



Char Technology Pty Ltd (Char Tech) proposes to install and operate a Vanadium Carbon-Nitride (VCN) Furnace within its existing licensed facility located at Erf 43 and 44, Ferrobank Industrial Park, eMalahleni. The project does not involve new buildings or greenfield development; instead, the furnace will be installed inside an existing industrial structure.

## **PURPOSE OF THE PROJECT**

The furnace will produce vanadium carbon-nitride (VCN), a high-value alloying material used in modern steel manufacturing. This will diversify Char Tech's production portfolio, support local mineral beneficiation, and strengthen long-term economic sustainability.

## **PROJECT NEED AND BENEFITS**

- Supports local beneficiation and downstream vanadium processing.
- Enhances economic resilience and job security at the existing facility.
- Enables limited short-term construction employment and long-term operational jobs.
- Utilises existing industrial infrastructure, reducing environmental disturbance.

## **LOCATION OF THE PROJECT**

The project is situated inside the Ferrobank Industrial Park—an entirely transformed and industrialised area. No natural vegetation, wetlands, rivers, heritage resources, or biodiversity-sensitive areas occur within the project footprint.

## **HOW THE FURNACE WORKS**

The VCN furnace processes briquettes containing vanadium oxides, carbon, and iron through four stages:

1. Receipt and internal handling of briquetted feed.
2. Pre-heating to remove moisture.
3. High-temperature carbothermal reduction and nitridation (600–1,500°C) under nitrogen.
4. Cooling, packaging, and dispatch of the VCN product.

All emissions are captured through an enclosed off-gas system, carbon monoxide flaring, and a baghouse filtration system.

## **ENVIRONMENTAL CONSIDERATIONS**

**Air Quality:** The Air Quality Impact Assessment (AQIA) confirmed that emissions will comply with all Minimum Emission Standards and National Ambient Air Quality Standards.

**Biodiversity:** The site is fully transformed; no natural habitat will be disturbed.

**Water Resources:** No watercourses lie within 1.5 km. The furnace uses a closed-circuit cooling system requiring only 2.4 m<sup>3</sup>/day of water.

**Heritage:** No heritage resources or palaeontological features will be impacted.

## **ENVIRONMENTAL MANAGEMENT**

A full Environmental Management Programme (EMPr) will be implemented, including:

- Air quality monitoring and compliance.
- Stormwater and spill prevention.
- Waste handling and safe operations.
- Health, safety, and emergency response procedures.

## **PUBLIC PARTICIPATION**

Public participation was undertaken in accordance with legislation. Comments related mostly to air quality, local benefits, and environmental protection. All issues were addressed through specialist studies and transparent engagement.

## **CONCLUSION**

The VCN Furnace Project will operate entirely within an existing industrial footprint, presents low environmental risk, and offers socio-economic benefits through job retention, local procurement opportunities, and value-added processing. The project is suitable for environmental authorisation subject to adherence to the EMPr and licensing requirements.

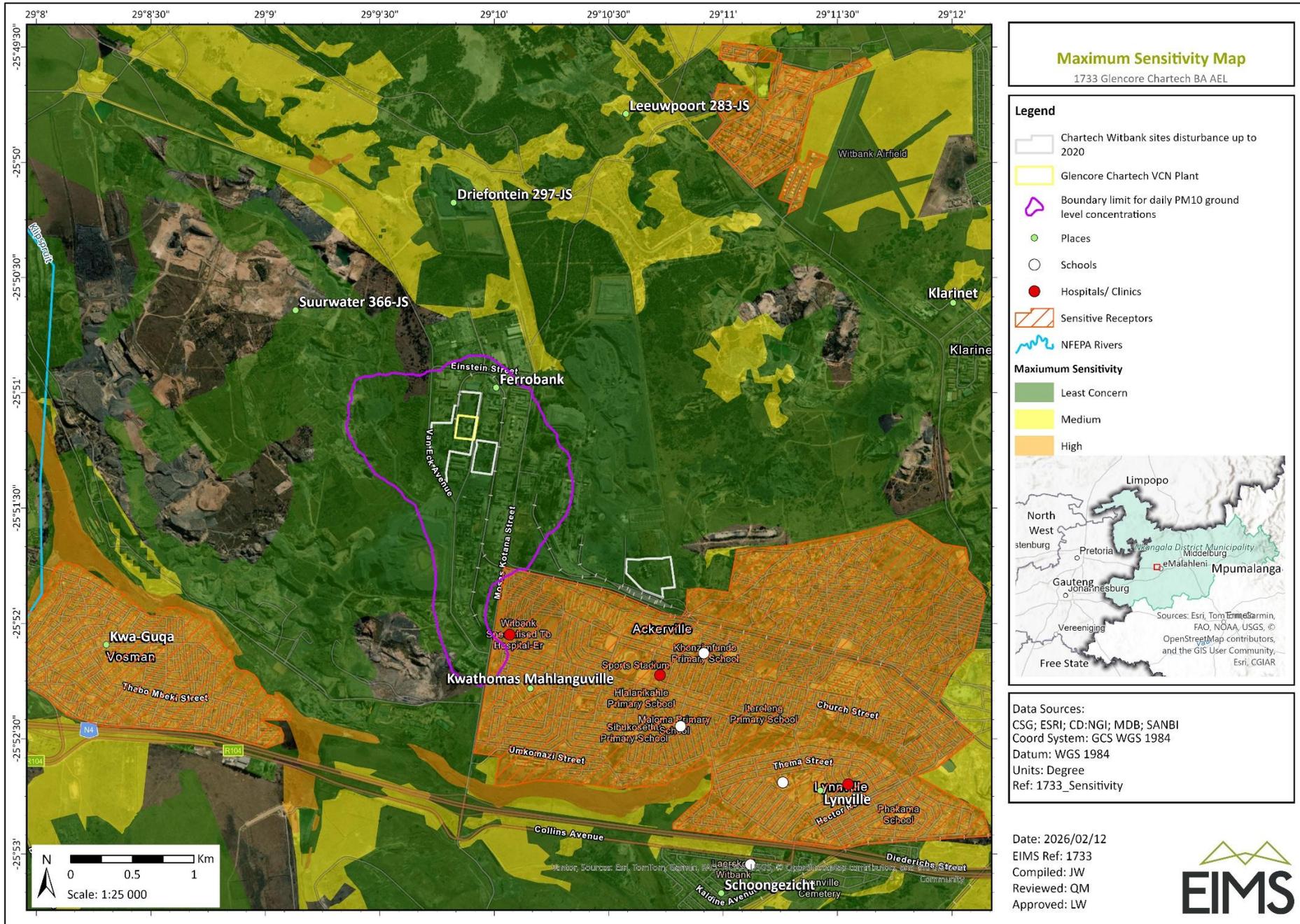


Figure 25: Composite Sensitivity Map