostert	Pr.Sci.Nat. Ecology, Botany & Zoology	Ecology	Section C and Section E	An Ecological Assessment of the Fauna, Flora and Wetlands of the Mkuze Biomass Project
Martiens Prinsloo	M.Sc.; Pr.Sci.Nat	Geohydrology	Section C and Section E	Mkuze Biomass Plant Groundwater Impact Assessment
Deborah Vromans and Patsy Scherman	MSc Botany (Estuaries), BA Environmental & Geographical Science	Wetland Delineation	Section C and Section E	Specialist Wetland Delineation Jozini Local Municipality, Mkuze, Kwazulu Natal

SECTION B: ACTIVITY INFORMATION

1. PROJECT TITLE

Describe the project title as provided on the application form for environmental authorization:

Lined wastewater dam and wastewater pipeline for an authorised Biomass Power Plant, near Mkuze, Jozini Local Municipality, KwaZulu Natal

2. PROJECT DESCRIPTION

Provide a detailed description of the project:

Navosync (Pty) Ltd, an Independent Power Producer (IPP), is proposing the establishment of a wastewater dam and associated discharge water pipeline infrastructure as essential infrastructure required for the operation of the authorised Mkuze Biomass Central Power Station. Contemplating the above activities require an application for Environmental Authorisation and a Waste Management License through an integrated application.

The site where the above-mentioned infrastructure is proposed to be located is approximately 2.5 km south west of Mkuze on the Farm Alkmaar 13434 and the Remainder of the farm Clerkness 13459, in KwaZulu-Natal. The proposed infrastructure is essential infrastructure required for the operation of the authorised Mkuze Biomass Central Power Station, which was authorised by the Department of Environmental Affairs and obtained Preferred Bidder status in the Department of Energy's (DoE) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme (Round 3). The REIPPP Programme has been designed to contribute towards the South African government's renewable energy target of 17GW by 2030, and to stimulate the renewable industry in South Africa. Construction of the power plant is scheduled to commence in the second half of 2015.

The following essential water-related infrastructure is required in order to ensure the successful operation of the Mkuze Biomass Power Plant:

Freshwater infrastructure

1. A pump station located adjacent to the existing abstraction infrastructure at the Clerkness Dam in order to pump raw water from the existing abstraction

pipeline for supply to the biomass plant.

2. An inlet water pipeline from the pump station at Clerkness Dam to the biomass power plant².

Wastewater infrastructure

3. A wastewater discharge outlet pipeline between the power plant and a new proposed wastewater dam located west of the biomass power plant.
4. A lined wastewater dam located west of the biomass power plant³.

The proposed construction of the abovementioned infrastructure is the subject of this Basic Assessment Report. A biomass stockpile area south of the road, plus water pipeline infrastructure from the new dam for use of the water at the stockpile area is the subject of a separate application for Environmental Authorisation.

Pump station: A pump station is required to be constructed adjacent to the existing abstraction infrastructure at the Clerkness Dam. The pump station will have a small footprint (225m²). The pump station will pump approximately 70.7m³ of water per hour from the existing abstraction pipeline to supply process water for use at the authorised Mkuze Biomass Power Plant. An underground power line of less than 33 kilovolts will be installed in a trench within the alignment of the raw water inlet pipeline (described below) in order to supply power from the biomass plant to the pump station.

Raw water inlet pipeline: The pipeline is required to convey raw water between the pump station to be located at Clerkness Dam and the Mkuze Biomass Power Station. The pipeline is approximately 4.6km in length and is proposed to be located adjacent to an existing road and fenceline which act as a barrier between the natural vegetation to the west and sugar cane fields to the east. The inlet water pipeline does not exceed the Listed Activity thresholds, and was authorised under the Mkuze Biomass Power Station Environmental Authorisation (March 2013), but is described here to allow the reader to form an overall picture of the movement of water within the process.

Wastewater discharge outlet pipeline: A wastewater discharge outlet pipeline of approximately 230m in length is proposed to be constructed between the authorised biomass power station and the proposed new wastewater dam within an existing gravel road reserve and farm/fence boundaries. The pipeline will

² The inlet water pipeline does not exceed the Listed Activity thresholds, and was authorised under the Mkuze Biomass Power Station Environmental Authorisation, but is described here to allow the reader to form an overall picture of the movement of water within the process.

³ The proposed construction of the abovementioned infrastructure is the subject of this Basic Assessment Report however only the wastewater dam triggers the requirement for an Environmental Authorisation as the development of the other infrastructure is not listed or has previously been authorised.

allow for the discharge of wastewater generated during the operation phase of the authorised power station to the wastewater dam, proposed to be located to the east of the Mkuze biomass power plant.

Wastewater dam: The proposed wastewater dam is situated approximately 230m west of the authorised Mkuze Biomass Power Station. The proposed wastewater dam site is bordered to the south by an existing road.

The proposed wastewater dam will accept wastewater (process water) from the energy generation process for evaporation but also provides backup for operational purposes including:

- » Guarantees a strategic water reserve for firefighting purposes at the proposed biomass storage area (subject of a separate BA process).
- » Provides for the irrigation of a buffer and areas to be rehabilitated around the proposed biomass storage area (subject of a separate BA process).

The proposed dam will cover an area of 10 000m² (1ha) and have a height of 4m. Minimum operational water volume will be 20 000m³, with a useful volume of 38 000m³. Total rejected water will be approximately 19,75 m³/h (or approximately 474 m³/daily). The new wastewater dam will be lined with a high density polyethylene geomembrane type HI-DRILINE® SMOOTH (HDPE), 1,5 mm thickness, from Aquatan lining systems or similar.

A Waste Management License is required for the storage of waste in lagoons in terms of Category A of GN 921 in terms of the Waste Act.

Comparisons between the water quality results from the proposed lined dam (industrial rejected water quality values) and the general authorisation limits are shown in the table below to demonstrate compliance with and improvement upon the relevant parameters.

Limit	General Authorisation Limit	Water quality values for wastewater dam water
pH	6-9	7
Electrical Conductivity	< 200 mS/m	86mS/m
COD	< 400 Mg/l	38.4Mg/l
Faecal coliforms	< 100 000 per 100ml	0, as sewage water is sent to a dedicated tank
SAR	<5	4

Zoning: The location for the discharge dam as well as the discharge pipeline falls within a larger 10 ha area rezoned for industrial use for the construction of the Mkuze Biomass Power Station. The wastewater dam and discharge pipeline are considered essential infrastructure for the operation of the power plant.

3. ACTIVITY DESCRIPTION

Describe each listed activity in Listing Notice 1 (GNR 544, 18 June 2010), Listing Notice 3 (GNR 546, 18 June 2010) or Category A of GN 718, 3 July 2009 (Waste Management Activities) which is being applied for as per the project description:

GNR 983, Item 27

"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..."-

Vegetation within a Critical Biodiversity Area (CBA1) is required to be cleared for the construction of the 1ha dam and pipeline.

GNR 983, Item 28 (ii)

"Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development:

(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare".

The proposed wastewater dam and pipeline is associated with the development of an authorised biomass power station (industrial development) which will occur outside an urban area. The dam will be approximately 10 000 m² (1ha) in extent but the area to be transformed during construction will likely be greater.

GNR 985, Item 2 (d)(viii)(xi)(xii)

"The development of reservoirs for bulk water supply with a capacity of more than 250 cubic metres.

(d) In KwaZulu-Natal:

viii. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

xi. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;

xii. Outside urban areas: within 5km from other protected areas

The proposed wastewater dam which will have a capacity of approximately 40 000 cubic meters, is located within a critical biodiversity area. According to the KZN Systematic Conservation Plan (2010), the area falls within a Critical Biodiversity area 1. The Umkhanyakude EMF for 2014/2015 shows that the area surrounding the Mkuze town is of "Very High" environmental sensitivity. In this category, developmental change will significantly influence the feature, either negatively or positively. The area may offer critical environmental goods and services or be afforded legal protection status.

GNR 985, Item 4 (d)(vii)(xi)(xii)

"The development of a road wider than 4 metres with a reserve less than 13,5 metres.

(d) In KwaZulu-Natal:

viii. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

xi. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;

xii. Outside urban areas: within 5km from other protected areas

A short section of road will be constructed from the existing gravel road to the site falling within a critical biodiversity area. According to the KZN Systematic Conservation Plan (2010), the area falls within a Critical Biodiversity area 1. The Umkhanyakude EMF for 2014/2015 shows that the area surrounding the Mkuze town is of 'Very High' environmental sensitivity. In this category, developmental change will significantly influence the feature, either negatively or positively. The area may offer critical environmental goods and services or be afforded legal protection status.

GNR 985, Item 12 (b)(v)(xii)

"The clearance of an area of 300 square metres or more of indigenous vegetation

b) In KwaZulu-Natal:

v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

xii. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority"

According to the KZN Systematic Conservation Plan (2010), the area falls within a Critical Biodiversity Area 1. The Umkhanyakude EMF for 2014/2015 shows that the area surrounding the Mkuze town is of 'Very High' environmental sensitivity. In this category, developmental change will significantly influence the feature, either negatively or positively. The area may offer critical environmental goods and services or be afforded legal protection status.

GN 921, Category A, Activity 1

"Storage of waste in lagoons"

Waste water which has been through a treatment process at the biomass power plant will be stored in a lined wastewater dam of approximately 1ha in extent.

4. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

Sections B 5 – 15 below should be completed for each alternative.

No other alternatives in terms of site location of the wastewater dam and water pipeline have been considered in this assessment. The applicant has not investigated location alternatives, as the current position has already been optimised in order to service the authorised Biomass Power Plant. The current proposed location is feasible to the development and is in line with the requirements of the Water Use License (in process).

5. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. List alternative sites were applicable.

Latitude (S):

Longitude (E):

Alternative:

Alternative S1⁴ (only site alternative for new wastewater dam)

Pump station

Alternative S3 (if any)

27°	38`	02.40"	32°	00'	43.33"
27°	36`	17.12"	31°	59'	26.61"
°	`	"	°	'	"

In the case of linear activities:

Alternative:

Latitude (S):

Longitude (E):

Alternative S1 (preferred or only route alternative for **wastewater discharge pipeline**)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

27°	38`	03.86"	32°	00'	43.46"
27°	38'	06.46"	32°	00'	43.82"

Alternative S1 (preferred or only route alternative for **inlet pipeline**)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

27°	37`	57.72"	32°	00'	56.97"
27°	37`	21.67"	32°	00'	12.72"
27°	36`	17.12"	31°	59'	26.61"

Alternative S3 (if any)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

°	`	"	°	'	"
°	`	"	°	'	"
°	`	"	°	'	"

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

⁴ "Alternative S.." refer to site alternatives.

6. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:

Alternative A1⁵ (preferred activity alternative – wastewater dam)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

10 000m ²
m ²
m ²

or, for linear activities:

Alternative:

Alternative A1 (preferred activity alternative - pipeline)

Alternative A2 (if any)

Alternative A3 (if any)

Length of the activity:

Wastewater outlet pipeline = ±230m
m
m

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the site/servitude:

~ 230m in length ; ~ 5m in width = area of 1150m ²
m ²
m ²

7. SITE ACCESS

Does ready access to the site exist?

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

YES	

⁵ "Alternative A.." refer to activity, process, technology or other alternatives.

The proposed development is located west of both the town of Mkuze and the National Route 2 (N2). Access to the site is off the rural Provincial Main Road P234. This road is aligned in an east-west direction, crossing the N2, with Bhanganomo to the west and Mkuze to the east. The P234 intersects the N2, creating a 2-way stop intersection. The P234 is a 2-lane surfaced road on the east of the N2 and a 7m wide gravel road on the west.

Direct access from the P234 road to the proposed site will be required for construction and operational purposes through construction of a short section of road onto the site (less than 50m).

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

Refer to Appendix A.

8. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

- 1.1. the scale of the plan which must be at least a scale of 1:500;
- 1.2. the property boundaries and numbers/ erf/ farm numbers of all adjoining properties of the site;
- 1.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 1.4. the exact position of each element of the application as well as any other structures on the site;
- 1.5. the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 1.6. walls and fencing including details of the height and construction material;
- 1.7. servitudes indicating the purpose of the servitude;
- 1.8. sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
 - rivers, streams, drainage lines or wetlands;
 - the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;

- areas with indigenous vegetation including protected plant species (even if it is degraded or infested with alien species);
- 1.9. for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 1.10. the positions from where photographs of the site were taken.

9. SITE PHOTOGRAPHS

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

Refer to Appendix B.

10. FACILITY ILLUSTRATION

A detailed illustration of the facility must be provided at a scale of 1:200 and attached to this report as Appendix C. The illustrations must be to scale and must represent a realistic image of the planned activity/ies.

Refer to Appendix C.

11. ACTIVITY MOTIVATION

1.11. Socio-economic value of the activity

It is important to note that the proposed construction of the wastewater dam and water pipeline on its own may not contribute significantly (if at all) to the values above. However, when the proposed infrastructure dam is considered as part of the larger biomass power project, then the value is intrinsically increased.

What is the expected capital value of the activity on completion?

R ± R1 Billion for power station and all associated infrastructure
--

What is the expected yearly income that will be generated by or as a result of the activity?

Undetermined

Will the activity contribute to service infrastructure?

YES	NO
------------	-----------

Is the activity a public amenity?

YES	NO
------------	-----------

How many new employment opportunities will be created in the development phase of the activity?	± 215
What is the expected value of the employment opportunities during the development phase?	Undetermined
What percentage of this will accrue to previously disadvantaged individuals?	2.5% through Local Community Trust
How many permanent new employment opportunities will be created during the operational phase of the activity?	± 16
What is the expected current value of the employment opportunities during the first 10 years?	Undetermined
What percentage of this will accrue to previously disadvantaged individuals?	100%

1.12. Need and desirability of the activity

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

The current electricity imbalances in South Africa highlight the significant role that renewable energy can play in terms of power supplementation. Given that renewables can generally be deployed in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality, while reducing expensive transmission and distribution losses. In order to meet the long-term goal of a sustainable renewable energy industry, a target of 17.8GW of renewables by 2030 has been set by the Department of Energy (DoE) within the Integrated Resource Plan (IRP) 2010 and incorporated in the REIPPP Programme. The authorised Mkuze Biomass Power Station which was awarded Preferred Bidder status (in Round 3) contributes to this goal for renewable energy. For its efficient functioning, a wastewater dam and pipeline infrastructure is required to ensure the facility keeps supplying energy to the grid. Therefore the establishment of the wastewater dam and pipeline infrastructure is considered necessary.

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

According to the Umkhanyakude District Municipality (UDM) Integrated Development Plan (IDP) (2012-2013), Improved Service Delivery and Infrastructure Investment and Sustainable Local Economic Development are one of the District Key Performance Areas (KPA). The overall project will contribute towards growing the local economy, the development of citizens through employment and training provision; it will also facilitate job creation and will introduce new business opportunities to the area. Job opportunities, albeit

limited, will be created during the construction and operation of the proposed facility. The vision of the Jozini Local Municipality (JLM) is to provide sustainable service delivery, socio-economic development and better life for all (JLM IDP 2013-2014). The proposed facility will contribute towards this vision through development investment in the local area, employment opportunities as well as contribute towards sustainable community through economic growth and development. In addition, local and regional economic benefits would be realised through the additional revenue generated as a result of the proposed project (through direct and indirect job opportunities, local spend, local procurement, etc.).

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

Local and regional economic benefits would be realised through the additional revenue generated as a result of the proposed project (through direct and indirect job opportunities, local spend, local procurement, etc.).

12. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
Refer to table overleaf		

Legislation	Administering Authority	Date
National Legislation		
<p>National Environmental Management Act (Act No 107 of 1998) The Environmental Assessment Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorisation are identified within these Regulations.</p> <p>In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.</p> <p>In terms of GN R982, R983, R984 and R985 of 4 December 2014, a Basic Assessment Process is required to be undertaken for the proposed project.</p>	<p>KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA)</p>	<p>Act No 107 of 1998</p>
<p>National Environmental Management Act (Act No 107 of 1998) In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised.</p> <p>In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.</p>	<p>KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA)</p>	<p>Act No 107 of 1998</p>
<p>Environment Conservation Act (Act No 73 of 1989) National Noise Control Regulations (GN R154 dated 10 January 1992)</p>	<p>KwaZulu-Natal EDTEA Jozini Local Municipality</p>	<p>10 January 1992</p>
<p>National Water Act (Act No 36 of 1998) Water uses under S21 of the Act must be licensed, unless such water use falls into one of the categories listed in S22 of the Act or falls under the general authorisation (and then registration of the water use is required).</p>	<p>Provincial Department of Water and Sanitation</p>	<p>Act No 36 of 1998</p>

Legislation	Administering Authority	Date
<p>Consumptive water uses may include the taking of water from a water resource - Sections 21a and b. Non-consumptive water uses may include impeding or diverting of flow in a water course - Section 21c; and altering of bed, banks or characteristics of a watercourse - Section 21i. A Water Use License Application to the Department of Water and Sanitation is currently in process for Section 21 (c) and (i) water uses as well as Section 21 (g) for waste discharge related water uses.</p>		
<p>Minerals and Petroleum Resources Development Act (Act No 28 of 2002) A mining permit or mining right may be required where a mineral in question is to be mined (e.g. materials from a borrow pit) in accordance with the provisions of the Act. Requirements for Environmental Management Programmes and Environmental Management Plans are set out in S39 of the Act.</p> <p>S53 Department of Mineral Resources: Approval from the Department of Mineral Resources (DMR) may be required to use land surface contrary to the objects of the Act in terms of section 53 of the Mineral and Petroleum Resources Development Act, (Act No 28 of 2002): In terms of the Act approval from the Minister of Mineral Resources is required to ensure that proposed activities do not sterilise a mineral resources that might occur on site.</p> <p>As no borrow pits are expected to be required for the construction of the facility, no mining permit or right is required to be obtained.</p>	<p>Department of Mineral Resources</p>	<p>Act No 28 of 2002</p>
<p>Minerals and Petroleum Resources Development Act (Act No 28 of 2002) A reconnaissance permission, prospecting right, mining right, mining permit, retention permit, technical corporation permit, reconnaissance permit, exploration right and production right work programme; mining work programme, environmental management programme, and environmental management plan may not be amended or varied (including by extension of the area covered by it or by the addition of minerals or a share or shares or seams, mineralised bodies, or strata, which are not at the time the subject thereof) without the written consent of the Minister.</p>	<p>Department of Mineral Resources</p>	<p>Act No 28 of 2002</p>

Legislation	Administering Authority	Date
<p>As no borrow pits are expected to be required for the construction of the facility, no mining permit or right is required to be obtained</p>		
<p>National Environmental Management: Air Quality Act (Act No 39 of 2004)</p> <ul style="list-style-type: none"> » Dust control regulations of November 2013 (GN R 827) promulgated in terms of NEMA:QA specify minimum standards which are required to be observed during construction and operations of the proposed infrastructure. The Regulation provides that an air quality officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that the person has failed to comply with the Act. 	<p>Department of Environmental Affairs</p>	<p>No 39 of 2004</p>
<p>National Heritage Resources Act (Act No 25 of 1999)</p> <ul style="list-style-type: none"> » Stipulates assessment criteria and categories of heritage resources according to their significance (S7). » Provides for the protection of all archaeological and paleontological sites, and meteorites (S35). » Provides for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority (S36). » Lists activities which require developers any person who intends to undertake to notify the responsible heritage resources authority and furnish it with details regarding the location, nature, and extent of the proposed development (S38). » Requires the compilation of a Conservation Management Plan as well as a permit from SAHRA for the presentation of archaeological sites as part of tourism attraction (S44). <p>A permit may be required should any heritage sites be impacted on by the proposed development.</p>	<p>South African Heritage Resources Agency Amafa Heritage KZN</p>	<p>Act No 25 of 1999</p>
<p>National Environmental Management: Biodiversity Act (Act No 10 of 2004)</p> <ul style="list-style-type: none"> » Provides for the MEC/Minister to identify any process or activity in such a listed 	<p>Department of Environmental Affairs</p>	<p>Act No 10 of 2004</p>

Legislation	Administering Authority	Date
<p>ecosystem as a threatening process (S53)</p> <ul style="list-style-type: none"> » A list of threatened and protected species has been published in terms of S 56(1) - Government Gazette 29657. » Three government notices have been published, i.e. GN R 150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R 151 (Lists of critically endangered, vulnerable and protected species) and GN R 152 (Threatened or Protected Species Regulations). » Provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), and vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GN 1002), 9 December 2011). » This Act also regulates alien and invader species. » Under this Act, a permit would be required for any activity which is of a nature that may negatively impact on the survival of a listed protected species. <p>A permit will be applied for should there be an impact on any species which are protected or endangered.</p> <p>In addition, a weed control and management plan must be implemented.</p>	<p>Ezemvelo KZN Wildlife</p> <p>Department of Agriculture, Forestry and Fisheries</p>	
<p>Conservation of Agricultural Resources Act (Act No 43 of 1983)</p> <ul style="list-style-type: none"> » Prohibition of the spreading of weeds (S5) » Classification of categories of weeds & invader plants (Regulation 15 of GN R1048) & restrictions in terms of where these species may occur. » Requirement & methods to implement control measures for alien and invasive plant species (Regulation 15E of GN R1048). <p>This Act will find application throughout the life cycle of the project. In this regard, soil</p>	<p>Department of Agriculture, Forestry and Fisheries (DAFF)</p>	<p>Act No 43 of 1983</p>

Legislation	Administering Authority	Date
<p>erosion prevention and soil conservation strategies must be developed and implemented. In addition, a weed control and management plan must be implemented.</p>		
<p>National Forests Act (Act No. 84 of 1998) According to this Act, the Minister has declared a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister'.</p> <p>The Marula tree and Bushveld Saffron are protected species identified within the project area and contemplating the removal or damage of these trees would require a permit.</p>	<p>Department of Agriculture, Forestry and Fisheries (DAFF)</p>	<p>Act No. 84 of 1998</p>
<p>National Veld and Forest Fire Act (Act 101 of 1998) In terms of S21 the applicant must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material.</p> <p>In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.</p>	<p>Department of Agriculture, Forestry and Fisheries (DAFF)</p>	<p>Act 101 of 1998</p>
<p>National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.</p> <p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> » Adding other waste management activities to the list. » Removing waste management activities from the list. » Making other changes to the particulars on the list. <p>In terms of the Regulations published in terms of this Act (GN 921), A Basic Assessment is required to be undertaken for identified listed activities. The storage of waste in lagoons is a</p>	<p>National Department of Water and Environmental Affairs</p> <p>Provincial Department of Environmental Affairs (general waste)</p>	<p>Act No. 59 of 2008</p>

Legislation	Administering Authority	Date
Category A activity requiring a waste management license.		
Provincial Legislation & Plans		
<p>KwaZulu-Natal Nature Conservation Management Amendment Act, No. 5 of 1999: This Act provides the institutional structure for nature conservation in KwaZulu-Natal; to establish control and monitoring body and mechanics, and to provide for matters incidental thereto.</p> <p>A permit will be required should there be any impact on any species which are identified in terms of this Act.</p>	KZN EDTEA	Act No. 5 of 1999
<p>KwaZulu-Natal Provincial Spatial Development Framework (Draft 2) (2011) Provides a spatial interpretation of the Provincial Growth and Development Strategy to guide future land use and development.</p>	KZN EDTEA	2011
<p>KwaZulu-Natal Provincial Growth and Development Strategy 2012-2030 (2012) Provides a framework for integrated and sustainable growth and economic development for the Province and its people over the next ten years. It addresses the formulation of a common vision, goals and objectives of what should be achieved and how the provincial government and its social partners should achieve its objectives.</p>	KwaZulu-Natal Provincial Planning Commission	2012
<p>KwaZulu-Natal Biodiversity Conservation Assessment Plan (2010) Purpose is to:</p> <ul style="list-style-type: none"> » inform the development of the Provincial Biodiversity Sector plans, bioregional plans, and also to inform Spatial Development Frameworks (SDFs), Environmental Management. » Provide Frameworks (EMFs), Strategic Environmental Assessments (SEAs) and provide guidance for the Environmental Impact Assessment (EIA) process in the province. 	Ezemvelo KZN Wildlife	2010
<p>UMkhanyakude District Municipality Environmental Management Framework (EMF): Volume 2 – Desired State Report (Final 2013).</p> <ul style="list-style-type: none"> » To facilitate decision-making to ensure sustainable management of natural resources; » To provide strategic guidance on environmental, economic and social issues in the district; 	KZN EDTEA	August 2012

Legislation	Administering Authority	Date
<ul style="list-style-type: none"> » To identify environmentally sensitive areas; » To identify the environmental and development opportunities and constraints; » To assess the economic and environmental potential of the area; » To provide a decision support system in respect of environmental issues and priorities in the EMF area; » To formulate a strategy that will incorporate issues such as land use, planning and sensitive environmental resources; and » To include existing policies as frameworks for establishing values, guidelines and standards for future developments. 		
<i>Local Government</i>		
<p>Jozini Local Municipality IDP (2013-2014)</p> <ul style="list-style-type: none"> » Ensure the provision of services to communities in a sustainable manner » Promote safe and healthy environment 	Local Authorities	2013 - 2014

13. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

13.1. Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	<input checked="" type="checkbox"/>
Unknown at this stage	<input type="checkbox"/>

If yes, what estimated quantity will be produced per month?

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

Waste will consist mainly of vegetation from clearing activities and material offcuts. Construction waste will include spoil material (rocks etc) within the wastewater dam and pipeline servitude which is not suitable for backfill purposes. This waste will be disposed of at a spoil site (soil, dirt and rubble from excavation). Other construction waste such as offcuts will be temporarily stored on site until collection by licensed contractors for safe disposal at the nearest licenced municipal landfill site.

Where will the construction solid waste be disposed of? (provide details of landfill site)

The nearest landfill site is the Mkhuze Landfill. The permitting status of the landfill is unknown. The waste will be disposed of at the nearest licenced municipal general landfill site.

Will the activity produce solid waste during its operational phase?

<input checked="" type="checkbox"/>	NO
<input type="checkbox"/>	

If yes, what estimated quantity will be produced per month?

How will the solid waste be disposed of? (provide details of landfill site)

--

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

--

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine the further requirements of the application.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

<input checked="" type="checkbox"/>	NO
<input type="checkbox"/>	

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

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

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

13.2. Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? **NO**

If yes, what estimated quantity will be produced per month?

Will the activity produce any effluent that will be treated and/or disposed of on site? **NO**

Only the operational phase of the power plant will require the disposal of wastewater into a lined lagoon.

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

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

If yes, provide the particulars of the facility:

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

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

Wastewater that is produced as a result of the operation of the Biomass power plant will be discharged to the proposed lined wastewater dam. This water will be used to irrigate the biomass storage area and areas requiring rehabilitation and irrigation surrounding the wastewater dam in terms of the quality parameters or limits specified in the General Authorisation.

13.3. Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

If yes, is it controlled by any legislation of any sphere of government?

	NO
YES	NO

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

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

During the construction phase, it is expected that there will be short-term dust generation and emissions from vehicles and machinery. The dust and emissions will have a short-term duration and have limited impact in terms of extent and severity. The extent of the impact will be restricted to the site of the wastewater dam and pipeline construction activities. Appropriate dust suppression measures will be implemented to reduce the impacts. It is recommended that construction vehicles be regularly serviced and kept in good mechanical condition to minimise possible exhaust emissions.

13.4. Generation of noise

Will the activity generate noise?

If yes, is it controlled by any legislation of any sphere of government?

	NO
YES	NO

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

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

Short-term noise impacts are anticipated during the construction phase of the project. It is however anticipated that the noise will be localised and contained within the construction area and its immediate surroundings. The operation phase of the wastewater dam and pipeline will not generate noise.

14. WATER USE

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

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

	litres
YES	

Does the activity require a water use permit from the Department of Water Affairs?

If YES, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this report.

If YES, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this report.

Construction: Water for construction purposes of the Mkuze Biomass Power Plant and all associated infrastructure will be pumped from the Clerkness Dam and transported via tanker. The use of this water is authorised under the existing Water Use Licence issued to Charl Senekal Suiker Trust (CSST) (issued 28/05/01) - license no B191/2/2130/6). An agreement between CSST and Navosync Limited is in place for the use of this water.

Operation: Raw water for the operation of the Mkuze Biomass Power Plant will be pumped from the Clerkness Dam. The use of this water is authorised under the existing Water Use Licence issued to Charl Senekal Suiker Trust (CSST) (issued 28/05/01) - license no B191/2/2130/6).

The activity which is the subject of this BAR is for the handling of wastewater discharged from the biomass power plant. The following essential water-related infrastructure is required in order to ensure the successful operation of the Mkuze Biomass Power Plant:

1. A pump station located adjacent to the existing abstraction infrastructure at the Clerkness Dam in order to pump raw water from the existing abstraction pipeline for supply to the biomass plant.
2. An inlet water pipeline from the pump station at Clerkness Dam to the biomass power plant.
3. A wastewater discharge outlet pipeline between the power plant and a new proposed wastewater dam located west of the biomass power plant.
4. A lined wastewater dam located west of the biomass power plant.

The use of water from the Clerkness Dam is already authorised under the existing Water Use Licence issued to Charl Senekal Suiker Trust (CSST) (issued 28/05/01) - license no B191/2/2130/6). A Water Use License application has been lodged with the Department of Water and Sanitation for all the other identified water uses.

15. ENERGY EFFICIENCY

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

The wastewater dam is situated down gradient of the biomass power station and wastewater can be gravity fed to the wastewater dam (i.e. minimal pumping will be required).

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

The purpose of the Mkuze Biomass Power Plant is to utilise a renewable energy source (biomass) for the production of energy. No alternative energy sources are therefore required to be considered.

SECTION C: SITE/ AREA/ PROPERTY DESCRIPTION

Important notes:

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

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

- Subsections 1 - 6 below must be completed for each alternative.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site (**Please cross the appropriate box**).

Alternative S1 (preferred site):

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
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Alternative S2 (if any):

Ridgeline	Plateau	Side slope of hill/mountain	Close d valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea - front
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Alternative S3 (if any):

Ridgeline	Plateau	Side slope of hill/mountain	Close d valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea - front
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3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Has a specialist been consulted for the completion of this section?

YES	
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If YES, please complete the following:

Name of the specialist:	Martiens Prinsloo		
Qualification(s) of the specialist:	Pr.Sci.Nat.		
Postal address:	PO Box 161, Menlyn		
Postal code:	0063		
Telephone:	-	Cell:	082 783 9801
E-mail:	martiens@ffgpm.co.za	Fax:	-

Are there any rare or endangered flora or fauna species (including red data species) present on any of the site and alternative sites?

YES	
------------	--

If YES,
specify
and
explain:

Vegetation

In total, seven vegetation associations were identified in the broader study area assessed in the ecological specialist report, two of which occur at the proposed wastewater dam and pipeline site.

- » The *Acacia nilotica*–*Acacia tortilis* open woodland community occurs at the site of the proposed wastewater dam. This plant community is associated with the Shortlands Soil Form (Orthic A horizon over a Red Structured B horizon).

The community structure can be described as open woodland over a seasonally closed herbaceous layer. During the dry winter months the herbaceous layer becomes very sparse and open. Dominant tree species include *Acacia tortilis* and *Acacia nilotica*, with heights between 4 and 5 meters. The grass layer (250 mm tall) is dominated by *Urochloa mosambicensis*, *Eragrostis racemosa* and *Panicum maximum*. The grass is heavily grazed and well utilized by animals. Prominent forbs include *Boerhavia diffusa*, *Heliotropium steudneri*, *Hibiscus aethiopicus* and *Tribulus terrestris*. The geophyte *Crinum macowanii* also occurs within this plant community. This plant community is regarded as ecologically highly functional.

- » The *Gymnosporia glaucophylla*–*Acacia nigrescens* closed woodland community occurs over a small section of the wastewater dam and discharge pipeline site. The vegetation structure can be described as close woodland with a woody cover ranging from 30–60% crown cover, over a dense herbaceous layer (300–500 mm tall) with 35–70% canopy cover.

The woody layer is dominated by the tree species *Acacia nigrescens*, with heights between 5 and 6 meters, the shrub species *Gymnosporia glaucophylla*, while the herbaceous layer is dominated by the grass species *Themeda triandra*, *Panicum coloratum* and *Cenchrus ciliaris*. Prominent forbs include *Blepharis integrifolia* and *Crossandra zuluensis*. This plant community is regarded as ecologically highly functional.

The rare tree species *Elaeodendron transvaalense* (Bushveld Saffron) was found in both of the above plant communities. This is a protected tree species and is listed as Near Threatened – damage or removal of the tree would require a licence according to the National Forests Act, 1998 (Act No. 84 of 1998).

Are there any special or sensitive habitats or other natural features present on any of the alternative sites? [REDACTED] **NO**

If YES, specify and explain:

Within the greater study area and to the north of the proposed wastewater dam site, "sparse woodlands along drainage lines and floodplains" were identified which are considered to be of very high conservation value. The site for the wastewater dam and pipeline do not impact on these habitats.

Are any further specialist studies recommended by the specialist? [REDACTED] **NO**

If YES, specify:

[REDACTED]

If YES, is such a report(s) attached in Appendix D? YES NO

Signature of specialist: _____ Date: _____

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

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

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

The geology of the area was considered in the groundwater impact assessment undertaken for the project and was used to inform the above. Refer to Appendix D.

4. GROUNDCOVER

Has a specialist been consulted for the completion of this section?

YES

If YES, please complete the following:

Name of the specialist:	Dr Theo Mostert		
Qualification(s) of the specialist:	Pr.Sci.Nat. Ecology, Botany & Zoology		
Postal address:	PO Box 609, Mtunzini		
Postal code:	3867		
Telephone:	Dr Theo Mostert	Cell:	082 783 9801
E-mail:	Pr.Sci.Nat. Ecology, Botany & Zoology	Fax:	-

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?

YES

If YES,
specify
and
explain:

Vegetation

In total, seven vegetation associations were identified in the broader study area assessed in the ecological specialist report, two of which occur at the proposed wastewater dam and pipeline site.

- » The *Acacia nilotica*–*Acacia tortilis* open woodland community occurs at the site of the proposed wastewater dam. This plant community is associated with the Shortlands Soil Form (Orthic A horizon over a Red Structured B horizon).

The community structure can be described as open woodland over a seasonally closed herbaceous layer. During the dry winter months the herbaceous layer becomes very sparse and open. Dominant tree species include *Acacia tortilis* and *Acacia nilotica*, with heights between 4 and 5 meters. The grass layer (250 mm tall) is dominated by *Urochloa mosambicensis*, *Eragrostis racemosa* and *Panicum maximum*. The grass is heavily grazed and well utilized by animals. Prominent forbs include *Boerhavia diffusa*, *Heliotropium steudneri*, *Hibiscus aethiopicus* and *Tribulus terrestris*. The geophyte *Crinum macowanii* also occurs within this plant community. This plant community is regarded as ecologically highly functional.

- » The *Gymnosporia glaucophylla*–*Acacia nigrescens* closed woodland community occurs over a small section of the wastewater dam and discharge pipeline site. The vegetation structure can be described as close woodland with a woody cover ranging from 30–60% crown cover, over a dense herbaceous layer (300–500 mm tall) with 35–70% canopy cover.

The woody layer is dominated by the tree species *Acacia nigrescens*, with heights between 5 and 6 meters, the shrub species *Gymnosporia glaucophylla*, while the herbaceous layer is dominated by the grass species *Themeda triandra*, *Panicum coloratum* and *Cenchrus ciliaris*. Prominent forbs include *Blepharis integrifolia* and *Crossandra zuluensis*. This plant community is regarded as ecologically highly functional.

The rare tree species *Elaeodendron transvaalense* (Bushveld Saffron) was found in both of the above plant communities. This is a protected tree species and is listed as Near Threatened – damage or removal of the tree would require a licence according to the National Forests Act, 1998 (Act No. 84 of 1998).

Are there any special or sensitive habitats or other natural features present on any of the alternative sites? **NO**

If YES, specify and explain:
 Within the greater study area and to the north of the proposed wastewater dam site, "sparse woodlands along drainage lines and floodplains" were identified which are considered to be of very high conservation value. The site for the wastewater dam and pipeline do not impact on these habitats.

Are any further specialist studies recommended by the specialist? **NO**

If YES, specify:

If YES, is such a report(s) attached in Appendix D? YES NO

Signature of specialist: _____ Date: _____

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

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

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

Land use character			Description
Natural area	YES	<input type="checkbox"/>	Natural land will be cleared at the location of the 1ha wastewater dam. The area adjacent to existing roads is considered to be less sensitive for the alignment of the pipeline infrastructure

			between the Biomass plant and the wastewater dam.
Low density residential		NO	No residential areas will be directly affected by the proposed dam and pipeline.
Medium density residential		NO	-
High density residential		NO	-
Informal residential		NO	-
Retail commercial & warehousing		NO	-
Light industrial		NO	-
Medium industrial		NO	-
Heavy industrial		NO	-
Power station	YES		The authorised Mkuze Biomass Power Station is to be constructed within 230m to the east of the wastewater dam site. The proposed dam is part of the essential infrastructure required for the biomass power plant.
Office/consulting room		NO	-
Military or police base/station/compound		NO	-
Spoil heap or slimes dam		NO	-
Quarry, sand or borrow pit		NO	-
Dam or reservoir		NO	-
Hospital/medical centre		NO	-
School/ creche		NO	-
Tertiary education facility		NO	-
Church		NO	-
Old age home		NO	-
Sewage treatment plant		NO	-
Train station or shunting yard		NO	-
Railway line		NO	-
Major road (4 lanes or more)		NO	The proposed project is more than 500m from the N2 National Road.
Airport		NO	-
Harbour		NO	-
Sport facilities		NO	-
Golf course		NO	-

Polo fields		NO	-
Filling station		NO	-
Landfill or waste treatment site		NO	-
Plantation		NO	-
Agriculture		NO	The site falls within a 10ha area which has been rezoned and does not have an agricultural zoning.
River, stream or wetland		NO	The pump house will be required to be constructed adjacent to the Clerkness Dam which is a water impoundment. There is no stream within 500m from this infrastructure.
Nature conservation area		NO	The site is located within the Farm Alkmaar 13434 and Remainder of the farm Clerkness 13459 which is situated on the boundary of the Zululand Rhino Nature Reserve. However the proposed infrastructure is more than 500m from the boundary.
Mountain, hill or ridge		NO	-
Museum		NO	-
Historical building		NO	-
Protected Area		NO	The site is located within the Farm Alkmaar 13434 Remainder of the farm Clerkness 13459 which is situated on the boundary of the Zululand Rhino Nature Reserve. However the proposed infrastructure is more than 500m from the boundary.
Graveyard		NO	-
Archaeological site		NO	-
Other land uses (describe)	YES		<ol style="list-style-type: none"> 1. An existing power line (Hluhluwe/Mkuze 132kV) runs parallel to the proposed site. 2. Mkuze Substation is located 550m to the east of the project site 3. Mkuze Biomass Central Power Station to be constructed adjacent to the project site (within 230m east).

6. CULTURAL/ HISTORICAL FEATURES

<p>Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or within 20m of the site?</p>	<p>NO</p>
<p>If YES, contact a specialist recommended by AMAFA to conduct a heritage impact assessment. The heritage impact assessment must be attached as an appendix to this report.</p>	
<p>Briefly explain the recommendations of the specialist:</p>	<p>The impacts of the proposed wastewater dam and pipeline infrastructure on heritage resources such as archaeological sites, built structures over 60 years old, sites of cultural significance associated with burial grounds and graves, graves of victims of conflict, and significant cultural landscapes or viewsapes is considered to be low.</p> <p>If during construction, any graves or archaeological finds are made (e.g. stone tools, skeletal material), the operations must be stopped and Amafa should be contacted.</p>
<p>Will any building or structure older than 60 years be affected in any way?</p>	<p>NO</p>
<p>Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?</p>	<p>NO</p>
<p>If YES, please submit the necessary application to AMAFA and attach proof thereof to this report.</p>	

SECTION D: PUBLIC PARTICIPATION

1. ADVERTISEMENT

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

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

Notice boards were fixed at the site of the proposed pipeline and wastewater dam and the positions noted. Refer to Appendix E.

- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the local and district municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity (as identified in the application form for the environmental authorization of this project); and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

Proof of the above is contained in Appendix E.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that an application for environmental authorization has been submitted to the KZN Department of Economic Development, Tourism & Environmental Affairs in terms of the EIA Regulations, 2010;(ii)
 - (iii) a brief project description that includes the nature and location of the activity to which the application relates;
 - (iv) where further information on the application can be obtained; and
 - (iv) the manner in which and the person to whom representations in respect of the application may be made.

Proof of the above is contained in Appendix E.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

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

specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

Proof of the above is contained in Appendix E.

4. DETERMINATION OF APPROPRIATE PROCESS

The EAP must ensure that the public participation process is according to that prescribed in regulation 54 of the EIA Regulations, 2010, but may deviate from the requirements of sub regulation 54(2) in the manner agreed by the KZN Department of Economic Development, Tourism & Environmental Affairs as appropriate for this application. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate.

Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before this application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations (regulation 57 in the EIA Regulations, 2010) and be attached as Appendix E to this report.

No comments have been received to date. A comments and responses report will be included in the final BAR.

6. PARTICIPATION BY DISTRICT, LOCAL AND TRADITIONAL AUTHORITIES

District, local and traditional authorities (where applicable) are all key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of this application and provided with an opportunity to comment.

Authorities and organs of state identified as key stakeholders:

- » KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (as competent authority)
- » Department of Agriculture, Forestry & Fisheries
- » Department of Water and Sanitation- KwaZulu-Natal
- » Eskom
- » Amafa Heritage KZN
- » South African National Roads Agency Limited
- » Jozini Local Municipality
- » Umkhanyakude District Municipality
- » Zululand Rhino Nature Reserve (Ezemvelo KZN Wildlife)
- » Ubombo Mountain Nature Reserve (Ezemvelo KZN Wildlife)
- » Umkuze Nature Reserve (Ezemvelo KZN Wildlife)

Has any comment been received from the district municipality?

NO

If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):

This is the draft Basic Assessment Report. This report has been submitted to the District Municipality for comment.

Has any comment been received from the local municipality?

NO

If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):

This is the draft Basic Assessment Report. This report has been submitted to the Local Municipality for comment.

The Jozini Local Municipality previously submitted comments on the application for Environmental Authorisation of the Mkuze Power Station. Clarification from the municipality was received in terms of zoning requirements. The land where the proposed project and associated infrastructure is located has since been rezoned from agricultural use.

Has any comment been received from a traditional authority?

NO

If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):

There is no traditional authority relevant for this area.

7. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

NO

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

Municipality - The Jozini Local Municipality previously submitted comments on the application for Environmental Authorisation of the Mkuze Power Station. Clarification from the municipality was received in terms of zoning requirements. The land where the proposed project and associated infrastructure is located has since been rezoned from agricultural use.

Landowner - The landowner owns all land directly adjacent to the proposed infrastructure. The landowner is a shareholder in the Mkuze Biomass project.

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

No issues have been identified as yet for the infrastructure included in this BA report.

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

This is the draft Basic Assessment Report and no comments have been received to date. Comments and responses will be included in the Final Basic Assessment Report.

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

The assessment of impacts considers the following:

- » Construction of a wastewater dam;
- » Construction of an outlet water pipeline;
- » Construction of a pumpstation adjacent to the Clerkness Dam;
- » Temporary laydown areas associated with the above;
- » Access roads required

A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase and decommissioning phases of the proposed dam and pipeline is provided in the table below.

Activity	Impact Summary	Significance	Proposed Mitigation
PLANNING AND DESIGN PHASE			
Use of vehicles during site survey and reconnaissance	Direct impacts:		
	Roads and vegetation damage	Medium	Make use of existing access roads only
	Impacts on Faunal habitats	Medium	<ul style="list-style-type: none"> » Ensure that any sensitive habitats are avoided as far as possible. Ensure no infrastructure is erected in sensitive areas. » Care should be taken to minimise any unnecessary impact on the vegetation in these areas through activities such as storing materials, turning vehicles, labour camps and others. » The site should be fenced to minimise the impact on fauna using the site.
	Indirect impacts:		
	None	N/A	N/A
	Cumulative impacts:		
None	N/A	N/A	
No – Go Option	Direct Impacts		
	Roads and vegetation damage	Low	No mitigation is proposed for the no-go option
	Impacts on Faunal habitats	Low	No mitigation is proposed for the no-go option
	Indirect impacts		
	None	N/A	N/A
	Cumulative Impacts		
None	N/A	N/A	

Activity	Impact summary	Significance (without - with mitigation)	Proposed mitigation
CONSTRUCTION			
Ecological impacts			
Vegetation clearing and construction activities at the wastewater dam, pipeline and pump station	<p>Direct impacts:</p> <ul style="list-style-type: none"> » Disturbance and loss of riparian habitat. 	<p>None</p> <p>No wetland habitat is disturbed by proposed activity.</p>	<ul style="list-style-type: none"> » Maintain construction activities outside of the drainage lines and buffers. » Accidental spills into wetland area should be reported to the ECO and rehabilitated immediately.
	<ul style="list-style-type: none"> » Disturbance and loss of vegetation due to construction activities. 	<p>High-Medium</p> <p>1ha area to be cleared for the construction of the dam.</p> <p>225m² area to be cleared for the construction of the pumpstation</p>	<ul style="list-style-type: none"> » Keep vegetation clearance to a minimum. » Sensitive areas should be demarcated and avoided. » A permit must be applied for the removal of protected plant or tree species.
	<ul style="list-style-type: none"> » Loss of soil as a result of clearance of vegetation and resultant erosion. 	<p>Medium -Low</p>	<ul style="list-style-type: none"> » Control stormwater runoff from the on-set of clearance and construction activities.
	<ul style="list-style-type: none"> » Faunal habitat destruction. 	<p>Medium- Low</p>	<ul style="list-style-type: none"> » Large mammals resident in the landowner's game farm area which could be threatened by the construction activities should be relocated away

Activity	Impact summary	Significance (without - with mitigation)	Proposed mitigation
			<p>from the construction activities to the fenced natural areas.</p> <ul style="list-style-type: none"> » Collection, hunting or harvesting of any plants or animals should be strictly forbidden. » Fuel wood collection should not be allowed on or around site.
	<ul style="list-style-type: none"> » Impede connectivity or faunal migration corridors. 	<p>Low-Low The site is adjacent to the property fenceline and road, which is an existing barrier to fauna movement.</p>	<ul style="list-style-type: none"> » Ensure that no large mammals enter and become trapped within the fenced-off area. » Large mammals should be removed from site.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> » With appropriate avoidance and mitigation indirect impacts will be low. 	<p>Low</p>	<ul style="list-style-type: none"> » N/A
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> » Cumulative impacts associated with vegetation clearance will result in disturbance of soils, increased soil erosion, reduced habitat for plant and animal species, spread of 	<p>Low - Low</p>	<ul style="list-style-type: none"> » Keep vegetation clearance to a minimum. » Control storm water runoff. » Control soil erosion. » Control alien invasive plants.

Activity	Impact summary	Significance (without - with mitigation)	Proposed mitigation
	alien invasive species and a reduction of ecosystem services.		
<i>Soil & Agricultural Impacts</i>			
Loss of arable land. Construction activities that disturb the soil profile, for example for levelling, excavations, etc.	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> » Loss of agricultural land The site is considered to have medium sensitivity to development. It is land capability class III and the soils are suitable for cultivation. However the impracticality of utilising it as part of the irrigation land on the farm reduces its sensitivity. The site has been rezoned to industrial use by the local municipality in terms of the Subdivision of Agricultural Land Act 70 of 70. 	Medium - low	» No mitigation required
	<ul style="list-style-type: none"> » Soil Erosion 	Low	<ul style="list-style-type: none"> » Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from hardened surfaces and prevents potential down slope erosion. This should be in place and maintained during all phases of the development. » Disturbed areas should be minimised as far as possible. » Rehabilitation should be undertaken as soon as possible following the completion of construction in an area.

Activity	Impact summary	Significance (without - with mitigation)	Proposed mitigation
	» Loss of topsoil	Low	<ul style="list-style-type: none"> » Strip and stockpile topsoil from all areas where soil will be disturbed. » Stockpile topsoil and subsoils separately. » After cessation of disturbance, re-spread topsoil over the surface. » Implement appropriate erosion control measures on topsoil stockpiles to minimise loss of this resource. » Dispose of any sub-surface spoils from excavations where they will not impact on agricultural land, or where they can be effectively covered with topsoil.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> » Sedimentation from erosion 	Low	<ul style="list-style-type: none"> » All hardened surfaces should have runoff control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk.
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> » The significance of agricultural impacts is influenced by the fact that the site is land capability class III and the soils are suitable for cultivation. However the impracticality of utilising it as part of the irrigation land on the farm reduces the significance. The extent of the development is also small, so a minimal amount of land is impacted. 	Low	<ul style="list-style-type: none"> » No mitigation possible.
<i>Heritage impacts</i>			
Construction of the	<i>Direct impacts:</i>	Low	<ul style="list-style-type: none"> » If during construction any possible finds such as

Activity	Impact summary	Significance (without - with mitigation)	Proposed mitigation
wastewater dam and pipeline and pump station	» Impacts on heritage resources (i.e. archaeological sites, built structures over 60 years old, sites of cultural significance associated with burial grounds and graves, graves of victims of conflict, and significant cultural landscapes or viewsapes)	No heritage resources identified on the site development footprint	stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and chance find procedures implemented whereby a qualified archaeologist and/or SAHRA and AMAFA must be contacted for an assessment of the find.
	Indirect impacts: » None	Low	» None
	Cumulative impacts: » The loss of a number of archaeological sites.	Low	» None

Activity	Impact Summary	Significance (with – without mitigation)	Proposed Mitigation
OPERATION			
<i>Ecological impacts</i>			
Operation of the wastewater dam and pipeline	<i>Direct impacts:</i> » Disturbance and loss of wetland habitat.	None	» Footprint is located outside of identified water resources/wetland habitat.
	» Disturbance and loss of vegetation due to operational activities.	Medium-Low	» Monitor increase of alien invasive species due to site clearance. » Control alien invasive plants.
	» Loss of soil as a result of clearance of vegetation and resultant erosion.	Medium-Low	» Monitor soil erosion. » Control storm water runoff to prohibit excessive soil erosion. » Maintain storm water management infrastructure.
	<i>Indirect impacts:</i> » With appropriate avoidance and mitigation indirect impacts will be low.	Low	» N/A
	<i>Cumulative impacts:</i> » Cumulative impacts associated with vegetation clearance will result in disturbance of soils, increased soil erosion, reduced habitat for plant and animal species, spread of alien invasive species and a reduction of ecosystem services.	Cumulative impacts will be associated with the operation of the biomass plant and all associated infrastructure	» Keep vegetation clearance to a minimum. » Control storm water runoff. » Control soil erosion. » Control alien invasive plants.

Activity	Impact Summary	Significance (with – without mitigation)	Proposed Mitigation
<u>Soil and agricultural impacts</u>			
Occupation of the site by the footprint of the wastewater dam, pipeline infrastructure and pump station	» Soil Erosion	Low - Low	<ul style="list-style-type: none"> » Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from hardened surfaces and prevents potential down slope erosion. This should be in place and maintained during all phases of the development. » Monitor and maintain rehabilitated areas in order to reduce erosion risk.
	<i>Indirect impacts:</i> » Sedimentation impacts on the adjacent drainage system	Medium-Low	Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from hardened surfaces and prevents potential downslope erosion. This should be in place and maintained during all phases of the development.
	<i>Cumulative impacts:</i> Sedimentation impacts on drainage systems downstream and loss of soil function	Low - Low	Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from hardened surfaces and prevents potential down slope erosion. This should be in place and maintained during all phases of the development.
<u>Groundwater impacts</u>			
Activities contributing to groundwater impacts	<i>Direct impacts:</i> » Impacts on groundwater levels	The groundwater table is not	» None

Activity	Impact Summary	Significance (with – without mitigation)	Proposed Mitigation
		affected by the dam due to the lining	
	» Impacts on groundwater quantity due to seepage from discharge dam	Low - Low	» Line dam to remove vertical infiltration to underlying aquifers » Compact dam to reduce vertical infiltration to underlying aquifers
	» Impacts on groundwater quality due to seepage from discharge wastewater dam	Low- Low	» Line dam to prevent seepage and infiltration to underlying aquifers. » Wastewater to meet committed water quality standards. » Only water which meets irrigation standards to be used as irrigation water.
	Indirect impacts: » Impacts due to hydrocarbon spills at the pump station	Low-Low	Regularly service plant and machinery to reduce risk of leaks. Keep spill kits on site.
	Cumulative impacts: No cumulative impacts identified	N/A	» N/A
NO-GO OPTION			

Activity	Impact Summary	Significance (with – without mitigation)	Proposed Mitigation
Construction and operation phase of the wastewater dam and pipeline	<p>Direct impacts:</p> <ul style="list-style-type: none"> » Impact on overall feasibility of the biomass power project. » Loss of economic development opportunities 	High negative	<ul style="list-style-type: none"> » The proposed infrastructure is essential associated infrastructure for the Mkuze biomass power station. Construction is due to commence mid-2015, and this infrastructure forms an essential service to reduce pollution potential on the site.

Activity	Impact summary	Significance	Proposed mitigation
DECOMMISSIONING AND CLOSURE			
<p>Decommissioning of the wastewater dam and pipeline and pump station</p> <p>It is anticipated that the infrastructure (excluding pump station) would be rehabilitated and left in-situ.</p>	<p>Direct impacts:</p> <p>Ecological:</p> <ul style="list-style-type: none"> » Compaction of soil as a result of construction » Disturbance and loss of vegetation due to construction activities outside of rehabilitation area. » Incorrect handling and disposal of components. 	<ul style="list-style-type: none"> » Medium -Medium 	<ul style="list-style-type: none"> » Rehabilitate soil to allow vegetation to grow in the substrate again. » Re-vegetate site with indigenous vegetation. » Monitor increase of alien invasive species due to site disturbance. » Restore vegetation to predetermined landuse.
	<p>Groundwater:</p> <ul style="list-style-type: none"> » Latent impacts on groundwater quality due to seepage 	<p>Medium -Low</p>	<ul style="list-style-type: none"> » Undertake surface and groundwater monitoring
	<p>Soil:</p> <ul style="list-style-type: none"> » Soil Erosion » Loss of topsoil » Contamination due to incorrect disposal of components 	<p>Low</p>	<ul style="list-style-type: none"> » Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from hardened surfaces and prevents potential down slope erosion.
	<p>Dust production and dust pollution</p>	<p>Low</p>	<ul style="list-style-type: none"> » Apply appropriate dust control measures, i.e. water spraying during decommissioning.
	<p>Increased alien plant invasion risk</p>	<p>Low</p>	<ul style="list-style-type: none"> » Due to the disturbance at the site during decommissioning, alien plant species are likely to invade the site and a long-term control plan will need to be implemented for several years after decommissioning » Regular monitoring for alien plants within the development footprint for 2-3 years after decommissioning. » Regular alien clearing should be conducted

Activity	Impact summary	Significance	Proposed mitigation
			using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible. » A cover of indigenous grass should be established to stabilise the soil.
	Indirect impacts: none	N/A	N/A
	Cumulative Impacts: » Cumulative impacts associated with infrastructure removal and decommissioning will result in disturbance of soils, increased soil erosion, reduced habitat for plant and animal species, spread of alien invasive species and a reduction of ecosystem services. » Cumulative impacts associated with soil compaction will result in soils losing natural soil horizons, structural degradation, loss of soil porosity, and loss of plant available moisture. » Siltation of watercourses downstream	» Low - Low »	» Control storm water runoff. » Control soil erosion. » Control alien invasive plants. » Rehabilitate soil to allow vegetation to grow in the substrate again. » Implement appropriate soil erosion control measures at the source.
NO-GO OPTION			

Activity	Impact summary	Significance	Proposed mitigation
Construction, operation and decommissioning phase of the wastewater dam and pipeline	<p>Direct impacts:</p> <ul style="list-style-type: none"> » The no-go option could result in impacts on environmental quality due to redundant infrastructure in-situ. » 	<p>Low</p> <p>Dam is lined and a WML is being applied for.</p>	<ul style="list-style-type: none"> » The no-go option could result in impacts on environmental quality due to redundant infrastructure remaining in-situ. Ensure that all infrastructure is removed or that its usefulness is considered elsewhere.

3. ENVIRONMENTAL IMPACT STATEMENT

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

Alternative S1 (preferred site)

This section provides a summary of the environmental assessment and conclusions drawn for the proposed wastewater dam and water pipeline as well as the pump station at the Clerkness Dam serving as essential infrastructure for the authorised Mkuze Biomass Power Station. In doing so, it draws on the information gathered as part of the Basic Assessment process and the knowledge gained by the environmental consultants during the course of this process and previous BA processes conducted for the Mkuze Power Station project, and presents an informed opinion of the environmental impacts associated with the proposed project.

The following conclusions can be drawn from the specialist studies as part of the Basic Assessment:

- » In terms of the **ecology**, based on the available information and the site investigations, it shows that the proposed 1ha wastewater dam would have a **medium** impact on any sensitive and / or important terrestrial habitats while the pipeline will have a **low** ecological sensitivity due to its proposed alignment adjacent to an existing road and farm/fence boundary. The pump station site would have a low ecological impact due to its small footprint (50m²), position adjacent to an artificial impoundment and the Jozini Municipality's existing pump station.

The site occurs within a national vegetation type classified as Vulnerable, with all vegetation within the study area being classified of Medium-High conservation value. The protected tree species *Elaeodendron transvaalense* (Bushveld Saffron) was identified within the broader area which will be affected by the proposed infrastructure, and should be avoided or a permit applied for the removal of such trees. The broader study area considered highly valuable for faunal conservation (especially mammal conservation). The landowner currently uses a portion of their land as a private game farm. The infrastructure is planned on the edge of the natural area, adjacent to an existing road and farm/fence boundary and limits the impact on the broader natural area. It is recommended that a search and rescue operation is

undertaken prior to construction to locate any Threatened or Protected fauna or flora species or any other species of conservation concern and that permitting for the removal thereof be undertaken.

- » In terms of **surface water impacts**, there will be no direct impact on surface water resources as the infrastructure is located outside of the surface water features (including their associated buffers) identified in the study area. The impact will therefore be **low**.
- » The wastewater within the wastewater dam will meet irrigation standards. In addition, the wastewater dam will be lined. In terms of **groundwater impacts** the risk of contamination of the groundwater is considered to be **low**.
- » In terms of **heritage**, no heritage resources were identified within the development footprint. Impacts associated with burial grounds and graves, graves of victims of conflict, and significant cultural landscapes or viewsapes are considered to be **low**.
- » **Cumulative impacts:** Considering all the components of the authorised Mkuze Biomass Power Station project (inclusive of authorised and proposed infrastructure), the cumulative impacts from all the project components combined is considered to be low to medium. The significance of ecological impact are medium due to nature of the broader environment. These impacts are reduced by the proximity of the authorised and proposed project components to existing electrical and linear infrastructure. Cumulative impacts on the surface water and heritage environment during construction and operational phases are considered to be low. Cumulative impacts on the groundwater and agricultural environment are considered to be low due to the discharge quality of the wastewater (water to meet standards for irrigation).

Based on the findings of the studies undertaken, in terms of environmental constraints and opportunities identified through the Environmental Basic Assessment process, no environmental fatal flaws were identified to be associated with the establishment of the proposed **wastewater dam and discharge pipeline, or the pump station** for the proposed Mkuze Biomass Power Station.

The significance levels of the majority of identified negative impacts are low and can be further reduced by implementing recommended mitigation measures. With reference to the information available at this planning approval stage in the project cycle, the confidence in the environmental assessment undertaken is regarded as acceptable.

On the basis of the findings of this Basic Assessment process, it is recommended that the proposed wastewater dam and discharge pipeline, and the pump station

be authorised as essential infrastructure for the approved Mkuze Biomass power station. In response to the potential environmental impacts, environmental specifications for the management of these issues / impacts are detailed within the draft Environmental Management Programme (EMPr) included within Appendix F.

Alternative S2

Alternative A1 (preferred alternative)

Alternative A2

No-go alternative (compulsory)

Also referred to as the 'Do nothing' option, this refers to Navosync (Pty) Ltd not constructing the proposed wastewater dam and pipeline as part of the authorised Mkuze Biomass Power Plant. In this scenario the potential positive and negative environmental and social impacts as described in this Basic Assessment Report will not occur and the status quo will be maintained.

The proposed infrastructure is essential infrastructure required for the operation of the authorised Mkuze Biomass Power Station, which was authorised by the Department of Environmental Affairs and obtained Preferred Bidder status in the Department of Energy's (DoE) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme (Round 3). The REIPPP Programme has been designed to contribute towards the South African government's renewable energy target of 17GW by 2030, and to stimulate the renewable industry in South Africa. Construction of the power plant is scheduled to commence in the second half of 2015. The power plant infrastructure, including the infrastructure assessment within this BAR is with a 10ha area rezoned for the purpose of the construction of the Mkuze Biomass plant.

Application of the no-go option is *not considered feasible* as this would directly impact the development of the authorised Mkuze Power Station. Should the project not proceed, the contribution of approximately 16.5MW from the Mkuze Biomass Power plant project towards the Government target for renewable energy will not be realised due to the variability in biomass resources. As a result the potential local and regional socio-economic and environmental benefits expected to be associated with the proposed project would not be realised.

The No-Development option would represent a lost opportunity for South Africa to

supplement is current energy needs with clean, renewable energy. Given South Africa's position as one of the highest per capita producer of carbon emissions in the world, this would represent a High negative social cost.

The no-development option also represents a lost opportunity in terms of the employment and business opportunities (construction and operational phase) associated with the authorised biomass plant. On a local level, should the development proceed, the landowner and local community will benefit from the proposed development financially. The no-development option will therefore not be beneficial to the landowner or the broader community.

The 'Do nothing' alternative is, therefore, not a preferred alternative.

SECTION F. RECOMMENDATION OF EAP

Is the information contained in this report and the documentation attached hereto in the view of the EAPr sufficient to make a decision in respect of this report?

YES	

If "NO", please contact the KZN Department of Economic Development, Tourism & Environmental Affairs regarding the further requirements for your report.

If "YES", please attach the draft EMPr as Appendix F to this report and list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

There are no insurmountable environmental or social constraints that prevent the establishment of the proposed wastewater dam and pipeline infrastructure for the authorised Mkuze Biomass Power Station.

The construction of the wastewater dam and pipeline and pump station infrastructure should be implemented according to the EMPr to adequately mitigate and manage potential impacts associated with construction activities. The construction activities and relevant rehabilitation of disturbed areas should be monitored against the approved EMPr, the Environmental Authorisation and all other relevant environmental legislation. Relevant conditions to be adhered to include:

Mitigation - Design, Construction, and Decommissioning Phases:

- » All relevant practical and reasonable mitigation measures detailed within this report and the specialist reports contained within Appendix D must be implemented.
- » It is recommended that a search and rescue operation is undertaken prior to construction to find any Threatened or Protected species or any other species of conservation concern.
- » Permits for relocation / removal of protect plant species and the Bushveld Saffron trees should be should be applied for from KZN Wildlife and/or DAFF.
- » The draft Environmental Management Programme (EMPr) as contained within Appendix F of this report should form part of the contract with the Contractors appointed to construct and maintain the proposed project, and will be used to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for all life cycle phases of the proposed project is considered to be key in achieving the appropriate environmental management standards as detailed for this project.
- » Synergies between the operational requirements of the biomass power station

and the wastewater dam and water pipeline must be identified and a consolidated Operational Environmental Management Plan developed.

- » Appoint an Environmental Control Officer (ECO) to monitor activities on site throughout the construction phase of the project.
- » The development footprint should be kept to a minimum.
- » Temporary laydown areas should be located within identified previously transformed areas or disturbed areas as far as possible. These areas should be rehabilitated after use.
- » Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust pollution becomes apparent).
- » Rehabilitate all adjacent or peripheral disturbed areas, laydown areas, access roads, etc. immediately after the completion of construction works in terms of the re-vegetation and habitat rehabilitation plan included in the EMPr. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.
- » Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required.
- » All declared alien plants must be identified and managed in accordance with the Conservation of Agricultural Resources Act (Act No. 43 of 1983), the implementation of a monitoring programme in this regard is recommended.
- » If during construction, any graves or archaeological finds are made (e.g. stone tools, skeletal material), the operations must be stopped, chance find procedures implemented and AMAFA should be contacted.
- » Post-construction, the site should be rehabilitated and revegetated with indigenous vegetation.

Mitigation - Operation Phase:

The mitigation and management measures previously listed in this Basic Assessment Report should be implemented in order to minimise potential environmental impacts. The following mitigation measures should also be implemented.

- » Wastewater should meet the required standards or committed limits prior to use of the water for irrigation purposes.
- » Water sampling must be undertaken regularly to ensure the discharge water quality is within the committed limits.
- » A groundwater monitoring programme should be implemented and a site specific monitoring borehole installed for monitoring.
- » Maintenance of erosion control measures.
- » Implementation of a stormwater management plan.
- » On-going monitoring of the site to detect and restrict the spread of alien plant species.

»

SECTION G: APPENDICES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Public Participation

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information