ATMOSPHERIC EMISSION LICENCE (AEL) APPLICATION FOR THE ARXO METALS RESEARCH AND DEVELOPMENT (R&D) FACILITY LOCATED IN BRITS, NORTH WEST PROVINCE
AEL NUMBER: BPDM/ARXO/PAEL 4.1, 4.9 & 4.16/MAY 2025
MANYABE CONSULTANCY (PTY) LTD PROJECT CODE: 202243

PUBLIC REVIEW FROM FRIDAY, 06 MARCH 2026 TO FRIDAY, 10 APRIL 2026

BACKGROUND INFORMATION DOCUMENT (BID): MARCH 2026

PURPOSE OF THIS DOCUMENT

The purpose of this Background Information Document (BID) is to provide you as a potential Interested and/or Affected Party (I&AP) with an overview of the proposed project.

The public participation process (PPP) forms an integral part of the Air Emissions Licensing processes, and the distribution of this document is a crucial step in advising I&APs on how they can be involved in the process.

To register and for more information on the project, please contact the following person (s):

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The aim of this document is therefore to provide I&APs with the proposed project brief, description; and legal requirements for the PPP.

INTRODUCTION AND BACKGROUND

Arxo Metals (Pty) Ltd (Arxo Metals), owned by Tharisa Minerals (Pty) Ltd (Tharisa); and specialises in the research, development, design and manufacturing of ferroalloys, from smelting various ores is intending to obtain an Air Emissions Licence (AEL) for the existing Arxo Metals R&D Facility (herein referred to as AMRD).

Manyabe Consultancy (Pty) Ltd (MC) was appointed by Arxo Metals as an independent Environmental Assessment Practitioner (EAP), to undertake the AEL Application through a Scoping and Environmental Impact Reporting (S&EIR) process in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998), as amended (NEMA); and the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM:AQA), in order to obtain Environmental Authorisation (EA) and an AEL, respectively.

The EA and AEL Applications were submitted to the North West Department of Economic Development, Environment, Conservation and Tourism (NW DEDECT) and Bojanala Platinum District Municipality (BDM), respectively.

The EA Application was subsequently withdrawn, as the operation of the facility did not trigger any listed activities in terms of the NEMA Environmental Impact Assessment (EIA) Regulations, 2014, as amended, promulgated in Government Notice Regulation (GNR.) 982 of 04 December 2014 in Government Gazette (GG) 38282).

The AEL Application process however proceeded in accordance with section 21 of NEM:AQA for the triggered listed activity 4, Sub-categories 4.1, 4.9 and 4.16 promulgated in GN. 893 of 22 November 2013 in GG 37054, as amended. A Provisional AEL (PAEL) was subsequently issued in terms of section 37, 40(1)(a) and 46 of NEMAQA, on 20 February 2024, a year after it was lodged (20 February 2023).

Updated application forms were submitted on 09 September 2024, followed by the submission of additional information submitted on 30 September 2024, which included the corrected number of stacks (6 in total). As a result of this correction, and due to the changes and decommissioning of certain facility units, an amended PAEL was issued on 09 October 2024, valid until 19 February 2025.

A further application was submitted on 21 January 2025. The PAEL issued on 20 February 2024 was made available for public review from 13 March 2025 to Monday 14 April 2025. The PPP report was submitted to the BDM on 24 April 2025. The amended PAEL was issued on 08 May 2025, which is valid until 07 May 2026, which necessitated the submission of the current application. It must be noted that the current application is for an AEL with a validity period of five (5) years.

LOCALITY

The AMRD is located on number 15, Piet Pretorius Street, Brits i.e. Portion 0 of Erf 2236, Brits Extension 14, Registration Division JQ, within the Madibeng Local Municipality, BDM, North West Province. Access to the site is from Piet Pretorius Street (refer to Figure 3).

The facility is within an urban area (an industrial node) and is surrounded by warehouses and businesses. The Erf portion on which the Facility is situated is currently registered in the name of Business Venture Investments 2121 (referred to and trading as Autocast Mining). Autocast Mining are leasing a portion of the building to Arxo Metals.

PROJECT DESCRIPTION

AMRD is a pilot study trialling and testing various ore smelting processes. There are currently six (6) stacks on the property as follows:

- Abatement equipment 1 (GCP-01)
- Abatement equipment 2 (GCP-02)
- Abatement equipment 3 (GCP-03)
- Abatement equipment 4 (GCP-04)
- Abatement equipment 5 (GCP-05)
- Abatement equipment 6 (GCP-06)

As advised by the BDM, GCP 02 (10m) and GCP 06 (8m) will need to be extended i.e. the stacks must be 2m above the highest building, and the AMRD highest building height is 14m. This therefore means that GCP 02 will be extended by 6m; and GCP 06 will be extended by 8m, both to be raised up to 16m above ground.

Iron ore, Manganese, Chromium, Nickel, and Platinum Group Metals (PGM) ores, Coal and Carbon are added during the smelting process. The development, design and manufacturing of Ferroalloys, from smelting various ores also involves the use of acids such as the Hydrochloric Acid (HCl) and Sulphuric Acid (H_2SO_4).

The ore is smelted in different size furnaces, all pilot scale (35KW to 1MW).

There are three (3) electric arc furnaces currently operating i.e.

- 420KVA DC
- 1MW DC
- 35 KVA DC

The alloys are processed in four (4) induction furnaces i.e.:

- 10kg
- 200kg
- 1-tonne
- 500kg

Some of the furnaces are being fed manually while some are fed from bins from the top. The ore raw material is stored outside the building in bunkers. The dry slag is temporarily stored outside for transportation to the Tharisa Mine.

The ore concentrates are dried prior to being fed into the furnaces. The driers are fed via conveyors. The bins are placed underneath the driers for collection of the dried material. The forklifts are used to transit bins with the dried concentrate which is then fed into furnaces.

The production rate for slag is approximately 150tons per month; and the production rate for alloy is ±40 tons or less per month. Materials used as energy sources are oxygen and electricity. Abatement equipment used include wet Scrubbers and baghouses.

Alloys and slag from respective ores are then sent to the laboratory for analysis. The slag has been tested and is inert. Changes and modifications are then affected based on the analysis feedback. By-product slags and product alloys are treated, temporarily stored outside the smelter facility, and sent back to the Tharisa Mine. Production rates for slag and alloy are approximately 150 tonnes per month (tpm) and ±40 tpm, respectively.

Leaching process description

With respect to the leaching plant, the following is applicable:

- Input: Sulphide ores and concentrates.
- Output: Dead roasted ores or oxides of nitrogen (NOx) and oxides of Sulphur (SOx) in off gas.
- Off gas is wet scrubbed to sulphuric acid and thereafter neutralised with caustic soda.
- Caustic soda and acids are regenerated.

Manganese ore leaching

With respect to the leaching plant, the following is applicable:

- Slag from the smelting of low-grade Manganese ore is prepared by crushing and/or milling and screening.
- This is leached with sulphuric acid (2-10% H_2SO_4) to extract several metals from the oxides or silicate slag at ambient temperature with either a tank leach or a heap leach.
- 10-40kg of slag.
- 20-100L of acidic salt laden solution (pH < 3).
- Solution is neutralised, salts precipitated and filtered out before all components are sent for assay or further processing.
- Barren slag is washed and disposed of as inert material.

Refer to Figure 1 and Figure 2 for the facility's process flow.

LEGAL REQUIREMENTS

The proposed application triggers the following legislation:

AEL Application

An AEL Application is being applied for in terms of Section 22A of the NEM:AQA. In terms of Section 22 of the NEM:AQA, no person may without a PAEL or an AEL conduct an activity- (a) listed on the national list anywhere in the Republic; or (b) listed on the list applicable in a province anywhere in that province. The AMRD Facility triggers the following listed activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social, economic and ecological conditions, or cultural heritage, published in GN 893 in GG 37054 dated 22 November 2013 (as amended):

Category 4: Metallurgical Industry:

- Subcategory 4.1: Drying and Calcining
- Subcategory 4.9: Ferro-Alloy Production
- Subcategory 4.16: Smelting and Converting of Sulphide Ores

An AEL Application process must be undertaken to obtain an AEL from the relevant District Municipality.

Public Participation Process

Notice is hereby given, in terms of Section 41 of the EIA Regulations of 2014, as amended (GNR. No. 982 in GG. 38202 of 04 December 2014) promulgated in terms of Section 24(5) and 44 of the NEMA; and Section 38(3)(b) of the NEM:AQA, that Arxo Metals intends to apply an AEL for the existing AMRD Facility.

LEGAL REQUIREMENTS OF THE PPP AS REQUIRED BY SECTION 41 OF THE NEMA:

41 (1) This regulation only applies in instances where adherence to the provisions of this regulation is specifically required. (2) The person conducting a PPP must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential I&APs of an application or the proposed application which is subjected to public participation by:

(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site;

(b) giving written notice, in any of the manners provided for in section 47D of the Act, to (i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (iii) the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area; (iv) the municipality which has jurisdiction in the area; (v) any organ of state having jurisdiction in respect of any aspect of the activity; and (vi) any other party as required by the competent authority;

(c) placing an advertisement in (i) one local newspaper; or (ii) any official that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official referred to in paragraph (c)(ii); and

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to (i) illiteracy; (ii) disability; or (iii) any other disadvantage.

(3) A notice, notice board or advertisement referred to in subregulation (2) must (a) give details of the application or proposed application which is subjected to public participation; and (b) state (i) whether a Basic Assessment (BA) or S&EIR procedures are being applied to the application; (ii) the nature and location of the activity to which the application relates; (iii) where further information on the application or proposed application can be obtained; and (iv) the manner in which and the person to whom representations in respect of the application or proposed application may be made.

(4) A notice board referred to in subregulation (2) must (a) be of a size of at least 60cm by 42cm; and (b) display the required information in lettering and in a format as may be determined by the competent authority.

It must be noted that the PPP process is being followed to announce the project application.

MC on behalf of Arxo Metals took into account all relevant guidelines applicable to public participation as contemplated in Section 24J of the NEMA.

The PPP is being undertaken as follows:

- An I&AP database has been updated and is being maintained which includes all I&APs in respect of the project in accordance with Regulation 42. The NEMA EIA Regulations of 2014, as amended, require identification of and consultation with communities and I&APs.
- BIDs and Letters are being sent to all I&APs, written in any of the manners provided for in section 47D of the NEMA, announcing the project, containing project information and a locality map.
- Affected parties who cannot be reached via mail, fax or e-mail, are being visited for delivery of the letters. The letters have attached sheets which allow I&APs to register and/ or/ comment.
- Emails having attached letters and BIDs are being sent to all I&APs.
- Four (4) site notice boards have been fixed at places conspicuous to and accessible by the public at the boundary of the AMRD site. Given the fact that the site cannot be accessed by the general public due to it being located within an industrial area, other site notices have been placed at strategic points where the general public will have access to them.
- Two (2) newspaper advertisements have been placed in the Brits Pos and Rustenburg Herald local newspapers.
- The BID has been made available on the MC website (https://manyabeconsultancy.com/stakeholder-engagement/); and at the Madibeng library.

LEGAL REQUIREMENTS OF THE PPP AS REQUIRED BY SECTION 41 OF THE NEMA:

Section 38(3) of the NEM:AQA (a) states that "an applicant must take appropriate steps to bring the application to the attention of relevant organs of state, interested persons and the public. (b) Such steps must include the publication of a notice in at least two newspapers circulating in the area in which the listed activity applied for is or is to be carried out-

(i) describing the nature and purpose of the licence applied for;

(ii) giving particulars of the listed activity, including the place where it is or is to be carried out;

(iii) stating a reasonable period within which written representations on or objections to the application may be submitted, and the address or place where representations or objections must be submitted; and

(iv) containing such other particulars as the licensing authority may require."

SPECIALISTS' STUDIES TO BE UNDERTAKEN

The Air Quality Impact Assessment Study - UPDATE will be undertaken for the current AMRD. .

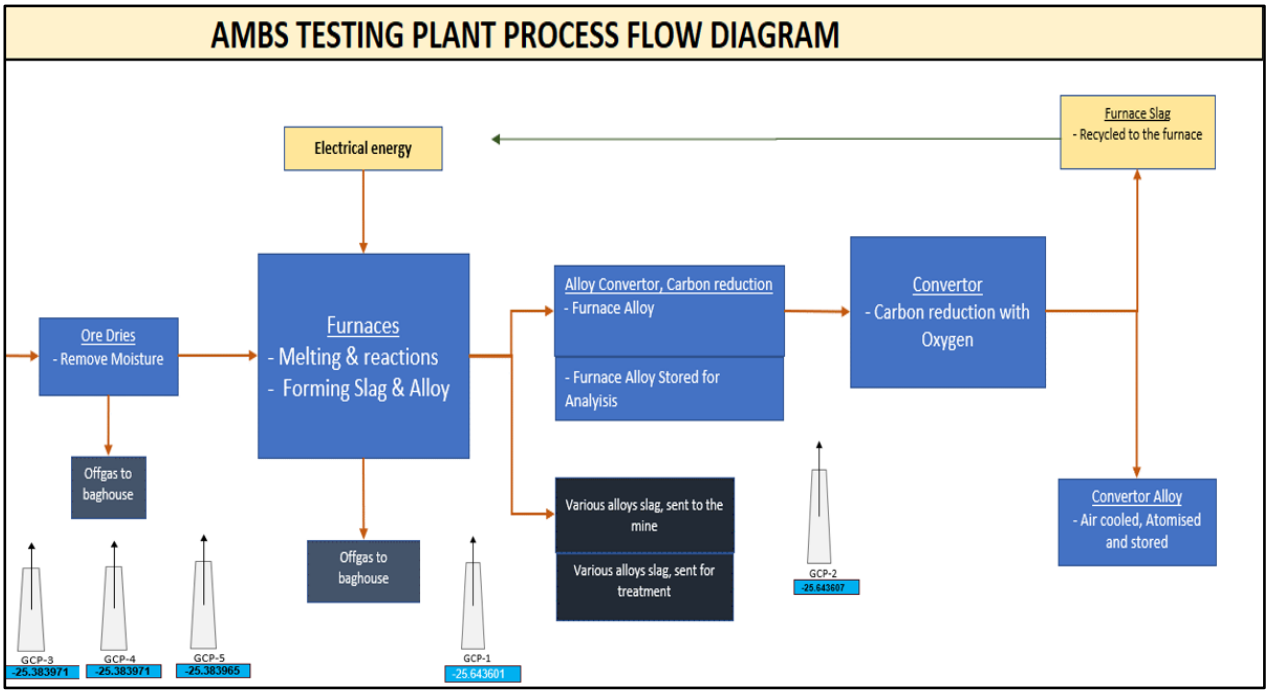

Figure 1: Basic block flow diagram for the operation (A)

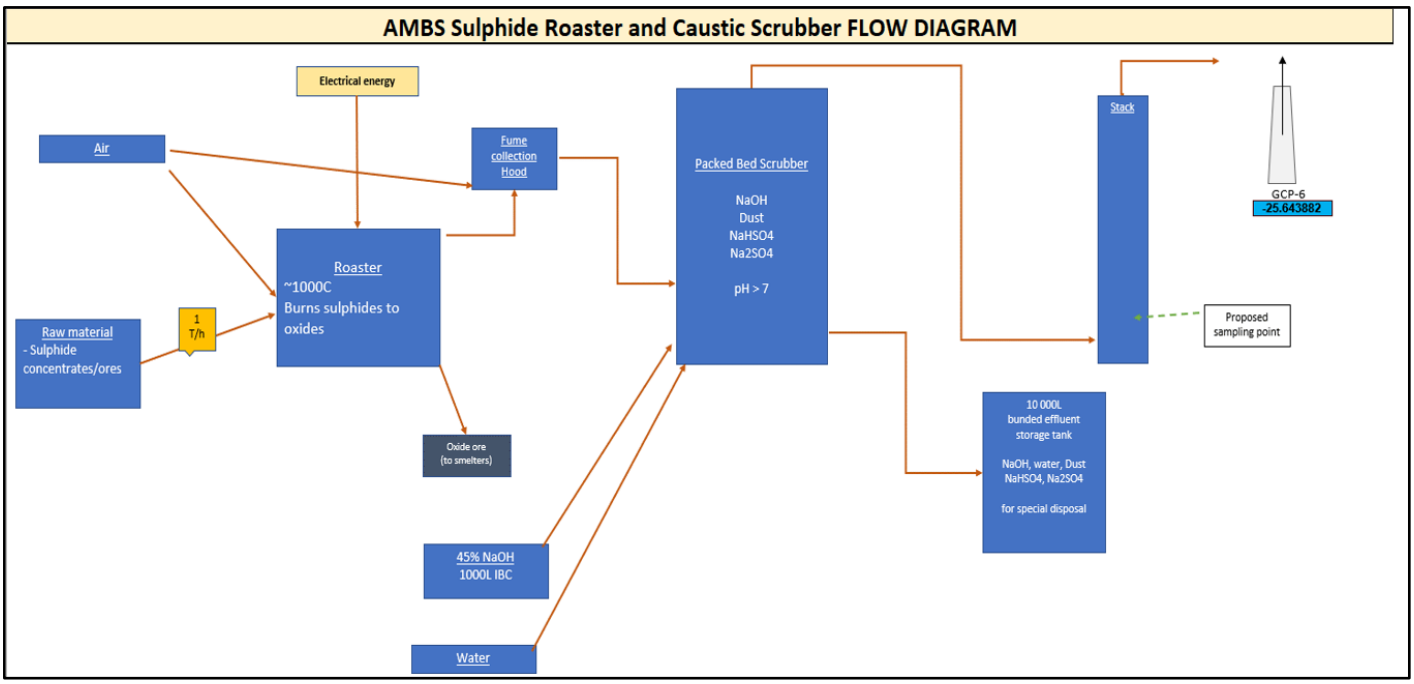

Figure 2: Basic block flow diagram for the operation (B)

YOUR COMMENTS ARE VALUABLE TO US!!!

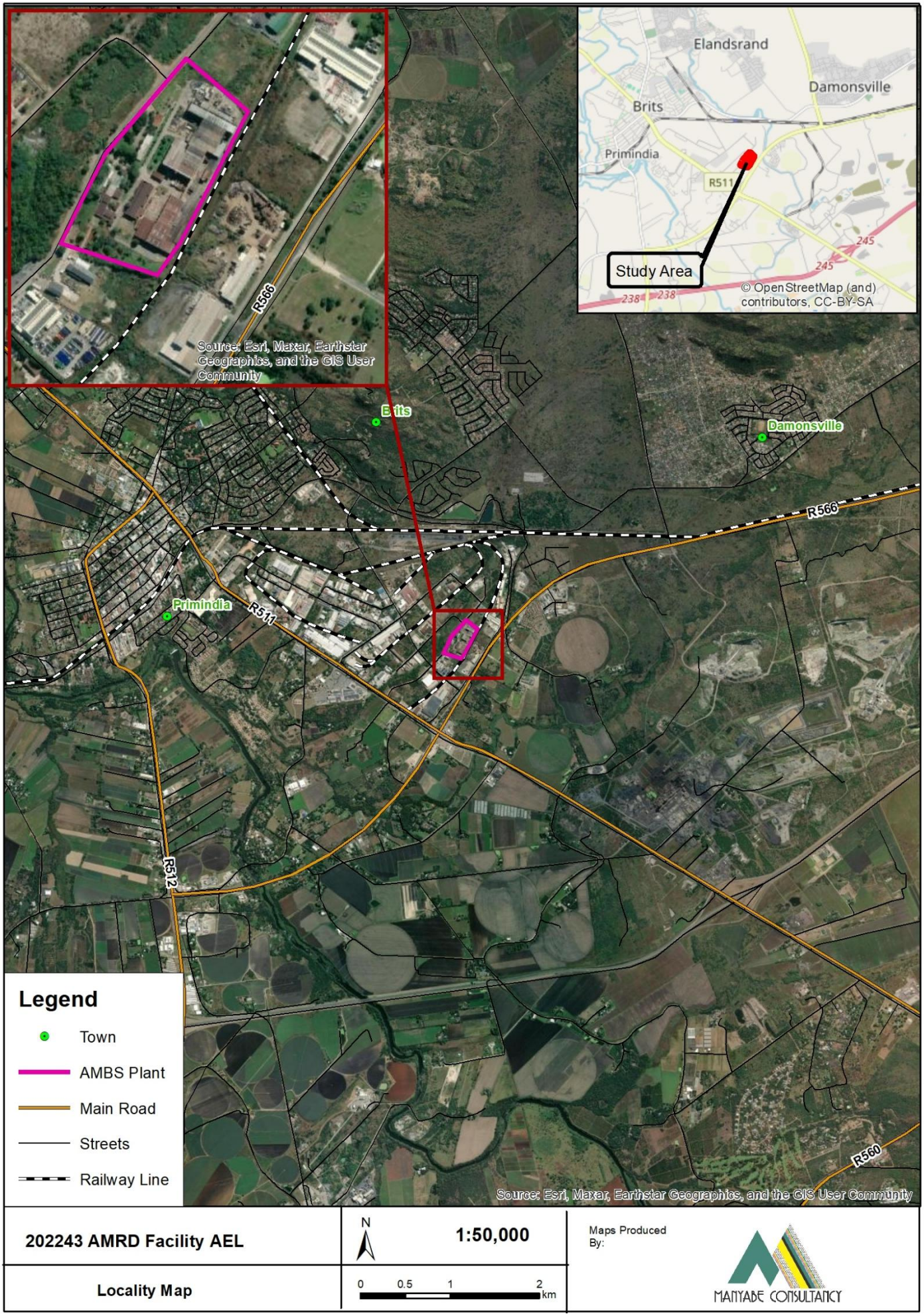

Figure 3: AMRD Facility Locality and sensitivity map

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ARXO METALS

I WOULD LIKE TO BE REGISTERED AS AN INTERESTED AND AFFECTED PARTY (I&AP) SO THAT I MAY RECEIVE PROJECT UPDATES FOR THE DURATION OF THE PROPOSED PROJECT.	YES	NO
PLEASE SEND ME NOTIFICATIONS BY (CIRCLE WHICHEVER APPLICABLE):	FAX	
	E-MAIL	
	CELL PHONE (SMS)	
	POST	

MY COMMENTS/ ISSUES/ CONCERNS ON THE ISSUED PAEL ARE AS FOLLOWS:

YOU ARE MORE THAN WELCOME TO ATTACH ADDITIONAL COMMENTS SHOULD THE SPACE PROVIDED NOT BE SUFFICIENT.

PLEASE ALSO ADD THE FOLLOWING I&AP IN YOUR DATABASE FOR FUTURE CORRESPONDENCE

NAME AND SURNAME		
ORGANISATION		
E-MAIL		
RESIDENTIAL ADDRESS		
	POSTAL CODE	
POSTAL ADDRESS		
	POSTAL CODE	
TELEPHONE NUMBER		
FAX NUMBER		
CELL PHONE NUMBER		
E-MAIL ADDRESS		