

**DRAFT SCOPING REPORT
IN SUPPORT OF A
WASTE MANAGEMENT LICENCE APPLICATION FOR THE PROPOSED
HAZARDOUS WASTE (E-WASTE) RECYCLING, RECOVERY AND
TREATMENT FACILITY
AT
CF AFRICA TRADING (PTY) LTD, T/A REVIVE AFRICA
GAUTENG PROVINCE**



Report Nr: 4110-ZANREV-2026

Report Date: 17th April 2026

General Information	
Report Name:	Draft Scoping Report in Support of a Waste Management Licence for the Proposed Hazardous Waste (E-Waste) Recycling, Recovery and Treatment Facility at CF Africa t/a Revive Africa Located in New Centre, Johannesburg, Gauteng Province
Report Date:	31 March 2026
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Report Nr:	4110-ZANREV-2026
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TERMS AND ACRONYMS

NEMA	National Environmental Management Act (No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act (No. 39 of 2004)
NEM:WA	National Environmental Management Waste Act (No. 59 of 2008)
NWA	National Water Act (No.36 of 1998)
EMPr	Environmental Management Program
GNR	Government Notice Regulation
GA	General Authorisation
GWIS	Gauteng Waste Information System
BA	Basic Assessment
EIA	Environmental Impact Assessment
EIR	Environmental Impact Assessment Report
EA	Environmental Authorisation
IAP's	Interested and affected Party
RoD	Record of Decision
WML	Waste Management License
WUL	Water Use Licence
GDARD	Gauteng Department of Agriculture and Rural Development
DEFF	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
ECO	Environmental Control Officer
WMCO	Waste Management Control Officer
°C	Degrees Celsius
cm	Centimetres
I&AP	Interested and Affected Parties
kg	Kilograms
m	Metres
m ²	Square metres
m ³	Cubic metres
mm	Millimetres
PPE	Personal Protective Equipment
GWIS	Gauteng Waste Information System
SAWIC	South African Waste Information System
ECA	Environment Conservation Act, 1989
APPA	Atmospheric Pollution Prevention Act
SANS	South African National Standards
SAWIS	South African Waste Information System

DEFINITIONS

Disposal	Means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land.
General waste	Means waste that does not pose an immediate hazard or threat to health or to the environment, and includes- a) domestic waste; b) building and demolition waste; c) business waste; d) inert waste; or e) any waste classified as non-hazardous waste in terms of the regulations made under section 69, and includes non-hazardous substances, materials or objects within business, domestic, inert, building and demolition wastes.
Hazardous waste	Means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles.
Recycling	Means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material
Reuse	Means the action or practice of using something again, whether for its original purpose (conventional reuse) or to fulfil a different function (creative reuse or repurposing)
Recovery	Means the controlled extraction or retrieval of any substance, material or object from waste
Storage	The accumulation of waste in a manner that does not constitute treatment or disposal of that waste.
Treatment	Means the biological, chemical, or mechanical method(s) employed to remove pollutants from industrial or municipal wastes, change the character and composition of medical waste, or reduce or eliminate its potential for harm to living beings and the environment.
Expansion	The modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased
Construction	The building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint;
Waste	a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette, but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste- i. once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered; ii. where approval is not required, once a waste is, or has been re-used, recycled or recovered; iii. where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or iv. where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.

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1. INTRODUCTION AND PROJECT BACKGROUND

1.1. Process Description

CF Africa Trading Pty (Ltd), trading as Revive Africa, currently operates a small-scale e-waste trading, storage and dismantling facility located at 24-26 Laub Street, New Centre Johannesburg. The company began operations in 2014 as a trader of empty printer cartridges that are collected through a corporate collections program. Revive Africa stores and prepare the cartridges prior to exporting them to upstream vendors for recycling. Since its inception, Revive Africa has expanded its operations into broader e-waste recycling. Since 2020, the company has collected over 434 593 laser cartridges and 982 404 ink units, keeping them out of landfill.

In April 2022, Revive Africa began trading printed circuit boards (PCBs) and collected a total of 96 306 kilograms to date. These PCBs are part of e-waste materials such as cell phones, computers, copiers, laptops, printers, servers, and telecommunications equipment. This initiative also led to the establishment of dedicated dismantling stations for the manual decontamination of the PCBs. Manual decontamination of e-waste also known as manual dismantling or depollution, involves the careful, non-destructive disassembly of electronic equipment by hand using tools such as screw drivers, hammers etc. to remove hazardous substances and separate materials for recycling. This process is crucial to isolate toxic components (like mercury, lead, and cadmium) from high-value materials (gold, copper, plastics), enhancing safety and recovery rates.

The facility soon realized that many of the devices they dismantle contained lithium-ion batteries (LIBs) and began a pilot project for discharging and recycling LIBs into black mass that is traded to upstream vendors for further metal extraction. The e-waste, consisting mainly of printer cartridges, printed circuit boards (PCBs) and Lithium-Ion batteries are collected through a corporate collections program before being transported to the Revive Africa facility. Majority of the material received is only subjected to re-packaging before being traded to upstream vendors for further processing.

With the proven success of the trials, Revive Africa now plans to establish a full-scale e-waste recycling facility comprising a PCB Recycling Plant and a Lithium-Ion Battery Recycling Plant. This project aims to process materials locally, create employment, and contribute to sustainable resource recovery in South Africa. The proposed facility entails increasing the volumes of e-waste accepted, as well as expanding their footprint to the adjacent buildings in 29-32 Laub Street, New Center Johannesburg. The proposed services for the e-waste management processes include recycling, treatment and recovery of e-waste and LIBs.

- a) The planned PCB recycling facility will cover 1 800 m², dedicated to e-waste storage, dismantling, and processing. The plant will be capable of processing 40-50 tons of PCBs per month and is expected to create at least 15 new jobs, depending on volume. PCBs will be collected, graded, shredded and sold to upstream vendors for further processes.
- b) The battery recycling facility will occupy approximately 900 m², for battery storage, discharging, shredding, and screening. It will have the capacity to process up to four (4) tons of lithium-ion batteries per day. The process will entail discharging batteries, shredding them into granulate, and screening the granulate to separate the black mass from plastic and copper residues. Comprehensive environmental and safety controls will be implemented to manage VOCs, fluorinated gases, and particulate emissions to ensure safe operations.

In addition to the recycling, recovery and treatment activities Revive Africa will utilise the space available within the facility for storage as well as the continuation of the printer cartridges trade. The facility is therefore, also in the process of registering in terms of the Norms and Standards for the Storage of Hazardous Waste.

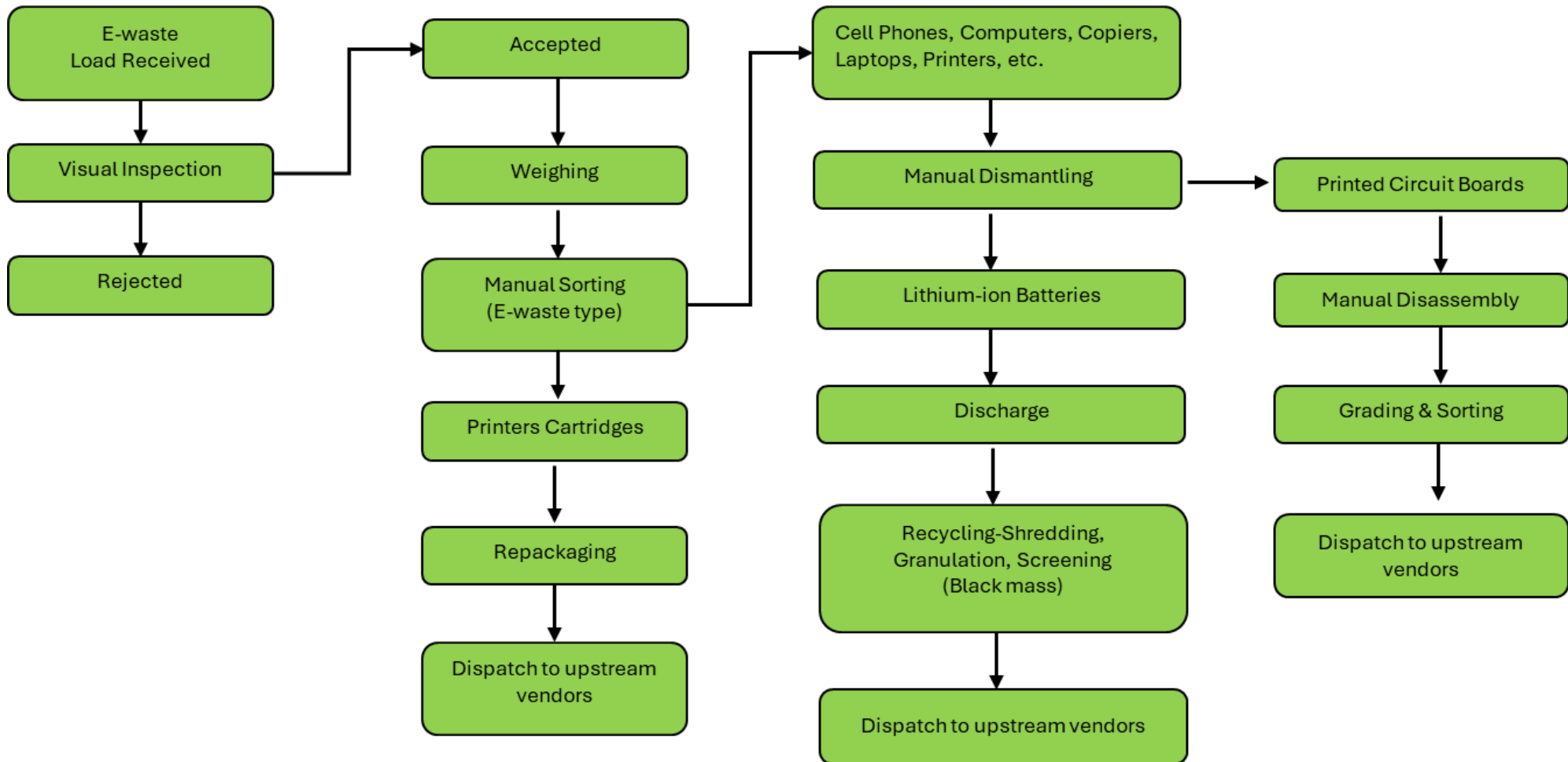


Figure 1: Revive Africa Current Process Flow

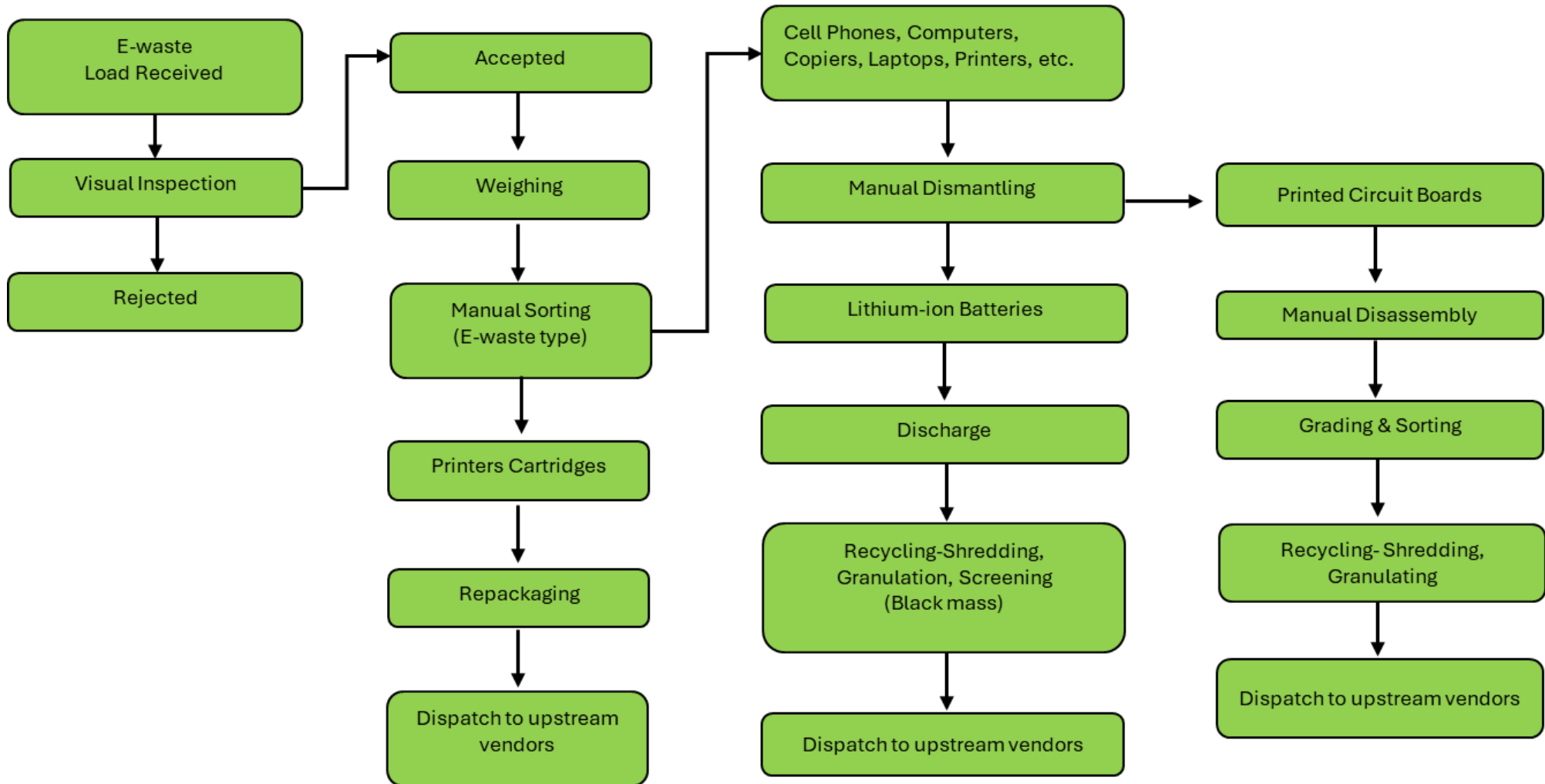


Figure 2: Revive Africa Proposed Process Flow

1.2. Legal Requirements

In terms of the National Environmental Management: Waste Act (No. 59 of 2008) (NEM: WA), waste management activities that are listed in regulations published under NEM: WA may not be undertaken without a Waste Management License (WML). The listed activities for which a WML is required are contained in Government Notice (GN) 921. Category A activities require a WML, and a Basic Impact Assessment (BA) process must be conducted, and Category B activities require a WML, and a full Scoping and Environmental Impact Assessment (EIA) process must be conducted.

The proposed waste management activities at Revive Africa will therefore trigger the following activities published under Category B of GN 921:

GNR 921 - Listed activity	Description of listed activity
B (2)	<i>The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises.</i>
B (3)	<i>The recovery of waste including the refining, utilisation, or co-processing of the waste at a facility that processes in excess of 100 tons of general waste per day or in excess of 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.</i>
B (4)	<i>The treatment of hazardous waste using any form of treatment at a facility that processes in excess of 1 ton per day calculated as a monthly average, excluding the treatment of effluent, wastewater, sewage or organic waste using composting or any other organic waste treatment.</i>
B (10)	<i>The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).</i>

Revive Africa is therefore applying for a WML in terms of NEMWA, for which a Full Scoping EIA process will be followed. The waste streams that are processed at the facility have been classified as hazardous waste. The Competent Authority (CA) for the WML application has therefore been identified as the Department of Forestry, Fisheries and the Environment (DFFE).

The facility will also utilize maximum storage space as is available on site for the storage of waste and has therefore applied for registration in terms of the Norms and Standards for the Storage of Hazardous Waste with the DFFE.

GNR 921-Listed activity	Description of listed activity
C (2)	<i>The storage of hazardous waste at a facility that has the capacity to store in excess of 80m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.</i>

1.3. Purpose of this Document

The Full Scoping and EIA process must be followed as part of the application for the required WML which will be facilitated by the DFFE. Additionally, the application for the registration of the facility in terms of the National Norms and Standards will also be submitted to the DFFE as the Competent Authority.

The waste-related activities proposed by Revive Africa require a Waste Management Licence (WML). This Scoping Report, representing the initial phase of the required Environmental Impact Assessment (EIA), has been prepared to support the WML application. The aim of this document is to provide Interested and Affected Parties (I&AP's) as well as relevant authorities and the Competent authority with the scope of work associated with the EIA process in support of the WML application. A copy of the Draft Scoping Report will be made

available for public review and comment, during which all I&APs will be given the opportunity to comment on the proposed activities and the proposed scope of the EIA specialist studies.

This Scoping Report has been generated in terms of the Appendix 2 of the NEMA EIA Regulations (GNR 982). Refer to **Annexure A** of this report for a checklist to confirm that the Scoping Report conforms to the requirements of GNR 982. In terms of GNR 982, the objective of the scoping process is to, through a consultative process-

- Identify the relevant policies and legislation relevant to the activity;
- Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- Identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- Identify the key issues to be addressed in the assessment phase;
- Agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

All comments and or communications received during the Public Participation Process will be considered by the EAP and incorporated into the Final Scoping Report which will be submitted to the Competent Authority for final consideration

2. APPLICANT AND PRACTITIONER DETAILS

2.1. Details of the Applicant

Applicant	CF Africa Trading Pty Ltd
Contact person	Fergus Slattery
Business registration nr	2013 236150/07
Cell:	081 747 2326
Tel	011 493 5700
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Postal address	24 Laub Street New Centre Johannesburg 2001
Physical address	24 Laub Street New Centre Johannesburg 2001

2.2. Details of the Environmental Assessment Practitioner

Independent consultant	Zantow Environment Consulting Services CC
Contact person	Karien Zantow
EAPASA Reg Nr	2019/1871
Cell	083 384 3641
E-mail	karien@zantow.co.za
Postal address	PO Box 3858, Vanderbijlpark, 1910
Physical address	Corner of Delius and Chopin Streets Coliseum Building 1 st Floor, Unit 2 Vanderbijlpark, 1910

2.3. Declaration of Environmental Assessment Practitioner independence

Zantow Environmental is not in any manner affiliated to the applicant, CF Africa Trading (Pty) Ltd, t/a Revive Africa. Zantow Environmental also does not have any interest in secondary developments that may arise out of the authorisation of the proposed activities. Furthermore, the Zantow Environmental (appointed EAP) meets the requirements for independence as none of the project team members has and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the EIA Regulations, 2014; has and will not have vested interest in the proposed project proceeding; and also has no, and will not engage in conflicting interests in the undertaking of the activity.

2.4. Expertise of the Environmental Assessment Practitioner

Refer to **Annexure A** for a copy of the EAP's curriculum vitae and EAPASA Registration.

- **Karien Zantow**

Karien Zantow obtained her degree from the University of Pretoria in BSc (Agric) Animal Science. The main subjects were Physiology, Nutrition, Ecology, Biochemistry, Toxicology, Plant production, Soil Science and Pasture Science. This degree provided her with a sound base and understanding of the environment.

Karien extended her knowledge in the environmental sciences by completing the BSc (Hons) Environmental Technology at the University of Pretoria. The honours degree presented by the Chemical engineering department addressed Environmental management that included South African environmental legislation, ISO 14001, Environmental impact assessments, Life cycle assessment, auditing and public participation. As well as the three specialized fields of study: Water (wastewater treatment and design), air (abatement equipment) and solid/hazardous waste management. She also completed a Post Graduate diploma in Environmental Sciences at the University of Witwatersrand which focussed on Environmental Law, Environmental Chemistry, Air quality and Energy, Waste and Wastewater management and Environmental Impact Assessments.

Karien Zantow has more than 15 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment.

- Teaching Business, subcontracted to Barlow World (1 year)
- Sappi Kraft Ngodwana (2 years) – As environmental engineer
- ArcelorMittal South Africa Germiston Works (7 years)
- Zantow Environmental Consulting Services (2012 – current)

During her career she has been involved with many large-scale site characterisation and remediation projects from the conceptual phase to implementation. Other projects include a variety of Waste Management Licences, Atmospheric Emissions Licences, other EIA's and Environmental Audits. Moreover, emission sampling and reporting forms a core component of Karien's scope of work.

Karien is also a registered Natural Science Professional with the South African Council for Natural Scientific Professions (Reg Nr 400114/14).

3. LOCATION OF THE PROPOSED EXPANSION ACTIVITIES

This section contains details of the property on which the proposed waste management activities will be undertaken as well as a description of the project and scope.

3.1. Location of the proposed facility and Property details

The site is located at 24 Laub Street, New Centre, which is in the jurisdiction of the City of Johannesburg Metropolitan Municipality in the Gauteng Province (See Figures 1, 2 and 3). The proposed expansion activities will be undertaken in an industrial zoned area and is considered to be completely transformed by the existing industrial activities.

Property Description:

- Erf 137 in New Centre, Johannesburg
- Erf 45, 47, 49 in New Centre, Johannesburg

Physical address: 24 Laub Street, New Centre, Johannesburg

Table 1: Coordinates of the site for the proposed facility

Corner	Latitude	Longitude
A	26° 12' 57.69" S	28° 02' 47.76" E
B	26° 12' 58.86" S	28° 02' 47.69" E
C	26° 12' 58.93" S	28° 02' 49.42" E
D	26° 12' 58.27" S	28° 02' 49.46" E
E	26° 12' 58.39" S	28° 02' 51.11" E
F	26° 12' 57.87" S	28° 02' 51.16" E
G	26° 12' 57.78" S	28° 02' 49.46" E
H	26° 12' 58.15" S	28° 02' 49.44" E
I	26° 12' 58.09" S	28° 02' 48.62" E
J	26° 12' 57.74" S	28° 02' 48.60" E

Refer to Figure 3 for the corner references.

3.2. Surveyor general codes

PROPOSAL	T	O	I	R	0	4	6	0	0	0	0	0	0	1	3	7	0	0	0	0	0
	T	O	I	R	0	4	0	0	0	0	0	0	0	0	4	5	0	0	0	0	0
	T	O	I	R	0	4	6	0	0	0	0	0	0	0	4	7	0	0	0	0	0
	T	O	I	R	0	4	6	0	0	0	0	0	0	0	4	9	0	0	0	0	0

3.3. Zoning of the property

The site is zoned as Industrial, and has been utilised for such purposes, therefore the proposed expansion of the waste activities is in line with the zoning of the property.

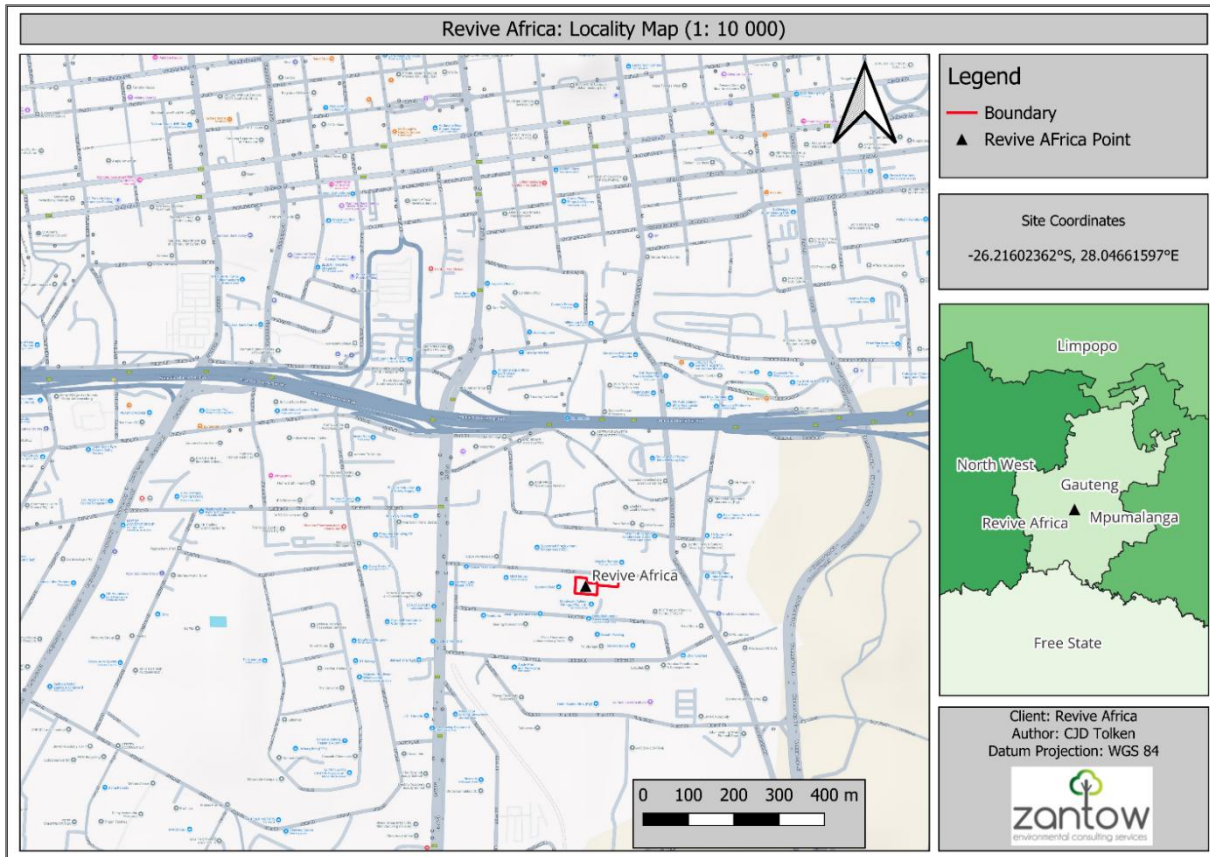


Figure 3: Locality Map

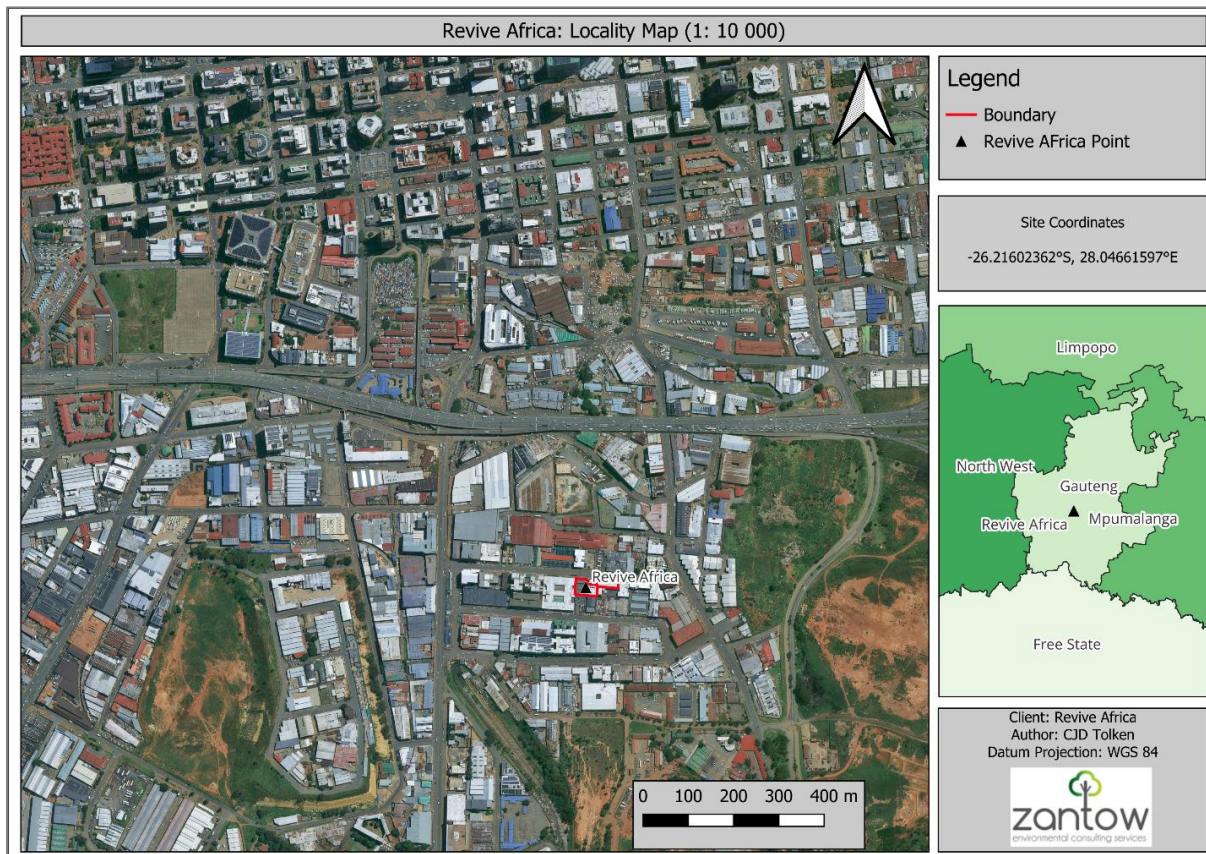


Figure 4: Aerial Map

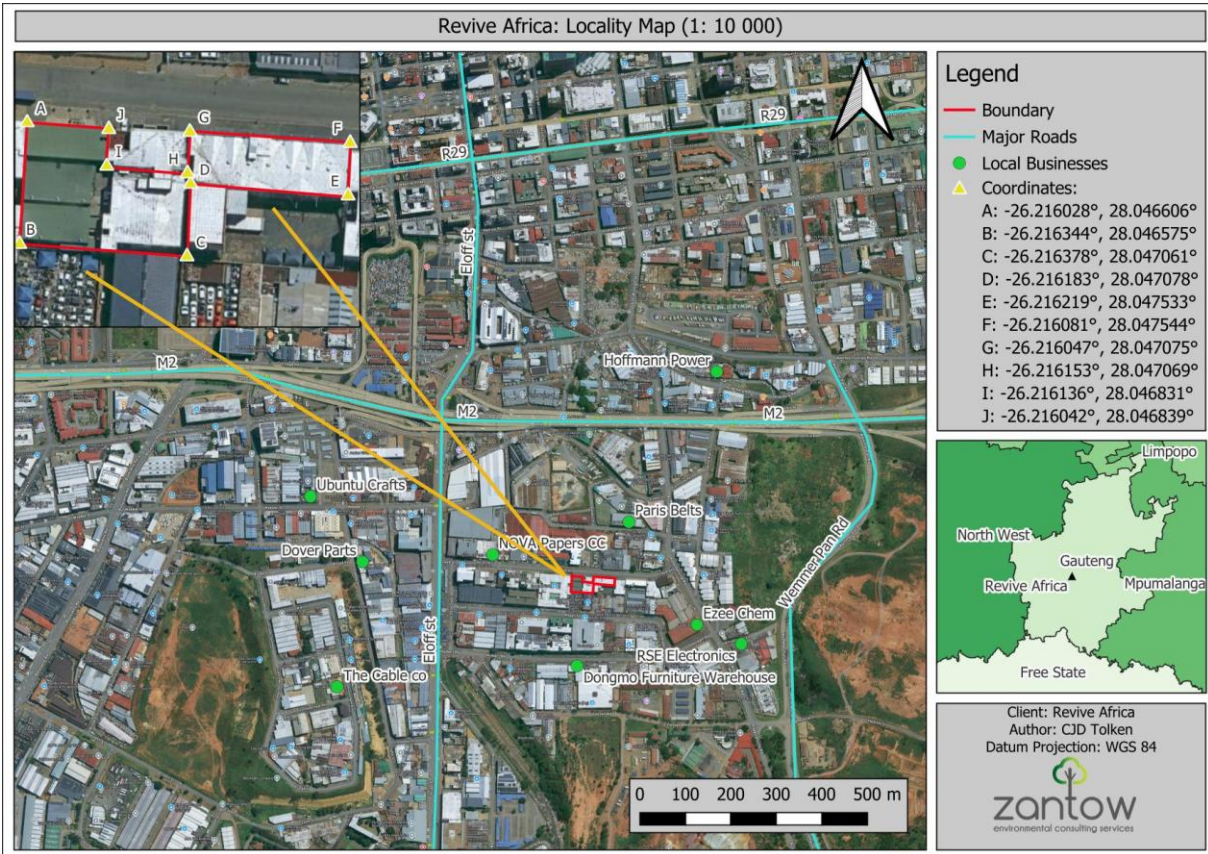


Figure 5: Boundary Co-ordinates

4. Supporting infrastructure associated with the facility.

4.1. Site Description and Surrounding Infrastructure

4.1.1. Roads

The proposed site is located in New Centre, an established commercial and industrial area within the Johannesburg Metropolitan Municipality, in Gauteng Province. The area benefits from well-developed road infrastructure, allowing convenient access to and from the site.

The site is situated on Laub Street, which connects to the M9 (Eloff Street). This route provides direct linkage to the M2 (François Oberholzer Freeway), a major east–west arterial highway within Johannesburg. The M2 runs along the southern edge of the Johannesburg Central Business District (CBD), originating near the R41 and extending eastward, where it connects with the N3 highway near Germiston. The M2 and M9 metro roads are within a 1km radius to the site, providing easy access to the proposed area.

Refer to Figures 3 and 5 under Section 3 for maps depicting the site’s locations and associated access roads.

4.1.2. Security and Access Control

The proposed site for the waste management activities is fenced and equipped with a gate for controlled access and to restrict unauthorised entry. The entrance to the existing operations is manned by security personnel and no one can access the site without prior arrangement with management. The current process flow depicted in Figure 4 where waste material that is received on site is inspected to determine whether it is acceptable material for the site, if the material contained is not acceptable it is rejected and sent back to the supplier. If accepted the material is directed to internal documentation and processing.

4.1.3. Electricity and Energy Supply

The site is connected to the municipal grid and will continue to use the grid as the main source of electricity. The site does not require additional electricity for the proposed waste management activities.

4.1.4. Water Supply

The site is linked to existing municipal infrastructure which provides for the water needs. The proposed waste management activities do not utilise water, the main uses of water within the site is domestic and sanitation purposes in the administrative offices. Therefore, no additional water supply will be required as the overall water usage is not anticipated to increase significantly.

4.1.5. Waste Management

The proposed site is a waste management facility that will be recycling, treating and recovering valuable materials contained in e-waste and consequently diverting them from unsustainable disposal practices. Therefore, waste generated from the site is expected to be minimal and consisting mainly of general domestic waste from the day-to-day administrative operations.

A waste management plan (WMP) will be developed for the facility to ensure that most of the waste is diverted from landfill and that any hazardous waste arising from the operations that cannot be handled internally is managed in a sustainable manner. The WMP will be included in the EIR phase of the application and will be updated once the facility has commenced with the activities. The table below gives a summary of the waste expected to be generated:

Waste	Activity	On Site Waste Handling	Final Destination
General Waste: Paper, Domestic Waste	Administrative, Domestic waste	Waste is separated into recyclable vs non-recyclable waste and stored in designated	<ul style="list-style-type: none"> Recyclable waste- Recycling companies

Waste	Activity	On Site Waste Handling	Final Destination
		waste containers prior removal from site.	<ul style="list-style-type: none"> Non-recyclable waste- Local Municipal Landfill
General Hazardous Waste	Spill clean-ups, Used PPE	Hazardous waste skip / drum	Hazardous Waste disposal facility/landfill
Waste Oil and used hydrocarbons	Equipment and machinery maintenance	External service provider to collect used oils and or hydraulic fluids in a sealable container.	Removed by external service provider for safe disposal or recycling.
All types of accepted e-waste goods	Onsite e-waste recycling, recovery and treatment activities (sorting, dismantling, granulation, shredding etc.)	<p>Recyclable fractions to be Collected and stored in bulk bags and or dedicated skips, bins or bunkers.</p> <p>Non-recyclable fractions to be disposed of.</p>	<p>Sold to upstream vendors</p> <p>Landfill or waste disposal facility</p>
Lithium-ion batteries	Onsite LIB recycling, recovery and treatment activities (sorting, dismantling, granulation, shredding etc.)	<p>Recyclable fraction (black mass) to be stored in bulk bags and or dedicated skips, bins or bunkers.</p> <p>Non-recyclable fractions (Acid bath) to be disposed of.</p>	<p>Sold to upstream vendors (In and out of the country)</p> <p>Waste disposal facility or secondary recovery</p>

4.1.6. Administrative Buildings

The proposed site contains existing buildings that will be utilised for administrative and waste management activities. No additional structures are required, as the current infrastructure is sufficient to accommodate the proposed operations. The site is also adequately paved, making it suitable for the intended waste management activities.

4.2. Site Photographs



Photo 1: External view of existing site



Photo 2: Weighing area



Photo 3: E-waste and Printer cartridges storage bunkers



Photo 4: E-waste Sorting area

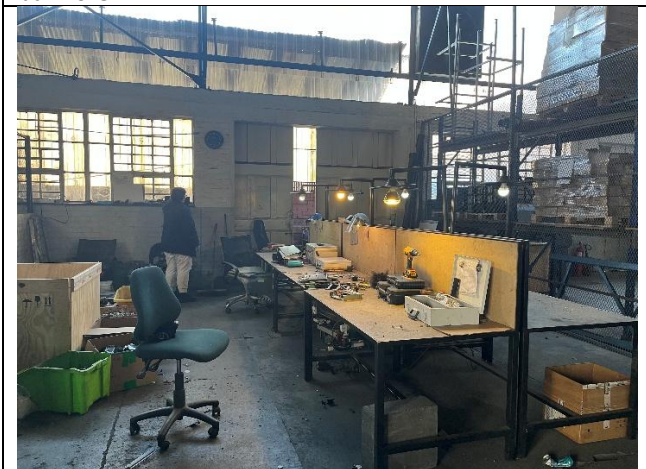


Photo 5: E-waste Dismantling stations



Photo 6: PCB grading designated storage containers



Photo 7: LIB Discharge Area



Photo 8: LIB Shredder Station



Photo 9: Shredded Material Storage



Photo 10: LIB Granulation Area



Photo 11: LIB Screening Area



Photo 12: Black mass



Photo 13: Proposed extension site



Photo 14: Extension site View of yard

5. LEGAL FRAMEWORK

5.1. Constitution of the Republic of South Africa (No. 108 of 1996)

Section 24 Environment.

“Everyone has the right -

- a) to an environment that is not harmful to their health or well-being; and*
- b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-*
 - i. prevent pollution and ecological degradation;*
 - ii. promote conservation; and*
 - iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”*

The facility must be managed to prevent adverse environmental consequences and to meet the constitutional requirements.

5.2. National Laws and Regulations

5.3. National Environmental Management Act (No. 107 of 1998) as amended in 2017

The NEMA is framework legislation in South Africa that governs environmental management.

Section 2: Environmental Management Principles

“Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.”

Section 28: Duty of care and remediation of environmental damage

“Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.”

Section 30: Control of incidents

Deals with the identification, reporting and remediation of environmental incidents.

- *NEMA EIA Regulations (GNR 982 as amended in 2017)*

These regulations prescribe the process that needs to be followed in the EIA process, including the relevant timeframes and requirements for the public participation as part of the process. It also stipulates specific requirement for the reports that must be generated as part of the EIA process, including the BAR.

- *Listed activities considered*

The proposed expansion of the facility entails extending operations to the adjacent building at 28-32 Laub Street. By completing the proposed expansion activities, Revive Africa will have an increased capacity to store hazardous substances and increase their operational capacity.

5.4. National Environmental Management Waste Act (No. 59 of 2008) as Amended

Provides the legal framework for the management of general and hazardous waste in South Africa to protect health, wellbeing and the environment by providing reasonable measures for waste management. The measures contained in the NEM:WA provides a sound framework for waste management that must be implemented.

- **Waste Classification and Management Regulations (23 August 2013)**

The purpose of these Regulations is to regulate the classification and management of waste, to prescribe requirements for the disposal of waste to landfill and prescribe general duties of waste generators, transporters and managers. The facility needs to comply with the requirements of the regulations.

- **National Waste Information Regulations (13 August 2012)**

The purpose of these Regulations is to regulate the collection of data and information to fulfil the objectives of the national waste information system. The facility needs to report the details of the waste recovered at the facility. Records of waste managed at the facility must also be kept.

Revive Africa is a registered facility and reports data on the GWIS system

- **Gauteng Waste Information Regulations (15 September 2004)**

The objective of the regulations is to create a waste information system for Gauteng (GWIS). The facility must keep records of the quantities of waste received for recovery and recycling report the quantities of waste managed at the facility on GWIS on a quarterly basis.

- **Listed activities triggered**

In terms of the NEM:WA, waste management activities that are listed in regulations published under NEM:WA may not be undertaken without a WML. The listed activities for which a WML is required are contained in Government Notice (GN) 921. Category A activities require a WML and a BA must be conducted, and Category B activities require a WML and a full Scoping and EIA must be conducted. The proposed expansion of waste management activities at Revive Africa therefore triggers the following activity under Category A of GN 921.

Table 2: Listed activity triggered in terms of GNR 921

Activity	Description
Category A Activity 13	<i>"The expansion of a waste management activity listed in Category A or B of this Schedule which does not trigger an additional waste management activity in terms of this Schedule."</i>

The planned changes will result in Revive Africa to increase their waste processing capacity by 600 tonnes per annum for PCBs and 1 440 tonnes per annum of LIBs based on the 4 tonnes a day processing capacity.

Revive Africa therefore must undertake a BA process and apply for a WML for the expansion activities to be legally undertaken in terms of the NEM:WA.

- **Norms and Standards for the Storage of Waste**

The storage of hazardous and general waste at the facility and the processing area exceeds the thresholds for the processing of waste stipulated in Category C of GNR 921 as contained in the Table below. Revive Africa submitted an application to the Department of Environmental Affairs (now the

Department of Environmental Affairs Forestry and Fisheries) on the 27th of August 2025 in terms of the National Norms and Standards for the Storage of Waste as well as the Norms and Standards for the Sorting, shredding, grinding, crushing, screening or baling of general waste. The registration decision has not been communicated by the DFFE despite follow-ups conducted on the 5th of December 2025.

Table 3: Category C of GNR 921

GNR 921	Description
Category C	
Activity 2	The storage of hazardous waste at a facility that has the capacity to store in excess of 80m ³ of hazardous waste at any one time, excluding the storage of hazardous waste lagoons or temporary storage of such waste.

5.5. National Waste Management Strategy (NWMS) 2011

Provides a national strategy and higher order waste management principles applicable to the management of waste. The first strategic goal of the NWMS is to “*promote waste minimisation, re-use, recycling and recovery of waste*”. Therefore, the strategy focuses on implementing the waste management hierarchy, and with the ultimate aim of diverting waste from landfill. The foundation of the hierarchy is avoidance and reduction of waste generation. The next stage of the hierarchy is re-using waste. After re-use comes the recycling of waste, which involves separating articles from the waste stream and processing them as products or raw materials. The last options are to treat and dispose of waste. **Figure 4** below shows the waste management hierarchy. Revive Africa strives to implement a zero waste to landfill strategy by optimising the recovery and reuse of waste at the facility and for their clients.

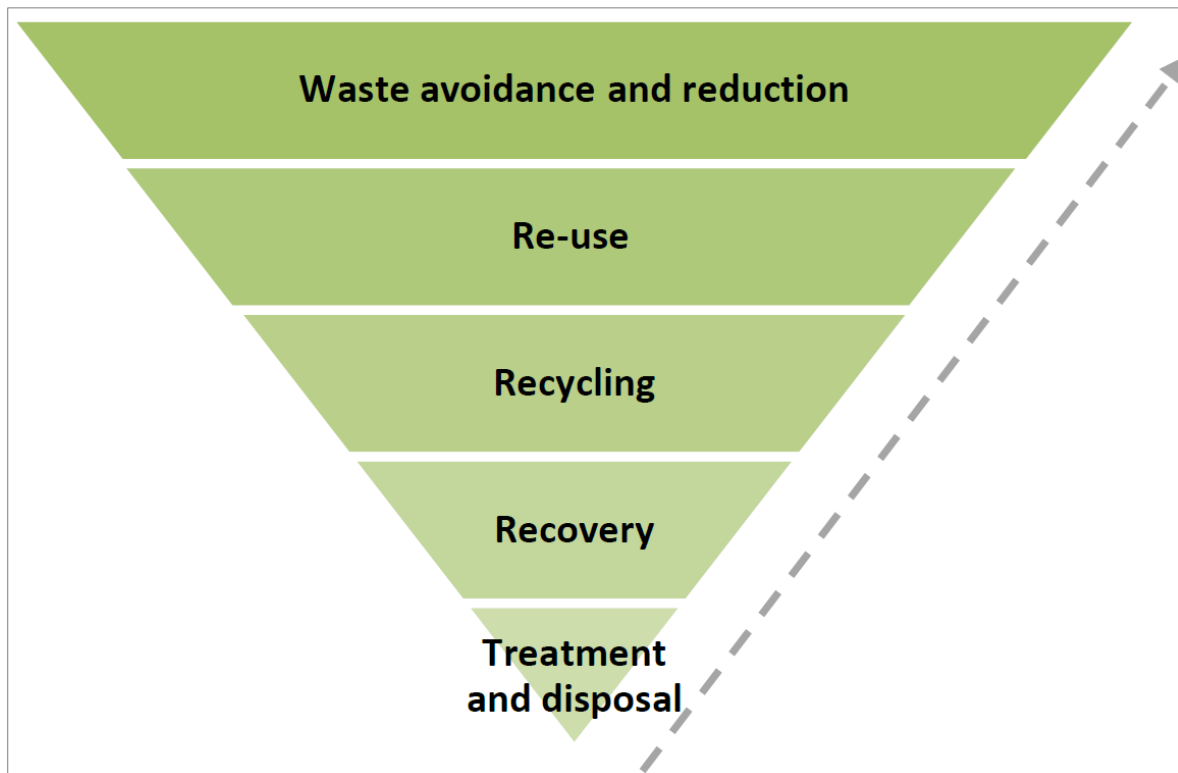


Figure 6: Waste Management Hierarchy (NWMS, 2011)

5.6. International protocols and conventions

- a. **Basel Convention on the Control of Trans-boundary Movements of Hazardous Waste (22 March 1989)**

The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous waste with a specific scope that covers the trans-boundary movement thereof. Applicable to the control of trans-boundary movements of hazardous waste from one country to another.

The operation of Revive Africa aligns with the vision of the waste hierarchy as the operations specialise in the recovery and recycling of hazardous waste, thus reducing the need for disposal. The impacts derived from the operation of the Revive Africa facility on the overall waste footprint of South Africa are considered positive.

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

The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors -

- Meeting the basic human needs of present and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial and gender discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Facilitating social and economic development;
- Providing for growing demand for water use;
- Protecting aquatic and associated ecosystems and their biological diversity;
- Reducing and preventing pollution and degradation of water resources;
- Meeting international obligations;
- Promoting dam safety;
- Managing floods and droughts, and for achieving this purpose, to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation.

5.8. City of Johannesburg Spatial Development Framework (SDF) and Gauteng Environmental Management Framework (GEMF)

The site is within an industrial node in terms of the SDF, and an industrial and large commercial zone focus zone in terms of the GEMF.

5.9. City of Johannesburg Municipal Bylaws and Plans

The CoJ Municipal bylaws have been considered, and no immediate or additional authorisations would be applicable.

5.10. National Environmental Management: Air quality Act (No. 39 of 2004)

The object of this Act is-

- (a) to protect the environment by providing reasonable measures for-
 - (i) the protection and enhancement of the quality of air in the Republic;
 - (ii) the prevention of air pollution and ecological degradation

The act contains general measures for the control of facilities that may cause air pollution. The act places a duty to prevent air pollution and mandates the licencing of facilities such as the proposed metal recovery facility.

Section 46 of the NEM:AQA states that a licensing authority may, by written notice to the holder of a provisional atmospheric emission licence or an atmospheric emission licence, vary the licence -

- (a) if it is necessary or desirable to prevent deterioration of ambient air quality;
- (b) if it is necessary or desirable for the purposes of achieving ambient air quality standards;
- (c) if it is necessary or desirable to accommodate demands brought about by impacts on socio-economic circumstances and it is in the public interest to meet those demands;
- (d) at the written request of the holder of the licence.

The proposed expansion project will entail increasing the footprint of the facility, increasing storage and recycling capacity. Category 8 listed in GNR 893 promulgated in terms of the National Environmental Management Air Quality Act (No 39 of 2004) (NEM:AQA), speaks to the treatment of Hazardous and General Waste by applying heat.

Revive Africa will not apply heat during their treatment process, and therefore does not trigger Category 8 and will not require an Atmospheric Emissions Licence (AEL).

6. NEED AND DESIRABILITY OF THE PROPOSED EXPANSION ACTIVITIES

The below need and desirability assessment was developed according to the Integrated Environmental Management Guideline Series 9: Guideline on Need and Desirability and in terms of the EIA Regulations.

6.1. Need and Desirability in terms of Type of Waste Received and Processed by Revive Africa

Revive Africa undertakes the recycling of electronic and electrical waste equipment (e-waste), mainly the printed circuit boards (PCBs) and lithium-ion batteries (LIBs) contained within consumer electronics as well as IT and telecommunication devices. E-waste is classified as a hazardous waste and is strictly governed by environmental laws and more specifically the requirements of the NEMWA.

E-waste is recognised as the fastest growing waste stream in the country, and due to the containment of hazardous components requires specialised handling procedures. The sustainable management of the e-waste is of concern due to the adverse environmental and health impacts when handled unsustainably. PCBs contain several harmful elements such as lead, cadmium, and brominated flame retardants (BRFs) amongst others, whilst LIBs contain flammable electrolytes, toxic material (Lithium salts and Hydrogen Fluoride (HF) gas, and cathode metals) and have high energy density which cause rapid and uncontrollable heat release that can cause explosions. In South Africa the e-waste recycling sector is still in its infancy, with limited formal e-waste recyclers and thus most of the generated e-waste is handled by the informal sector using harmful methods.

Therefore, the sustainable management of PCBs and LIBs is essential, to ensure that e-waste is managed in a sustainable manner that is not detrimental to the environment and human health. The management of e-waste through formal sector is also essential in keeping data on the e-waste generated and managed within the country to assist authorities in planning for sustainable waste management.

Currently, Revive has dismantling stations for the manual disassembly of PCBs and a pilot project for the recycling of LIBs. The facility recycles less than 500 kilograms of e-waste at their facility, operating below the threshold for a waste management licence (WML). Revive now proposes to establish a full-scale e-waste recycling plant for both PCBs and LIBs. The expansion entails increasing the volumes of e-waste accepted, expanding their footprint to the adjacent building in 28-32 Laub Street, New Centre Johannesburg and e-waste management processes to include recycling, treatment and recovery of e-waste and LIBs.

The proposed expansions and upgrades would allow Revive Africa to further streamline their process. With the modifications made, the facility will be able to accept and process larger volumes of waste at any given time.

6.2. Need and Desirability in terms of South African Legislation

E-waste and its components in South Africa are governed by the NEM:WA as well as Norms and Standards and Regulations promulgated in terms of the Act, as well as the waste management hierarchy as noted in the National Waste Management Strategy (NWMS). In terms of e-waste, the Extended Producer Responsibility Regulations (EPR) (GNR 1184), 5 November 2020 and the Norms and Standards for Disposal of Waste to Landfill (GNR 636), effective 23 August 2021 are particularly applicable. The EPR regulations set forth targets for producers of electronic and electrical to collect the end-of-life products and manage them in a sustainable manner through EPR schemes, in the case of Revive Africa the EPR Scheme for Electrical & Electronic Equipment as well as the EPR Scheme for the Portable Battery Sector are applicable.

Revive Africa is registered as a recycler with an EPR scheme in South Africa, assisting producers with meeting their EPR scheme targets by through recycling and recovery. The operation of Revive Africa

also ensures the sustainable management of e-waste and associated components diverting them from landfill in fulfilment of the banning of the waste stream from landfill sites. The proposed expansion at Revive Africa will result in increased storage and processing capacity for e-waste, which will result in increased targets for the facility to assist producers in meeting their EPR scheme targets and the sustainable management of e-waste in line with the waste management hierarchy ensuring that waste is not landfilled in fulfilment of the e-waste ban.

By providing a licensed operation, Revive Africa is able to not only accept a hazardous waste stream for processing, limiting the need for disposal, but also able to generate viable and valuable products for other industries.

6.3. Need and desirability in terms of waste regional management

The latest official statistics released by the DFFE on waste management in South Africa was conducted in 2018, captured in the State of Waste Report. According to the report, 52 million tonnes of hazardous waste was generated in 2017, with 92.7% of the total volume of waste disposed to landfill and only 6.6% was recycled and recovered. Although e-waste accounted for only 0.7% of the total volume of hazardous waste generated in 2017, it has been recognised as the fastest growing waste stream with majority of it stockpiled (86.4%) and only 9.7% recycled or recovered. The stockpiling of e-waste has been recognised as the most used method for the waste stream as many waste generators believe the waste has an inherent value and thus, is not sent for recycling or even disposal. Furthermore, in developing countries the lack of adequate infrastructure for the sustainable management of e-waste contributes to the stockpiling of e-waste.

The Gauteng province is the hub of e-waste management, with more than 100 formally registered companies that handle e-waste, however, many are involved in the collection, consolidation and dismantling activities. Thus, a significant need still exists to increase the sustainable management of e-waste through recycling and recovery of materials. Particularly for information and communication technology (ICT) and consumer electronics made up the bulk of the waste stream (79%). The proposed expansion for Revive Africa demonstrates itself as one that is required within the region, first on the basis of the need for more formal and duly authorized waste recycling and recovery facilities in the country and secondly, based on the type of waste managed at the facility which accounts for the majority of e-waste that is currently generated in the region. The proposed expansion activities will increase Revive Africa's capacity to recycle and recover waste.

6.4. Need and Desirability in terms of Socio-Economic Benefits

The proposed expansion will provide employment opportunities for additional persons during the operational phase. Revive Africa is committed to employing and training local personnel as far as reasonably possible in the recycling and recovery of materials from e-waste. The use of local labours and skilled workers would have a positive impact on the surrounding community. The proposed expansion will contribute to local economic development and uplift the livelihoods of the persons that will be employed.

The facility currently employs +/-20 persons. The proposed expansion and upgrades to the facility will also contribute to additional job security, as it is estimated that a total of 18 permanent jobs will be created from the expansion.

Furthermore, Revive Africa is committed to giving back to the community, particularly the disabled community. This is demonstrated through their support to the Mandeville Para Swimming Club, which is South Africa's only club dedicated to teaching disadvantaged children with a disability to swim. Through the expansion Revive Africa can continue to support additional initiatives in the country that benefit society beyond the provision of employment opportunities.

6.5. Need and Desirability in terms of the Location and Accessibility

The proposed expansion activities will be conducted within the footprint of an existing industrial site that has been completely transformed and identified as an industrial zone in terms of the 2022 Gauteng Provincial Environmental Management Framework (GPEMF) and the City of Johannesburg's 2024 Spatial Development Framework (SDF). The proposed site is in line with the compatible land uses for Zone 5: Industrial and large commercial focus zone in terms of the GPEMF. Therefore, no virgin land will have to be transformed, which is aligned with CoJ's SDF's objective to opt for brownfield development over greenfield development allows us to preserve the limited natural land available, which is a crucial provider of valuable ecosystem services.

The site is situated in New Centre, an industrial area in Johannesburg, with existing access that is conveniently close to major roads to and from the site. The property is zoned for industrial purposes which is in line with the proposed expansion activities. Moreover, the site is well serviced by public transport allowing easy access for personnel working at the site.

6.6. Conclusion Regarding the Need and Desirability of the Proposed Activities

A clear need exists to decrease waste disposal and transition towards more sustainable waste management practices that prioritise keeping products circulating in the economy for longer to not lose the valuable materials contained in them and to allow for their reuse to reduce dependency on virgin materials where possible. By implementing methods such as the recycling or recovery of waste, disposal of waste is avoided all together, which is aligned with policies and regulations and South Africa's transition towards a more circular economy. The proposed expansion activities will increase Revive Africa's capacity to recycle and recover materials contained in e-waste and keep the hazardous components from the environment through safe disposal methods.

Existing access to the site has already been established. The proposed expansion will provide employment opportunities for additional persons over the operational phase of the facility. The facility currently employs +/- 20 persons and the proposed expansion of the facility will contribute to job security. The proposed expansion project will therefore contribute to local economic development and uplift the livelihoods of the persons that will be employed. The proposed expansion and modification of the waste recovery activities of Revive Africa is in line with the waste hierarchy in terms of the National Waste Management Strategy (NWMS) and the NEM:WA, and will ensure the sustainable management of e-waste and uphold the regulations that ban the disposal of waste to landfill.

7. DESCRIPTION OF REASONABLE AND FEASIBLE ALTERNATIVES

This section evaluates the alternatives that have been identified and will be included in the environmental impacts associated with the alternatives, compared to the proposed alternative. The pros and cons of the different alternatives will be highlighted to ensure that a transparent decision will be reached on the best alternative.

7.1. Site selection process

The site selection was guided by the existing operations of Revive Africa and the availability of suitable properties capable of accommodating the proposed activities. The selected site is a brownfield that has already been fully developed for commercial and light- to medium-industrial use. Consequently, no virgin land will be disturbed for the facility. Additionally, the site is not located near any sensitive environmental features that could be impacted by the proposed activities.

Other factors influencing the site selection include available infrastructure and space. The site currently supports Revive Africa's e-waste management activities, which are below the threshold requiring a waste management licence. The additional space required to accommodate increased material intake and processing capacity is adjacent to the existing operations. Both sites are under the ownership of the same entity that operates Revive Africa, simplifying management and operational continuity.

Given these considerations, alternative sites were not pursued. Relocating the existing operations or acquiring a separate facility would be less feasible and would disrupt ongoing operations while attempting to accommodate the growing demand for e-waste management services.

The table below presents a detailed evaluation of the proposed site.

Table 4: Site selection matrix

Environmental consideration	Site evaluation	
	New Centre	
	Yes	No
Within a 3000m radius of the end of an airport landing strip.		x
Within an unstable area (fault zone, seismic zone, dolomite, sinkholes).		x
Within 500m of water resource.		x
Nodality with respect to raw materials.		x
The distance to the boundary of the nearest residential area.	0.5 km	
Availability of land for expansion of production volumes.	x	
Accessibility in terms of road networks.	x	
Suitability of zoning	x	

The site location alternatives will not further be addressed in this study as the site is preferred from a logistical, financial and strategic perspective.

7.2. Technology Alternatives

According to the European Integrated Pollution Prevention and Control (IPPC) for Best Available Techniques (BAT), the technique for choosing the best available technology should consider potential environmental impacts associated with the chosen technology, the ease of implementing an environmental management system to manage and mitigate impacts, the economic efficiency, size and the raw material that is intended to be used.

7.2.1. Printed Circuit Board (PCB) Recycling

PCBs contain both valuable (Au, Ag, Cu, Pd, plastics, etc.) and hazardous substances, making their disassembly a crucial process in the recycling of PCBs. The disassembly phase involves the removal of electrical components (capacitors, resistors, inductors, integrated circuit, cooling fin, etc.) from the

PCB substrate. This process can be conducted using either thermal, mechanical, chemical, or automated methods.

a. Thermal disassembly methods

Thermal disassembly techniques utilise elevated temperatures ranging between 200 °C and 600 °C to separate the various electrical components mounted to the basal plate of the PCB. The heat is used to target the polymeric materials that bind the EC and the metallic layers contained in the basal plate. Thermal disassembly methods are advantageous in that they achieve the highest recovery rate of EC due to effective solder removal; however, these advantages are offset by the energy requirements and environmental impact through hazardous emissions.

b. Mechanical disassembly methods

Mechanical disassembly methods rely on physical processes to separate the EC fractions from the basal plate and to break down PCBs into smaller fractions. This often involves manual separation of EC from the basal plate using hand tools (hammers, screw drivers, etc.) and shredders and crushers to breakdown the PCBs into smaller fractions. Followed by methods such as magnetic separation, eddy current separation, electrostatic separation, and density-based methods to separate metals from other constituents. Mechanical disassembly is often used as a pre-treatment step to concentrate metal-rich fractions. Mechanical methods offer low energy requirements and low to moderate environmental impact based on the accuracy of hazardous material removal from the PCBs. The disadvantages of mechanical disassembly methods are that they are labour-intensive and often results in incomplete recovery of EC, and due to the use of labour there lies a risk of exposing workers to hazardous materials when conducted without adequate safety measures in place.

c. Chemical disassembly methods

Chemical PCB disassembly methods involve the process of using chemical reagents to dissolve or separate materials contained within the PCBs. Chemical processes are efficient in material separation and effective in breaking down certain materials, however, they often rely on toxic solvents that pose significant handling and disposal challenges. Furthermore, chemical processes can be energy-intensive and costly, raising concerns about their feasibility for large-scale recycling operations.

d. Automatic disassembly methods

Automated PCB disassembly processes involve the use of advanced technologies, specifically edge computing and the Internet of Things (IoT), to streamline the recycling process and efficiently dismantle electronic components from boards with minimal human intervention. The automated disassembly methods use sensors, cameras, and smart devices to identify and track boards as they move through the process. Data collected is analysed by computers and machine learning algorithms, which guide robotic arms to carefully dismantle components like resistors, capacitors, and chips. After disassembly, parts are sorted by material and usability, and EC's as well as other recyclable materials such as metals, plastics, and silicon are recovered. Automation enables high throughput and consistent recovery efficiency, while reducing safety risks to operators and minimizing exposure to hazardous substances such as solder fumes, resins, or heavy metals. Advanced sensors and vision systems allow for precise identification and segregation of components, enhancing material purity for downstream recycling. The main limitations are the high initial capital cost, complex maintenance requirements, and the need for skilled operators to program and monitor the system.

The following table summarises the pros and cons of each disassembly technology:

Table 5: Comparison of PCB recycling techniques (Adapted from Mohsin et al., 2026)

Characteristic	Thermal	Mechanical	Chemical	Automatic
Energy Consumption	High	Low to Moderate	Low	Optimized
Environmental Impact	High	Low to Moderate	Moderate to High	Low
Scalability	Moderate	High	Moderate	High
Safety Risks	Moderate to High	Low to Moderate	Moderate to High	Minimal

Thermal and chemical PCB recycling techniques will not be considered further due to the overall energy consumption, environmental impact, scalability and safety risks. The EIR will consider the mechanical systems that are currently utilised by Revive Africa against emerging automated PCB recycling techniques.

7.2.2. Lithium-ion Battery Recycling

Lithium-ion batteries (LIBs) are key components for many electrical and electronic equipment (EEE) being adopted as the main energy source for various EEE devices. A lithium-ion battery (LIB) cell consists of six main components: anode, cathode, electrolyte, separator, current collectors, and housing. The anode typically has a copper collector coated with graphite, binder, and additives, while the cathode uses an aluminium collector coated with active materials, additives, and ligands. The type of active cathode material (lithium cobalt oxide (LCO), lithium nickel-manganese-cobalt oxide (NMC), lithium iron phosphate (LFP), lithium nickel-cobalt-aluminium oxide (NCA), or lithium manganese oxide (LMO)) determines the specific chemistry of the battery. The electrolyte is a mix of lithium salts, organic solvents, and additives, and the separator, usually polypropylene or microporous polyethylene, prevents short circuits. Finally, the housing, made from metals or plastics, protects the battery from external damage.

The LIB recycling process is made up of two phases post the collection and sorting phases, that is pretreatment and recycling. The recycling phase is where valuable metals and materials are recovered from the pretreated fractions, for reuse in new batteries or other products, maximising resource recovery and minimizing waste. Revive Africa will be focusing on the pretreatment phases for their operations and therefore, the difference between thermal and mechanical methods will be explored in detail on the

The pretreatment phase involves the active separation of cathode material (black mass) from other from other cell components such as housings, current collectors, electrolytes, binders, and separators. The pretreatment phase typically include:

- Discharge: Safely removing any remaining electrical charge to prevent short circuits or fire.
- Dismantling or disassembly: Separating the battery into components such as cells, casings, and electronic modules.
- Separation: Physical methods (magnetic, density, or screening) to segregate metals, plastics, and other components.

The pretreatment process can be done using either thermal or mechanical methods:

a. Thermal pretreatment

The pretreatment of LIBs usually involves heating the batteries in temperatures ranging from 200 °C to 700 °C to decompose the organic binders that hold the components together. This can be done using either roasting or pyrolysis.

Roasting

Roasting involves heating LIBs materials in an oxidising atmosphere at temperatures of up to 700 °C. This process breaks down organic binders and vaporises electrolytes, improving the liberation of cathode and anode materials from their current collectors.

Pyrolysis

Pyrolysis, usually conducted in an inert atmosphere, involves heating batteries between 300 °C and 1300 °C to remove organic binders and electrolytes, enhancing the efficiency of subsequent material separation.

Excessive heating of LIBs can lead to re-deposition of binders, alter surface chemistry, and reduce flotation efficiency. This method requires skilled personnel and precise temperature control, and it has a high energy demand due to the elevated temperatures. While thermal treatment can moderately improve material recovery by deactivating reactive components, some lithium and volatile metals may be lost. There is also a residual risk of fire or explosion during handling, and potential emissions of toxic gases require flue gas treatment. For these reasons, thermal treatment of LIBs will not be considered further in the EIR.

b. Mechanical pretreatment

Discharge

The discharging of lithium-ion batteries (LIBs) is a critical stage in mechanical pretreatment to prevent fires or thermal events during subsequent processing. Two mechanical techniques are commonly used for battery discharging:

- i. Soaking in a saturated salt solution – Batteries are submerged in a conductive solution to minimize short-circuiting and prevent material deposition in the anode.
- ii. Discharging via resistors – Batteries are connected to a resistor in a closed circuit, allowing electrons to flow through the resistor and gradually deplete the chemical energy of the electrolyte. This method allows residual energy to be extracted for reuse.

While the resistor method can prevent energy loss and enable reuse, it is generally not cost-effective for small- to medium-scale LIB recycling due to the high investment required to set up the system. Consequently, the preferred alternative is the one currently used by Revive Africa to discharge the batteries by soaking them in a saturated salt solution. Thus, the alternative method of the resistor will not be considered further in the EIR.

Dismantling or disassembly

Once lithium-ion batteries have been safely discharged, they can be disassembled to separate components for further pretreatment and material recovery. The dismantling of the batteries can be done either through manual or automatic processes. Manually disassembling batteries can be done using hand tools like saws, knives, and pincers to access the cell core and separate the metal, plastics from the black mass fractions. Automatic disassembly uses robotic cutting, controlled shredding, vacuum-assisted separation, and sensor-based sorting to achieve the same outcome with greater efficiency and safety. Automated systems reduce manual handling, minimise exposure to residual energy or hazardous materials, and improve the consistency and throughput of material recovery. Therefore, the automated systems have been identified as the preferred alternative and the manual processes will not be considered further as the alternative method in the EIR.

Separation

Separation is required prior to the hydrometallurgical process to remove impurities from the aluminium and copper foils, as these contaminants can interfere with the efficiency of the recycling stage. The techniques commonly used in separating components of the scrap batteries are physical and mechanical, thermal, chemical, and mechano-chemical separation processes.

i. Physical and Mechanical Separation

Mechanical separation relies on the physical properties of battery components, such as size, shape, and material type, and typically follows dismantling. Key techniques include:

- **Crushing:** Components are reduced in size using dry or wet crushing methods. Wet crushing occurs in a salt solution (e.g., NaCl, MgSO₄, Na₂S) to prevent toxic gas emissions and reduce lithium reactivity. Dry crushing is carried out in an inert atmosphere to optimize safety and productivity. Some processes, like the two-step Recupyl system, use sequential crushing to enhance black mass recovery.
- **Sieving:** Separates fine electrode powders (black mass) from coarser components like Al-Cu foils and plastics. Particle sizes typically range from 0.5 mm to 63 mm, depending on LIB type.
- **Magnetic Separation:** Steel and other ferrous components are isolated from non-ferrous materials. Recovery efficiencies can exceed 90%, particularly with wet magnetic or fluid-magnetic systems.
- **Eddy Current Separation:** Aluminium and copper foils are separated from non-metals using alternating magnetic fields. Efficiency improves with proper particle size control and speed adjustments.

ii. Thermal Separation

Thermal methods, including pyrolysis or heat treatment, are used to:

- Remove organic binders like PVDF from cathodes.
- Liberate active materials from current collectors.
- Reduce the volume of organic materials while recovering pyrolytic gases and tars as fuel.

Typical treatment ranges from 100–500 °C for binder removal and up to 900 °C to burn residual organics. Thermal pretreatment enhances the separation efficiency of active materials for downstream chemical recovery.

iii. Chemical Separation

Chemical methods employ alkaline or organic solvents to detach electrode active materials from aluminium foils and binders:

- **Organic Solvents:** N-methylpyrrolidone (NMP), DMAC, DMSO, DMF, or ionic liquids dissolve PVDF binders. Ultrasonic treatment can improve separation efficiency.
- **Alkaline Solutions:** NaOH can selectively dissolve aluminium foils without damaging cathode oxides. Residual binders may be removed by calcination.
- Green alternatives, such as citrus juice, have been explored to reduce environmental impacts, though they require elevated temperatures (>90 °C).

Chemical separation improves active material purity but may introduce impurities or losses if not carefully controlled.

iv. Mechano-Chemical Separation

This hybrid method combines **mechanical size reduction** with **chemical treatment**, often using chelating agents like EDTA. Benefits include:

- Enhanced surface area and particle size reduction for improved acid-leaching efficiency.
- More effective liberation of cathode materials for downstream metal recovery.

The thermal, chemical, and mechano-chemical separation processes will not be further considered on the EIR due to their energy requirements (thermal), the use of chemical solutions (chemical and mechano-chemical separation). Thus, the Physical and Mechanical Separation processes will be discussed in detail in the EIR.

7.3. No-go option

The no-go alternatives Revive Africa continuing with processing e-waste at current scale that is below the threshold for a waste management license. The increase in processing capacity would not only benefit current operations but have positive impacts for e-waste management, which are currently still below 10% for the country. Should the application for the waste management license be rejected the operations would be forced to continue as is and operate within the facility's current operational capacity. If the application is rejected the operations will not have the opportunity to further evolve in order to remain competitive in the current market.

7.4. Conclusion Regarding the Considered Alternatives

The identified site(s) on which the proposed activities will be conducted have been completely transformed by industrial activities. No virgin land will be transformed to accommodate the facility. The site is also not situated near any sensitive environmental features that can be impacted by the proposed activities.

The proposed site(s) is adequately fenced and gated to allow controlled access and is ideally located near established routes for transportation of material to and from the site as well as for ease of commuting for employees. Existing infrastructure and operations on the 24-26 Laub facility make the proposed site ideal for the planned waste management activities. Therefore, no alternative sites were considered due to the practical and financial reasons.

The recycling of e-waste and its components is of particular importance in South Africa due to the growing use and demand for electrical and electronic equipment. The EEE contains valuable materials that are at risk of being discarded once the equipment reaches its end-of-life and is discarded as waste. The sustainable management of e-waste and its components is critical for the preservation of valuable materials and the prevention of the disposal of the hazardous components contained therein into the environment and increasing human exposure.

The scoping report considered four recycling methods for the recycling of printed circuit boards (PCBs) and after careful evaluation concluded that only the mechanical and automated systems will be considered for the EIR with the mechanical processes as the proposed method due to the socio-economic circumstances of the country the infancy of the e-waste recycling sector. The scoping report also indicated that the recycling of LIBs is made of two processes, namely, pretreatment and recycling phases. The information gathered indicated that Revive Africa engages on the pretreatment phase, which uses mechanical and thermal treatment, and thus the full details of the methods will be discussed in the EIR with the mechanical treatment options as the preferred alternative.

Should the waste management licence application for the proposed activities be rejected then Revive Africa would be forced to continue with operations in its current state. Although no short-term impacts are considered severe long-term impacts following the decision may lead to economic pressures as the company would not be able to evolve in line with competitors in the market. This could in turn lead to financial pressure which could lead to potential retrenchments of staff members.

8. DESCRIPTION OF THE BASELINE ENVIRONMENTAL CONDITIONS

The site has been completely transformed by the existing industrial and associated activities. The following provides a description of the environmental features of the area.

8.1. Climate

The temperature of the region is mild with the highest temperatures recorded in December to February and the coldest in July and August. The winters can produce frosty mornings with strong cold fronts. The subject area falls within a zone of summer rainfall which is prevalent over most of the Gauteng Province with the majority of rain falling during afternoon thunderstorms in December and January of each year.

The climate of Johannesburg is mild, generally warm, and temperate, with dry winters and warm summers. The average annual temperature in Johannesburg is approximately 15.9 °C, while the mean annual rainfall is around 784 mm. Rainfall is highly seasonal, with the majority occurring during the summer months from December to March.

8.2. Hydrology

The project area is located in the Vaal-Orange Water Management Area (WMA) and the C22B Quaternary Catchment. The mean annual precipitation is moderate and approximately 690 mm/a, but significantly exceeded by potential evaporation estimated at approximately 1 600 and 1 700mm/a. Consequently, the majority of rainfall is lost through evapotranspiration, with only a small proportion contributing to surface runoff and groundwater recharge.

The presence of shallow, sandy soils derived from quartzitic bedrock, combined with extensive urban development in the project area, further reduces infiltration and enhances rapid runoff generation. Existing stormwater infrastructure is in place to manage runoff from the expansion activities.

8.3. Topography

The natural slope of the site is generally gentle and typically less than 5%, however, localised steeper gradients may occur along engineered embankments, road cuttings, and drainage corridors. The topography is generally gently undulating, with localised low relief typical of the Highveld region.

8.4. Geology and soils

The Revive Africa site falls within the Siliciclastic lithological class, underlain specifically by the Central Rand Group of the Witwatersrand Supergroup. Siliciclastic rocks, which include siltstone, sandstone, and conglomerate, are the second most abundant type of sedimentary rock after mudrocks. These rocks form primarily through the accumulation and consolidation of mineral grains, mainly silicates, and serve as important reservoirs for water, oil, and natural gas. They also host economically significant minerals, including diamonds and gold.

Siliciclastic rocks are composed of three primary materials: framework grains, matrix, and cement. Framework grains - typically mineral particles or fragments of other rocks - make up the bulk of the rock. The matrix is a fine-grained material, such as clay, deposited along with the grains, while cement precipitates in the voids between grains after deposition. Framework grains and matrix are considered primary deposits, whereas cement is a secondary deposit formed post-deposition.

The Central Rand Group is dominated by quartzites, sandstones, and conglomerates, with quartzite being more than twelve times more abundant than shale. The majority of Witwatersrand gold occurs within this group, particularly in the Johannesburg and Turffontein Subgroups. The lithologies of the Witwatersrand Supergroup are highly resistant to weathering, giving rise to shallow, sandy to sandy

clay loam soils with generally low natural fertility and moderate permeability. The combination of shallow soils and fractured bedrock limits groundwater storage capacity, while exposed soils are potentially vulnerable to erosion if disturbed.

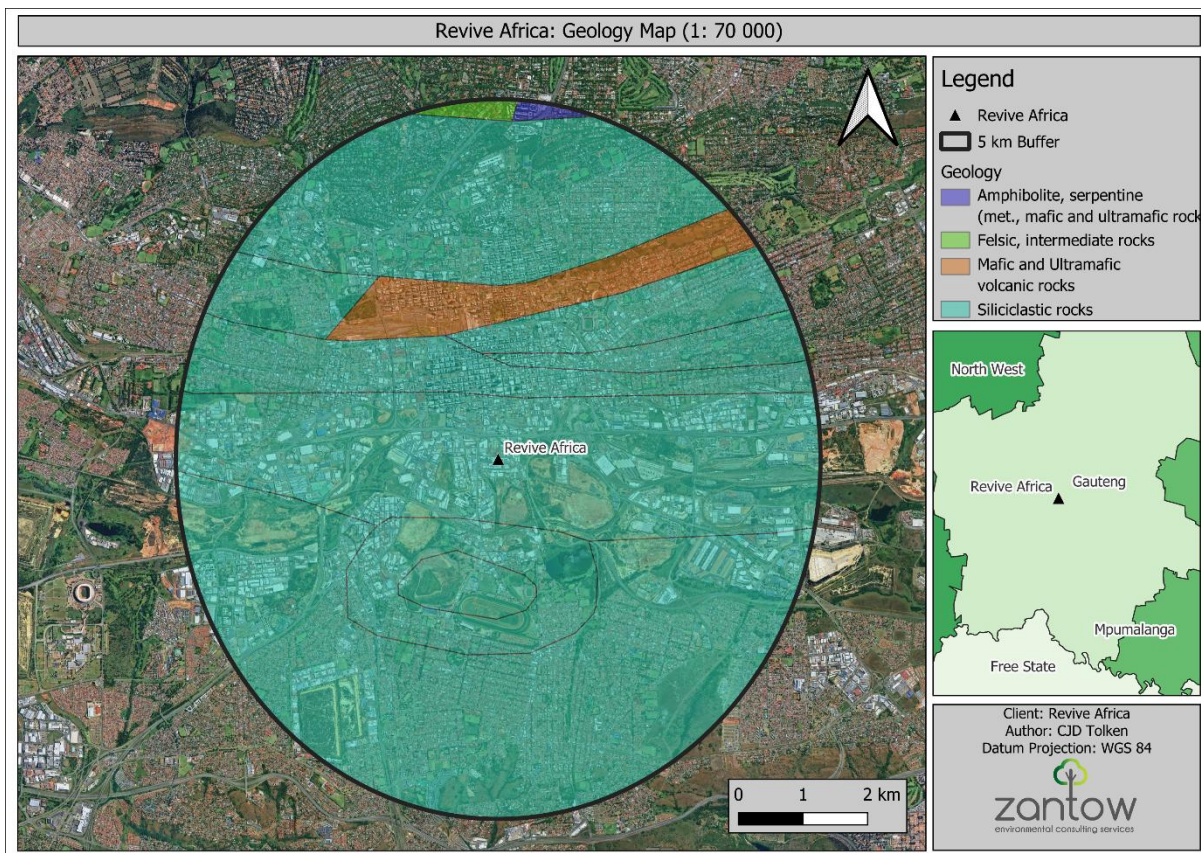


Figure 7. Geology of the area surrounding Revive Africa

8.5. Vegetation

The site has completely been disturbed by the existing industrial activities. No vegetation will be removed on the area in which the activity will be conducted.

The project area is situated in the Grassland biome (Mucina & Rutherford, 2006), which is characterised by herbaceous vegetation of relatively short and simple structure that is dominated by graminoids, usually of the family Poaceae. Woody plants are rare (usually low to medium-sized shrubs) or absent or are confined to specific habitats, such as smaller escarpments or koppies. Core grassland areas usually have deep, fertile soils although a wide spectrum of soil types occurs. Precipitation is strongly seasonal, and the growing season lasts approximately half the year (Mucina & Rutherford, 2006).

The project area overlaps the Soweto Highveld Grassland vegetation unit (Mucina et al., 2018). The Soweto Highveld Grassland vegetation unit is characterised as gently to moderately undulating landscape on the Highveld plateau, supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover.

8.6. Heritage Resources

According to the National Screening Tool, the site selected for the proposed expansion has a very high sensitivity for the Archaeological and Cultural Heritage Theme.

The area is given a high sensitivity because of the Grade I Heritage site which is said to be within a 5km buffer and the Grade II Heritage sites which are within a 2km buffer from the proposed site.

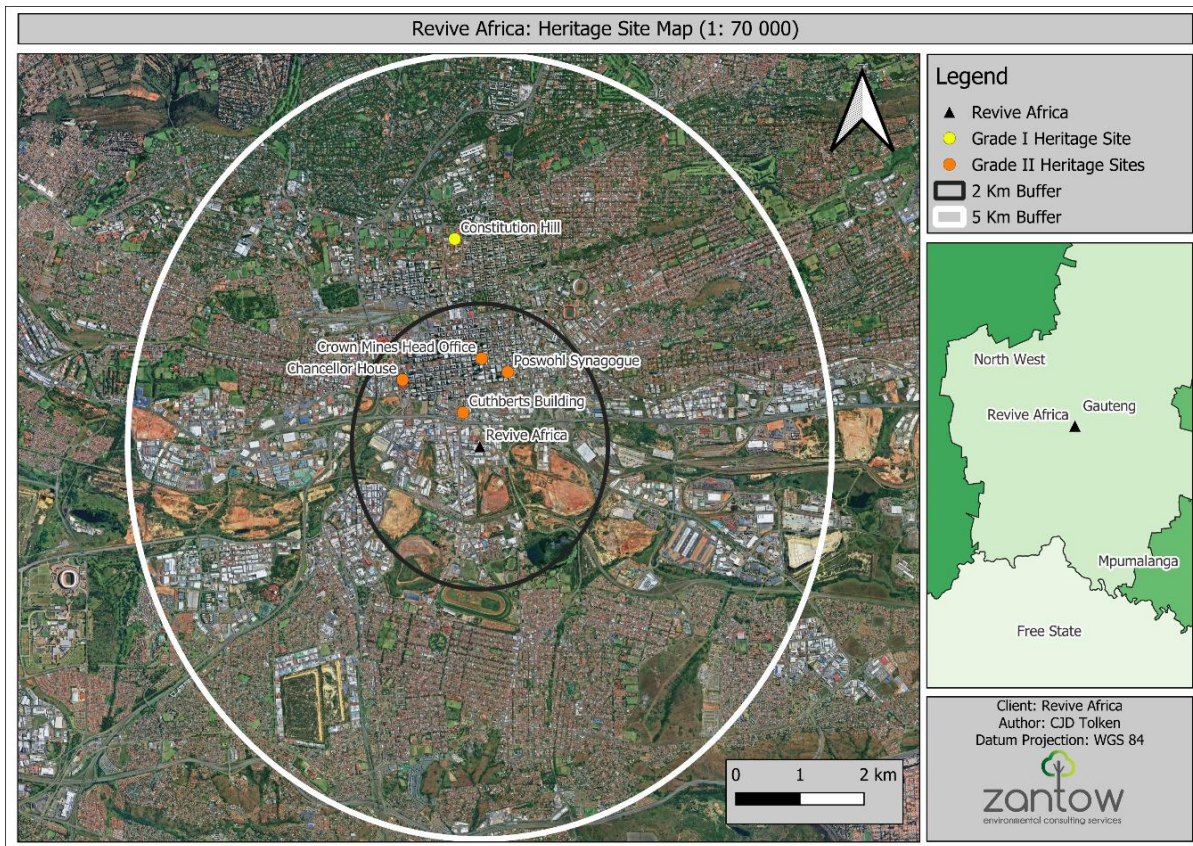


Figure 8. Heritage Site Location Map

The area has been previously developed, and no archaeological or cultural heritage resources were identified during construction or are currently present. In addition, the proposed area selected for the activities will be located within the bounds of the existing Revive Africa facility. Therefore, the proposed activities will have no impact on the Grade I Heritage site which is said to be approximately 3 km away from the proposed expansion area. A compliance statement for the archaeological and cultural theme will be included in the EIR.

8.7. Socio-economic

The site is in the jurisdiction of the City of Johannesburg, South Africa's largest metropolitan municipality in terms of population, size and economy. According to 2018 statistics the City of Johannesburg is home to approximately 5.5 million people, with an average household size of 3.1. The project area is situated in Region F of the city, with land use in the region varies from residential in the northwest, the west and the south, to industrial and manufacturing areas in the northeast. There are no residential units directly adjacent to the proposed site as the area is zoned for industrial activities, the nearest residential area is 0.5 km away in the inner city, characterised by low- to middle-income groups.

The abundant economic activity in the project area is related to low and middle industrial activities such as paper manufacturing, chemical manufacturing and waste management. Some retail activities are also situated in the area, such as autobody and repair shops, furniture warehouses, printing and embroidery services.

The unemployment in the city is currently at 26,5% and youth unemployment is estimated to be over 46,6%. Although over 65,5% of young people have completed matric only 9% have post matric.

qualifications consequently, the majority of youth due to their low skills are employed in the wholesale, retail & trade and private households.

8.8. Water Management

The facility uses municipal supplied water. The recycling processes employed are primarily mechanical and require little to no water; therefore, water consumption is predominantly for domestic purposes such as sanitation and staff facilities. Domestic wastewater generated on site will be discharged to the municipal sewage system through existing infrastructure. No process wastewater is expected to enter the municipal system.

8.9. Waste Management

The facility is a waste recycling facility and thus accepts hazardous e-waste for recycling and recovery of valuable materials. Therefore, only two types of waste streams are generated by the operations:

- Hazardous waste

During the manual dismantling of PCBs from the e-waste feedstock, non-valuable materials such as, low-metal substrates, plastics, ceramics, adhesives, and dust, will be segregated from recoverable materials. Although these materials have limited economic value, they may contain hazardous substances such as lead, cadmium, and brominated flame retardants. All non-recoverable waste will be segregated from valuable fractions, stored in closed and clearly labelled containers and sent to licensed hazardous waste facilities. While non-hazardous materials will be directed to approved recycling or disposal sites in accordance with local regulations. Appropriate personal protective equipment (PPE) will be used during handling to ensure worker safety.

Residual waste from grinding lithium-ion batteries to black mass and extracting metals will include unrecoverable black mass, separator and binder residues, graphite, and spent chemical solutions. Hazardous fractions containing heavy metals and residual electrolytes will be stored in closed, labelled containers and sent to licensed hazardous waste facilities, while non-hazardous materials will be directed to approved recycling or disposal sites. Appropriate PPE, dust control, and fume extraction will be used to ensure worker safety and environmental protection

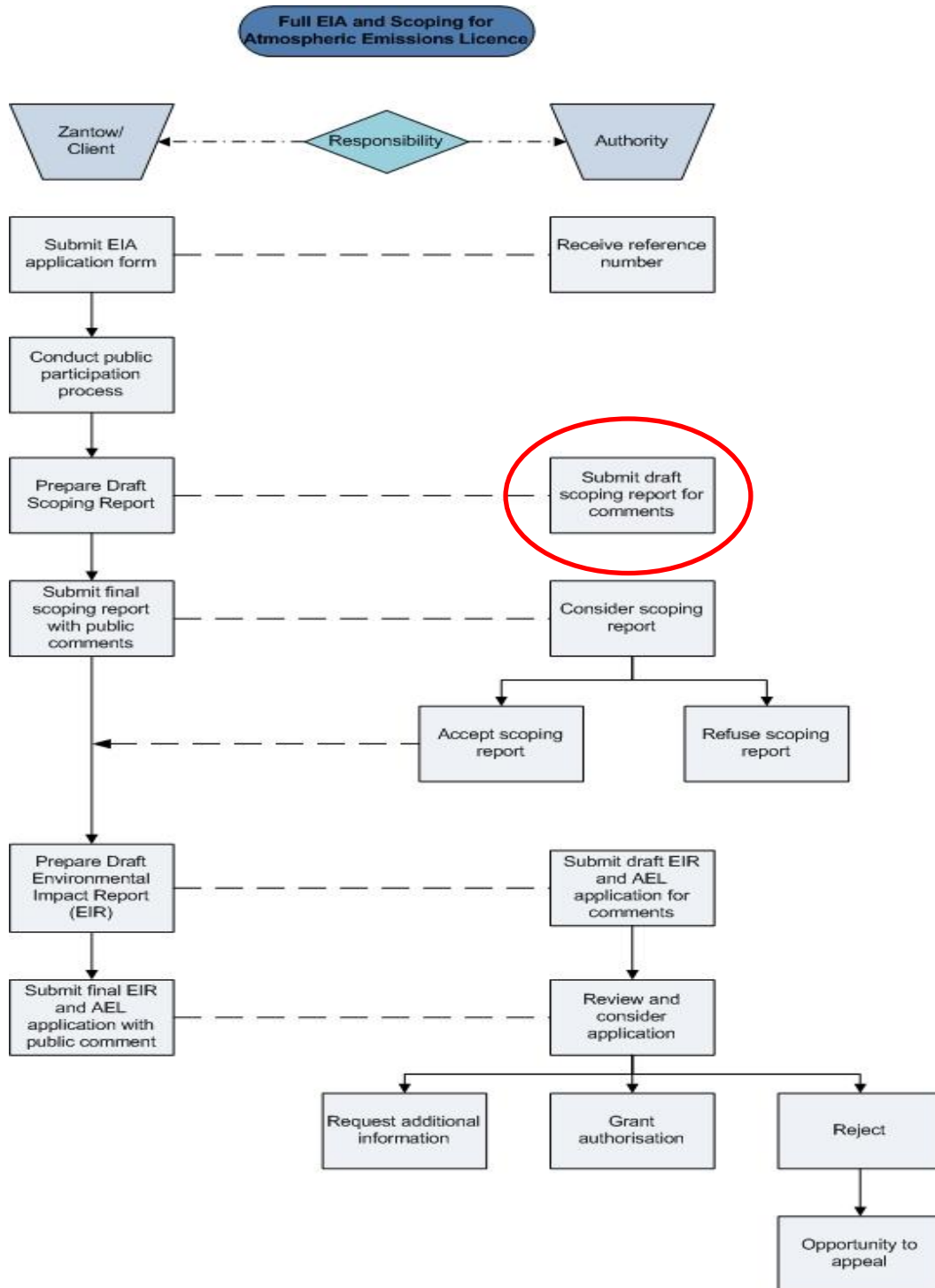
- General and domestic waste

General and domestic waste generated by the office and administrative sections of the facility is disposed of in allocated general waste bins and removed by a waste service provider at set frequencies.

8.10. Air quality management

Emissions from the site are not expected to be significant, as all processes will be undertaken within enclosed systems equipped with appropriate dust and fume extraction measures. The facility will install abatement equipment in the form of a dust and fume extraction system, fitted with a suction fan and a bottom hopper to enable efficient dust collection. The filtration system will be customised according to the types of fumes expected within the facility to ensure optimal extraction and effective emission control.

9. ACTIVITIES UNDERTAKEN AS PART OF THE EIA PROCESS



10. PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

A comprehensive impact assessment was conducted to assess the significance of the potential environmental impacts associated with the proposed e-waste management activities by Revive Africa. This methodology was also used to evaluate the alternatives to compare the proposed activities to those of the alternatives.

10.1. Assessment methodology

The assessment methodology that was utilised in determining the significance of the potential impacts of the planned activities, on the biophysical and socio-economic environment is explained in the following sections. The methodology is broadly consistent to that described in Integrated Environmental Management Series.

In order to assess the significance as objectively as possible, the criteria as per the 1998 Department of Environmental affairs and Tourism (DEAT) guidelines and the 2002 DEAT Information Series document was used as the basis for the assessment methodology adopted by Zantow Environmental Consulting Services.

The methodology applied to the assessment of the significance of potential impacts is based on the assessment criteria provided within the 1998 DEAT guidelines and the 2002 DEAT Information Series document (Impact significance, Integrated Environmental Management, Information Series 5). The methodology has been adapted to be more user friendly and applicable to the industrial processes and a description of the nature, extent, duration, intensity, probability of the impact.

The significance of the impacts is determined through a synthesis of these criteria, ranking them as follows;

Table 6: Risk classification

Significance Rating (SR)	Significance
350 - 600	Severe
200 – 349	High
131- 199	Medium
0 – 130	Low

For each impact identified, the Significance Rating (SR) is determined by various factors. Significance is described prior to mitigation as well as with the most effective mitigation measure(s) in place where so required.

The significant Rating is calculated as follows;

Risk (SR) = (Duration + Probability + Extent + Degree to which the impact may cause irreplaceable loss of resources) x Severity – (Mitigation + Degree to which the impact can be reversed)

The criteria are defined as follows;

- **Duration** – Refers to timeframe of the impact (how long will it last)
- **Probability** – Refers to the likeliness (chance) of the event occurring
- **Extent** – Refers to the scale of the impact in case the aspect results into impact (how far will the impact reach)
- **Severity** – Refers to the degree to which the impacts can change the environment
- **Degree** – Refers to which the impact may cause irreplaceable loss of resources
- **Indirect impacts** – Refers to impacts that do not result directly from the activity or operation but are influenced by the activity or operation
- **Mitigation** – Refers to a control that can be implemented to reduce the significance of an environmental impact

- **Degree to which the impact can be reversed** – Refers to the chance that the impact can be reversed by applying mitigation measures

A risk rating value is assigned accordingly as follows;

Table 7: Marks awarded for duration:

Duration	Guidelines	Value
Permanent	Permanent	8-10
Long term	As long as the facility is in operation	6-7
Medium term	5-10 years	4-5
Short term	0-4 years	1-3

Table 8: Marks awarded for probability

Probability	Guidelines	Value
Definite	where the impact will occur regardless of any prevention measures	9-10
Highly probable	impact is likely to occur 11 – 15 times per year where it is most likely that the impact will occur (>70% and <90% sure)	7-8
Probable	it is probable that the impact will occur 5 to 10 times per year where there is a distinct possibility that the impact will occur (>40% and < 70% sure);	4-6
Improbable	impact occurs very rarely (less than 5 times) throughout the year where the possibility of the impact to materialise is very low, either because of design or historic experience (<40% sure)	1-3
Imposable	No risk	0

Table 9: Marks awarded for extent

Degree to which the impact may cause irreplaceable loss of resources	Guidelines	Value
International	Causes international impacts	10
National	Where the impact would have an impact on a national scale	8-9
Regional	Where the impact would extend to the region (municipal boundaries);	6-7
Local	Where the impact would be limited to the site and its immediate surroundings;	4-5
Immediate	extending only as far as the activity	1-3

Table 10: Marks awarded for degree to which the impact may cause irreplaceable loss of resources

Extent	Guidelines	Value
Severe	Large scale loss of resources	5-7
Major	Loss of resources	3-4
Minor	No to minimal impact on resources	0-2

Table 11: Marks awarded for severity

Severity	Guidelines	Value
Highly significant	Causes irreparable damage	16-20
Severe	where natural or social functions or processes are altered to the extent that they will temporarily or permanently cease.	11-15
Major	where the affected environment is altered but natural and social functions and processes continue albeit in a modified way;	6-10
Minor	where the impact affects the environment in such a way that the natural and social functions and processes are affected in an insignificant manner. The impact is of low order and therefore likely to have little real effect	1-5

Table 12: Deductions awarded for each mitigation measure implemented

Mitigation	Guidelines	Value
Engineering controls	Engineering controls such as bund walls or lock out valves to control the activity	-10%
Administrative	Procedure or work instruction that guides or manage the activity	- 5%

Table 13: Calculated value to which an impact can be reversed

Degree to which the impact can be reversed	Guidelines	Value
High	The impact can be reversed easily by applying little effort	- 8%

Medium	The impact can be reversed by applying effective mitigation measures	- 6%
Low	The chance of revering the impact is low and is not likely. However, by applying extensive measures the impact can be reversed	- 4%
None	Cannot be reversed	- 0%

Any potential impact with a Risk Rating (SR) above “**medium risk**” must be assigned a mitigation measure to mitigate impact. In this case, most of the impacts have been determined as a low or medium impact, mitigation measures were however still assigned from a responsible corporate citizen and precautionary approach principal.

The mitigation described in the proposed EMP document will represent the full range of plausible and pragmatic measures but does not necessarily imply that they all should or will be implemented. The decision as to which mitigation measures to implement lies with the applicant and ultimately with the relevant competent authority.

10.2. Specialist Studies

This section will provide a summary of the specialist studies that will be undertaken as part of the EA application and EIA process. The findings of the specialist studies will provide input to the EIA and EMP and will be included in the Environmental Impact Assessment Report (EIR).

10.2.1. Terrestrial and Aquatic Biodiversity, Plant and Animal Species Compliance Statement

Specialist: Excellence Ecology

The screening tool report indicated a high level of sensitivity for the Terrestrial Biodiversity Theme. As such, a Terrestrial and Aquatic Biodiversity, as well as Plant and Animal Species impact assessment has been undertaken in support of the EIA process.

The study assesses the potential sensitivities on the proposed site within the Terrestrial and Aquatic Biodiversity and Plant and Animal Species Themes.

Scope of work:

The scope of work for the Terrestrial and Aquatic Biodiversity, Plant and Animal Species Compliance Statement included a comprehensive assessment of the project area to identify and evaluate terrestrial and aquatic ecosystems, as well as associated flora and fauna. The Terrestrial and Aquatic Biodiversity, Plant and Animal Species Compliance Statement was informed by a combination of site-based observations and a review of relevant environmental legislation and biodiversity datasets. A site visit was conducted during the wet season in November 2025 (summer). The timing of the survey is not considered to have influenced the findings, as the project area is transformed and lacks natural vegetation. Information sources consulted included:

- Relevant spatial data and environmental information obtained through GIS mapping of the study area
- Applicable environmental legislation, including the National Environmental Management Act (NEMA) and the National Environmental Management: Biodiversity Act (NEMBA)
- The Vegetation of South Africa, Lesotho and Swaziland (2006) by Mucina and Rutherford
- Red Data species lists obtained from the South African National Biodiversity Institute
- Gauteng Conservation Plan V4 (C-Plan 4)
- Wetland-related datasets, including the National Freshwater Priority Areas and the National Wetland Map Version 6

Refer to **Annexure G-1** for a copy of the Terrestrial and Aquatic Biodiversity, Plant and Animal Species Compliance Statement.

10.2.2. Archaeological and Cultural Heritage Theme Compliance Statement

Specialist: Zantow Environmental Consultants

The screening tool report indicated a high level of sensitivity for the Archaeological and Cultural Heritage Theme. As such, an Archaeological and Cultural Heritage, compliance statement has been undertaken in support of the EIA process.

The study assesses the potential sensitivities on the proposed site within the Archaeological and Cultural Heritage theme.

Scope of work:

The Archaeological and Cultural Heritage assessment comprised a desktop study and site visit to determine the presence and sensitivity of heritage resources within the proposed development area. The desktop review included consultation of the South African Heritage Resources Information System, as well as relevant literature, historical maps, and aerial imagery.

A site visit conducted on 5 November 2025 included a visual inspection of the project footprint and surrounding area for any archaeological or cultural heritage features. The site is located within a previously disturbed industrial and commercially zoned area, and no heritage resources were identified.

The assessment, undertaken in accordance with the National Heritage Resources Act (NHRA), indicates that the site has low to negligible heritage sensitivity, and the proposed development is not expected to impact on archaeological or cultural heritage resources.

Refer to **Annexure G-2** for a copy of the Archaeological and Cultural Heritage assessment Compliance Statement.

10.3. Potential environmental aspects and impacts associated with the proposed activities

The following environmental impacts associated with the proposed activities have been identified and will be further assessed during the impact assessment phase and mitigation measures will be developed to manage the impacts.

Table 14: Environmental Aspects

Environmental aspects associated with the proposed activities	Potential Environmental Impacts
<ul style="list-style-type: none"> Air quality and emissions 	<ul style="list-style-type: none"> Emissions from waste management processes Indirect emissions from usage of electricity generation
<ul style="list-style-type: none"> Handling and storage of hazardous material 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Handling and storage of hazardous waste 	<ul style="list-style-type: none"> Environmental pollution (storm water pollution) Potential risks to human health Fire and thermal events from LIB processing
<ul style="list-style-type: none"> General waste management 	<ul style="list-style-type: none"> Environmental pollution and nuisance conditions Loss of recyclable material
<ul style="list-style-type: none"> Resource consumption 	<ul style="list-style-type: none"> Water and electricity usage
<ul style="list-style-type: none"> Occupational health and exposure 	<ul style="list-style-type: none"> Exposure to hazardous materials Thermal events from LIB processing and handling

Environmental aspects associated with the proposed activities	Potential Environmental Impacts
<ul style="list-style-type: none"> Socio economic benefits 	<ul style="list-style-type: none"> Creation of employment opportunities Support local economic development

10.4. Proposed Mitigation measures to be applied

The following mitigation measures are proposed to manage the proposed e-waste management activities, to prevent and mitigate potential environmental impacts. The environmental aspects (activities) and potential impacts associated with the proposed activities are summarised in the Table below:

Aspect	Proposed mitigation measures
Air quality	
Emissions from waste management procedures	<ul style="list-style-type: none"> All operations are to be conducted in enclosed shredder systems The operational area must be well ventilated and equipped with fume and dust extractors Conduct regular inspections and maintenance of fume and dust extractors to ensure all systems are operating efficiently All employees must be equipped with adequate PPE Provide adequate training for personnel on e-waste management procedures
Storm water quality	
Storage and handling of hazardous substances	<ul style="list-style-type: none"> All hazardous materials are to be stored in an area with impermeable surfaces All hazardous materials are to be stored in clearly labelled containers that are of good integrity Access to the hazardous materials must be restricted to trained personnel A spill kit must be available to clean up spillages. The spill kit must be specific to the substances stored. Employees must be trained on the appropriate use of spill kits and spill response procedures Large spillages must be reported to management and handled according to the facility's incident management procedure
Waste management	
Storage of waste (input material)-LIBs	<ul style="list-style-type: none"> LIBs must be stored in a dry and well-ventilated area, with no exposure to heat Implement good housekeeping practices at the storage area
Storage of waste (input material)-PCBs	<ul style="list-style-type: none"> PCBs must be stored at their designated storage area in accordance with their grading as per Revive Africa's grading processes All components removed from the PCBs must be stored in designated storage containers that are correctly labelled Implement good housekeeping practices at the storage area
Waste generated- non-recyclable material	<ul style="list-style-type: none"> Waste must be stored in dedicated skips/bins and disposed at an appropriately licenced landfill site or sent to duly authorised upstream/downstream service providers General and hazardous waste must be managed separately Use only credible and authorised waste contractors to transport and manage waste Obtain safety disposal certificates for hazardous waste disposed Burning of waste must be prohibited on site
Handling of General Waste	<ul style="list-style-type: none"> The site must be kept clear of litter

Aspect	Proposed mitigation measures
	<ul style="list-style-type: none"> • Where possible general waste such as paper, cans and plastic must be separated and recycled • General waste must be kept in clearly labelled containers • General waste must not be mixed with hazardous waste • Employees must be trained on the handling of waste • General waste must be disposed at an appropriately licenced disposal site • Records must be kept of the volumes of waste disposed
Handling of Hazardous Waste	<ul style="list-style-type: none"> • Hazardous waste generated on-site must be stored in an appropriately labelled container • Containers containing hazardous waste must be stored on an impermeable surface • Hazardous and general waste must not be mixed • Employees must be appropriately trained on the handling of hazardous waste • Hazardous waste must be removed from site and disposed by an appropriately licenced contractor at an appropriately licenced landfill site • Records must be kept of the volumes of waste disposed
Use of natural resource	
Wasteful use of resources like water and electricity leads to unnecessary impacts on national resources.	<ul style="list-style-type: none"> • No running taps to be left unattended • Switch off lights and air conditioners when not in use • Maintenance of water infrastructure to be conducted regularly
Occupational, Health and Safety	
Occupational exposure and safety risks	<ul style="list-style-type: none"> • Keep noise levels as low as possible • Provide Health and Safety Toolbox Talks • Maintain effective ventilation in the operational area • Appropriate PPE must be provided to all employees
Fire and thermal events-LIB handling and processing	<ul style="list-style-type: none"> • All LIB processing should be conducted in fully enclosed and inert systems to prevent thermal runaway • Adequate fire extinguishing equipment for LIB thermal events must be made available and maintained accordingly • All personnel must be trained on emergency response procedure and measures to take during thermal events
Socio-economic benefits	
Creation of employment opportunities	<ul style="list-style-type: none"> • Employ local labourers as far as reasonably possible

The abovementioned mitigation measures are preliminary, and a comprehensive Environmental Management Programme (EMPr) will be generated. The draft EMPr will contain details of the aspects, impacts and proposed mitigation measures to manage the proposed activities. A copy of the EMPr will be included in the EIR for approval by the competent authority.

10.5. Residual impact ratings after mitigation measures have been applied

The proposed mitigation measures will reduce the significance of the potential environmental impacts associated with the activities. Therefore, the residual risk will be lower after mitigation measures have been applied

11. PUBLIC PARTICIPATION PROCESS AND GOVERNMENT CONSULTATION

A comprehensive public consultation process was undertaken in terms of Section 41 of NEMA to inform the I&APs of the proposed activity and to allow them to raise any concerns or give comments regarding the application. This section will elaborate on the methods that will be used to inform potential I&APs of the project. Comments and concerns raised during the public participation process will be summarised in a comments and response report which will be included in the Final Scoping Report.

The following processes will be followed to inform the public of the proposed project:

11.1. Identification and Registration of I&AP's

For an efficient and effective public participation process to be undertaken, potential interested, and affected parties must be identified. Potential I&APs must include:

- The occupants of the site, and if the applicant is not the owner of the site on which proposed activities will be undertaken, the owner of the site needs to be identified.
- The owners, persons in control of, and occupiers of the land adjacent to the site where the activity is to be undertaken.
- The municipal councillor of the ward in which the site is situated and any organization of rate payers that represent the community in the area.
- The municipality which has jurisdiction in the area.
- Any organ of state having jurisdiction in respect of any aspect of the activity.
- Any other party as required by the competent authority.

A database of I&APs was developed for the application process by conducting internet and media searches of the area as well as a site visit during which surrounding landowners, businesses and residential holdings were identified. The existing I&AP database used by the facility was also incorporated. A Windeed search was conducted on the properties adjacent to the site to try and find the vacant landowners or unknown landowners surrounding the site.

Organs of state such as the Department of Forestry, Fisheries and the Environment (DFFE), Gauteng Department of Environment ('GDENV), City of Johannesburg Metropolitan Municipality has also been identified.

Other stakeholders such as the Ward Councillor, and local NGOs for the area were also included as I&AP's.

A detailed register of potential I&APs will be developed and maintained throughout the EIA process. A summary of I&APs identified and engaged with during the EIA process will be included in the Final Scoping Report.

The identified I&APs will be provided with a written notice and background information document to invite comments from all parties. This notice will also include a registration form that can be used to register I&AP's and therefore be notified of all processes occurring in the proposed projects.

11.2. Legal Notice(s) (advertisement(s))

An advertisement containing the information of the application will be placed in one local/regional newspaper to notify the potential I&APs of the proposed project and to inform them of the availability of the Draft Scoping Report for comment. Proof of placement will be included in the will be included in the Final Scoping Report.

11.3. Written Notices

A written notice, containing all of the relevant application information may be delivered by the following means:

- By hand delivering to:
 - The identified interested party's business or residential address
 - In the case of a juristic party, to its registered address or principal place of business
- By emailing a copy of the notice to the interested party
- By posting the notice by ordinary mail.

A Basic Information Document (BID) will also be distributed to all identified IAPs along with the written notice. Copies and records of distribution will be included in the Final Scoping Report.

11.4. Site Notice

A notice will be fixed at the entrance to the existing Revive Africa Facility, as well as the adjacent building where some of the proposed activities will be undertaken. The proposed placement location is conspicuous and accessible to the public as the entrance is directly linked to Laub Street.

The notice board will be at least 60cm X 24cm. The wording and format of the required information will be displayed in a manner which is clear and legible. Photographic proof of the notice will be included in the Final Scoping Report.

11.5. Communication from I&APs

Should any comments be raised by any of the notified IAP's during the 30-day commenting period will the comments be recorded and addressed in the final public participation report and the Final Scoping Report which will be submitted to each competent authority for consideration.

11.6. Public meeting

No public meeting is envisioned to be conducted, however should formal requests be received during the public participation process such a meeting may be arranged and undertaken.

11.7. Circulation of the Draft BAR for comment

The Draft Scoping Report will be made available to the public and copies supplied to the relevant authorities. Public copies of the Draft Scoping Report will be placed at the following locations for easy access and review:

Hard copy: Revive Africa's offices
24 Laub Street, New Centre

Electronic copies: www.zantow.co.za (for download)
karien@zantow.co.za (on request)

Proof of distribution of the Draft Scoping Report to the relevant authorities and the public will be included in the Final Scoping Report.

11.8. Comments and response report

A comments and responses report will be compiled to reflect all comments received during the public participation process. A copy of the report will be submitted to the competent authority along with a copy of the Final BAR.

11.9. Register of I&APs

A register is maintained of all the identified I&APs.

11.10. Notification regarding the decision from DFFE

All registered I&APs will be notified of the decision made by DFFE on the application.

11.11. Engagement with government departments

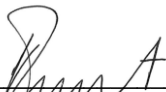
A copy (hard copy or electronic copy, depending on the government entity's preferred method) of the Draft Scoping Report will be provided to the Department of Environment Forestry and Fisheries as the Competent Authority and proof of submission and following communications and or comments included in the Final Scoping Report.

In addition, copies of the Draft Scoping Report will also be submitted to the Gauteng Department of Environment (GDEnv) and City of Johannesburg Metropolitan Municipality for review and comment as commenting authorities. Proof of submission and following communications and or comments included in the Final Scoping Report.

12. DECLARATION OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, Karien Zantow as a registered EAP compiled this report and declare that it correctly reflects the findings made. I further declare that I,

- Act as the Independent Environmental Practitioners who were responsible for the compiling of this Scoping Report,
- Conducted all work relating to this report in an objective manner even when this results in views and findings that is not favourable to the applicant,
- Declare that there are no circumstances that may compromise our objectivity in performing such work,
- Have the necessary expertise in conducting environmental impact assessments, including knowledge of the act, regulations and any other guidelines that have relevance to the activity,
- Will comply with the Act, regulations and all other applicable legislation,
- Will take into account, to the extent possible, the matters listed in the EIA regulations as published in Government Notice R982 as well as other legislation,
- Have no, and will not engage in, conflicting interests in the undertaking of the activity,
- 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,
- Will ensure that the comments of all interested and affected parties have been considered and are recorded in this report that is submitted to the competent authority in respect of the application,
- Have kept a register of all interested and affected parties that participated in the public participation process,
- Have provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not,
- Declare that all the particulars furnished by me in this report are true and correct,
- Declare that no information provided to the Department was at no stage influenced by the applicant and that we as the appointed Environmental Assessment Practitioners have explained the potential consequences of submitting this application,
- Will perform all other obligations as expected from an EAP in terms of the Regulations; and
- Realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.



Karien Zantow

Environmental Consultant
SACNASP Reg Nr 400114/14
EAPASA Reg 2019/1871

13. CONCLUSION

CF Africa Trading Pty (Ltd), trading as Revive Africa, currently operates a small-scale e-waste trading, storage and dismantling facility located at 24-26 Laub Street, New Centre Johannesburg. The company began operations in 2014 as a trader of empty printer cartridges that are collected through a corporate collections program. Revive Africa stores and prepare the cartridges prior to exporting them to upstream vendors for recycling. Since its inception, Revive Africa has expanded its operations into broader e-waste recycling. Since 2020, the company has collected over 434,593 laser cartridges and 982,404 ink units, keeping them out of landfill.

In April 2022, Revive Africa began trading printed circuit boards (PCBs) and collected a total of 96,306 kilograms to date. These PCBs are recovered from e-waste materials such as cell phones, computers, copiers, laptops, printers, servers, and telecommunications equipment. This initiative also led to the establishment of dedicated dismantling stations for the manual disassembly of the PCBs. The facility soon realized that many of the devices they dismantle contained lithium-ion batteries (LIBs) and began a pilot project for discharging and recycling LIBs into black mass that is traded to upstream vendors for further metal extraction.

The site falls within the jurisdiction of the City of Johannesburg Metropolitan Municipality within the Gauteng Province. The facility covers approximately 0.3 hectares and has completely been transformed by existing industrial activities. Revive Africa strives to implement a zero waste to landfill strategy in order to maximise the recovery of waste at the facility. Therefore, Revive Africa intends to expand its facility by:

- Increasing the physical footprint of their existing operations
- Increasing the volume of waste stored, recycled, recovered and treated

Revive Africa will be contributing to the e-waste value chain by collecting and processing e-waste generated locally and selling it to upstream service providers for further processing so the valuable materials contained in them are preserved and not discarded and lost in the economy.

The proposed waste management activities at Revive Africa will therefore trigger the following activities published under Category B of GN 921:

GNR 921 - Listed activity	Description of listed activity
B (2)	<i>The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises.</i>
B (3)	<i>The recovery of waste including the refining, utilisation, or co-processing of the waste at a facility that processes in excess of 100 tons of general waste per day or in excess of 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.</i>
B (4)	<i>The treatment of hazardous waste using any form of treatment at a facility that processes in excess of 1 ton per day calculated as a monthly average, excluding the treatment of effluent, wastewater, sewage or organic waste using composting or any other organic waste treatment.</i>
B (10)	<i>The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).</i>

Revive Africa is therefore applying for a WML in terms of NEMWA, for which a Full Scoping EIA process will be followed. The waste streams that are processed at the facility have been classified as hazardous waste. The Competent Authority (CA) for the WML application has therefore been identified as the Department of Forestry, Fisheries and the Environment (DFFE).

The facility will also utilize maximum storage space as is available on site for the storage of waste and has therefore applied for registration in terms of the Norms and Standards for the Storage of Hazardous Waste with the DFFE.

GNR 921- Listed activity	Description of listed activity
C (2)	<i>The storage of hazardous waste at a facility that has the capacity to store in excess of 80m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.</i>

The proposed operations undertaken by Revive Africa will provide improved production rates by increasing the facility's waste recycling and recovery capacity and therefore reduce the stockpiling and unsustainable disposal of e-waste to the environment.

The activities currently undertaken by Revive Africa already adhere to the waste hierarchical approach prescribed by the NWMS. The waste hierarchical approach has been designed to promote effective waste management practices to avoid the disposal of waste and associated environmental consequences. Furthermore, the operations encourage South Africa's transition to a more circular economy by ensuring materials are recovered and kept circulating in the economy for longer. The proposed facility required for the increase in processing capacity is located within an already established and approved area suitable for industrial activities and is adjacent to the existing Revive Africa facility.

Additionally, the site is also located close to existing roadways equipped to supported transport of larger loads both to and from the site. Furthermore, the selected property is already equipped with the required infrastructure to support the planned activities. Therefore, the need to develop virgin land and vegetation removal is also be eliminated. Municipal supply of both water and electricity would be sufficient to support the planned operations so no additional energy or water sources would need to be developed or established. Due to the aforementioned reasons the proposed sites, located on 24-26 Laub and 28-32 Laub street have therefore been identified as the preferred alternative for the planned operation.

Several e-waste recycling technologies were considered which ranged from mechanical, chemical, thermal and automated systems for PCB recycling. These technologies were assessed and it was concluded that the EIR would only consider the mechanical and automated systems due to the environmental consequences associated with chemical and thermal systems. Furthermore, the mechanical methods were recognised as the preferred alternative as the methods are currently utilised by Revive Africa in their existing facility and offer more socio-economic and environmental benefits. The LIB recycling technologies were assessed, and it was evident that Revive Africa engages in the pretreatment phase of the LIB recycling value chain and thus the recycling technologies will not be considered further. The pretreatment of LIBs can be conducted in either mechanical or thermal processes which will be further explored in detail in the EIR, however, upon a preliminary assessment of both methods the mechanical processes were identified as the preferred option. Thus, the thermal pretreatment options will not be considered further.

The EIR will focus on mechanical pretreatment methods that are safe, efficient, and economically feasible. For battery discharging, soaking in a saturated salt solution will be adopted, while discharging via resistors will not be considered due to high investment costs. Automated dismantling and disassembly will be prioritised over manual methods because of improved safety, consistency, and throughput. Among separation techniques, physical and mechanical methods — including crushing, sieving, magnetic separation, and eddy current separation — will be further explored, as they effectively prepare materials for recovery without the high energy demands or chemical use associated with thermal, chemical, or mechano-chemical separation processes, which will not be pursued further in the EIR.

The no-go alternative, in which Revive Africa continues operating below the threshold for a waste management license, would limit the facility to its current processing capacity. This would prevent the expansion of operations, restricting the potential benefits of increased e-waste processing, which remain critically low at under 10% nationally. Continuation under the no-go scenario would result in unsustainable waste management practices, loss of income for the facility, and reduced job security for local workers. The Draft Scoping Report indicates that the environmental and socio-economic impacts of this alternative are of high to severe significance prior to mitigation. For these reasons, the no-go option is not considered the preferred alternative, as it would hinder the facility's growth, competitiveness, and contribution to improved e-waste management over the long term.

The application of the proposed mitigation measures contained in the EMPr will lower the significance ratings and the impacts will be medium to lower after mitigation measures have been applied. Therefore, the project can proceed only if the proponent commits to the effective implementation of the proposed mitigation measures contained in the EMPr.

The draft Scoping Report will be made available for comment to stakeholders on the 8th of April 2026 for 30 days. Once the Public Participation Process in support of the Scoping Phase of this application has concluded, a Final Scoping Report will be compiled, and all comments and responses included before submission to the Competent Authority for consideration.

14. REFERENCES

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Annexure A
EAP Curriculum Vitae
&
EAPASA Registration



KARIEN ZANTOW

INTRODUCTION

Karien Zantow has more than 20 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment. Karien is the founding member of Zantow Environmental Consulting Services, who specialises in management of environmental projects and offers services in the preparation of a range of strategies to manage development and mitigation of potential impacts of any development or activities. Years of experience in the manufacturing industry and construction sector enables her to have a balanced approach to environmental management, with a commercial and sustainable perspective. Vast experience has been gained in the determination and improvement of legal compliance status and the development of prioritized and realistic action plans to achieve compliance. License and or environmental authorization applications can be concluded efficiently and cost effectively.

FIELDS OF EXPERTISE

Environmental Compliance Management

Air Quality Management

Water Management

Licensing, EIA's and permitting

Public Participation and Engagement

Legal Compliance Audits

Waste Management

Land Management & Remediation

Monitoring and Reporting

REGISTRATIONS / AFFILIATIONS

Registered Professional Natural Scientist with the South African Council for Natural Science as Environmental Science (Reg Nr 400114/14)

EDUCATION

BSc (Agric) Animal Sciences, Pretoria University

BSc (Hons) Environmental Engineering, Pretoria University

Post graduate Studies, Environmental Sciences, WITS University



KARIEN ZANTOW

PROFESSIONAL CAREER

2012 - Current

Zantow Environmental Consulting Services, MD

Karien is the founding member and has taken the position of Managing Director.

2006 -2012

ArcelorMittal South Africa Vanderbijlpark Works Environmental Manager

After one year Karien was promoted from Environmental Engineer to the Environmental Manager at ArcelorMittal Vanderbijlpark Works. The functions included the management of a 10 staff compliment department responsible for all environmental compliance and management functions.

She served on the Management Structure of Vanderbijlpark Works and was responsible to advise Top Management on strategic Environmental Management trends, changing legislation and ensuring legal compliance and highlight risks and provide solutions. She was responsible to drive the works to environmental compliance and ensure continued

improvement of the environmental footprint. This included the planning, prioritisation and funds management of the various environmental requirements. Under her management period remediation of various legacy issues commenced and was completed. This included the remediation of a waste disposal site and various contaminated land and dams, both organic and inorganic on a large scale. All functions related to waste, water and air quality management, from monitoring to licensing fell under her responsibility.

2004 -2006

Sappi Kraft Ngodwana

Environmental Engineer

As environmental engineer at Sappi, Karien was responsible for all aspects of environmental management in the industrial facility. This included but is not limited to the maintenance of the ISO 14001 Certification, monitoring of the plant environmental systems and operation to maintain compliance with environmental permits and other environmental requirements. This required the technical support and guidance to all levels of employees including top management. She was also the owner of all new environmental projects (example establishment of the continuous air emissions monitoring system,



K A R I E N Z A N T O W

ambient air quality monitoring station, waste minimisation, invader plant eradication and recycling initiatives). A key function was to manage and remediate the soil on the effluent irrigation pastures and develop and implement odour reduction strategies. This function further included the development of environmental procedures, reporting and recordkeeping. Experience was also gained in the development of the IWWMP and the Water Use License application and the associated Reserve Determination. Waste management functions included the day to day waste management and disposal practices, waste minimisation projects as well as the landfill extension project. Karien was responsible for the entire legal compliance program, public communication, and governmental liaison.

2002 -2004

Teaching Business - Subcontracted to Barlow World Junior Business and Environmental Analyst

Specifically focussing on the sustainability and impacts from the suppliers of Barlow world. Within the consulting firm, her responsibilities included the assessment and auditing of the suppliers. The duties and responsibilities included conducting in-situ assessment of their suppliers and conduct a sustainability profile of their business, assess and advice on implementing Black Economic Empowerment, as well as auditing the environmental, health and safety policies and procedures of the suppliers.

F I E L D S O F C O M P E T E N C E

National Environmental Management Act, National Environmental Management: Air Quality Act National Environmental Management: Waste Act, Environmental Conservation Act, 1998 National Water Act, 1998 Gas Act and regulations NEMA EIA regulations and EMF; Promotion to Access of Information Act; Applicable SANS standards Applicable Regulations

K E Y E X P E R I E N C E

- Training and Awareness

Numerous training courses have been prepared and presented to customers, mainly in the mining and industrial sectors. The courses and lectures included all aspects on Environmental Management, ISO 14001, EMPr, Waste Management and Water Management. Some courses also addressed environmental legislation and liability for employees and directors. Training material has also been developed and provided to customers to be used as awareness training material.



KARIEN ZANTOW

- Environmental Compliance and System Audits

Numerous environmental compliance audits have been conducted for facilities on existing environmental authorisations, permits or licenses. These are geared to determine compliance levels against the relevant conditions. Audits have been conducted on Water Use Licenses, Atmospheric Emission Licences, Waste Management Licenses, ECA and NEMA Authorisations and Permits and Discharge Permits as well as performance audits to EMPr's. Clients include but are not limited to:

Water Use License Audits	ArcelorMittal SA AfriSam Aquarella Investments
Waste Management License Audits	Bumatech Cape Gate Columbus Stainless Danone
Norms and Standards Audits	DMS Powders Eco Energy Infrabuild Cement Isanti Glass
Atmospheric Emission License Audits	Intocast Quarries JJ Martiz & Son Mines Metso Minerals Nampak Glass
Environmental Authorisation Audits	National Ceramic Industries Nafasi Water Norcross
Environmental Management Programme Audits	Palabora Mining Company Pinnacle Metals Rockfibre SA Saldanha Steel
Legal Compliance Audits	Vaal Sanitaryware / Lixil Africa Universal Oil Solutions Universal Recycling Company

- Environmental Impact Assessments

Numerous Environmental Impact Assessments has been completed for various customers for various projects. A few is listed below:

- Adient – Automotive Foam Plant and AEL
- AfriSam Roodepoort – Waste Disposal Site Decommissioning (Basic Assessment)



K A R I E N Z A N T O W

- ArcelorMittal – Conversion of Galvanising Line, Waste Disposal Site Decommissioning
- ArcelorMittal – Proposed Waste Site Expansion (Full Scoping)
- Aveng Infraset – Closure of Quarry (Basic Assessment)
- Aveng Duraset (S24G and S22A Rectification Environmental Impact Assessment)
- Bumatech – Expansion of Waste processing site (Basic Assessment)
- Bright Refining (S24G and S22A Rectification Environmental Impact Assessment)
- Cape Gate – Abstraction of Water (Water Use License Application)
- Columbus Stainless – Proposed Dangerous Goods Storage (Basic Assessment)
- Canyon Coal – Proposed Coal Siding Project (Basic Assessment)
- Danone (Water Use License)
- Eco Energy – Decommissioning of Waste Processing Site (Basic Assessment / Waste License)
- Eco Energy – Proposed new Waste Processing Site (Basic Assessment / Waste License)
- Eco Energy – Section 24 G Rectification Environmental Impact Assessment)
- Flexilube SA – Expansion and modifications (Basic Assessment, Amendments)
- Goldplat Recovery - S22A Rectification Environmental Impact Assessment
- Intocast Quarries – EMPr Amendment and Waste License (Full Scoping)
- Retromin Refractories – Refractory brick processing plant (Basic Assessment / Waste License)
- Metso Minerals – Foundry Decommissioning Basic Assessment, Transfer Application
- National Ceramics – Gryphon (Water Use License), Gryphon (EA, AEL)
- National Ceramics – Gryphon (Water Use License), Gryphon (EA, AEL)
- National Ceramics – Pegasus (Atmospheric Emissions License (AEL) and Full Scoping EIA)
- Pinnacle Metals – Non Ferrous Recycling and Smelting plant (AEL and Full Scoping EIA)
- Reclite SA – Expansion of the Electronic and Electrical Waste processing facility
- SA Tank Terminals – Waste Treatment facility (AEL and Full Scoping EIA)



KARIEN ZANTOW

- Terra Nova Meyerton – Section 22 A rectification AEL and Impact Report
- Terra Nova Vanderbijlpark – Ceramic Crucible Plant (AEL and Full Scoping EIA)
- Universal Oil Solutions – Oil Recycling Facility (Full Scoping / Waste License)
- Universal Recycling Company – Ferrous Yard Scrap Recycling (Basic Assessment)
- Universal Recycling Company – Non Ferrous Yard Scrap Recycling (Full Scoping)
- Waterberg Diesel Storage Facility (Basic Assessment)
- VIP Recycling (S24 G / Impact Report)
- SA Superslag (S24 G / Impact Report)

- Environmental Control Officer Functions

Various of our customers does not have dedicated environmental resources on their premises and therefore require regular interaction and assistance in maintaining their legal compliance to the various license conditions or duty of care requirements. To this effect, a customised solution is recommended and agreed with the customer. Listed below is some of the customers that we assist on a regular basis;

- | | |
|-------------------------------|-------------------|
| - National Ceramic Industries | - Pinnacle Metals |
| - Rockfibre SA | - UOS |
| - Knights Foundry | - Eco Energy |
| - Intocast Quarries | - Retromin |

- Site Assessments, Remediation Plans and ARPs

- | | |
|------------------------|----------------------------|
| - Nampak | - Lixil Krugersdorp |
| - Aquarella Investment | - JJ Maritz and Son Mining |
| - Intocast Quarries | - Cape Gate |
| - Vaal Santiwareware | - Delmore Extension |
| - Cobra Watertech | - New Way Power |



KARIEN ZANTOW

FIELDS OF EXPERTISE

General

- Legal compliance audits
- Monitoring and Reporting programs
- Training
- Environmental Control Officer functions
- Environmental Monitoring and Auditing
- Annual Remediation Plans

Environmental Authorisation Applications

- Environmental Impact Assessment
- Environmental Management Plans
- Water Use License Application
- Waste License Applications
- Atmospheric Emission License applications
- Rectification Applications

Waste

- Waste Classification
- Integrated Waste Management Plans
- Waste Minimization Planning and implementation
- Waste Disposal Site Management and operational Plans
- Waste disposal site closure and remediation plans

Land Management

- Site Characterization



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- Remediation Plans
- License and authorization application

Air Quality

- Compilations and Verification of Emissions Inventory
- Emission Reduction Strategies
- NAEIS Reports, Annual Reports
- Compliance Inspections and Audits
- Postponement Applications and Amendments
- Monitoring In Accordance with New Emission Limits Standards Requirements

Water

- Water License Applications
- Integrated Waste and Water Management Plans (IWWMP)
- Storm Water Management Plans
- Water balances
- Borehole monitoring
- Surface water monitoring
- Data management and reporting



University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae Agriculturae with specialisation in Animal Science

with all the associated rights and privileges
was conferred on

KARIEN DE WET

in terms of the Higher Education Act, 1997 and
the Statute of the University


On behalf of the Council and Senate
(Sgd) CWI Pistorius
Vice-Chancellor and Principal

On behalf of the Faculty of
Natural and Agricultural Sciences
(Sgd) RM Crewe
Dean

(Sgd) NJ Grové
Registrar

Date of Conferment
15 April 2003

Certified a true translation of the original Certificate


Registrar

Signed at Pretoria on the twenty-first day of February, 2013



University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae Honores with specialisation in Environmental Technology

with all the associated rights and privileges
was conferred on

KARIEN DE WET

in terms of the Higher Education Act, 1997 and
the Statute of the University

On behalf of the Council and Senate
(Sgd) CWI Pistorius
Vice-Chancellor and Principal

On behalf of the Faculty of Engineering,
Built Environment and Information Technology
(Sgd) RF Sandenbergh
Dean

(Sgd) NJ Grové
Registrar

Date of Conferment
22 April 2004

Certified a true translation of the original Certificate

Registrar

Signed at Pretoria on the twenty-first day of February, 2013



Certificate of Competence

**UNIVERSITY OF THE WITWATERSRAND
JOHANNESBURG**

FACULTY OF COMMERCE, LAW & MANAGEMENT

**GRADUATE SCHOOL OF
BUSINESS ADMINISTRATION**

**MANAGEMENT ADVANCEMENT
PROGRAMME**

This is to certify that

KARIEN DE WET

attended and participated in the programme during the period

MARCH – NOVEMBER 2008

*and has completed all the requirements prescribed for the programme
(Details shown overleaf)*

Handwritten signature of Mthuli Ncube in black ink.

Head, School of Business Administration

Handwritten signature of Katherine A. Munro in black ink.

Dean, Faculty of Commerce, Law & Management

Signed in Johannesburg on 21 November 2008



Certificate of A t t e n d a n c e

Karien Zantow

Mine Closure Legislation
Amendments

17 November 2020



Meloshni Andrews
Chief Executive Officer

Validation Number: FAMC 2018/1219

CPD Points: 1



UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



Private Bag 3 Wits, 2050
Fax: 02711 7176029
Tel: 02711 7176006

Reference: Ms Louise du Plooy
E-mail: louise.duplooy@wits.ac.za

04 November 2014
Person No: 0618386K

Ms K De Wet
Po Box 3858
1911
South Africa

Dear Ms De Wet

Congratulations on completing the requirements for the **Postgraduate Diploma in Science**.

Enclosed is a copy of a full academic record for the years that you have been at Wits. Please keep this document safely as you may need it from time to time.

Congratulations and best wishes.

Yours sincerely

A handwritten signature in black ink, appearing to read 'René Vosloo'.

Ms René Vosloo
Faculty Registrar
Faculty of Science



This is to certify that

K. DE WET

Has successfully completed the

**ISO 14001:2004
Revision Course**

Organised by BSI Quality Services (Pty) Ltd

Certified by:

**Presenter
E.A. Holmes**

Date:

4 February 2005

Certification No:

20050213 – QU10



1 Data Street, Ormonde, 2091 • P.O. Box 2079, Southdale, 2135, South Africa
Tel: +27 (0)11 496 3500 • Fax: +27 (0)11 496 3504

The British Standards Institution is incorporated by Royal Charter

CERTIFICATE

**Environmental Assessment
Practitioners Association
of South Africa**



Registration No. 2019/1871

Herewith certifies that

KARIEN ZANTOW

is registered as an

Environmental Assessment Practitioner

**Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).**

Effective: 01 April 2026

Expires: 31 March 2027

Chairperson

Registrar



herewith certifies that

Karien Zantow

Registration Number: 400114/14

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **12 March 2014**

Expires **31 March 2027**



President of Council

Chief Executive Officer



Annexure B

Content of Scoping Report Compared to GNR 982

Content of the Scoping Report in terms of Appendix 1 of the EIA regulations	
Requirement for the scoping report (Appendix 2 of GNR 982)	Page of scoping with information
(a) details of- (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	Section 2.2 Section 2.4 & Annexure A
(b) the location of the activity, including- (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name. (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section 3.2 – 3.3 & Annexure C
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Section 3 & Annexure C
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered (ii) a description of the activities to be undertaken, including associated structures and infrastructure;	Section 1.1 – 1.2 & Section 5
(e) a description of the policy and legislative context within which the development is proposed including— (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section 5
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 6
(g) a motivation for the preferred development footprint within the approved site;	Section 6 & Section 7.1
(h) a full description of the process followed to reach the proposed preferred activity, site and location within the site, including -	Section 6 & Section 7.2
(i) details of all the alternatives considered;	Section 7
(ii) details of the PPP undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 11
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	No issues raised thus far

Content of the Scoping Report in terms of Appendix 1 of the EIA regulations

Requirement for the scoping report (Appendix 2 of GNR 982)	Page of scoping with information
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 6 & Section 8
(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which these impacts- (aa) can be reversed. (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed, or mitigated;	Section 10
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Section 10.1
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 10.4
(viii) the possible mitigation measures that could be applied and level of residual risk;	Section 10.4 & Section 10.5
(ix) the outcome of the site selection matrix;	Section 7.1
(x) if no alternative development locations for the activity were investigated, the motivation for not considering such; and	Section 7.1 &
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Section 7.4
(i) a plan of study for undertaking the environmental impact assessment process to be undertaken, including-	Section 10
(a) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	Section 7.2
(b) a description of the aspects to be assessed as part of the environmental impact assessment process;	Section 10
(c) aspects to be assessed by specialists;	Section 10.2
(d) a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;	Section 10
(e) a description of the proposed method of assessing duration and significance;	Section 10.1
(f) an indication of the stages at which the competent authority will be consulted;	Section 11.11
(g) particulars of the public participation process that will be conducted during the environmental impact assessment process; and	Section 11
(h) a description of the tasks that will be undertaken as part of the environmental impact assessment process;	Section 9

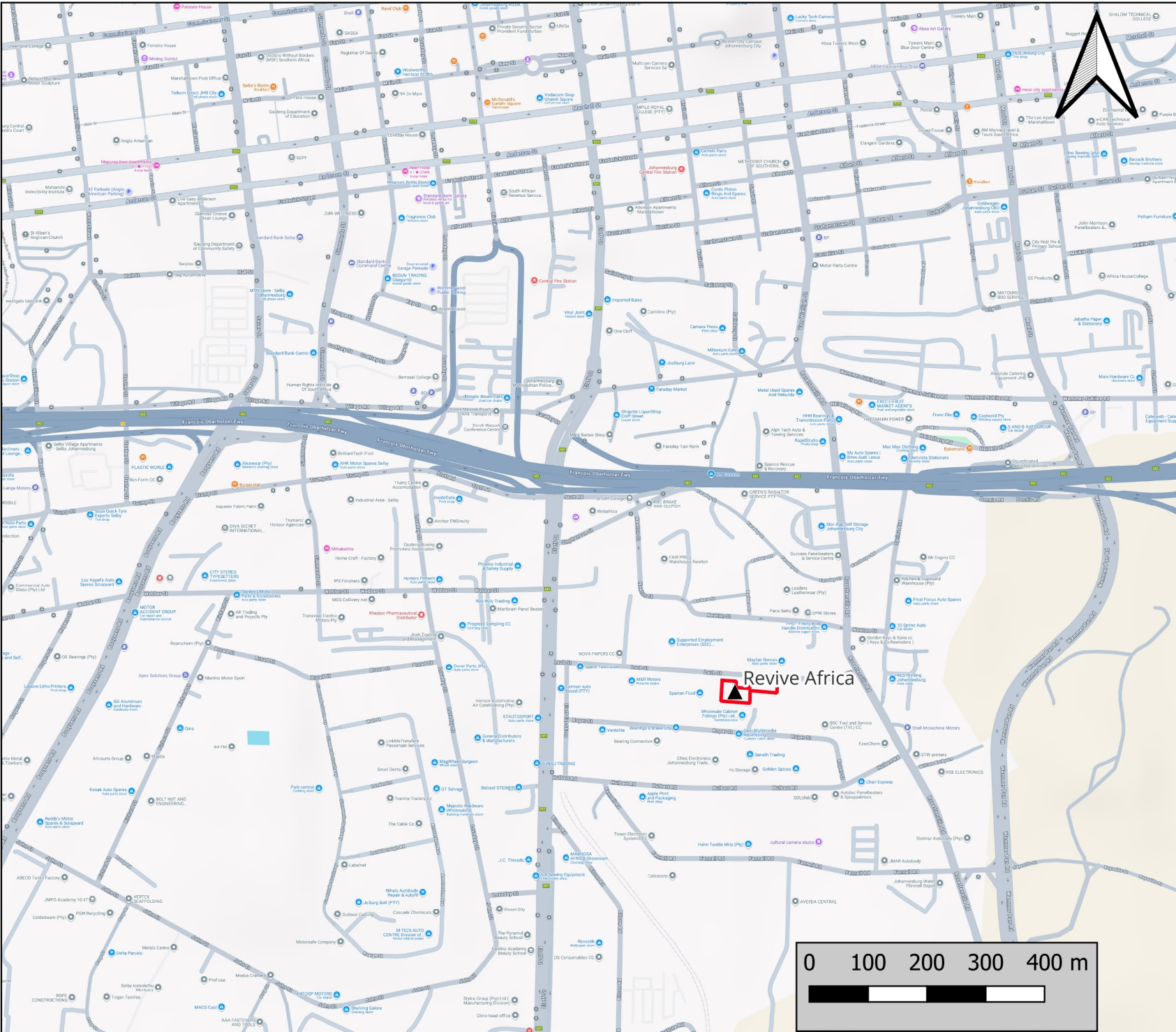
Content of the Scoping Report in terms of Appendix 1 of the EIA regulations

Requirement for the scoping report (Appendix 2 of GNR 982)	Page of scoping with information
(i) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Section 10.1
j) an undertaking under oath or affirmation by the EAP in relation to-	Section 12
(a) the correctness of the information provided in the report;	
(b) the inclusion of comments and inputs from stakeholders and interested and affected parties; and	
(c) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	
(k) an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	
(l) where applicable, any specific information required by the competent authority; and	Noted
(m) any other matter required in terms of section 24(4)(a) and (b) of the Act.	Noted

Annexure C

Site Maps

Revive Africa: Locality Map (1: 10 000)



Legend

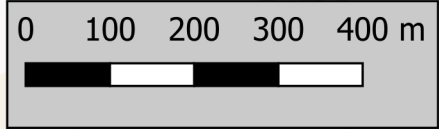
- Boundary
- Revive Africa Point

Site Coordinates

-26.2160362°S, 28.04661597°E



Client: Revive Africa
Author: CJD Tolken
Datum Projection: WGS 84



Revive Africa: Locality Map (1: 10 000)

Legend

- Boundary
- Major Roads
- Local Businesses
- ▲ Coordinates:

- A: -26.216028°, 28.046606°
- B: -26.216344°, 28.046575°
- C: -26.216378°, 28.047061°
- D: -26.216183°, 28.047078°
- E: -26.216219°, 28.047533°
- F: -26.216081°, 28.047544°
- G: -26.216047°, 28.047075°
- H: -26.216153°, 28.047069°
- I: -26.216136°, 28.046831°
- J: -26.216042°, 28.046839°



Client: Revive Africa
 Author: CJD Tolken
 Datum Projection: WGS 84



Revive Africa: Locality Map (1: 10 000)

Legend

 Major Roads

 Existing Facility

 Expansion

Coordinates:

A: -26.21602542, 28.04660091

B: -26.21635043, 28.04658161

 C: -26.21636860, 28.04706103

D: -26.21618514, 28.04707231

E: -26.21621946, 28.0475313

F: -26.21607604, 28.04754405

G: -26.21605052, 28.04707133

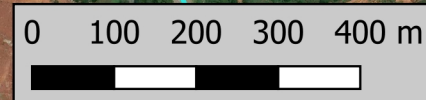
H: -26.21615171, 28.04706544

I: -26.21613587, 28.04683889

J: -26.21603997, 28.04683398



Client: Revive Africa
 Author: CJD Tolken
 Datum Projection: WGS 84



Revive Africa: Route Access Map

Legend

- Major Roads
- Boundary
- Access

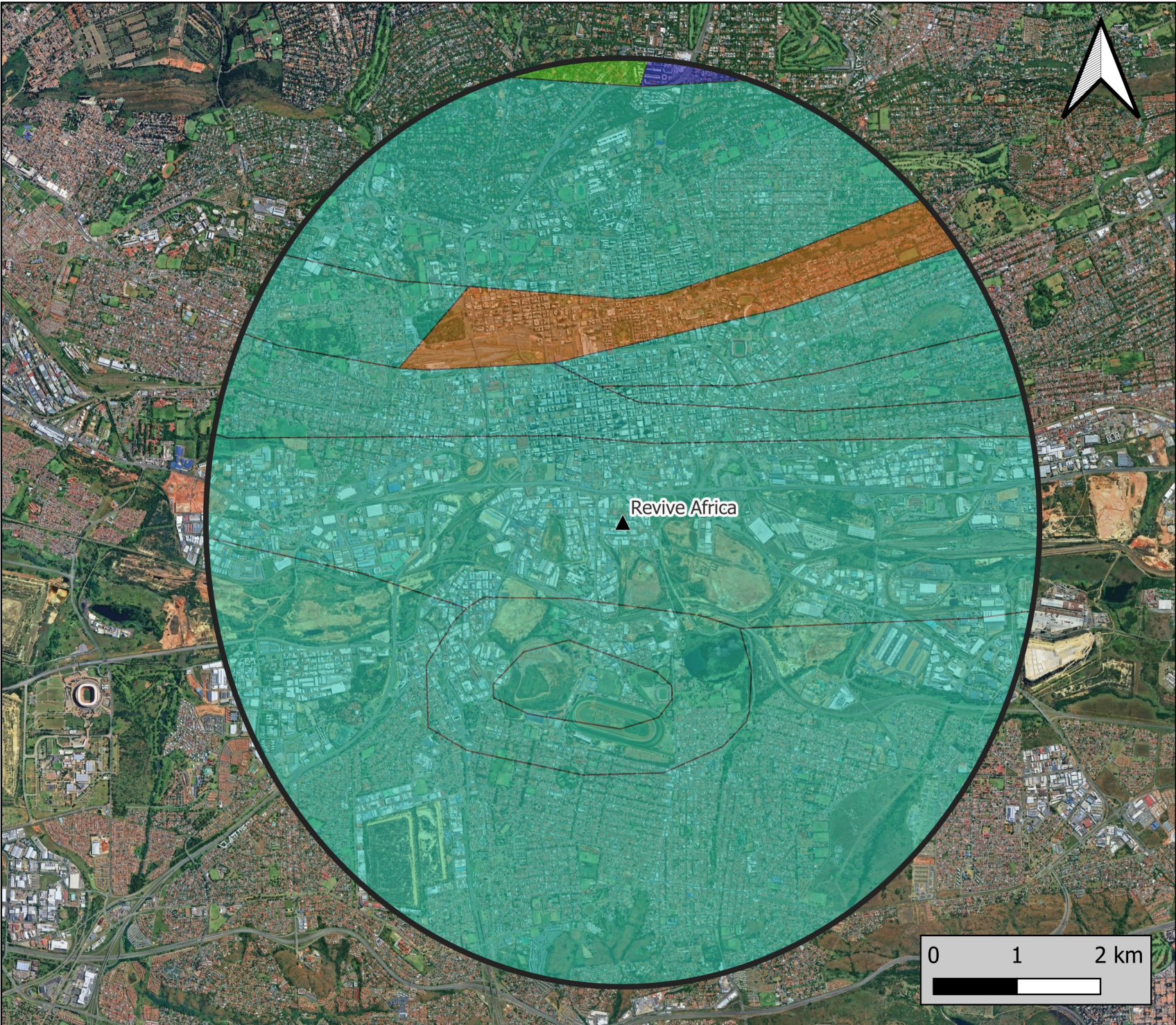
Sattelite



Client: Revive Africa
Author: CJD Tolken
Datum Projection: WGS 84



Revive Africa: Geology Map (1: 70 000)



Legend

▲ Revive Africa

◻ 5 km Buffer

Geology

■ Amphibolite, serpentine (met., mafic and ultramafic rock)

■ Felsic, intermediate rocks

■ Mafic and Ultramafic volcanic rocks

■ Siliciclastic rocks



Client: Revive Africa
Author: CJD Tolken
Datum Projection: WGS 84



Revive Africa: Locality Map (1: 10 000)



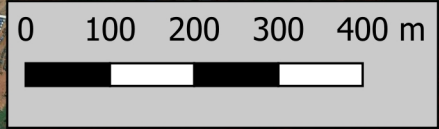
Legend

- Boundary
- ▲ Revive Africa Point

Site Coordinates
-26.21602362°S, 28.04661597°E



Client: Revive Africa
Author: CJD Tolken
Datum Projection: WGS 84



Revive Africa: Heritage Site Map (1: 70 000)



Legend

- ▲ Revive Africa
- Grade I Heritage Site
- Grade II Heritage Sites
- ▭ 2 Km Buffer
- ▭ 5 Km Buffer



Client: Revive Africa
Author: CJD Tolken
Datum Projection: WGS 84

zantow
environmental consulting services

Annexure D

Screening Tool Report

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE
ENVIRONMENTAL SENSITIVITY**

EIA Reference number: N/A

Project name: Revive Africa WML Application

Project title: Waste Management Licence Application for the Proposed Electronic Waste (E-Waste) Recycling, Recovery and Treatment Facility to be Undertaken by CF Africa Trading (Pty) Ltd, trading as Revive Africa, located in New Centre, Johannesburg, Gauteng

Date screening report generated: 27/03/2026 14:00:20

Applicant: CF Africa Trading (Pty) Ltd,

Compiler: Zantow Environmental Consultants

Compiler signature:

.....

Application Category: Services|Waste Management Services|Treatment facilities|Hazardous

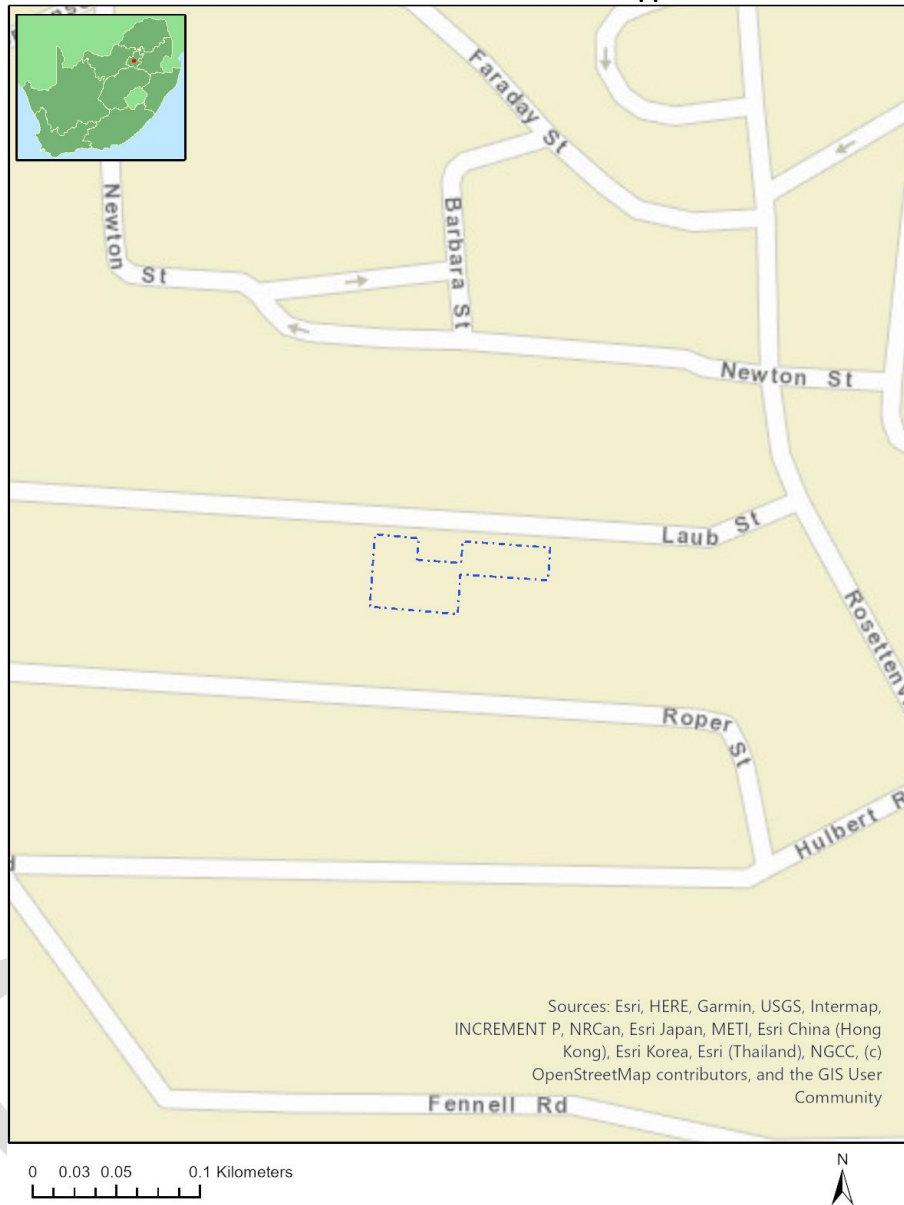
Table of Contents

- Proposed Project Location 3
 - Orientation map 1: General location 3
- Map of proposed site and relevant area(s) 4
 - Cadastral details of the proposed site 4
 - Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area 4
 - Environmental Management Frameworks relevant to the application 5
- Environmental screening results and assessment outcomes 5
 - Relevant development incentives, restrictions, exclusions or prohibitions 6
 - Proposed Development Area Environmental Sensitivity 6
 - Specialist assessments identified 6
- Results of the environmental sensitivity of the proposed area 8
 - MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY 8
 - MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY 9
 - MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY 10
 - MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY 11
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 - MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY 15
 - MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY 16

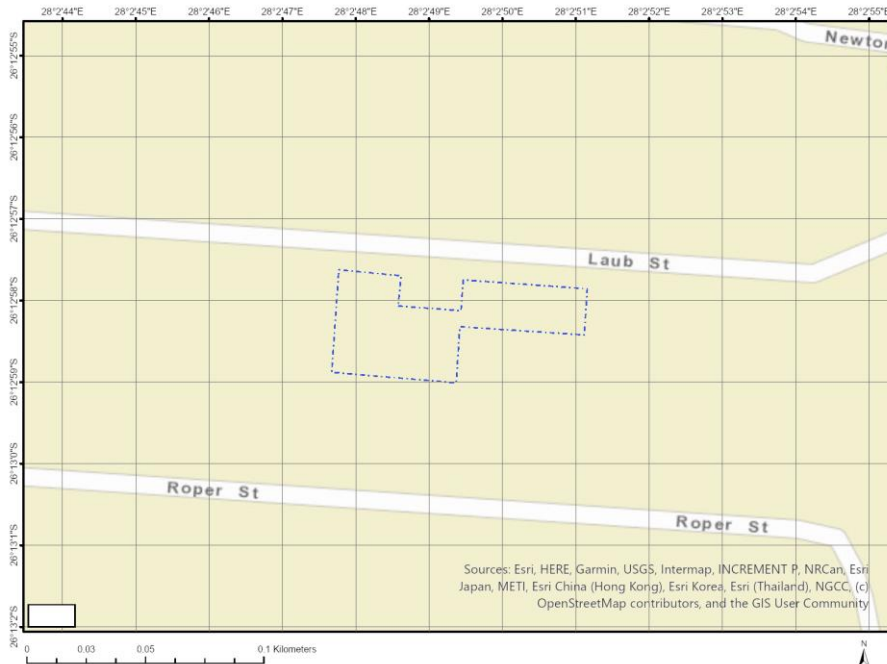
Proposed Project Location

Orientation map 1: General location

General Orientation: Revive Africa WML Application



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	NEW CENTRE	137	0	26°12'58.33S	28°2'48.56E	Erven
2	NEW CENTRE	45	0	26°12'58.4S	28°2'49.83E	Erven
3	NEW CENTRE	47	0	26°12'58.45S	28°2'50.69E	Erven
4	TURFFONTEIN	96	0	26°12'53.33S	28°2'14.79E	Farm
5	TURFFONTEIN	96	343	26°12'59.5S	28°2'47.36E	Farm Portion

Development footprint¹ vertices:

No development footprint(s) specified.

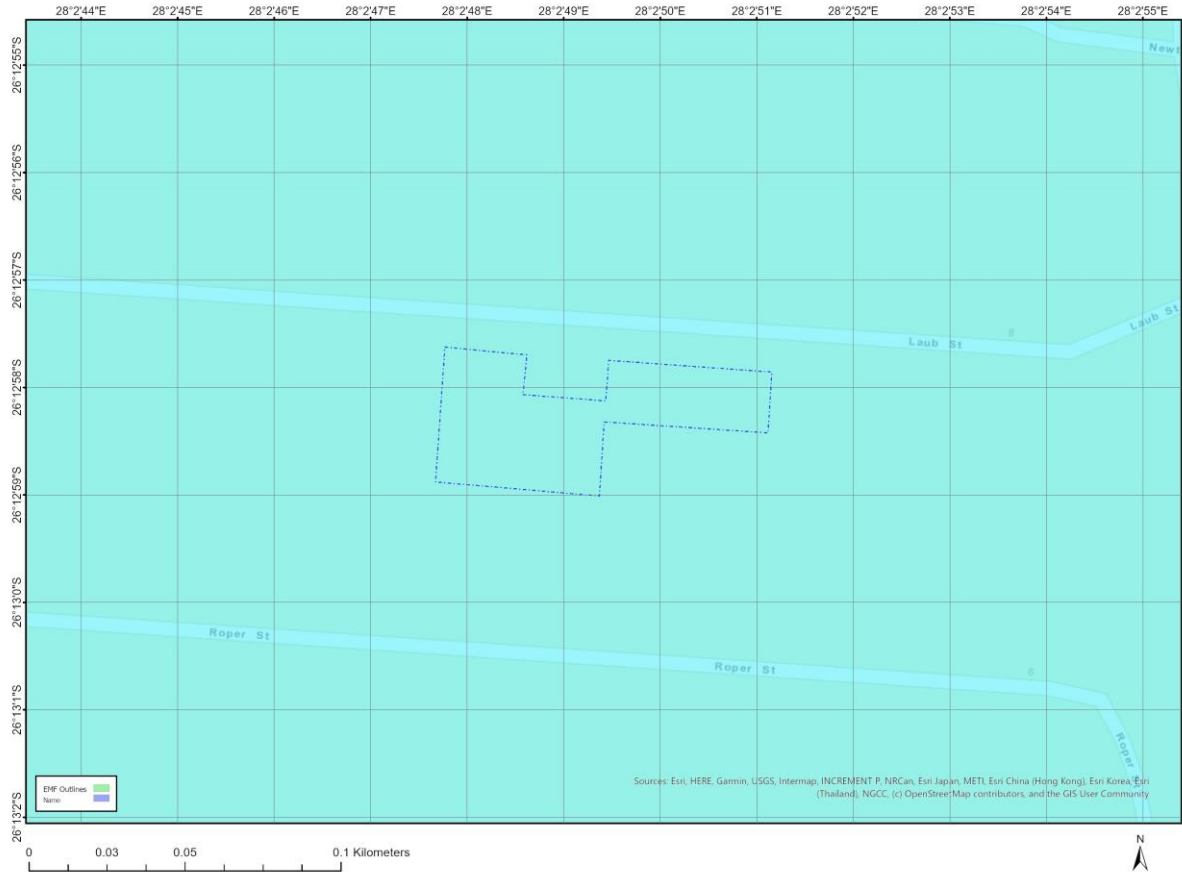
Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	12/12/20/2147	Solar PV	Approved	22.5
2	12/12/20/2147/A1	Solar PV	Approved	22.5
3	12/12/20/2530	Solar PV	Approved	8.3

¹ "development footprint", means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

4	12/12/20/2551	Solar PV	Approved	8.3
5	002/15-16/E0152	Solar PV	Approved	10.2
6	14/12/16/3/3/1/569	Solar PV	Approved	27.5
7	14/12/16/3/3/2/375/AM1	Solar PV	Approved	14.4
8	14/12/16/3/3/2/825	Solar PV	Approved	27.4
9	14/12/16/3/3/2/375	Solar PV	Approved	14.4

Environmental Management Frameworks relevant to the application



Environmental Management Framework	LINK
Gauteng EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/GPEMF_2021_Gazette_and_summary.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:

Services | Waste Management Services | Treatment facilities | Hazardous.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-Central corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf
Strategic Gas Pipeline Corridors-Phase 3: Richards Bay to Gauteng	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_GAS.pdf
Gauteng EMF-Industrial and large commercial focus zone 5	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Zone5_2021.pdf

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme			X	
Defence Theme				X
Paleontology Theme				X
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

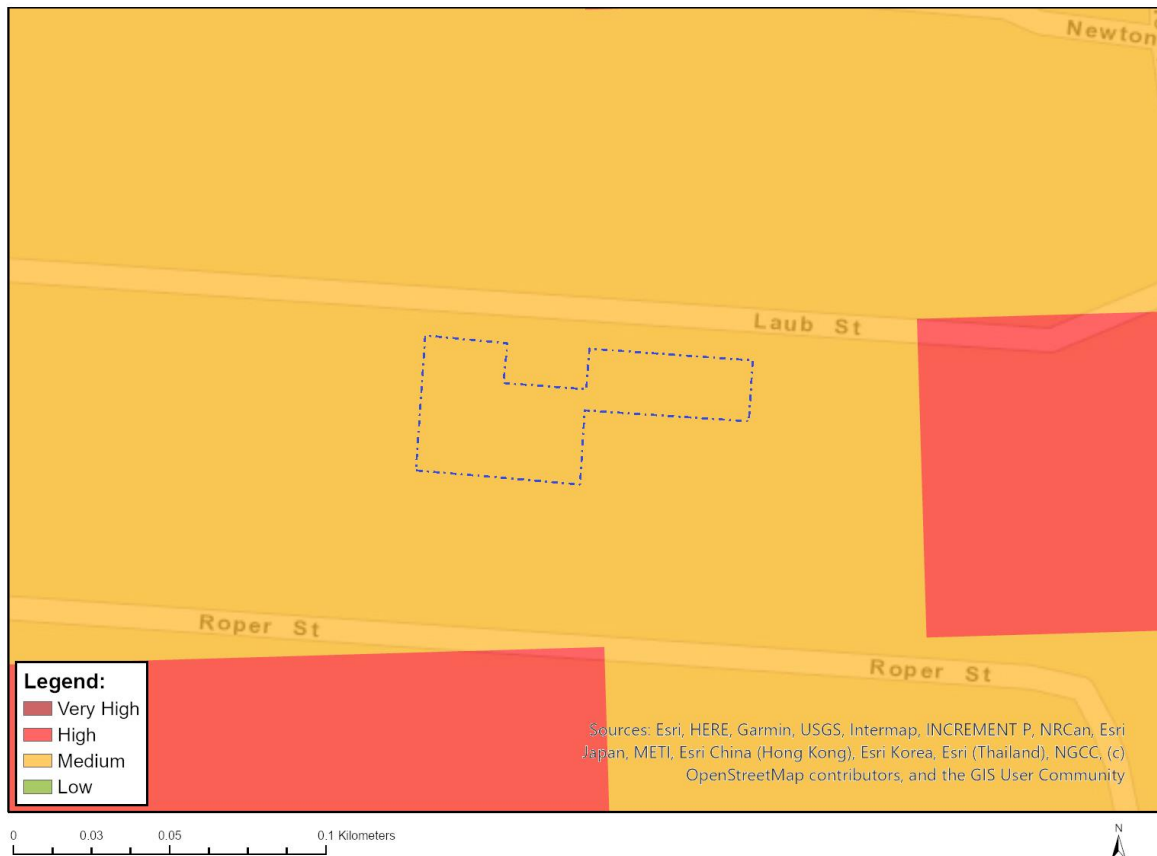
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/GuidanceforHIA.pdf

3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/GuidanceforPIA.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Terrestrial Biodiversity Assessment Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Aquatic Biodiversity Assessment Protocols.pdf
6	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf
7	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Noise Impacts Assessment Protocol.pdf
8	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf
9	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf
10	Health Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf
11	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf
12	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf
13	Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf
14	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Plant Species Assessment Protocols.pdf
15	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Animal Species Assessment Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

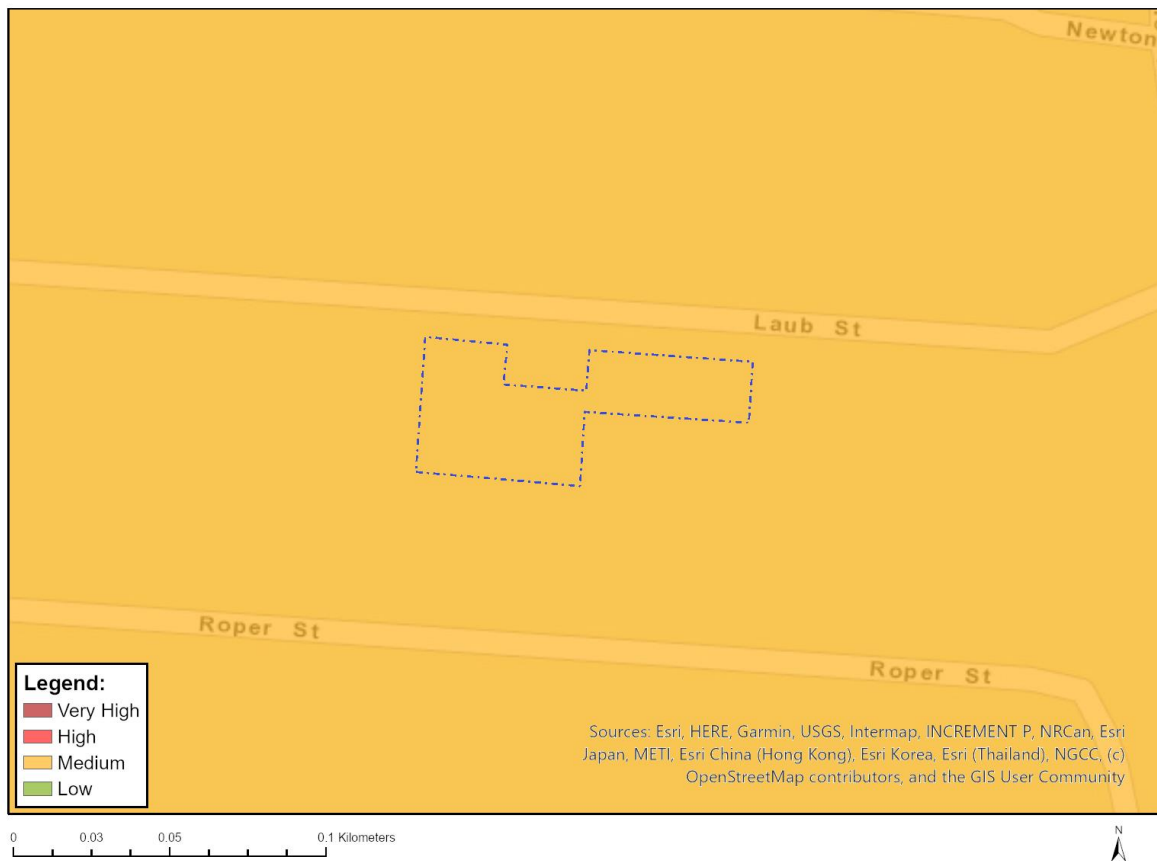


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	07. Low-Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Mammalia-Chrysospalax villosus
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Dasymys robertsii
Medium	Mammalia-Hydrictis maculicollis
Medium	Invertebrate-Clonia uvarovi

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

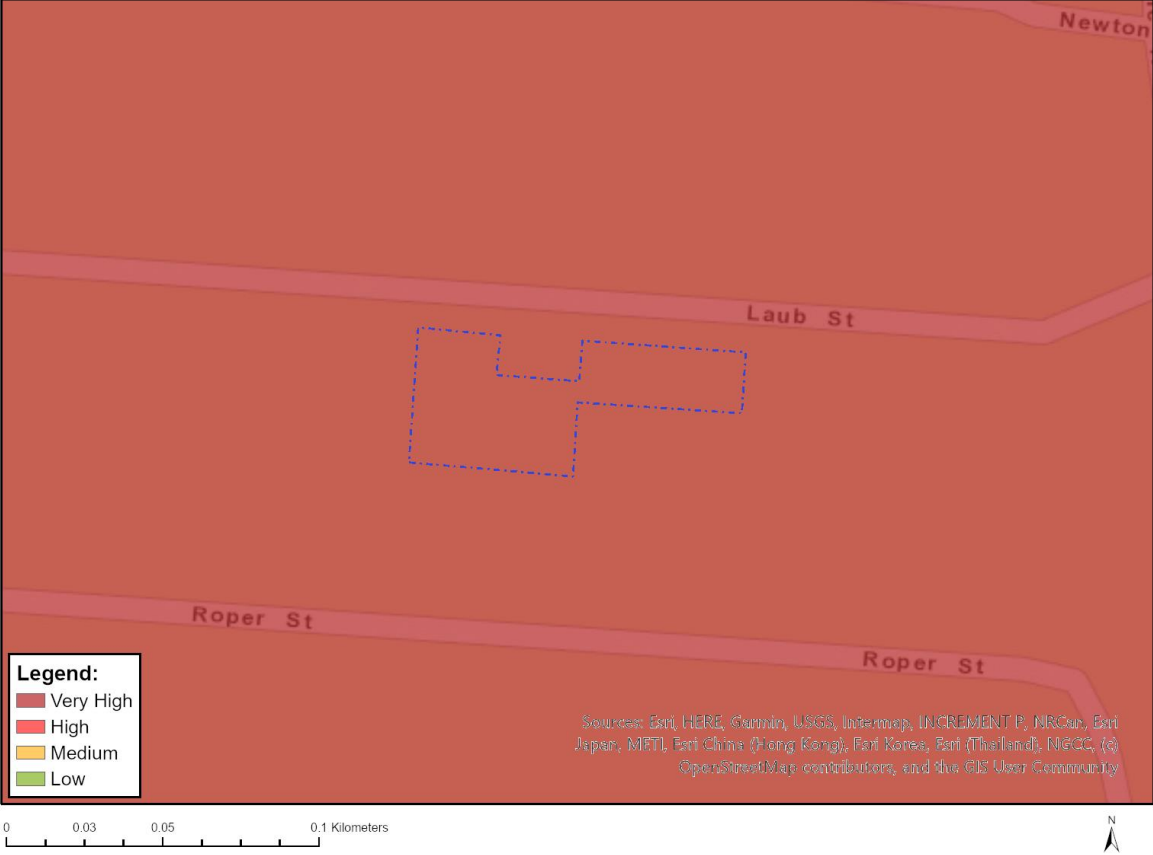


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

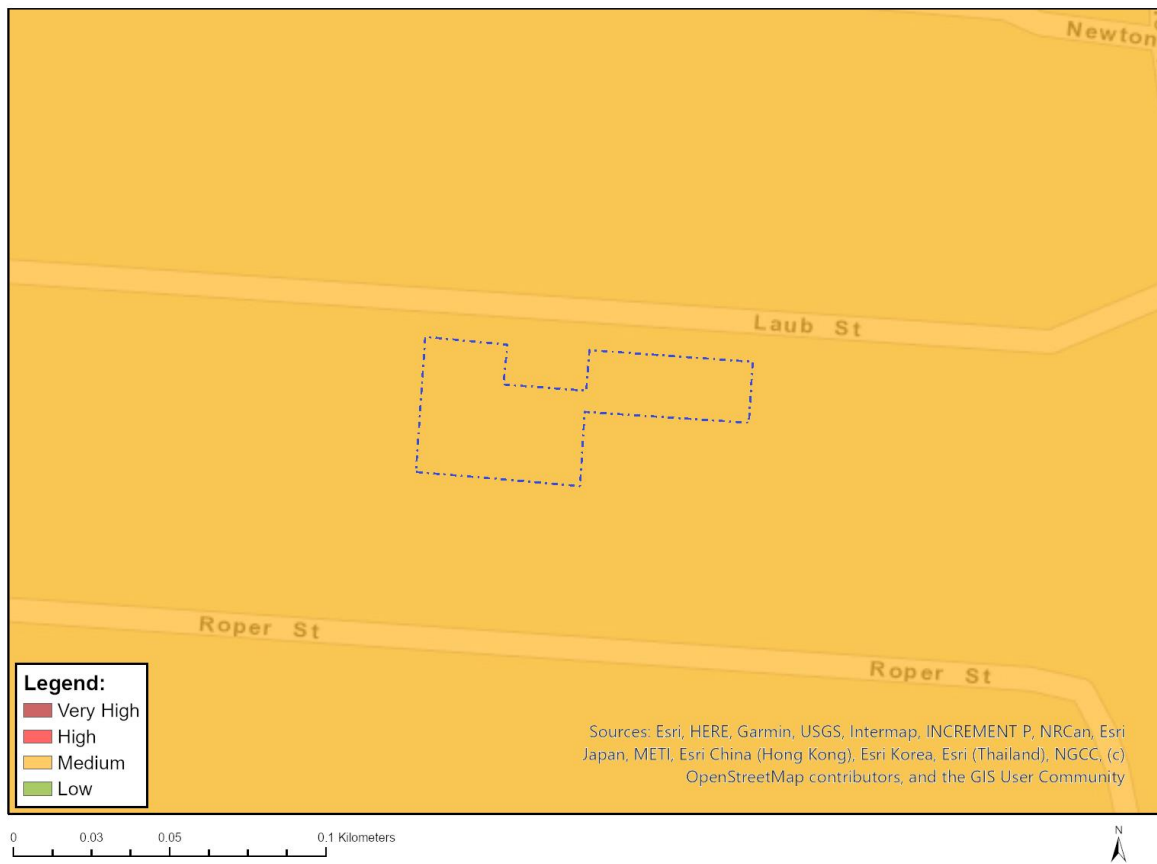


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Within 5km of a Grade I Heritage site
Very High	Within 2km of a Grade II Heritage site

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Between 15 and 35 km from a civil aviation radar
Medium	Between 15 and 35 km from a major civil aviation aerodrome
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Features with a Low paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



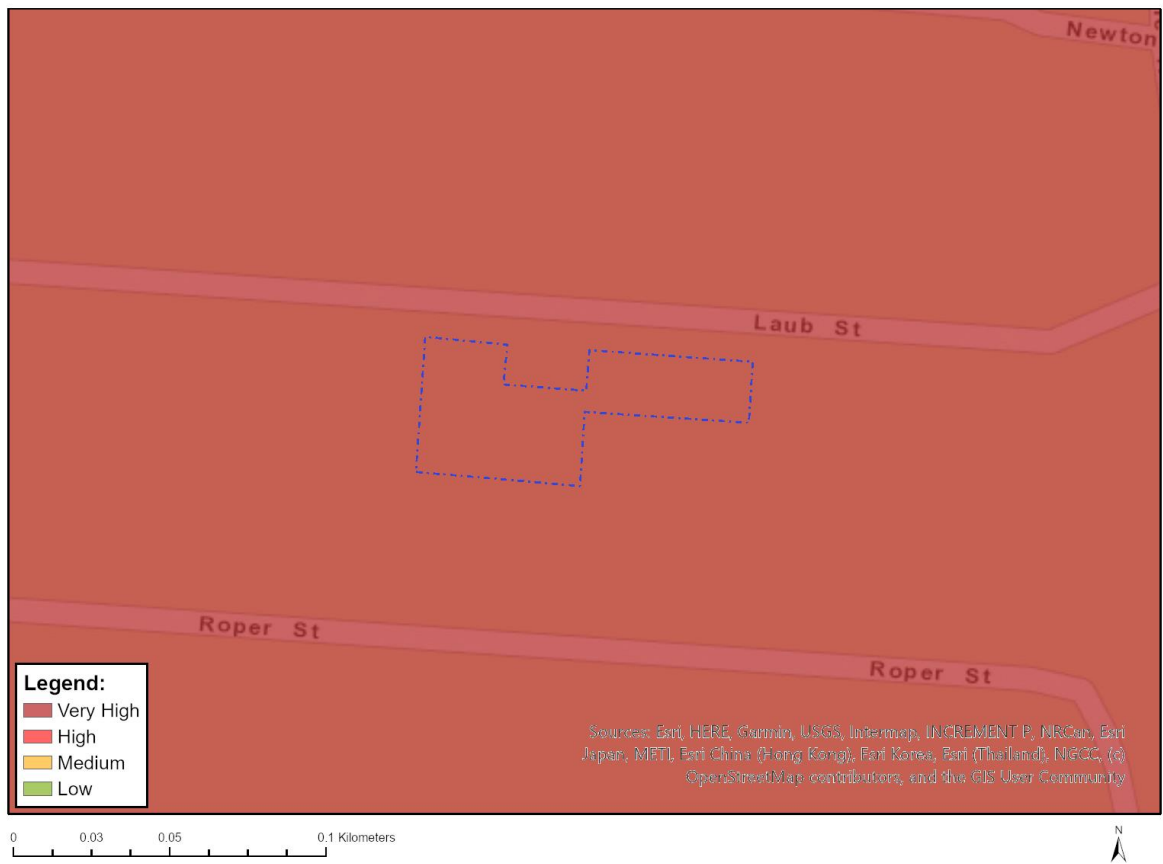
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	VU_Soweto Highveld Grassland

Annexure E

Site Photos

Site Photographs



Picture 1: North



Picture 2: North-East



Picture 3: East



Picture 4: South-East



Picture 5: South



Picture 6: South-West



Picture 7: West



Picture 8: North-West

Annexure F

Site Sensitivity Verification Report

**ENVIRONMENTAL SITE SENSITIVITY VERIFICATION IN SUPPORT OF:
A WASTE MANAGEMENT LICENCE APPLICATION FOR THE
PROPOSED HAZARDOUS WASTE (E-WASTE) RECYCLING,
RECOVERY AND TREATMENT FACILITY
AT REVIVE AFRICA,
LOCATED IN
NEW CENTRE, JOHANNESBURG, GAUTENG**



Report date: 15th November 2025

Report No: 3891-ZANREV-2025

General Information	
Report Name:	Environmental Site Sensitivity Verification in Support of a Waste Management Licence Application for the Proposed Hazardous Waste (E-Waste) Recycling, Recovery and Treatment Facility at Revive Africa, Located in New Centre, Johannesburg, Gauteng
Site Verification Date:	5 th November 2025
Report Date:	15 th November 2025
Environmental Consultant	<p>Zantow Environmental Consulting Services CC</p> <p>Coliseum Building 1st Floor, Unit 2 Cnr Delius Street & Chopin Street Vanderbijlpark, 1911</p> <p>PO Box 3858 Vanderbijlpark, 1911</p> <p>Contact Person:</p> <p>Karien Zantow Tel: 083 384 3641 Email: karien@zantow.co.za</p>
Client:	<p>CF Africa Trading t/a Revive Africa</p> <p>24 Laub Street New Centre Johannesburg 2001</p> <p>Contact Person:</p> <p>Fergus Slattery Tel: 011 493 5700 Cell: 081 747 2326 Email: fergus@reviveafrica.co.za</p>
Report Compiled by:	Mbali Zwane
Report Reviewed by:	Karien Zantow
Report Nr:	3891-ZANREV-2025

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3.	OUTCOMES OF THE SITE VERIFICATION	21

1. INTRODUCTION

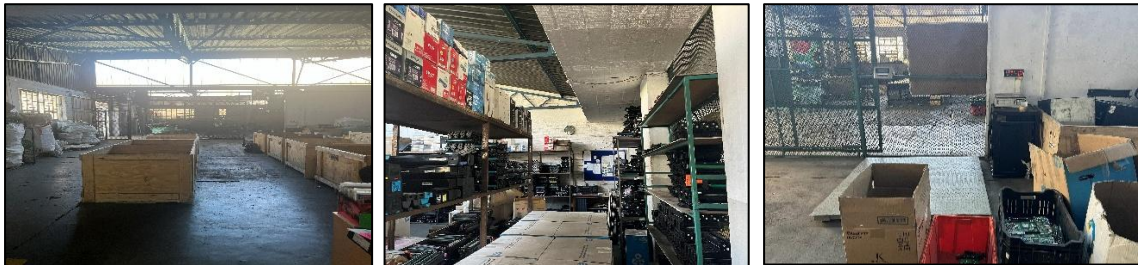
1.1 Introduction to the proposed activity

CF Africa Trading Pty (Ltd), trading as Revive Africa, currently operates a small-scale e-waste trading, storage and dismantling facility located at 24-26 Laub Street, New Centre Johannesburg. The company began operations in 2014 as a trader of empty printer cartridges that are collected through a corporate collections program.

Current waste management operations

Revive Africa stores and prepare the cartridges prior to exporting them to upstream vendors for recycling. Since its inception, Revive Africa has expanded its operations into broader e-waste recycling. Since 2020, the company has collected over 434,593 laser cartridges and 982,404 ink units, keeping them out of landfill.

In April 2022, Revive Africa began trading printed circuit boards (PCBs) and collected a total of 96,306 kilograms to date. PCBs are recovered from e-waste materials such as cell phones, computers, copiers, laptops, printers, servers, and telecommunications equipment. This initiative also led to the establishment of dedicated dismantling stations for the manual decontamination of the PCBs. Manual decontamination of e-waste also known as manual dismantling or depollution, involves the careful, non-destructive disassembly of electronic equipment by hand using tools such as screw drivers, hammers etc. to remove hazardous substances and separate materials for recycling. This process is crucial to isolate toxic components (like mercury, lead, and cadmium) from high-value materials (gold, copper, plastics), enhancing safety and recovery rates. The facility soon realized that many of the devices they dismantle contained lithium-ion batteries (LIBs) and began a pilot project for discharging and recycling LIBs into black mass that is traded to upstream vendors for further metal extraction. *(Existing Recycling, recovery and or treatment, below the threshold of the WML requirements)*



Current storage, sorting and receiving



Current manual depopulation of e-waste and battery recycling



Figure 1: Revive Africa Facility 24-26 Laub Street (Existing facility layout).

Revive Africa plans to establish a full-scale e-waste recycling facility comprising a PCB Recycling Plant and a Lithium-Ion Battery Recycling Plant. This project aims to process materials locally, create employment, and contribute to sustainable resource recovery in South Africa.

The proposed recycling facility entails increasing the volumes of e-waste accepted, as well as expanding their footprint to the adjacent buildings in 29-32 Laub Street, New Centre Johannesburg. The proposed services for the e-waste management processes include recycling, treatment and recovery of e-waste and LIBs.

The planned PCB recycling facility will cover 1,800 m², dedicated to e-waste storage, dismantling, and processing. The plant will be capable of processing 40-50 tons of PCBs per month and is expected to create at least 15 new jobs, depending on volume. PCBs will be collected, graded, shredded and sold to upstream vendors for further processes.

The battery recycling facility will occupy approximately 900 m², for battery storage, discharging, shredding, and screening. It will have the capacity to process up to four (4) tons of lithium-ion batteries per day. The process involves discharging batteries, shredding them into granulate, and screening the granulate to separate the black mass from plastic and copper residues. Comprehensive environmental and safety controls will be implemented to manage VOCs, fluorinated gases, and particulate emissions to ensure safe operations.

The proposed operational area for the PCB and LIB recycling processes is projected to be as follows:

Aspect	Existing Process	Proposed Operational Area	
PC Boards	Manual depollution and export to upstream vendors < 500 kg/day	E-waste storage	800m ²
		Dismantling facility	200m ²
		Processing area	800m ²
		Storage	300m ²

Lithium-Ion Batteries	Pilot-scale discharging and shredding < 500 kg/day	Discharge	200m ²
		Shredding	300m ²
		Screening	100 m ²

E-waste, consisting mainly of printer cartridges, printed circuit boards (PCBs) and Lithium-Ion batteries are collected through a corporate collections program before being transported to the Revive Africa facility. Majority of the material received is only subjected to re-packaging before being traded to upstream vendors for further processing. Small scale trials have been undertaken by Revive Africa to process small quantities (less than 500kg per day) of E-waste to generate materials which could be subjected to further processing for additional recovery and recycling.

With the proven success of the trials, Revive Africa is now proposing to expand their physical footprint and increase the volumes of e-waste accepted in order to implement a full-scale recycling and recovery initiative which would include a Lithium-Ion Battery recycling plant and a PC Board recycling plant.



Figure 2: Revive Africa Facility 28-32 Laub Street (Proposed layout).

In order to facilitate the planned waste management activities, the facility’s footprint will be extended to include a secondary warehouse located at 29-32 Laub Street, New Centre, Johannesburg an adjacent property (refer to Figure 3 below).

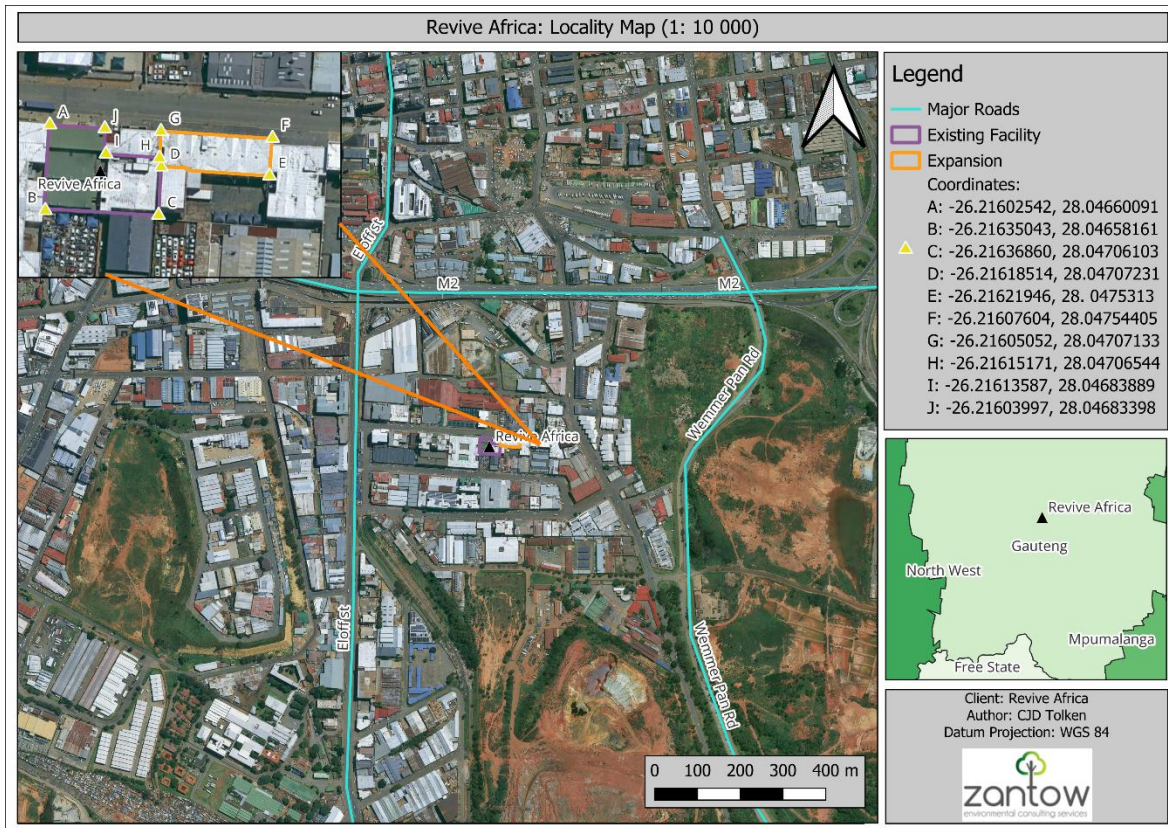


Figure 3: Revive Africa Facility 24-32 Laub Street (Existing facility and proposed facility).

In terms of the National Environmental Management: Waste Act (No. 59 of 2008) (NEM: WA), waste management activities that are listed in the regulations published under NEM: WA may not be undertaken without a Waste Management License (WML). The listed activities for which a WML is required are contained in Government Notice (GN) 921. Category A listed activities require that a WML application and a Basic Impact Assessment (BA) process be conducted, and Category B activities require that a WML application and full Scoping and Environmental Impact Assessment (EIA) process be conducted.

The proposed waste management activities at Revive Africa will therefore trigger the following activities published under Category B of GN 921:

GNR 921 - Listed activity	Description of listed activity
B (2)	The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises.
B (3)	The recovery of waste including the refining, utilisation, or co-processing of the waste at a facility that processes in excess of 100 tons of general waste per day or in excess of 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.
B (4)	The treatment of hazardous waste using any form of treatment at a facility that processes in excess of 1 ton per day calculated as a monthly average, excluding the treatment of effluent, wastewater, sewage or organic waste using composting or any other organic waste treatment.
B (10)	The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).

Therefore, a Scoping and Environmental Impact Assessment (EIA) Process will be followed in order to obtain a WML for the operational (recovery and recycling and treatment) activities planned by Revive Africa.

1.2 Purpose of the report

On the 20th of March 2020, the Department of Forestry, Fisheries and the Environment (DFFE) published procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of section 25(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for an Environmental Authorisation. These regulations require that an applicant must conduct an environmental sensitivity assessment of the site by utilising the Department's national web-based environmental screening tool.

When environmental sensitivities are identified for the site by utilising the screening tool, the Environmental Assessment Practitioner (EAP) must conduct a site sensitivity verification to confirm or dispute the current use of the land as well as the environmental sensitivity as identified by the screening tool.

The outcome of the site verification must be presented in the form of a report and contain the minimum requirements as set out in GN No. 320.

1.3 Expertise of the EAP conducting the site verification

Zantow Environmental Consulting Services has been appointed by Isanti Glass to facilitate the process for the Application for an Environmental Authorisation. The following is a description of the EAP's expertise:

➤ **Karien Zantow**

Karien Zantow obtained her degree from the University of Pretoria in BSc (Agric) Animal Science. The main subjects were Physiology, Nutrition, Ecology, Biochemistry, Toxicology, Plant production, Soil Science and Pasture Science. This degree provided her with a sound base and understanding of the environment.

Karien extended her knowledge in the environmental sciences by completing the BSc (Hons) Environmental Technology at the University of Pretoria. The honours degree presented by the Chemical Engineering department addressed Environmental Management that included South African environmental legislation, ISO 14001, Environmental Impact Assessments, Life Cycle Assessment, Auditing and Public Participation. As well as the three specialized fields of study: Water (wastewater treatment and design), air (abatement equipment) and solid/hazardous waste management. She also completed a Post Graduate diploma in Environmental Sciences at the University of Witwatersrand which focussed on Environmental Law, Environmental Chemistry, Air Quality and Energy, Waste and Wastewater Management and Environmental Impact Assessments.

Karien Zantow has more than 15 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment.

- Teaching Business, subcontracted to Barlow World
- Sappi Kraft Ngodwana – As environmental engineer
- ArcelorMittal South Africa Vanderbijlpark Works
- Zantow Environmental Consulting Services

During her career she has been involved with many large-scale site characterisation and remediation projects from the conceptual phase to implementation. Other projects include a variety of Waste Management Licences, Atmospheric Emissions Licences, other EIA's and Environmental Audits. Moreover, emission sampling and reporting forms a core component of Karien's scope of work.

Karien is a registered Natural Science Professional with the South African Council for Natural Scientific Professions (Reg Nr 400114/14) as well as a Registered EAP (Reg Nr 2019/1871).

➤ **Mbali Zwane**

Mbali obtained her B.Sc. Environmental Management and Geography degree, from the University of Johannesburg. Her main subjects of study included Geographic Information Systems (GIS), Environmental Management, and Zoology. This degree provided Mbali with a sound base and understanding of the environment, and human impacts on the environment. Mbali went on to complete her B.Sc. Honours Degree in Geography from the University of Johannesburg in 2020. The main subjects focused on within her Honours Degree included but were not limited to Strategic Environmental Management, Geographic Information Systems (GIS) and Remote Sensing. Furthermore, Mbali has obtained a M.Sc. in Environmental Management at the University of Johannesburg in 2023.

During her years of study at the University of Johannesburg, Mbali gained more than 4 years' experience working at the University of Johannesburg's Process Energy and Environmental Technology Station (UJ PEETS) as a research assistant and junior project manager between June 2021 and September 2023 and as the program manager at the same organisation between October 2023 and June 2025 for the resource efficiency and circular economy unit. is a registered as a Certificated Natural Scientist with the South African Council for Natural Scientific Professions (Reg Nr: 170448). Mbali is currently appointed as an Environmental Consultant at Zantow Environmental Consulting Services.



Karien Zantow
Environmental Consultant
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871



Mbali Zwane
Environmental Specialist
SACNASP Reg Nr 170448

2. SITE SENSITIVITY VERIFICATION

The National web based environmental sensitivity screening tool was utilised in order to identify the potential site sensitivities.

The screening tool identified the following sensitivities:

Table 1: Site Sensitivities as identified by the Screening Tool

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme			X	
Defence Theme				X
Palaeontology Theme				X
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

After generating the Screening tool report, a site visit was conducted on the 5th of November 2025 to verify the current land use and environmental sensitivity of the site. Thereafter a desktop study was undertaken to ensure that the environmental site sensitivities identified are applicable.

2.1 Desktop Analysis

A satellite image was generated of the site utilising Google Earth Pro. As can be seen on the figure below, the site is located within the Ceramic Industries footprint. The vegetation present has been previously disturbed. Half of the site area is located on a lawn used for recreational purposes for employees. The other half of the site area is located on a previously disturbed area with little natural vegetation present. The proposed development footprint (marked in red) is still within an already established industrial footprint of the Ceramic Industries group. Therefore, there is no environmental site sensitivity expected as the site is completely transformed.

It can be concluded that the site already has no agricultural potential, any heritage and palaeontological finds would have been made when the site was established, and no plants and animals, that are sensitive, are found in the development footprint within the boundaries of an industrial site.

The following is a description of all environmental sensitivities identified by the National Screening Tool:

- **Agricultural Theme**

The screening tool identifies the area for the proposed development footprint as a medium sensitivity for the Agricultural Theme, with a low to moderate land capability.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

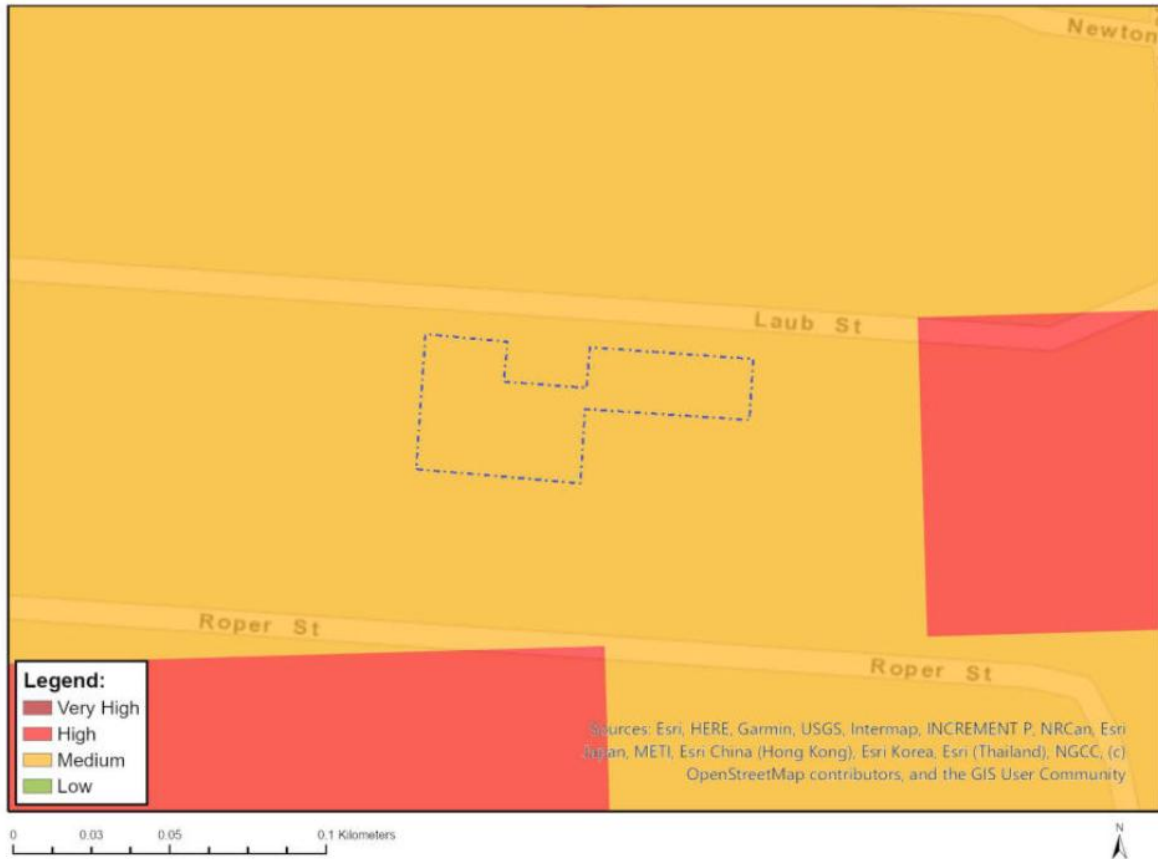


Figure 4: Agricultural Theme Sensitivity

The site is however located within the footprint of an area that has been transformed for industrial activities. Therefore, no agricultural activities will be able to take place at the site as it is not in line with the current land use and zoning.

According to the protocol for specialist assessment and minimum content requirements for environmental impacts on agricultural resources (GN320 of March 2020) an Environmental Assessment Practitioner (EAP) can dispute the site sensitivity identified by the Screening Tool.

The environmental sensitivity is therefore argued to be a low sensitivity as no agricultural activities will be able to be undertaken on the proposed site.

➤ **Animal Species Theme**

The screening tool identifies the area for the proposed development footprint as a medium sensitivity for the Animal Species theme.

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

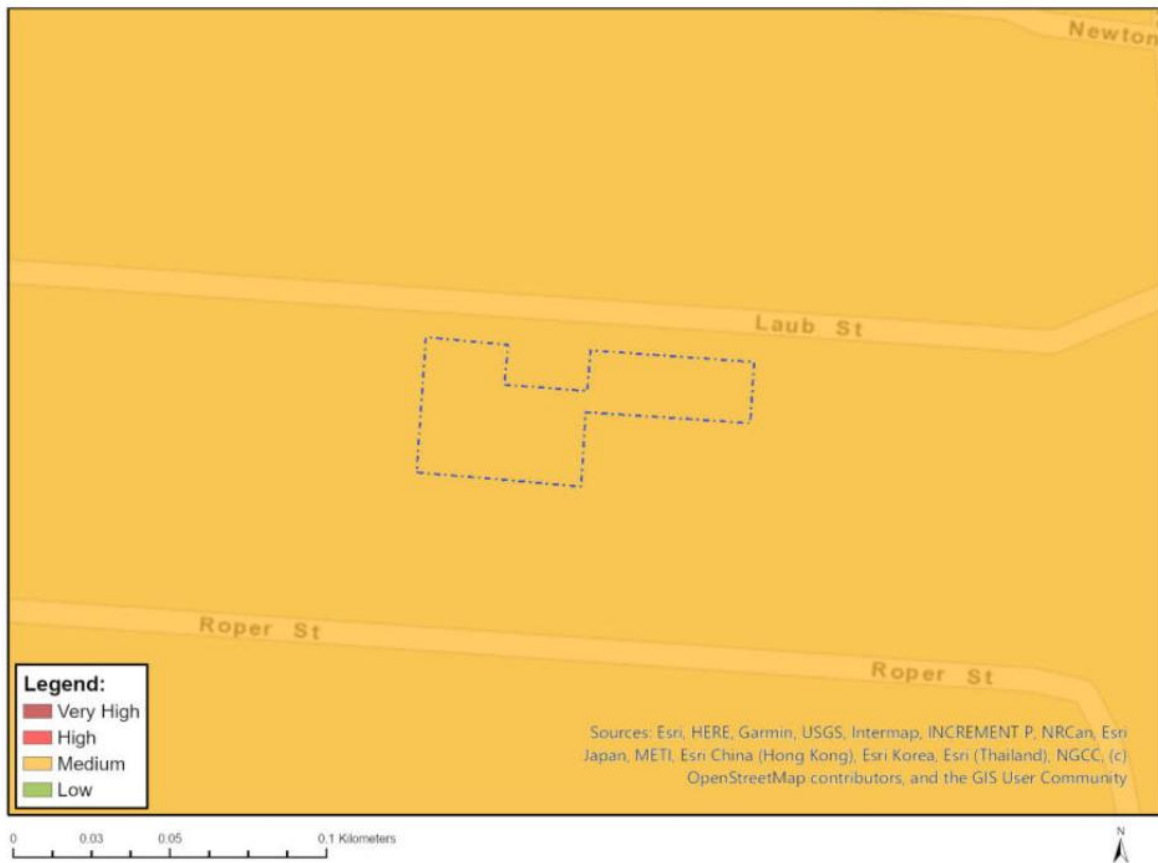


Figure 5: Animal Species Theme

The Screening tool identified the following sensitivity features in the area:

- **Mammalia *Chrysospalax villosus***- which is an owl commonly referred to as the Roughed-haired Golden Mole. According to SANBI this species has a disjunct distribution in South Africa, being recorded only from scattered localities in Eastern Cape, KwaZulu-Natal, Gauteng and Mpumalanga provinces. It is found on sandy soils in grasslands, meadows and along edges of marshes in Savanna and Grassland biomes of South Africa. The species is currently classified as vulnerable, within the region, however, the status might change to endangered as the number of known locations decline further.



Figure 6: Roughed-haired Golden Mole

- **Mammalia *Crocidura maquassiensis***- which is commonly referred to as the Makwassie musk shrew. According to SANBI it is endemic to South Africa, Eswatini and Lesotho, existing in moist grassland activities in the Savannah and Grassland biomes. Within South Africa it is found in the Limpopo, North West, Gauteng, KwaZulu-Natal and Mpumalanga regions. The species is classified as vulnerable due to loss of habitat in the region.



Figure 7: Makwassie musk shrew (example)

The species was not noted to be present during the site visit. Its habitat is also not found in the area. The proposed development footprint is a built-up area and therefore there is no habitat for the species.

- **Mammalia *Dasymys robertsii***- which is commonly referred to as the African Marsh Rat is a species that is highly dependent on intact rivers and wetland ecosystems. According to SANBI the species is near threatened due to loss of habitat and are found mostly in protected areas in the Western Cape with some of them being endemic to specific regions.



Figure 8: African Marsh Rat (Example)

The proposed development area does not exhibit the type of habitat the species would be in and is therefore not expected that this animal will be present onsite.

- **Mammalia-*Hydricotis maculicollis***- which is commonly referred to as a spotted neck otter. According to SANBI these otters occur all over South Africa in freshwater systems, it is however, restricted to areas of permanent freshwater offering good shoreline cover and an abundant prey base.



Figure 9: Spotted-necked otter

The proposed development area is not located near any naturally occurring freshwater resources. Therefore, it is not expected that this animal will be present onsite.

- **Invertebrate-Clonia uvarovi**- which is a cricket commonly referred to as Uvarov's bush cricket. According to SANBI it is endemic to the highveld region of South Africa and has only been recorded from Gauteng and North West provinces. The species occurs in tall woodland savannah areas which are under intensive grazing pressure by livestock and wildlife, cultivation with non-timber crops, and urban development. The species is classified as vulnerable.



Figure 10: Uvarov's bush cricket (example).

The environmental sensitivity for the Animal Species Theme is therefore argued to be a low sensitivity and not medium. As an assessment conducted by a registered specialist with a drafted compliance statement verifying the EAPs observations that none of these identified species are expected to be present in the proposed site due to the high level of disturbances and absence of suitable habitat. The compliance statement will be attached in the Basic Assessment Report.

- **Aquatic Biodiversity Theme**

The screening tool identifies the area for the proposed development footprint as a low sensitivity for the Aquatic Biodiversity theme. The EAP can confirm that the site is not located near any aquatic features.

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Figure 11: Aquatic Biodiversity Sensitivity

- **Archaeological and Cultural Heritage Theme**

The screening tool identifies the area for the proposed development footprint as a very high sensitivity for the Archaeological and cultural heritage theme. The proposed development footprint is within an area with heritage sites in the following categories:

Grade I: Heritage resources with qualities so exceptional that they are of special national significance; and

Grade II: Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region.

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

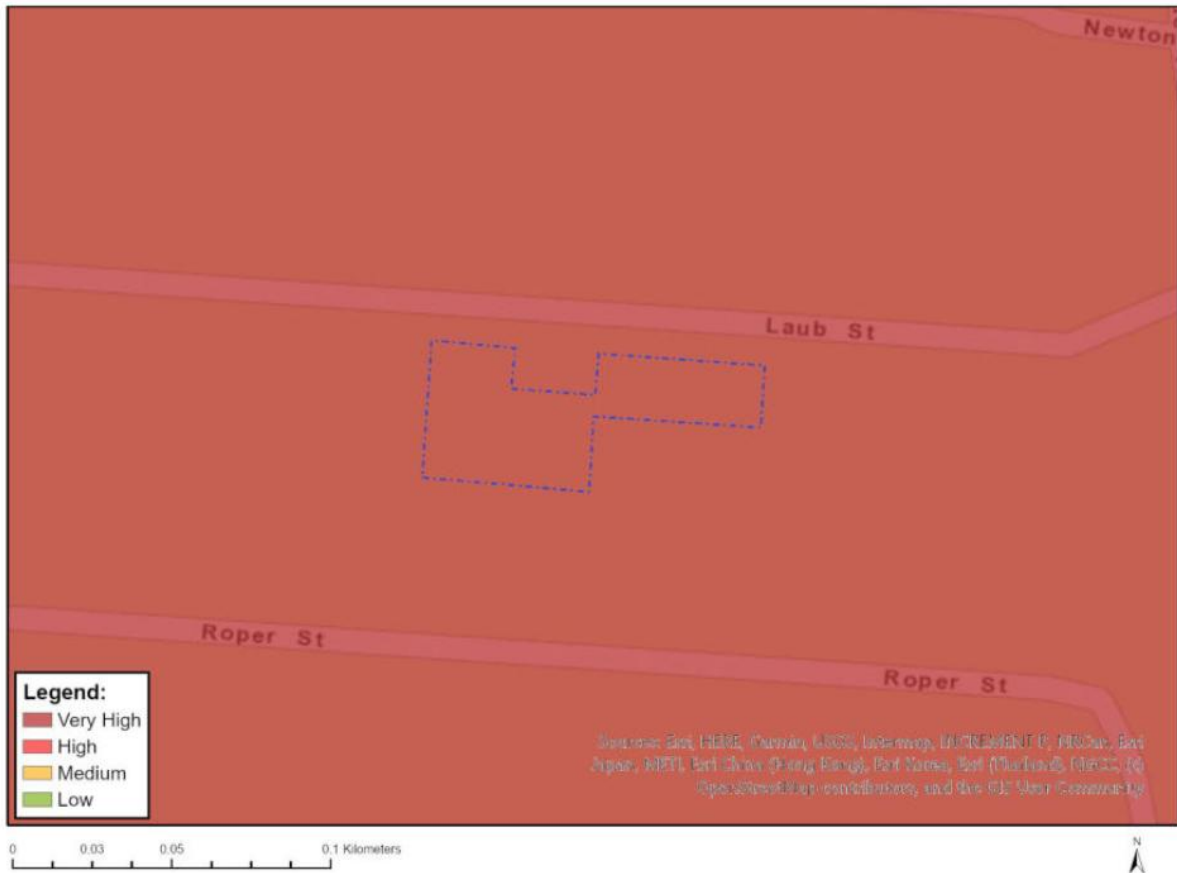


Figure 12: Archaeological and cultural heritage theme

An assessment conducted by a registered specialist with a drafted compliance statement verifying the EAPs observations that the proposed activities will not threaten any archaeological and cultural sites. The compliance statement will be attached in the Basic Assessment Report.

- **Civil Aviation Theme**

The screening tool identifies the area for the proposed development footprint as a medium sensitivity for the Civil Aviation theme. The screening tool indicates that the proposed area is located:

- Between 15 and 35 km from a civil aviation radar
- Between 15 and 35 km from a major civil aviation aerodrome; and
- Between 8 and 15 km of a civil aviation aerodrome.

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

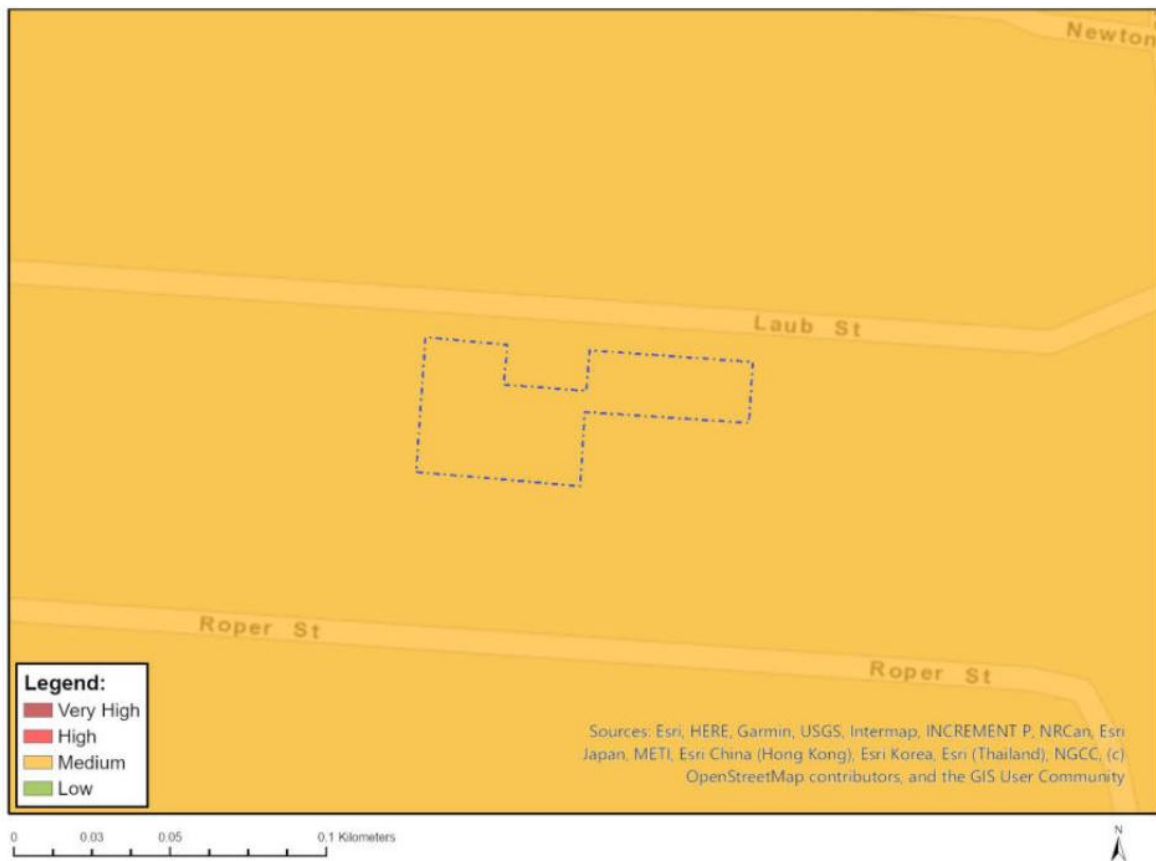


Figure 13: Civil Aviation Theme

The proposed waste management activities will be conducted on the existing infrastructure on site and will not pose a risk or cause any disturbance to aircraft operations and airport infrastructure as the activities does not cause any radar interference, glint and glare, or environmental noise. The activities will be conducted at an existing building and will therefore have no impact on the civil aviation installations and operations. The site sensitivity is therefore argued to be a low sensitivity.

- **Relative Defence Theme**

The screening tool identifies the area for the proposed development footprint as a low sensitivity for the Relative Defence theme.

MAP OF RELATIVE DEFENCE THEME SENSITIVITY



Figure 14: Relative defence theme

- **Palaeontology Theme**

The screening tool identifies the area for the proposed development footprint as a low sensitivity for the Palaeontology theme.

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Figure 15: Palaeontology Theme

- **Plant Species Theme**

The screening tool identifies the area for the proposed development footprint as a low sensitivity for the Plant Species theme.

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Figure 16: Plant Species Theme

- **Terrestrial Biodiversity Theme**

The screening tool identifies the area for the proposed development footprint as a Very-High sensitivity for the Terrestrial Diversity theme.

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Figure 17: Terrestrial biodiversity Theme

The tool identified the Soweto Highveld Grassland biome as the sensitivity feature. The area is however already disturbed, and it is assumed that the sensitivity is low. A specialist was appointed to verify the terrestrial biodiversity. The report will be attached in the Basic Assessment report.

2.2 On-site inspection

A site visit was conducted on the 05th of November 2025. The site is confirmed to have been completely transformed, the vegetation that is found at the site has been previously disturbed. The proposed waste management activities will not expand the site's footprint into an undisturbed area. The site verification therefore confirmed the findings made in the desktop analysis, that the site is already disturbed and does not possess the environmental sensitivities that the screening tool has identified.

3. OUTCOMES OF THE SITE VERIFICATION

Based on the desktop analysis and the onsite inspection, it can be concluded that the proposed development footprint does not possess the Environmental Sensitivity as identified by the Screening Tool. It is however recommended that:

- The findings of the specialist studies be incorporated into the EMPr.
- The facility implements the measures contained in the EMPr.

Annexure G-1

Biodiversity Impact Assessment Report



November 2025

TERRESTRIAL BIODIVERSITY, AQUATIC
BIODIVERSITY, PLANT AND ANIMAL
SPECIES COMPLIANCE STATEMENT
FOR REVIVE AFRICA, GAUTENG
PROVINCE

FOR A WASTE MANAGEMENT LICENSE
APPLICATION

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M. van der Westhuizen

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List of abbreviations	
CBA	Critical Biodiversity Areas
CR	Critically Endangered
CSIR	Council for Scientific and Industrial Research
DFFE	Department of Forestry, Fisheries and the Environment
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Areas
GDARD	Gauteng Department of Agriculture and Rural Development
IBA	Important Bird Areas
LC	Least Concern
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NFEPA	National Freshwater Ecosystem Protected Areas
NPAES	National Protected Area Expansion Strategy
NT	Near Threatened
NWM5	National Wetland Map 5
PA	Protected Areas
SACNASP	South Africa Council for Natural Scientific Professions
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
VU	Vulnerable

1 INTRODUCTION

Excellence Ecology has been appointed by CF Africa Trading (Pty) Ltd, trading as Revive Africa, to undertake a biodiversity assessment in support of the Waste Management Licence Application for waste management activities at their facility in Johannesburg.

1.1 PROJECT DESCRIPTION

CF Africa Trading (Pty) Ltd, trading as Revive Africa, currently operates a small-scale e-waste trading, storage, and dismantling facility at 24–26 Laub Street, New Centre, Johannesburg. Established in 2014, the company focused on collecting and exporting empty printer cartridges through a corporate collection programme and has since expanded into broader e-waste recycling. Since 2020, the company has collected over 434,593 laser cartridges and 982,404 ink units, keeping them out of landfill. In April 2022, Revive Africa began trading printed circuit boards (PCBs) and collected a total of 96,306 kilograms to date. PCBs are recovered from e-waste materials such as cell phones, computers, copiers, laptops, printers, servers, and telecommunications equipment. This initiative also led to the establishment of dedicated dismantling stations for the manual decontamination of the PCBs. Manual decontamination of e-waste also known as manual dismantling or depollution, involves the careful, non-destructive disassembly of electronic equipment by hand using tools such as screw drivers, hammers etc. to remove hazardous substances and separate materials for recycling. This process is crucial to isolate toxic components (like mercury, lead, and cadmium) from high-value materials (gold, copper, plastics), enhancing safety and recovery rates. The facility soon realized that many of the devices they dismantle contained lithium-ion batteries (LIBs) and began a pilot project for discharging and recycling LIBs into black mass that is traded to upstream vendors for further metal extraction.

Revive Africa plans to establish a full-scale e-waste recycling facility comprising a PCB Recycling Plant and a Lithium-Ion Battery Recycling Plant. This project aims to process materials locally, create employment, and contribute to sustainable resource recovery in South Africa. The proposed recycling facility entails increasing the volumes of e-waste accepted, as well as expanding their footprint to the adjacent buildings in 29-32 Laub Street, New Centre Johannesburg. The proposed services for the e-waste management processes include recycling, treatment and recovery of e-waste and LIBs

1.2 TERMS OF REFERENCE

Site sensitivity verification undertaken through the use of:

- a desktop analysis, using satellite imagery;
- a preliminary on-site inspection; and
- any other available and relevant information

If the sensitivity is Low a **Terrestrial Biodiversity** Compliance Statement is needed, which must include:

- 1) The contact details of the specialist, their SACNASP registration number, their field of expertise and a Curriculum Vitae (Appendix A);
- 2) A signed statement of independence by the specialist (Appendix A);
- 3) A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment (Section 1.3);

- 4) A baseline profile description of biodiversity and ecosystems of the site (Section 4 and 5);
- 5) The methodology used to verify the sensitivities of the terrestrial biodiversity features on the site, including equipment and modelling used, where relevant (Section 3);
- 6) In the case of a linear activity, confirmation from the terrestrial biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;
- 7) Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPR;
- 8) A description of the assumptions made and any uncertainties or gaps in knowledge or data (Section 1.3); and
- 9) Any conditions to which this statement is subjected.

If the sensitivity is Low an **Aquatic Biodiversity** Compliance Statement is needed, which must include:

- 1) The contact details of the specialist, their SACNASP registration number, their field of expertise and a Curriculum Vitae (Appendix A);
- 2) A signed statement of independence by the specialist (Appendix A);
- 3) A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment (Section 1.3);
- 4) A baseline profile description of biodiversity and ecosystems of the site (Section 4 and 5);
- 5) The methodology used to verify the sensitivities of the aquatic biodiversity features on the site including the equipment and modelling used where relevant (Section 3);
- 6) In the case of a linear activity, confirmation from the aquatic biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;
- 7) Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPR;
- 8) A description of the assumptions made and any uncertainties or gaps in knowledge or data (Section 1.3); and
- 9) Any conditions to which this statement is subjected.

If the sensitivity is Low a **Plant Species** Compliance Statement is needed, which must include:

- 1) The contact details of the specialist, their SACNASP registration number, their field of expertise and a Curriculum Vitae (Appendix A);
- 2) A signed statement of independence by the specialist (Appendix A);
- 3) A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment (Section 1.3);
- 4) A baseline profile description of biodiversity and ecosystems of the site (Section 3 and 4);
- 5) A description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant (Section 2);
- 6) In the case of a linear activity, confirmation from the aquatic biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase (N/A);
- 7) Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPR (N/A);

- 8) A description of the assumptions made and any uncertainties or gaps in knowledge or data (Section 1.3);
- 9) The mean density of observations/ number of samples sites per unit area; and
- 10) Any conditions to which this statement is subjected (N/A).

If the sensitivity is Low an **Animal Species** Compliance Statement is needed, which must include:

- 1) The contact details of the specialist, their SACNASP registration number, their field of expertise and a Curriculum Vitae (Appendix A);
- 2) A signed statement of independence by the specialist (Appendix A);
- 3) A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment (Section 1.3);
- 4) A description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant (Section 2);
- 5) The mean density of observations/ number of samples sites per unit area;
- 6) Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPR;
- 7) A description of the assumptions made and any uncertainties or gaps in knowledge or data (Section 1.3); and
- 8) Any conditions to which this statement is subjected.

1.3 ASSUMPTIONS AND LIMITATIONS

- A site visit was conducted in the wet season, in November 2025, which is in summer. The season of the site visit will not have any effect on the outcome of the survey, as there is no natural vegetation in the project area.

1.4 INFORMATION SOURCES

The following information sources were obtained:

1. Relevant maps through GIS mapping, and information on the natural environment of the area concerned.
2. Legislation pertaining to the fauna and flora study as relevant.
3. The vegetation of South Africa, Lesotho and Swaziland (Mucina and Rutherford, 2006).
4. Red data species lists from the South African National Biodiversity Institute (SANBI).
5. Gauteng Conservation Plan V4 (C-Plan 4) (2024).
6. Wetland databases: National Fresh Water Priority Areas and National Wetland Map Version 6.

1.5 EIA SCREENING TOOL

According to the national web-based environmental screening tool in terms of National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), the site has the following sensitivities:

Terrestrial Biodiversity Theme Sensitivity (Figure 1): **Very high**

Reason: Located in the Vulnerable Soweto Highveld Grassland.

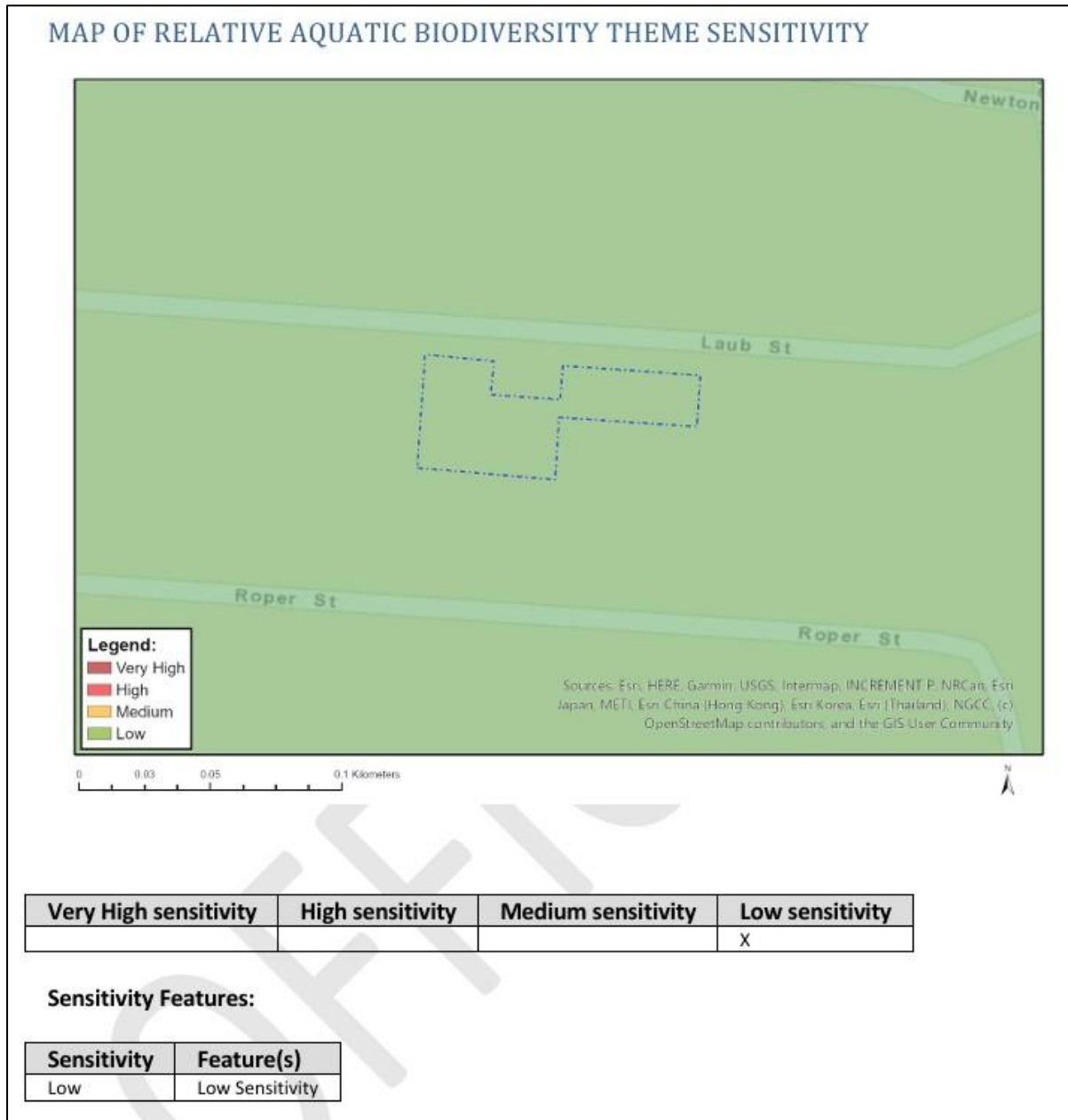


Figure 2: Aquatic biodiversity theme sensitivity according to the Screening Tool

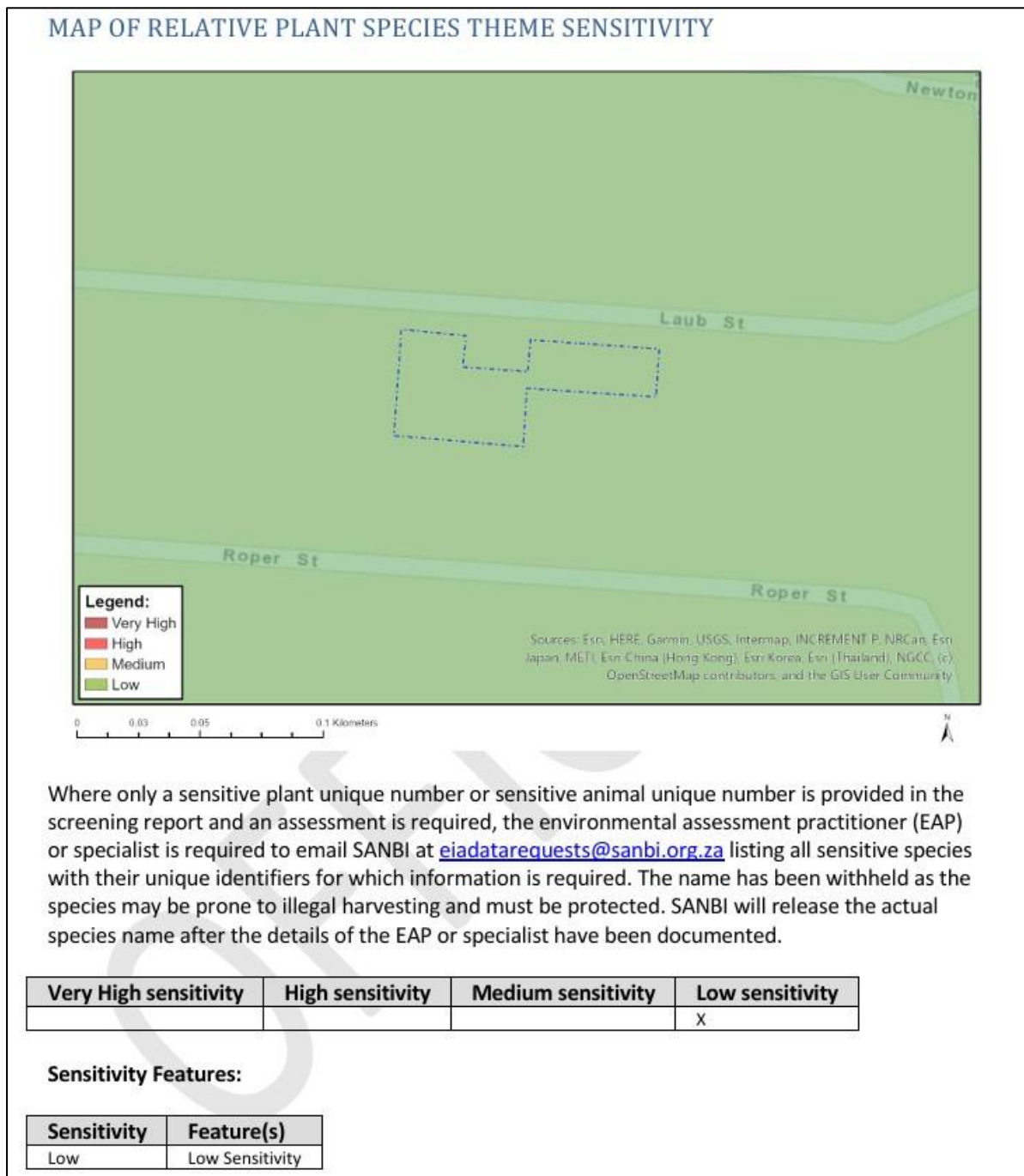


Figure 3: Plant species theme sensitivity according to the Screening Tool

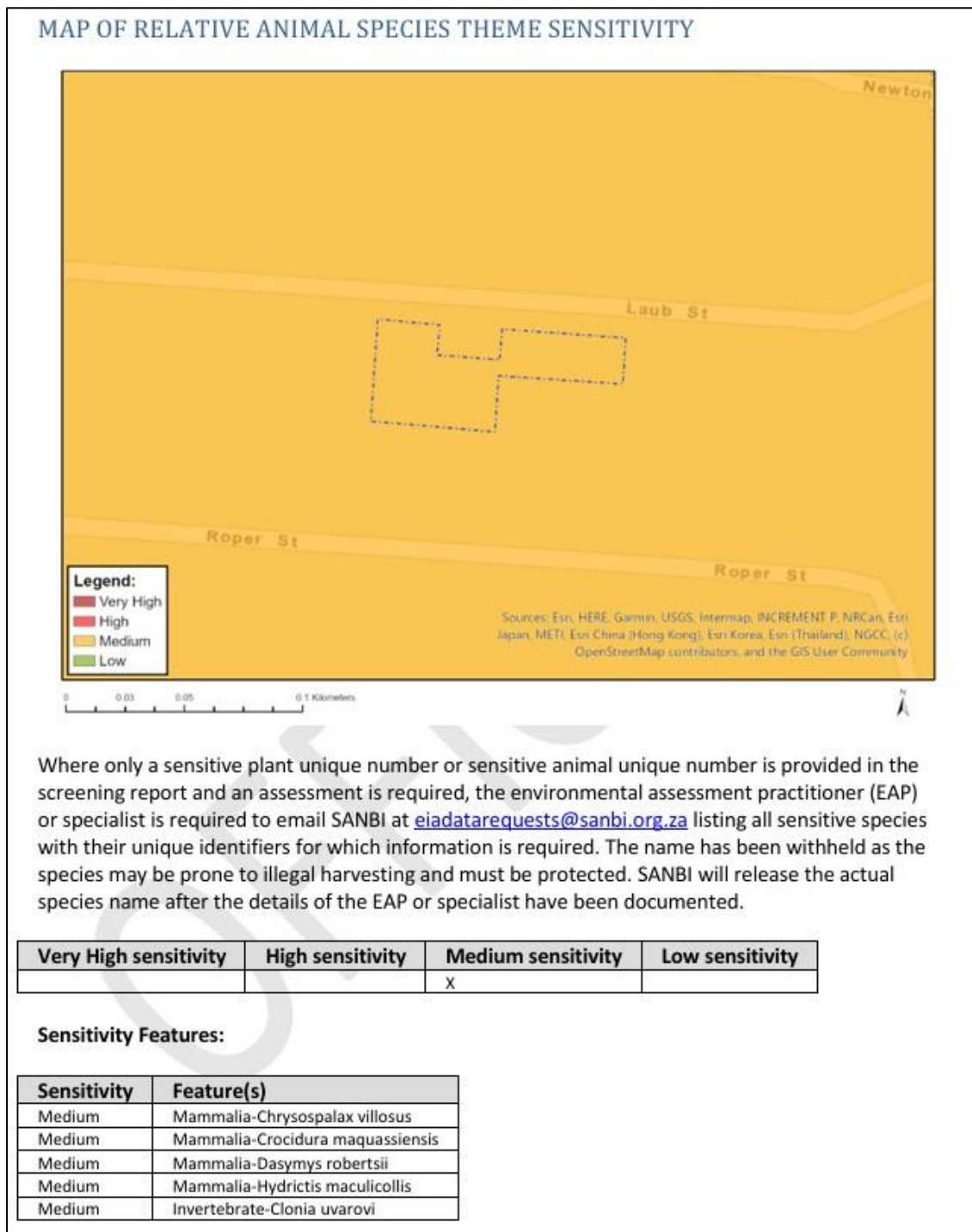


Figure 4: Animal species theme sensitivity according to the Screening Tool

2 METHODS

2.1 DESKTOP SURVEY

A desktop survey was completed to determine whether the project area is located in any sensitive areas, like Critical Biodiversity Areas (CBA), Ecological Support Areas (ESA), National Freshwater Ecosystem Priority Areas (NFEPAs), Important Bird Areas (IBA), Nationally Threatened Ecosystems etc. Climate and vegetation were also discussed for the project area.

2.2 SITE VISIT

The EAP conducted a site visit on the 5th of November 2025 to verify the sensitivity. Land use and general condition of the site was noted. Sensitive features were assessed. Habitat types that may be present in the project area were assessed. Photos of the project area was taken.

2.3 REPORTING

A baseline profile description of the terrestrial and aquatic biodiversity and plant and animal SCC of the site is given with maps and photos.

3 BACKGROUND TO THE STUDY AREA

3.1 LOCATION

The project area is at 24-26 Laub Street, New Centre Johannesburg, Gauteng Province.

3.2 CLIMATE

The climate of Johannesburg is mild, generally warm, and temperate, with dry winters and warm summers. The average annual temperature in Johannesburg is approximately 15.9 °C, while the mean annual rainfall is around 784 mm. Rainfall is highly seasonal, with the majority occurring during the summer months from December to March (Climate-data.org, 2025).

3.3 VEGETATION

South Africa has been recognized as having remarkable plant diversity with high levels of endemism. South Africa hosts a wide range of ecosystems, including nine biomes, namely the Fynbos, Succulent Karoo, Desert, Nama-Karoo, Grassland, Savanna, Albany Thicket, Indian Ocean Coastal Belt and Forest Biomes (Mucina & Rutherford, 2006). The project area is situated in the Grassland biome (Mucina & Rutherford, 2006), which is characterised by herbaceous vegetation of relatively short and simple structure that is dominated by graminoids, usually of the family Poaceae. Woody plants are rare (usually low to medium-sized shrubs) or absent or are confined to specific habitats, such as smaller escarpments or koppies. Core grassland areas usually have deep, fertile soils although a wide spectrum of soil types occurs. Precipitation is strongly seasonal, and the growing season lasts approximately half the year (Mucina & Rutherford, 2006).

The project area overlaps the Soweto Highveld Grassland vegetation unit (Figure 5) (Mucina et al., 2018). The Soweto Highveld Grassland vegetation unit is characterised as gently to moderately undulating landscape on the Highveld plateau, supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover. The National Biodiversity Assessment lists this vegetation unit as **Vulnerable**, and the protection level is **Not protected** (SANBI, 2018).

3.4 WATER MANAGEMENT AREAS AND QUATERNARY CATCHMENT

The project area is located in the Vaal-Orange Water Management Area (WMA) and the C22B Quaternary Catchment.

3.5 SENSITIVITY ANALYSIS AND CONSERVATION ANALYSIS TOOLS

There are several assessments for South Africa as a whole, as well as on provincial levels that allow for detailed conservation planning as well as meeting biodiversity targets for the country's variety of ecosystems. These guides are essential to consult for development projects and will form an important part of the sensitivity analysis. Areas earmarked for conservation in the future, or that are essential to meet biodiversity and conservation targets should not be developed and have a high sensitivity as they are necessary for overall functioning. In addition, sensitivity analysis in the field based on much finer scale data can be used to ground truth the larger scale assessments and put it into a more localised context.

3.5.1 Critical Biodiversity Areas and Ecological Support Areas

Critical Biodiversity Areas (CBA) are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological Support Areas (ESA) are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services. Critical Biodiversity Areas and Ecological Support Areas may be terrestrial or aquatic.

The primary purpose of a map of Critical Biodiversity Areas and Ecological Support Areas is to guide decision-making about where best to locate development. It should inform land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity. It is the biodiversity sector's input into multi-sectoral planning and decision-making processes (SANBI Biodiversity Advisor, 2017).

The project area is not located in a Critical Biodiversity or Ecological Support Area (Figure 6) (GDARD, 2024).

3.5.2 Important Bird Areas (Key Biodiversity Areas)

Important Bird Areas (IBAs) are sites of global significance for bird conservation (Marnewick *et al.*, 2015). The project area is not located in or close to an Important Bird Area.

3.5.3 Protected Areas (PA) and National Protected Area Expansion Strategy (NPAES)

Officially protected areas, either Provincially or Nationally that occur close to a project site could have consequences as far as impacts on these areas are concerned. The National Protected Area Expansion Strategy (NPAES) sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion.

The project area is not located in or close to a protected area. It is not located in a NPAES focus area, but there is a NPAES focus area approximately 1 560 m southwest of the project area. The proposed development will not have an impact on protected areas or NPAES focus areas.

3.5.4 Nationally threatened ecosystems

The Biodiversity Act (Act 10 of 2004) provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to preserve witness sites of exceptionally high conservation value.

The list of Threatened Ecosystems was published in 2011 (SANBI, 2011). This dataset has been refined and replaced by the Red List of Ecosystems (RLE) for terrestrial realm for South Africa – remnants (2022). This dataset contains the current remaining natural extent (circa 2018) of each of the 458 ecosystem types assessed. This means that those portions of ecosystems that have been lost to anthropogenic activities such as mining or croplands are excluded and only the remnants are part of the dataset (SANBI, 2022).

The project area is located in the Vulnerable Soweto Highveld Grassland (SANBI, 2021) (Figure 8).

3.6 NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREAS (NFEPAS) AND NATIONAL WETLAND MAP 5

South Africa's freshwater ecosystems are diverse, ranging from sub-tropical in the north-eastern part of the country, to semi-arid and arid in the interior, to the cool and temperate rivers of the fynbos. "Freshwater ecosystems" refer to all inland water bodies whether fresh or saline, including rivers, lakes, wetlands, sub-surface waters and estuaries. Consistent with global trends, high levels of threat have been reported for freshwater ecosystems. According to the National Biodiversity Assessment 2018 nearly 80% of inland wetland ecosystem types in South Africa are threatened and approximately 75% of inland wetland ecosystem types are both threatened and under-protected (SANBI, 2019). South Africa's freshwater fauna also displays high levels of threat: at least one third of freshwater fish indigenous to South Africa are reported as threatened, and a recent southern African study on the conservation status of major freshwater-dependent taxonomic groups (fishes, molluscs, dragonflies, crabs and vascular plants) reported far higher levels of threat in South Africa than in the rest of the region.

Urgent attention is needed to ensure that we conserve some representative natural examples of the different ecosystems that make up the natural heritage of this country for current and future generations. NFEPAs respond to this need, providing strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources (Driver *et al.*, 2011)

The National Wetland Map version 5 (NWM5) shows the distribution of inland wetland ecosystem types across South Africa and includes estuaries and the extent of some rivers (CSIR, 2018).

There are no NWM 6 wetlands in or close to the proposed project area, however there is a small NFEPAs wetland roughly 800 m from the project area (Figure 9).

3.7 STRATEGIC WATER SOURCE AREAS

Water source areas are those areas that supply a disproportionate amount of mean annual runoff to a geographical region of interest. Strategic water source areas (SWSA) are those that supply substantial downstream economies and urban centres. These water source areas are vital to the national economy (Nel *et al.*, 2013).

The project area is not located in a SWSA.

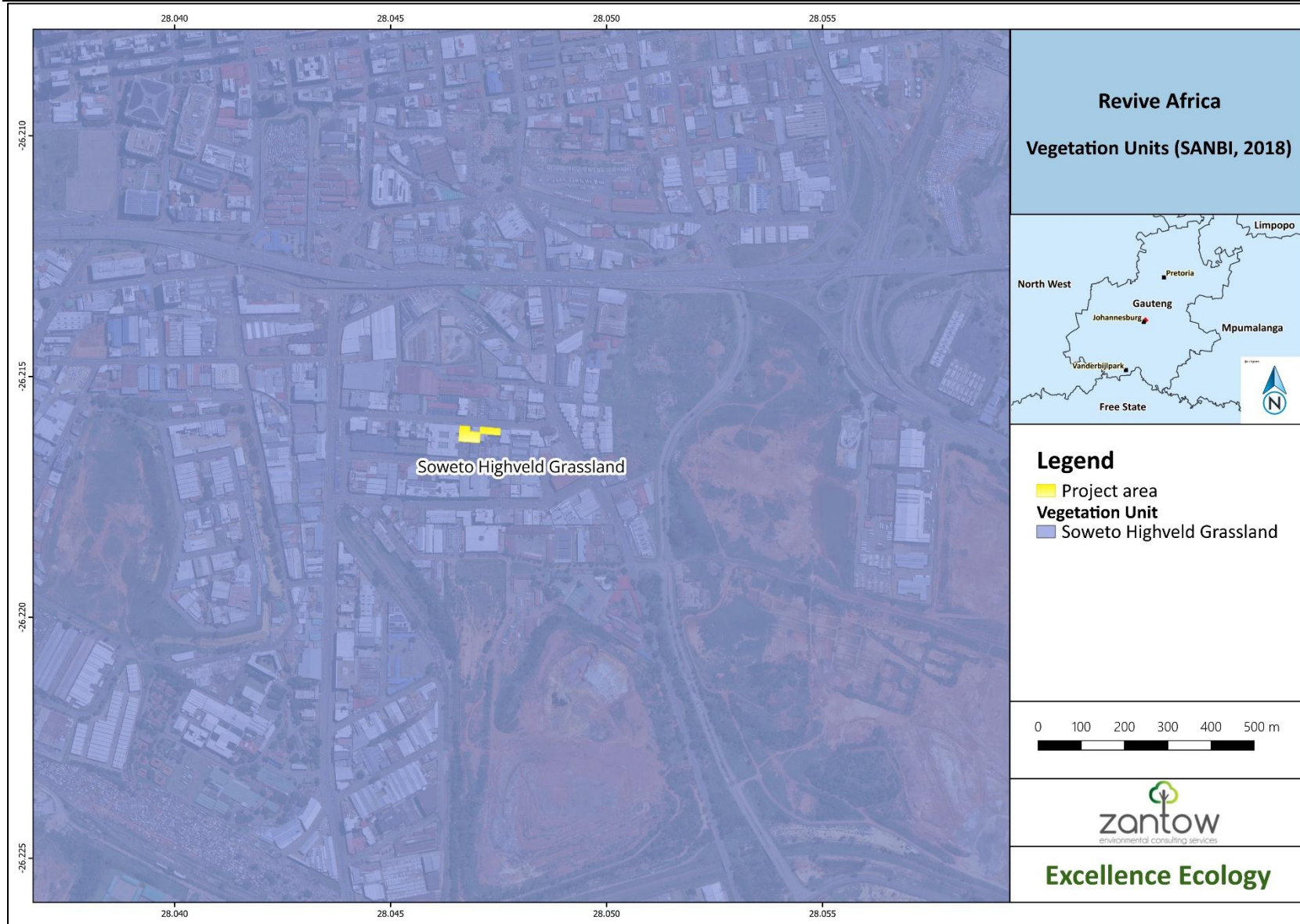


Figure 5: Vegetation Units (SANBI 2018)

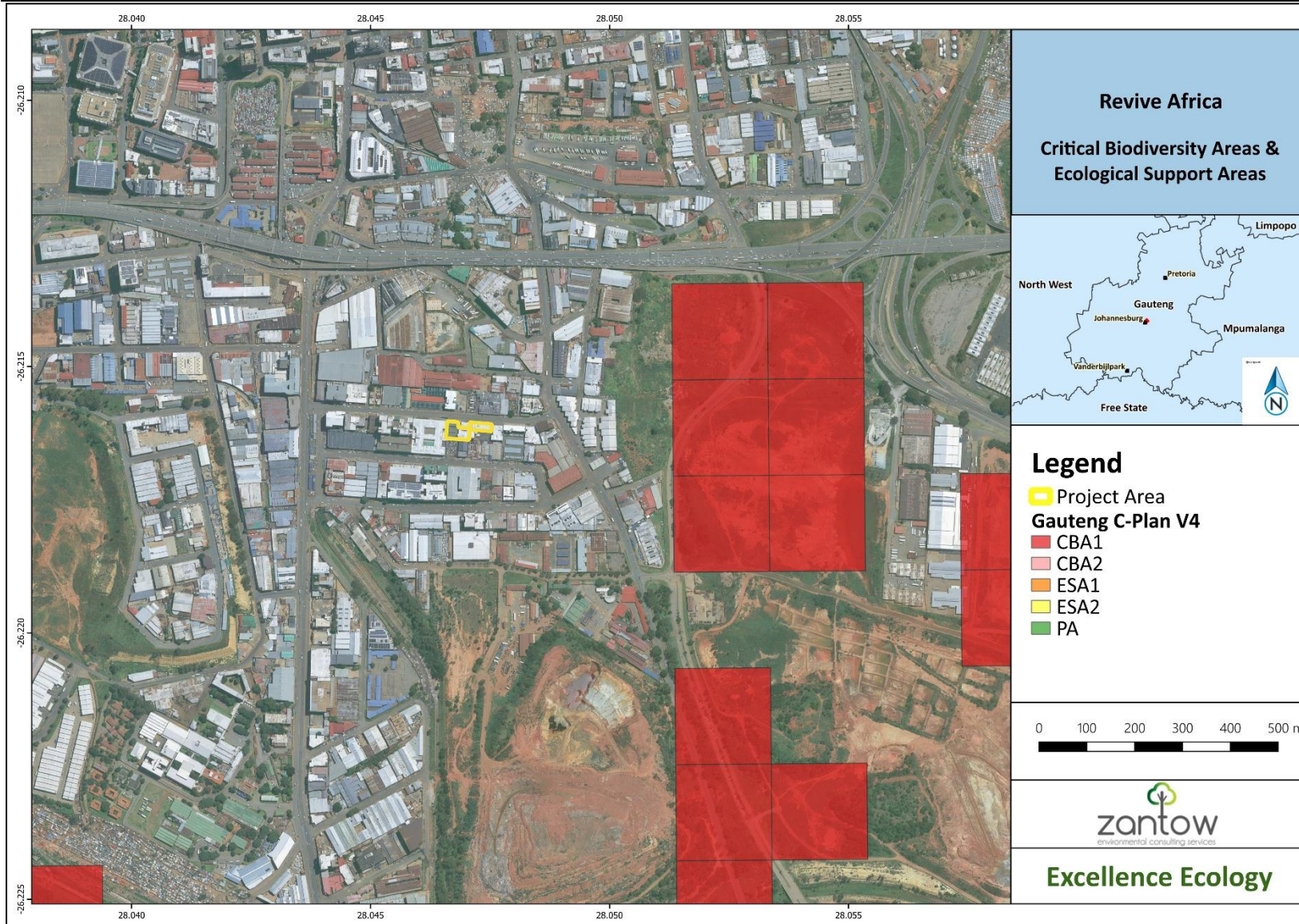


Figure 6: Critical Biodiversity Areas and Ecological Support Areas (GDARD, 2024)

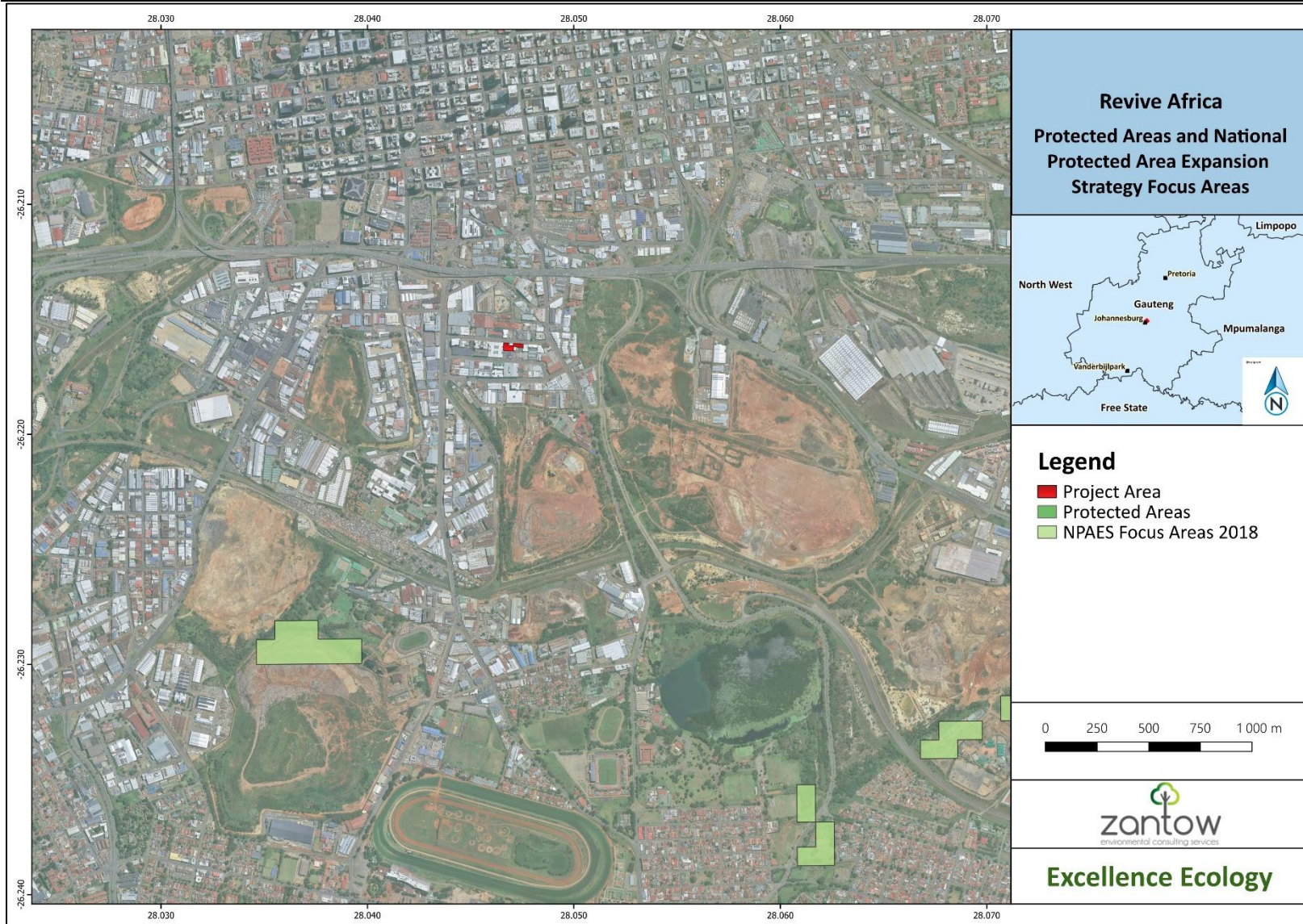


Figure 7: Protected Areas and Protected Areas Expansion Strategy areas

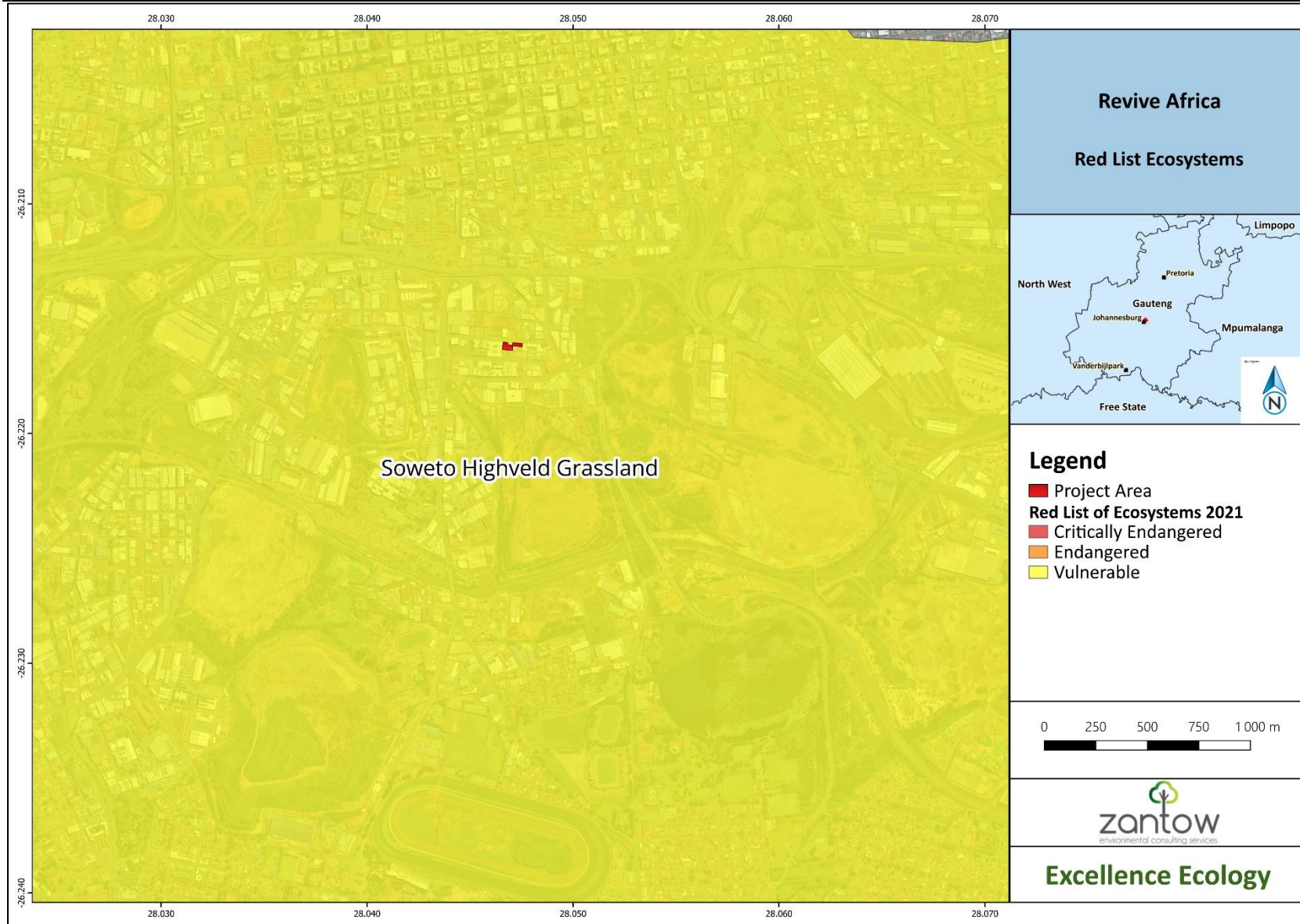


Figure 8: Red List of Ecosystems 2021

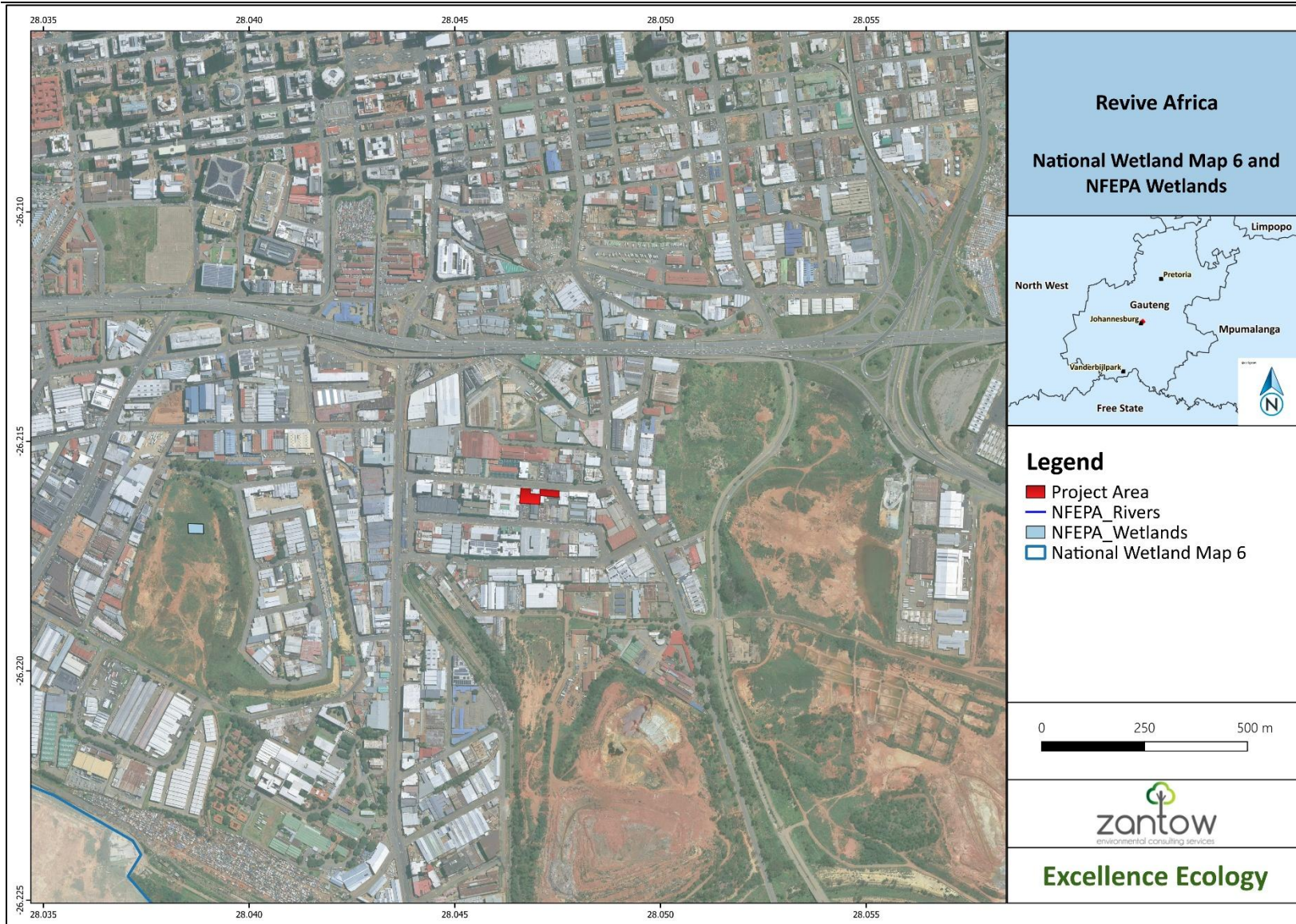


Figure 9: National Freshwater Ecosystem Priority Areas (NFEPA) and National Wetland Map 5

4 RESULTS

4.1 LANDUSE AND VEGETATION

The project area has been fully developed as a small-scale electronic waste (e-waste) trading, storage, and dismantling facility. The site consists of warehouse buildings, loading bays, and paved service areas, with no remaining undeveloped or natural portions. No natural vegetation or grassland is present within the project footprint. The area does not support any wetlands, drainage lines, rivers, or dams, and there is no habitat suitable for Species of Conservation Concern.



Figure 10: Google Earth image of project area



Figure 11: Warehouse



Figure 12: Loading bay



Figure 13: Parking area

4.2 PROTECTED TREES

No protected tree species were recorded.

4.3 EIA SCREENING TOOL LISTED SPECIES (SCC)

The Screening Tool identified four mammal species and one invertebrate species of Conservation Concern (SCC) (Table 1), with no plant SCC potentially occurring within the project area. However, none of these species were recorded during the site visit, nor are they expected to occur on-site. The project area is fully developed, comprising warehouse buildings and paved surfaces, and therefore does not provide suitable habitat to support any of the identified SCC.

Table 1: Screening Tool fauna SCC and presence of suitable habitat in the project area

Scientific name	English name	Red list category	Habitat	Habitat present in project area
<i>Chrysothalax villosus</i>	Rough-haired Golden Mole	VU	Sandy soils in grasslands, meadows and along edges of marshes in Savannah and Grassland biomes (Child <i>et al.</i> , 2016)	No
<i>Crocidura maquassiensis</i>	Maquassie Musk Shrew	VU	It may tolerate a wide range of habitats, including urban and rural landscapes.	No
<i>Dasymys robertsii</i>	African Marsh Rat	VU	These species have been recorded from a wide variety of habitats, including forest and savannah, swampland and grasslands, but they rely on intact wetlands in these areas.	No
<i>Hydricetus maculicollis</i>	Spotted-necked Otter	VU	Spotted-necked Otters are thought to inhabit freshwater habitats where water is not silt-laden, and is unpolluted, and rich in small fishes (Perrin & Carugati 2000a; d’Inzillo Carranza & Rowe-Rowe 2013). However, anecdotal observations suggest they can occur, and can be common, in relatively polluted rivers. Adequate riparian vegetation, in the form of long grass, reeds, or bushes, is also essential to provide cover.	No
<i>Clonia uvarovi</i>	Uvarov's Clonia	VU	This species inhabits tall woodland savannah.	No

5 DISCUSSION & CONCLUSION

Excellence Ecology was appointed by Zantow Environmental Consulting Services (acting on behalf of the applicant: CF Africa Trading (Pty) Ltd, trading as Revive Africa, to undertake a biodiversity assessment for the Waste Management Licence Application underway for the waste management activities at their facility in Johannesburg.

The desktop survey indicates that:

- The project area is not located in a Critical Biodiversity or Ecological Support Area.
- The project area is not located in or close to a protected area.
- The project area is not located in or close to a protected area. It is not located in a NPAES focus area, but there is a NPAES focus area approximately 1 560 m southwest of the project area. The proposed development will not have an impact on protected areas or NPAES focus areas.
- The project area is located in the Vulnerable Soweto Highveld Grassland.
- The project area is located in the Vaal-Orange Water Management Area (WMA) and the C22B Quaternary Catchment.
- There are no NWM 6 wetlands in or close to the proposed project area, however there is a small NFEPA wetland roughly 800 m from the project area.

According to the national web-based environmental screening tool in terms of National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), the site has a very high sensitivity from a Terrestrial Biodiversity Theme Perspective. This is due to the fact that the project area is located in the Vulnerable Soweto Highveld Grassland. The Site Sensitivity Verification proved otherwise. The Very High sensitivity is disputed as there is no natural vegetation remaining in the project area. The sensitivity is therefore low for the terrestrial biodiversity theme.

The project area has been fully developed as a small-scale electronic waste (e-waste) trading, storage, and dismantling facility. The site consists of warehouse buildings, loading bays, and paved service areas, with no remaining undeveloped or natural portions. No natural vegetation or grassland is present within the project footprint. The area does not support any wetlands, drainage lines, rivers, or dams, and there is no habitat suitable for Species of Conservation Concern.

As there are no wetlands, drainage lines, rivers or dams in the project area, the screening tool gave a low sensitivity for the aquatic biodiversity theme. The site visit confirmed this.

The Screening Tool identified four mammal species and one invertebrate species of Conservation Concern (SCC), with no plant SCC potentially occurring within the project area. However, none of these species were recorded during the site visit, nor are they expected to occur on-site. The project area is fully developed, comprising warehouse buildings and paved surfaces, and therefore does not provide suitable habitat to support any of the identified SCC. See Table 2 for summary of the Screening Tool sensitivities.

No declared invader plant species were recorded.

Table 2: Assessment of Screening Tool sensitivities

Theme	DFFE Screening Tool Report Sensitivity	Specialist Sensitivity	Rating Confirmed/ disputed	Reasons
Terrestrial Biodiversity	Very high	Low	Disputed	The project area is developed and there is no natural vegetation remaining. It is not representative of the vegetation units it is located in.
Aquatic Biodiversity	Low	Low	Confirmed	There are no wetlands or rivers in the project areas.
Plant Species	Low	Low	Confirmed	There is no suitable habitat for plant SCC in the project area.
Animal Species	Medium	Low	Disputed	There is no suitable habitat for animal SCC in the project area.

No sensitive features were recorded, so no sensitive features / species will be affected during the proposed development. The areas surrounding the project areas is also very disturbed and not sensitive. The development can be approved from an aquatic and terrestrial biodiversity perspective and also from a plant and animal species perspective.

6 REFERENCES

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APPENDIX A: Specialist CV and Declaration of Independence

CURRICULUM VITAE

Mari van der Westhuizen

(M.Sc. Environmental Sciences, Professional Natural Scientist: Ecological Science)

PERSONAL DETAILS

Name:	Mari van der Westhuizen
Maiden name:	La Grange
Nationality:	South African
Date of birth:	26 October 1985
E-mail address:	mariwesthuizen@gmail.com
Cell phone number:	+27 82 257 1715
Identity number:	851026 0045 083

KEY QUALIFICATION

M. Sc. Environmental Sciences (2010)
B.Sc. Honours in Ecological Remediation and Sustainable Usage (2007)
B. Sc. with Microbiology and Botany at the North West University, Potchefstroom Campus (2006)

AWARDS AND PRIZES

Best Second year Microbiology student (2005)
Best M.Sc. in Botany (2010)

SHORT COURSES COMPLETED

Wetland Legislation (2024) WetRest
Track and Sign Workshop (2023) Motsumi Bush Courses
Tools for Wetland Assessment (2015) Rhodes University
Landscape Function Analysis course (2010) North West University
Multivariate Statistics course (CANOCO) (2009) University of Kwazulu-Natal

MEMBERSHIP WITH PROFESSIONAL BODIES AND ASSOCIATIONS

Registered as a Professional Natural Scientist in Ecological Science at the South African Council for Natural Scientific Professions (SACNASP), with registration number 400166/15.
South African Association of Botanists (SAAB).

KEY RELEVANT EXPERIENCE

12 years' experience:

- Biodiversity, plant and animal species impact assessments for Environmental Authorisations (Environmental Impact Assessments).
- Wetland assessments for EIA's and WULA's.
- Wetland Rehabilitation Plans.
- Protected tree counts and protected tree license applications.
- Declared invader surveys.
- GIS mapping and data processing (ArcGIS and QGIS).
- Writing and reviewing scientific reports.
- Mentoring junior ecologists.

DECLARATION OF INDEPENDENCE

I, Mari van der Westhuizen, hereby confirm my independence as a specialist and declare that I do not have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which I was appointed as ecologist in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for worked performed, specifically in connection with the terrestrial biodiversity, aquatic biodiversity, plant and animal species compliance statement for the environmental authorisation for Rhenus Logistics, Gauteng Province, for the proposed storage of hazardous goods.



Full Name: Mari van der Westhuizen

Title / Position: Ecologist

Qualification(s): B.Sc. in Botany and Microbiology (2006) North West University;

B.Sc. Honours in Ecological Remediation and Sustainable Usage (2007) North West University;

M.Sc in Environmental Sciences (2010) North West University

Experience (years): 12

Registration(s): SACNASP (Pri.Sci.Nat. # 400166/15 – Ecological Science)

Phone no: 082 257 1715 **Email:** mari@excellence-ecology.co.za

APPENDIX A: Specialist CV and Declaration of Independence

CURRICULUM VITAE

Elandrie Davoren

(Ph.D. Environmental Sciences, Junior Ecologist)

PERSONAL DETAILS

Name:	Elandrie Davoren
Maiden name:	Davoren
Nationality:	South African
Date of birth:	26 October 1985
E-mail address:	elandriedavoren@yahoo.com
Cell phone number:	+27 83 283 0106
Identity number:	851026 0079 082

KEY QUALIFICATION

Ph.D. Environmental Science (2017)
M. Sc. Environmental Sciences (2010)
B.Sc. Honours in Urban Ecology (2007)
B. Sc. with Botany and Zoology at the North West University, Potchefstroom Campus (2006)

AWARDS AND PRIZES

Best M.Sc. in Botany (2010)

SHORT COURSES COMPLETED

Practical Implementation of Environmental Auditing and Monitoring (2024) Business Success Solutions
Track and Sign Workshop (2023) Motsumi Bush Courses

MEMBERSHIP WITH PROFESSIONAL BODIES AND ASSOCIATIONS

South African Association of Botanists (SAAB).

KEY RELEVANT EXPERIENCE

4 years' experience:

- Biodiversity, plant and animal species impact assessments for Environmental Authorizations (Environmental Impact Assessments).
- Wetland assessments for WULA's.
- Declared invader surveys.
- GIS mapping and data processing (ArcGIS and QGIS).
- Writing and reviewing scientific reports.

DECLARATION OF INDEPENDENCE

I, Elandrie Davoren, hereby confirm my independence as a specialist and declare that I do not have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which I was appointed as ecologist in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for worked performed, specifically in connection with the terrestrial biodiversity, aquatic biodiversity, plant and animal species compliance statement for the environmental authorisation for Rhenus Logistics, Gauteng Province, for the proposed storage of hazardous goods.



Full Name: Elandrie Davoren

Title / Position: Junior Ecologist

Qualification(s): B.Sc. in Botany and Zoology (2006) North West University;

B.Sc. Honours in Urban Ecology (2007) North West University;

M.Sc in Environmental Sciences (2010) North West University

Ph.D. Environmental Science (2017) North West University

Experience (years): 4

Phone no: 083 283 0106 **Email:** elandriedavoren@yahoo.com

Annexure G-2

Heritage Study Compliance Statement

**ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME
STATEMENT IN SUPPORT OF A WASTE MANAGEMENT LICENCE
APPLICATION FOR THE PROPOSED HAZARDOUS WASTE (E-
WASTE) RECYCLING, RECOVERY AND TREATMENT FACILITY
AT REVIVE AFRICA,
LOCATED IN
NEW CENTRE, JOHANNESBURG, GAUTENG**



Report Number: 4057-ZANREV-2025

Report Date: 15th November 2025

General Information	
Report Name:	Archaeological And Cultural Heritage Theme Statement in Support of A Waste Management Licence Application for the Proposed Hazardous Waste (E-Waste) Recycling, Recovery and Treatment Facility at Revive Africa, Located in New Centre, Johannesburg, Gauteng.
Site Visit Date:	05 th November 2025
Report Date:	15 th November 2025
Environmental Consultant	<p>Zantow Environmental Consulting Services CC Colosseum Building 1st Floor, Unit 2 Cnr Delius Street & Chopin Street Vanderbijlpark, 1911</p> <p>PO Box 3858 Vanderbijlpark, 1911</p> <p>Contact Person: Karien Zantow Tel: 083 384 3641 Fax: 016 932 4976 Email: karien@zantow.co.za</p>
Client:	<p>CF Africa Trading Pty Ltd t/a Revive Africa 24 Laub Street New Centre Johannesburg South Africa 2001</p> <p>Contact Person: Fergus Slattery Tel: 011 493 5700 Cell: 081 747 2326 Email: fergus@reviveafrica.co.za</p>
Report Compiled by:	Karien Zantow
SACNASP Registration:	400114/14
EAPASA Registration:	2019/1871
Report Nr:	4057-ZANREV-2025

DECLARATION AND REVIEW

I, **Karien Zantow** as an independent consultant and specialist compiled this report and declare that it correctly reflects the results and findings made during the site visit an assessment. I further declare that;

- I act as an independent specialist in terms of the associated application
 - 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;
 - I declare that there are no circumstances that may compromise my objectivity in performing such work;
 - I have expertise in conducting the specialist report relevant to the application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
 - I will comply with the Act, 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 report are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of Section 24F of the Act.



Karien Zantow
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871

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INTRODUCTION AND BACKGROUND

CF Africa Trading Pty (Ltd), trading as Revive Africa, currently operates a small-scale e-waste trading, storage and dismantling facility located at 24-26 Laub Street, New Centre Johannesburg. The company began operations in 2014 as a trader of empty printer cartridges that are collected through a corporate collections program.

Revive Africa stores and prepare the cartridges prior to exporting them to upstream vendors for recycling. Since its inception, Revive Africa has expanded its operations into broader e-waste recycling. Since 2020, the company has collected over 434,593 laser cartridges and 982,404 ink units, keeping them out of landfill.

In April 2022, Revive Africa began trading printed circuit boards (PCBs) and collected a total of 96,306 kilograms to date. PCBs are recovered from e-waste materials such as cell phones, computers, copiers, laptops, printers, servers, and telecommunications equipment. This initiative also led to the establishment of dedicated dismantling stations for the manual decontamination of the PCBs. Manual decontamination of e-waste also known as manual dismantling or depollution, involves the careful, non-destructive disassembly of electronic equipment by hand using tools such as screw drivers, hammers etc. to remove hazardous substances and separate materials for recycling. This process is crucial to isolate toxic components (like mercury, lead, and cadmium) from high-value materials (gold, copper, plastics), enhancing safety and recovery rates. The facility soon realized that many of the devices they dismantle contained lithium-ion batteries (LIBs) and began a pilot project for discharging and recycling LIBs into black mass that is traded to upstream vendors for further metal extraction. (*Existing Recycling, recovery and or treatment, below the threshold of the WML requirements*).



Current storage, sorting and receiving



Current manual depopulation of e-waste and battery recycling

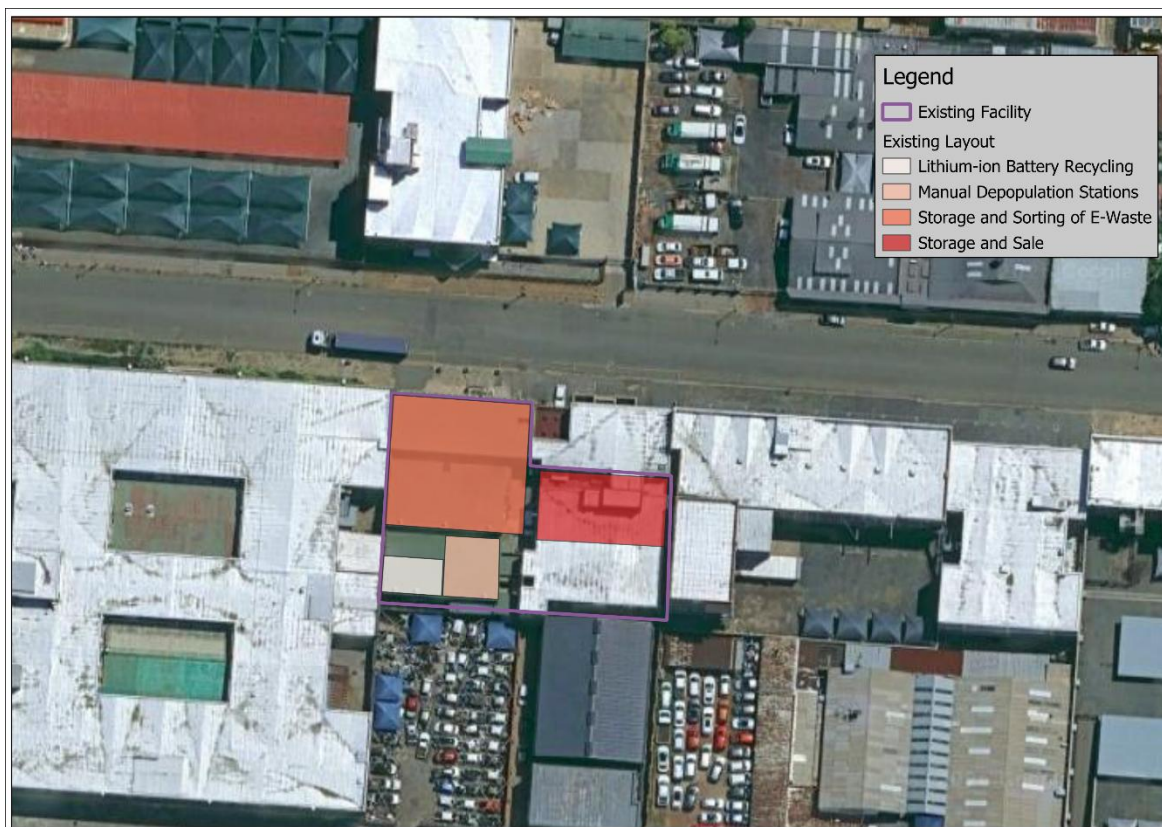


Figure 1: Revive Africa Facility 24-26 Laub Street (Existing facility layout).

Revive Africa plans to establish a full-scale e-waste recycling facility comprising a PCB Recycling Plant and a Lithium-Ion Battery Recycling Plant. This project aims to process materials locally, create employment, and contribute to sustainable resource recovery in South Africa.

The proposed recycling facility entails increasing the volumes of e-waste accepted, as well as expanding their footprint to the adjacent buildings in 29-32 Laub Street, New Center Johannesburg. The proposed services for the e-waste management processes include recycling, treatment and recovery of e-waste and LIBs.

The planned PCB recycling facility will cover 1,800 m², dedicated to e-waste storage, dismantling, and processing. The plant will be capable of processing 40-50 tons of PCBs per month and is expected to create at least 15 new jobs, depending on volume. PCBs will be collected, graded, shredded and sold to upstream vendors for further processes.

The battery recycling facility will occupy approximately 900 m², for battery storage, discharging, shredding, and screening. It will have the capacity to process up to four (4) tons of lithium-ion batteries per day. The process involves discharging batteries, shredding them into granulate, and screening the granulate to separate the black mass from plastic and copper residues. Comprehensive environmental and safety controls will be implemented to manage VOCs, fluorinated gases, and particulate emissions to ensure safe operations.

Zantow Environmental Consulting Services CC (Zantow Environmental) has been appointed by Revive Africa as an Independent Environmental Assessment Practitioner (EAP) to facilitate the application process to obtain the required environmental authorisation.

As part of the application process, the National Web based Environmental Screening Tool (<https://screening.environment.gov.za/screeningtool/>) was used to generate a Screening Tool Report. The Screening Tool Report thus indicated that the proposed site for the waste management activities

has a very high sensitivity for the Archaeological and Cultural Heritage theme. In addition, the report recommends the specialist studies that must be undertaken and submitted with the application.

The “*Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation*” (“the Protocols”), clearly states that “prior to commencing with a specialist assessment, the current use of the land and environmental sensitivity of the site under consideration, identified by the screening tool, must be confirmed by undertaking a site sensitivity verification.

The said verification was undertaken by Zantow Environmental Consulting Services (Zantow Environmental), and it was confirmed that the site selected for the proposed waste management activities has very high Archaeological and Heritage resources. However, the project itself would not impact on any of the resources identified.

Using existing information, desktop assessments and the site visit, this Compliance Statement was compiled in line with the requirements set out in the Protocol for the specialist assessment and minimum report content requirements for Environmental Impacts on Archaeological and Cultural Heritage.

1. DATA LIMITATIONS AND STUDY GAPS

Assumptions and conclusions made in terms of this compliance statement are based on the data and historic information provided to the specialist as part of application process.

Data and information obtained by means of the desktop assessment and associated specialist assessments (as provided) were deemed accurate and correct.

2. METHODOLOGY

To determine the potential of Archaeological and Cultural Heritage resources of the selected area for the proposed waste management activities, a site visit and desktop assessment was conducted.

The desktop study involved a review of the South African Heritage Resources Information System (SAHRIS), published literature, historical maps, and aerial imagery to identify any previously recorded archaeological or cultural heritage resources within or near the site. This was complemented by a site visit, during which the project footprint and its surroundings were systematically inspected for any visible heritage resources.

3. SITE VISIT

A site visit was undertaken on the 5th of November 2025. Site photos taken during the site visit are included in this report. Based on the findings of the site visit it was found that the area selected for the proposed waste management activities has a low to negligible archaeological and cultural heritage resource potential.

The area has been previously developed, and no archaeological or cultural heritage resources were identified during construction or are currently present. The proposed area selected for the waste management activities will be located within the boundary of an already disturbed industrial and commercially zoned area. The proposed development will therefore have no impact on the archaeological and cultural heritage resources.



Figure 2. Revive Africa (existing operation) building



Figure 3. Proposed building for increasing processing capacity.

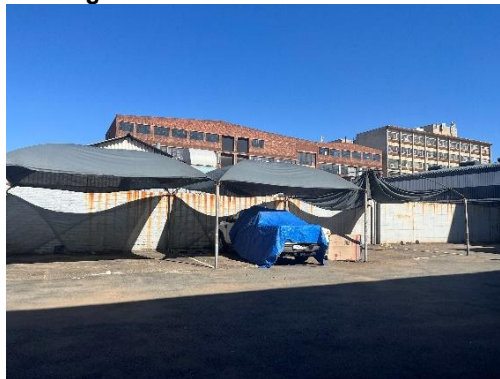


Figure 4. Paved parking area behind building



Figure 5. Cemented surfaces inside building.



Figure 6. Electrical scrap storage containers.



Figure 7. Grading bins.



Figure 8. Scale



Figure 9. Work benches



Figure 10. Processed LIB materials.



Figure 11. Processed materials (black mass).



Figure 12. Toner storage.



Figure 13. Printer and toner storage.

4. GEOLOGY

Revive Africa falls within the Siliciclastic lithological class (Fig.13). Siliciclastic rocks, which comprise siltstone, sandstone, and conglomerate, are the second most abundant sedimentary rock type after mudrocks. These rocks are largely formed by the accumulation and consolidation of mineral grains, primarily silicate minerals, and are important reservoirs for water, oil, and natural gas. They also function as storage facilities for valuable minerals like diamonds and gold, making them economically significant.

Three major material types make up siliciclastic rocks: cement, matrix, and framework grains. The majority of a siliciclastic rock is often composed of framework grains, which are mineral particles or tiny pieces of other rocks. The matrix is a very fine-grained substance, like clay, that is deposited concurrently with the framework grains. Any substance that precipitates in the voids, or pores, between the grains of a rock or sediment is called cement. Cement is a secondary deposit since it precipitates in pores after the source material, while framework grains and matrix are primary deposits.

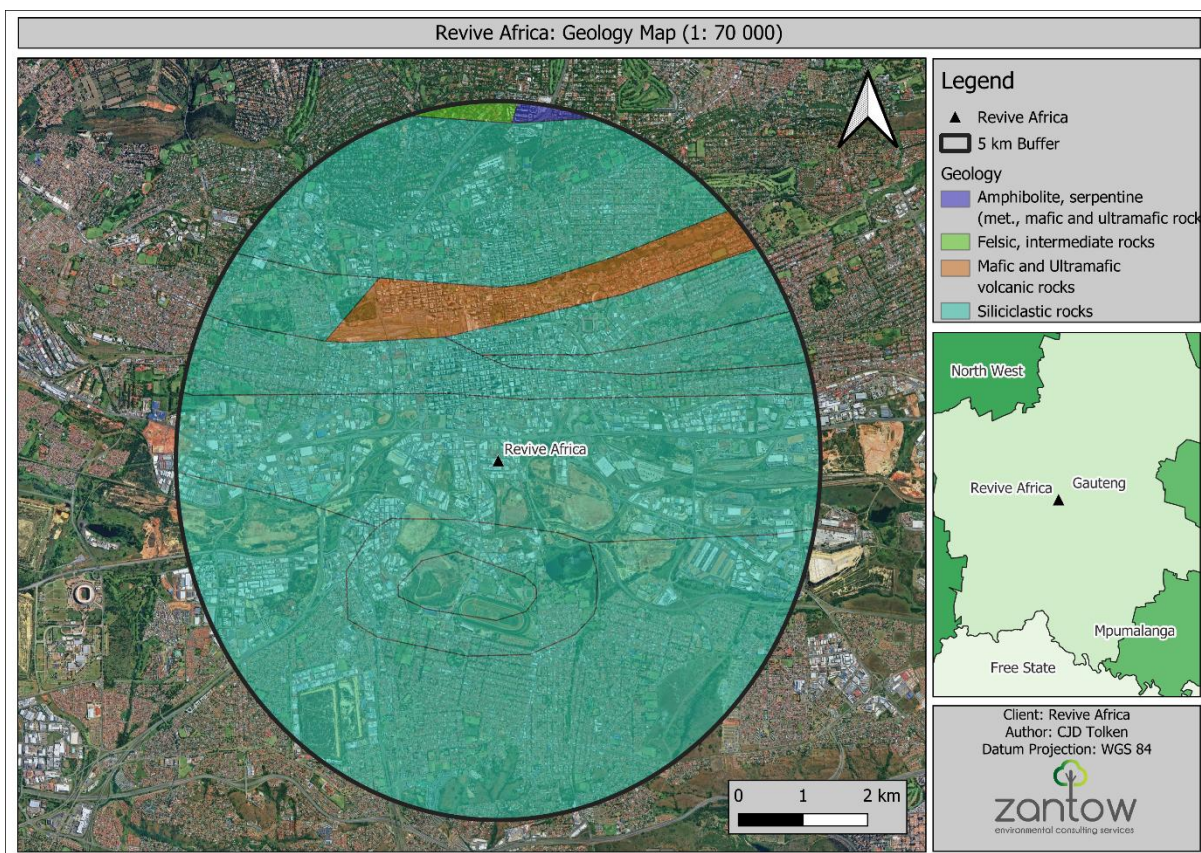


Figure 14. Geology of the area surrounding Revive Africa

Stone tools are the most direct application of siliciclastic rock in archaeology. Certain varieties, like chert (or flint), are microcrystalline silica that break predictably, which makes them perfect for knapping (shaping) into tools with sharp edges, including blades and arrowheads. These tools are frequently well preserved in archaeological excavations due to the durability of quartz, the predominant mineral.

5. GRADE I HERITAGE SITE: CONSTITUTION HILL HUMAN RIGHTS PRECINCT

The Constitution Hill Human Rights Precinct located in Johannesburg, approximately 3 km from Revive Africa, is a national heritage site with rich history dating back more than a century. After opening in 1893

and closing in 1983, the precinct underwent renovations in the late 1990s and early 2000s to become the museum it is today. The Constitutional Court first convened at Constitution Hill in 2004.

Additionally, Constitution Hill is a site of contrasts: oppression and emancipation, injustice and justice. The precinct is proof of the significance of both conserving atrocity sites for future generations and reconstructing them to fulfil current needs and shape the future.



Figure 15: Old Fort

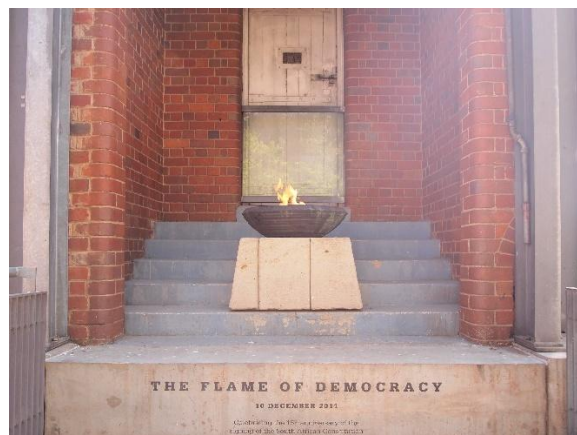


Figure 16: The Flame of Democracy



Figure 17: Number Four



Figure 18: Constitutional Court

4. GRADE II HERITAGE SITES

Buildings or neighbourhoods of notable architectural or aesthetic value are classified as Grade II heritage sites, although their significance is local or regional rather than national. These locations are regarded as local landmarks that add to the uniqueness of a region and are safeguarded by provincial or local authorities.

Grade II Sites within 2 km of Revive Africa:

- Poswohl Synagogue: believed to be the only memorial anywhere in the world to the Jews of Poswohl.
- Cuthberts Building: Cuthberts is a famous structure in Johannesburg that has been designated as a heritage property. It was finished in 1904 and designed by the renowned architectural team of Stucke and Bannister. Once the most sought-after retail address in South Africa, the building is situated on the intersection of Eloff and Pritchard Streets.
- Chancellor House: Offices of Mandela and Tambo attorneys in the 1950s.

- Crown Mines Head Office: Sir Herbert Baker created the office building following the 1909 merger of eight mining businesses. Contained an experimental lab with a noticeable brick chimney.



Figure 19. Poswohl Synagogue



Figure 20. Cuthberts Building



Figure 21. Chancellor House



Figure 22. Crown Mines Head Office

6. SCREENING TOOL COMPARISON AND CONCLUSION

According to the National Screening Tool, the site selected for the proposed waste management activities has a **very high sensitivity** for the Archaeological and Cultural Heritage Theme.

The area is given a high sensitivity because of the Grade I Heritage site which is said to be within a 5km buffer and the Grade II Heritage sites which are within a 2km buffer from the proposed site.

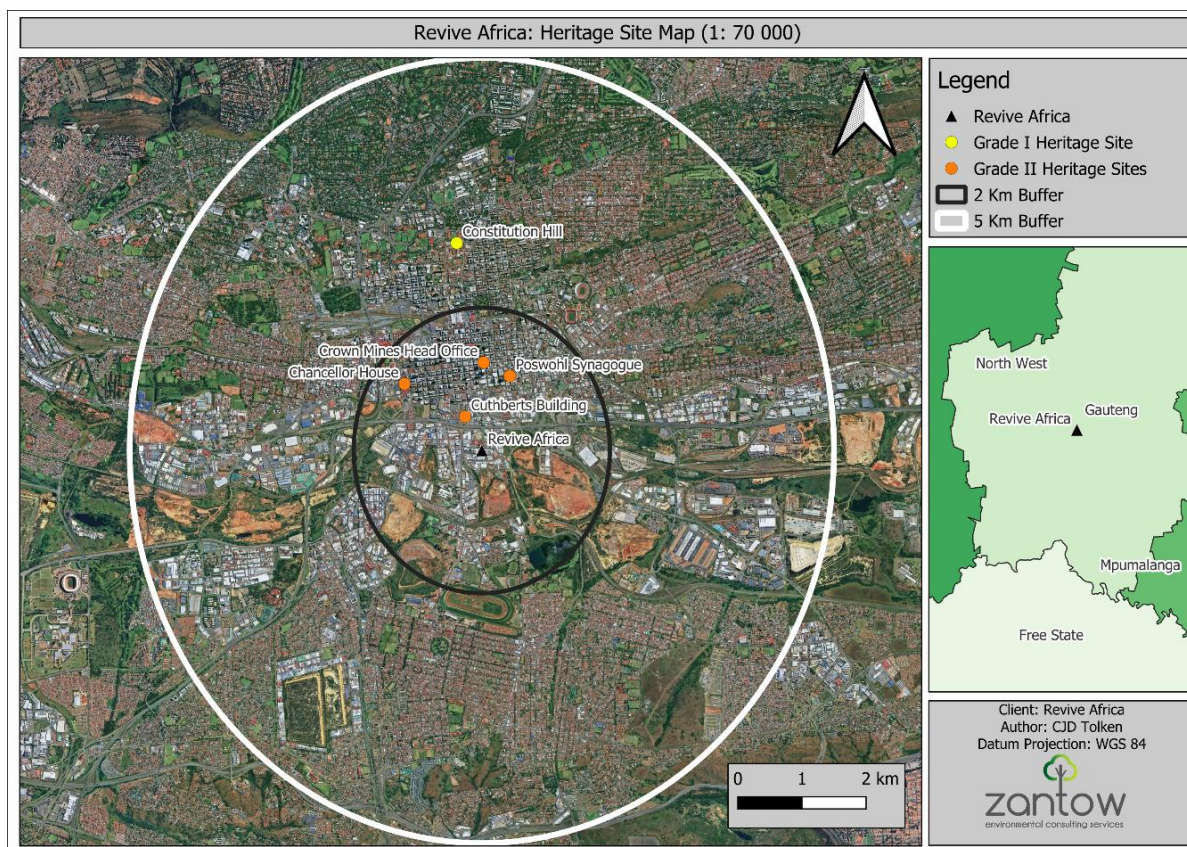


Figure 24. Heritage Site Location Map

Based on the findings of the assessment and available information it was determined that no negative impacts of any nature are expected upon the archaeological and cultural heritage resources. The site in its current state in fact has no very high sensitivity to it.

The area has been previously developed, and no archaeological or cultural heritage resources were identified during construction or are currently present. In addition, the proposed area selected for the waste management activities will be located within the bounds an existing industrial and commercial zoned area. Therefore, the proposed activities will have no impact on the Grade I Heritage site which is said to be approximately 3 km away from the proposed area.

It is in the specialist's opinion that the proposed waste management site is of a **low archaeological and cultural heritage sensitivity** and that the proposed waste management activities will not impact the Grade I Heritage site which is said to be approximately 3 km away from the proposed area. In terms of archaeological and cultural heritage sensitivity, the proposed waste management activities should thus be allowed to proceed at the identified site, subject to recommendations provided.

Conclusion

It is in the specialist's opinion that the proposed site is of a **low archaeological and cultural heritage sensitivity** and that the proposed waste management activities will not impact the Grade I Heritage site which is said to be 5km away from the proposed area.

Recommendations

- Restrict activities to the proposed infrastructure development area.

ANNEXURE A

SPECIALIST CV



KARIEN ZANTOW

INTRODUCTION

Karien Zantow has more than 20 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment. Karien is the founding member of Zantow Environmental Consulting Services, who specialises in management of environmental projects and offers services in the preparation of a range of strategies to manage development and mitigation of potential impacts of any development or activities. Years of experience in the manufacturing industry and construction sector enables her to have a balanced approach to environmental management, with a commercial and sustainable perspective. Vast experience has been gained in the determination and improvement of legal compliance status and the development of prioritized and realistic action plans to achieve compliance. License and or environmental authorization applications can be concluded efficiently and cost effectively.

FIELDS OF EXPERTISE

Environmental Compliance Management

Air Quality Management

Water Management

Licensing, EIA's and permitting

Public Participation and Engagement

Legal Compliance Audits

Waste Management

Land Management & Remediation

Monitoring and Reporting

REGISTRATIONS / AFFILIATIONS

Registered Professional Natural Scientist with the South African Council for Natural Science as Environmental Science (Reg Nr 400114/14)

EDUCATION

BSc (Agric) Animal Sciences, Pretoria University

BSc (Hons) Environmental Engineering, Pretoria University

Post graduate Studies, Environmental Sciences, WITS University



KARIEN ZANTOW

PROFESSIONAL CAREER

2012 - Current

Zantow Environmental Consulting Services, MD

Karien is the founding member and has taken the position of Managing Director.

2006 -2012

ArcelorMittal South Africa Vanderbijlpark Works Environmental Manager

After one year Karien was promoted from Environmental Engineer to the Environmental Manager at ArcelorMittal Vanderbijlpark Works. The functions included the management of a 10 staff compliment department responsible for all environmental compliance and management functions.

She served on the Management Structure of Vanderbijlpark Works and was responsible to advise Top Management on strategic Environmental Management trends, changing legislation and ensuring legal compliance and highlight risks and provide solutions. She was responsible to drive the works to environmental compliance and ensure continued

improvement of the environmental footprint. This included the planning, prioritisation and funds management of the various environmental requirements. Under her management period remediation of various legacy issues commenced and was completed. This included the remediation of a waste disposal site and various contaminated land and dams, both organic and inorganic on a large scale. All functions related to waste, water and air quality management, from monitoring to licensing fell under her responsibility.

2004 -2006

Sappi Kraft Ngodwana

Environmental Engineer

As environmental engineer at Sappi, Karien was responsible for all aspects of environmental management in the industrial facility. This included but is not limited to the maintenance of the ISO 14001 Certification, monitoring of the plant environmental systems and operation to maintain compliance with environmental permits and other environmental requirements. This required the technical support and guidance to all levels of employees including top management. She was also the owner of all new environmental projects (example establishment of the continuous air emissions monitoring system,



K A R I E N Z A N T O W

ambient air quality monitoring station, waste minimisation, invader plant eradication and recycling initiatives). A key function was to manage and remediate the soil on the effluent irrigation pastures and develop and implement odour reduction strategies. This function further included the development of environmental procedures, reporting and recordkeeping. Experience was also gained in the development of the IWWMP and the Water Use License application and the associated Reserve Determination. Waste management functions included the day to day waste management and disposal practices, waste minimisation projects as well as the landfill extension project. Karien was responsible for the entire legal compliance program, public communication, and governmental liaison.

2002 -2004

Teaching Business - Subcontracted to Barlow World Junior Business and Environmental Analyst

Specifically focussing on the sustainability and impacts from the suppliers of Barlow world. Within the consulting firm, her responsibilities included the assessment and auditing of the suppliers. The duties and responsibilities included conducting in-situ assessment of their suppliers and conduct a sustainability profile of their business, assess and advice on implementing Black Economic Empowerment, as well as auditing the environmental, health and safety policies and procedures of the suppliers.

F I E L D S O F C O M P E T E N C E

National Environmental Management Act, National Environmental Management: Air Quality Act National Environmental Management: Waste Act, Environmental Conservation Act, 1998 National Water Act, 1998 Gas Act and regulations NEMA EIA regulations and EMF; Promotion to Access of Information Act; Applicable SANS standards Applicable Regulations

K E Y E X P E R I E N C E

- Training and Awareness

Numerous training courses have been prepared and presented to customers, mainly in the mining and industrial sectors. The courses and lectures included all aspects on Environmental Management, ISO 14001, EMPr, Waste Management and Water Management. Some courses also addressed environmental legislation and liability for employees and directors. Training material has also been developed and provided to customers to be used as awareness training material.



KARIEN ZANTOW

- Environmental Compliance and System Audits

Numerous environmental compliance audits have been conducted for facilities on existing environmental authorisations, permits or licenses. These are geared to determine compliance levels against the relevant conditions. Audits have been conducted on Water Use Licenses, Atmospheric Emission Licences, Waste Management Licenses, ECA and NEMA Authorisations and Permits and Discharge Permits as well as performance audits to EMPR's. Clients include but are not limited to:

Water Use License Audits	ArcelorMittal SA AfriSam Aquarella Investments
Waste Management License Audits	Bumatech Cape Gate Columbus Stainless Danone
Norms and Standards Audits	DMS Powders Eco Energy Infrabuild Cement Isanti Glass
Atmospheric Emission License Audits	Intocast Quarries JJ Martiz & Son Mines Metso Minerals Nampak Glass
Environmental Authorisation Audits	National Ceramic Industries Nafasi Water Norcross
Environmental Management Programme Audits	Palabora Mining Company Pinnacle Metals Rockfibre SA Saldanha Steel
Legal Compliance Audits	Vaal Sanitaryware / Lixil Africa Universal Oil Solutions Universal Recycling Company

- Environmental Impact Assessments

Numerous Environmental Impact Assessments has been completed for various customers for various projects. A few is listed below:

- Adient – Automotive Foam Plant and AEL
- AfriSam Roodepoort – Waste Disposal Site Decommissioning (Basic Assessment)



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- ArcelorMittal – Conversion of Galvanising Line, Waste Disposal Site Decommissioning
- ArcelorMittal – Proposed Waste Site Expansion (Full Scoping)
- Aveng Infraset – Closure of Quarry (Basic Assessment)
- Aveng Duraset (S24G and S22A Rectification Environmental Impact Assessment)
- Bumatech – Expansion of Waste processing site (Basic Assessment)
- Bright Refining (S24G and S22A Rectification Environmental Impact Assessment)
- Cape Gate – Abstraction of Water (Water Use License Application)
- Columbus Stainless – Proposed Dangerous Goods Storage (Basic Assessment)
- Canyon Coal – Proposed Coal Siding Project (Basic Assessment)
- Danone (Water Use License)
- Eco Energy – Decommissioning of Waste Processing Site (Basic Assessment / Waste License)
- Eco Energy – Proposed new Waste Processing Site (Basic Assessment / Waste License)
- Eco Energy – Section 24 G Rectification Environmental Impact Assessment)
- Flexilube SA – Expansion and modifications (Basic Assessment, Amendments)
- Goldplat Recovery - S22A Rectification Environmental Impact Assessment
- Intocast Quarries – EMPr Amendment and Waste License (Full Scoping)
- Retromin Refractories – Refractory brick processing plant (Basic Assessment / Waste License)
- Metso Minerals – Foundry Decommissioning Basic Assessment, Transfer Application
- National Ceramics – Gryphon (Water Use License), Gryphon (EA, AEL)
- National Ceramics – Gryphon (Water Use License), Gryphon (EA, AEL)
- National Ceramics – Pegasus (Atmospheric Emissions License (AEL) and Full Scoping EIA)
- Pinnacle Metals – Non Ferrous Recycling and Smelting plant (AEL and Full Scoping EIA)
- Reclite SA – Expansion of the Electronic and Electrical Waste processing facility
- SA Tank Terminals – Waste Treatment facility (AEL and Full Scoping EIA)



K A R I E N Z A N T O W

- Terra Nova Meyerton – Section 22 A rectification AEL and Impact Report
- Terra Nova Vanderbijlpark – Ceramic Crucible Plant (AEL and Full Scoping EIA)
- Universal Oil Solutions – Oil Recycling Facility (Full Scoping / Waste License)
- Universal Recycling Company – Ferrous Yard Scrap Recycling (Basic Assessment)
- Universal Recycling Company – Non Ferrous Yard Scrap Recycling (Full Scoping)
- Waterberg Diesel Storage Facility (Basic Assessment)
- VIP Recycling (S24 G / Impact Report)
- SA Superslag (S24 G / Impact Report)

- Environmental Control Officer Functions

Various of our customers does not have dedicated environmental resources on their premises and therefore require regular interaction and assistance in maintaining their legal compliance to the various license conditions or duty of care requirements. To this effect, a customised solution is recommended and agreed with the customer. Listed below is some of the customers that we assist on a regular basis;

- | | |
|-------------------------------|-------------------|
| - National Ceramic Industries | - Pinnacle Metals |
| - Rockfibre SA | - UOS |
| - Knights Foundry | - Eco Energy |
| - Intocast Quarries | - Retromin |

- Site Assessments, Remediation Plans and ARPs

- | | |
|------------------------|----------------------------|
| - Nampak | - Lixil Krugersdorp |
| - Aquarella Investment | - JJ Maritz and Son Mining |
| - Intocast Quarries | - Cape Gate |
| - Vaal Santiwareware | - Delmore Extension |
| - Cobra Watertech | - New Way Power |



KARIEN ZANTOW

FIELDS OF EXPERTISE

General

- Legal compliance audits
- Monitoring and Reporting programs
- Training
- Environmental Control Officer functions
- Environmental Monitoring and Auditing
- Annual Remediation Plans

Environmental Authorisation Applications

- Environmental Impact Assessment
- Environmental Management Plans
- Water Use License Application
- Waste License Applications
- Atmospheric Emission License applications
- Rectification Applications

Waste

- Waste Classification
- Integrated Waste Management Plans
- Waste Minimization Planning and implementation
- Waste Disposal Site Management and operational Plans
- Waste disposal site closure and remediation plans

Land Management

- Site Characterization



KARIEN ZANTOW

- Remediation Plans
- License and authorization application

Air Quality

- Compilations and Verification of Emissions Inventory
- Emission Reduction Strategies
- NAEIS Reports, Annual Reports
- Compliance Inspections and Audits
- Postponement Applications and Amendments
- Monitoring In Accordance with New Emission Limits Standards Requirements

Water

- Water License Applications
- Integrated Waste and Water Management Plans (IWWMP)
- Storm Water Management Plans
- Water balances
- Borehole monitoring
- Surface water monitoring
- Data management and reporting



University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae Agriculturae with specialisation in Animal Science

with all the associated rights and privileges
was conferred on

KARIEN DE WET

in terms of the Higher Education Act, 1997 and
the Statute of the University


On behalf of the Council and Senate
(Sgd) CWI Pistorius
Vice-Chancellor and Principal

On behalf of the Faculty of
Natural and Agricultural Sciences
(Sgd) RM Crewe
Dean

(Sgd) NJ Grové
Registrar

Date of Conferment
15 April 2003

Certified a true translation of the original Certificate


Registrar

Signed at Pretoria on the twenty-first day of February, 2013



University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae Honores with specialisation in Environmental Technology

with all the associated rights and privileges
was conferred on

KARIEN DE WET

in terms of the Higher Education Act, 1997 and
the Statute of the University


On behalf of the Council and Senate
(Sgd) CWI Pistorius
Vice-Chancellor and Principal

On behalf of the Faculty of Engineering,
Built Environment and Information Technology
(Sgd) RF Sandenbergh
Dean

(Sgd) NJ Grové
Registrar

Date of Conferment
22 April 2004

Certified a true translation of the original Certificate


Registrar

Signed at Pretoria on the twenty-first day of February, 2013



Certificate of Competence

**UNIVERSITY OF THE WITWATERSRAND
JOHANNESBURG**

FACULTY OF COMMERCE, LAW & MANAGEMENT

**GRADUATE SCHOOL OF
BUSINESS ADMINISTRATION**

**MANAGEMENT ADVANCEMENT
PROGRAMME**

This is to certify that

KARIEN DE WET

attended and participated in the programme during the period

MARCH – NOVEMBER 2008

and has completed all the requirements prescribed for the programme
(Details shown overleaf)

Handwritten signature of Mthuli Ncube in black ink.

Head, School of Business Administration

Handwritten signature of Katherine A. Munro in black ink.

Dean, Faculty of Commerce, Law & Management

Signed in Johannesburg on 21 November 2008



Certificate of A t t e n d a n c e

Karien Zantow

Mine Closure Legislation
Amendments

17 November 2020



Meloshni Andrews
Chief Executive Officer

Validation Number: FAMC 2018/1219

CPD Points: 1



UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



Private Bag 3 Wits, 2050
Fax: 02711 7176029
Tel: 02711 7176006

Reference: Ms Louise du Plooy
E-mail: louise.duplooy@wits.ac.za

04 November 2014
Person No: 0618386K

Ms K De Wet
Po Box 3858
1911
South Africa

Dear Ms De Wet

Congratulations on completing the requirements for the **Postgraduate Diploma in Science**.

Enclosed is a copy of a full academic record for the years that you have been at Wits. Please keep this document safely as you may need it from time to time.

Congratulations and best wishes.

Yours sincerely

A handwritten signature in black ink, appearing to read 'René Vosloo'.

Ms René Vosloo
Faculty Registrar
Faculty of Science



This is to certify that

K. DE WET

Has successfully completed the

**ISO 14001:2004
Revision Course**

Organised by BSI Quality Services (Pty) Ltd

Certified by:

**Presenter
E.A. Holmes**

Date:

4 February 2005

Certification No:

20050213 – QU10



1 Data Street, Ormonde, 2091 • P.O. Box 2079, Southdale, 2135, South Africa
Tel: +27 (0)11 496 3500 • Fax: +27 (0)11 496 3504

The British Standards Institution is incorporated by Royal Charter

CERTIFICATE

**Environmental Assessment
Practitioners Association
of South Africa**



Registration No. 2019/1871

Herewith certifies that

KARIEN ZANTOW

is registered as an

Environmental Assessment Practitioner

**Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).**

Effective: 01 April 2026

Expires: 31 March 2027

Chairperson

Registrar



herewith certifies that

Karien Zantow

Registration Number: 400114/14

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **12 March 2014**

Expires **31 March 2027**



President of Council

Chief Executive Officer



Annexure H
Public Participation Report

To be Included in Final BAR

Annexure I

Site Layout



Legend

- Existing Facility
- Existing Layout
 - Lithium-ion Battery Recycling
 - Manual Depopulation Stations
 - Storage and Sorting of E-Waste
 - Storage and Sale



Legend

Layout

- Lithium ion Battery Recycling
- Manual Dismantling
- PCBs Recycling
- Storage and Sorting of E-Waste

