



# Scientific Terrestrial Services

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Marelle Meintjies

**Date:** Friday, 15 December 2017

**Ref:** STS 170079

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Attention: Nyaladzi Nleya

Dear Sir,

## **DESKTOP LEVEL ECOLOGICAL ASSESSMENT AS PART OF THE WASTE AUTHORISATION PROCESS FOR THE PROPOSED DECOMMISSIONING (CLOSURE) OF THE SHAKAVILLE LANDFILL, KWADUKUZA LOCAL MUNICIPALITY, KWAZULU NATAL PROVINCE**

Scientific Terrestrial Services (STS) was appointed by GA Environment (Pty) Ltd to conduct a desktop level ecological assessment as part of the Waste Management Licensing Process for the decommissioning (closure) of the Shakaville landfill site, Kwa-Zulu Natal Province. The process is undertaken by the KwaDukuza Local Municipality, to ensure compliance with the National Environmental Management Waste Act (Act No. 59) of 2008.

Other legislative requirements taken into consideration during the assessment include:

- National Environmental Management Act (NEMA) (Act No. 107 of 1998);
- National Water Act (NWA) (Act No. 36 of 1998); and
- General Notice 509 as published in the Government Gazette 40229 of 2016 as it relates to the NWA (Act 36 of 1998).

The Shakaville landfill site occupies an area of approximately 80 000m<sup>2</sup> (8 Ha) and is located on Erf 3595 Stanger within the KwaDukuza Local Municipality. Direct access is available from Mbozambo Street, which is located to the north west of the site. The boundaries of the site are within the riparian area of a tributary of the Mbozamo River. (GA Environment, 2017).

The Shakaville landfill ceased operations in the year 2000 after approximately 30 years of receiving general waste from areas located within the KwaDukuza Local Municipality boundaries. The Local Municipality currently disposes of waste at the Dolphin Coast Landfill Management (DCLM); however, pockets of illegal dumping of waste were evident within the site boundaries. The Shakaville landfill was noted to have naturally rehabilitated as vegetation was noted to have been fully established. Current land use on site include pockets of informal housing infrastructure and the occupants are regarded as historical reclaimers of waste that have since occupied this land when the disposal of waste ceased on this site. Approximately 20 families currently occupy the landfill site area (GA Environment, 2017).

As a result of numerous complaints about the state of poorly operated municipal landfills and the associated impacts on the biophysical and social environment, the Department of Environmental Affairs has embarked on an initiative to assist various Municipalities in South Africa with the licensing of the existing illegal waste disposal sites. One of these is the Shakaville landfill site that will require a Waste Management Licence for decommissioning. The initiative by Department of Environmental affairs (DEA) will assist the Shakaville Local Municipality with obtaining a Waste Management Licence which will also serve as a basis to seek funding opportunities and assistance from financial institutions such as Development Bank of South Africa (DBSA) and state departments such Treasury and National Ministries to ensure the closure of the landfill as per the waste legislation (GA Environment, 2017).

The aim of the study is to identify any preliminary areas of increased sensitivity within the Shakaville landfill site, by utilising all relevant desktop databases, such as the National Freshwater Ecosystem Priority Area (NFEP, 2011) Database, National Threatened Ecosystems (2011), Mucina & Rutherford (2012), and the Kwa-Zulu Natal Biodiversity Spatial Planning Terms and Processes (2016). The study further includes the delineation of all freshwater resources within the Shakaville landfill site and 500m thereof, utilising desktop methods, including digital satellite imagery. Based on the desktop data, areas of higher ecological importance were identified, which should be protected during decommissioning activities.



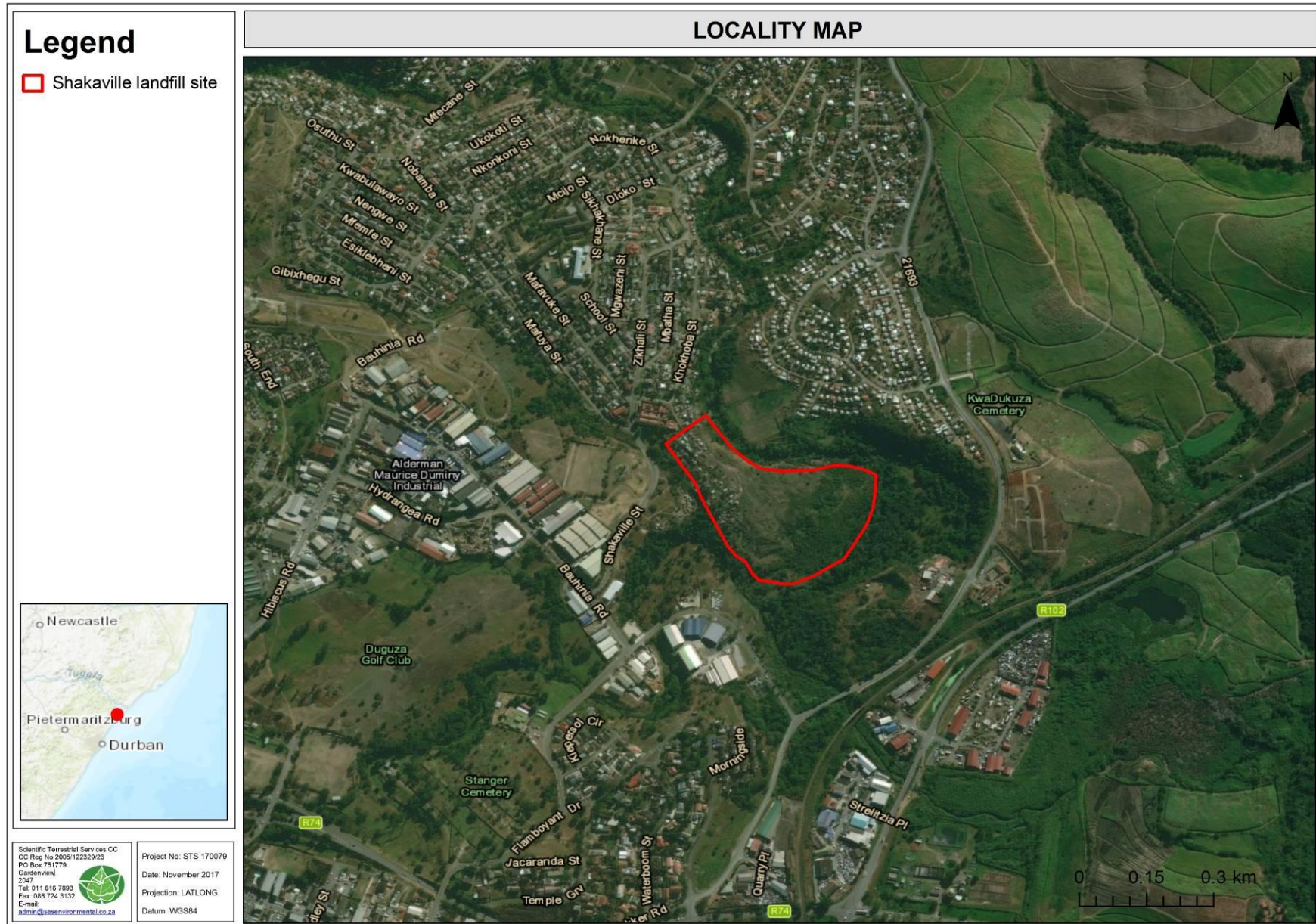


Figure 1: Digital Satellite image depicting the location of the Shakaville landfill site in relation to surrounding areas



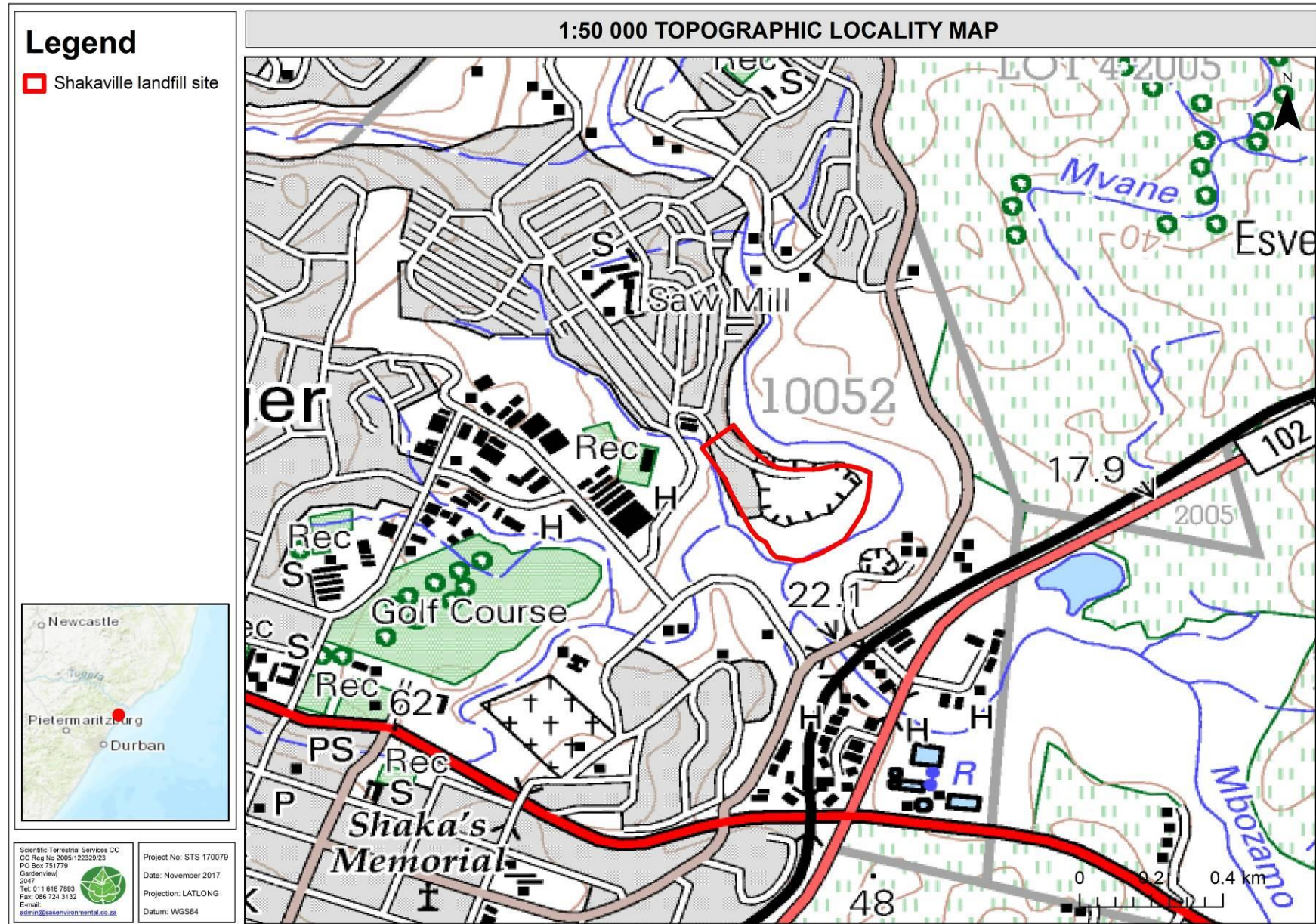


Figure 2: The Shakaville landfill site depicted on a 1:50 000 topographical map in relation to the surrounding area.



# 1. DESKTOP ASSESSMENT RESULTS

**Table 1: Summary of the conservation characteristics for the Shakaville landfill site: Aquatic Datasets**

Aquatic ecoregion and sub-regions in which the Shakaville landfill site is located		Detail of the Shakaville landfill site in terms of the National Freshwater Ecosystem Priority Area (NFEPA) (2011) database (Figure 4 & 5)	
Ecoregion	North Eastern Coastal Belt	FEPACODE	The Shakaville landfill site falls within a sub quaternary catchment not considered important in terms of fish and freshwater conservation.
Catchment	Mkomazi		
Quaternary Catchment	U40J	NFEPA Wetlands	According to the NFEPA database, a natural channelled valley bottom wetland is situated ± 124m south of the Shakaville landfill site, while an artificial unchanneled valley bottom is situated ± 470m to the southeast. Both wetland features are considered to be in a heavily to critically modified ecological condition according to the NFEPA database (Figure 3).
WMA	Mvoti to Umzimkulu		
subWMA	Mvoti		
Dominant characteristics of the North Eastern Coastal Belt Level II (17.01) Ecoregion (Kleynhans <i>et al.</i> , 2007)			
Dominant primary terrain morphology	Plain, low relief; Low Mountains, Undulating Hills, Plains	Wetland vegetation Type	The Shakaville landfill site is located within the Indian Ocean Coastal Belt Group 2, a critically endangered wetland vegetation type.
Dominant primary vegetation types	Valley Thicket, Sand Forest, Afromontane Forest	NFEPA Rivers (Figures 3)	According to the NFEPA database there are no Rivers situated within the Shakaville landfill site, nor the immediate vicinity (within 500m)
Altitude (m a.m.s.l)	0 - 900		
MAP (mm)	600 to 800	Ecological Status of the most proximal sub-quaternary reach (DWS, 2014)	
Coefficient of Variation (% of MAP)	<20 to 30	Sub-quaternary reach	U40J-03998 (Mvoti River) (±4 km south)
Rainfall concentration index	30 to 45	Assessed by expert?	Yes
Rainfall seasonality	Early to Mid-Summer	Mean Ecological Importance (EI) Class	High
Mean annual temp. (°C)	16 to 22	Mean Ecological Sensitivity (ES) Class	Very High
Winter temperature (July)	6 – 24 °C	Stream Order	3
Summer temperature (Feb)	16 – 28°C	Default Ecological Class (based on median PES and highest EI or ES mean)	A (Very High)
Median annual simulated runoff (mm)	80 to >250		



**Table 2: Summary of the conservation characteristics for the Shakaville landfill site: Terrestrial and Provincial Datasets**

Details of the Shakaville landfill site in terms of Mucina & Rutherford (2012)		Description of the vegetation type(s) relevant to the Shakaville landfill site (Mucina & Rutherford 2012)	
<b>Biome</b>	The Shakaville landfill site is situated within the <b>Indian Ocean Coastal Belt Biome</b> .	<b>Vegetation Type</b>	KwaZulu-Natal Coastal Belt
		<b>Climate</b>	Summer rainfall, but with some rainfall also in winter
<b>Bioregion</b>	The Shakaville landfill site is located within the <b>Indian Ocean Coastal Belt Bioregion</b>	<b>Altitude (m)</b>	20–450
		<b>MAP* (mm)</b>	989
<b>Vegetation Type</b>	The Shakaville landfill site is situated within the <b>KwaZulu-Natal Coastal Belt Grassland</b> vegetation type.	<b>MAT* (°C)</b>	19.6
		<b>MFD* (Days)</b>	0
Conservation details pertaining to the Shakaville landfill site (Various databases)		<b>MAPE* (mm)</b>	1659
<b>NBA (2011)</b>	The Shakaville landfill site falls within an area that is currently <b>not protected</b> .	<b>MASMS* (%)</b>	65
		<b>Distribution</b>	KwaZulu-Natal Province
<b>National Threatened Ecosystems (2011)</b>	The southern portion of the Shakaville landfill site falls within the remaining extent of the vulnerable KwaZulu-Natal Coastal Belt Ecosystem (Figure 4).	<b>Conservation</b>	Endangered. Target 25%. Only very small part statutorily conserved
		<b>Geology &amp; Soil</b>	Ordovician Natal Group sandstone, Dwyka tillite, Ecca shale and Mapumulo gneiss (Mokolian). Weathering of old dunes has produced the red sand, called the Berea Red Sand, in places. The soils supported by the above-mentioned rocks are shallow over hard sandstones and deeper over younger, softer rocks.
<b>SAPAD (2017) &amp; NPAES (2009)</b>	According to the SAPAD (2017), SACAD (2017) and NPAES (2009), there are no protected or conservation areas within 5km of the Shakaville landfill site.		<b>Vegetation &amp; landscape features</b>
<b>IBA (2015)</b>	The Shakaville landfill site is not located within or near an IBA (within 5 km)		
Detail of the Shakaville landfill site in terms of the KwaZulu-Natal Biodiversity Sector Plans (KZN Biodiversity Spatial Planning Terms and Processes V3.3 (2016)		<b>Vegetation &amp; landscape features</b>	Highly dissected undulating coastal plains which presumably used to be covered to a great extent with various types of subtropical coastal forest. Some primary grassland dominated by <i>Themeda triandra</i> still occurs in hilly, high-rainfall areas where pressure from natural fire and grazing regimes prevailed. At present the KwaZulu-Natal Coastal Belt is affected by an intricate mosaic of very extensive sugarcane fields, timber plantations and coastal holiday resorts, with interspersed secondary <i>Aristida</i> grasslands, thickets and patches of coastal thornveld
The Shakaville landfill site does not fall within any Critical Biodiversity Areas (CBAs) nor any Ecological Support Areas (ESAs), nor within any form of protected or conservation area.			

DWS = Department of Water and Sanitation; EI = Ecological Importance; ES = Ecological Sensitivity; m.a.m.s.l = Metres Above Mean Sea Level; MAP = Mean Annual Precipitation; NFEPA = National Freshwater Ecosystem Priority Areas; WMA = Water Management Area; NBA = National Biodiversity Assessment; SAPAD = South African Protected Areas Database; IBA = Important Bird Area; MAP – Mean annual precipitation; MAT – Mean annual temperature; MAPE – Mean annual potential evaporation; MFD = Mean Frost Days; MASMS – Mean annual soil moisture stress (% of days when evaporative demand was more than double the soil moisture supply).



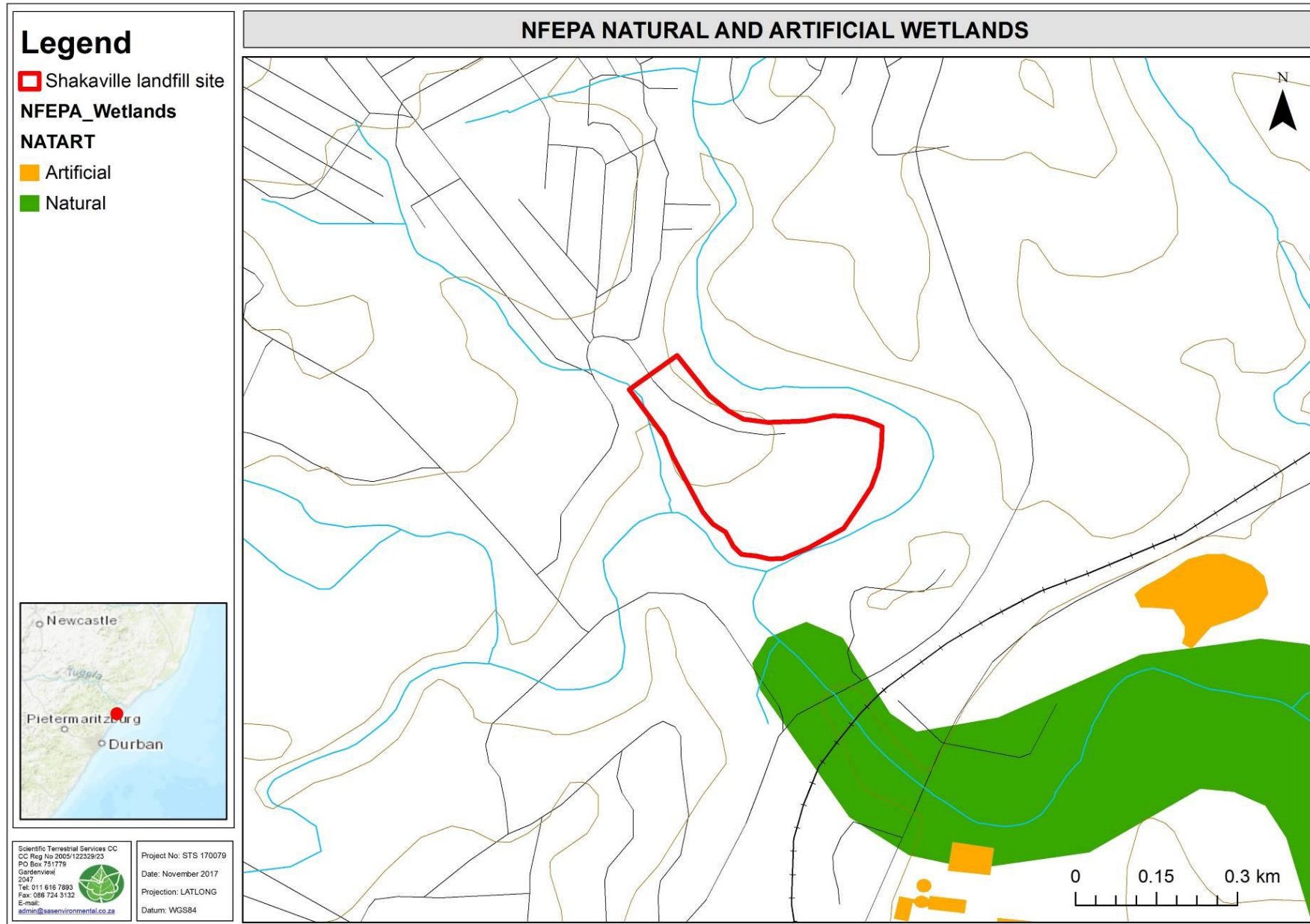


Figure 3: Natural and artificial wetlands in close proximity to the Shakaville landfill site (NFEPA, 2011)



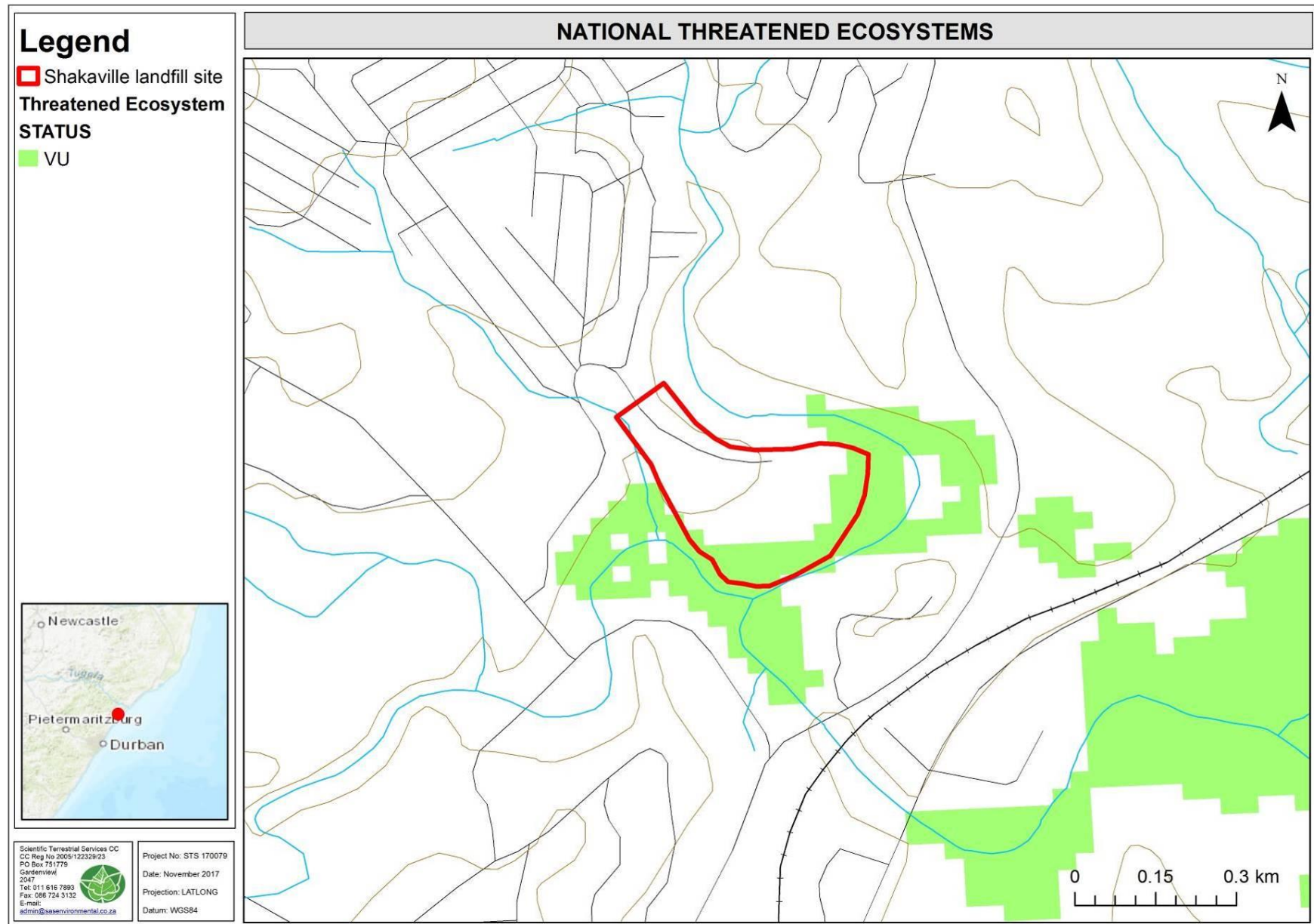


Figure 4: Vulnerable ecosystem, associated with the Shakaville landfill site according to the National Threatened Ecosystem Database (2011).





## 2. SENSITIVITY OF THE RECEIVING ENVIRONMENT

From the desktop assessment, it is evident that the landfill site does not fall within a critically endangered or endangered ecosystem. The Shakaville landfill site is further not associated with any CBA or ESAs, nor with any protected, conservation or important bird and biodiversity areas.

As the Shakaville landfill site is no longer operational, the area is mainly associated with an informal settlement and illegal dumping activities. Subsistence farming associated with the illegal settlement was also evident from site photographs taken by GA Environmental. Vegetation within the area not associated with the informal settlement, has re-established, however from site photographs the floral composition is considered transformed, and in the pioneer stage of succession, comprising predominantly of alien vegetation such as *Solanum mauritianum*, and pioneer species such as *Vachellia sp.*

Although the NFEPA database does not indicate any wetlands or river systems to be situated within the Shakaville landfill site, the NFEPA wetlands database did indicate a channelled valley bottom situated to the south of the Shakaville landfill site. From digital satellite imagery, it is evident that various watercourses forming part of the Mvoti River catchment partially encroach on the Shakaville landfill site. As such all freshwater resources within 500m of the Shakaville landfill site were identified and delineated making use of desktop methods and digital satellite imagery, in accordance with General Notice 509 of 2016 as it relates to the National Water Act (NWA) of 1998. This was done to identify all potential freshwater resources that might be affected by the Shakaville landfill site, as well as to determine whether a Water Use Authorisation (WUA) procedure as per the National Water Act (NWA) of 1998 would have to be undertaken. The 500m buffer around the Shakaville landfill site, will henceforth be referred to as the “investigation area”

The freshwater resources were not field verified and as such, the delineations as presented in this letter are regarded as a best estimate of the temporary zone boundaries based on digital signatures such as:

- Identification of linear features indicating riverine crossings or valley bottom wetlands;
- Changes in vegetation coverage, often to greener more lush hues;



- Changes in texture often related to more dense vegetation or altered vegetation types associated with wetland and riverine features;
- Presence of surface water often indicated by white reflections or dark colours in the active channel; and
- Topographic changes determined through the utilisation of contour lines.



**Figure 5: Representative photographs of the Shakaville landfill site (GA Environment). Top: Vegetation has been re-established as the site is no longer formally operational, Middle: Illegal dumping activities however continue. Below: An informal settlement associated with subsistence farming present in the western portion of the Shakaville landfill site.**



Legislative requirements were taken into consideration when determining a suitable buffer zone for the watercourse located within the investigation area. The definition and motivation for a regulated zone of activity as well as buffer zone for the protection of the freshwater resources can be summarised as follows:

- The extent of a watercourse as per the Water Use Authorisation (WUA) in terms of the NWA, 1998 (Act 36 of 1998) defines a watercourse as
  - (a) a river or spring;
  - (b) a natural channel in which water flows regularly or intermittently;
  - (c) a wetland, lake or dam into which, or from which, water flows; and
  - (d) reference to a watercourse includes, where relevant, its bed and banks”.
- Further to this GN 509 of 2016 defines a regulated area of a watercourse for section 21 (c) or (i) of the Act water uses as
  - “(a) the outer edge of the 1 in 100 year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;
  - (b) in the absence of a determined 1 in 100 year flood line or riparian area the area within 100 m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench; or
  - (c) a 500 m radius from the delineated boundary (extent) of any wetland or pan will trigger a WUA in terms of section 21 (c) and (i) of the NWA, 1998 (Act 36 of 1998).

As no field verification has taken place, the hydrogeomorphic units of the freshwater resources could not be defined and as such distinction cannot be made between wetland and riparian features and a 500m zone of regulation around the watercourse is applicable. As such, the Shakaville landfill site is situated within this 500m Zone of Regulation (Figure 8) as described by GN 509, and as such, a DWS Risk Assessment will have to compile. A WUA process may need to be followed for the decommissioning of the Shakaville landfill site, based on the outcome of the DWS Risk Assessment.



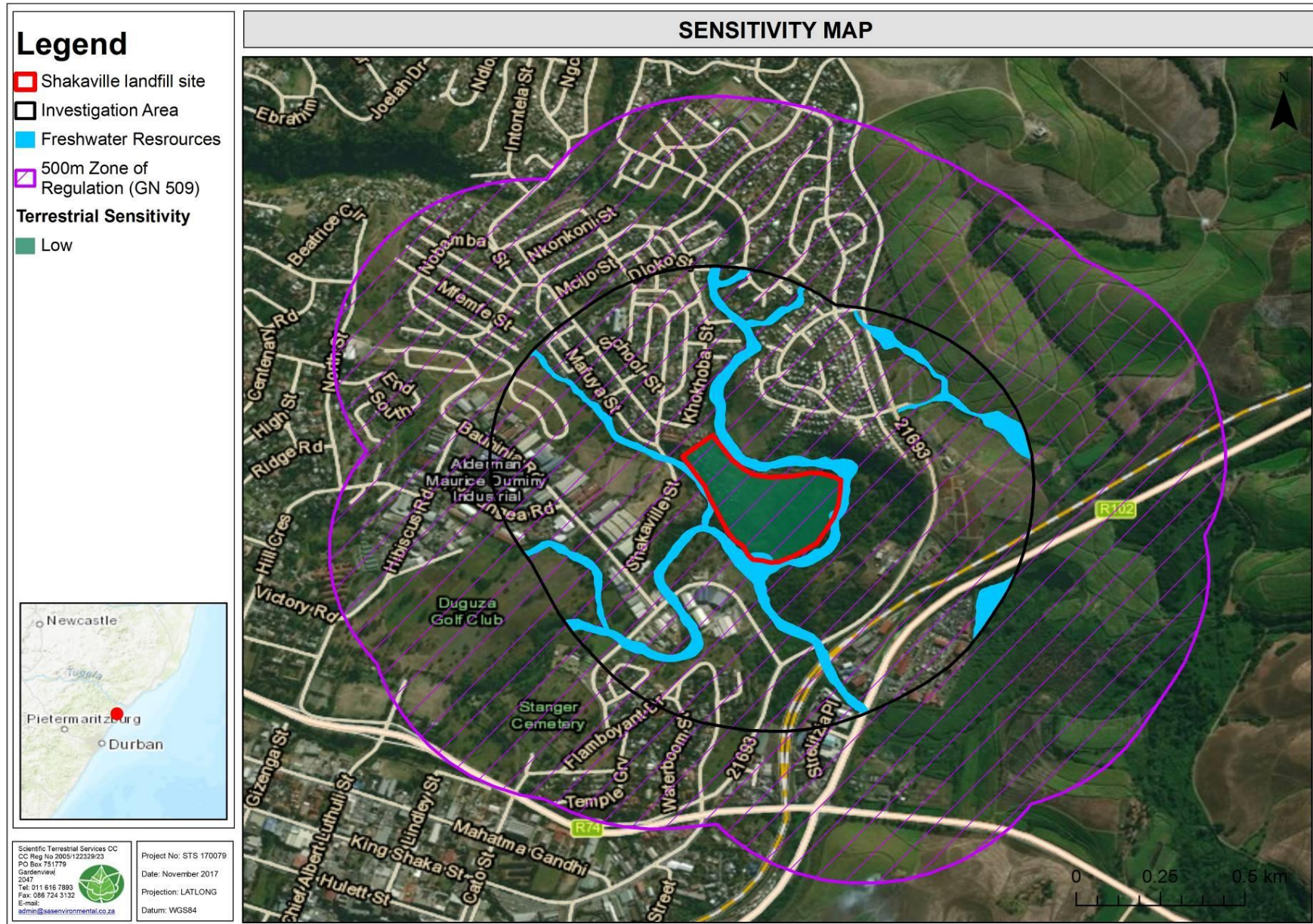


Figure 6: The Shakaville landfill site falling within the 500m Zone of Regulation as per GN 509 of the freshwater resources.



### 3. POTENTIAL IMPACTS AND PROPOSED MITIGATION

#### 3.1 *Potential Impacts*

As the Shakaville landfill site is considered transformed, the anticipated impacts associated with the decommissioning of the site is considered to be on the freshwater resources on the boundaries of the landfill site, include but may not be limited to:

- Post closure seepage of contaminated water into the freshwater resources associated with the boundaries of the Shakaville landfill site;
- Continued illegal waste disposal activities, resulting in waste material transported into the freshwater resources during rainfall events;
- Bare soils, subsistence farming, and informal sanitary facilities as a result of the informal settlement, resulting in an increase in sediment and nutrients entering the freshwater resources; and
- Increase in alien proliferation of the freshwater resource, which can further alter the diversity and sensitivity of this area as a result of ineffective rehabilitation.

#### 3.2 *Proposed Mitigation*

Based on the above mentioned potential impacts, the following mitigation measures are proposed to lower the impact on the surrounding area during the decommissioning of the Shakaville landfill site:

- As the site is currently associated with an informal settlement, and the decommissioning fate of the settlement is unknown, the end land use of the Shakaville landfill site, post decommissioning should be defined, and appropriate management and mitigation measures defined and implemented for the defined end land use;
- The use of Sustainable Drainage Systems (SUDs) to manage stormwater is considered critical in order to prevent significant impacts on the hydrological functioning and water quality of the freshwater resources associated with the boundaries of the Shakaville landfill site. In this regard, it is highly recommended that a suitably qualified engineer be consulted with regards to the use of SUDs. Examples of these, which may be applicable to this development, include rainwater harvesting, soakaways, and bio-retention facilities or attenuation ponds.



- Illegal waste on site should be compacted and transported to the existing Dolphin Coast Landfill Management Site;
- Alien vegetation should be removed, and monitored regularly (at least twice a year), within the decommissioned area, as well as the recommended buffer of the freshwater resources associated with the boundaries of Shakaville landfill site, to prevent the spread of alien invasive species. This should be conducted for a period of at least 3 years post decommissioning. Specific mention is made of Category 1b species in line with the NEMBA Alien and Invasive Species Regulations (2016);
- All areas comprising compacted soils, should be ripped to a depth of at least 300mm, and treated with a 300mm layer of good quality topsoil;
- All bare soils should be reseeded, with an indigenous seed mixture, such as Mayford's Biomosone Grassveld Reclamation Mixture, at a density of 24kg/ha to prevent erosion and ensure adequate vegetation cover. [Contact details online available: <http://mayford.co.za/veld-grass/>];
- A rehabilitation, management and monitoring plan should be implemented with specific focus on storm water management, and alien invasive species control.

## 4. CONCLUSION

Based on the desktop ecological assessment, freshwater resource delineations within 500m of the Shakaville landfill site and site photographs, it was determined that the existing Shakaville landfill site, is considered transformed. Although vegetation within the majority of the Shakaville has been re-established, the floral composition is considered to be in a pioneer stage of succession. The area is further associated with an informal settlement, subsistence farming and illegal dumping practises, and as such potential impacts as a result of the decommissioning of the Shakaville landfill site is predominantly on the freshwater resources associated with the boundaries of the Shakaville landfill site.

The end land use of the landfill site should be defined and appropriate management and mitigation measures implemented for the defined land use. The potential impacts that the decommissioning of the landfill site might have on the freshwater resources associated with the boundary of the landfill site cannot be determined without the end land use defined. Once the end land use has been defined, a freshwater resource ecological assessment and DWS risk assessment should be undertaken to determine the potential impacts that the decommissioning of the landfill site will have on the freshwater ecology of the area. Based on the outcome of the DWS risk assessment, a WUA process may need to be followed for the decommissioning process.



Should the landfill site however not be decommissioned, the impact on the freshwater resources will be high as a result of the continued existence of the informal settlement and illegal dumping activities. As such, it is the opinion of the specialist that the proposed decommissioning of the landfill site be considered favourably, particularly as the continuance of an unlicensed landfill site will have more detrimental effects on the surrounding ecology.

We trust that we have interpreted your requirements correctly. Please do not hesitate to contact us if there are any aspects you would like to discuss further.

Yours Faithfully,



**Emile van der Westhuizen**  
SACNASP REG.NO: 100008/15  
(B.Sc. Hons Plant Ecology)

**Marelle Meintjies**  
(MSc Medicinal Plant Science)



## 5. REFERENCES

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## APPENDIX A- Specialists Declaration



**edtea**

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

### Details of specialist and declaration of interest

**in terms of the National Environmental Management: Waste Act,  
2008 (Act No. 59 of 2008), and the Environmental Impact  
Assessment Regulations, 2014**

Reference number:	DC29/0025/2017
Project title:	<i>Basic Assessment for the proposed Decommissioning (Closure) of the Shakaville Landfill, KwaDukuza Local Municipality, KwaZulu Natal Province</i>

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E-mail:	emile@sasenvgroup.co.za		
Qualifications:	BSc(Hons). Plant Science (University of Pretoria) BSc. Botany and Environmental Management (University of Pretoria)		
Professional affiliations:	Member of the South African Council for Natural Scientific Professions (SACNASP) (Reg. Number 100008/15)		
Expertise:	More than 10 years experience in Terrestrial Ecology, Floral, Faunal and Wetland Assessment		

EAP:	Ntsebo Mkhize		
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**Declaration by the specialist**

I, **Emile van der Westhuizen**, declare that --

- I act as the independent specialist in this application;
- I do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the EIA Regulations, 2014;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Waste Act and NEMA, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Waste Act and NEMA, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of subregulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998).



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Signature of the specialist

**Scientific Terrestrial Services**

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Name of company

**12/12/17**

Date





**edtea**

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

## Details of specialist and declaration of interest

**in terms of the National Environmental Management: Waste Act, 2008  
(Act No. 59 of 2008), and the Environmental Impact Assessment  
Regulations, 2014**

Reference number:	9/0025/2017
Project title:	ic Assessment for the proposed Decommissioning (Closure) of the Shakaville Landfill, KwaDukuza Local Municipality, KwaZulu Natal Province

Specialist:	Marelle Meintjies		
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E-mail:	marelie@sasenvgroup.co.za		
Qualifications:	MSc. Medicinal Plant Science (University of Pretoria) BSc(Hons). Medicinal Plant Science (University of Pretoria) BSc. Biotechnology (University of Pretoria)		
Professional affiliations:			
Expertise:	Three years experience in GIS, and Floral Ecological Assessments		
EAP:	Ntsebo Mkhize		
Name of company:	GA Environment (Pty) Ltd		
Postal address:	P.O Box 6723, Halfway House		
Postal code:	1685	Cell:	072 550 9669
Telephone:	011 312 2537	Fax:	27 11 805 1950
E-mail:	<a href="mailto:environment@gaenvironment.com">environment@gaenvironment.com</a> / <a href="mailto:ntsebom@gaenvironment.com">ntsebom@gaenvironment.com</a>		



**Declaration by the specialist**

I, **Marelle Meintjies** declare that --

- I act as the independent specialist in this application;
- I do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the EIA Regulations, 2014;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Waste Act and NEMA, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Waste Act and NEMA, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- **all the particulars furnished by me in this form are true and correct; and**
- **I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of subregulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998).**



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Signature of the specialist

**Scientific Terrestrial Services**

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Name of company

12/12/17

Date





## SCIENTIFIC TERRESTRIAL SERVICES (STS) – SPECIALIST CONSULTANT INFORMATION

### CURRICULUM VITAE OF EMILE BASSON VAN DER WESTHUIZEN

#### PERSONAL DETAILS

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Position in Company	Director, Ecologist, Botanist
Date of Birth	30 May 1984
Nationality	South African
Languages	English, Afrikaans
Experience	> 10 years

#### MEMBERSHIP IN PROFESSIONAL SOCIETIES

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Member of the South African Council for Natural Scientific Professions (SACNASP) (Reg. Number 100008/15).

#### EDUCATION

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##### Qualifications

BSc (Hons) Plant Science (University of Pretoria)	2012
B.Sc. Botany and Environmental Management (University of South Africa)	2010

##### Short Courses

Grass Identification – Africa Land Use Training	2009
Wild Flower Identification – Africa Land Use Training	2009

#### COUNTRIES OF WORK EXPERIENCE

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South Africa – Gauteng, Mpumalanga, North West, Limpopo, KwaZulu-Natal, Free State, Eastern Cape.  
Mozambique (Tete, Sofala and Manica Provinces)  
Angola (Zaire and Cabinda Provinces)  
Democratic Republic of the Congo (Katanga and Kivu Provinces)  
Ghana (Western and Greater Accra Provinces)  
Sierra Leone

#### SELECTED PROJECT EXAMPLES

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##### Floral Assessments

- Floral assessment for the proposed Modikwa Platinum Mine South 2 Shaft Project, Burgersfort, Limpopo Province.
- Floral assessment for the proposed New Clydesdale Colliery Stopping Project, Vandyksdrift, Mpumalanga Province.

- Floral assessment as part of the EIA process for the proposed Harriet's Wish PGM Project, Limpopo Province.
- Floral assessment as part of the environmental authorisation process for the proposed Shanduka Coal Argent Colliery in the vicinity of Argent, Mpumalanga.
- Floral assessment for the Auroch Resources Manica Gold Mining Project, Manica, Mozambique.
- Floral assessment for the Namoya Gold Mine project in Namoya, Democratic Republic of Congo.
- High level floral risk assessment and alternatives analysis for the proposed new Tete Airport, Tete, Mozambique.
- Floral assessment for the proposed Richardsbay Harbour Compactor Slab development, Richardsbay, Kwa-Zulu-Natal Province.
- Site walkdown and floral ecological input prior to the construction of the proposed 180km Mfolozi-Mbewu powerline, Richardsbay, Kwa-Zulu-Natal Province.
- Floral assessment as part of the EIA process for the proposed Peerboom Colliery, Lephalale, Limpopo Province.
- Floral assessment as part of the EIA process for the proposed Overvaal Underground Coal Mine Project, Ermelo, Mpumalanga Province.
- Floral assessment as part of the EIA process for the proposed King's City Takoradi 3000 hectare development, Takoradi, Ghana
- Floral assessment as part of the EIA process for the proposed Aquarius Platinum Fairway Platinum Mine, Steelpoort, Mpumalanga Province.
- Floral assessment as part of the EIA process for the proposed Geniland Lubumbashi City 4000 hectare development, Likasi, Katanga Province, Democratic Republic of Congo.
- Floral, faunal, aquatic and wetland assessment as part of the EIA process for the proposed Appollonia City Accra 3000 hectare development, Accra, Ghana.
- Floral assessment as part of the EIA process for the proposed Leeuw Colliery, Utrecht, Kwa-Zulu Natal Province.
- Floral assessment as part of the EIA process for the proposed Lubembe Coppermine Project, Lubumbashi, Katanga Province, Democratic Republic of Congo.
- Floral assessment as part of the EIA process for the proposed Kinsenda Coppermine Project, Lubumbashi, Katanga Province, Democratic Republic of Congo.
- Floral assessment as part of the EIA process for the proposed Lonshi Coppermine Project, Lubumbashi, Katanga Province, Democratic Republic of Congo.
- Floral assessment as part of the EIA process for the proposed Jozini Shopping Mall, Jozini, Kwa-Zulu Natal Province.
- Floral assessment as part of the Biodiversity Action Plan for the Assmang Chrome Dwarsrivier Mine, Steelpoort, Mpumalanga Province.



**edtea**

**Department :**

Economic Development, Tourism and  
Environmental Affairs

**PROVINCE OF KWAZULU-NATAL**

## **Details of specialist and declaration of interest**

**in terms of the National Environmental Management: Waste  
Act, 2008 (Act No. 59 of 2008), and the Environmental Impact  
Assessment Regulations, 2014**

Reference number:	DC29/0025/2017
Project title:	<i>Basic Assessment for the proposed Decommissioning (Closure) of the Shakaville Landfill, KwaDukuza Local Municipality, KwaZulu Natal Province</i>

Specialist:	Marelle Meintjies		
Name of company:	Scientific Terrestrial Services		
Postal address:	29 Arterial Road West, Oriel, Bedfordview		
Postal code:	2007	Cell:	074 888 8717
Telephone:	011 616 7893	Fax:	086 724 3132
E-mail:	marelie@sasenvgroup.co.za		
Qualifications:	MSc. Medicinal Plant Science (University of Pretoria) BSc(Hons). Medicinal Plant Science (University of Pretoria) BSc. Biotechnology (University of Pretoria)		
Professional affiliations:			
Expertise:	Three years experience in GIS, and Floral Ecological Assessments		

EAP:	Ntsebo Mkhize		
Name of company:	GA Environment (Pty) Ltd		
Postal address:	P.O Box 6723, Halfway House		
Postal code:	1685	Cell:	072 550 9669
Telephone:	011 312 2537	Fax:	27 11 805 1950
E-mail:	<a href="mailto:environment@gaenvironment.com">environment@gaenvironment.com</a> / <a href="mailto:ntsebom@gaenvironment.com">ntsebom@gaenvironment.com</a>		

## Declaration by the specialist

I, **Marelie Meintjies**, declare that --

- I act as the independent specialist in this application;
- I do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the EIA Regulations, 2014;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Waste Act and NEMA, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Waste Act and NEMA, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of subregulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998).



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Signature of the specialist

**Scientific Terrestrial Services**

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Name of company

**12/12/17**

Date