



2023



DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT
THE APPLICATION FOR A WASTE MANAGEMENT LICENCE IN TERMS OF SECTION 49(1)(A) OF THE
NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): FOR THE
PROPOSED ACTIVITIES AT THE EX-MAIN PUMP HOUSE BUILDING SITE LOCATED AT CORNER FRIKKIE
MEYER AND ROGER DAYSON ROAD, CITY OF TSHWANE, GAUTENG PROVINCE

GDARDE Reference Number:

Gaut: 002/23-24/W0009

Project Number:

IEN-P-23147

Report Number:

IEN-ASB-01-101-23-00



| | |
|------------------------------------|---|
| Report: | Environmental Impact Assessment Report |
| Project Title: | Application for a Waste Management Licence in Terms of Section 49(1)(A) of the National Environmental Management: Waste Act, 2008 (Act No. 59 Of 2008): For the Proposed Activities at The Ex-Main Pump House Building Site Located at Corner Frikkie Meyer and Roger Dayson Road, City of Tshwane, Gauteng Province. |
| Location: | Corner Frikkie Meyer and Roger Dayson Road, City of Tshwane, Gauteng Province |
| Client Name: | Intervention Engineering (Pty) Ltd. |
| Environmental Edge Project Number: | IEN-P-23147 |
| Report Reference Number: | IEN-ASB-01-101-23-00 |
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Declaration of Interest:

Environmental Edge, or any of its representatives (we) hereby declare:

1. we have no vested interest (present or prospective) in the project that is the subject of this report as well as its attachments. We have no personal interest with respect to the parties involved in this project.
2. we have no bias with regard to this project or towards the various stakeholders involved in this project.
3. we have not received, nor have we been offered, any significant form of inappropriate reward for compiling this report.

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EXECUTIVE SUMMARY



Key points, purpose, brief description of results, conclusions, and recommendations

Intervention Engineering (Pty) Ltd (hereafter referred to as “Intervention Engineering” or “the Applicant”), have appointed Environmental Edge (Pty) Ltd (hereafter referred to as “Environmental Edge”) as an independent Environmental Assessment Practitioner (EAP) to prepare, undertake, and lodge a Waste Management Licence Application in terms of Section 49(1)(a) of the National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008) (NEM:WA), for their proposed scrap metal recycling facility (foundry) and related activities, with the Gauteng Department of Agriculture, Rural Development and Environment (GDARDE), on their behalf.

In terms of the National Environmental Management: Waste Act (NEM:WA), 2008 (Act No. 59 of 2008), as amended, the development triggers Activity (3) and Activity (12) of Category A, published under Government Notice No. 921 of NEM:WA (Act No. 59 of 2008).

In addition, the development triggers sub-categories 4.4 and 4.10 of Category 4 (Metallurgical Industries) of Section 21 of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) (NEM:AQA).

As such, the development requires both an Environmental Authorisation (EA) in the form of a Waste Management Licence in terms of NEM:WA, and an Atmospheric Emissions Licence (AEL) in terms of NEM:AQA.

Environmental Edge has compiled this basic environmental impact assessment (BA) report on behalf of Intervention Engineering in terms of Part 2: Basic Assessment of Section 19 of the EIA Regulations of 2014, as amended on 7 April 2017 (EIA Regulations), in terms of Chapter 5 of the NEMA. The impacts associated with the proposed development are herein identified, described, and scientifically translated.

Through this impact assessment, it is evident that although the development imparts negative impacts, they are of low significance post-mitigation.

It is of note that the development and its continued operation have a positive socio-economic impact through the creation of employment and contributions to the GDP of the region.

Summary of Significance of Environmental Impacts.

| Assessed Impact | Rating before Mitigation | Rating Post-Mitigation |
|-----------------|--------------------------|------------------------|
| Air quality | Negative Low Impact | Negative Low Impact |
| Socio-economic | Positive Medium Impact | N/A |
| Solid waste | Negative Low Impact | Negative Low Impact |
| Resource usage | Negative Medium Impact | Negative Low Impact |
| Fire Hazard | Negative Medium Impact | Negative Low Impact |

Pertinent environmental concerns have been identified, assessed and rated according to their significance. Mitigation measures have been included for each of the assessed environmental concerns, and an Environmental Management Programme (EMPr) has been developed.

The firm implementation of the appropriate environmental management process and mitigation measures throughout the duration of the project, especially during the construction phase, as stated in this report as well as in the accompanying EMPr will ensure that the impacts of the activity are minimized.

Throughout the impact assessment, none of the identified impacts had a no-go implication with regards to this specific project and all impacts could be successfully mitigated with applicable measures. Significant rating remains Negative Low post mitigation. Therefore, it is recommended that the proposed activities be approved.

The following aspects were taken into consideration when coming to this conclusion:

- The facility is proposed to be located within a pre-existing industrial site that is appropriately zoned as “industrial 1”;
- The activity will provide socio-economic benefits of employment opportunities and to the wider economy of the manufacturing industry;
- The pollution associated with the functioning of the activity will be minimal with mitigations and will not have a significant impact on the surrounding environment.
- No impacts are rated high significance prior to or following mitigation.
- Intervention Engineering has expressed its commitment to ensuring all possible environmental mitigation measures are incorporated into the operations of the activity, and that the company aims to abide by all relevant environmental legislation.

It is recommended that the activity be approved, subject to the following:

- All mitigation measures as detailed in this report are to form an extension of the WML, thus ensuring applicant/operator adherence;
- The specific conditions as detailed in the WML are to be enforced on-site;
- The EMPr should become a binding document on-site. The EMPr must also be binding to all contractors associated with Intervention Engineering who would be conducting any work at the site.
- An appropriately qualified and accredited external Environmental Control Officer (ECO) should be appointed to audit the project at least once every twelve (12) months. A compliance audit report must be compiled against the conditions of the WML and must be submitted to the authorities within sixty (60) days after completion.

Incidences of noncompliance by employees, contractors and site operators should be dealt with in a manner so as to ensure practical control and avoidance of any transgressions.



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LIST OF ABBREVIATIONS

| | |
|---------------------|--|
| AEL | Air Emissions Licence |
| AGIS | Agricultural Geo-Referenced Information System |
| AQA | Air Quality Assessment |
| AQIA | Air Quality Impact Assessment |
| AQMP | Air Quality Management Plan |
| AQMSes | Air Quality Monitoring Station |
| AQSRs | Air Quality Sensitive Receptor |
| BAR | Basic Assessment Report |
| C&RR | Comments and Response Report |
| CARA | Conservation of Agricultural Resources Act No. 43 of 1983 |
| CBA | Critical Biodiversity Area |
| CBD | Central Business District |
| CH ₄ | Methane |
| CO | Carbon Monoxide |
| CO ₂ | Carbon Dioxide |
| CO ₂ -eq | Carbon Dioxide equivalents |
| CoT | City of Tshwane Metropolitan Municipality |
| C-Plan | Gauteng Conservation Plan |
| DEA | Department of Environmental Affairs |
| DEFF | Department of Environment, Forestry and Fisheries |
| DFFE | Department of Forestry Fisheries and the Environment |
| DoI | Declaration of Interest |
| EA | Environmental Authorisation |
| EAP | Environmental Assessment Practitioner |
| EAPASA | Environmental Assessment Practitioners Association of South Africa |
| ECA | Environment Conservation Act (Act No 73 of 1989) |
| ECO | Environmental Control Officer |
| EIA | Environmental Impact Assessment |
| EMF | Environmental Management Framework |
| EMPr | Environmental Management Programme |
| ESA | Ecological Support Area |
| GDARDE | Gauteng Department of Agriculture, Rural Development and Environment |
| GDP | Gross Domestic Product |
| GHG | Greenhouse Gas |
| GIS | Geographic Information System |
| GN | Government Notice |
| GPS | Geographic Positioning System |
| HF | Hydrogen Fluoride |
| HFCs | Hydrofluorocarbons |
| HPA | Highveld Priority Area |
| I&AP | Interested and or Affected Parties |
| MAP | Mean Annual Precipitation |
| MES | Minimum Emission Standard |
| N ₂ O | Nitrous Oxide |



| | |
|-----------------|---|
| NAAQS | National Ambient Air Quality Standards |
| NAEIS | National Atmospheric Emissions Inventory System |
| NDCR | National Dust Control Regulations |
| NDP | National Development Plan |
| NEM:AQA | National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) |
| NEM:BA | National Environmental Management: Biodiversity Act 2004, (Act No. 10 of 2004) |
| NEM:PAA | National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) |
| NEM:WA | National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) |
| NEMA | National Environmental Management Act, 1998 (Act No. 107 of 1998) |
| NFEPA | National Freshwater Ecosystem Priority Area |
| NH ₃ | Ammonia |
| NHRA | National Heritage Resources Act No. 25 of 1999 |
| NO ₂ | Nitrogen Dioxide |
| NPAES | National Protected Areas Expansion Strategy |
| NRTA | National Road Traffic Act, 1996 (Act No. 93 of 1996) |
| NWA | National Water Act 1998 (Act No. 36 of 1998) |
| O ₃ | Ozone |
| PAEL | Provisional Air Emissions Licence |
| PFCs | Perfluorocarbons |
| PM | Particulate Matter |
| PPE | Personal Protective Equipment |
| PPP | Public Participation Process |
| SACNASP | South African Council for Natural Scientific Professions |
| SAGERS | South African Greenhouse Gas Emissions Reporting System |
| SAHRA | South African Heritage Resources Agency |
| SANBI | South African National Biodiversity Institute |
| SANS | South African National Standards |
| SO ₂ | Sulphur Dioxide |
| VOC | Volatile Organic Compounds |
| WML | Waste Management Licence |



1. INTRODUCTION



Appointment
Background
Purpose

Intervention Engineering (Pty) Ltd (hereafter referred to as “Intervention Engineering” or “the Applicant”), have appointed Environmental Edge (Pty) Ltd (hereafter referred to as “Environmental Edge”) as an independent Environmental Assessment Practitioner (EAP) to prepare, undertake, and lodge a Waste Management Licence Application in terms of Section 49(1)(a) of the National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008) (NEM:WA), for their proposed scrap metal recycling facility (foundry) and related activities, with the Gauteng Department of Agriculture, Rural Development and Environment (GDARDE), on their behalf.

In terms of NEM:WA (Act No. 59 of 2008), as amended, the development triggers Activity (3) and Activity (12) of Category A, published under Government Notice No. 921 of NEM:WA , (Act No. 59 of 2008):

3. *The recycling of general waste at a facility that has an operational area in excess of 500m², excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises...*
12. *The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).*

Furthermore, the development triggers sub-categories 4.4 and 4.10 of Category 4 (Metallurgical Industries) of Section 21 of NEM:AQA (Act No. 39 of 2004):

- 4.4. *Secondary Aluminium Production* – Secondary aluminium production and alloying through the application of heat (excluding metal recovery, covered under Subcategory 4.21).
- 4.10. *Foundries* - The production and/or casting of iron, iron ores, steel or ferro-alloys, including the cleaning of castings and handling of casting mould materials.

As such, the development requires both a Waste Management Licence (WML) in terms of the NEM:WA and an Atmospheric Emissions Licence (AEL) in terms of the NEM:AQA. The AEL application will be submitted to the City of Tshwane Metropolitan Municipality (CoT) in terms of Section 21 of NEM:AQA.

Environmental Edge has compiled this basic environmental impact assessment (BA) report on behalf of Intervention Engineering in terms of Part 2: Basic Assessment of Section 19 of the EIA Regulations of 2014, as amended on 7 April 2017 (EIA Regulations), in terms of Chapter 5 of the NEMA. The impacts associated with the proposed development are herein identified, described, and scientifically translated.

1.1. Project Applicant

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He is an Environmental Assessment Practitioner at Environmental Edge and has experience in the environmental management field. Furthermore, he has been involved in various projects concerning Environmental Impact Assessment, Basic Assessments, Atmospheric Emissions Licence applications and audits, Section 24G Application and Reporting, Environmental Management Programmes, Waste Management Plans, as well as reviewing of various Environmental Impact Assessments and Basic Assessments. He also has extensive experience in Environmental auditing as well as reporting, and he has participated in various environmental training programmes.

Mr Ramatladi Owen Mokoena (EAP/Environmental Scientist)

B.Sc. (Hons) Environmental Sciences (Univ. of Venda)

Mr Ramatladi Mokoena is an EAP at Environmental Edge with experience in the environmental management field. He has been involved in various projects that include but are not limited to EIA, BA, AEL compliance, Waste Management Licensing and others including the reviewing of various EIA and BA. He has attended training in environmental and environmental related fields. Trainings include; introduction to GIS, Project management and herbarium training. Ramatladi has also been involved in environmental education and alien invasive species eradication programmes.

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Registered EAP: EAPASA Reg. 2020/1401

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He is a Senior Environmental Assessment Practitioner at Environmental Edge, with vast experience in the environmental assessment and management field. His experience spans various projects, including Environmental Impact Assessments, Basic Assessments, Atmospheric Emissions Licences applications and audits, Environmental Authorisation implementation programmes, Section 22A Applications and Reporting, Section 24G Applications and Reporting, Waste Management Licences applications and audits, Environmental Management Programmes, Waste Management Plans, Environmental Authorisation Compliance Audits, Due Diligence, Environmental Advisory, Waste Management facility operations, Environmental and Social Management Systems development and implementation, and offering Environmental Management Training.

1.3. Objectives/ Purpose of this Document

This Basic Assessment Report (BAR) has been prepared as part of the impact assessment process to fulfil the required objectives of a basic assessment process as outlined in Section 2 of Appendix 1 of the NEMA EIA Regulations of 2014 (as amended). The following are the objectives met in this regard:

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives;
- (d) through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and

cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects, determine:

- (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
- (ii) 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; and
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity:
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

Furthermore, this report contains information as outlined in Section 3(1) of Appendix 1 of the NEMA EIA Regulations, 2014 (as amended), which is necessary for a proper understanding of the process, informing all preferred alternatives (including location alternatives), the scope of the assessment, and the consultation process to be undertaken in a basic assessment process. The content requirements of this report, as well as the report sections which fulfil these requirements, are shown in Table 1-1 below.

Table 1-1: Basic Assessment Content and Sections in this Report

| Content Requirements | Applicable Section |
|--|--|
| a) details of- <ul style="list-style-type: none"> i. the EAP who prepared the report; and ii. the expertise of the EAP, including a curriculum vitae; | Details of the EAP and project team are included in section 1.2. The expertise (including curriculum vitae) of the EAP and project team are included in Appendix B. |
| b) the location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including: <ul style="list-style-type: none"> 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; | The location of the proposed project is detailed in section 2.3 of this report. |
| c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is- <ul style="list-style-type: none"> 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; | A map of the regional locality and coordinates are shown in section 2.3. Additionally, all project maps are included in Appendix F. |
| d) a description of the scope of the proposed activity, including- <ul style="list-style-type: none"> i. all listed and specified activities triggered; ii. a description of the activities to be undertaken, including associated structures and infrastructure; | The listed and specified activities triggered as per the NEM:WA & NEM:AQA are detailed in section 3.1.3 & 3.1.4, respectively. The technical project description is included in section 2.5. This contains a description of activities to be undertaken, including associated structures and infrastructure. |



| | |
|--|---|
| <p>e) a description of the policy and legislative context within which the development is proposed including –</p> <ul style="list-style-type: none"> (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; | <p>A description of all legal requirements and guidelines is provided in section 3. This includes key legal and administrative requirements as well as key development strategies and guidelines.</p> |
| <p>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;</p> | <p>Section 4 describes the need and desirability of the project.</p> |
| <p>g) a motivation for the preferred site, activity and technology alternative;</p> | <p>Section 2.6. contains this information.</p> |
| <p>h) a full description of the process followed to reach the proposed preferred alternative within the site, including –</p> <ul style="list-style-type: none"> i. details of all the alternatives considered; ii. details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; 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; iv. the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; v. the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts- <ul style="list-style-type: none"> (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; vi. the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; 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; viii. the possible mitigation measures that could be applied and level of residual risk; ix. the outcome of the site selection matrix; x. if no alternatives, including alternative footprints for the activity were investigated, the motivation for not considering such and xi. a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report; | <p>Alternatives have been discussed in section 2.6. It should however be noted that no site or layout alternatives have been considered and/or assessed as part of this impact assessment process due to the facts mentioned in the section. Public Participation records are to be contained in section 8 and Appendix I of the final report. Environmental attributes of the site and possible impacts are explained in sections 6 under the Description and Sensitivity of the Receiving Environment. The relevant ones are assessed in section 7 of the report.</p> |
| <p>i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including—</p> <ul style="list-style-type: none"> i. a description of all environmental issues and risks that were identified during the environmental impact assessment process; and ii. an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could | <p>Description of impact assessment method is included in section 7.2 of this report.</p> |

| | |
|--|--|
| <p>be avoided or addressed by the adoption of mitigation measures;</p> | |
| <p>j) an assessment of each identified potential impact and risk, including—</p> <ul style="list-style-type: none"> i. cumulative impacts; ii. the nature, significance and consequences of the impact and risk; iii. the extent and duration of the impact and risk; iv. the probability of the impact and risk occurring; v. the degree to which the impact and risk can be reversed; vi. the degree to which the impact and risk may cause irreplaceable loss of resources; and vii. the degree to which the impact and risk can be mitigated; | <p>Assessment of potential impacts and recommendations have been included in section 7.3.</p> |
| <p>k) Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 and an indication as to how these findings and recommendations have been included in the final assessment report;</p> | <p>Specialist studies are incorporated in each relevant impact assessment in section 7.3 of this report and copies of full reports are included in Appendix G.</p> |
| <p>l) an environmental impact statement which contains—</p> <ul style="list-style-type: none"> i. a summary of the key findings of the environmental impact assessment; ii. a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and iii. a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives; | <p>A summary of impacts and recommendations is included in section 9.1 of this report.</p> |
| <p>m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr;</p> | <p>Relevant mitigation recommendations have been made in section 9 of this report and more described in the attached EMPr (Appendix K).</p> |
| <p>n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;</p> | <p>No conditional aspects have been identified. Only mitigation and management recommendations have been made in section 9 of the EMPr, as well as section 11 of this report.</p> |
| <p>o) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;</p> | <p>Where relevant, the EAP's assumptions and those made by specialists have been included in section 5 of this report.</p> |
| <p>p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;</p> | <p>Opinions have been made in the conclusion in section 10 and 11 of this report.</p> |
| <p>q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;</p> | <p>Not relevant. Activity includes operational aspects.</p> |
| <p>r) an undertaking under oath or affirmation by the EAP in relation to—</p> <ul style="list-style-type: none"> (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) 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; | <p>The EAP affirmation and declaration of interest is included in Appendix C. Specialist studies' findings have been considered and incorporated in this report and copies of reports are included in Appendix G. Comments and opinions which are received from I&APs shall be considered, responded to, and incorporated in the final BAR.</p> |



| | |
|---|--|
| s) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts; | Not applicable. The site infrastructure is perceived as permanent, with the operations planned to take place indefinitely to a point where it may be sold to a potential buyer(s). As such, waste generated from decommissioning the site facilities is rather explained as mitigations in the EMPr. |
| t) any specific information that may be required by the competent authority; and | None communicated thus far. |
| u) any other matter required in terms of section 24(4)(a) and (b) of the Act. | All requirements in terms of section 24(4)(a) and (b) of the Act have been met in this report. |

2. PROJECT DESCRIPTION

2.1. Project Background

The facility at the proposed address of Corner Frikkie Meyer and Roger Dayson Road, Pretoria West, City of Tshwane Metropolitan Municipality, is located within the pre-existing ArcelorMittal site at the Pretoria West facility. The site is the former Iscor and current ArcelorMittal facility, and it was used for the production of metal products including iron and a range of steel products. Intervention Engineering has now acquired rights to a portion of the facility, mainly the Ex-Main Pump House Building area, with the intention of undertaking the proposed metal recycling foundry activities as described in section 2.5 below.

By triggering activities listed in terms of NEM:WA, the proposed development must obtain a WML through a BA process from the GDARDE. As such, any work related to the commissioning and preparation of the facility for the proposed activities has not commenced, pending the necessary approvals and authorisations.

2.2. Land Zoning

The city where Intervention Engineering is proposing to be located, Pretoria, was founded in 1855, as the capital of the Transvaal. The city consists of multiple land uses, with the proposed site being the industrial region. The site is the former Iscor facility which was established in 1928 as a parastatal entity that mainly produced iron and a range of steel products. In 1989, Iscor was privatised, and Iscor Limited shares were listed on the stock exchange. The facility continually changed in terms of ownership as well as name, with the most recent change in both ownership and name occurring in October of 2006 to the current name ArcelorMittal (ArcelorMittal South Africa, 2020).

Intervention Engineering is proposed to be situated within the ArcelorMittal facility which is located at the corner of Frikkie Meyer and Roger Dayson Road, City of Tshwane Metropolitan Municipality, Gauteng Province. The immediate surroundings are dominated by industrial activities including steel manufacturers, brick manufacturers, and concrete suppliers among others. Furthermore, the area in which the facility is located is zoned as “Industrial 1”. Other zones within the vicinity of the site area include residential 1, education, private open space, and undetermined zones in the northern direction and public open space, as well as government zones south of the site. Figure 2-1 below illustrates the land zoning of the Intervention Engineering site and its surrounding areas.



2.3. Locality and Land Use

The facility is situated within an already built-up industrial area. The residential areas nearest to the proposed site include, Kwaggasrand (northwest), West Park (north), and Proclamation Hill (northeast) situated approximately 1.33 km, 1.15 km, and 1.36km from the site, respectively.

The closest schools to the site include Wespark Primary School which is about 1.5 km north northwest from the site and Kwaggasrand Special School which is about 1.4 km northwest from the site. The proposed facility is within a 1.5km radius of the R55 Regional Route. The road runs from the north direction towards the south and it turns towards the western direction and curves to continue running towards the southern direction.

Table 2-1 below shows the cadastre information of the site. Table 2-2 and Table 2-3 show the approximate corner points and the centre point coordinates of the site, respectively.

Table 2-1: Cadastre Information.

| | |
|--------------|-----------------------------|
| Portion | A Portion of Portion 124 |
| ERF | 351 |
| Portion Name | PRETORIA TOWN AND TOWNLANDS |

Table 2-2: Approximate corner points of the Intervention Engineering facility.

| Corner | Latitude | Longitude |
|----------------|---------------|--------------|
| Point/Corner 1 | 25°46'14.70"S | 28°7'45.14"E |
| Point/Corner 2 | 25°46'16.31"S | 28°7'44.99"E |
| Point/Corner 3 | 25°46'16.77"S | 28°7'50.69"E |
| Point/Corner 4 | 25°46'17.73"S | 28°7'56.91"E |
| Point/Corner 5 | 25°46'16.75"S | 28°7'57.42"E |
| Point/Corner 6 | 25°46'15.06"S | 28°7'54.92"E |
| Point/Corner 7 | 25°46'14.94"S | 28°7'50.69"E |

Table 2-3: Centre Point coordinates of the Intervention Engineering facility.

| Point | Latitude (S) | Longitude (E) |
|--------------|---------------|---------------|
| Centre Point | 25°46'15"51"S | 28°7'50"03"E |

Table 2-4: 21 Digit Surveyor General code.

| 21 Digit SG Code | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T | 0 | J | R | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 1 | 0 | 0 | 1 | 2 | 4 |

2.4. Site Description

The proposed site is 1.82 hectares in size and consists of four pre-existing building structures. Three of the buildings will be used for the undertaking of the proposed activities. These buildings are located in the mid regions of the site.

The biggest building (main building) is located in the middle of all the buildings and will be used mainly for the offices, scrap metal storage, casting, sand molding, green sand molding, shakeout and storage areas. Sand storage silos will be added to the existing infrastructure, attached to the main building on the sand molding parts of the building. Please see Figure 2-3 below showing the proposed site layout plan.

The second building is located to the north of the main building and it will be used primarily as the fettling area (fettling means to clean and remove excess metal). The use of the third building will be determined at a later stage. The fourth building is an electrical substation located in the southwestern parts of the site. It should be noted that the applicant intends on building a warehouse on the eastern parts of the site as and when business grows.

Photographs 2-1 to 2-12 below show various angles of the site and imagery of where the proposed activities will be undertaken on-site.

Photographs were taken during a site assessment undertaken on the 24th of August 2023. The site assessment was carried out by the EAPs, Mr Cyril Kamogelo Legong and Mr Ramatladi Mokoena from

Environmental Edge. They were accompanied by Intervention Engineering's General Manager, Mrs Velona McCall.



Photograph 2-1: Southwestern view of the second and third buildings (middle portions of the site).



Photograph 2-2: Northeastern view of the main building (middle portion of the site).



Photograph 2-3: Eastern view of the site with building infrastructure.



Photograph 2-4: Southwestern view of site.



Photograph 2-5: Northeastern view of the electrical substation



Photograph 2-6: Southwestern view of the western portion of the site.



Photograph 2-7: Northwestern view of the western portion of the site.



Photograph 2-8: Southeastern view of the eastern portion of the site.



Photograph 2-9: Western view of the main building on-site.



Photograph 2-10: Western view of all the buildings on-site.



Photograph 2-11: Western view of the site from the edge of the eastern boundary of the site.



Photograph 2-12: Northern view of the site from the edge of the southern boundary of the site.

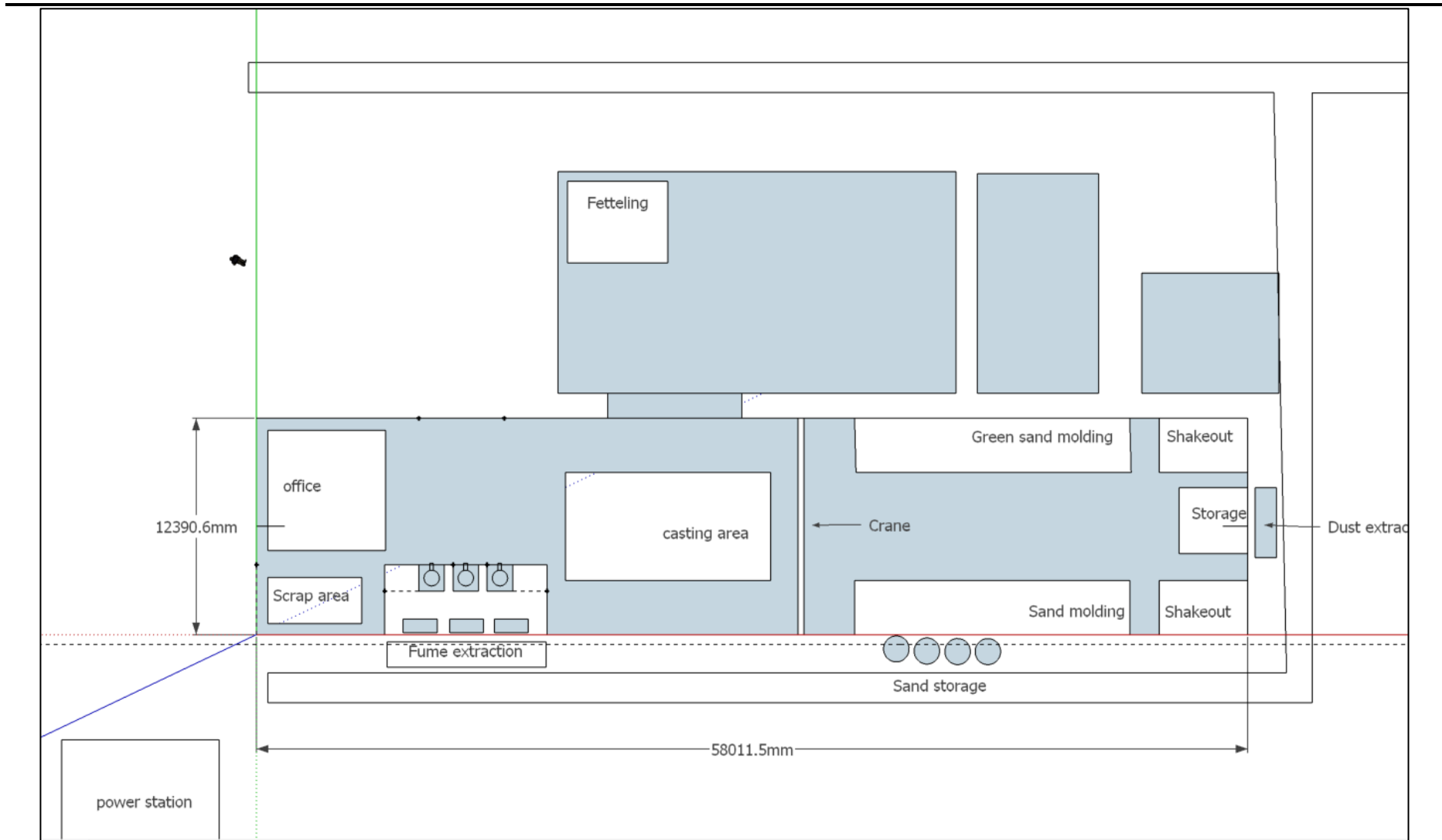


Figure 2-2: Intervention Engineering site layout plan (Appendix F).

2.5. Technical Description

The following is a process description of the new proposed activities:

Wooden Patterns & Core boxes will be manufactured and repaired by hand. The patternmaker makes a template, which is called a Pattern. The core box is the inside shape of the mould. These Patterns & Core boxes will then be used to make the sand moulds. Sand will be reclaimed from casted moulds for re-use for the next batch of moulds. The moulding boxes, which contain sand and castings, are to be put on a shakeout and the sand and the castings are separated. The shakeout is a vibrating table where the sand will fall through. The sand will then be transferred onto a conveyer belt. The sand will then be crushed into smaller pieces and conveyed by a sealed vibrating belt to a reclamation plant. The dust will be extracted into a bag house and the sand will then be pneumatically pumped into an attrition unit with sieves.

From this hopper it will be pumped into other hoppers for use at the continuous mixers by means of gravity feed. This process is where the moulds will be made. The patterns will be placed inside a moulding box, or a loose frame and the sand will be poured over the patterns. Once the sand is set, the moulding box will be turned over and the patterns will be removed by means of hand or machine. The sand will be painted with a heat resisting coat of Mould paint. Cores will be placed into the mould to form the inside cavities. The mould top and bottom halves will then be closed, and the mould would then be ready to be poured.

For the moulding processes, a continuous sand mixer to mix silica sand with resins and hardeners will be used. 2% resin will be added and 20% of the resin weight with a hardener used for the mould to set. Alkaline phenolic foundry resins will be used.

Silica sand (by weight) will be mixed with 1-3% Bentanite and 1-2% Coal dust. The sand product is called "Green sand". 2-3% Water will be added and mixed in a batch mixer to form a clay mixture. This clay mixture will be poured into a moulding box and squeezed by a moulding machine to achieve the desired strength. This sand will also be reclaimed for future use. Mould coat may be used, but often rarely in this process. This process is where sand forms are made to create the inside cavities of moulds.

The same process as resin bonded sand will be used for larger cores. Ecolotec may be used, which is also a resin. Where used, it will be mixed into the sand by means of a small batch mixer. This sand will be hardened by a very small percentage of carbon dioxide gas. The cores will then be painted with mould coats and will then be ready for use.

Melting is basically a process where metal is transformed using energy from a solid to a liquid state. All melting shall take place in induction furnaces. Here scrap with a mix of ingots of aluminium, iron and steel, and bronze will be melted.

Once the castings and sand are separated, the castings will be transferred from the shake out to the shot blast machine. Here the rest of the sand will be removed, and the castings will be cleaned by means of small steel balls which are called steel shot. The steel shot will be thrown at a very high velocity against the castings on a rotating table. This process then cleans the casting. Grit blasting will be used instead of sand blasting. Both grit blasting and shot blasting will be done in concealed areas.

The dust and sand will be extracted into a bag filter house. Once shot blasted, the castings will be transferred to the fettling bays (fettling means to clean and remove excess metal). Here, by hand-operated angle grinders and pedestal grinders, all the excess and unwanted material (runners, risers and fins) are removed, and the castings will be dressed and cleaned. Runners are excess materials where the metal enters the mould but does not form part of the castings and must be removed. This material (runners, risers and fins) will be re-melted again.

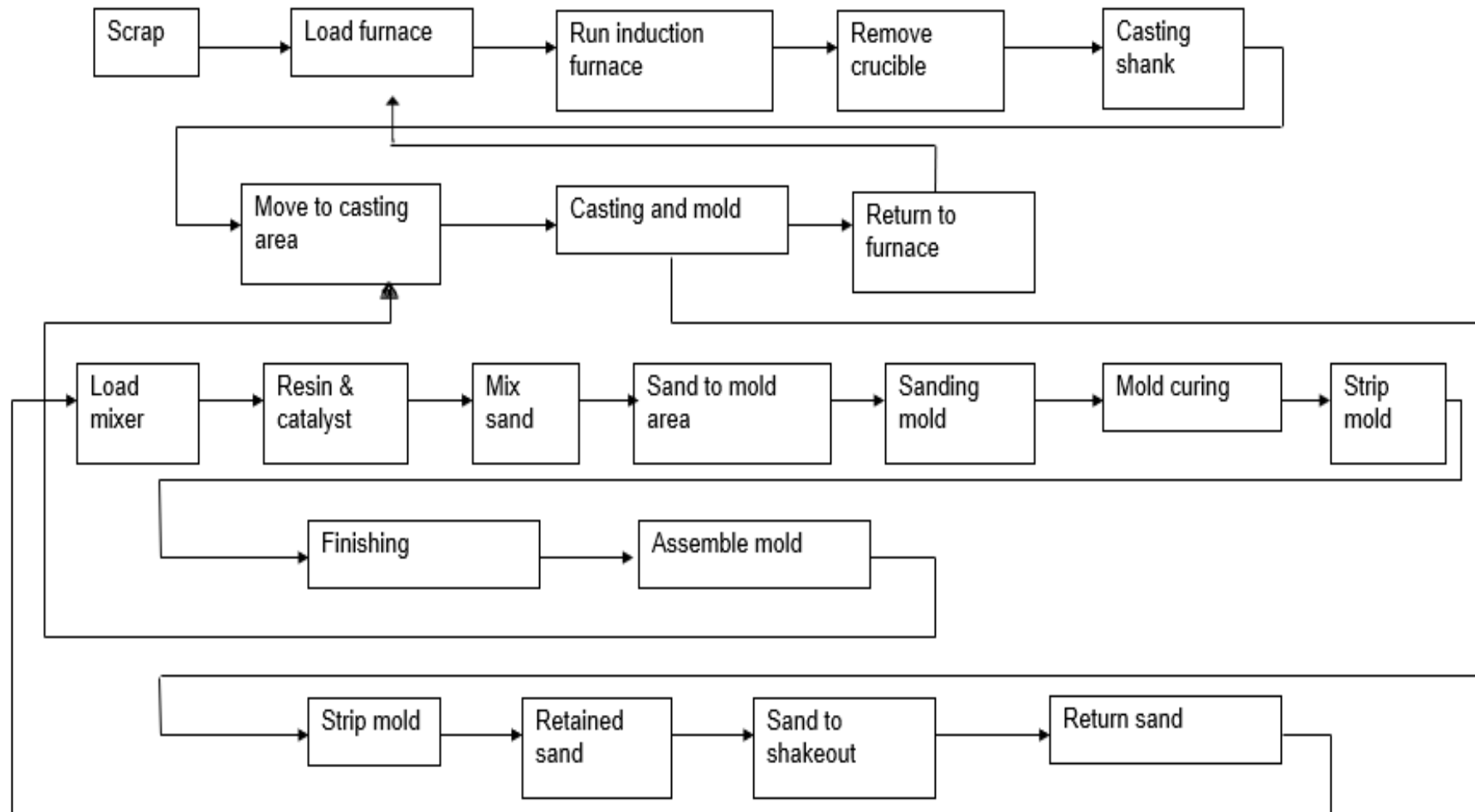


Figure 2-3: Process Flow Diagram

2.6. Alternatives

As far as Chapter 1 of the 2014 EIA Regulations is concerned, practicable and appropriate alternatives must be considered during the process of environmental impact assessment.

Alternatives are defined as “*different means of meeting the general purpose and requirements of the activity, which may include alternatives to the-*

- a. property on which or location where the activity is proposed to be undertaken;*
- b. type of activity to be undertaken;*
- c. design or layout of the activity;*
- d. technology to be used in the activity;*
- e. operational aspects of the activity;*

and includes the option of not implementing the activity.”

There are no major feasible or reasonable alternatives in the case of Intervention Engineering, as the facility is proposed on an already constructed site and will only include the commissioning of the facility. However, in the sections below, each of these alternatives is discussed in relation to the project.

2.6.1. Site Alternatives

The proposed Intervention Engineering facility is proposed within an already constructed infrastructure. The facility will be located within the ArcelorMittal site, located at the Corner of Frikkie Meyer and Roger Dayson Road, City of Tshwane, Gauteng Province. The ArcelorMittal site is an industrial facility involved in the production of steel and iron products.

The proposed Intervention Engineering facility is a foundry that will be involved in the production of aluminium, iron and steel, bronze, brass and copper products. The land use of the area in which the proposed foundry activities will be undertaken is in line with the proposed activities. Furthermore, the site is zoned as “Industrial 1” which further supports the proposed activities to be undertaken on the site. As such, no site alternatives were considered, and the only alternative in this regard will be the no-go alternative.

2.6.2. Activity Alternatives

Intervention Engineering has discovered an activity which they consider financially and economically viable within the metal industry. They have further identified potential clients that are interested in the type of products they intend on manufacturing.

There are no activity alternatives that were considered for the proposed activities, and the only alternative in this case will be the no-go alternative.

2.6.3. Technology Alternatives

The proposed technology for the activities is considered recent. It does not have any other impacts except for those associated with air quality. The inclusion of abatement equipment would allow for the capturing and significant cleaning of the emissions before they exit into the atmosphere. Furthermore, the inclusion of sand reclamation machine will significantly reduce the amount of waste sand meant to be disposed.

Where necessary, the facility plans to continue maintaining and/or upgrading its equipment throughout its operational existence.

Thus, no technology alternatives have been considered or deemed applicable at the moment.

2.6.4. Operational Alternatives

The metal recycling industry that Intervention Engineering wishes to embark on has standard operational activities that are specific to the processing of scrap metal. These are what Intervention Engineering plan to implement for their site without any deviations in order to ensure maximum productivity.

Thus, no operational alternatives were considered in this regard.

2.6.5. No-go Alternative

It must be noted that the option of not implementing the activity, or the 'no-go' alternative, would result in the facility not being established.

Should the operational activities at the proposed Intervention Engineering facility not commence, the potential employment opportunities associated with the commissioning and operations of the facility will be lost which will have both direct and indirect consequences. Moreover, the socio-economic advantages associated with the facility will not be realized should the 'no-go' option be selected.

3. LEGAL REQUIREMENTS

In the subsections below, key legislation and guidelines that may have an impact on the activities from an environmental perspective are described. It should be noted that this is not an exhaustive list, but rather aims to identify pertinent sections of relevant legislation.

3.1. Legislation

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

The Constitution of the Republic of South Africa (Act No. 108 of 1996) is the supreme law of the Republic of South Africa and provides the legal foundation for the existence of the republic. It also sets out the rights and duties of its citizens and defines the structure of the government.

With reference to the environment, the constitution has afforded citizens environmental rights in Section 24. According to Section 24 of the Constitution, *everyone has the right –*

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

With regard to this right, a safe environment is guaranteed to every citizen and the State needs to ensure that the environment is preserved *while fostering justifiable economic and social growth* through the use of sustainable development principles.

Various environmental laws and regulations have been promulgated in order to give effect to these privileges. Individuals, companies and the state are expected to comply with these laws and regulations and, if they do not comply, are liable for prosecution.

In view of the above, Intervention Engineering would have to ensure that their activity(ies) is ecologically sound and that economic and social growth is demonstrated.

Moreover, they will need to ensure that reasonable steps are taken, where relevant, in order to prevent pollution as a result of the activity(ies).

3.1.2. National Environmental Management Act (NEMA) (Act No. 107 of 1998), as amended

The National Environmental Management Act (Act no.107 of 1998), referred to as NEMA, provides South Africa's framework for environmental legislation. All amendments thereafter have been considered herein.

The act provides for:

- co-operative environmental governance by establishing principles for decision-making on matters affecting the environment;



Legal Requirements
NEMA
NEMAQA
etc.

-
- institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state;
 - the prohibition, restriction or control of activities which are likely to have a detrimental effect on the environment; and
 - matters connected therewith.

Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities that may not commence without an EA. NEMA now governs the EIA process with the said promulgation of the EIA Regulations in December 2014, as amended on 07 April 2017. This EIA has therefore been undertaken in accordance with the NEMA EIA Regulations.

3.1.3. National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)

The promulgation of the National Environmental Management Waste Act (NEM:WA) (Act no. 59 of 2008) sought to consolidate various legislation concerning waste within South Africa in order to:

- protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development;
- provide for institutional arrangements and planning matters;
- provide for national norms and standards for regulating the management of waste by all spheres of government;
- provide for specific waste management measures;
- provide for the licensing and control of waste management activities;
- provide for the remediation of contaminated land;
- provide for the national waste information system; and
- provide for compliance and enforcement; and to provide for matters connected therewith.

The objectives of this Act are:

- to protect health, well-being and the environment by providing reasonable measures for –
- minimising the consumption of natural resources;
- avoiding and minimising the generation of waste;
- reducing, re-using, recycling and recovering waste;
- treating and safely disposing of waste as a last resort;
- preventing pollution and ecological degradation;
- securing ecologically sustainable development while promoting justifiable economic and social development;
- promoting and ensuring the effective delivery of waste services;
- remediating land where contamination presents, or may present, a significant risk of harm to health or the environment; and
- achieving integrated waste management reporting and planning;
- to ensure that people are aware of the impact of waste on their health, well-being and the environment;
- to provide for compliance with the measures set out in paragraph (a); and
- generally, to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.

Waste management activities that are listed in regulations published under NEM:WA may not be undertaken without a Waste Management Licence (WML). The listed activities for which a WML is required are contained in Government Notice (GN) 921 published in Gazette No 37083 on 29th of November 2013, as amended. Category

A activities require a WML and a Basic Assessment (BA) must be conducted, and Category B activities require a WML and a full Scoping and EIA must be conducted. Category C activities are not required to have a WML but need to comply with the National Norms and Standards.

Table 3-1 below outlines the corresponding applicable listed activities triggered by Intervention Engineering in terms of Government Notice R921 of NEM:WA (No. 59 of 2008, as amended).

Table 3-1. Listed Activities triggered by the activity at Intervention Engineering.

| Activities listed in terms of Government Notice R921 of the National Environmental Management Waste Act (No. 59 of 2008, as amended) | Activity details (clear description including extent i.e., GPS coordinates) |
|--|--|
| <p>1. Category A: Activity 3</p> <p>The recycling of general waste at a facility that has an operational area in excess of 500m², excluding recycling that takes place as an integral part of an internal manufacturing process within the same premises.</p> | <p>The activity applied for is the proposed construction and operation of a metal recycling facility at the Ex-main pump building at the Corner Frikkie Meyer and Roger Dayson Road, City of Tshwane Metropolitan Municipality.</p> <p>Coordinates: Latitude: 25°46'15.80"S Longitude: 28° 7'49.94"E</p> |
| <p>2. Category A: Activity 12</p> <p>The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).</p> | <p>The proposed recycling facility will have an operational area of more than 500 square metres.</p> |

3.1.4. National Environmental Management: Air Quality Act (NEM:AQA), 2004 (Act No. 39 of 2004), as amended

The National Environmental Management: Air Quality Act, 2004 (No. 39 of 2004), as amended (referred to as NEM:AQA), has shifted the approach of air quality management from source-based control to receptor-based control. The main objectives of the Act are:

- 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; and
 - iii. securing ecologically sustainable development while promoting justifiable economic and social development; and
- generally to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

The Act provides for the establishment and formulation of National Ambient Air Quality Standards for substances or mixtures of substances that pose a health, well-being or environmental threat. It is possible to create more rigorous standards at the provincial and local levels.

The control and management of emissions in the NEM:AQA relates to the listing of activities that are sources of **emissions and the issuing of AELs. Listed activities are defined as activities which “result in atmospheric emissions and are regarded as having a significant detrimental effect on the environment, including human health”.** Listed activities have been identified by the Minister of the Department of, Forestry, Fisheries and the Environment (DFFE) and atmospheric emission standards have been established for each of these activities. These listed activities require an AEL to operate. The issuing of AELs for listed activities is normally the responsibility of the Metropolitan and District Municipalities, except for those associated with mining operations.

In addition, the Minister may declare any substance contributing to air pollution as a priority pollutant. Any industries or industrial sectors that emit these priority pollutants will be required to implement a Pollution Prevention Plan. Municipalities are required to **“designate an air quality officer to be responsible for coordinating**



matters pertaining to air quality management in the Municipality”. The appointed Air Quality Officer is responsible for the issuing of AELs.

Intervention Engineering’s proposed activities will trigger sub-categories 4.4 and 4.10 of Section 21 of the NEM:AQA and require an AEL to operate. An AEL Application will be lodged with the CoT once the WML is approved and issued by the GDARDE for the development.

Table 3-2: Listed activities triggered by Intervention Engineering in terms of section 21 of NEM:AQA.

| Category | Sub-category | Name of the Listed Activity | Description of the Listed Activity |
|----------|--------------|--------------------------------|--|
| 4 | 4.4 | Secondary Aluminium Production | Secondary aluminium production and alloying through the application of heat (excluding metal recovery, covered under Sub-category 4.21). |
| 4 | 4.10 | Foundries | The production and or casting of iron, iron ores, steel or ferro-alloys, including the cleaning of castings and handling of casting mould materials. |

Emissions emanating from production processes at the facility are therefore required to comply with the minimum emission standards (MES) for new plants in terms of Section 21 of NEM:AQA.

3.1.5. Greenhouse Gas (GHG) Regulations

In terms of NEM:AQA, GHG means the gaseous constituents of the atmosphere, both natural and anthropogenic that absorbs and re-emits infrared radiation.

The following six greenhouse gases were declared a priority for air pollution in South Africa on 14 March 2014 by the then Department of Environmental Affairs (Government Gazette No. 37421):

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous Oxide (N₂O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF₆)

The then Department of Environmental Affairs released the National GHG Emission Reporting Regulations (Government Gazette No. 40762, dated 3 April 2017). According to these regulations, an individual defined in Annexure 1 of these Regulations as a Category A data provider shall register their facilities by filling in the form set out in Annexure 2 and send an inventory of GHG emissions and activity data in the requested format.

A pollution prevention plan will be required should the development:

- a) Undertake any of the activities identified in Annexure A of the National GHG Emission Reporting Regulations (Government Gazette No. 40762 of 3 April 2017), which involves the direct emission of GHG in excess of 0.1 Megatonnes (Mt) annually measured as carbon dioxide equivalents (CO_{2-eq}); or
- b) Undertake any of the activities identified in Annexure A of the National Pollution Prevention Plan Regulations as a primary activity.

In order to allow for submissions and keeping of GHG emissions inventory, the DFFE has set up the South African Greenhouse Gas Emissions Reporting System (SAGERS). It is a Greenhouse Gas Reporting Module of the National Emissions Inventory System (NAEIS).

This portal is a web-based platform for the registration and submission of GHG emissions data by category A data providers in terms of GHG Reporting Regulations of 3 April 2017, as amended and promulgated under the NEM:AQA.

Objectives include:

-
- Providing a user-tailored platform for category A data providers to register and report their annual GHG emissions data and the associated activity data.
 - Providing methodological guidance on the quantification of GHG emissions and the embedded parameters for assessing the annual GHG emissions.
 - Facilitating easy access to the parameters and GHG emission factors database embedded into the system.
 - Serving as an information hub for data providers for accessing information relevant to the registration and reporting under the GHG Reporting Regulations.
 - The portal provides relevant guidance, templates, guidelines, and information relating to compliance under the GHG Reporting Regulations 2017 published under GNR 275 in Government Gazette 40762 of 03 April 2017 promulgated under the NEM:AQA.

As such, the Intervention Engineering facility must register on SAGERS and report their GHG emissions by the 31st of March every year.

3.1.6. Other Relevant Legislation

- Waste Classification and Management Regulations (GN 634, 23 August 2013);
- Norms and Standards for the Storage of Waste (29 November 2013);
- Gauteng Conservation Plan Version 3.3 (C-Plan 3.3);
- Development Facilitation Act (Act No. 67 of 1995);
- Water Services Act (Act No. 108 of 1998);
- Municipal Systems Act (Act No. 32 of 2000);
- Gauteng Noise Control Regulations (GNR. 5479 of 20 August 1999);
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004);
- The National Water Act, 1998 (Act No. 36 of 1998);
- National Heritage Resources Act, 1999 (Act No. 25 of 1999);
- South African National Standards, SANS 10103 of 2008;
- Occupational Health and Safety Act (Act No. 85 of 1993);
- City of Tshwane Municipal By-Laws.

3.1.7. Key Development Strategies and Guidelines

- Gauteng Growth Development Strategy;
- Gauteng Development Plan;
- Gauteng Sustainable Development Implementation Guideline, 2017;
- Spatial Planning and Land Use Management Act, 2013.
- Spatial Planning and Land Use Management By-law.

4. NEED AND DESIRABILITY

The proposed foundry will be situated within the ArcelorMittal Site, which is within an industrial area, thereby making the site appropriate for the proposed foundry activities. The facility further intends to employ 10 people, 50 percent of which will be those with a previously disadvantaged background.

Foundries play a crucial role within the manufacturing sector and can produce intricate and complex metal products. The proposed foundry intends to produce various kinds of products for different industries. These

industries include the pump engineering industry which supplies other major sectors such as mining institutions, power plants, as well as pulp and paper industries. The foundry also intends to produce valves for the valve industry which supplies various fluid flow sectors like water, oil, gas and manufacturing. These industries already play a significant role in the economy.

The proposed facility has seen a gap within the market to produce valve and pump parts for various industries with the intention to supply other industries such as the automotive industry with various steel, bronze and aluminium products. This will also assist the company to grow and thereby provide more employment opportunities for the local communities.

The foundry will supply various products to local companies that employ local labourers. This will help support and grow the local economy. The activity will bring employment opportunities to the society. This will help improve the livelihoods of the local labourers and also improve the state of the economy from the sales and services rendered by the facility. The facility will be regulated in terms of the NEMA and its associated legislations to ensure sustainable development and cleaner environments within the local communities.

Due to the downscaling of production capacity of the ArcelorMittal facility, the area lost a great deal of employment opportunities.. Although the facility might not provide employment opportunities at the same degree as the ArcelorMittal facility, it will nonetheless play a vital role in providing some employment opportunities.

5. ASSUMPTIONS AND LIMITATIONS

It is assumed that all information provided by the Applicant to Environmental Edge was correct and valid at the time it was provided.

It is not always possible to involve all Interested and/or Affected Parties (I&APs) individually, however, every effort has been made to involve as many I&APs as possible. It is also assumed that individuals representing various associations or parties will convey the necessary information to relevant associations, parties or organs of state.

It is assumed that the information provided by the various specialists is unbiased and accurate.

It is assumed that the motivation and ensuing planning and studies for the project were done with integrity and that all information provided to the specialist by the Applicant and its consultants to date is accurate.

It is assumed that the project description and infrastructure components as discussed above are reasonably accurate. These details were used to assess the potential impacts.

With regard to received comments, concerns or objections to this application during the public participation process, the following assumptions are made:

- Questions asked were answered accurately.
- The attitudes of the respondents towards the project will remain reasonably stable.

At the same time, it is assumed that the general concerns and opinions raised by all other landowners, such as security concerns, would also apply to the landowners who did not provide their feedback for whatever reasons.

Socio-Economic:

- The secondary data sources used to compile the socio-economic baseline (demographics, dynamics of the economy) although not exhaustive, can be viewed as being indicative of broad trends within the study area.
- The study was done with the information available to the EAP within the time frames and budget specified.
- Possible impacts and stakeholder responses to these impacts cannot be predicted with complete accuracy, even when circumstances are similar and these predictions are based on research and years of experience, taking the specific set of circumstance into account.

6. DESCRIPTION OF THE RECEIVING ENVIRONMENT



The sections below provide an understanding of the environmental context and sensitivity within which the activities are located. This assists in understanding the potential impacts associated with the project. The sections below provide a description of the attributes and key sensitive receptors with regards to the receiving environment of the study area or area of interest. Where applicable, a description of the receiving environment in relation to specialist assessment which was undertaken as part of this impact assessment process is provided.

6.1. Topography

Intervention Engineering sits at an approximately 1403 m above sea-level. Within the ArcelorMittal site, the portion on which the proposed Intervention Engineering facility will sit on is general flat terrain. The topography and slope surrounding the Intervention Engineering site is shown by the map in Figure 6-1 below.

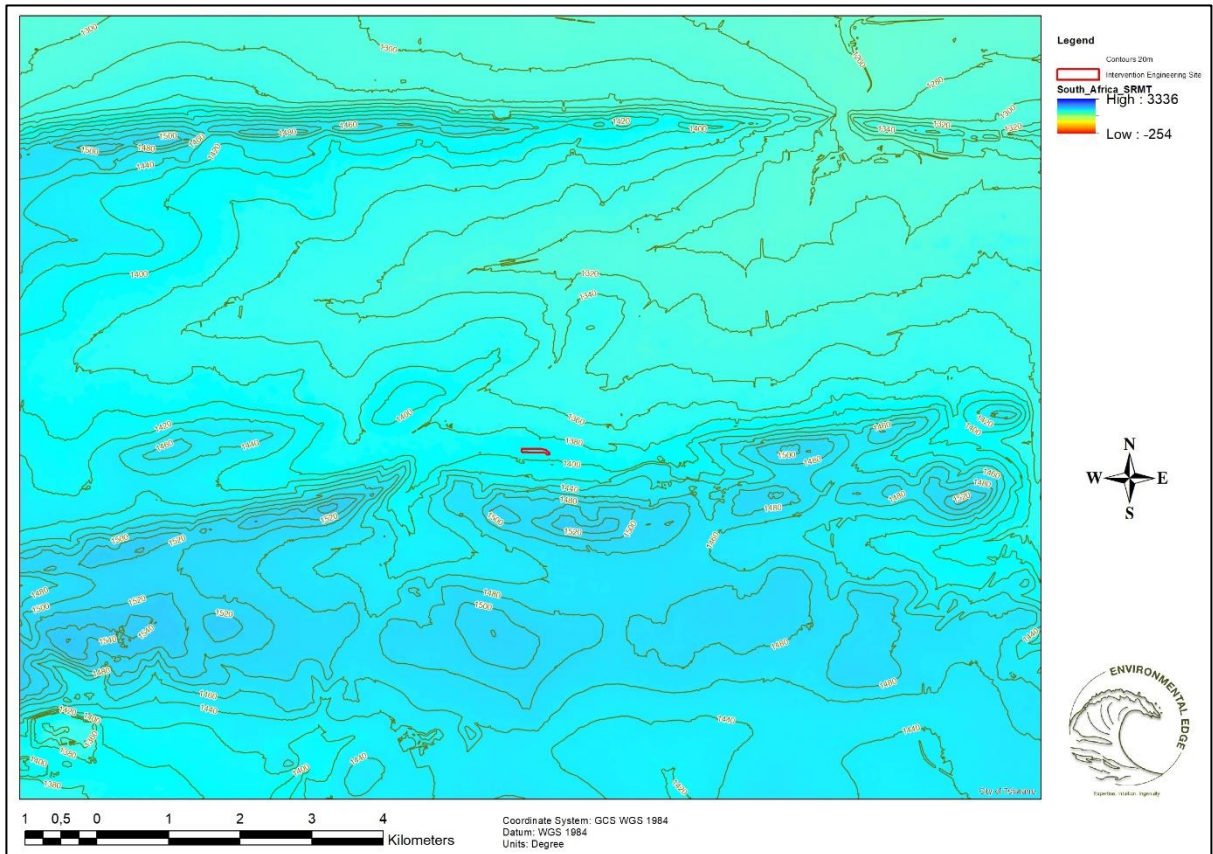


Figure 6-1: Topography surrounding Intervention Engineering (Appendix F).

6.2. Geology and Soil

The Intervention Engineering site is located within the Pretoria Geological Group. The Pretoria Group of the Transvaal Sequence sits on the Rooihogte formation layer. The Rooihogte rocks overlie the Malmani Subgroup dolomites as well as the Penge Formation ironstones. The Rooihogte formation is typically underlain by a palaeokarst surface and sprouts at irregular intervals in the Transvaal Basin. The palaeokarst surface forms over carbonate rocks belonging to the Malmani Subgroup (Eriksson, 1988).

According to Eriksson (1988), these formations are typically found within the Pretoria area and Botswana. Lithofacies typically associated with this formation include chert breccia, chert conglomerate, mudrocks and cross-bedded quartz. The Timeball Hill formation is a collection of carbonaceous and ferruginous shales as well as minor quartzites and diamictites. This formation rests on the Rooihogte formation.

The Intervention Engineering site sits on an area that is characterised by soils that are black and red, strongly structured clayey soils with high base status, which is typically an association of Vertisols, Phaeozems,

Kastanozems and nitisols, additionally at least one Leptosols, Calcisols and Cambisols might be found within the soil.

It is inconceivable that the proposed activities by Intervention Engineering will have any significant impact on the geology and/or soil around the area, since the activities will take place on an already developed site. Therefore, no further assessment was recommended in this regard. However, significant mitigations to ensure further management of this aspect are recommended in the attached Environmental Management Programme (EMPr).

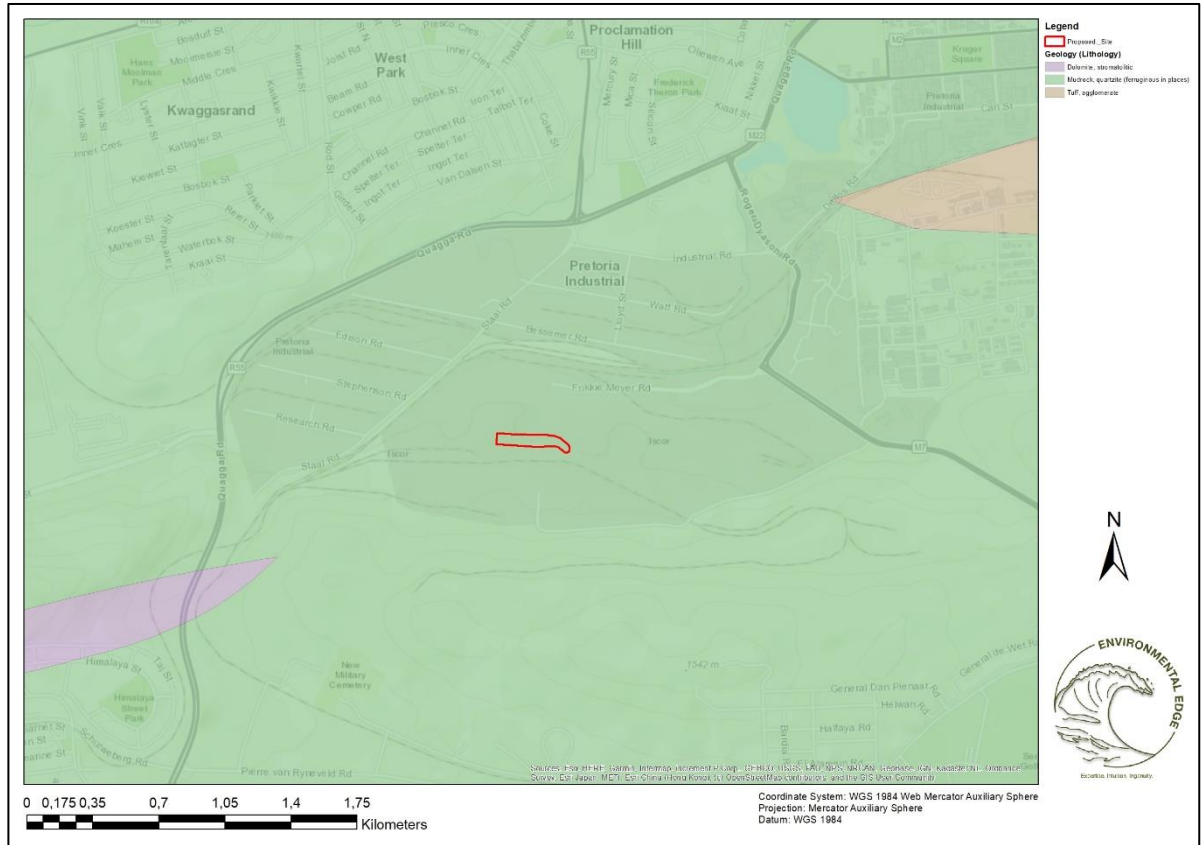


Figure 6-2: Geology of the area around Intervention Engineering (Appendix F).

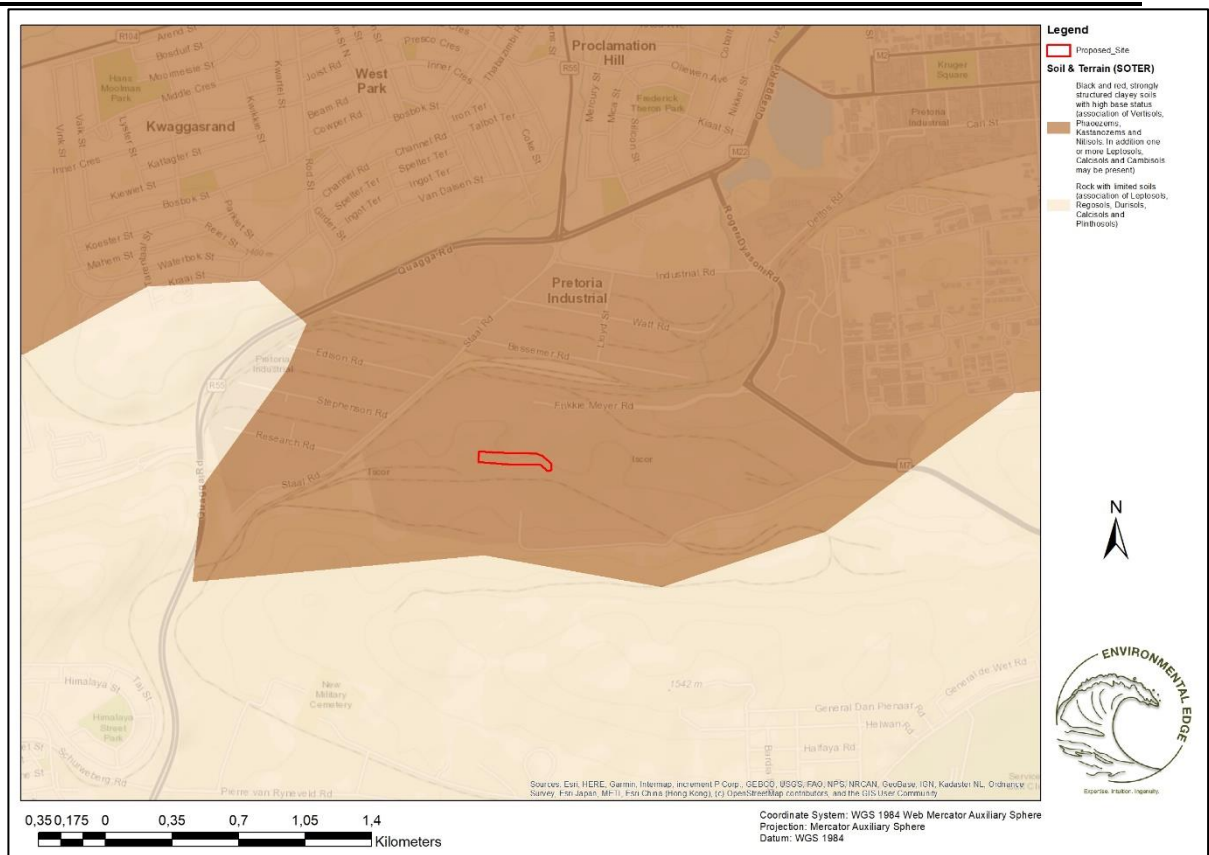


Figure 6-3: Soil characteristics of the area around Intervention Engineering (Appendix F)

6.3. Climate

The dispersion and dilution potential of contaminants released into the atmosphere is dependent on meteorological processes.

The stability of the atmosphere and the depth of the surface mixing layer control the vertical dispersion of pollutants. Dominant wind fields affect horizontal emission dispersion. Furthermore, meteorological parameters including temperature, precipitation, wind speed, and wind direction are of significance when looking at pollution dispersion as they will influence the degree to which pollution will accumulate or disperse in the atmosphere.

6.3.1. Surface Wind Field

The wind field determines both the distance of downward transport and the rate of dilution of pollutants. The generation of mechanical turbulence is a function of the wind speed, in combination with the surface roughness. The wind field for the study area is described with the use of wind roses.

Wind roses comprise 16 spokes, which represent the directions from which winds blew during a specific period. The colours used in the wind roses below, reflect the different categories of wind speeds; the yellow area, for example, represents wind speeds between 2 and 4 m/s. The dotted circles provide information regarding the frequency of occurrence of wind speed and direction categories. The frequency with which calms occurred, i.e. periods during which the wind speed was below 1 m/s are also indicated.

The data described below is MM5 modelled meteorological data, obtained from Envitrans for the period June 2023 to July 2023. MM5 is a PSU/NCAR mesoscale model used to predict mesoscale and regional-scale atmospheric circulation. The model provides integrated model meteorological data, which can be used in a wide range of applications. This model is often used to create weather forecasts and climate projections. Details of the meteorological data used are summarised in Table 6-1 below.

Table 6-1: Meteorological data details.

| Meteorological Data Details | |
|---|---|
| Met Data Information | Description |
| Met data type | MM5 AERMET-Ready (Surface & Upper Air Data) |
| Datum | WGS 84 |
| Closest Town | Pretoria - South Africa |
| Time zone | UTC +2 hours |
| Period of record | June 2020 - July 2023 |
| Met Station Parameters | Description |
| Anemometer height | 13 m |
| Station base elevation | 1 397 m |
| Upper air adjustment | -2 hours |
| Grid Cell Information | |
| Co-ordinates of centre met grid | 25°46'15.65"S, 28°7'50.08"E |
| UTM zone | -35 |
| Cell dimension | 12 km x 12 km |
| Surface Met Data | Description |
| File format | SAMSON file |
| Output interval | Hourly |
| Upper Air Data | Description |
| Format | TD-6201- Fixed Length |
| Reported in | GMT |
| Models used to process met data | Description |
| Model used to process data for wind roses | WR Plot |
| Model used to process data for AERMOD | AERMET |

Wind roses for the period June 2020 - July 2023 are shown in Figure 6-4 to Figure 6-6 below. The average wind speed during this period was about 2.6 m/s, blowing from the north-north-east direction of the site, with some occasional north-north-west winds. Experienced winds reached maximums of over 6 m/s in all wind directions. Some prominent winds were also experienced from southeast east of the site. A calm percentage of 13% was experienced during this period. Daytime (06:00-18:00) winds were mostly from north-north-east of the site at an average of 2.3 m/s speed and was 17% calm. Nighttime (18:00-06:00) winds were prominently from north-north-east of the site with an average of 2.9 m/s speed and was 8% calm. A maximum wind speed of 12 m/s was experienced during daytime in the area.

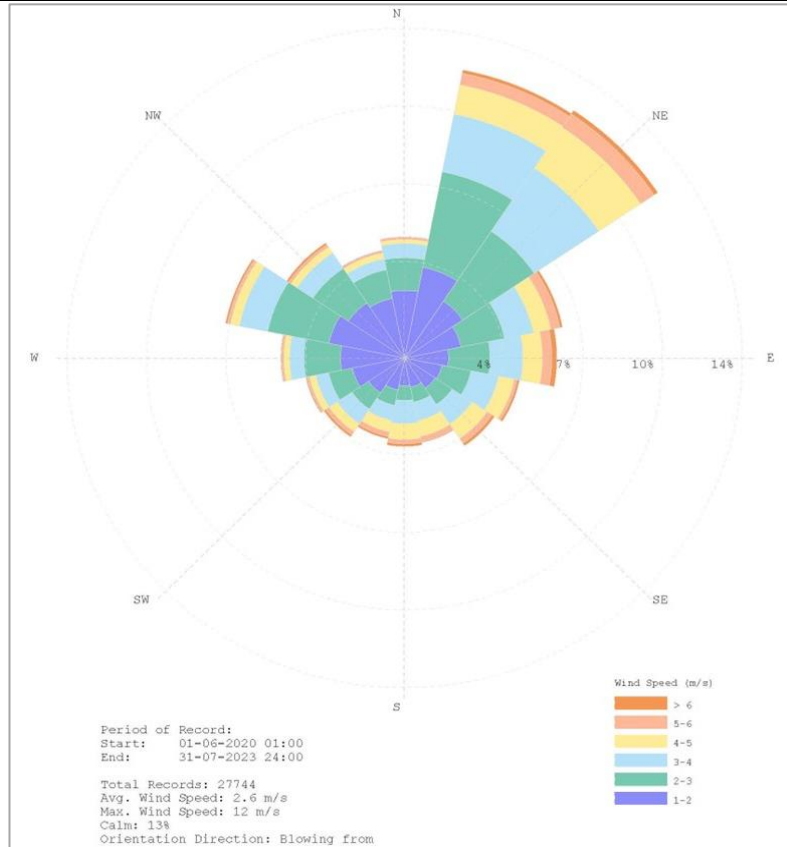


Figure 6-4: Period (01/06/2020-31/07/2023) average wind roses (daytime and nighttime). Av. wind speed was 2.6m/s NNE.

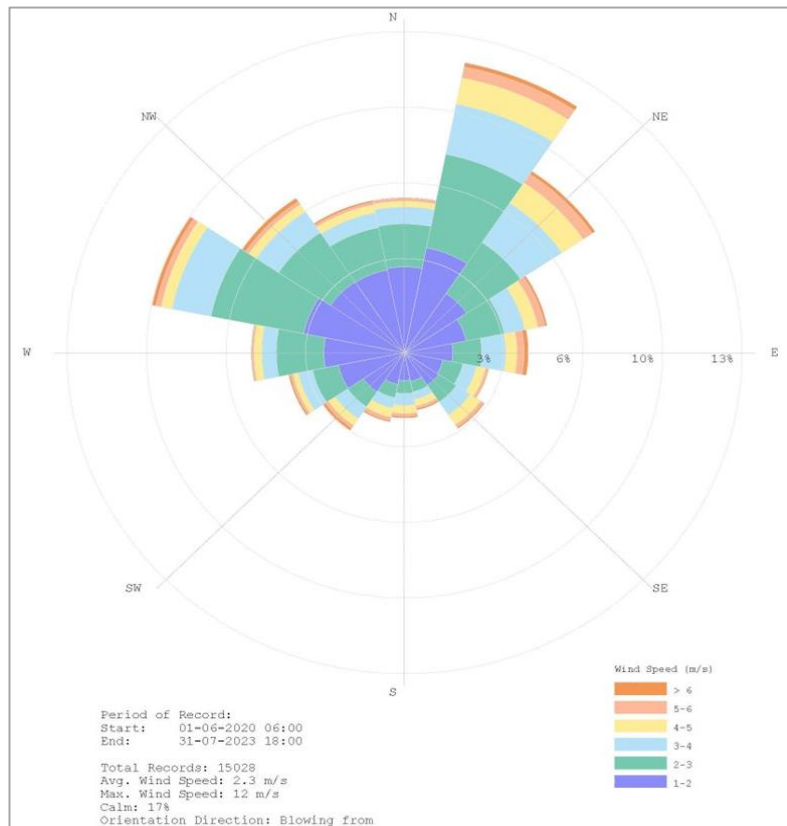


Figure 6-5: Period (01/06/2020-31/07/2023) average wind roses (daytime only). Av. wind speed was 2.3m/s NNE.

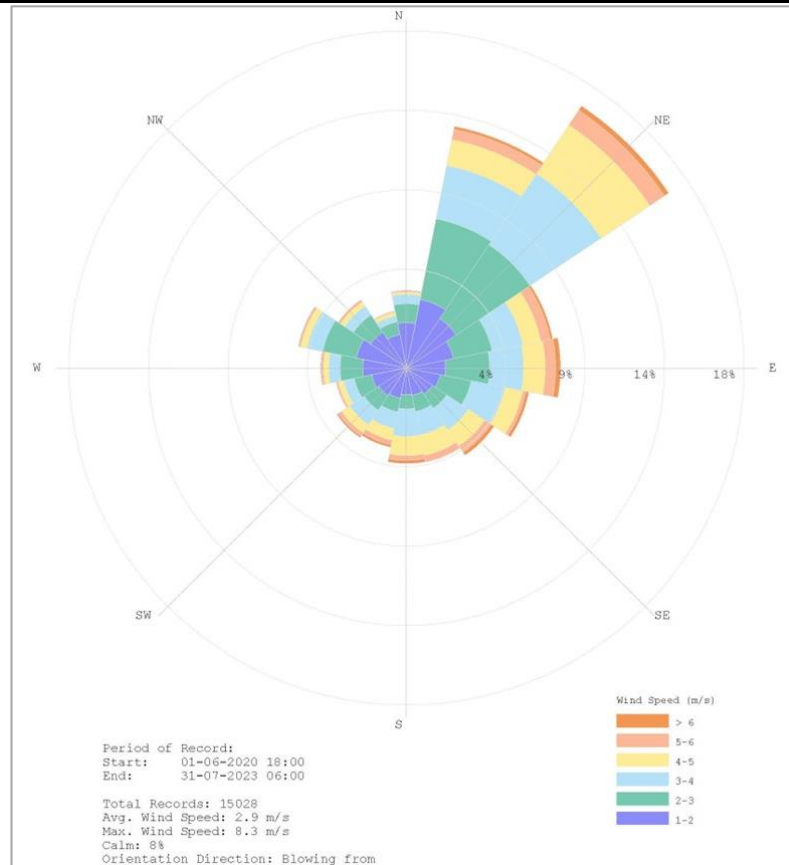


Figure 6-6: Period (01/06/2020-31/07/2023) average wind roses (nighttime only). Av. wind speed was 2.9m/s NNE.

6.3.2. Temperature

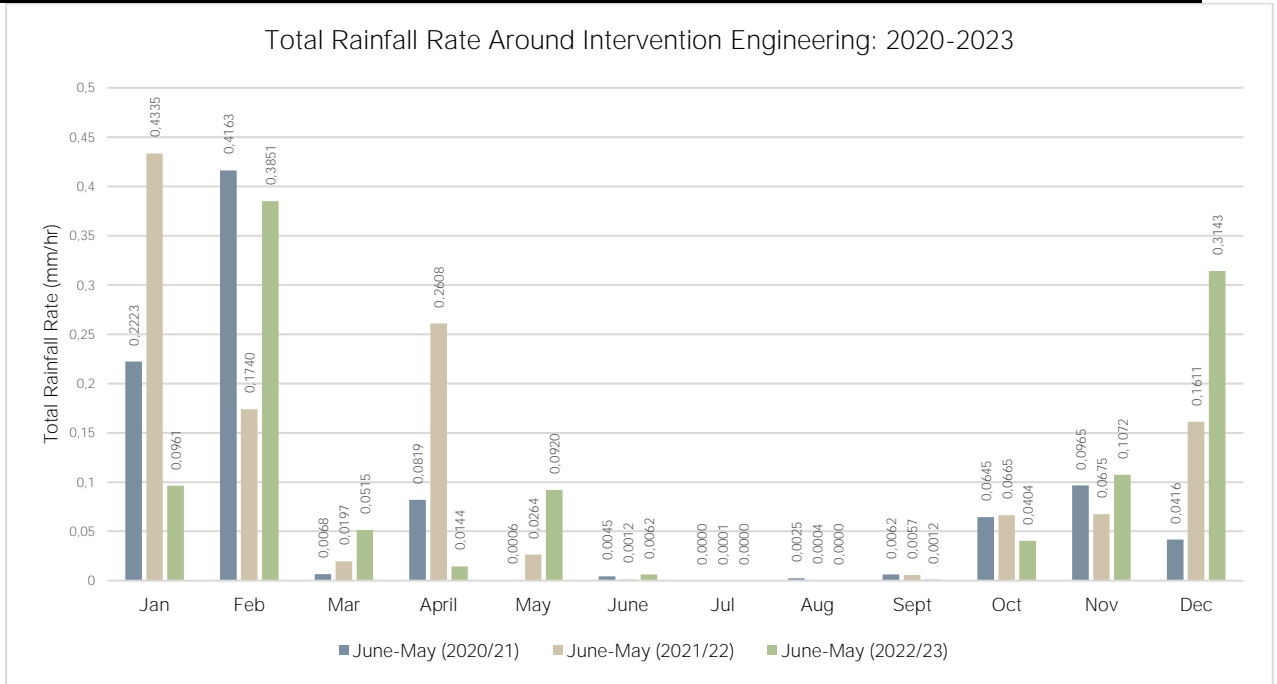
Air temperature is important, both for determining the effect of plume buoyancy (the larger the temperature difference between the plume and the ambient air, the higher a pollution plume can rise), and determining the development of the mixing and inversion layers. Minimum, maximum and mean temperatures as recorded at Intervention Engineering, are shown in Table 6-2. Period average maximum and minimum temperatures were 24.2 °C, and 13.3 °C respectively.

Table 6-2: Minimum, maximum and average temperatures for (2020 – 2023).

| °C | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| Min | 13.8 | 15.6 | 14.2 | 11.6 | 8.7 | 3.8 | 2.6 | 3.4 | 9.0 | 11.0 | 13.4 | 13.1 |
| Max | 33.2 | 32.0 | 31.1 | 30.0 | 26.2 | 22.7 | 22.4 | 27.4 | 31.5 | 33.7 | 35.2 | 32.0 |
| Ave | 24.2 | 23.9 | 22.6 | 20.4 | 16.8 | 13.3 | 13.0 | 15.5 | 20.2 | 23.0 | 23.8 | 23.2 |

6.3.3. Rainfall

Rainfall has an overall dilution effect and cleanses the air by washing out particles and pollutants suspended in the atmosphere. Monthly total rainfall at Intervention Engineering for the period 2020 to 2023 is presented in figure 6-7 below. The area receives on average 0.0923 mm/hour of rainfall per year. Rainfall is predominantly received from October to May.



Figure

6-7:

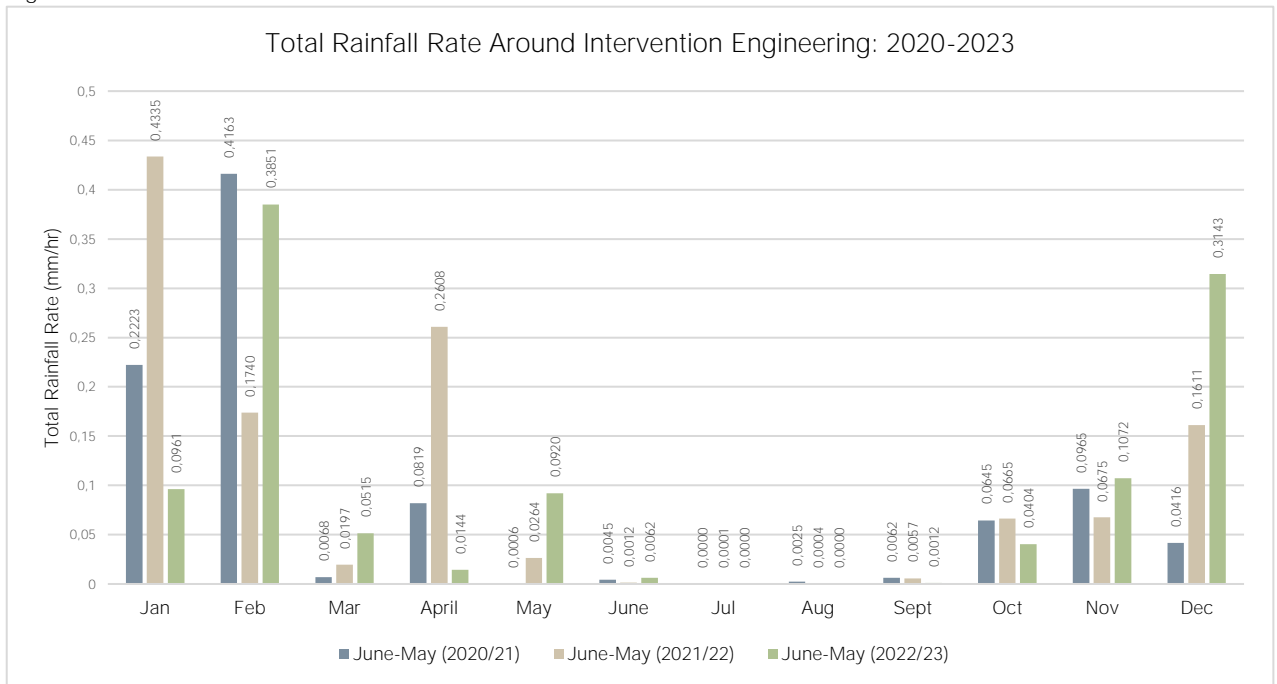


Figure 6-7: Total monthly rainfall for Intervention Engineering for 2020 - 2023.

6.3.4. Atmospheric Stability

Two parameters describe the atmospheric boundary layer properties: the boundary layer depth and the Monin-Obukhov length. The Monin-Obukhov length (L_{Mo}) provides a measure of the importance of buoyancy generated by the heating of the ground and mechanical mixing generated by the frictional effect of the earth's surface. Physically, it can be thought of as representing the depth of the boundary layer within which mechanical mixing is the dominant form of turbulence generation (AIRSHED, 2017; CERC, 2004).

The atmospheric boundary layer constitutes the first few hundred metres of the atmosphere. During daytime, the atmospheric boundary layer is characterised by thermal turbulence due to the heating of the earth's surface. Nighttimes are characterised by weak vertical mixing and the predominance of a stable layer. These conditions are normally associated with low wind speeds and lower dilution potential (AIRSHED, 2017).

The highest concentrations for ground level, or near-ground level releases from non-wind dependent sources would be expected during weak wind speeds and stable (nighttime) atmospheric conditions. For elevated releases, unstable conditions will likely result in very high concentrations of poorly diluted emissions close to the stack. This is called looping and occurs mostly during daytime hours. Neutral conditions disperse the plume equally in both the vertical and horizontal planes and the plume shape is referred to as coning. Stable conditions prevent the plume from mixing vertically, although it can still spread horizontally (which is called fanning) (Tiway & Colls, 2010; AIRSHED, 2017). For ground level releases the highest ground level concentrations will likely occur during stable nighttime conditions (AIRSHED, 2017).

6.4. Biodiversity and Vegetation

In accordance with the Gauteng C-Plan 3.3 of the South African National Biodiversity Institute (SANBI), Intervention Engineering is situated outside any conservation areas. The closest critical biodiversity area is approximately 360 m south of the site.

The nearest ecological support area is further south of the site, past the critical biodiversity area. Please refer to Figure 6-8 below for the Biodiversity Map of the surrounding area.

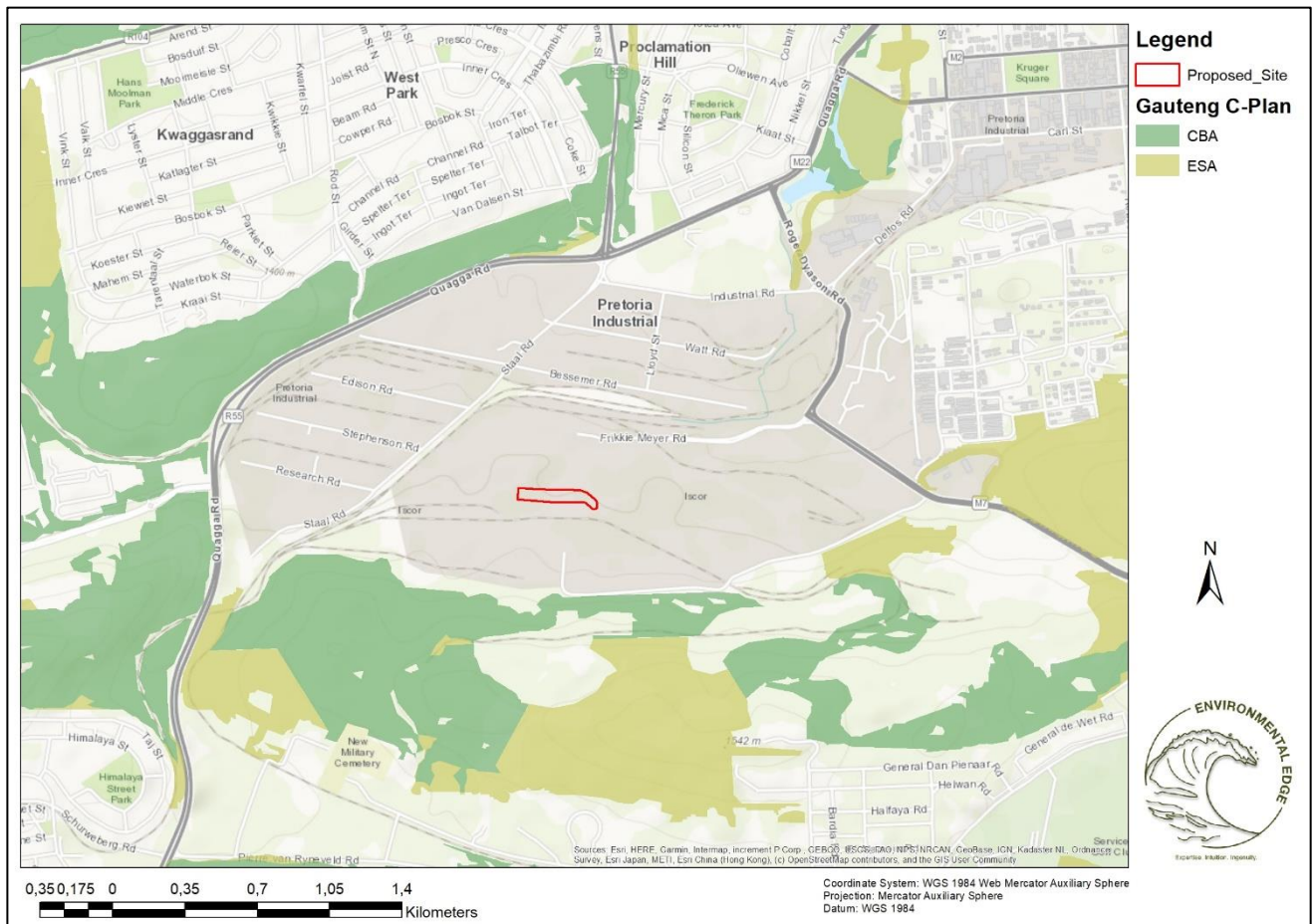


Figure 6-8: Important Biodiversity areas around Intervention Engineering (Appendix F).

According to Reddy and Adam (2021), the proposed development site falls within the Marikana thornveld vegetation type, this is also confirmed by the SANBI 2018 national vegetation map. This vegetation type forms

part of the Central Bushveld Bioregion, which is found within the Savanna Biome. The Marikana Thornveld vegetation type is typically found within the Gauteng and North West provinces laying at altitudes that range from 1050 to 1500 metres above sea level.

Such areas are typically characterised by clay and dark turf soils, with the Acacia species as the prevalent plant species. The Marikana Thornveld vegetation type covered roughly 1070 km² of the Gauteng province, with most of it having been lost and very little of it under formal protection (Nemutamvuni, 2018).

The proposed development site, however, is situated within an area that is zoned as an industrial area with little to no vegetation remaining within the area. Furthermore, the site was developed as an industrial area in 1928 as the state entity known as Iscor. As such, the site has been transformed and the impacts of the proposed activities on the vegetation types in this regard are negligible.

Due to the nature of the surrounding environment being characterized mostly by industrial activities, Intervention Engineering will have no significant impact on the biodiversity and vegetation of the area.

No further assessment is required for this aspect. However, significant mitigations to ensure further management of this aspect are recommended in the attached EMP. See Figure 6-9 below for a vegetation map of the site and its surroundings.

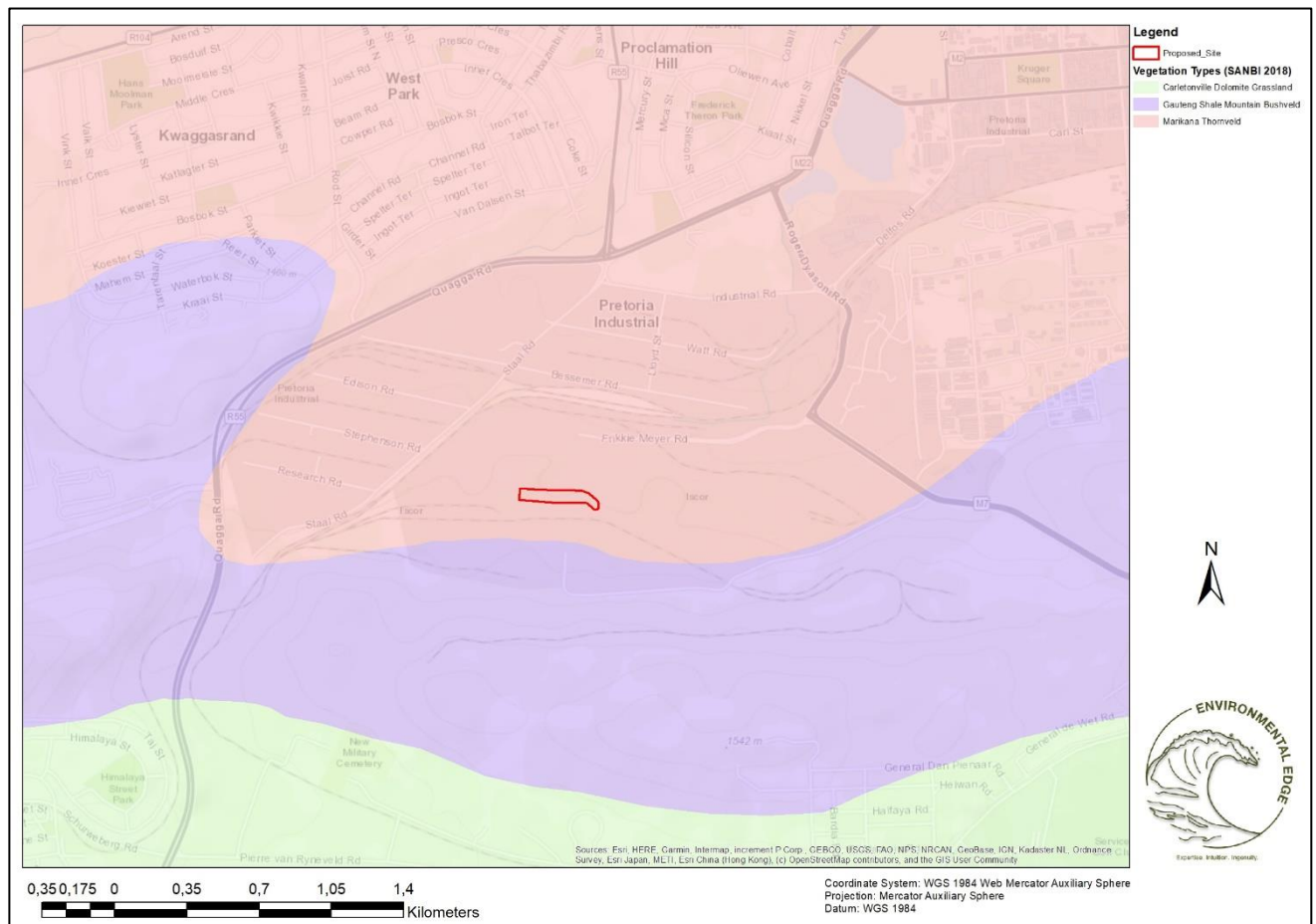


Figure 6-9: Vegetation Type around Intervention Engineering (Appendix F).

6.5. Surface Water

Data from the Council for Scientific and Industrial Research (CSIR), that includes, the 2018 Artificial Wetlands, the 2018 National Wetland Map 5 and Confidence Map and the 2018 River Ecosystem threat status and protection

level, which can be accessed from the SANBI GIS website, show that there are six water resources located within a kilometre radius of the proposed site. These include an unknown wetland situated approximately 500 m south, and a dam that is located approximately 820 m southeast of the proposed site. There are also four reservoirs, two of which are located approximately 300 m south. The third reservoir is located approximately 800 m southwest, and the fourth one is located approximately 900 m east of the site.

Since the site sits at a regulatory acceptable distance from any natural surface water bodies, no further assessment is required for this aspect. However, significant mitigations to ensure further management of this aspect are recommended in the attached EMPr.

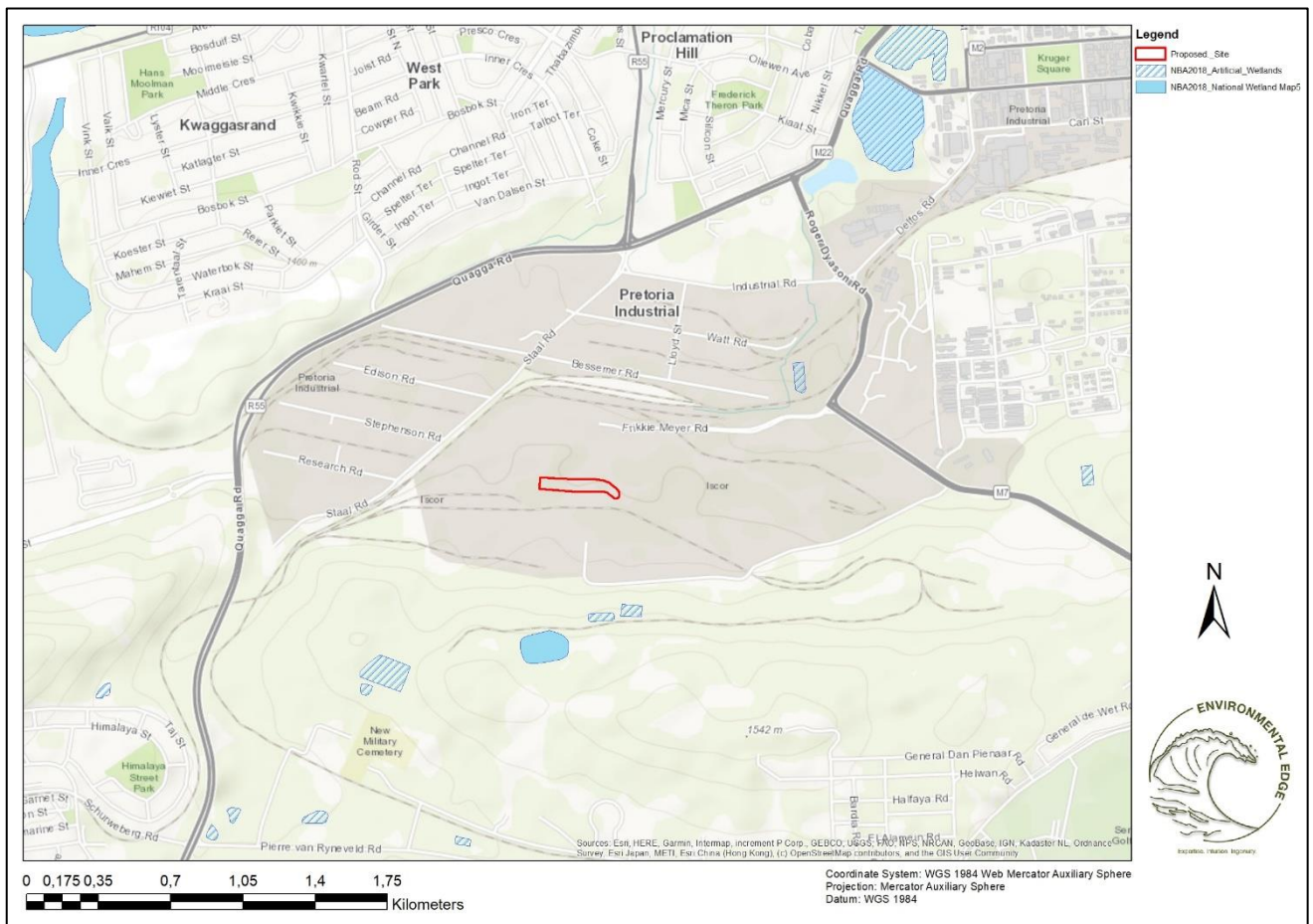


Figure 6-10: Surface water bodies surrounding Intervention Engineering (Appendix F).

6.6. Heritage

According to the South African Heritage Resource Agency (SAHRA), the proposed site is located between 2km and 3.5km from various heritage sites in the southeast direction. Such heritage sites include, 17 Ben Viljoen Road, Voortrekkerhoogte, Pretoria; 3-5 Jacobus Naude Road, Voortrekkerhoogte, Pretoria; Northern Transvaal Command Headquarters, Voortrekkerhoogte, Pretoria; SA Air Force Officers' Club, Voortrekkerhoogte, Pretoria; SA Army College, Voortrekkerhoogte, Pretoria; as well as The Fortress and Blockhouse, 2 Johannes Kok Road, Voortrekkerhoogte, Pretoria.

An additional heritage site worth noting, which is not recorded within the SAHRA database is the Voortrekkerhoogte military cemetery that is located approximately 1.54km southwest of the proposed Intervention Engineering facility. See Figure 6-11 below for an illustration of the heritage sites in relation to Intervention Engineering.

As the site is located within an existing industrial area and at a greater distance from any heritage site, it is improbable that the Intervention Engineering activities carry any significant impacts in this regard. Therefore, no further assessment is required in this aspect.

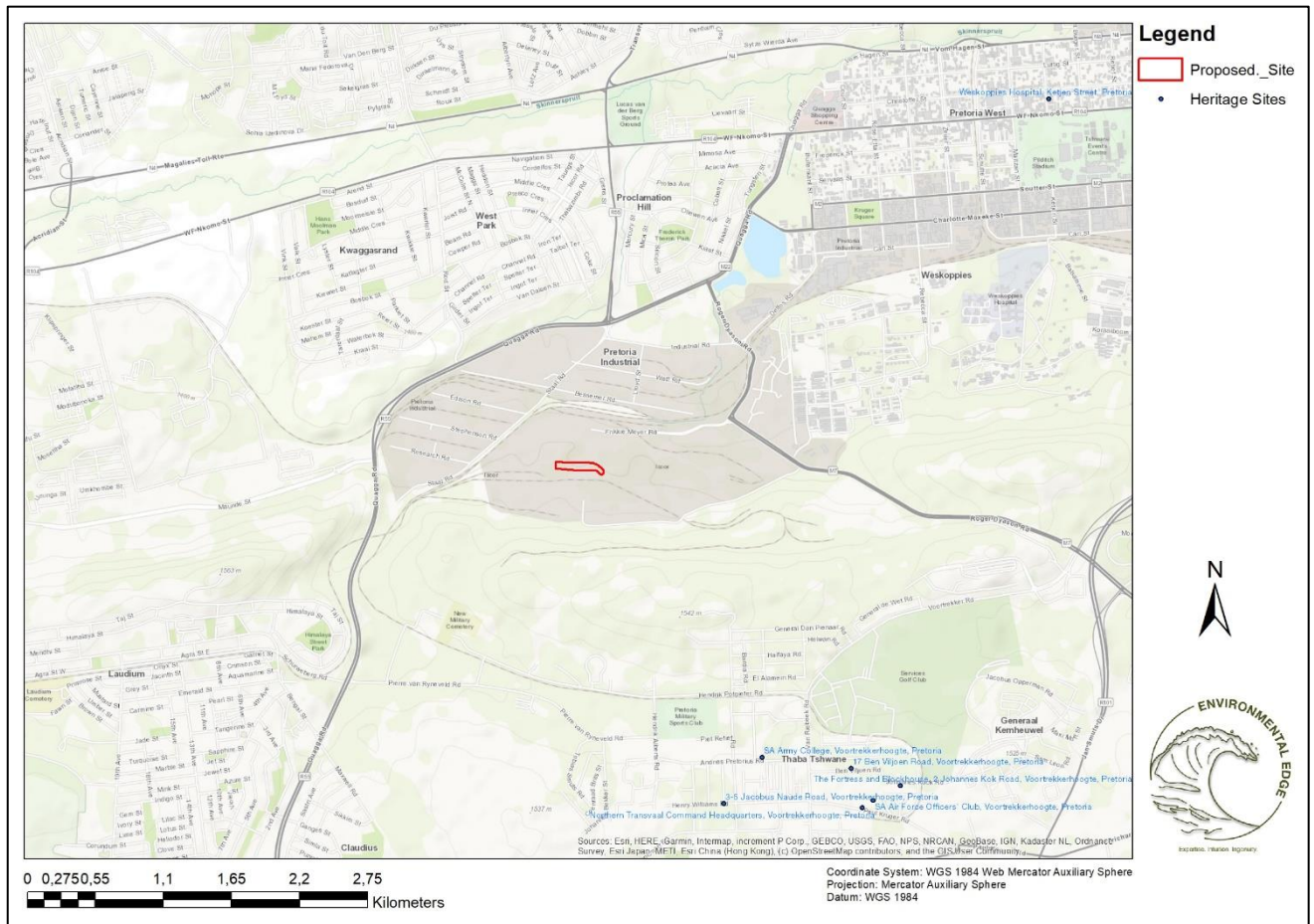


Figure 6-11: Heritage sites in relation to Intervention Engineering (Appendix F).

6.7. Traffic

The facility is proposed within an industrial area that is characterized by relatively low traffic volumes, with occasional influx of delivery vehicles throughout the day. The site can be accessed via Roger Dayson Road (East Gate) or Frikkie Mayer Road (Main Gate). The initial site development took into account the impacts associated with traffic flow within the area and the measures currently in place have proven to be adequate.

As such, no further assessment is deemed significant for this aspect. However, significant mitigations to ensure further management of this aspect are recommended in the attached EMPr.

6.8. Visual Aspects

The site is proposed to be located within an existing built-up industrial area that is characterized by paved surfaces, buildings, walling/fencing, roads and unnatural lighting. The activity is considered to be in line with the “sense of place” of the area. Due to the nature of the surrounding environment, the existence of Intervention Engineering will have no significant changes to the visual environment, as it blends with the visual aspect of the area. Additionally, all production activities will take place within buildings and the facility is located in the middle of the ArcelorMittal site, with no human view of the facility. Therefore, no further assessment is required. However, significant mitigations to ensure further management of this aspect are recommended in the attached EMPr.

6.9. Noise



Existing noise is mainly from the various industrial and commercial activities taking place around the area. This includes trucks and machinery from companies involved in brick manufacturing, steel manufacturing, concrete industries as well as other industrial activities. Given the nature of the site and area, the noise levels that will emanate **from Intervention Engineering's** facility are deemed insignificant. Furthermore, the proposed activities will be undertaken within enclosed building structures.

As such, no further noise assessment is required. However, significant mitigations to ensure further management of this aspect are recommended in the attached EMPr.

6.10. Socio-Economic Setting

The City of Tshwane ranks at number four in terms of gross value contribution on a national scale and ranks number two provincially. The city accounted for 28.4% of the provincial economic contribution and 10% of the national economy in 2017 (City of Tshwane Metropolitan Municipality, 2020).

It is evident that the City of Tshwane has National, Provincial and Parastatal entities within its boundaries through the size of employment opportunities within the community services sector. The sector contributed 30.2 percent **towards the City's** Gross Value-Added amount. Furthermore, in 2017 the five predominant sectors in the city included community services with 30.2 percent contribution, finance with 24.9 percent contribution, trade with 13.1 percent contribution, manufacturing with 11.7 percent contribution, as well as transportation with 11.6 percent contribution. The manufacturing sector has ranked fourth as an economic contributor towards the **City's** economy.



7. ASSESSMENT OF IDENTIFIED POTENTIAL IMPACTS

The activity is likely to result in a variety of positive and negative impacts. Additionally, it could potentially result in collective and long-term impacts known as cumulative impacts. A cumulative impact is the impact of an activity that, in itself, may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

This section aims to assess the potentially significant impacts (either negative/positive and/or cumulative) which may occur as a result of the activity. Furthermore, it describes the methodology to be utilised in the qualitative assessment of the identified impacts.

The impacts found, including those identified and analysed by a specialist assessment, namely the Air Quality Impact Assessment (AQIA), have been reviewed and (where applicable) included in this impact assessment. Where negative impacts are found, mitigation steps have been considered and recommended to minimize impacts. The qualitative evaluation of the impacts found provides an indication of the mitigation measures' potential effectiveness in reducing the overall importance of the effect.

Where relevant, each impact has been assessed through the planning, construction/commissioning, operation and decommissioning phases of the proposed activities. Where required, the proposed mitigation measure have been detailed.

7.1. Environmental Issues and Impacts

The activity is associated with a variety of positive, negative impacts, and cumulative impacts. A cumulative impact is the impact of an activity that may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

As the site infrastructure is already built up, with the proposed activities including only the commissioning and installation of equipment related to the activities, the construction/commissioning, and operational phases are included in this assessment. The decommissioning phase is somewhat included in this assessment, as the site infrastructure is perceived as permanent with the operations planned to take place indefinitely to a point where it may be sold to a potential buyer(s).

However, should it be deemed, at any point or any time for any reason, that the development is no longer relevant, and decommissioning of the infrastructure be planned, then Activity 31 of Listing Notice 1 published under GN R.983 of 4 December 2014 as amended by GN R.327 of 7 April 2017 of the EIA Regulations in terms of NEMA shall apply and therefore an impact assessment through the Basic Assessment process must be followed.

7.2. Impact Assessment Methodology

7.2.1. Determination of Significance of Impacts

Significance is calculated by a synthesis of effect characteristics that include an impact's meaning and severity. Context refers to the regional scale, i.e., local, national or global, while intensity is characterized by the severity of the effect, e.g., the degree of variance from background conditions, the size of the affected area, the length of the impact and the overall likelihood.

Significance is an indicator of the importance of the impact, both in terms of physical scale and time scale, and thus demonstrates the degree of mitigation required. For each impact, the total number of points scored shows the extent of the impact's importance. Significance is calculated as shown in Table 7-2 below.

7.2.2. Impact Rating System

Impact assessment must take into account the nature, scale and length of environmental impacts, whether they are positive (beneficial) or negative (detrimental). Each impact is also assessed according to the project stages:

- Construction/Commissioning
- Operation
- Decommissioning

The proposal for mitigation or optimization of an effect is specific, where appropriate. It also includes a brief discussion of the effect and the reasoning behind the evaluation of its importance.

7.2.3. Rating System Used To Classify Impacts

The following rating system is applicable to the possible effects on the receiving environment and contains an objective impact mitigation assessment. Impacts were combined into one ranking. In assessing the significance of each issue, the following criteria including an allocated point system are used:

Table 7-1: Description of parameters used to determine impact significance

| NATURE | | |
|--|----------------------------|---|
| A brief overview of the effects of the environmental parameters being evaluated in the context of the project is included. These criteria require a short-written statement of the environmental factor that a specific action or behaviour affects. | | |
| GEOGRAPHICAL EXTENT | | |
| This is described as the region over which the effect is transmitted. The magnitude and significance of an effect usually have distinct scales and grouping ranges are often needed. This is also useful in the thorough evaluation of a project in order to better define it. | | |
| 1 | Site | The impact only affects the site. |
| 2 | Local/district | Have an effect on the local area or district. |
| 3 | Province/region | Have an effect on the entire province or region. |
| 4 | International and National | Have an effect on the entire world and country. |
| PROBABILITY | | |
| This describes the chance of occurrence of an impact. | | |
| 1 | Unlikely | The chance of the impact occurring is extremely low (less than a 25% chance of occurrence). |
| 2 | Possible | The impact may occur (between a 25% to 50% chance of occurrence). |
| 3 | Probable | The impact is likely to occur (between a 50% to 75% chance of occurrence). |
| 4 | Definite | The impact will certainly occur (greater than a 75% chance of occurrence). |
| REVERSIBILITY | | |
| This describes the degree to which an impact on an environmental parameter can be successfully reversed upon completion of the proposed activity. | | |
| 1 | Completely reversible | The impact is reversible with implementation of minor mitigation measures. |
| 2 | Partly reversible | The impact is partially reversible, but more intense mitigation measures are required. |



| | | |
|---|-------------------|--|
| 3 | Barely reversible | The impact is unlikely to be reversed even with intense mitigation measures. |
| 4 | Irreversible | The impact is irreversible, and no mitigation measures exist. |

IRREPLACEABLE LOSS OF RESOURCES

This describes the degree to which resources are irreplaceably lost because of a proposed activity.

| | | |
|---|-------------------------------|--|
| 1 | No loss of resource. | The impact does not result in the loss of any resources. |
| 2 | Marginal loss of resource | The impact results in marginal loss of resources. |
| 3 | Significant loss of resources | The impact results in significant loss of resources. |
| 4 | Complete loss of resources | The impact results in a complete loss of all resources. |

DURATION

This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact because of the proposed activity.

| | | |
|---|-------------|---|
| 1 | Short-term | The impact and its effects will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction; thereafter it will be entirely negated (0 – 2 years). |
| 2 | Medium-term | The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years). |
| 3 | Long-term | The impact and its effects will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter (10 – 50 years). |
| 4 | Permanent | The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (indefinite). |

CUMULATIVE EFFECT

This describes the cumulative effect of the impacts on the environmental parameter. A cumulative effect/impact is an effect which may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.

| | | |
|---|------------------------------|---|
| 1 | Negligible Cumulative Impact | The impact would result in negligible to no cumulative effects. |
| 2 | Low Cumulative Impact | The impact would result in insignificant cumulative effects. |
| 3 | Medium Cumulative impact | The impact would result in minor cumulative effects. |
| 4 | High Cumulative Impact | The impact would result in significant cumulative effects. |

INTENSITY/ MAGNITUDE

Describes the severity of an impact.

| | | |
|---|-----------|--|
| 1 | Low | Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible. |
| 2 | Medium | Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity). |
| 3 | High | Impact affects the continued viability of the system/ component, and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation. |
| 4 | Very high | Impact affects the continued viability of the system/component, and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible, rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation. |

Table 7-2: Significance calculation and ratings.

SIGNIFICANCE

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula:

$$\text{SIGNIFICANCE} = (\text{Extent} + \text{probability} + \text{reversibility} + \text{irreplaceability} + \text{duration} + \text{cumulative effect}) \times \text{magnitudel intensity.}$$

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

| Points | Impact Type | Impact Significance Rating | Description |
|------------|-------------|----------------------------|--|
| >90 | Negative | Negative Very High Impact | The impact has highly significant effects which are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws". |
| -61 to -90 | Negative | Negative High Impact | The impact has significant effects and requires significant mitigation measures to achieve an acceptable level of impact. |
| -31 to -60 | Negative | Negative Medium Impact | The impact has moderate negative effects and requires moderate mitigation measures. |



| | | | |
|-----------|----------|---------------------------|--|
| -1 to -30 | Negative | Negative Low Impact | The impact has negligible negative effects and requires little to no mitigation. |
| 0 | Neutral | No Impact | The impact has no effects. |
| 1 to 30 | Positive | Positive Low Impact | The impact has minor positive effects. |
| 31 to 60 | Positive | Positive Medium Impact | The impact has moderate positive effects. |
| 61 to 90 | Positive | Positive High Impact | The impact has significant positive effects. |
| >90 | Positive | Positive Very High Impact | The impact has highly significant positive effects. |

Table 7-3: Example: Rating of impacts

| IMPACT TABLE FORMAT | | | |
|---|--|---------------------------------|------------------------------|
| | Description | Before Mitigation | After Mitigation |
| <i>[Environmental Parameter]</i> e.g., Biodiversity | <i>A brief description of the nature of the impact that is likely to positively or negatively affect the environment as a result of the activity, e.g. alteration of aquatic biota, or an oil spill in surface water.</i> | | |
| Extend (Ex) | <i>A brief description indicating the chances of the impact occurring.</i> | 4 | 1 |
| Reversibility (Re) | <i>A brief description of the ability of the environmental components recovery after a disturbance as a result of the activity.</i> | 4 | 1 |
| Probability (Pr) | <i>A brief description of the environmental aspect likely to be affected by the activity e.g. Surface water.</i> | 4 | 1 |
| Irreplaceable loss of resources (L) | <i>A brief description of the degree in which irreplaceable resources are likely to be lost.</i> | 4 | 1 |
| Duration (D) | <i>A brief description of the amount of time the activity is likely to take to its completion.</i> | 4 | 1 |
| Cumulative effect (CE) | <i>A brief description of whether the impact will be exacerbated as a result of the activity.</i> | 4 | 1 |
| Intensity/magnitude (M) | <i>A brief description of whether the impact has the ability to alter the functionality or quality of a system permanently or temporarily.</i> | 2 | 2 |
| Significance Rating | <i>A brief description of the importance of an impact which in turn dictates the level of mitigation required.</i> | -48 (Negative Medium Impact) | -12 (Negative Low Impact) |
| Mitigation measures | <i>Outline/explain the mitigation measures to be undertaken to ameliorate the impacts that are likely to have risen from the activity. Describe how the mitigation measures have reduced/enhanced the impact with relevance to the impact criteria used in analysing the significance. These measures will be detailed in the EMP.</i> | | |

7.3. Assessment of Identified Impacts

Impacts that have been identified as being potentially significant are elaborated on in the sub-sections below.

7.3.1. Air Quality Impact Assessment

An AQIA was conducted for Intervention Engineering as part of the Waste Management Licence application process and AEL application process for their facility.

The main objective of the AQIA was to determine the potential impact of emissions associated with the operational activities of the foundry on ambient air quality in terms of dust fall (as TSP), criteria air pollutants (PM, SO₂ and NO₂) and non-criteria air pollutants (HF, NH₃, and TVOCs). The pollutants assessed in this study were chosen based on pollutants given under sub-categories 4.4 (secondary aluminium production) and 4.10 (foundries) applicable to the project.

In studying the receiving environment, the following was found:

- Air Quality Sensitive Receptors (AQSRs) in the project area include urban residential areas, educational facilities, recreational facilities and hospitals. Residential areas within 5 km radius of the study area include Quagga Estates which is the closest residential complex to the proposed site (about 1.05 km).

Other residential areas include Iscor Park (north), West Park (north), Kwaggasrand (northwest), Proclamation Hill (northeast), Laudium (southwest), and Valhalla (southeast).

- The land use surrounding the foundry includes urban built up, commercial, residential, and industrial properties, natural vegetation, and grassland, with urban smallholdings and informal settlements, water/wetlands and mining areas also located in surrounding areas, but to a limited extent. The larger area surrounding the foundry has industrial characteristics.
- Existing key sources of pollution surrounding the foundry include urban industrial activities and vehicle emissions.
- Based on MM5 meteorological data obtained from Envitrans for the period June 2023 to July 2023, the area is affected by frequent north-north-east winds with some occasional north-north-west winds. Long term air quality impacts are therefore expected to be the most significant from the north-north-east of operations at Intervention Engineering.
- An analysis of ambient air quality monitoring data from the permanent Pretoria West and Market Tshwane Air Quality Monitoring Stations (AQMSes), for the period June 2020 – July 2023, indicated the following in terms of the status quo air quality around Intervention Engineering:
 - Daily average PM₁₀ concentrations for the period ranged between 21.324 µg/m³ – 47.41 µg/m³, with an average for the period June 2020 – July 2023 of 32.391 µg/m³.
 - Daily average PM_{2.5} concentrations for the period ranged between 12.088 µg/m³ – 35.123 µg/m³, with an average for the period June 2020 – July 2023 of 21.781 µg/m³.
 - Significant exceedances of the daily PM₁₀ and PM_{2.5} ambient air quality limits, i.e., 48 and 91 exceedances for PM₁₀ and PM_{2.5}, respectively. In terms of the South African National Ambient Air Quality Standards (NAAQS), no exceedances of the PM₁₀ and PM_{2.5} annual standards are permitted within a calendar year. Only four (4) exceedances of the PM₁₀ and PM_{2.5} 24-hour standards are permitted.
 - Daily average SO₂ concentrations ranged between 1.259 – 6.264 ppb, with an average of 3.591 ppb for the period June 2020 – July 2023.
 - Only one exceedance of the annual SO₂ ambient air quality limits was observed during the period, and that was the daily concentration of 19.850 ppb, which was recorded on 17 January 2019. No exceedances of SO₂ annual standard are permitted within a calendar year.
 - Daily average NO₂ concentrations ranged between 8.976 – 11.414 ppb, with an average of 10.331 ppb for the period.
 - A total of 6 exceedances of the NO₂ hourly standard of 21 ppb were recorded during this period, with the highest hourly concentration of 24.385 ppb being recorded on 22 July 2019. No exceedances of NO₂ annual standard are permitted.

The main findings of the impact assessment are as follows:

- The key emitting activities at Intervention Engineering include the electricity needed to power the furnaces and operational equipment, emission sources to be connected to 1x stack, as well as casting and cooling. These activities result in the emission of criteria air pollutants (PM, SO₂ and NO₂) and non-criteria air pollutants (HF, TVOCs and NH₃), which have an impact on ambient air quality.
- The point sources which trigger sub-categories 4.4 and 4.10 of Category 4 (Metallurgical Industries) in terms of S21 of NEM:AQA (No. 39 of 2004), were the focus of this assessment. A total of one (1) point source was assessed in this study and include:
 - A combined stack, which is associated with all potential emission sources.
- PM₁₀, PM_{2.5}, SO₂, NO₂, HF, TVOCs and NH₃ emission rates from the emission source operations were quantified through an emissions inventory for input into the model. Emission rates were generally low for all pollutants.

- Two scenarios were considered in the assessment:
 - Scenario A: MES: where the MES for Intervention Engineering, i.e., the maximum threshold limit that is allowed for new plants (in terms of PM, SO₂ and NO₂, HF, TVOCs and NH₃, where applicable) as per listed activity sub-categories 4.4 and 4.10 of Category 4 (Metallurgical Industries) was considered for input into the model.
 - This is representative of potential impacts if the facility were emitting at the acceptable threshold that is permissible for sub-categories 4.4 and 4.10 of Category 4 (Metallurgical Industries). The emission standards were converted into emission rates for input into the model.
 - Results from this scenario remained significantly below the standard limits and the values were **lower than scenario B's results.**
 - Scenario B – Similar Operations: where emissions from similar operations were used with maximum allowed threshold limits for new plants as per listed activity sub-categories 4.4 and 4.10 of Category 4 (Metallurgical Industries) was considered for input into the model.
 - This is representative of potential impacts if the foundry was emitting at the acceptable threshold that is permissible for the sub-categories. The emission standards were converted into emission rates for input into the model.
 - Results from this scenario remained significantly below the standard limits and the values were **slightly higher than scenario A's results.**
- Simulated PM₁₀ and PM_{2.5} concentrations are well below the NAAQS in both the scenarios and fall well below the maximum daily and annual average background PM₁₀ and PM_{2.5} concentrations recorded at the Pretoria West and Market Tshwane AQMSes.
- Simulated HF, TVOCs and NH₃ are also low over the entire project area and its surroundings.
- Simulated SO₂ concentrations are low and fall below the applicable NAAQS over the project area. Simulated SO₂ concentrations are lower than the maximum hourly, daily and annual average background SO₂ concentrations recorded at the Pretoria West and Market Tshwane AQMSes.
- Simulated NO₂ concentrations are low and fall below the applicable NAAQS over the project area and its surrounding. Simulated NO₂ concentrations are lower than the maximum hourly and annual average background NO₂ concentrations recorded at the Pretoria West and Market Tshwane AQMSes.
- Simulated emission levels at all AQSRs modelled in the study (as described in in the AQIA) are low, with no exceedances of the applicable NAAQS, NDCR, or Alberta standards observed, where applicable.
- Other open-air fugitive emission sources associated with the facility such as casting and cooling are also identified as key sources of emissions at the site. As such, the fugitive emission mitigation measures given in the AQIA should be implemented where possible and applicable, to reduce the impact of these sources.

With the proposed mitigation measures in place, the significance of current impacts can be further reduced to minimal.

The significance of the air quality impacts on AQSR for the modelled scenario, which is representative of furnace operations emitting at the acceptable threshold that is permissible for the triggered activities in terms of Section 21 of NEM:AOA, was found to be low with and without mitigation. Emissions at Intervention Engineering should be maintained below the MES limits as far as possible. Nonetheless, should Intervention Engineering ever reach the MES limits, the impact of the furnaces is still predicted to be relatively low inside and beyond the facility boundary.

Table 7-4: Rating of impacts for Scenario A – MES Standards.

| IMPACT TABLE FORMAT | | |
|---------------------|-------------------|------------------|
| Description | Before Mitigation | After Mitigation |



| | | | |
|-------------------------------------|---|------------------------------|-----------------------------|
| Air Quality Impact | <i>Air Quality is most likely to be impacted by furnace operations at Intervention Engineering, through the emission of criteria and non-criteria air pollutants from melting and combustion activities into the atmosphere. Parameters from regulated limits in terms of Section 21 of NEM:AQA are considered.</i> | | |
| Extent (Ex) | The impact is likely occurring and affects the local area. With implementation of additional, suitable mitigation measures, the impact can be reduced to only affect the facility site. | 2 | 1 |
| Probability (Pr) | Probability of the impact occurring, considering existing mitigation measures, is definite, but can be reduced to possible with implementation of additional, suitable mitigation measures. | 4 | 2 |
| Reversibility (Re) | Air quality is likely impacted by current furnace operations at the facility. However, the impact is completely reversible with the implementation of additional mitigation measures, considering the simulated emissions and the rate of atmospheric recovery. The impact will likely cease upon cessation of operations at Intervention Engineering. | 2 | 1 |
| Irreplaceable loss of resources (L) | The impact will likely result in marginal loss of resources. However, with mitigations, no loss of resources would be realized. | 2 | 1 |
| Duration | The impact of current furnace operations at Intervention Engineering on air quality will last for the operational lifecycle of the facility but can be mitigated by human action. | 3 | 3 |
| Cumulative effect (CE) | The impact would contribute an insignificant amount to the cumulative effects. With mitigation, the impact would result in negligible to no effects. | 2 | 1 |
| Intensity/magnitude (M) | Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity). With mitigation, impact will affect the quality, use and integrity of the system/component in a way that is barely perceptible. | 2 | 1 |
| Significance Rating | The impact has negligible negative effects and requires little to no mitigation. | -30 (Negative Low Impact) | -9 (Negative Low Impact) |
| Mitigation measures | <p>Mitigation measures that can be implemented to reduce the impact of furnace operations on air quality are outlined in Section 9 of this report as well as the associated AQIA and EMPr. These include the installation of extraction systems and stacks, where applicable, and abatement equipment, if required, which will minimise the level of ground level air pollutants; compliance with MES of all applicable Section 21 listed activities; and compliance to provisional AEL requirements.</p> <p>The five (5) furnaces at Intervention Engineering must have extraction hoods over them and have stack which must be connected to a baghouse. The stack height should be at least 12 m aboveground.</p> | | |

Table 7-5: Rating of impacts for Scenario A – Similar Operations.

| IMPACT TABLE FORMAT | | | |
|---------------------|---|-------------------|------------------|
| | Description | Before Mitigation | After Mitigation |
| Air Quality Impact | <i>Air Quality is most likely to be impacted by furnace operations at Intervention Engineering, through the emission of criteria and non-criteria air pollutants from melting and combustion activities into the atmosphere. Parameters from other similar operations are considered.</i> | | |
| Extent (Ex) | The impact is likely occurring and affects the local area. With implementation of additional, suitable mitigation measures, the impact can be reduced to only affect the facility site. | 2 | 1 |
| Probability (Pr) | Probability of the impact occurring, considering existing mitigation measures, is definite, but can be reduced to possible with implementation of additional, suitable mitigation measures. | 4 | 2 |
| Reversibility (Re) | Air quality is likely impacted by the proposed furnace at the proposed facility. However, the impact is completely reversible with the implementation of additional mitigation | 2 | 1 |



| | | | |
|-------------------------------------|---|------------------------------|-----------------------------|
| | measures, considering the simulated emissions and the rate of atmospheric recovery. The impact will likely cease upon cessation of operations at Intervention Engineering. | | |
| Irreplaceable loss of resources (L) | The impact will likely result in marginal loss of resources. However, with mitigations, no loss of resources would be realized. | 2 | 1 |
| Duration | The impact of current furnace operations at Intervention Engineering on air quality will last for the operational lifecycle of the facility but can be mitigated by human action. | 3 | 3 |
| Cumulative effect (CE) | The impact would contribute an insignificant minor amount to the cumulative effects. With mitigation, the impact would result in negligible to no effects. | 3 | 1 |
| Intensity/magnitude (M) | The impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity). With mitigation, impact will affect the quality, use and integrity of the system/component in a way that is barely perceptible. | 2 | 1 |
| Significance Rating | The impact has negligible negative effects and requires little to no mitigation. | -32 (Negative Low Impact) | -9 (Negative Low Impact) |
| Mitigation measures | Mitigation measures that can be implemented to reduce the impact of furnace operations on air quality are outlined in Section 9 of this report as well as the associated AQIA and EMP. These include the installation of extraction systems and stacks, where applicable, and abatement equipment, if required, which will minimise the level of ground level air pollutants; compliance with MES of all applicable Section 21 listed activities; and compliance to provisional AEL requirements. The five (5) furnaces at Intervention Engineering must have extraction hoods over them and have stack which must be connected to a baghouse. The stack height should be at least 12 m aboveground. | | |

7.3.2. Socio-Economic Impact Assessment

Planning Phase

There are no impacts associated with the planning phase of this project since the facility already exists.

Construction Phase

Works for the constructions phase will only involve the commissioning of the equipment required for the operation of the facility. The equipment will be commissioned within an existing building structure. The commissioning will be contracted to a third-party service provider. It is assumed that the service provider will require labourers to undertake the commissioning activities. It is further assumed that the service provider will source local labourers to undertake the commissioning. The commissioning activities will consequently result in positive economic impacts, which will impact the livelihood of the people involved.

Operational Phase

Intervention Engineering intends to provide employment to ten (10) people with at least fifty percent (50%) of these people coming from previously disadvantaged backgrounds. **Although Intervention Engineering's** employment contribution may be regarded as low, it forms part of an essential input to the livelihoods of its direct and indirect dependencies. Furthermore, the company intends on expanding as business grows, thereby employing more people, which will lead to positive socio-economic impacts for those employed by the company.

It is recommended that the nearby previously disadvantaged community be prioritised as much as possible when sourcing employees.

Decommissioning Phase

The socio-economic impacts associated with the facility will only come to a halt when the facility is decommissioned. The facility is considered a permanent infrastructure, with its operations planned to continue

long term until it is sold to a potential buyer. As such, impacts associated with this phase were not assessed. However, should it be deemed, at any point or any time for any reason, that the development is no longer relevant, and decommissioning of the infrastructure be planned, then Activity 31 of Listing Notice 1 published under GN R.983 of 4 December 2014 as amended by GN R.327 of 7 April 2017 of the EIA Regulations in terms of NEMA shall apply and therefore an impact assessment through the Basic Assessment process must be followed. Furthermore, additional mitigations have been included in the associated EMPr.

Table 7-5: Socio-economic impact assessment.

| IMPACT TABLE FORMAT | | | |
|-------------------------------------|--|---------------------------------|------------------|
| Assessment Parameter | Description | Before Mitigation | After Mitigation |
| | <i>Socio-economic aspects affected by the existence of Intervention Engineering.</i> | | |
| Extent (Ex) | Have effect on the local area or district. | 2 | N/A |
| Probability (Pr) | Impact certainly occurs. | 4 | N/A |
| Reversibility (Re) | Impact occurs only as long as the facility remains operational. | 1 | N/A |
| Irreplaceable loss of resources (L) | The impact does not result in the loss of any resources. | 1 | N/A |
| Duration | Impact occurs only as long as the facility remains operational. | 4 | N/A |
| Cumulative effect (CE) | The impact would result in minor cumulative effects, experienced from the employees themselves and through a knock-on effect to their individual dependants. | 3 | N/A |
| Intensity/magnitude (M) | Impact affects the continued viability of the socio-economic system/component. | 3 | N/A |
| Significance Rating | Overall socio-economic impacts remain positive for the operational phase of the site. | +45 (Positive Medium Impact) | N/A |
| Mitigation measures | <ul style="list-style-type: none"> As the impacts are positive in nature, no mitigation is required. It is recommended to utilise local labour available from the nearby informal settlement to maximise the positive impact on the surrounding community. | | |

7.3.3. Solid Waste Impact Assessment

Planning Phase

There are no impacts associated with the planning phase of this project since the facility already exists.

Construction phase waste:

Intervention Engineering will be occupying an existing infrastructure with little to no construction activities expected and only commissioning activities to be undertake. No waste is expected from this phase, thus no impacts from this phase.

Operational phase waste:

The operations of the facility are expected to produce waste material including slag and waste sand. However, a sand reclamation system will be installed, and the sand will be reused on-site. The slag produced from site activities will be sold to other entities that can further process the material. Based on the proposed plans, there will be little to no waste generated from site, excluding general office waste, which will be collected and disposed of using municipal services. As such, the significance of the impact from the waste generated by the facility is deemed low as there is very little to no waste removed from site for disposal.

Decommissioning phase

The facility is considered a permanent infrastructure with its operations planned to continue long-term until it is sold to a potential buyer. As such, impacts associated with this phase were not assessed. However, should it be deemed, at any point or any time for any reason, that the development is no longer relevant, and decommissioning of the infrastructure be planned, then Activity 31 of Listing Notice 1 published under GN R.983 of 4 December 2014 as amended by GN R.327 of 7 April 2017 of the EIA Regulations in terms of NEMA shall apply and therefore



an impact assessment through the Basic Assessment process must be followed. Furthermore, additional mitigations have been included in the associated EMPr.

Table 7-6: Solid waste impact assessment – Construction/Commissioning Phase

| IMPACT TABLE FORMAT | | | |
|-------------------------------------|---|------------------------------|-----------------------------|
| Assessment Parameter | Description | Before Mitigation | After Mitigation |
| | <i>Solid Waste Impact.</i> | | |
| Extent (Ex) | Impacts during the operational phase remain low as none of the waste ends up at a disposal facility. However, waste from decommissioning of the site may have some local impacts which may be decreased through implementation of mitigations. | 2 | 1 |
| Probability (Pr) | The impact may occur (between a 25% to 50% chance of occurrence). | 2 | 1 |
| Reversibility (Re) | The impact is partly reversible but more intense mitigation measures are required. | 2 | 2 |
| Irreplaceable loss of resources (L) | The impact results in marginal loss of resources. | 2 | 2 |
| Duration | The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years). However, mitigations may decrease these to almost none. | 2 | 1 |
| Cumulative effect (CE) | The impact would result in minor cumulative effects. Mitigations would result in negligible to no cumulative effects. | 3 | 1 |
| Intensity/magnitude (M) | Impact alters the quality, use and integrity of the aspect but would still continue to function. | 2 | 1 |
| Significance Rating | The impact has negligible negative effects and requires little to no mitigation. | -26 (Negative Low Impact) | -9 (Negative Low Impact) |
| Mitigation measures | <ul style="list-style-type: none"> Please refer to attached EMPr for mitigation measures. | | |

Table 7-7: Solid waste impact assessment - Operational Phase

| IMPACT TABLE FORMAT | | | |
|-------------------------------------|---|-------------------|------------------|
| Assessment Parameter | Description | Before Mitigation | After Mitigation |
| | <i>Solid Waste Impact.</i> | | |
| Extent (Ex) | Impacts during the operational phase remain low as none of the waste ends up at a disposal facility. However, waste from decommissioning of the site may have some local impacts which may be decreased through implementation of mitigations. | 2 | 1 |
| Probability (Pr) | The impact may occur (Between a 25% to 50% chance of occurrence). | 2 | 1 |
| Reversibility (Re) | The impact is partly reversible but more intense mitigation measures are required. | 2 | 2 |
| Irreplaceable loss of resources (L) | The impact results in marginal loss of resources. | 2 | 2 |
| Duration | The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years). However, mitigations may decrease these to almost none. | 2 | 1 |
| Cumulative effect (CE) | The impact would result in minor cumulative effects. Mitigations would result in negligible to no cumulative effects. | 3 | 1 |
| Intensity/magnitude (M) | Impact alters the quality, use and integrity of the aspect but would still continue to function. | 2 | 1 |
| Significance Rating | The impact has negligible negative effects and requires little to no mitigation. | -26 | -9 |



| | | | |
|---------------------|--|-----------------------|-----------------------|
| | | (Negative Low Impact) | (Negative Low Impact) |
| Mitigation measures | <ul style="list-style-type: none"> For by-products such as slag which cannot be used further in the production processes, the possibility of selling them to service providers who can process them further must be explored. Additional mitigation measures have been included in the attached EMPr. | | |

7.3.4. Resource Usage Impact Assessment

Planning Phase

There are no resource usage impacts associated with the planning phase of this project.

Construction Phase

The main resources associated with this phase include electricity, diesel and petrol for equipment (e.g., generators) and/or vehicles used on-site for the commissioning activities. Such resource will be used for energy throughout the commissioning activities.

Operational Phase

Intervention Engineering intends on mainly using electricity supplied by the City of Tshwane and have a back-up diesel generator during the operational phase of their facility. The air quality impacts associated with the use of diesel generators are worth noting. Furthermore, the carbon footprint resulting from the **facility's energy** sources must be quantified to determine the significance of the impacts caused by the energy sources, once the facility is operational. Further mitigations are included in the EMPr.

Decommissioning phase

The facility is considered a permanent infrastructure with its operations planned to continue long-term until it is sold to a potential buyer. As such, impacts associated with this phase were not assessed. However, should it be deemed, at any point or any time for any reason, that the development is no longer relevant, and decommissioning of the infrastructure be planned, then Activity 31 of Listing Notice 1 published under GN R.983 of 4 December 2014 as amended by GN R.327 of 7 April 2017 of the EIA Regulations in terms of NEMA shall apply and therefore an impact assessment through the Basic Assessment process must be followed. Furthermore, additional mitigations have been included in the associated EMPr.

Table 7-8: Intervention Engineering resource impact assessment.

| IMPACT TABLE FORMAT | | | |
|-------------------------------------|---|---------------------------------|-----------------------------|
| Assessment Parameter | Description | Before Mitigation | After Mitigation |
| | <i>Resource Usage Impact Assessment</i> | | |
| Extent (Ex) | Impact will affect the local area or district. | 2 | 2 |
| Probability (Pr) | Impact of using some resources certainly occurs (Greater than a 75% chance of occurrence). However, mitigations would decrease these to a 25% - 50% chance of occurrence. | 4 | 2 |
| Reversibility (Re) | The impact is reversible with implementation of minor mitigation measures. | 2 | 1 |
| Irreplaceable loss of resources (L) | The impact results in marginal loss of resources. It may be lowered with the aid of mitigations. | 3 | 1 |
| Duration | The impact and its effects will continue or last for some time. However, mitigations may result in these impacts lasting only for a short term. | 2 | 1 |
| Cumulative effect (CE) | The impact would result in minor cumulative effects. Mitigations would result in insignificant cumulative effects. | 3 | 2 |
| Intensity/magnitude (M) | Impact alters the quality, use and integrity of the aspect but would still continue to function. | 2 | 1 |
| Significance Rating | The impact has moderate negative effects and requires moderate mitigation measures. | -32 (Negative Medium Impact) | -9 (Negative Low Impact) |



Mitigation measures

- Please refer to attached EMP for mitigation measures.

7.3.5. Fire Hazard Impact Assessment

Planning Phase

There are no fire hazard impacts associated with the planning phase of this project.

Construction Phase

Preventative measures for the occurrence of fire must be in place during the commissioning activities. Such measures must include the use of material safety data sheets for any hazardous material that may be used on-site and any relevant statutory requirements in terms of the Occupational Health and Safety (OHS) Act (Act 85 of 1993).

Operational Phase

Fire risk exists within various operational facilities and the risk of fire is exacerbated by storage and handling of flammable materials. Intervention Engineering must have in place procedures to manage emergency situations and standard operating procedures for the storage and handling of hazardous materials, including the provision of firefighting equipment that is regularly and appropriately maintained as well as training for personnel on-site on the handling of emergency situations.

Furthermore, it must be noted that the operations of the facility also carries explosion risk. As such measures to **prevent and respond to explosion incidents must be put in place. Such measures must be included in the facility's Emergency Response Procedure (ERP).**

Decommissioning phase

The facility is considered a permanent infrastructure with its operations planned to continue long term until it is sold to a potential buyer. As such impacts associated with this phase were not assessed. However, should it be deemed, at any point or any time for any reason, that the development is no longer relevant, and decommissioning of the infrastructure be planned, then Activity 31 of Listing Notice 1 published under GN R.983 of 4 December 2014 as amended by GN R.327 of 7 April 2017 of the EIA Regulations in terms of NEMA shall apply and therefore an impact assessment through the Basic Assessment process must be followed. Furthermore, additional mitigations have been included in the associated EMP.

Table 7-9: Fire Hazard impact assessment. – Construction/Commissioning Phase

| IMPACT TABLE FORMAT | | | |
|-------------------------------------|--|-------------------|------------------|
| Assessment Parameter | Description | Before Mitigation | After Mitigation |
| | <i>Fire Hazard Impact Assessment.</i> | | |
| Extent (Ex) | Smoke and fumes from the fire would affect the local area. However, with mitigations, it may be restricted to the site. | 2 | 1 |
| Probability (Pr) | The impact may occur (between a 25% to 50% chance of occurrence). This may be lowered by the implementation of mitigation measures. | 2 | 1 |
| Reversibility (Re) | Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. | 3 | 2 |
| Irreplaceable loss of resources (L) | Fire impact may result in significant loss of resources. Mitigating these may result in marginal loss of resources. | 3 | 2 |
| Duration | Effects will continue or last for some time after occurrence. | 2 | 1 |
| Cumulative effect (CE) | Fire would result in insignificant cumulative effects. This would be decreased to negligible with the aid of mitigations. | 2 | 1 |
| Intensity/magnitude (M) | Impact affects the continued viability of the system/component, and the quality, use, integrity and functionality of the system or component would be severely impaired and may temporarily cease. There would be high costs of rehabilitation and remediation. The severity would likely be minor with the implementation of mitigations. | 3 | 2 |



| | | | |
|---------------------|--|---------------------------------|------------------------------|
| Significance Rating | The impact has moderate negative effects and requires moderate mitigation measures.. | -42 (Negative Medium Impact) | -16 (Negative Low Impact) |
| Mitigation measures | <ul style="list-style-type: none"> Please refer to attached EMPr for mitigation measures. | | |

Table 7-10: Fire hazard impact assessment - Operational phase

| IMPACT TABLE FORMAT | | | |
|-------------------------------------|--|---------------------------------|------------------------------|
| | Description | Before Mitigation | After Mitigation |
| Assessment Parameter | <i>Fire Hazard Impact Assessment.</i> | | |
| Extent (Ex) | Smoke and fumes from the fire would affect the local area. However, with mitigations, it may be restricted to the site. | 2 | 1 |
| Probability (Pr) | Occurrence of a fire is likely (between a 50% to 75% chance of occurrence). This may be reduced by the implementation of mitigation measures. | 3 | 2 |
| Reversibility (Re) | Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. | 3 | 2 |
| Irreplaceable loss of resources (L) | Fire impact may result in significant loss of resources. Mitigating these may result in marginal loss of resources. | 3 | 2 |
| Duration | Effects will continue or last for some time after occurrence. | 2 | 1 |
| Cumulative effect (CE) | Fire would result in insignificant cumulative effects. This would be decreased to negligible with the aid of mitigations. | 2 | 1 |
| Intensity/magnitude (M) | Impact affects the continued viability of the system/component, and the quality, use, integrity and functionality of the system or component would be severely impaired and may temporarily cease. There would be high costs of rehabilitation and remediation. The severity would likely be minor with the implementation of mitigations. | 3 | 2 |
| Significance Rating | The impact has moderate negative effects and requires moderate mitigation measures. | -42 (Negative Medium Impact) | -18 (Negative Low Impact) |
| Mitigation measures | <ul style="list-style-type: none"> Please refer to attached EMPr for mitigation measures. | | |

7.4. Environmental Management Programme (EMPr)

An Environmental Management Programmes (EMPr), included in Appendix K, has been compiled to provide recommendations and guidelines according to which compliance and monitoring can be done during the operational and decommissioning phases of the Intervention Engineering facility, as well as to ensure that all relevant factors are considered to ensure that they are an environmentally responsible company.

In addition, the EMPr considers and incorporates all conditions and recommendations that will be received from the authorities, specialists, and relevant organisations during the current impact assessment process.

8. PUBLIC PARTICIPATION

Public participation is a fundamental aspect of any impact assessment process. The Public Participation Process (PPP) followed for the EA Application is to be conducted according to Section 41 of the NEMA EIA Regulations. The PPP includes the provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment, and ensuring the participation of all interested and affected parties (I&APs).

The PPP is based on two primary factors; firstly, ongoing interaction with concerned organs of state, environmental specialists and the technical teams to achieve integration of technical assessment and public participation throughout. Secondly, to obtain the bulk of the issues to be addressed early in the process, with the





latter half of the process designed to provide environmental and technical evaluation of these issues. Findings are to be presented to stakeholders, allowing them to give further comments and verify all captured comments.

The primary aims of the PPP are:

- To inform I&APs and key stakeholders of the development.
- To initiate meaningful and timeous participation of I&APs.
- To identify issues and concerns of key stakeholders and I&APs with regards to the development
- To promote transparency and an understanding of the project and its potential environmental impacts.
- To provide information used for decision-making.
- To provide a structure for liaison and communication with I&APs and key stakeholders.
- To assist in identifying potential environmental impacts associated with the development.
- To ensure inclusivity (the views, needs, interests, and values of I&APs must be considered in the decision-making process).
- To focus on issues relevant to the project and issues considered important by I&APs and key stakeholders.
- To provide responses to I&AP queries.
- To encourage co-regulation, shared responsibility and a sense of ownership.

8.1. Site notices

As per the NEMA EIA Regulations, the following public participation is currently underway:

It must be noted that the public participation was initiated on the 30th of August 2023 with a notification email sent to I&APs, followed by a newspaper notification published on the 15th of September 2023 which shall run for at least thirty (30) days, excluding public holidays and closure dates in terms of the National Environmental Calendar. Proof documents for some actions taken throughout the process will be included as Annexures of the final report.

8.2. Newspaper advertisement

Public notification of the application process was advertised in a local newspaper, namely, the Record West Newspaper on the 15th of September 2023.

The newspaper advert complies with the requirements and information as prescribed in the EIA Regulations

Proof of the advert is included in Annexure A2 in Appendix I.

8.3. Background information document

A Background information document (BID) was compiled at the commencement of the project detailing the project and the application process to be followed. The BID was sent to all registered I&APs and key stakeholders. Proof of the sent BID is included in Annexure A1 in Appendix I in this impact assessment report.

BID was also circulated via emails and a copy will be made available on the Projects page on the Environmental Edge website: <https://environmentaledge.co.za/projects/>

8.4. Written notices

Written notices were circulated via emails and a copy will be made available on the Projects page on the Environmental Edge website: <https://environmentaledge.co.za/projects/> during the course of the PPP period.

8.5. Social media and website notifications

Notices about the project will be posted on the Environmental Edge social media platform pages with a link redirecting to the Projects page on the website: <https://environmentaledge.co.za/projects/>

The Environmental Edge social media pages information:

Table 8-1: Social Media Information where project notifications were posted.

| Platform | Handle | Link |
|----------|--------|------|
|----------|--------|------|



| | | |
|----------|----------------------|---|
| Facebook | @EnvironmentalEdgeSA | https://web.facebook.com/EnvironmentalEdgeSA |
| Twitter | @EnviEdge | https://twitter.com/EnviEdge |

8.6. Comments and Response Register

All written comments received from I&APs during the application process will be recorded in the comments register. A Comments and Responses report will be compiled. This report provides a summary of the issues raised, as well as responses provided to I&APs.

Where relevant, information will be incorporated into the relevant impacts and mitigations in the Final Impact Assessment report and in the Management Plan/Programmes.

8.7. Authority Review of the Draft Impact Assessment Report

In terms of section 40 (2) of the 2014 EIA Regulations (as amended), public participation must include consultation with *“organs of state which have jurisdiction in respect of the activity to which the application relates”*.

The table below includes all the organs of state who were emailed the PPP notification and afforded the chance to submit comments on the full report including all appendices. Telephonic and/or email follow-ups with stakeholders will be undertaken in order to provide them with ample opportunity to comment.

Table 8-2: Authorities’ follow-up consultation

| DISTRIBUTION TO ORGANS OF STATE/AUTHORITIES FOR COMMENT | | | | |
|---|------------|------------------------------|--------------------------------|--|
| Name | Surname | Company/Department | Position | Email Address |
| GAUTENG DEPARTMENT OF AGRICULTURE, RURAL DEVELOPMENT AND ENVIRONMENT (GDARDE) | | | | |
| Lerato | Lukhele | GDARDE | WML Authority | Lerato.Lukhele@gauteng.gov.za |
| Lungile | Mkhungo | GDARDE | Compliance Monitoring | Lungile.Mkhungo@gauteng.gov.za |
| Nkhumeleni | Rambasa | GDARDE | Pollution and Waste Management | Nkhumeleni.Rambasa@gauteng.gov.za |
| CITY OF TSHWANE (CoT) | | | | |
| Tshifhiwa | Godobedzha | CoT - Air Quality Management | AEL – Competent Authority | TshifhiwaG@tshwane.gov.za |
| Kemmone | Mofela | CoT - EAM | WML commenting authority | kemmonem@tshwane.gov.za |

9. RECOMMENDATIONS AND CONCLUSIONS

9.1. Summary of Findings and Recommendations

A summary of the findings and recommendations for each of the significant and assessed environmental aspects is provided in Table 9-1 below. Other environmental aspects identified to be potentially affected by the existence of Intervention Engineering are elaborated on in the EMPr, with specific recommended mitigations.

Table 9-1. Summary of Findings and Recommendations.

| Aspect | Fatal flaws | Outcomes & Recommendations |
|-------------|-------------|--|
| Air Quality | None | <ul style="list-style-type: none"> • Apply storage and handling methods for solids, liquids and gases to avoid any possible gas leaks, accumulation of dust, gaseous volatilisation and evaporation and any hazardous combustion; • Avoid outdoor material stockpiles. Where unavoidable, store materials under a roof and on an impermeable surface to reduce the accumulation of dust and associated windblown dust as well as dust entrainment on unpaved surfaces during the handling of materials; • For outdoor stockpiles, make use of binders, water sprays, stockpile management techniques, windbreaks, etc. to minimise fugitive emissions from exposure to wind fields; • For indoor stockpiles, make use of binders, water sprays, etc. to minimise fugitive dust emissions; • Restrict the distribution of materials to paved surfaces thus preventing dust entrainment during material handling activities; • Appropriate PPE should be worn by all employees; • Implement a fugitive dust management plan. This must be reviewed/updated on an annual basis. • Apply regulated storage and handling methods for any waste products; • Prevent the burning of waste materials and allow for appropriate re-use, recycling or frequent disposal thereof; • Vacuum clean and/or sweep the pattern and molding/core-making areas (specifically in sand molding foundries) frequently so as to avoid the accumulation of dust or fine particulates; • If possible, all activities should occur in an enclosed shelter that is connected to an extraction unit and if needed a control device (e.g. baghouse) should be available; • Implement a fugitive dust management plan. This must be reviewed/updated on an annual basis. • Install an extraction system which can capture furnace emissions and if needed, filter the emissions through a control device (abatement equipment); • Optimise the extraction system by keeping doors closed, preventing cross winds and sealing gaps and holes in the roof and walls; • Regularly maintain the extraction system vents/ducting and abatement equipment as per manufacture specifications to ensure optimal extraction and control of emissions; • Conduct regular emission tests to ensure the system is working efficiently; • Apply a carefully designed working floor area to allow for effective extraction and control of emissions; |





| | | |
|-------|------|--|
| | | <ul style="list-style-type: none"> • All activities should be undertaken in an enclosed room/area; • Implement a fugitive dust management plan, where applicable. This must be reviewed/updated on an annual basis; • Collect and treat any significant releases of off-gas using either wet or dry abatement measures (if needed); • Have extraction units and appropriate abatement equipment (e.g. baghouse) connected to key fugitive dust sources such as the shot blasting equipment. • Make use of clean fuels (lower sulphur content) during heat treatment where applicable; • If possible, finishing activities should be undertaken in an enclosed room that is connected to an efficient extraction system. Appropriate abatement equipment should be used to treat the captured emissions (if necessary); • Avoid outdoor unpaved surfaces where frequent disruption may occur (e.g. offloading/loading area); • Frequently apply wet suppression or vacuum clean/sweep paved surfaces where vehicles/trucks/forklifts/tractors manoeuvre; • Regularly (i.e. annually) maintain mobile equipment to ensure combustion efficiency and prevent emitting relatively high levels of black smoke; • Have clear demarcated areas for different activities with well-defined boundary lines. For instance, the casting and cooling area in sand molding foundries should be clearly demarcated with a boundary line or barrier (e.g. bricks, steel guard rail, rope, etc.) to avoid sand from extending past the working area and prevent people from unnecessarily walking through the area; • Regularly maintain equipment, such as ducting and abatement equipment; • Regularly reassess where upgrades and changes can be made to improve operations efficiency and increase metal product yield; • If possible & necessary, make use of portable extraction or air filtration units; • Carry out good housekeeping practices. |
| Waste | None | <ul style="list-style-type: none"> • Appropriately labelled waste receptacles should be available throughout the site. • Non-hazardous solid waste generated from the normal operation of the site should be disposed of in the correct manner at a registered general waste disposal site. Such waste can be collected by the Municipality as part of its regular service or removed by a reputable contractor. • Recycling of general waste should be encouraged with the use of appropriately labelled recycling receptacles according to waste types in terms of Section 26 of the NEM:WA. • All non-hazardous material that can be reused in the facility and or production processes must be reused as much as practicable. • Solid waste deemed to be contaminated and non-recyclable must be stored and handled in accordance with appropriate regulations. Any removed waste should be transported to an appropriate hazardous waste disposal facility. • All material used for the mopping up of surface spillages should be stored in a container labelled “used material” and removed on a regular basis by an approved hazardous waste disposal contractor. • Apply regulated storage and handling methods for any waste products; • Prevent the burning of waste materials and allow for appropriate re-use, recycling or frequent disposal thereof. |



| | | |
|----------------|------|--|
| Socio-Economic | None | <ul style="list-style-type: none"> • As the impacts are positive in nature, no mitigation is required. • It is recommended to utilise local labour available from the nearby informal settlement to maximise the positive impact on the surrounding community. |
| Resource Usage | None | <ul style="list-style-type: none"> • Intervention Engineering should consider implementing the following at their site • Energy efficient equipment • Energy efficient lighting • Lighting linked to motion sensors where applicable • Solar energy where possible • Rainwater harvesting where applicable • Grey water recycling where applicable |
| Fire Hazard | None | <ul style="list-style-type: none"> • All equipment associated with the storage of dangerous goods must be well maintained as required using approved contractors. • Intervention Engineering must ensure that sufficient training is presented to the operators of the facility and personnel utilising the chemicals and/or gas. Training must include general site operation, spill response and emergency procedures and site safety. • In case of an incident the Intervention Engineering Emergency Response Procedure must be followed. • Safety signage must be systematically placed around the site. These include, “no naked flames; no smoking; safety clothing”. • The fire department must immediately be informed of any fires that occur on-site. • The facility must ensure that a spill kit is available on-site and must be used to timely clean any spillages which may occur. • The facility must ensure that firefighting equipment is systematically placed on-site. Furthermore, it must be ensured that an individual with firefighting competency is always available on-site. • The facility must develop an ERP that deals with all types of emergencies including fires, explosions, spillages etc. |



10. ENVIRONMENTAL IMPACT STATEMENT

The environmental impact statement provides an account of the key findings of the impact assessment process. Referring to the significance rating summary in the table below, it is evident that although the **facility's proposed** activity imparts negative impacts, most of them are of low significance post-mitigation.

While all environmental impacts were found to have low significance to their respective aspects, it must also be noted that the **proposed** facility will have a positive socio-economic impact through the creation of employment and contributions to the GDP of the region.

Table 10-1: Summary of Significance of Environmental Impacts.

| Assessed Impact | Rating Before Mitigation | Rating Post-Mitigation |
|---|--------------------------|------------------------|
| Air quality (Construction/Commissioning) | Negative Low Impact | Negative Low Impact |
| Socio-economic (Construction/Commissioning and operation) | Positive Medium Impact | N/A |
| Solid waste (Construction/Commissioning) | Negative Low Impact | Negative Low Impact |
| Resource usage (Construction/Commissioning) | Negative Medium Impact | Negative Low Impact |
| Fire Hazard (Construction/Commissioning) | Negative Medium Impact | Negative Low Impact |



Conclusions drawn from this professional scientific assessment

11. CONCLUSION

This report describes the findings of the environmental impacts assessment conducted on behalf of Intervention Engineering (the Applicant) for the application for an environmental authorisation in terms of Section 19 of the EIA Regulations of 4 December 2014, as amended on 7 April 2017, in terms of Chapter 5 of the NEMA, as amended, for the proposed Activities at the Ex-Main Pump House Building site Located at Corner Frikkie Meyer And Roger Dayson Road, City Of Tshwane, Gauteng Province.

Pertinent environmental concerns have been identified, assessed and rated according to their significance. Mitigation measures have been included for each of the assessed environmental concerns, and an Environmental Management Programme has been developed.

The firm implementation of the appropriate environmental management process and mitigation measures throughout the duration of the project, as stated in this report as well as the accompanying environmental management programme will ensure that the impacts of the activity are minimized.

Throughout the impact assessment, none of the identified impacts had a no-go implication with regards to this specific project and all impacts could be successfully mitigated with applicable measures. The significance rating remains Negative Low post mitigation. Therefore, it is recommended that the proposed activities be approved.

The following aspects were taken into consideration when coming to this conclusion:

- The facility is proposed to be located within a pre-existing industrial site that is appropriately zoned as "Industrial 1";
- The activity will provide socio-economic benefits of employment opportunities to the local community as well as to the wider economy of the manufacturing industry;
- The pollution associated with the functioning of the activity will be minimal with mitigations and will not have a significant impact on the surrounding environment.
- No impacts are rated high significance prior to or following mitigation.
- Intervention Engineering has expressed its commitment to ensuring all possible environmental mitigation measures are incorporated into the operations of the activity, and has expressed that the company aims to abide by all relevant environmental legislation.

It is recommended that the activity be approved, subject to the following:

- All mitigation measures as detailed in this report are to form an extension of the WML, thus ensuring applicant/operator adherence;



-
- The specific conditions as detailed in the WML are to be enforced on-site;
 - The Environmental Management Programme should become a binding document on-site. The EMPr must also be binding to all contractors associated with Intervention Engineering who would be conducting any work at the site.
 - An appropriately qualified and accredited external Environmental Control Officer (ECO) should be appointed to audit the project at least once every twelve (12) months. A compliance audit report must be compiled against the conditions of the WML and must be submitted to the authorities within sixty (60) days after completion.
 - Register Waste transporters must be used for any transportation of waste generated from site.
 - Incidences of noncompliance by employees, contractors and site operators should be dealt with in a manner that will ensure practical control and avoidance of any transgressions.

- Anon., 2018. Financial Tribune. *Pretoria Is South Africa's Fastest Growing MetroEconomy*, 8 August.
- Anon., 2022. *METRO IGR PLAN: CITY OF TSHWANE*, Pretoria : The South African Department of Cooperative Governance and Traditional Affairs.
- ArcelorMittal South Africa, 2020. *ArcelorMittal Integrated report 2020*, Vanderbijlpark: ArcelorMittal South Africa.
- City of Tshwane Metropolitan Municipality , 2020. *PROFILE: CITY OF TSHWANE*, Pretoria : The South African Department of Cooperative Governance and Traditional Affairs.
- Encyclopaedia Britannica, 2023. *Encyclopaedia Britannica*. [Online]
Available at: <https://www.britannica.com><https://www.britannica.com/place/Pretoria>
[Accessed 21 August 2023].
- Eriksson, P. ..., 1988. Sedimentology of the Rooihoogte Formation, Transvaal Sequence. *S. Afr. J. Geol.*, Volume 4, pp. 477-489.
- J.N. Steyn, Steyn, T. & Crafford, J., 2007. *PROPOSED POWER LINE BETWEEN ETNA AND GLOCKNER SUBSTATIONS ECOLOGICAL ASSESSMENT REPORT*, s.l.: Naledzi Environmental Consultants cc.
- Jones, R. T. & Mackey, P. J., 2015. An Overview of Copper Smelting in Southern Africa. *Southern African Institute of Mining and Metallurgy*, pp. 499-504.
- Malaza, N., 2013. Basin Analysis of the Soutpansberg and Tuli Coalfields, Limpopo Province of South Africa. *Unpublished PhD Thesis*, p. 12.
- Mucina, L. & Rutherford, M. C., 2006. *The Vegetation of South Africa, Lesotho and Swaziland*. Pretoria: South African National Biodiversity Institute.
- Nemutamvuni, K., 2018. *MULTI-STAKEHOLDER MANAGEMENT OF A WETLAND IN THE CITY OF TSHWANE: THE CASE OF COLBYN*, Pretoria: UNIVERSITY OF SOUTH AFRICA.
- Pfab, M. et al., 2017. *The Gauteng Conservation Plan: Planning for biodiversity in a rapidly urbanising province*. [Online]
Available at: <https://doi.org/10.4102/abc.v47i1.2182>
[Accessed 21 August 2023].
- Pienaar, , R., 2005. Pretoria Historical Context. *University of Pretoria etd*.
- Reddy, S. & Adam, J., 2021. *BIODIVERSITY AND TERRESTRIAL FAUNAL COMPLIANCE STATEMENT for the Proposed development of 82 Furrow Road in Equestria, City of Tshwane Metropolitan Municipality, Pretoria.*, Pretoria: Exigent .
- Steyn, J. N., Steyn, T. M. & Crafford, J. E., 2007. *Proposed Powerline Between ETNA and Glockner Substations*, s.l.: s.n.