

Appendix C3:  
Background Document Information

NOVEMBER  
2020



ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

DEVELOPMENT OF A PROPOSED WASTE RECOVERY PLANT AT HIGHVELD STEEL

NEAR WITBANK, MPUMALANGA PROVINCE

Fodere Titanium has developed a disruptive technology for the economic extraction of valuable minerals from mining ore and waste materials. The process offers solutions for simultaneously extracting both vanadium and titanium oxides from slag materials. The technology developed by the Fodere Group is also demonstrated to extract aluminium as aluminium oxide (Al<sub>2</sub>O<sub>3</sub>), magnesium as magnesium oxide (MgO) and calcium as calcium sulphate/gypsum (CaSO<sub>4</sub>). The project is known as the Fodere Titanium Zero Waste Recovery Solution.

The waste recovery plant is proposed to be located on Portion 48 of Farm Elandsfontein No. 309, approximately 17 km west of eMalahleni town in the eMalahleni Local Municipality (LM) within the Nkangala District Municipality (DM) in Mpumalanga. The development area is approximately 4 ha in extent and is contained within the EVRAZ Highveld Steel and Vanadium property. The site is accessible directly off the R104, from the N4 turnoff near Kwa-Guqa informal settlement.

### Aim of this background information document

This document aims to provide you, as an interested and/or affected party (I&AP), with:

- » an overview of the proposed project proposed by Fodere Titanium.
- » an overview of the Environmental Impact Assessment (EIA) process and specialist studies being undertaken to assess the proposed project.
- » details of how you can become involved in the EIA process, receive information, or raise issues, which may concern and/or interest you.

### Overview of the proposed fodere titanium zero waste recovery solution

Anglo African Metals (Pty) Ltd (the South African registered company of Fodere Titanium) has identified a suitable tailings/slag resource which can be processed using their developed technology at Highveld Steel located between Balmoral and Emalahleni in Mpumalanga. A site for a small-scale industrial plant has been identified within the Highveld Steel property in close proximity to the slag stockpile.

The main infrastructure associated with the facility includes the following, all wholly contained within Portion 48 of Farm Elandsfontein No. 309:

- » Chemical area, where all process chemicals including acid are produced, stored and handled as required by the waste recovery process.
- » Substation and plant utility unit as interface and controlling unit for the electricity utilised by the plant during operation.
- » Slag stockpile.
- » Crushing plant.
- » Mill.
- » Product area for storage of the various products produced through the recovery process.
- » Reagent area, for the storage and handling of reactants utilised in the waste recovery process.
- » A security area.
- » Parking lot.
- » Admin and control room including offices and ablutions for staff.

The plant will be developed to process 2000 tonnes of tailings/slag per month, approximately 3 tons per day and will be primarily fuelled by LPG and Sasol gas brought into site by dedicated transport truck deliveries.

Operation of the plant is anticipated for 24 hours per day, 365 per year (i.e. non-stop operation) and will utilise the slag produced by the Highveld Steel operations. The process offers solutions for simultaneously extracting both vanadium and titanium oxide from slag materials. The technology developed by the Fodere Group is also demonstrated to extract aluminium as aluminium oxide (Al<sub>2</sub>O<sub>3</sub>), magnesium as magnesium oxide (MgO) and calcium as calcium sulphate/gypsum (CaSO<sub>4</sub>)



Plant layout map



The technology developed by Fodere Titanium includes the following approximate process :

- » Crushing and milling of titanium dioxide (TiO<sub>2</sub>) slag to the appropriate size for further treatment.
- » Magnetic separation of entrained metallic iron from the crushed slag, which is used to separate ferroalloy production process.
- » Alkali roasting of the remaining feedstock using a gas fired kiln. Off-gases from the kiln is a combination of mainly carbon monoxide (CO) and a very small concentration of sulphur dioxide. These off gases are passed through the off-gas scrubber to remove SO<sub>2</sub> and the remaining CO<sub>2</sub> and CO is reused in the kiln to supply part of the required heat.
- » The material produced during alkali roasting from the kiln is then leached in water to dissolve vanadium and alumina.
- » A further process produces vanadium pentoxide and recovers aluminium oxide from the leached products in the steps above.
- » The remaining solid or residue after extracting vanadium is treated via leaching and curing sulphuric acid. The SO<sub>2</sub> gases or fumes given out during leaching or roasting are scrubbed off.
- » Iron, magnesium and TiO<sub>2</sub> are recovered from solution via precipitation steps.
- » Precipitated TiO<sub>2</sub> is heated to remove water.
- » The leach solution is neutralised with lime to form calcium sulphate and respective sulphates. The mixture of sulphates is heated in the furnace to produce sulphuric acid which is then used in the leaching step. The solid material after heating in the furnace is mainly calcium silicate which is used for cement production and construction.
- » The remaining material after leaching of titanium, magnesium, aluminium oxide etc is mainly silica sand which is also used for construction.

This process therefore recovers vanadium and titanium oxide from slag materials, with water, carbon monoxide and carbon dioxide, gypsum and synthetic rutile produced at the various stages. These materials are all useful in other processes and are planned to be collected and sold to third parties. The process itself therefore results in no further waste production, while simultaneously utilising a common waste type – i.e. slag.

#### Environmental impact assessment process

The Fodere Titanium Zero Waste Recovery Solution triggers the need for following environmental permits:

- » **Environmental Authorisation (EA)** from the National Department of Environment, Forestry and Fisheries (DEFF), in consultation with the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs , in accordance with the requirements of the National Environmental Management Act (No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations (GNR 326).
- » A **Waste Management License (WML)**, from the DEFF for the recovery of waste, as is proposed as part of the Zero Waste Recovery Solution, as well as the construction of the infrastructure for this purpose trigger such activities, in accordance with the National Environmental Management: Waste Act (No. 59 of 2008) (NEM:WA), and the List of Waste Management Activities (GNR 921).
- » An **Atmospheric Emission License (AEL)**, from the Nkangala District Municipality, in accordance with the National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM:AQA), and List of Activities resulting in Atmospheric Emissions published in GNR 893.

Anglo African Metals (Pty) Ltd (the South African registered company of Fodere Titanium) appointed Savannah Environmental as the independent environmental consulting company in accordance with NEMA and Regulations 21 to 24 of the 2014 EIA Regulations (GNR 326) in support of an integrated application for Environmental Authorisation (EA) and a Waste Management License (WML). The S&EIA process will also support the future application for an Atmospheric Emission License (AEL).

An EIA is an effective planning and decision-making tool for the project developer as it allows for the identification and management of potential environmental impacts. It provides the opportunity for the developer to be fore-warned of potential environmental issues, and allows for the resolution of issues reported on in the Scoping and EIA Reports as well as a dialogue with interested and affected parties (I&APs). Comprehensive, independent environmental specialist studies are required in accordance with the EIA Regulations to provide the competent authority with sufficient information in order to make an informed decision. The EIA process being undertaken for the proposed Fodere Titanium Zero Waste Recovery Solution comprises two phases – i.e. Scoping and Impact Assessment - and involves the identification and assessment of environmental impacts through specialist studies, as well as public participation. The process followed in these two phases is as follows:

- The **Scoping Phase** includes the identification and description of potential impacts associated with the proposed project through a desktop study and consultation with affected parties and key stakeholders. This phase considers the broader project area in order to identify and delineate any environmental fatal flaws, no-go or sensitive areas, as well as project alternatives in order to determine which should be assessed in more detail in the EIA Phase. Following the public review period of the Scoping report, this phase culminates in the submission of a final Scoping Report and Plan of Study for EIA to the competent authority for acceptance and approval to continue with the EIA phase of the process.
- The **EIA Phase** involves a detailed assessment of potentially significant positive and negative impacts (direct, indirect, and cumulative) identified in the Scoping Phase. This phase considers a proposed development footprint and includes detailed specialist investigations (including field surveys), consideration of feasible alternatives and public consultation. Recommendations of practical and achievable mitigation and management measures are included in an Environmental Management Programme (EMPr) considering all phases of the project. Following a review of the EIA report and EMPr by stakeholders, this phase culminates in the submission of a Final EIA Report and EMPr to the competent authority for review and decision-making.



### What are the potential environmental impacts associated with the fodere titanium zero waste recovery solution?

Based on the nature and extent of the proposed project, the nature of the affected area, and experience of the consultants on similar projects, a number of potential environmental impacts associated with the proposed project have been identified at this stage. Site-specific studies will be undertaken for the identified site in order to delineate areas of potential sensitivity, assess impacts associated with the project and make recommendations regarding avoidance, management and mitigation of impacts. Specialist studies will consider the following:

- » Impacts on heritage resources, including archaeology and palaeontology.
- » Impacts on the social and socio-economic environment.
- » Impacts on the visual quality of the area.
- » Air quality impacts.

The specialist studies will be informed by existing information, field observations and input from the public participation process. As an I&AP, your input is considered as an important part of the process, and we urge your involvement.

### Public participation process

The sharing of information forms the basis of the public participation process and offers you the opportunity to become actively involved in the EIA process from the outset. Comments and inputs from I&APs during the EIA process are encouraged in order to ensure that all potential impacts are considered within the ambit of the study.

The public involvement process aims to ensure that:

- » Information containing all relevant facts in respect of the application are made available to I&APs for review.
- » Participation by potential I&APs is facilitated in such a manner that I&APs are provided with a reasonable opportunity to comment on the application.
- » Adequate review period is provided for I&APs to comment on the findings of the Scoping and EIA reports.

### Your responsibilities as an I&AP

In terms of Section 24J of the National Environmental Management Act, Act 107 of 1998 and the Department of Environmental Affairs Public Participation Guideline 2017, as part of the EIA process, an I&AP has the responsibility to:

- » Provide comment regarding the proposed project within the specified timeframes.
- » Submit written comment directly to the EAP.
- » Disclose any direct business, financial, personal, or other interest which that I&AP may have in the approval or refusal of the applications.

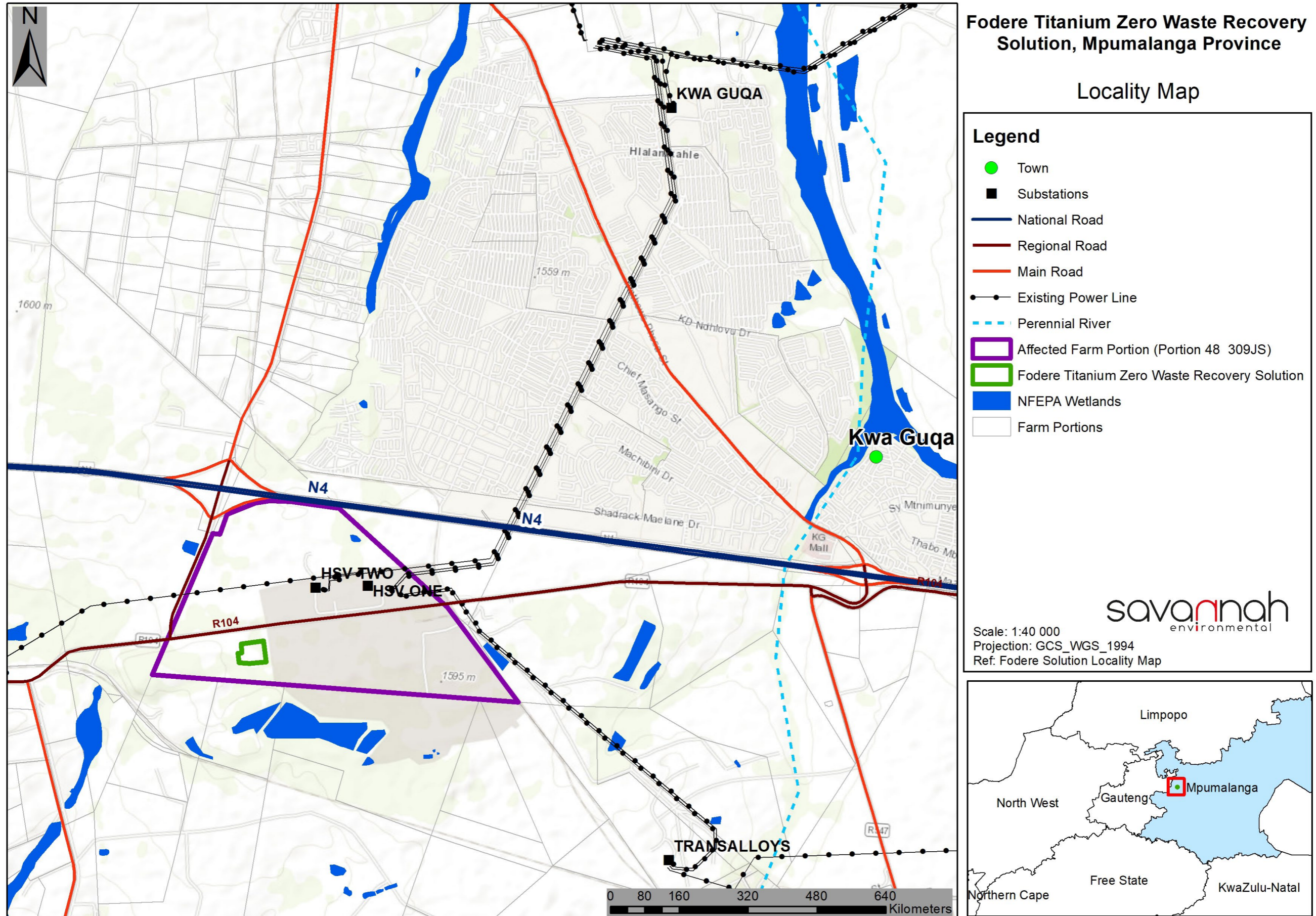
### How to become involved

1. By responding (by phone, fax or email) to our invitation for your involvement which has been advertised in local news papers and on site.
2. By returning the attached Reply Form to the relevant contact person.
3. By attending the virtual meetings to be held during the course of the EIA process.
4. By contacting the consultants with queries or comments.
5. By reviewing and commenting on the Scoping and EIA reports within the stipulated 30-day review periods.

If you consider yourself an I&AP for the Fodere Titanium Zero Waste Recovery Solution, we urge you to make use of the opportunities created by the public participation process to provide comment or raise those issues and concerns which affect and/or interest you, and about which you would like more information. Your input into this process forms a key element of the EIA process.



Figure 1: Overall Fodere Titanium Zero Waste Recovery Solution Locality Map and Layout





## COMMENTS AND QUERIES

Direct all comments, queries or responses to:

*Savannah Environmental*

*Nicolene Venter*

P.O. Box 148, Sunninghill, 2157

Tel: 011 656 3237

Fax: 086 684 0547

Email: [publicprocess@savannahsa.com](mailto:publicprocess@savannahsa.com)

To view project documentation, visit  
[www.savannahSA.com](http://www.savannahSA.com)



**ENVIRONMENTAL IMPACT ASSESSMENT AND PUBLIC PARTICIPATION PROCESSES**

**DEVELOPMENT OF A WASTE RECOVERY PLANT AT HIGHVELD STEEL NEAR WITBANK, MPUMALANGA PROVINCE**

November 2020

Return completed registration and comment form to: **Nicolene Venter** or **Ronald Baloyi** of **Savannah Environmental**

**Phone:** 011 656 3237 / **Mobile (incl. 'please call me'):** 060 978 8396 / **Fax:** 086 684 0547

**E-mail:** publicprocess@savannahsa.com

**Postal Address:** PO Box 148, Sunninghill, 2157

**Your registration as an interested and/or affected party will be applicable for this project only and your contact details provided are protected by the PoPI Act of 2013**

**Please provide your complete contact details:**

Name & Surname:		
Organisation:		
Designation:		
Postal Address:		
Telephone:		Fax:
Mobile:		
E-mail:		

**Would you like to register as an interested and affected party (I&AP)?** YES   
 (please tick the relevant box) NO

**Note:** In terms of EIA Regulations, 2014, as amended, Regulation 43(1), you are required to register as an I&AP to receive further correspondence regarding the EIA process and comment on the Reports being made available for comments, and to disclose any direct business, financial, personal or other interest which you may have in the approval or refusal of the application (add additional pages if necessary):

**Please list your comments regarding the Environmental Impact Assessment process** (add additional pages if necessary):

**Please provide contact details of any other persons who you regard as a potential interested or affected party:**

Name & Surname:	
Postal Address:	
Telephone:	
Mobile:	
E-mail:	