GAUTENG INDUSTRIAL DEVELOPMENT ZONE (GIDZ)

PROPOSED DEVELOPMENT AND INCLUSION OF THE METAL CONCENTRATORS (METCON) REFINERY FACILITY IN THE JEWELLERY MANUFACTURING PRECINCT (JMP) WITHIN THE OR TAMBO INTERNATIONAL AIRPORT (ORTIA) PRECINCT, KEMPTON PARK, GAUTENG PROVINCE

FINAL SCOPING REPORT

01 November 2018

Marang Report Number: MET-01-106-003-00

Marang Project Number: MAR-MET-180017

DEA Reference No: 14/12/16/3/3/2/1098

Revision: 1.0

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REVISION AND APPROVAL PAGE

Revision Number	**0.1**		
Marang Report Number	**MET-01-106-003-00**		
Marang Project Number	**MAR-MET-180017**		
Report Title	**PROPOSED DEVELOPMENT AND INCLUSION OF THE METAL CONCENTRATORS (METCON) REFINERY FACILITY IN THE JEWELLERY MANUFACTURING PRECINCT (JMP) WITHIN THE OR TAMBO INTERNATIONAL AIRPORT (ORTIA) PRECINCT, KEMPTON PARK, GAUTENG PROVINCE**		
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Document Authorisation	**Claire Taylor** (Environmental Assessment Practitioner)		01 November 2018
Report Submission Summary			
Report Revision Number	**1.0**	Date submitted: 01 November 2018	
Report Revision Number			

DISCLAIMER

Information contained in this report was based on the information received from Metal Concentrators (Pty) Ltd and the Gauteng Industrial Development Zone (GIDZ) in July to August 2018. Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Marang Environmental and Associates (Pty) Ltd for incomplete or inaccurate data supplied by others. We are aware of the fact that there might have been changes since this report was submitted, however this report and its findings is based on the last information received from the client. To the best of our knowledge the assumptions and findings are correct at the time of submission of the specialist reports. Should any of the assumption or findings prove to be incorrect subsequent to submission of the report we as the specialist cannot be held accountable.

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GAUTENG INDUSTRIAL DEVELOPMENT ZONE (GIDZ)

PROPOSED DEVELOPMENT AND INCLUSION OF THE METAL CONCENTRATORS (METCON) REFINERY FACILITY IN THE JEWELLERY MANUFACTURING PRECINCT (JMP) WITHIN THE OR TAMBO INTERNATIONAL AIRPORT (ORTIA) PRECINCT, KEMPTON PARK, GAUTENG PROVINCE

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Executive Summary

Marang Environmental and Associates (Pty) Ltd (hereafter referred to as "Marang") was appointed by the Gauteng Industrial Development Zone (hereafter referred to as the "GIDZ") to undertake an Environmental Impact Assessment (EIA) process for the proposed development and inclusion of the Metal Concentrators SA (Pty) Ltd (hereafter referred to as "MetCon") Refinery facility in the Jewellery Manufacturing Precinct (JMP) within the OR Tambo International Airport (ORTIA) Precinct, Kempton Park, Gauteng Province (hereafter referred to as the "proposed project").

The GIDZ, as appointed by the Gauteng Department of Economic Development (GDED), have been given the mandate to develop the JMP (located on Portion 282 of the Farm Witkoppie No. 64 – IR) within the ORTIA Precinct. The JMP aims to increase employment opportunities and foreign direct investment in the jewellery manufacturing sector. A basic assessment (BA) process was undertaken in 2009 to obtain Environmental Authorisation (EA) for the development of the original JMP site. The BA was carried out in terms of the 2006 EIA Regulations. The GDED were subsequently issued with an approved EA (GDARD Ref No. GAUT002/09-10/N0021) for the original JMP development by the Provincial Authority, namely the Gauteng Department of Agriculture and Rural Development (GDARD), on 25 July 2011 (**Appendix 8**). The EA covers an area of approximately 6.5 hectares (ha). The EA was then amended in May 2018 and included a change in the licence holder details from the GDED to the GIDZ. This amendment was subsequently granted by the Department of Environmental Affairs (DEA), and the amended EA was issued on 11 May 2018 (DEA Ref No. 14/12/16/3/3/1/7/94/AM1) (**Appendix 8**). Although construction has commenced on the greater JMP site (**Appendix 12**), no construction has taken place for the proposed MetCon Facility.

The current EA application is for a proposed MetCon refining facility that will occupy an area of approximately 0.55ha within the previously authorised JMP site. MetCon specialises in extracting precious and base metals from secondary gold materials (i.e. dorè sourced from other refineries and mines) through a chemical treatment refining process and has been identified as a key facility to be incorporated into the JMP site.

The development and inclusion of the proposed MetCon facility within the JMP requires an additional EA from the DEA due to the triggering of listed activities that require a full environmental impact assessment to be conducted. The EIA for the proposed development will be conducted in terms of the EIA Regulations of 2014, promulgated in terms of Chapter 5 of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), which came into effect on 8 December 2014, and as amended on 7 April 2017. The proposed development is listed as Activity 6 of Listing Notice 2 (GNR 325, as amended) which refers to:

> *6. The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation*

governing the generation or release of emissions, pollution or effluent,…

Activity 6 above applies to the proposed development as sub-categories 4.2 and 4.17 of Section 21 of the National Environmental Management: Air Quality Act (NEM:AQA) (Act No. 39 of 2004) are triggered by the proposed activity and therefore an Atmospheric Emissions Licence (AEL) is required. All relevant legislations and guidelines will be consulted and complied with during the EIA process.

In light of the above, Marang has compiled this Final Scoping Report (FSR) on behalf of MetCon and the GIDZ in order to comply with the requirements of the EIA Regulations of 2014 (as amended) in terms of the NEMA. The potential impacts associated with the proposed project have been identified and are described in the report.

Marang has made use of the previously authorised BA, conducted for the greater JMP site in 2009, as a basis for identifying and assessing potential environmental impacts. The following environmental parameters were assessed as part of that BA process, however no specialist studies / assessments were conducted for these:

- Vehicular Access and Traffic Congestion;
- Biophysical (clearance of vegetation);
- Socio-economic impacts;
- Soil instability and erosion;
- Stormwater run-off volume and velocity;
- Increased Waste Generation;
- Noise pollution; and
- Increased demand/pressure on service infrastructure.

During the BA process, overall potential impacts of the proposed development were identified through a desktop study, a site visit, specialist studies and comments received during the public participation process. An assessment of the potential impacts was provided, identifying the impacts that are potentially significant including management recommendations and mitigation measures to reduce the impacts.

The Final Basic Assessment Report (FBAR) compiled as part of the BA process undertaken for the original JMP project in 2009 concluded that the development of the JMP in the OR Tambo International Airport IDZ, is "*in line with the region's Spatial Development Plan*", as well as the adjacent land uses. It further stated that the proposed development will provide a number of "*job opportunities during the construction phase*" and thereby enhance the local economy. The property on the Portion 282 of the Farm Witkoppie No. 64 - IR has "*no ecological, archaeological or geohydrological sensitivities*" which may be impacted on by the proposed development. If all mitigation measures as stipulated in the FBAR and in the Environmental Management Programme (EMPr) are implemented, the significance of most, if not all, and the potential impacts, as listed above, will be "*reduced to 'medium' and 'low'" and reach "environmentally acceptable levels*".

Two (2) specialist assessments / studies completed for the original development of the JMP site, have been made available for utilisation in this MetCon application. These include;

- Geotechnical Studies (completed in 2015), and
- Traffic Impact Assessment (completed in 2016).

In addition, the following specialist reviews have been conducted for the following environmental parameters as part of the EIA process for the proposed development and inclusion of the MetCon facility within the JMP site:

- Heritage;
- Visual;

- Noise;
- Soil and Land Capability; and
- Surface Water;

It should also be noted that a full Air Quality Impact Assessment (AQIA) has also been undertaken as part of this EIA process, the results of which have been included in this FSR (**Appendix 6F**).

The results of the above-mentioned specialist reviews and AQIA are detailed in **Table iii** below.

Table iii: Outcomes and Recommendations of Specialist Reviews and/or Assessments

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
Surface Water	None	From the results of the review, it was determined that the findings of the Basic Assessment Report (BAR) are likely to still hold true but are not absolute. The recommendations presented in the BAR and EMPr are appropriate, relevant/necessary, sensible and achievable; and the proposed mitigatory measures are considered the best options available. Additional information from desktop sources and national and provincial databases to assist with decision making for the additional listed activities for which authorisation is now required have been provided in the report. The information on the adjacent wetlands has been presented, at a high level, in the report. This information was used to inform the impact assessment undertaken according to the Marang Impact Rating methodology. Based on the findings of the impact assessment, the construction and operation of the proposed precious metal refinery facility poses a low significance of impact on the freshwater resources of the area. Due to the distance between the activities and the watercourses in the area, and the presence of existing developments between the study area and watercourses of the area, limited to negligible impact from the proposed activities on the wetlands is expected to occur. Fulfilment of Regulation GN R. 509 of 2016 now needs to be considered as delineated pans are located within 500m of the proposed development site. As such, the Department of Water and Sanitation (DWS) Risk Assessment Matrix as promulgated in Regulation GN R. 509 of 2016 and the appropriate water use authorisation process (namely a General Authorisation) will be undertaken as part of this EIA process. • ***Construction Phase Recommendations***:	Yes. A DWS Risk Assessment Matrix as promulgated in Regulation GN R. 509 of 2016 and the appropriate water use authorisation process (namely a General Authorisation) will be undertaken as part of the EIA process. This is detailed in section 10, Plan of Study for the EIA.

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		○ Contractor laydown areas and material storage facilities must be placed within the study area and must not be placed within 30m of the wetlands in line with GDARD and NEMA requirements; ○ All vehicle re-fuelling is to take place on a sealed surface within the study area and must not be permitted to occur within 30m of the wetlands; ○ All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is absolutely essential; ○ Retain as much indigenous vegetation as possible; ○ Excavated materials should not be contaminated, and it should be ensured that the minimum surface area is taken up, however, the stockpiles may not exceed 2m in height; ○ All exposed soils and temporary stockpiles must be protected for the duration of the construction phase in order to prevent erosion and sedimentation of the wetlands; and ○ Immediate revegetation of all stockpiles which are to remain on site post-construction. • ***Operational Phase Recommendations***: ○ Clean and dirty water management must take place in order to prevent contaminated runoff from the precious metal refinery facility creating preferential flow paths which may reach the wetlands. Clean and dirty water management systems must be implemented prior to commencement of construction; and ○ Suitable waste disposal facilities should be provided. These facilities should regularly be emptied and taken to a registered waste disposal facility; and ○ All recyclable waste should be recycled as far as possible.	
Soil and Land Capability	None	From the results of the review, it was determined that the findings of the Basic Assessment Report (BAR) are likely to still hold true but are not absolute. The recommendations presented in the BAR and Environmental Management Programme EMPr are appropriate, relevant/necessary, sensible and achievable; and the proposed mitigatory measures outlined in this report are considered the best options available.	No

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		The study area is located within a highly industrialised and urbanised area with no active agricultural practices within or in the immediate vicinity of the study area. The eastern half of the study area is situated within the Environmental Management Framework (EMF) Zone 5 (Industrial and large commercial focus zone) (EMF, 2015). The proposed facility falls within the EMF Zone 5. In addition, the study area is currently under development and the soils have been anthropogenically transformed, thus these soils are likely to have little to no bearing on agricultural productivity. Thus, from a soil, land use and land capability point of view, the impact significance on the loss of high agricultural potential soils is anticipated to range between very low and negligible. Based on the findings of the impact assessment, the construction and operation of the proposed precious metal refinery facility poses a low significance of impact on soil, land use and land capability. Additional information from desktop sources and national and provincial databases to assist with decision making for the additional listed activities for which authorisation is now required have been provided in the specialist review. • ***Construction Phase Recommendations***: o All development footprint areas to remain as small as possible; o Laydown areas should be located within disturbed soils (anthrosols) to avoid compaction of natural soils; o All exposed soils and temporary stockpiles must be protected for the duration of the construction phase in order to prevent erosion; o Stockpile height should not exceed 2 meters (m) o Vehicle re-fuelling is to take place on a sealed surface within the study area; and o Contamination prevention measures should be addressed in the Environmental Management Programme (EMPr) for the proposed development, and this should always be implemented and made available and accessible to the contractors and construction crew conducting the works on site for reference. • ***Operational Phase Recommendations***: o All vehicles should remain within demarcated roads as far as practically possible;	

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		○ Stormwater management must take place to prevent contaminated runoff from the precious metal refinery facility; ○ Waste product should be recycled as best as practically possible to minimise sources of soil contamination; and ○ Contamination prevention measures should be addressed in the EMPr for the proposed development, and this should be implemented and made available and accessible at all times to the contractors and construction crew conducting the works on site for reference.	
Visual	None	It was evident from the review of the Basic Assessment Report (BAR) that very little to no information was presented on visual impacts. However, based on the geographic setting of the proposed Precious Metals Refinery Facility (PMRF), the development is not likely to lead to any change in the visual character and sense of place of the surrounding environment. Both the EMPr and the Environmental Authorisation set conditions to limit the visual impact of the development. Should these conditions be adhered to, the significance of the impact on visual resources and the visual landscape are considered negligible. The development of the proposed PMRF is located within a highly industrialised and urbanised area, with the eastern portion of the proposed PMRF situated within the Industrial and Large Commercial Zone (Zone 5) of the Environmental Management Framework (EMF, 2015). Since the surrounding area has been subject to development and the proposed PMRF is situated within a footprint where buildings are already constructed, the visual character and sense of place of the area will not be significantly negatively affected. Furthermore, since the proposed PMRF is situated adjacent to the OR Tambo International Airport, none of the buildings are permitted to be higher than two storeys (approximately 12m), therefore the proposed buildings associated with the PMRF is congruous with the surrounding existing buildings from the Jewellery Manufacturing Precinct (JMP). Based on the findings of the impact assessment, the proposed PMRF poses a low significance of impact on the visual character and aesthetics of the area. Additional information from desktop sources with emphasis on climate, topography, land uses and land cover as well as protected areas within a 10km radius from the proposed development was gathered	No

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		to assist with decision making for additional listed activities for which authorisation may be required. • ***Construction Phase Recommendations:*** o The development footprint area should remain as small as possible; o No rubble should be disposed of at random within the site, but within relevant removable bins, where recyclable and non-recyclable waste is kept separate; o Contractor's laydown areas and temporary storage facilities should be located within the development footprint and cordoned off with shade cloth to conceal and minimise the visual impact; o Any topsoil stockpiled should either be utilised during landscaping or it should be shaped and rounded to blend in with the surrounding landscape and to minimise visual contrast; o Vegetation, especially large and tall trees bordering the Bonaero Park residential area south of the PMRF should be retained if feasible; o It must be ensured that the buildings fit into its surroundings through the appropriate use of colour and material selection. Natural Colours should be used in all instances. Should the stacks comprise metal surfaces, it must be painted in a colour that blends in with the natural environment. White structures are to be avoided; o A dust management plan must be implemented to reduce dust generation. Such dust control measures may include, but is not limited to; watering of the footprint area and any access roads, speed limits of 20km/h must be adhered to and should it be practical stockpiles should be covered with a tarpaulin on windy days to avoid soil and dust being blown away; o Construction activities should be restricted to daylight hours as far as possible; o A lighting engineer may be consulted to assist in the placement of temporary and permanent light fixtures, to reduce the visual impact associated with glare and light trespass; and o No naked / unshielded light sources are to be used. It is recommended that "full cut-off" light fixtures that direct light only below the horizontal is to be used. • ***Operational Phase Recommendations:***	

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		○ Operational activities of the PMRF and gas emissions at the stacks; ○ An increase in vehicular movement and level of human activity in the area due to operational activities; ○ Exterior and security lighting around the buildings and parking facilities, possibly contributing to light pollution; ○ Potential lighting at night from operational vehicles; and ○ Light sources temporarily stationed for maintenance activities conducted at night, in case of emergencies. ○ It is recommended that routine maintenance on buildings and other structures be implemented, to ensure that the paint of buildings are not weathered and that the buildings fit into the colour palette of the surroundings; ○ In the event that a green open space is demarcated and landscaped, it must be ensured that the vegetation be maintained and controlled to reduce the risk of potential alien floral species proliferation and to keep it aesthetically appealing to the receiving environment; ○ It is recommended that maintenance activities should not take place at night or on weekends, unless absolutely essential; ○ Making use of motion detectors on security lighting at buildings and parking facilities, ensures that the site will remain in relative darkness, until lighting is required for security and maintenance purposes; ○ No naked / unshielded light sources are to be directly visible from a distance; and ○ The PMRF should be screened through the use of a clearVU fence, or equally approved, which will result in a more unified and tidy appearance	
Heritage	None	A brief desktop study was undertaken which consisted of an assessment of old aerial photographs. Aerial photographs taken in 1941, 1952, 1969 and 1976 were obtained and included in the study. Neither one of these images depict any buildings or heritage sites within the study area. In 1941 a plantation was growing across the study area and its surroundings. Eleven years later, in 1952, this plantation had almost entirely been cut down. By 1969 the remaining trees from the plantation started growing and expanding again, albeit in an unmanaged way suggesting that the study area was not farmed or formally used for any particular purpose. By 1976 signs for earthworks and	No. It is the specialist's professional opinion that there is no need for a Heritage Impact Assessment.

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		excavations within the study area started appearing, although sections of it still comprised trees. The site was assessed in the field by way of a brief walkthrough undertaken by Polke Birkholtz, an experienced archaeologist / heritage specialist. The fieldwork showed that the study area is almost entirely disturbed and construction on the jewellery precinct is at an advanced stage. The following recommendations are made: ▪ Despite the fact that study area was assessed by way of a detailed investigation of aerial photographs, no evidence for any buildings or heritage sites could be found on any of these old depictions of the study area. Furthermore, the walkthrough also did not reveal any evidence for archaeology or heritage, even though sections of intact soil profiles that were exposed by construction were scrutinised during the walkthrough. As a result, it is my professional opinion that there is no need for a Heritage Impact Assessment on this project.	
Air Quality	None	Particulate and gaseous emissions were identified for operations associated with the proposed facility and will be emitted from the following key sources: ▪ Jewellers secondary gold material incineration in roasting oven; ▪ Gas (fuel) combustion installation (roasting oven); ▪ Chemical refining process; ▪ Melting of material in induction furnaces and adding fluxes; and ▪ Casting of material. The abovementioned activities trigger sub-category 4.17 (precious and base metal production and refining) and 4.2 (combustion installations) in terms of S21 of NEM:AQA (Act No. 39 of 2004). As such, the proposed facility requires an AEL to operate. While there were other identified existing key sources of air pollution surrounding the project site which also need to be taken into account, Marang predicted low unmitigated incremental concentrations. MetCon do plan to install abatement equipment, as per their current design at the MetCon Centurion Plant. Under the mitigated scenario, very low concentrations were observed within 2 km from the facility, as the abatement equipment (scrubber and baghouse) has an associated emission control efficiency of approximately 98%. Therefore, Marang further concluded that the development be approved from an Air Quality point of view. • ***Operational Phase Recommendations****:*	No. It should however be noted that an AEL will be obtained for the proposed development.

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		○ The proposed facility must install abatement equipment (baghouse and scrubber) as per their current design at the existing MetCon Centurion Plant. The abatement equipment must achieve at least 90% control efficiency and must ensure compliance with the minimum emission standards for sub-category 4.17 in terms of S21 of the NEM:AQA listed activities. Additional recommendations include: ○ MetCon must apply for an AEL prior to the commencement of operations. All conditions of the AEL must be complied with. ○ Appoint a responsible person, such as an emission control officer or safety, health & environmental manager, to ensure compliance with the AEL. ○ Once operational, conduct stack emissions monitoring on all stacks for the relevant listed activity and ensure compliance with the minimum emission standards, with the use of abatement equipment. Ensure that monitoring is undertaken in accordance with nationally or internationally acceptable methods. ○ Ensure that all unit processes & apparatus used for undertaking the listed activity in question, and all appliances and mitigation measures for preventing or reducing emissions, are at all times properly maintained and operated. ○ Submit an annual AEL report within the required timeframe. ○ Submit compliance audit reports annually. ○ Once operational, maintain and report monthly to the authority a complaint register. Should a complaint be logged, a report in the required format as per the AEL, should be submitted to the authority. ○ Register and report on the NAEIS. Category A (listed activities) are required to report their emissions on the NAEIS annually. The NAEIS is a national emissions inventory. ○ Maintenance and pollution prevention plans should be developed for the facility. ○ Undertake regular training of all key employees to ensure effective implementation of the AEL requirements, maintenance and pollution prevention plans.	
Noise	None	If only daytime activities are planned, no mitigation measures are recommended.	No.

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		If night-time activities are planned (after 22:00 at night, before 06:00) it is recommended that MetCon: ▪ measure the typical night-time ambient sound levels in the area prior to the project being developed (over the full night-time period). Once operational, measurements must be repeated to confirm that the implementation of the project did not raise the noise levels with more than 7 dB (Noise Control Regulations) and ideally, does not raise the ambient sound levels with more than 3 dB (International Finance Corporation recommendation). ▪ select appropriate noise mitigation measures (to be considered during the planning stage) which may include: o Eliminating the noise source where possible at night; o The installation of one or more acoustical silencer(s) or enclosures; o Acoustical treatment of ducts and exhaust stacks; o A change in equipment, controlling the speed of the fans/blowers; o Moving the noise source further from the residential area (if possible). • ***Operational Phase Recommendations***: o No additional mitigation required for activities during daytime (06:00 – 22:00) operations. o If night-time activities are required, MetCon should measure the typical night-time ambient sound levels in the area prior to the project being developed (over the full night-time period). Once operational, measurements must be repeated to confirm that the implementation of the project did not raise the noise levels with more than 7 dB (Noise Control Regulations), ideally, no more than 3 dB (International Finance Corporation recommendation). o Other measures include: - Minimise night-time activities that will require the use of the baghouse stack and blowers at night. - The design of the baghouse stack exit to ensure a more flared design, or the use of a silencing system at the exit. - Enclose the blowers in a structure to reduce the noise levels from this source. o The reduction of the gas exit velocities at night.	

The above-mentioned specialist reviews (namely Heritage, Freshwater, Visual, Soil and Land Capability and Noise) and assessments (namely Air Quality, Traffic and Geotechnical) were conducted to address

the potential impacts relating to the proposed development. Impact assessments were conducted as part of the specialist reviews and assessments to ascertain the level of each identified impact, as well as mitigation measures which may be required. The potential positive and negative impacts associated within these reviews and assessments have been evaluated and rated accordingly. The results of the specialist reviews and impact assessments have indicated that no fatal flaws exist as a result of the proposed project.

The EIA Phase will (where possible) culminate in the compilation of detailed mitigation measures to reduce impacts and the identification of sensitive areas within the site which may require more specific management measures. The EIA Phase will also aim to optimise and improve potential positive impacts that may result from the proposed development. Furthermore, the EMPr which will be compiled as part of the proposed project will detail mitigation and management measures, in response to the detailed assessment, and will be included with the Draft Environmental Impact Assessment Report (DEIAr). Should this project receive a positive EA, the EMPr will help inform the project proponent and appointed contractors through the final design, construction and operational phases of the proposed project.

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LIST OF ABBREVIATIONS

AEL	Air Emissions License
ACSA	Airport Company of South Africa
AGIS	Agricultural Geo-Referenced Information System
APPA	Atmospheric Pollution Prevention Act (Act No. 45 of 1965)
AQA	Air Quality Assessment
AQIA	Air Quality Impact Assessment
ATNS	Air Traffic and Navigation Services SOC Limited
ASTM D1739	The American Society for Testing and Materials standard method for collection and measurement of dust fall (Settleable Particulate Matter)
BA	Basic Assessment
C-Plan	Gauteng Conservation Plan
C&RR	Comments and Response Report
CAA	Civil Aviation Act, 2009 (Act No. 13 of 2009)
CARA	Conservation of Agricultural Resources Act No. 43 of 1983
CBA	Critical Biodiversity Area
CBD	Central Business District
CH_4	Methane
CO	Carbon Monoxide
$CO_{2\text{-eq}}$	Carbon Dioxide equivalents
CoE	City of Ekurhuleni
DD	Due Diligence
DEA	Department of Environmental Affairs
DEIAr	Draft Environmental Impact Assessment Report
DEMPr	Draft Environmental Management Programme
DSR	Draft Scoping Report
DoI	Declaration of Interest
DTI	Department of Trade and Industry
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
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
FBAR	Final Basic Assessment Report
FGM	Focus Group Meeting

FEIAr	Final Environmental Impact Assessment
Fe_2O_3	Hematite
FeOOH	Goethite
FSR	Final Scoping Report
GA	General Authorization
GDARD	Gauteng Department of Agriculture and Rural Development
GDED	Gauteng Department of Economic Development
GGDA	Growth & Development Agency
GHG	Greenhouse Gas
GIDZ	Gauteng Industrial Development Zone
GIFA	Gauteng Infrastructure Financial Agency
GN	Government Notice
GPS	Geographic Positioning System
HFCs	Hydrofluorocarbons
HPA	Highveld Priority Area
IPAP	Industrial Policy Action Plan
IRPTS	Integrated Rapid Public Transport System
JMP	Jewellery Manufacturing Precinct
MAP	Mean Annual Precipitation
MetCon	Metal Concentrators SA (Pty) Ltd
N_2O	Nitrous Oxide
NAEIS	National Atmospheric Emissions Inventory System
NDP	National Development Plan
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
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)
NFEPA	National Freshwater Ecosystem Priority Area
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
ORTIA	OR Tambo International Airport
PAEL	Provisional Air Emissions License

PFCs	Perfluorocarbons
PM	Particulate Matter
PMRF	Precious Metals Refinery Facility
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANRAL	South African National Road Agency SOC Ltd
SANS	South African National Standards
SAPAD	South African Protected and Conservation Areas Databases
SEZ	Strategic Economic Zone (Special, Economic and Industrial Development Zones)
SF_6	Sulphur hexafluoride
SHE	Safety, Health and the Environment
SIP	Strategic Infrastructure Projects
SO_2	Sulphur Dioxide
WML	Waste Management License
WULA	Water Use License Authorisation

LIST OF APPENDICES

1. INTRODUCTION

Marang Environmental and Associates (Pty) Ltd (hereafter referred to as “Marang”) was appointed, in terms of Section 12, Chapter 3 of the National Environmental Management Act, 1998 (NEMA) (Act No. 107 of 1998) and the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended in April 2017), by the Gauteng Industrial Development Zone (hereafter referred to as “GIDZ”) to undertake an EIA process for the proposed development and inclusion of the Metal Concentrators SA (Pty) Ltd (hereafter referred to as “MetCon”) refinery facility in the Jewellery Manufacturing Precinct (JMP) within the OR Tambo International Airport (ORTIA) Precinct, Kempton Park, Gauteng Province (hereafter referred to as the “proposed project”).

The GIDZ, as appointed by the Gauteng Department of Economic Development (GDED), have been given the mandate to develop the JMP (located on Portion 282 of the Farm Witkoppie No. 64 – IR) within the ORTIA Precinct. The JMP aims to increase employment opportunities and foreign direct investment in the jewellery manufacturing sector. A basic assessment (BA) process was undertaken in 2009 to obtain Environmental Authorisation (EA) for the development of the original JMP site. The BA was carried out in terms of the 2006 EIA Regulations. The GDED were subsequently issued with an approved EA (GDARD Ref No. GAUT002/09-10/N0021) for the original JMP development by the Provincial Authority, namely the Gauteng Department of Agriculture and Rural Development (GDARD), on 25 July 2011 (**Appendix 8**). The EA covers an area of approximately 6.5ha. The EA was then amended in May 2018 and included a change in the licence holder details from the GDED to the GIDZ. This amendment was subsequently granted by the Department of Environmental Affairs (DEA), and the amended EA was issued on 11 May 2018 (DEA Ref No. 14/12/16/3/3/1/7/94/AM1) (**Appendix 8**). Although construction has commenced on the greater JMP site (**Appendix 12**), no construction has taken place for the proposed MetCon Facility. This will only commence once the necessary approvals / authorisations have been obtained.

The current EA application is for a proposed MetCon refining facility that will occupy an area of approximately 0.55 hectares (ha) within one (1) of the blocks of the authorised JMP site (please refer to the Site Layout Map attached in **Appendix 5**). MetCon specialises in extracting precious and base metals from secondary gold materials (i.e. dorè sourced from other refineries and mines) through a chemical treatment refining process, and has been identified as a key facility to be incorporated into the JMP site. The activities proposed by MetCon trigger sub-category 4.2 (combustion installations) and sub-category 4.17 (precious and base metal production and refining) in terms of Section 21 (S21) of the National Environmental Management: Air Quality Act (NEM:AQA) (Act No. 39 of 2004) and will therefore require an Atmospheric Emissions Licence (AEL).

The development and inclusion of the proposed MetCon facility within the JMP therefore requires an additional EA from the DEA due to the triggering of listed activities that require a full environmental impact assessment to be conducted in terms of the EIA Regulations of 2014, promulgated in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), which came into effect on 8 December 2014, and as amended on 7 April 2017. The proposed development is listed as Aactivity 6 of Listing Notice 2 (GNR 325, as amended) which refers to:

> *6. The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent,…*

It should be noted that the additional 1ha area along the north-western boundary of the JMP site, which the GIDZ originally proposed to include in this EIA process, is no longer being considered for this proposed project due to uncertainties regarding the actual parameters of this area. This issue is currently being investigated by the GIDZ. As the proposed MetCon facility was not to be located on this land, and that the additional land did not trigger any listed activities within this current application, the removal of the additional land from the MetCon EIA process does not alter the EIA application significantly.

1.1. Objectives of Scoping Report

This Final Scoping Report (FSR) has been prepared as part of the EIA process to fulfil the required objectives of a scoping process as outlined in Appendix 2 of the NEMA EIA Regulations of 2014 (as amended). In terms of the NEMA EIA Regulations, 2014 (as amended), published under GN R. 326, the objective of the scoping process is to, through a consultative process–

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

Furthermore, this scoping report contains information as outlined in Section 2(1) of Appendix 2 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 through the EIA process. The content requirements for a scoping report, as well as details of which section of the report fulfils these requirements, are shown in **Table 1-1** below.

Table 1-1: Requirements of a Scoping Report

Content Requirements	Applicable Section
a) details of- i. the EAP who prepared the report; and ii. the expertise of the EAP, including a curriculum vitae;	Details of the EAP and full project team are included in section 1.5. The expertise (including curriculum vitae) of the EAP and

	full project team are included in **Appendix 2**.
b) the location of the activity, including- i. the 21-digit Surveyor General code of each cadastral land parcel; ii. where available, the physical address and farm name; iii. where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	The location of the proposed project is detailed in section 5.1 and section 5.2 of the report.
c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is- i. a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or ii. on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	A map of the regional locality is shown in section 5.1. Additionally, all project maps are included in **Appendix 5**. Coordinates are shown in section 5.2.
d) a description of the scope of the proposed activity, including- i. all listed and specified activities triggered; ii. a description of the activities to be undertaken, including associated structures and infrastructure;	The listed and specified activities triggered as per the NEMA are detailed in section 3.1.1. The technical project description is included in section 2. This includes a description of activities to be undertaken, including associated structures and infrastructure.
e) a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	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.
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;	The need and desirability of the proposed project is discussed in section 4.
g) a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including - 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;	Alternatives have been discussed in section 2.4. It should however be noted that no site or layout alternatives have been considered and/or assessed as part of this EIA process.

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- (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 locations for the activity were investigated, the motivation for not considering such and xi. a concluding statement indicating the preferred alternatives, including preferred location of the activity;	
h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including- (i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; (ii) a description of the aspects to be assessed as part of the environmental impact assessment process; (iii) aspects to be assessed by specialists; (iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists; (v) a description of the proposed method of assessing duration and significance; (vi) an indication of the stages at which the competent authority will be consulted;	The plan of study for the EIA phase is included in section 10. Alternatives have been discussed in section 2.4.

	(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and (viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process; (ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	
i)	an undertaking under oath or affirmation by the EAP in relation to- i. the correctness of the information provided in the report; ii. the inclusion of comments and inputs from stakeholders and interested and affected parties; and iii. 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;	The EAP declaration is included in **Appendix 3**.
j)	an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	The EAP affirmation and declaration of interest is included in **Appendix 3**. The plan of study is included within this FSR which has been made available for review and comment by I&APs. In light of comments received from the DEA, the plan of study has been updated. Should any I&APs identify any further issues or concerns with respect to the plan of study for undertaking the EIA, it will be updated accordingly.
k)	where applicable, any specific information required by the competent authority; and	A record of authority consultation is provided in section 1.4, and details how the competent authority's comments on the DSR have been addressed, taken into consideration and incorporated into this report. Any further specific information requested will be detailed in the same manner in the Draft

	Environmental Impact Assessment Report (DEIAr).
l) 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.

1.2. Applicable documentation

The following documentation should be read in conjunction with this Scoping Report:

- Gauteng Industrial Development Zone Strategic Plan (2014-2019) – Updated 2017 February.
    - This document, similar to any programme management and planning documentation, outlines all the programmes, objectives, targets and indicators of the GIDZ over a medium period as well as relevant legislative requirements and mandates thereof.

- South African Special Economic and Industrial Development Zones (SEZ).
    - The GIDZ Project, as described in page 12 of the SEZ document, forms part of the Special Economic Zones (SEZ) aimed at the stimulating economic development through the JMP project.

The above-mentioned documents have been provided in **Appendix 1**.

1.3. Specialist Reviews and/or Assessments

A BA process was undertaken in 2009 for the development of the existing JMP development site under the guidance of the NEMA, 1998 (Act No. 107 of 1998), as amended, and the EIA Regulations of 2006. Inputs were "*made by specialists to the extent that may be necessary*" in terms of Section 23(2)(j) of the NEMA EIA Regulations, 2006. As such, the Final Basic Assessment Report (FBAR) included the following environmental impacts for the construction, operation, and decommissioning phases of the original above-mentioned JMP development:

- Vehicular Access and Traffic Congestion,
- Biophysical (clearance of vegetation),
- Socio-economic impacts,
- Soil instability and erosion,
- Stormwater run-off volume and velocity,
- Increased Waste Generation,
- Noise pollution, and
- Increased demand/pressure on service infrastructure.

A Scoping Geotechnical Report was available as an extension to the BA process.

In 2015 and 2016, two (2) detailed specialist assessments were conducted. These included the following:

- Geotechnical; and
- Traffic Impact Assessment.

The above-mentioned Geotechnical and Traffic studies / assessments are included in **Appendix 9**.

During the original BA process, overall potential impacts of the proposed development were identified through a desktop study, a site visit, specialist studies and comments received during the public

participation process. An assessment of the potential impacts was provided, identifying the impacts that are potentially significant including management recommendations and mitigation measures to reduce the impacts.

The FBAR concluded that the development of the JMP in the OR Tambo International Airport IDZ, is "*in line with the region's Spatial Development Plan*", as well as the adjacent land uses. It further stated that the development will provide a number of "*job opportunities during the construction phase*" and thereby enhance the local economy. The property on Portion 282 of the Farm Witkoppie No. 64 - IR has "*no ecological, archaeological or geohydrological sensitivities*" which may be impacted on by the proposed development. If all mitigation measures as stipulated in the FBAR and in the Environmental Management Plan (EMPr) are implemented, the significance of most, if not all, and the potential impacts, as listed above, will be "reduced to 'medium' and 'low'" and reach "environmentally acceptable levels".

A Scoping Geotechnical Report (assessing the topography, vegetation, geology, and surface and ground water in a geotechnical viewpoint) was also compiled as part of the BA process undertaken for the original JMP project in 2009 and is thus also available (**Appendix 9**). While this report raised concerns about the presence of a large trench that discharges to the "*triangular very wet area*" (wetland), it recommended feasible mitigations and concluded that the proposed development has "*no fatal flaws*". Furthermore, a more extensive geotechnical assessment was completed for the JMP development site in 2015, approximately four (4) years after the EA was issued, which also was in consonance with the findings of the initial Scoping Geotechnical Report. This above-mentioned geotechnical assessment has also been provided in **Appendix 9**.

It should be noted that only the FBAR and above-mentioned Geotechnical report were completed during the BA process undertaken for the original JMP development in 2009 to support the above assessment conclusions, with no other specialist reports or documentation in this regard.

An extensive Geotechnical study and Traffic Impact (scoping and extensive) Assessment, were completed recently in 2015 and 2016 respectively, for the same JMP development site. These reports are also presented in **Appendix 9**. The Traffic Impact Assessment recommended road upgrades which will see the surrounding road network being able to accommodate the development traffic at acceptable levels, and further concluded that the development be approved from a traffic point of view.

It should be noted that the above-mentioned Geotechnical and Traffic specialist assessments / studies will be reviewed as part of this EIA process for the proposed development and inclusion of the MetCon facility to certify that the specialist assessments are still relevant, and the findings remain valid.

After consultation with the DEA on the 2nd of July 2018 (see attached Meeting Minutes in **Appendix 7G**), It was decided that various specialists would be required to review the findings of the FBAR compiled as part of the BA process undertaken in 2009, including all other specialist studies that have been completed for the JMP site (as defined in terms of Part 2 of Chapter 3 of the NEMA EIA Regulations, 2014, as amended). All correspondence with the DEA is also included in **Appendix 4**.

It should also be noted that the following specialist reviews have been identified in terms of the Section 12(2), Chapter 3 of the NEMA Regulations, 2014 (as amended) as requiring a confirmatory assessment;

- Heritage;
- Noise;
- Visual;

- Soil and Land Capability; and
- Surface Water.

It should also be noted that a full Air Quality Impact Assessment (AQIA) has been undertaken as part of this EIA process, the results of which have been included in this FSR. This has been included in **Appendix 6**, along with the other specialist reviews mentioned above.

1.4. Authority Consultation

1.4.1. Authority Consultation prior to current EIA process

As mentioned, a BA process was undertaken in 2009 for the development of the JMP Industrial Development Zone (IDZ) at the ORTIA precinct. An EA was subsequently granted by GDARD to the then holder, namely the GDED, on 25 July 2011. The GIDZ was founded in 2009 as a subsidiary of the Gauteng Growth & Development Agency (GGDA) under the auspices of GDED to develop and operate the JMP IDZ. This meant that the details of the EA holder had to be amended from GDED to GIDZ.

In light of the above, Marang was appointed in December 2017 to undertake a Part 1 EA Amendment process in order to amend the holder details of the EA from GDED to GDIZ, as mentioned above. Prior to the EA Amendment application, it was noted that both the GDED and GDARD are regulated by, and report to, the same MEC. In terms of S24C, subsection 2(d)(ii), "*the Minister must be identified as the competent authority in terms of subsection (1),…, if the activity is undertaken, or is to be undertaken, by a provincial department responsible for environmental affairs or any other organ of state performing a regulatory function and reporting to the MEC*". Therefore, the DEA was identified as the competent authority for this project.

As such, a Part 1 EA Amendment application (DEA Reference Number: **14/12/16/3/3/1/7/94/AM1)** was lodged with the DEA on 13 February 2018 in order to amend;

1. *the holder and contact details of the EA*.
   The reason for the amendment was that the GDED had appointed GIDZ (as the Gauteng Provincial Industrial Development Agency,) to develop the project on behalf of the GDED. Therefore, the holder and contact details were subject to change.

2. *the authorised listed activities under the 2006 Environmental Impact Assessment Regulations to incorporate activities as per the EIA Regulations, 2014, as amended*.
   The reason for the amendment was that the activities originally applied for and authorised in the EA dated 25 July 2011, had been delisted and replaced with the 2014 EIA Regulations, as amended. Furthermore, the EA needed to be amended to include an additional listed activity as the proposed MetCon facility triggers listed activities in terms of Section 21 of the National Environmental Management Air Quality Act (NEM:AQA) (Act No. 39 of 2004) and will require an AEL.

The proposed activities triggered by the MetCon facility include Listed Activity 6 in terms of the 2014 EIA Regulations Listing Notice 2 of the NEMA, 1998 (Act No. 107 of 1998) (NEMA), as amended.

Listed activity as described in Listing Notice 2 of GN R. 325	Description of project activity that may trigger the listed activity
Listed Activity 6: The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding— i. activities which are identified and included in Listing Notice 1 of 2014; ii. activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; iii. the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or iv. where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.	The incorporation of one (1) of the facilities (namely the MetCon Refinery Facility) within the JMP requires an AEL from the City of Ekurhuleni (CoE) before the facility can be operational. In order for them to apply for an AEL, they are required to undertake an EIA and obtain an EA.

On 11 May 2018, the DEA responded with a decision to approve the first amendment of the holder and contact details of the EA from GDED to GIDZ, including the change of EA contact details. However, the second amendment to include Listed Activity 6 of Listing Notice 2 of GN R. 325, was refused. The DEA's reason for the refusal was that "*the EA was issued in terms of 2006 EIA Regulations and the EA cannot be amended to include similar listed activities as per the EIA Regulation 2014, as amended and this activity is activity 6 of GN R984*".

In May 2018, Marang was subsequently further appointed to undertake an EIA process for the proposed development and inclusion of the MetCon refinery facility within the JMP site. Marang together with the GIDZ then requested a pre-application meeting with the DEA to confirm the triggered listed activities associated with the proposed development and to clarify the appropriate EIA process to be followed.

The meeting was held at the DEA's Head Office (473 Steve Biko, Arcadia, Pretoria) on 02 July 2018 with the following attendees:

- Vincent Chauke, Nyiko Nkosi and Chulumanco Myakaza representing the DEA;
- Sophia Rosslee, Veronique Evans and Sindiso Lubisi from Marang; and
- Pat Sibiya as the representative for the GIDZ.

Listed Activity 6 (in terms of the 2014 EIA Regulations Listing Notice 2 of the NEMA, as amended), as mentioned above, was confirmed as the only activity triggered by the proposed MetCon facility. Also, the DEA stated that specialists can include statements to certify that the findings on the impacts and mitigation

recommendations stipulated in the FBAR (which was compiled as part of the BA process undertaken for the original JMP development) and any other relevant specialist assessments completed during the original BA process are still relevant for the site. The DEA further mentioned that this can be in the form of specialist review letters and may include any other additional recommendations (where applicable). These specialist review letters have been included in **Appendix 6**. In addition, a full AQIA has been undertaken as part of this EIA process. This has also been included in **Appendix 6**.

Minutes of the above-mentioned meeting are included in **Appendix 7G**. In addition, all correspondence undertaken with the DEA is included in **Appendix 4**.

1.4.2. Authority Consultation for current EIA Process

The DSR, together with the Application for EA, was submitted to the DEA on Tuesday the 18th of September 2018. A proof of payment, details of the EAP and declaration of interest, project schedule, details of landowners, and locality map formed part of the application form and were submitted accordingly on the same date. An acknowledgement of receipt from the DEA was subsequently received on the same day and the project was allocated the following reference number: **14/12/16/3/3/2/1098**. The DEA provided comments on the DSR on the 09th of October 2018. This comment letter is provided in **Appendix 4**. The table below provides details as to how this Final Scoping Report (FSR) addresses the comments made by the DEA in the DSR comment letter.

Table 1-2. Comments received from DEA in DSR Comment Letter and details on how these have been addressed

Comment made by the DEA on the DSR	Notes / Comments
The Department has reviewed aforementioned Draft Scoping Report (DSR) and provides the following comments:	
1) <u>Coordinates:</u> The Final Scoping Report (FSR) must provide the coordinates of the proposed development, <u>including associated infrastructure</u>.	Corner point and centre point coordinates of the proposed development, including associated structures/infrastructure are provided in section 5.2 of this FSR, as well as on page iii.
2) <u>Maps:</u> Please ensure that the FSR includes copies of the final site layout map and an environmental sensitivity map indicating environmental sensitive areas in A3 format.	All project maps, including a final site layout map and an environmental sensitivity map indicating environmental sensitive areas, have been provided in A3 format. All project maps and facility illustrations are provided in **Appendix 5**.
3) <u>Activities to be applied for:</u> Please ensure that all relevant listed activities are applied for, are specific and can be linked to the development activity or infrastructure as described in the project description. Furthermore, you are required to ensure that that activities applied for in the application form for environmental authorization (EA) must be the same as those mentioned in the DSR. If the activities applied for in the application form for EA differ from those mentioned in the DSR, an	All relevant listed activities have been applied for, are specific and can be linked to the development activity or infrastructure as described in the project description. In addition, at this stage the activities applied for in the application for EA are the same as those mentioned in the DSR as well as this FSR. A description of the activities associated with the operation of the proposed MetCon refinery facility is provided in section 2.3 of this report. In addition, the listed activities which are triggered as a result of the proposed project are detailed in section

amended application form must be submitted with the FSR.	Should any changes in the project related activities result in a change in or addition to the listed activities which were applied for in the application for EA and mentioned in the DSR and this FSR, an amended application form will be submitted with the DEIAr.
4) <u>Public Participation Process</u> • Please ensure that all issues raised, and comments received during the circulation of the DSR from the registered I&APS and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the FSR. • Proof of correspondence with various stakeholders must be included in the FSR, should you be unable to obtain comments, proof of the attempts that were made to obtain comments must be submitted to the Department in the FSR. • The Public Participation Process must be conducted in terms of Regulations 29, 40, 41, 42, 43 & 44 of the EIA Regulations 2014, as amended. • A Comments and Response trail Report (C&R) of all comments received must be submitted with the FSR. The C&R report must be a separate document from the main report and the format must be in the table format. It must clearly indicate the Stakeholder, Date of comments, Comments and EAPs response. • Please note that you must refrain from summarizing comments made by the registered Interested and Affected Parties (I&APs) and an original comment from the I&APs must be attached.	• All issues raised, and comments received during the circulation of the DSR from registered Interested and/or Affected Parties (I&APs), Landowners (LOs), stakeholders and Organs of State (OoS)/Authorities have been captured in the Comments and Response Report (C&RR) which is included in **Appendix 7E**. Where necessary, these comments have been addressed. In addition, all issues raised, and comments received during the public meeting and Focus Group Meetings (FGMs) which were undertaken as part of the scoping phase public participation process have been captured in the meeting minutes, and where necessary comments have been addressed. Minutes of all meetings which have been undertaken as part of the EIA process are included in **Appendix 7G**. • Proof of correspondence with registered I&APs, LOs, stakeholders and OoS/Authorities is included in **Appendix 7D** and **7I**. Where comments were not obtained from OoS/Authorities, the details of the attempts to gain comments are included in Section 8.13, in **Table 8-1**. In addition, proof of attempts to obtain comments from I&APs, LOs and stakeholders is provided in **Appendix 7D**. • The scoping phase Public Participation Process has been conducted in terms of Regulations 29, 40, 41, 42, 43 & 44 of the EIA Regulations 2014, as amended. • As mentioned, all issues raised, and comments received have been captured in the C&RR which is included in **Appendix 7E**. The C&RR is a separate document from the main report and is in table format as requested. It should be noted that the FSR clearly indicates the

	I&AP/LO/stakeholder/OoS, date of comments, comments and EAPs response. • All correspondence and comments received to date have been included in **Appendix 7D**.
5) <u>Policies and Legislatives:</u> • Appendix 2 (2)(1)(e) states that a scoping report must include "*a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process*". Please ensure that in your FSR, the Constitution is included as the supreme law of South Africa. • Please ensure that all policies and legislation which are not applicable to the proposed development are removed and not included in the FSR.	• A description of the policy and legislative context within which the development is proposed (including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity) is included in section 3 of this FSR. In addition, these policies and legislative contexts have been considered in the assessment process accordingly. • All policies and legislation which are not applicable to the proposed development have been removed and are not included in the FSR.
6) <u>Plan of Study:</u> • The Submitted DSR does not include a description of the aspects to be assessed as part of the environmental impact assessment process, aspects to be assessed by specialists, a description of the proposed method of assessing duration and significance and suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored as per appendix 2 (2)(1)(h) of the EIA Regulation, 2014 as amended. Please include in the FSR.	• The Plan of Study has been updated/amended to include a description of the aspects to be assessed as part of the EIA process, aspects to be assessed by specialists, a description of the proposed method of assessing duration and significance and suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored as per appendix 2 (2)(1)(h) of the EIA Regulation, 2014 as amended. The plan of Study is included in section 10 of this FSR. It should be noted that Marang's Impact Rating Methodology, which has been used by the respective specialists to assess the significance of identified impacts and to determine the extent of the residual risks that need to be managed and monitored, has been included in **Appendix 10.**
7) <u>Undertaking under oath:</u> • The submitted DSR report does not include an undertaking under oath or affirmation by the EAP. You are therefore required to include **<u>undertaking under oath (administered by a commissioner of</u>**	• The DSR was submitted along with an undertaking under oath or affirmation by the EAP. This was provided in **Appendix 3** of the DSR. An undertaking under oath (administered by a commissioner of Oaths) or EAP affirmation as per Appendix 2 (i) and

<u>Oaths) or affirmation</u> as per Appendix 2 (i) and (J) of the EIA Regulations, 2014 as amended, which states the following: *(i) "An undertaking under oath or affirmation by the EAP in relation to:* o *The correctness of the information provided in the reports:* o *The inclusion of comments and inputs from stakeholders and I&APs; and* o *Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties;* *(j) "An undertaking under oath or affirmation by the EAP in relation to the level and agreement between the EAP and I&APs on the plan of study for undertaking the EIA."*	(J) of the EIA Regulations, 2014 as amended, has been provided again in **Appendix 3** of this FSR. This EAP affirmation meets all the requirements as stipulated in the DSR comment letter.
<u>General Comments:</u> • You are further reminded that the FSR to be submitted to this Department must comply with all the requirements in terms of the scope of assessment and content of Scoping reports in accordance with Appendix 2 and Regulation 21(1) of the amended EIA Regulations, 2014. • Based on the above, you are hereby reminded that should the final report fail to comply with the requirements of this letter, the proposed development and inclusion of the metal concentrators (MetCon) refinery facility in the jewellery manufacturing precinct (JMP) within the OR Tambo International Airport (ORTIA) precinct, Kempton Park, Gauteng Province will be refused as per regulation 22(b) of the EIA regulations 2014, as amended. • Further note that in terms of Regulation 45 of the EIA Regulation 2014, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of these Regulations, unless an extension has been granted in terms of Regulation 3(7). • You are hereby reminded of Section 24F of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), as	• This FSR complies with all the requirements in terms of the scope of assessment and content of Scoping reports in accordance with Appendix 2 and Regulation 21(1) of the amended EIA Regulations, 2014. The objectives of this scoping report are detailed in section 1.1 of this FSR, in **Table 1-1**. • The DEA's comment with regards to compliance with the requirements of the DSR comment letter is duly noted. • The EAP will ensure that this application will meet the timeframes prescribed in terms of Regulation 45 of the EIA Regulation 2014, as amended. It should be noted that due to a delay in obtaining comments on the DSR from the DEA, Marang requested an extension to the submission date for the FSR. This request was however denied by the DEA. Correspondence relating to this FSR extension request is provided in **Appendix 4**. Should any further extension be required in terms of Regulation 3(7), this will be applied for accordingly.

	amended, that no activity may commence prior to environmental authorization being granted by the Department.	

1.5. Expertise of Environmental Assessment Practitioner (EAP)

Marang has experience in undertaking EIAs. The staff and specialists who have contributed to the completion of this report are detailed below in **Table 1-3** below.

Table 1-3. Marang Project Team.

Name and Organisation	Role
Claire Taylor (Scott) – Marang	Senior Environmental Assessment Practitioner (EAP)
Stephan Jacobs – Marang	Environmental Assessment Practitioner (EAP)
Sindiso Lubisi – Marang	Environmental Assessment Practitioner (EAP)
Sophia Rosslee – Marang	Senior Air Quality Specialist
Stephen van Staden – Scientific Aquatic Services (SAA)	Soil and Land Capability; Surface Water & Visual
Polke Birkholtz – PGS Heritage	Heritage
Morné de Jager – Enviro Acoustic Research (EAR)	Noise

The details and level of expertise of the EAP who prepared the report are provided in **Table 1-4** below.

Table 1-4. Expertise of EAP who prepared the report

Environmental Practitioner	Stephan Jacobs
Contact Details	011 792 0880 / info@maranggroup.co.za
Qualifications	BSc. Hons. Environmental Management and Analysis
Expertise of EAP	• Environmental Impact Assessment (EIA) for the Proposed Construction of the Graskoppies Wind Farm near Loeriefontein, Northern Cape Province. • Environmental Impact Assessment (EIA) for the Proposed Construction of the Hartebeest Leegte Wind Farm near Loeriefontein, Northern Cape Province. • Environmental Impact Assessment (EIA) for the Proposed Construction of the Ithemba Wind Farm near Loeriefontein, Northern Cape Province. • Environmental Impact Assessment (EIA) for the Proposed Construction of the !Xha Boom Wind Farm near Loeriefontein, Northern Cape Province. • Environmental Control Officer (ECO) for the Polokwane Integrated Rapid Public Transport System (IRPTS), Limpopo Province. • Basic Assessment (BA) for the construction of a Non-Motorised Transport (NMT) Training and Recreational Park adjacent to the Peter Mokaba Stadium in Polokwane, Limpopo Province. • Basic Assessment (BA) for the Proposed Expansion of the Tissue Manufacturing Capacity at the Twinsaver Kliprivier Operations Base, Gauteng Province.

	• Basic Assessment (BA) for the Proposed Construction of a New SPAR Distribution Centre on Erf 1092 at Redhouse in Port Elizabeth, Eastern Cape Province. • Basic Assessment (BA) for the Proposed Construction of the Graskoppies Substation, Linking Substation and Associated 132kV Power Line near Loeriesfontein, Northern Cape Province. • Basic Assessment (BA) for the Proposed Construction of the Hartebeest Leegte Substation, Linking Substation and Associated 132kV Power Line near Loeriesfontein, Northern Cape Province. • Basic Assessment (BA) for the Proposed Construction of the Ithemba Substation, Linking Substation and Associated 132kV Power Line near Loeriesfontein, Northern Cape Province. • Basic Assessment (BA) for the Proposed Construction of the !Xha Boom Substation, Linking Substation and Associated 132kV Power Line near Loeriesfontein, Northern Cape Province. • Environmental Control Officer (ECO) for Phase 1 and Phase 2 of the Newmarket Retail Development, Gauteng Province. • Environmental Control Officer (ECO) for the proposed NuPay Office Block development at the Newmarket Retail Development, Gauteng Province. • Environmental Control Officer (ECO) for the proposed Construction of the Decathlon Building at the Newmarket Retail Development, Gauteng Province. • Environmental Control Officer (ECO) for the External Road Upgrades at the Newmarket Retail Development, Gauteng Province. • Environmental Review of the Xakwa Coal Operations, adjacent to the proposed Eastside Junction Development. • Environmental Due Diligence for the Woodlands and Harrowdene Office Parks in Woodmead, Gauteng Province. • Visual Impact Assessment for the Helena Solar PV Plant, Northern Cape Province. • Visual Impact Assessment for the Nsoko Msele Integrated Sugar Project, Swaziland. • Visual Impact Assessments for the proposed construction of the Sendawo Solar 1, Sendawo Solar 2 and Sendawo Solar 3 Photovoltaic (PV) Energy Facilities near Vryburg, North West Province. • Visual Impact Assessments for the proposed construction of the Sendawo Substation and Associated 400kV Power Line near Vryburg, North West Province. • Visual Impact Assessments for the proposed construction of the Tlisitseng Solar 1 and Tlisitseng Solar 2 Photovoltaic (PV) Energy Facilities near Lichtenburg, North West Province. • Visual Impact Assessment for the proposed construction of the Tlisitseng 1 132kV Substation and associated 132kV Power Line near Lichtenburg, North West Province. • Visual Impact Assessment for the proposed construction of the Tlisitseng 2 132kV Substation and associated 132kV Power Line near Lichtenburg, North West Province.

	• Visual Impact Assessment for the proposed construction of the 3000MW PhilCo Green Energy Wind Farm and Associated Infrastructure near Richmond, Northern Cape Province. • Visual Impact Assessment for the proposed construction of the Aletta 140MW Wind Energy Facility neat Copperton, Northern Cape Province. • Visual Impact Assessment for the proposed construction of the Aletta 132kV Substation and associated 132kV Power Line near Copperton, Northern Cape Province. • Visual Impact Assessment for the proposed construction of the Eureka 140MW Wind Energy Facility and associated Infrastructure near Copperton, Northern Cape Province. • Visual Impact Assessment for the proposed construction of the Eureka 400kV Substation and 400kV Power Line neat Copperton, Northern Cape Province. • Visual Impact Assessment for the Proposed Construction of the Graskoppies Wind Farm near Loeriesfontein, Northern Cape Province. • Basic Visual Impact Assessment for the Proposed Construction of the Graskoppies Substation, Linking Substation and Associated 132kV Power Line near Loeriesfontein, Northern Cape Province. • Visual Impact Assessment for the Proposed Construction of the Hartebeest Leegte Wind Farm near Loeriesfontein, Northern Cape Province. • Basic Visual Impact Assessment for the Proposed Construction of the Hartebeest Leegte Substation, Linking Substation and Associated 132kV Power Line near Loeriesfontein, Northern Cape Province. • Visual Impact Assessment for the Proposed Construction of the Ithemba Wind Farm near Loeriesfontein, Northern Cape Province. • Basic Visual Impact Assessment for the Proposed Construction of the Ithemba Substation, Linking Substation and Associated 132kV Power Line near Loeriesfontein, Northern Cape Province. • Visual Impact Assessment for the Proposed Construction of the !Xha Boom Wind Farm near Loeriesfontein, Northern Cape Province. • Basic Visual Impact Assessment for the Proposed Construction of the !Xha Boom Substation, Linking Substation and Associated 132kV Power Line near Loeriesfontein, Northern Cape Province. • Visual Impact Assessment for the Proposed Construction of the 315MW Phezukomoya Wind Energy Facility near Noupoort, Northern Cape Province. • Visual Impact Assessment for the Proposed Construction of the 390MW Sankraal Wind Energy Facility near Noupoort, Northern Cape Province. • Visual Impact Assessment for the proposed development of the Phase 1 Kuruman Wind Energy Facility, Kuruman, Northern Cape Province • Visual Impact Assessment for the proposed development of the Phase 2 Kuruman Wind Energy Facility, Kuruman, Northern Cape Province • Basic Visual Impact Assessment for the proposed development of Supporting Electrical Infrastructure to the Phase 1 and Phase 2 Kuruman Wind Energy Facilities, Kuruman, Northern Cape Province

	• Visual Impact Assessment for the Proposed Tinley Manor South Banks Beach Enhancement Solution, KwaZulu-Natal Province. • Visual Impact Assessment for the proposed Mlonzi Hotel and Golf Estate Development, Near Lusikisiki, Eastern Cape Province. • Visual Impact Assessment for the Proposed Assagay Valley Development, KwaZulu-Natal Province. • Visual Impact Assessment for the Proposed Kassier Road North Development, KwaZulu-Natal Province. • Basic Visual Impact Assessment for the proposed construction of up to a 132kV Power Line and Associated Infrastructure for the Rooipunt Solar Thermal Power Plant near Upington, Northern Cape Province. • Basic Visual Impact Assessment for the proposed construction of up to a 132kV Power Line and Associated Infrastructure for the proposed Kalkaar Solar Thermal Power Plant near Kimberly, Free State and Northern Cape Provinces. • Surface Water Assessment for the Steve Tshwete Local Municipality, Mpumalanga Province. • Surface Water Delineation and Assessment for the proposed coal Railway Siding at the Welgedacht Marshalling Yard and associated Milner Road Upgrade near Springs, Ekurhuleni Metropolitan Municipality.

Please Refer to **Appendix 2** for CV's of the team members and specialists. Declaration of Independence (DoIs) from all specialists and the EAP Affirmations are included in **Appendix 3**.

1.6. Final Scoping Report (FSR) Structure

This FSR is structured as follows:

- Section 1 introduces the project and explains the objectives of the Scoping Phase. This section also outlines the applicable documentation and the relevance thereof. In addition, this section points out the specialist studies which were undertaken as part of the BA process for the original JMP development in 2009, as well the specialist reviews and assessment undertaken as part of this current EIA process. It also describes the authority consultation undertaken thus far, including comments received on the DSR. Furthermore, the section discusses the experience of the Environmental Assessment Practitioners (EAPs), as well as the specialists, who have contributed to the report.
- Section 2 presents the project background, current status and technical description of the project, including a discussion with regards to alternatives.
- Section 3 discussed the relevant legal requirements of the proposed project and describes relevant development strategies and guidelines.
- Section 4 provides an explanation to the need and desirability of the proposed project.
- Section 5 provides a description of the area in which the proposed project is intended to be located. Although the chapter provides a broad overview of the area, it is also specific to the application. It also contains descriptions of the proposed project site.
- Section 6 discusses the receiving environment from the perspective of the respective specialist reviews and assessments.

- Section 7 identifies potential impacts associated with the proposed project. The chapter further identifies these impacts per specialist review and/or assessment and provides mitigation measures to reduce identified impacts.
- Section 8 describes the Public Participation Process (PPP) undertaken during the Scoping Phase thus far. Issues and concerns raised by Interested and Affected Parties (I&APs) / Stakeholders and/or Organs of State / Authorities are provided.
- Section 9 provides a conclusion to the FSR and specialist recommendations. This section also touches on any further assessments which might be required.
- Section 10 describes the plan of study for the environmental impact reporting phase of the EIA process (i.e. the way forward for this EIA study and includes the Plan of Study for the EIA). The Plan of Study for the EIA phase includes a description of the aspects to be assessed as part of the EIA process, aspects to be assessed by specialists, a description of the proposed method of assessing duration and significance and suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored as per appendix 2 (2)(1)(h) of the EIA Regulation, 2014 as amended.
- Section 11 lists references indicated in the FSR.

2. TECHNICAL DESCRIPTION

2.1. Project Background

The GIDZ was founded in 2009 as a subsidiary of the GGDA and was given the responsibilities to develop and operate the designated IDZ within the grounds of the ORTIA. Located within the ORTIA (Portion 282 of the Farm Witkoppie No. 64 – IR), the proposed development entails identifying, designing, packaging and enabling focused export-driven manufacturing and beneficiation programmes that will increase industrialization and manufacturing capability in the region. Also, the project will be focused on the identification of jewellery manufacturers for export and will include enterprise mentorship between established and upcoming jewellery manufacturers. The JMP furthermore aims to increase employment opportunities and foreign direct investment in the jewellery manufacturing sector.

As mentioned, a BA process was undertaken in 2009 to obtain EA for the development of the original JMP site. The EA was subsequently issued by the DEA and covers an area of approximately 6.5ha. Construction at the JMP site is still currently underway (**Appendix 12**), however, construction at the proposed MetCon facility (as per this EA application) has not yet commenced. This will only commence once the necessary approvals / authorisations have been obtained.

The proposed MetCon facility will occupy an area of approximately 0.55ha within the existing JMP site and will specialise in extracting precious metals from secondary metal sources and manufacturing jewellery secondary materials through a chemical treatment refining process. A layout plan illustrating the proposed MetCon facility is provided in **Appendix 5**. It should be noted that the additional 1ha area along the north-western boundary of the JMP site, which the GIDZ originally proposed to include in this EIA process, is no longer being considered for this proposed project due to uncertainties surrounding this area. As such and in-line with the objectives of the JMP project, the proposed MetCon facility has been identified and incorporated as part of the significant and required facilities to compliment the JMP project. As mentioned, construction of the proposed MetCon facility has not yet commenced. This will only commence once the necessary authorisations / approvals have been obtained.

2.2. Current Status of the Project

While construction at the JMP site has commenced as per the original EA, the proposed MetCon facility has not yet been constructed pending this EIA process and the issuing of an EA by the DEA.

The activities to be undertaken in the MetCon facility trigger sub-category 4.2 (combustion installations) and sub-category 4.17 (precious and base metal production and refining) in terms of S21 of the NEM:AQA Act, 2004 (Act No. 39 of 2004) and will therefore also require an AEL. Therefore, the MetCon facility consequently triggers Activity 6 of GN R. 325 Listing Notice 2 of the 2014 EIA Regulations (as amended) in terms of the NEMA, 1998 (Act No. 107 of 1998). The original EA for the JMP site cannot be amended to include this activity as an EIA process is required. As such, an EA is required specifically for the development and inclusion of the proposed MetCon facility in the existing JMP site.

2.3. Technical Project Description

The proposed MetCon facility will primarily specialize in extracting precious metals from secondary gold materials (i.e. dorè sourced from other refineries and mines), provide services to the jewellers in the JMP and the local South African market, and beneficiate gold, silver and platinum into finished products for export. MetCon will also undertake a minor process that will involve roasting a small amount of jeweller sweeps (mix of papers, bench sweeps, carpets and polishing residues) from manufacturing jewellers, to separate out the metallic components which will then be refined through MetCon's primary refining process. It should be noted that this minor roasting process will constitute about 1% of MetCon's turnover.

In the primary refining process (**Figure 2-1**), the main acid solution, known as aqua regia, will comprise acids, namely hydrochloric and nitric acid, used individually and as blends for the dissolution and refining of the precious metals. Various chemicals such as, Sodium Hydroxide, Borax and Sodium Metabisulphate are also required in the process for neutralization and separation. Chemicals such as 25% Ammonia and ethanol will be used in MetCon's Laboratory.

Metals will be chemically refined and concentrated by means of selective dissolution and recovery to separate the different components as shown in **Figure 2-1** of the refining process indicating inputs, outputs and emissions. The chemistry of this refining process consists of using an aqua regia solution, which is a combination of commercial nitric acid and hydrochloric acid mixed at specific ratios. Nitric acid is a powerful oxidizer and will be used to dissolve to virtually undetectable amounts of certain precious materials. The hydrochloric acid provides a ready supply of chloride ions (Cl-), which reacts with the ions of the precious materials to produce tetrachloroaurate (III) anions in a solution. The reaction with hydrochloric acid is an equilibrium reaction which favours formation of chloroaurate anions ($AuCl_4$-). This results in a removal of ions of the precious materials from the solution and allows further oxidation to take place. The precious material dissolves to become chloroauric acid. In addition, precious materials may be dissolved by the free chlorine present in aqua regia.

Upon mixing the metals with aqua regia, chemical reactions occur resulting in the volatile products nitrosyl chloride and chlorine. Nitrosyl chloride can further decompose into nitric oxide and chlorine. This dissociation is equilibrium-limited. Therefore, in addition to nitrosyl chloride and chlorine, the fumes over aqua regia contain nitric oxide. Because nitric oxide reacts readily with atmospheric oxygen, the gases produced also contain nitrogen dioxide, NO_2. These gaseous emissions are scrubbed in a caustic soda (sodium hydroxide) scrubber before being released into atmosphere. The resultant scrubber solution is neutralised to a pH of 7 before been disposed using the services of an approved waste collector. Liquid

and solid effluent generated from the refining activities will be treated and the remaining sludge and filter cake sent for further refining by other refiners. Once refined, the precious metals will be cast into ingots using an induction furnace and then assayed to determine the purity of the metal. Emissions from the melting and casting process will be captured in a fume hood, then extracted via a baghouse filter to atmosphere. All air emissions arising from the various processes are extracted through the caustic scrubber and the baghouse filtration system, thereby meeting emissions standards.

In the minor process, a small amount of jeweller sweeps (mix of papers, bench sweeps, carpets and polishing residues) from manufacturing jeweller operations, will be processed by placing the jewellers sweeps in a gas-fired roasting oven and transformed them into ash within the roaster oven. It is important to note that, in this minor process, the burning of the raw material/jewellers sweep in the roaster oven is a key part of the process to separate out the precious metals in the sweeps. The roaster oven extraction unit will be equipped with a baghouse filter to capture particles that are emitted from the process. The ash will then be removed from the oven and de-magnetized to remove any steel components contained within the ash. The remaining ash will then be put through a screening process to separate the metals and the ash. Once screening is complete, two (2) samples will be taken, the customer will be paid out and once enough material has accumulated, this will be sent to a third party.

In terms of the treatment of effluent at the proposed facility, water coming from the refining process will be treated with a grey water treatment plant which consists of two (2) main components:

- 1 tank complete with agitator to stir the solution to be neutralised; and
- 1 Filter press.

A conceptual illustration of the grey water treatment plant is provided below.

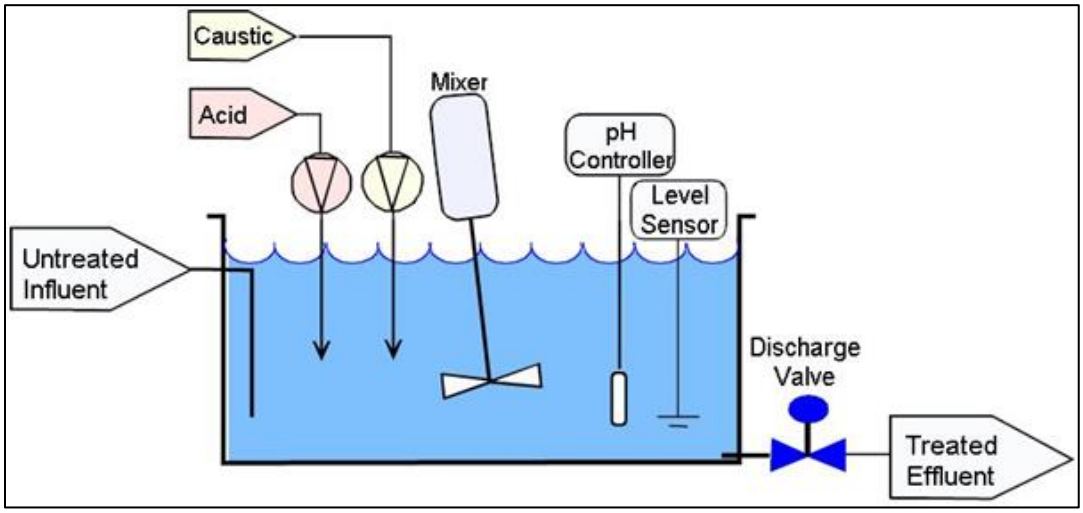

Figure 2-1. Conceptual Illustration of Grey Water Treatment Plant

The pump is provided with an electronic level control probe for the automatic starting and stopping of the plant. The system includes a treatment tank, mixer, acid and caustic metering pumps, a pH probe and controller, a level sensor, and a discharge valve. The influent flow enters the tank anywhere that is convenient and exits the tank via gravity near the bottom wherever a port can be conveniently located.

In the system, the untreated influent fills the tank to the high-level point as measured by the level sensor. Once the tank is full the pH adjustment process begins. The large batch volume is treated in one (1) cycle. Once the tank contents are within the acceptable discharge range (PH of 8) and have been for a minimum period of time, the effluent Discharge Valve opens thereby draining the tank via gravity to the filter press feed pump. Once the tank is drained the cycle repeats. The filter press is used to filter the neutralised solutions and retain the copper, zinc etc hydroxides. The grey water from the filter press will be transferred to the grey water tanks where it will be collected for safe disposal by a recognised waste disposal company and a certificate of safe disposal must be issued.

The effluent treatment process described above is detailed in the process diagram below.

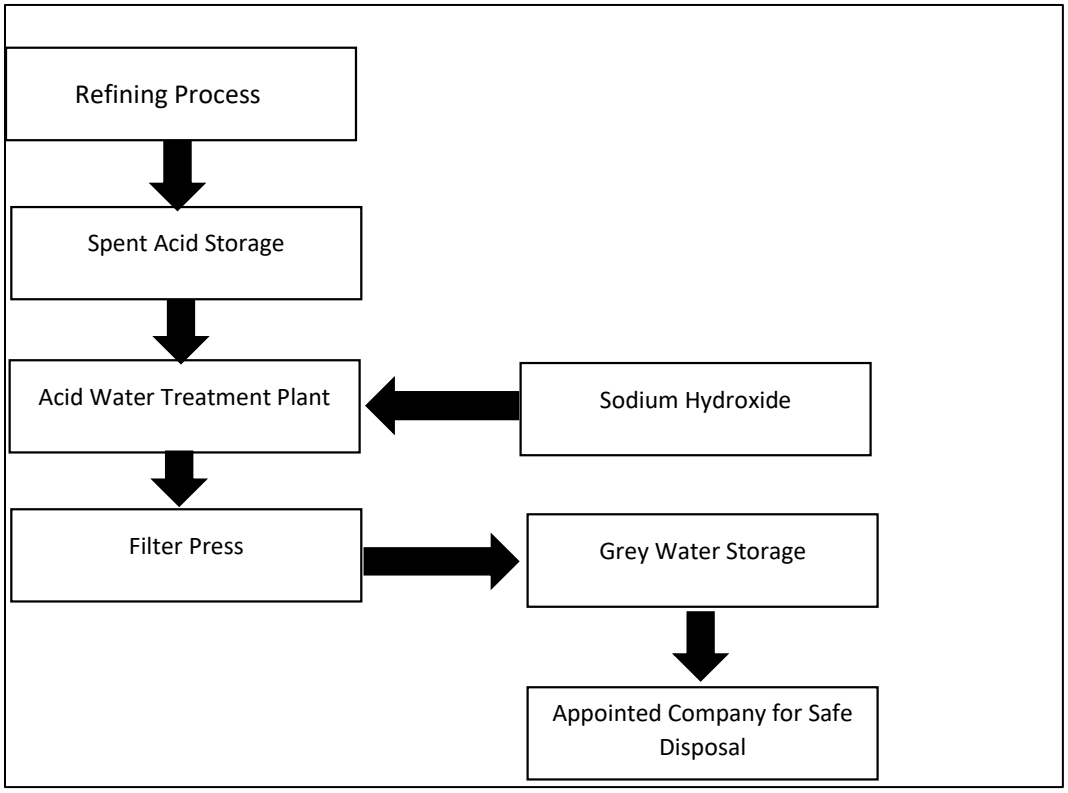

Figure 2-2. Process Flow Diagram Illustrating Effluent Treatment Process

In summary, MetCon plans to operate a variety of processes and activities on the site which will aid in achieving the desired productions. These will include:

- Chemical refining and concentration of precious metals.
- Roasting of jewellers' waste materials, known as jewellers sweep.
- Casting of precious metals into ingots by means of induction furnace.
- Manufacture of Jewellery
- Manufacture of products for use by manufacturing jewellers
- Cooling water by means of cooling towers.
- Storage of liquid and solid raw materials.
- Caustic soda chemical scrubbing of acid gas emissions from the chemical refining process.
- Collection of dust and particulates from the roaster and induction furnace by means of a bag filter.

The products from MetCon's facility will include refined precious metals of gold, silver and platinum which will be beneficiated and chemically refined into added value finished products such as minted bars, 1-kilogram bars, as well as jewellery pieces. Jewellery pieces and products for use by manufacturing jewellers will be sold into South Africa and some of the finished jewellery will be exported. Surplus gold will be melted into 400-ounce (oz) bullion bars and exported.

A process flow diagram of operations at the proposed MetCon Refinery Facility within the JMP is provided in **Figure 2-3** below.

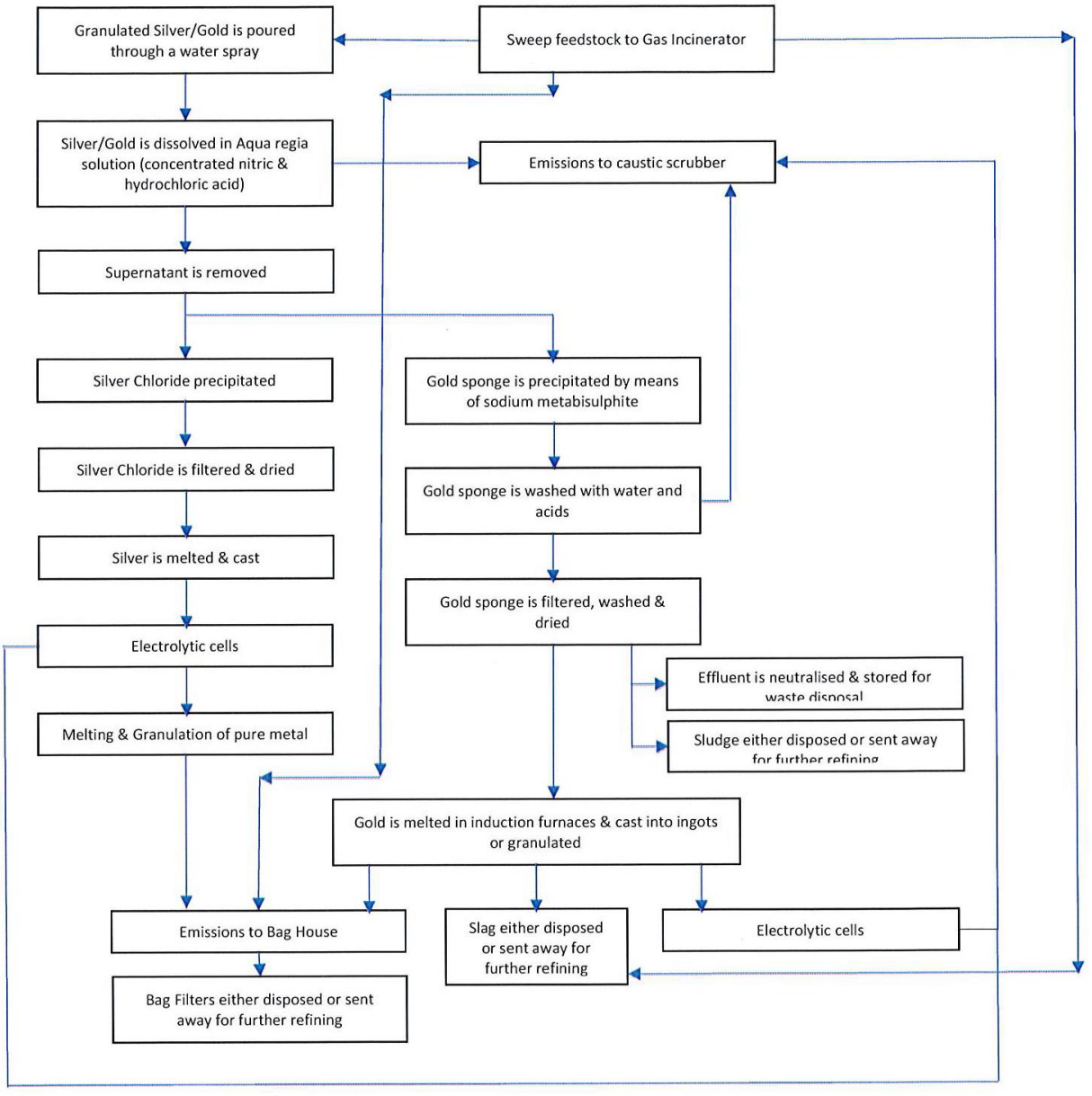

Figure 2-3: Process Flow Diagram of Operations at proposed MetCon Refinery Facility within JMP

It should be noted that the following quantities (in Litres [ℓ]) of hazardous materials may be stored and handled at the proposed MetCon facility:

- 10 000 ℓ of nitric acid (HNO_3);
- 20 000 ℓ of hydrochloric acid (HCL);
- 20 000 ℓ of sodium metabisulfite (SMB); and
- 20 000 ℓ of caustic solution.

It should however be noted that these are not the total volumes of the hazardous substances but rather the total capacities of the storage tanks which the materials will be stored in. The volumes of the hazardous materials being stored and handled on site will thus be less than the above-mentioned quantities.

In addition to the above, the following will also be stored and handled at the proposed facility:

- Ten (10) x 25 ℓ Sulphuric Acid (H_2SO4) drums/cans;
- Five (5) x 25 ℓ Hydrogen peroxide (H_2O_2) drums/cans; and
- Five (5) x 25 ℓ Ethanol Alcohol (C_2H_5OH) drums/tanks.

Borax, which is not hazardous, will also be handled. This results in a total combined capacity of approximately 70.5m^3, which is below the thresholds in terms of the 2014 EIA Regulations, as amended. As such, no authorisations are required for these materials. However, should authorizations be required, these will be applied for accordingly. It should also be noted that all hazardous material will be contained within bunded areas.

2.4. Alternatives

As per Chapter 1 of the 2014 EIA Regulations (as amended), feasible and reasonable alternatives are required to be considered during the EIA process. Alternatives are defined at "*different means of meeting the general purpose and requirements of the activity*" These alternatives may include:

a. The property on which or location where it is proposed to undertake the activity;
b. The type of activity to be undertaken;
c. The design or layout of the activity;
d. The technology to be used in the activity;
e. The operational aspects of the activity; and
f. The option of not implementing the activity.

Each of these alternatives is discussed in relation to the proposed project in the sections below:

2.4.1. The property on which or location where it is proposed to undertake the activity

No feasible or reasonable alternatives are possible for the proposed MetCon project. The JMP site has been systematically identified as part of the National Strategic Infrastructure Projects (SIPs) and falls under the Aerotropolis Master plan developed by the host City of Ekurhuleni (CoE). It should further be noted that the Aerotropolis Master plan is part of the South African Special, Economic and Industrial Development Zones (SEZs), which are part of the SIPs. As such, the proposed MetCon facility can be considered as a key facility to be incorporated into the JMP site.

It should further be noted that the proposed JMP development falls under the OR Tambo Industrial Development Zone (IDZ) (Gauteng) of the South African SEZs. The OR Tambo IDZ aims to develop land around OR Tambo International Airport to stimulate economic development through the use of the IDZ

mechanism. The OR Tambo IDZ supports the growth of the beneficiation of precious metals and minerals sector, with a focus on light, high-margin, export-oriented manufacturing of South African precious and semi-precious metals. Details regarding the above-mentioned IDZ and SEZ is included in **Appendix 1**. The inclusion of the proposed MetCon facility within the JMP site is therefore considered to be in line with the development plans and/or frameworks for the proposed area.

Development of the JMP will further transform the ORTIA property into an investment. Not only will the development provide formalized employment after construction, but it will provide employment during its construction phase. The development of the JMP would be able to provide approximately 3000 jobs during construction and about 500 specialized jobs after construction. The numbers for employment will depend on the market appetite. It should however be stressed that this is the potential employment opportunities created as a result of the construction and operation of the entire JMP and does not reflect employment opportunities associated with the construction and operation of the proposed MetCon facility. In terms of the proposed MetCon facility, it is envisaged that the new facility will have approximately 85 employees during the operational phase. In addition, it is anticipated that approximately 500 – 650 employees will be present throughout the construction phase.

It should be noted that there is currently an application to re-zone the JMP site and establish it as a township. There are however still uncertainties surrounding this process and this is an issue/concern which has been raised by stakeholders during a Focus Group Meeting (FGM) which was undertaken during the scoping phase public participation process of this EIA process. This issue/concern has been raised with the GIDZ and confirmation regarding this will be provided in the DEIAr, if possible. Minutes of this meeting, as well as any other meetings which were undertaken (such as the Public Meeting and OoS/Authority FGM), are included in **Appendix 7G**.

2.4.2. The type of activity to be undertaken;

There are no feasible and reasonable alternatives for the type of activity to be undertaken by the MetCon facility. As outlined in the sections above, the proposed MetCon facility will specialize in extracting precious and base metals from secondary gold materials (i.e. dorè sourced from other refineries and mines) through a chemical treatment refining process. In addition, the proposed MetCon refinery facility is considered to be in line with the services which the JMP would want to offer and is thus in line with the ultimate objective of the JMP. Due to all the above mentioned, no other operational alternatives were considered or deemed applicable.

2.4.3. The technology to be used in the activity;

There are no feasible and reasonable alternatives for the technology used in the activity as these will be utilizing some of the most recent technology available for this purpose.

2.4.4. The operational aspects of the activity; and

No operational alternatives are applicable for the development as MetCon has standard operational activities relevant to the industry. In order to meet the perceived demand/outputs, the facility may be required to operate up to 24 hours a day. This is however unlikely. Also, double shifts may need to be implemented with each staff maintaining up to 12 hours a shift.

2.4.5. No-go Alternative

In addition to the refining processes, the MetCon facility will be aiding in the recovery of precious metals from jewellers secondary materials. The MetCon facility will contribute in the socio-economic factors or the surrounding community while enhancing the broader economic goals of the GIDZ development project. Should the "no-go" option be selected, the above-mentioned socio-economic benefits would not be realized.

3. LEGAL REQUIREMENTS

3.1. Key Legal and Administrative Requirements Related to Proposed Project

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.

Environmental Law in South Africa has been strengthened by the inclusion of an environmental right in terms of Section 24 of the Constitution. It encompasses the preservation and conservation of the country's natural resources and includes the legal stipulations regarding economic and social issues relating to South Africa's biodiversity. The Section also provides a mandate on the State to ensure environmental protection and ecologically sustainable development. The aforesaid is achieved by way of laws and regulations. Private individuals, corporate entities and public authorities need to comply with such laws and regulations by way of putting the appropriate measures in place and, where compliance is lacking, enforcement mechanisms. Courts and the judiciary further play a key role in ensuring the enforcement of environmental rights. Before the State fulfils its mandate in terms of Section 24(b) of the Constitution, it will have to ensure that there is a balance, not only in environmental considerations, but also social and economic considerations, namely sustainable development. To achieve sustainability in most cases, the economic inequalities need to be reduced and social welfare concerns need to be addressed.

The environmental right, in terms of the Constitution, is interpreted to have a two-fold purpose. The first part guarantees a healthy environment to every person. The second part mandates the State to ensure compliance with the first part. The State is prohibited from infringing on the right to environmental protection and is further required to provide protection against any harmful conduct towards the environment.

According to Section 24 of the Constitution, everyone has the right –

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

This Section also incorporates International Environmental Law which includes the duty of care and that the "Polluter" will pay for polluting the environment, which creates liability for environmental damage caused.

South Africa has numerous goals to achieve sustainability in different fields, namely; ensure availability and sustainable management of water and sanitation for all; ensure access to affordable, reliable, sustainable

and modern energy for all; take urgent action to combat climate change and its impacts (in line with the United Nations Framework Convention on Climate Change); conserve and sustainably use the oceans, seas and marine resources for sustainable development as well as protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forest, combat desertification, and halt and reverse land degradation and halt biodiversity loss (http://www.polity.org.za/article/environmental-right-in-terms-of-the-constitution-2018-02-14).

In light of the above, the proponent will need to adhere to Section 24 of the Constitution as far as possible in order to ensure environmental protection and ecologically sustainable development with regards to the proposed project. In addition, the proponent will need to take reasonable steps to prevent air, water, food or soil pollution as a result of the proposed project.

3.1.2. The National Environmental Management Act (NEMA) (Act No. 107 of 1998) – NEMA EIA Requirements

Due to the fact that the proposed project requires an EA, the National Environmental Management Act (NEMA) (Act No. 107 of 1998) needs to be considered.

The NEMA was promulgated in 1998 but has since been amended on several occasions from this date. This Act replaces parts of the Environment Conservation Act (ECA) (Act No. 73 of 1989) with exception to certain parts pertaining to Integrated Environmental Management.

The act intends to provide for:

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

Sections 24 and 44 of the NEMA, 1998 (Act No. 107 of 1998), as amended, make provision for the promulgation of regulations that identify activities which may not commence without an EA, the result being that NEMA now governs the EIA process with the said promulgation of the EIA Regulations in December 2014. This EIA has therefore been undertaken in accordance with the NEMA EIA Regulations, 2014, as amended on 07 April 2017, contained in four (4) Government Notices (GN R. 324, 325, 326, and 327).

The listed activities triggered by the proposed MetCon facility include Listed Activity 6 in terms of the 2014 EIA Regulations Listing Notice 2 of the NEMA, 1998 (Act No. 107 of 1998) (NEMA), as amended. In terms of these Regulations, a full EIA is required for the proposed development based on the triggered activity listed in **Table 3-1** below.

Table 3-1. Listed Activities in terms of GN R. 325 triggered by the proposed MetCon facility

Listed activity as described in Listing Notice 2 of GN R. 325	**Description of project activity that may trigger the listed activity**
Listed Activity 6:	The incorporation of one (1) of the facilities (namely the MetCon refinery facility) within the JMP requires

The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding– i. activities which are identified and included in Listing Notice 1 of 2014; ii. activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; iii. the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or iv. (iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.	an AEL from the City of Ekurhuleni (CoE) before the facility can be operational. In order for them to apply for and AEL they are required to undertake an EIA and obtain an EA.

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

Due to the fact that the operation of the proposed MetCon facility will result in emissions and impact on air quality, the National Environmental Management: Air Quality Act (NEM:AQA) (Act No. 39 of 2004) will be applicable for this EIA process.

Previously air pollution regulation and air quality management in South Africa was informed and regulated by the Atmospheric Pollution Prevention Act (APPA) (Act No. 45 of 1965) (APPA). As such any company that undertook one (1) of the scheduled processes were required to have an APPA registration certificate. However, over time concerns around ambient air quality arose and as such the APPA (Act No. 45 of 1965) was delisted and replaced with the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA). NEM:AQA defined the process of acquiring and implementing AEL.

As a result of the legislation changes, companies that had registered for an APPA registration certificate had three (3) years to apply for an AEL and the department would convert their existing APPA into an AEL. All companies requiring an AEL had until the 31 March 2013 to apply for an AEL otherwise they would trigger Section 24G of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), which defined and detailed the processes to be followed when a facility is in contravention of current legislations.

The NEM:AQA (Act No. 39 of 2004) and as amended Act No. 20 of 2014 has shifted the approach of air quality management from source-based control to receptor-based control. The main objectives of the Act are to:

- Give effect to everyone's right 'to an environment that is not harmful to their health and well-being'
- Protect the environment by providing reasonable legislative and other measures that (i) prevent pollution and ecological degradation, (ii) promote conservation and (iii) secure ecologically

sustainable development and use of natural resources while promoting justifiable economic and social development.

The Act makes provision for the setting and formulation of National ambient air quality standards for 'substances or mixtures of substances which present a threat to health, well-being or the environment'. More stringent standards can be established at the provincial and local levels.

The control and management of emissions in the air quality assessment (AQA) relates to the listing of activities that are sources of emissions and the issuing of emission licenses. 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 DEA and atmospheric emission standards have been established for each of these activities. These listed activities now require an atmospheric emission license to operate. The issuing of emission licenses for Listed Activities will be the responsibility of the Metropolitan and District Municipalities.

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 atmospheric emission licenses

In terms of Section 21 of the NEM:AQA Act, 2004 (Act No. 39 of 2004), as amended, the MetCon facility is required to have an AEL to operate – as it triggers sub-category 4.2 (combustion installations) and sub-category 4.17 (precious and base metal production and refining) of Category 4 for a Metallurgical Industry.

Table 3-2. NEM:AQA Government Notice R. 893.

NEM: AQA Government Notice R893				
Listed Activity Number	**Category of Listed Activity**	**Sub-category of the Listed Activity**	**Name of the Listed Activity**	**Description of the Listed Activity**
1	4. Metallurgical Industry	4.2	Combustion Installations	Combustion installations not used for primarily for steam raising and electricity generation (except drying).
2	4. Metallurgical Industry	4.17	Precious and Base Metal Production and Refining	Production or processing of precious and associated base metals through chemical treatment (Excluding Inorganic Chemicals-related activities under Category 7).

3.1.4. National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA), as amended

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;
- to provide for institutional arrangements and planning matters;
- to provide for national norms and standards for regulating the management of waste by all spheres of government;
- to provide for specific waste management measures;
- to provide for the licensing and control of waste management activities;
- to provide for the remediation of contaminated land;
- to provide for the national waste information system; and
- to provide for compliance and enforcement; and to provide for matters connected therewith.

The objectives of this Act are:

a) to protect health, well-being and the environment by providing reasonable measures for –
    i. minimising the consumption of natural resources;
    ii. avoiding and minimising the generation of waste;
    iii. reducing, re-using, recycling and recovering waste;
    iv. treating and safely disposing of waste as a last resort;
    v. preventing pollution and ecological degradation;
    vi. securing ecologically sustainable development while promoting justifiable economic and social development;
    vii. promoting and ensuring the effective delivery of waste services;
    viii. remediating land where contamination presents, or may present, a significant risk of harm to health or the environment; and
    ix. achieving integrated waste management reporting and planning;
b) to ensure that people are aware of the impact of waste on their health, well-being and the environment;
c) to provide for compliance with the measures set out in paragraph (a); and
d) 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.

The waste act introduced the concept of dealing with waste according to a waste management hierarchy. The hierarchy approach places emphasis on waste reduction, followed by re-use, then recycling and composting, recovery for energy production and disposal as the last resort. In terms of NEM:WA, waste management activities that are listed in regulations published under NEM:WA may not be undertaken without a WML. The listed activities for which a WML is required are contained in GN R921 published in Gazette No 37083 on the 29th of November 2013, as amended on the 11th of October 2017. Category A activities require a WML and a BA must be conducted, and Category B activities require a WML and a full Scoping and EIA must be conducted.

In the case of the proposed MetCon facility, waste materials (also referred to as jewellers sweep) will be acquired from jewellery stores. The jewellers sweep is photographed and weighed and then placed in a gas-fired roasting oven with no other preprocesses. Furthermore, MetCon plans to install abatement equipment such as baghouses and scrubbers for the particulate matter (PM) and effluent waste water.

However, as outlined in the Technical Project Description section above, the PM as well as the slag that will be produced as by-products are valuable and will be sent for further processing and refining.

Despite the fact that the proposed MetCon facility will be dealing with waste, the activities associated with the operation of this facility do not require any waste related permits, licenses or authorizations.

3.1.5. National Heritage Resources Act (NHRA) (Act No. 25 of 1999)

In terms of Section 35(4) of the National Heritage Resources Act No. 25 of 1999 (NHRA), no person may, without a permit issued by the responsible heritage resources authority—

a) Destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects or use such equipment for the recovery of meteorites.

The South African Heritage Resources Agency (SAHRA), has been established to manage the national estate and make provision for the establishment of provincial heritage resources authorities to manage provincial and local heritage resources in terms of section 4(d) of the NHRA (Act No. 25 of 1999). As such, all authorities, bodies and persons, including SAHRA, performing functions of exercising powers in terms of this Act for the management of heritage resources must recognize the principles set out in section 5 and 6 of the NAHRA. Various sections in Part 1 of Chapter II of the NAHRA make provision for the protection and management of South African heritage resources. The following should be noted:

a) Section 27(18): “No person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site”.
b) Section 28(3): “No person may damage, disfigure, alter, subdivide or in any other way develop any part of a protected area unless, at least 60 days prior to the initiation of such changes, he or she has consulted the heritage resources authority which designated such area in accordance with a procedure prescribed by that authority”.
c) Section 29(10): “No person may damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of a provisionally protected place or object without a permit issued by a heritage resources authority or local authority responsible for the provisional protection”.

As such, Chapter II, III, IV, V, and VI of the NAHRA Regulations, 2000, as amended, make provision for the application process of permits prior to a development impacting on any heritage resource.

The GIDZ JMP site is not regarded as a SAHRA conservation area. In addition, an overview heritage impact study has been conducted to explore how the proposed development may impact any heritage resources as well as identifying whether or not a permit may be required as per the NAHRA Act. In terms of this study, no evidence for any buildings or heritage sites could be found on any of the old depictions of the study area.

Furthermore, the walkthrough also did not reveal any evidence for archaeology or heritage, even though sections of intact soil profiles that were exposed by construction were scrutinised during the walkthrough. As a result, it is the specialist's professional opinion that there is no need for a Heritage Impact Assessment on this project. The Heritage Screening Assessment which was undertaken as part of this EIA process is included in **Appendix 6**.

In addition, SAHRA will be notified about the EIA process. All relevant impact assessment documents will be made available to SAHRA, giving them the opportunity to comment on the project. Any comments, or recommendations in this regard will be included and incorporated in the final EIA report.

Despite the fact that no evidence for any buildings or heritage sites could be found on any of the old depictions of the study area and a walkthrough also did not reveal any evidence for archaeology or heritage, this Act is being included should any heritage or archaeological sites be discovered during construction, in which case this Act would be applicable.

3.1.6. National Water Act (NWA) (Act No. 36 of 1998, as amended)

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides a framework to protect water resources against over exploitation. It is also in place to ensure that aquatic environment needs, socio-economic and economic development needs are all met. It is important to note that water resources are protected under the Act. The water resources, in terms of the NWA, is defined as watercourse, surface water, estuary or aquifer. A watercourse is defined as a river or spring, a natural channel in which water flows regularly or intermittently, or a wetland, lake or dam into which, or from which water flows. '*Protection*' in relation to a water resource entails the following:

- Maintenance of the quality of the water resource to the extent that the water use may be used in a sustainable way;
- Prevention of degradation of the water resource; and
- The rehabilitation of the water resource.

In terms of Section 19 of the NWA, owners / managers / people occupying land on which any activity or process undertaken which causes or is likely to cause pollution of a water resource must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. These measures may include (inter alia):

- measures to cease, modify, or control any act or process causing the pollution;
- comply with any prescribed waste standard or management practice;
- contain or prevent the movement of pollutants;
- remedy the effects of the pollution; and
- remedy the effects of any disturbance to the bed and banks of a watercourse.

In the case of the MetCon facility, a surface water / freshwater specialist review has been conducted to explore how the proposed development may impact on surface water resources with a specific focus on the wetlands as protected by the Act. Based on the findings of the impact assessment undertaken as part of the specialist review, it was determined that the construction and operation of the proposed precious metal refinery facility poses a low significance of impact on the freshwater resources of the area. Due to the distance between the activities and the watercourses in the area, and the presence of existing

developments between the study area and watercourses of the area, limited to negligible impact from the proposed activities on the wetlands is expected to occur.

It should however be noted that fulfilment of Regulation GN R. 509 of 2016 needs to be considered for all wetland areas within 500m of the proposed development site. Due to the fact that the proposed site is located within 500m of a wetland, the Department of Water and Sanitation (DWS) Risk Assessment Matrix as promulgated in Regulation GN R. 509 of 2016 and the appropriate water use authorisation process (namely a General Authorisation) will be undertaken as part of the EIA process. This will include facilitating a freshwater verification and General Authorisation (GA) in terms of the NWA, 1998 (Act 36 of 1998). This process is detailed below.

3.1.5.1 Proposed Method of Assessment

A detailed desktop assessment will be undertaken in which all available background information will be reviewed. All relevant national and provincial databases will be reviewed and searched as required, in order to further define the environmental sensitivities of the receiving environment. As part of the desktop studies all freshwater areas will be mapped based on desktop delineation methods.

- **Wetland Ecology:**
  - A brief site visit will be undertaken whereby, all freshwater feature(s) within 500m of the study area as provided by the client will be assessed, and the following will be undertaken:
  - Delineation of freshwater features within 500m of the study area will be undertaken utilising desktop methods, with limited field verification thereof (access dependent);
  - All freshwater features identified during the field assessment will be mapped using a handheld GPS and the use of ARC GIS 10.1 software;
  - A freshwater resource classification assessment will be undertaken according to the Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland systems (Ollis et al., 2013);
  - Applicable buffer zones and/or zones of regulation according to relevant legislation or provincial guidelines will then be delineated around the freshwater resources. The applicable buffer maps will be provided;
  - The wetland services provided by the water resources within the study area will be assessed according to the method of Kotze et al (2009) in which services to the ecology of the site will be defined and services to the people of the area will be defined;
  - The wetland Present Ecological State (PES) will be assessed according to indices such as the Wet-Health / Index of Habitat Integrity as advocated by Macfarlane et al., (2008) and DWA (2007), respectively as applicable;
  - The wetland EIS will be determined based on the method described by Rountree & Kotze, (2013);
  - The Risk Assessment as promulgated in General Notice 509 of 2016, as it relates to the National Water Act, 1998 (Act 36 of 1998) will be undertaken to determine if a General Authorisation (Low Risk) can be applied for the proposed activities; and
  - Recommendations on management and mitigation measures (including opportunities and constraints) with regards to the development/operation in order to improve manage and mitigate impacts on the freshwater ecology of the area will be provided. All results will be compiled into a brief fact-presenting verification report.

- **Water Use Authorisation**

As of January 2018, all water use applications are to be submitted via the e-WULA portal, whereby three (3) phases must be undertaken (each phase requires approval from the DWS before progressing to the next phase). On review of the proposed plans it is anticipated that only a General Authorisation will be required (as applicable for Low Risk activities, as identified in the Risk Assessment Matrix), which is inclusive of only Phase 1 and 2:

1. **Pre-application (I)** – this includes an overview of the application, including water uses triggered, applicant details as well as property details. A pre-consultation meeting with the DWS will be held prior to logging any information on the e-portal in order to ascertain all information requirements.
2. **Application (II)** – This phase required more detail about the water use, including application forms, all supporting documentation (I.e. title deeds, company registration forms etc). A site visit will be undertaken with the relevant case officer at the end of this phase.

The Surface Water / Freshwater Specialist Review which was undertaken as part of this EIA process is included in **Appendix 6**.

3.1.7. National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004 as amended)

The aim of the National Environmental Management: Biodiversity Act 2004, (Act No. 10 of 2004) (NEM:BA), within the framework of NEMA, is to provide for:

- The management and conservation of biological diversity within South Africa, and of the components of such biological diversity;
- The use of indigenous biological resources in a sustainable manner; and
- The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources.

The South African National Biodiversity Institute (SANBI) was established by the NEM:BA with its purpose being to report on the status of the country's biodiversity and the conservation status of all listed threatened or protected species and ecosystems. Chapter 5 of NEM:BA provides a range of subsections for the protection of ecosystems and for the protection of species that are threatened or in need of protection, including a prohibition on carrying out a "restricted activity" involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7. Lists of critically endangered, endangered, vulnerable and protected species have been published and a permit system for listed species has been published under Government Notice R. 151 of 2004, as amended.

While a portion of the GIDZ JMP development site is located within an Ecological Support Area (ESA) as identified in the South African National Biodiversity Institute (SANBI) Gauteng Conservation Plan (2011) (as indicated in **Figure 6.1**), a preliminary biophysical desktop study which was conducted during the BA concluded that the proposed JMP project has *"no fatal flaws*" to the environment. In addition, the closest Critical Biodiversity Area (CBA) to the JMP site is approximately 500m east of the JMP site and is thus located approximately 500m outside the site boundary. It should however be noted that the whole JMP development site has subsequently been cleared for construction which began in 2013 approximately two (2) years after the site was issued with an EA. Therefore, an ecological study is regarded as insignificant for the site which no longer has any vegetation.

3.1.8. Conservation of Agricultural Resources Act No. 43 of 1983

The Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983) controls the utilization of natural agricultural resources in South Africa. The Act promotes the conservation of soil, water sources and vegetation as well as the combating weeds and invader plants. The Act has been amended in part by the Abolition of Racially Based Land Measures Act (Act No. 108 of 1991).

The primary objective of the Act is to conserve natural agricultural resources by:

- maintaining the production potential of land;
- combating and preventing erosion and weakening or destruction of the water resources;
- protecting vegetation; and
- combating weeds and invaders plants.

It is important to note that an agricultural impact assessment as part of the studies that explore any potential impacts on the agricultural production potential of the proposed site was not undertaken during the BA. While construction at the JMP site has already commenced and this study may be regarded negligible for this EIA process, a Soil and Land Capability overview study has been conducted to confirm any impacts that the JMP project may potentially have on the environment where it is located.

In terms of the Soil and Land Capability overview study, it was found that the study area is located within a highly industrialised and urbanised area with no active agricultural practices within or in the immediate vicinity of the study area. The eastern half of the study area is situated within the Environmental Management Framework (EMF) Zone 5 (Industrial and large commercial focus zone) (EMF, 2015). The proposed MetCon facility falls within the EMF Zone 5. In addition, the study area is currently under development and the soils have been anthropogenically transformed, thus these soils are likely to have little to no bearing on agricultural productivity. Thus, from a soil, land use and land capability point of view, the impact significance on the loss of high agricultural potential soils is anticipated to range between very low and negligible. Based on the findings of the impact assessment, the construction and operation of the proposed precious metal refinery facility poses a low significance of impact on soil, land use and land capability.

3.1.9. National Road Traffic Act (NRTA) (Act No. 93 of 1996, as amended)

The National Road Traffic Act, 1996 (Act No. 93 of 1996) (NRTA), provides for all road traffic matters and is applied uniformly throughout South Africa. The Act enforces the necessity of registering and licensing motor vehicles. It also stipulates requirements regarding fitness of drivers and vehicles as well as making provision for the transportation of dangerous goods.

All the requirements stipulated in the NRTA will need to be complied with during the construction and operational phases of the proposed development.

3.1.10. Civil Aviation Act (Act No. 13 of 2009)

The Civil Aviation Act, 2009 (Act No. 13 of 2009), controls and regulates aviation within Republic of South Africa. This Act makes provision for the establishment of a South African Civil Aviation Authority (SA CAA) and independent Aviation Safety Investigation Board in terms of the Annex 13 of the Chicago Convention. In addition, the objectives of the Act include:

- to repeal, consolidate and amend the aviation laws giving effect to certain International Aviation Conventions;
- to provide for the control and regulation of aviation within the Republic;
- to give effect to certain provisions of the Convention on Offences and Certain other Acts Committed on Board Aircraft;
- to give effect to the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation;
- to provide for the National Aviation Security Program;
- to provide for additional measures directed at more effective control of the safety and security of aircraft, airports and the like; and
- to provide for matters connected thereto.

Although the Act is not directly relevant to the proposed development, it should be considered that the JMP is located within the bounds of an aviation sensitive site. While it should also be noted that the JMP site has been given consent as leased by ACSA for the JMP proposed development, the Air Traffic and Navigation Services SOC Limited (ATNS) and the Airport Company of South Africa (ACSA) have been consulted throughout the EIA process to give them an opportunity to raise any comments or objections to the proposed MetCon project. The DSR and all relevant impact assessment reports were also be made available to them. All comments and or issues/concerns received from these Departments throughout the course of this EIA process have been included in the C&RR which is provided in **Appendix 7E**. In addition, all correspondence received from these Departments is included in **Appendix 7D**. All further project related information and further drafts of reports will be made available to these Departments for commenting and reviewing purposes accordingly.

3.1.11. City of Ekurhuleni (CoE): Air Quality Management By-Law

Due to the fact that the proposed MetCon facility will result in emissions which will need to be governed by an AEL, the CoE Air Quality Management By-Laws will need to be considered and adhered to.

The air quality management by-law for the CoE was issued on 25 January 2005 (Report No.: APP/04/EMM02c of 2005). The purpose and objective of the by-law is to enable the local municipalities to protect, intervene, regulate and control activities which emit emissions and promote the long-term health, well-being and safety of people and environment within its jurisdiction area.

The by-law states that any person who is responsible for causing air pollution or creating a risk of air pollution within the municipality must take reasonable measures to:

a) Prevent any potential air pollution from occurring; or
b) Where the causing of any air pollution is permitted, not prohibited, or cannot be reasonably avoided or stopped, to minimise that pollution.

Reasonable measures, as provided by the by-law, include the following:

a) Investigate, assess and evaluate the impact of air pollution on the environment;
b) Inform and educate employees about the environmental risks of their work and how they can perform their work in order to avoid air pollution;
c) Cease, modify or control any act, activity or process causing the air pollution;
d) Contain or prevent the movement of pollutants or remedy the effects of the air pollution.

The municipality may direct any person causing significant air pollution either to cease the activity; investigate, evaluate and assess the impact of such; implement specific measures before a given date and continue with those measures in place. The municipality also has the authority to issue a directive. Should the person fail to comply with the directive, the municipality may take reasonable steps to remedy the situation or apply to court for appropriate relief.

The by-law has identified eight (8) priority air pollutants [particulate matter with an aerodynamic diameter of < 10 µm (PM_{10}), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), lead (Pb), benzene (C_6H_6) and dust fall which may present a threat on the health and well-being of people in the municipal area. The municipality may add more substances to the list in the future. The by-law makes provision for the CoE to develop and adopt local emissions standards for any of the identified substances. A person emitting any of the identified substances must comply with the relevant emission standards.

Under the Air Quality Management by-law for the CoE there are specific provisions pertaining to the several activities or emissions sources that need to be complied with. In most instances, authorisation from the Municipality is required before the emitting activities can take place and in other instances the activity is prohibited. The relevant activities or emissions sources are summarised below:

a) Emissions from domestic fuel burning.
b) Emissions from mining operations and tailings impoundments.
c) Any activity resulting in dust emissions.
d) Road transportation emissions.
e) Open burning emissions.
f) Emissions from industrial and domestic waste disposal and treatment (e.g. landfill operations, incineration, sewage and waste water treatment works.
g) Emissions caused by burning of garden waste.
h) Emissions from industrial processes.
i) Emissions from industrial fuel burning appliances.
j) Emissions from electricity generation
k) Emissions from aircraft engines
l) Emissions from other sources like vehicle entrainment from unpaved public roads, agricultural activities, veld burning and railway transport.

3.1.12. Ambient Air Quality Standards

Due to the fact that the proposed MetCon facility will result in emissions which will need to be governed by an AEL, the National Ambient Air Quality Standards will need to be considered and adhered to.

National ambient air quality standards, including allowable frequencies of exceedance and compliance timeframes, were issued by the Minister of Water and Environmental Affairs on 24 December 2009 (**Table 3-3**). National standards for $PM_{2.5}$ were established by the Minister of Water and Environmental Affairs on 29 June 2012.

Table 3-3. National Ambient Air Quality Standards for Criteria Pollutants.

POLLUTANT	AVERAGING PERIOD	CONCENTRATION ($\mu g/m^3$)	FREQUENCY OF EXCEEDANCE

Sulphur dioxide (SO_2)	10 minutes	500 (191)	526
	1 hour	350 (134)	88
	24 hours	125 (48)	4
	1 year	50 (19)	0
Nitrogen dioxide (NO_2)	1 hour	200 (106)	88
	1 year	40 (21)	0
Particulate Matter (PM_{10})	24 hours	75	4
	1 year	40	0
Particulate Matter ($PM_{2.5}$)	24 hours	40(1) 25(2)	0
	1 year	20(1) 15(2)	0
Ozone (O_3)	8 hours (running)	120 (61)	11
Benzene (C_6H_6)	1 year	5 (1.6)	0
Lead (Pb)	1 year	0.5	0
Carbon monoxide (CO)	1 hour	30 000 (26 000)	88
	8 hour (calculated on 1 hourly averages)	10 000 (8 700)	11

Notes:

*Values indicated in blue are expressed in PPB.

(1) Compliance required by 1 January 2016 – 31 December 2029.

(2) Compliance required by 1 January 2030.

3.1.13. Dust Deposition Standards

The activities associated with the operation of the proposed MetCon facility may result in dust fallout. As such, the National dust control regulations need to be adhered to.

The DEA has issued National dust control regulations on 1 November 2013 (**Table 3-4**). The purpose of the regulations is to prescribe general measures for the control of dust in all areas. The regulations prohibit activities which give rise to dust in such quantities and concentrations that the dust fall at the boundary or beyond the boundary of the premises where it originates exceeds –

a) 600 mg/m^2/day averaged over 30 days in residential areas measured using reference method ASTM D1739.
b) 1200 mg/m^2/day averaged over 30 days in non-residential areas measured using reference method ASTM D1739.

Table 3-4. South African Dust Fallout Regulations.

RESTRICTION AREAS	DUST FALLOUT RATE (D) (1)	REQUENCY OF EXCEEDANCE

Residential Areas	D < 600	Two within a year, no two sequential months (2)
Non-residential areas	600 < D < 1200	Two within a year, no two sequential months (2)

Notes:
(1) Averaged over 1 month (30±2-day average) (mg/m^2/day)
(2) Per dust fallout monitoring site.

Any person who has exceeded the dust fallout standard must, within three (3) months after submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval. The dust management plan must:

a) Identify all possible sources of dust within the affected site;
b) Detail the best practicable measures to be undertaken to mitigate dust emissions;
c) Develop an implementation schedule;
d) Identify the line management responsible for implementation;
e) Incorporate the dust fallout monitoring plan;
f) Establish a register for recording all complaints received by the person regarding dust fall, and for recording follow up actions and responses to the complainants.

The dust management plan must be implemented within a month of the date of approval. An implementation progress report must be submitted to the air quality officer at agreed time intervals.

3.1.14. Greenhouse Gas (GHG) Emissions

On 14 March 2014, the following six (6) greenhouse gases were declared as priority air pollutants in South Africa:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous Oxide (N_2O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulphur hexafluoride (SF_6).

National Greenhouse Gas (GHG) Emission Reporting Regulations (Government Gazette No. 40762 of 3 April 2017), were published by the DEA. A person identified as a Category A data provider in terms Annexure 1 of these regulations, must register their facilities by filling in the form under Annexure 2 and must submit a GHG emissions inventory and activity data in the required format given under Annexure 3 on an annual basis.

Updated draft National Pollution Prevention Plan Regulations (Draft Gazette No. 40996) were published on 21 July 2017 by the DEA. A pollution prevention plan will be required should the proposed development:

a) Undertake any of the following 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 ($CO_{2\text{-eq}}$); or

b) Undertake any of the following activities identified in Annexure A of the Draft National Pollution Prevention Plan Regulations (Gazette No. 40996 of 21 July 2017) as a primary activity.

Annexure A activities in terms of the Draft National Pollution Prevention Plan Regulations include:

- Coal mining
- Production and /or refining of crude oil
- Production and/or processing of natural gas
- Production of liquid fuels from coal or gas
- Cement production
- Glass production
- Ammonia production
- Nitric acid production
- Carbon black production
- Iron & steel production
- Ferro-alloys production
- Aluminium production
- Polymers production
- Pulp and paper production
- Electricity production

A person identified as a Category A data provider in terms of these regulations must register their facilities by filling in the form under Annexure 2 and must submit a GHG emissions inventory and activity data in the required format given under Annexure 3. All data must be provided annually, by the 31 March of the following year. Data providers are required to register on the NAEIS and report on their direct GHG emissions on an annual basis and comply with the reporting requirements as detailed in the National GHG Emission Reporting Regulations.

The proposed MetCon refinery facility within the JMP would need to report on GHG emissions by the 31 March of every year, should the total design net heat input capacity of all the stationary fuel combustion installations, associated with their activities, fall above the 10MW threshold in terms of Annexure 1 of the National GHG emission reporting regulations (Government Gazette No. 40762 of 3 April 2017).

3.1.15. Highveld Priority Area Air Quality Management Plan

As the proposed MetCon refinery is located within the CoE, which is located within a Highveld Air Quality Priority Area, the Highveld Priority Area Air Quality Management Plan is applicable.

The HPA was declared a priority area by the Minister of Environmental Affairs and Tourism on the 23 November 2007 under the NEM:AQA (Act No. 39 of 2004) (Government Gazette, No. 30518 of 23 November 2007). A Priority Area is usually associated with elevated ambient concentrations of criteria air pollutants such as PM_{10}, $PM_{2.5}$, SO_2 and NO_x. Generally, a high number of emitters (industrial and non-industrial) are also concentrated in these areas. In order to meet the requirements of Air Quality Act (Act No. 39 of 2004), an Air Quality Management Plan (AQMP) was compiled for the HPA and provides as a management tool that can be used and implemented by departments and industry to ensure effective air quality management within the area.

The primary aim of the AQMP is to provide a framework including short to long term strategies and programs that can be used to work towards achieving and maintaining compliance with the National ambient air quality standards within the HPA. In the HPA, industrial emitters were identified as the most significant contributor of emissions accounting for 89% of PM_{10}, 90% of NO_x and 99% of SO_2. Industrial emitters within the HPA include (DEA, 2011):

- Power generation;
- Coal mining;
- Primary & secondary metallurgical operations;
- Brick manufactures;
- Petrochemical industry;
- Ekurhuleni industrial sources (excluding the above); and
- Mpumalanga industrial sources (excluding the above).

An assessment of ambient air quality monitoring data within the HPA, allowed for the following areas to be identified as areas of concern. These areas are associated with high frequency exceedances of the PM_{10} and SO_2 ambient standards. The air quality monitoring data for the HPA also shows seasonal trends. A higher frequency of exceedances of the standards are observed during the winter season where the dispersion potential of ground level pollutants (e.g. vehicle exhaust emissions) are largely reduced due to the strengthening of surface inversions (DEA, 2011).

- Witbank 2;
- Middelburg;
- Secunda;
- Ermelo;
- Standerton;
- Balfour; and
- Komati.

A comprehensive emissions inventory was compiled for the HPA. A combination of ambient air quality monitoring and dispersion modelling results identified nine areas within the HPA as hotspot areas, where ambient concentrations of PM_{10}, SO_2 and NO_2 frequently exceed and/or were predicted to exceed the ambient standards (**Table 3-5**). Residential areas associated with a high level of domestic fuel burning (wood and coal) were identified to experience high concentrations of particulates and CO.

Table 3-5. HPA Air Quality Hot Spot Areas (DEA, 2011;20).

Hot Spot	PM_{10}	SO_2	NO_2
Emalahleni	✓	✓	
Kriel		✓	
Steve Tshwete	✓	✓	✓
Ermelo	✓	✓	
Secunda	✓	✓	✓
Ekurhuleni	✓	✓	
Lekwa	✓	✓	
Balfour	✓		
Delmas		✓	

In order to achieve compliance with the National air quality limits for criteria pollutants within the HPA, the AQPM for the HPA developed seven goals which are given below (DEA, 2011):

1. ***Goal 1:*** *By 2015, organisational capacity in government is optimised to efficiently and effectively maintain, monitor and enforce compliance with ambient air quality standards*

2. ***Goal 2:*** *By 2020, industrial emissions are equitably reduced to achieve compliance with ambient air quality standards and dust fallout limit values*
3. ***Goal 3:*** *By 2020, air quality in all low-income settlements is in full compliance with ambient air quality standards*
4. ***Goal 4:*** *By 2020, all vehicles comply with the requirements of the National Vehicle Emission Strategy*
5. ***Goal 5:*** *By 2020, a measurable increase in awareness and knowledge of air quality exists*
6. ***Goal 6:*** *By 2020, biomass burning, and agricultural emissions will be 30% less than current*
7. ***Goal 7:*** *By 2020, emissions from waste management are 40% less than current*

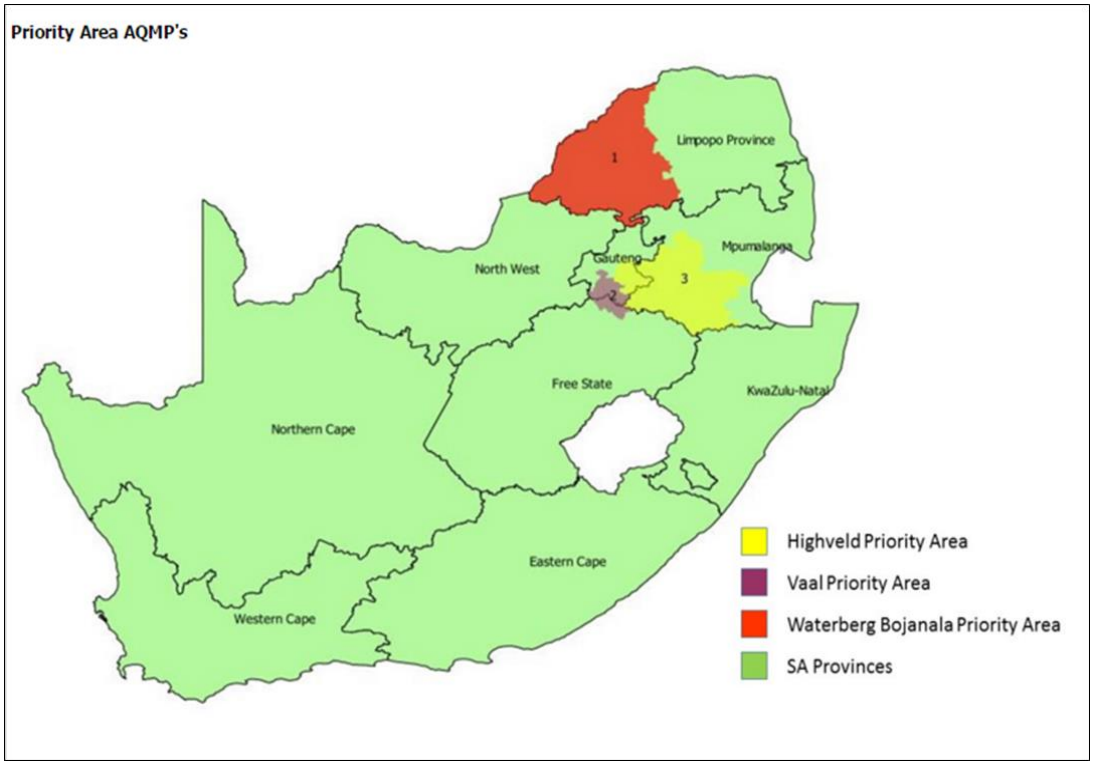

Figure 3-1: Air Quality Priority Areas

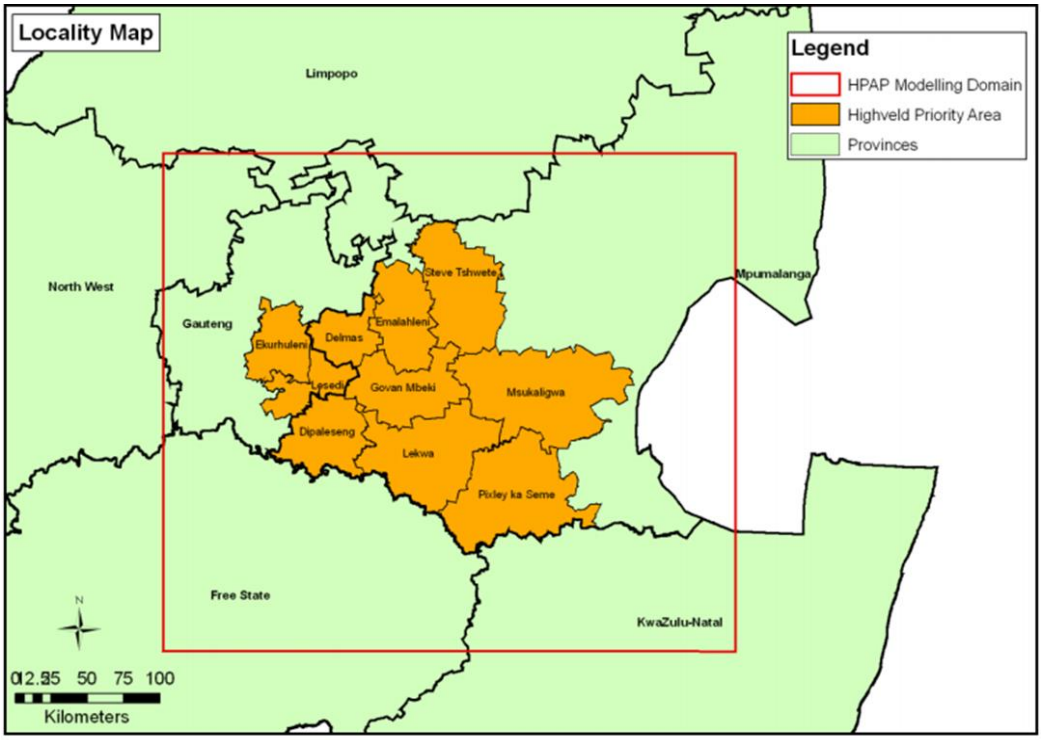

Figure 3-2: Highveld Priority Area (DEA, 2011)

3.1.16. Additional Relevant Legislation

- Gauteng Conservation Plan Version 3.3 (C-Plan 3.3);
- Occupational Health and Safety Act (Act No. 85 of 1993);
- 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 (GN R. 5479 of 20 August 1999);
- South African Diamond & Precious Metals Regulator (SADPMR);
- Precious Metals Act, 2005 (Act No. 37 of 2005); and
- Applicable local by-laws.

3.1.17. Key Development Strategies and Guidelines

- Gauteng Growth development strategy;
- Gauteng development plan;
- South African Special, Economic and Industrial Development Zones (SEZs);
- City of Ekurhuleni (CoE) development plan; and
- City of Ekurhuleni (CoE) integrated development plan (IDP).

4. PROJECT NEED AND DESIRABILITY

The South African Government seeks to transform and improve the economy into a global competitive industrial economy. The National Development Plan (NDP) and various South African industrial policies,

such as the Industrial Policy Action Plan (IPAP), outlines a long-term development path towards a prosperous and successful economy characterised by high levels of economic growth, employment generation and an equitable society. In addition, these plans and policies aim to address the South African Government's industrial agenda, prioritized industrial sectors and a range of interventions required to accelerate economic growth, create jobs, and fight poverty and underdevelopment. The Strategic Infrastructure Projects (SIPs) have been identified and implemented all over the country in attempts to achieve the best outcomes towards the latter objectives.

The GIDZ falls under the Aerotropolis Master plan developed by the host CoE and is part of the South African Special, Economic and Industrial Development Zones (SEZs) which further form part of the SIPs. The SEZ Programme, which was mandated by the SEZ Act, proclaimed on the 9th of February 2016, is one (1) of the critical tools for accelerating the country's industrial development agenda. In terms of the Department of Trade and Industry (DTI), SEZs are a tool to help:

- promote industrial agglomeration;
- build the required industrial infrastructure;
- promote coordinated planning among key government agencies and the private sector; and
- guide the deployment of other necessary development tool.

The proposed JMP development falls under the OR Tambo Industrial Development Zone (IDZ) (Gauteng) of the South African SEZs. The OR Tambo IDZ aims to develop land around OR Tambo International Airport to stimulate economic development through the use of the IDZ mechanism. The OR Tambo IDZ supports the growth of the beneficiation of precious metals and minerals sector, with a focus on light, high-margin, export-oriented manufacturing of South African precious and semi-precious metals. In light of this, the proposed JMP development forms part of SIP 2. Furthermore, it is the objective of the GIDZ to significantly contribute to the realization of the competitive and inclusive economic growth within the Gauteng Province. Also, by the attracting both domestic and foreign investors and maximizing the provincial exports economic contribution, the JMP project will essentially position the Gauteng Province as a globally recognized city.

The OR Tambo IDZ JMP project will consist of several industry-specific entities which will occupy the facilities in the precinct. In order to achieve the objectives of the project and those of the broader plans, the GIDZ has strategically identified MetCon to be one of the occupants within the precinct. MetCon was established in 1989 in Pretoria to provide a service for the refining of precious metals to the Jewellery industry. During 2004, the operation was expanded, and a second refinery was opened in Cape Town. MetCon chemically refines precious metals from jeweller's waste materials and casts the metals it into ingots. In addition, MetCon is also considered to be a major exporter of gold beneficiated from dorè. As such, MetCon has been identified as a key facility to be incorporated into the GIDZ JMP project.

5. PROJECT SITE DESCRIPTION

A general description of the project site and surrounding area is outlined in the section below.

5.1. Locality

The existing GIDZ JMP site is situated on Airports Company South Africa (ACSA) Ltd land (namely Portion 282 of the Farm Witkoppie No. 64 – IR), within the boundaries of the ORTIA. The location coordinates are as follows: S26.114351, E28.250192. The ORTIA is situated in close proximity to the commercial centre of Johannesburg and other economic development areas such as Wadeville and Alrode. As part of the CoE Airport City/ Aerotropolis economic development framework, the JMP project is aimed at achieving the

economic potential of the City also through the promotion of industry-based enterprises located close to the ORTIA.

The site is further complemented by the linkages to some of Gauteng's major technical cities such as Alberton, Benoni, Germiston, Midrand, Centurion and the further City of Tshwane. Furthermore, the JMP project site is situated within a 10 km radius of the Rand Refinery (a large supplier of gold) and a 20 km radius of Jewel City, where most of South Africa's diamond trade takes place. The nearest residential area is the suburb of Bonaero Park, located within 100m of the proposed MetCon facility.

A map showing the locality of the proposed project site is provided in **Figure 5-1** below.

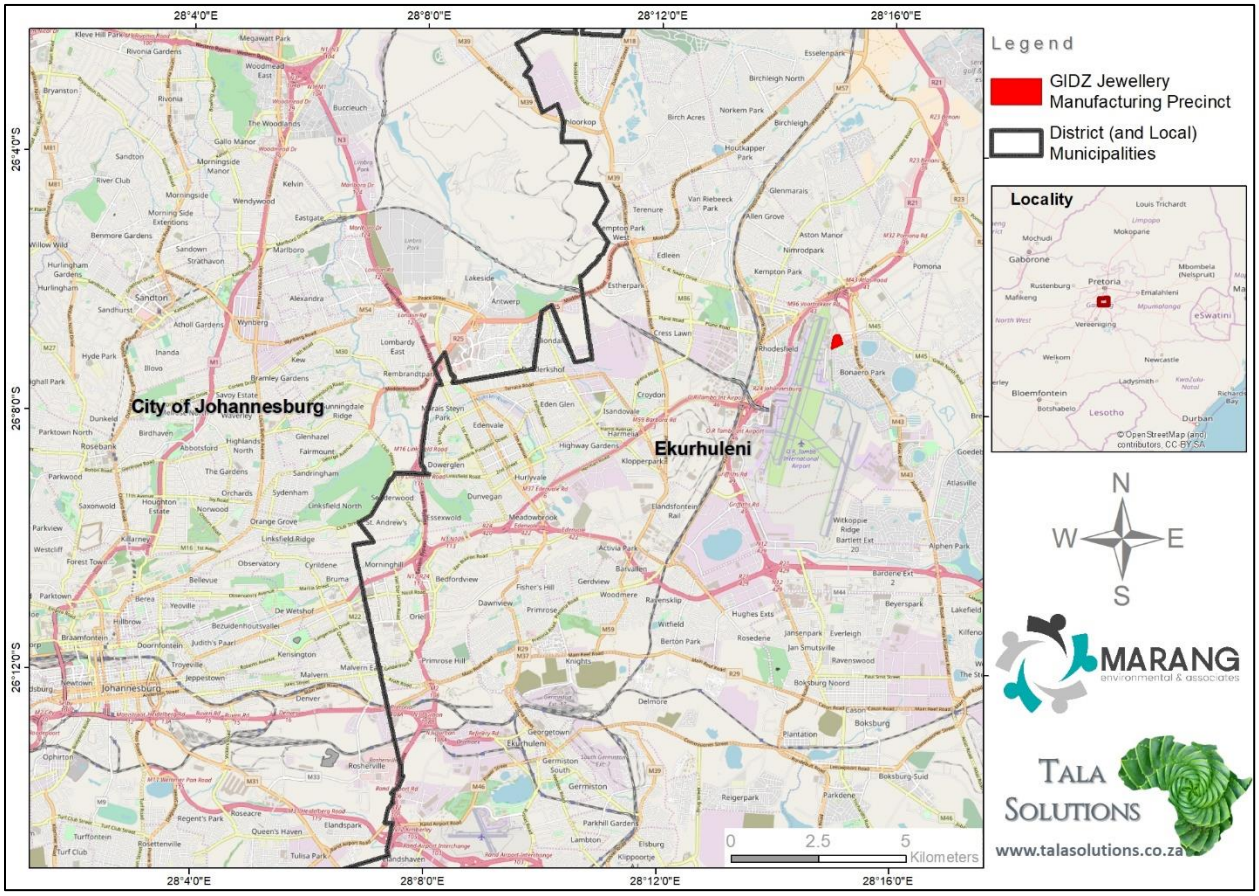

Figure 5-1: JMP development site locality map.

5.2. Study site description

The GDED have signed a Notarial Deed of Lease agreement, which is defined as a long-term agreement on immovable property, for the JMP located on Portion 282 of the Farm Witkoppie No. 64 – IR in Kempton Park, within the CoE, Gauteng Province. The JMP site initially received an EA for the 6.5ha site from the provincial authority (namely GDARD) in 2011. The proposed MetCon facility will occupy approximately 0.55 ha within the authorised 6.5 ha site.

The JMP site has been cleared of vegetation and certain areas are under construction as per the original EA (from GDARD) and subsequent amended EA (from the DEA). However, construction of the proposed MetCon facility identified under the current EIA application, has not yet commenced. This will only commence once the necessary approvals / authorisations have been obtained.

The proposed MetCon facility will occupy block 2 of the existing JMP site as represented in the site layout diagram below (**Figure 5-3**). The infrastructure within the site will include office buildings, industry buildings, parking, and paved grounds as well as environment complementary components such as vegetation. It should be noted that an attenuation pond / dam was constructed in the south-eastern corner of the study area during the construction of the original JMP site (**Figure 5-2**). This attenuation pond is still present and will remain within the JMP site. A site layout plan (which was compiled for the development of the original JMP site in 2009) which illustrates the above-mentioned infrastructure is provided in **Appendix 5**.

Figure 5-2: Attenuation pond/ dam located in south-eastern corner of existing JMP site

The JMP will consist of jewellery manufacturers and retail outlets such as In2Food, Isondo, Julius Klein, Akapo Jewels, Diarough, Break Even and Ruzow Diamonds. The development area is close to major roads such as the R21, M43 and the M45 (Dann Road), although accessibility by public transport is limited.

Table 5-1. 21-digit Surveyor General code of the JMP site.

T	0	I	R	0	0	0	0	0	0	0	0	0	0	6	4	0	0	0	6	9

Table 5-2. Corner Points of the JMP site.

Corner	Latitude	Longitude

Corner 1	26° 6'45.34"S	28°15'4.15"E
Corner 2	26° 6'45.38"S	28°15'1.82"E
Corner 3	26° 6'46.06"S	28°14'58.35"E
Corner 4	26° 6'52.25"S	28°14'56.78"E
Corner 5	26° 6'58.13"S	28°14'56.89"E
Corner 6	26° 6'53.60"S	28°15'7.43"E

Table 5-3. Corner Point Coordinates of proposed MetCon Facility.

Corner Point	Latitude (S)	Longitude (E)
Corner 1	26° 6'52.60"S	28°15'2.78"E
Corner 2	26° 6'51.45"S	28°15'2.81"E
Corner 3	26° 6'51.44"S	28°15'5.14"E
Corner 4	26° 6'52.59"S	28°15'5.12"E

Table 5-4. Centre Point Coordinates of proposed MetCon Facility.

Point	Latitude (S)	Longitude (E)
Centre Point	26° 6'52.05"S	28°15'3.98"E

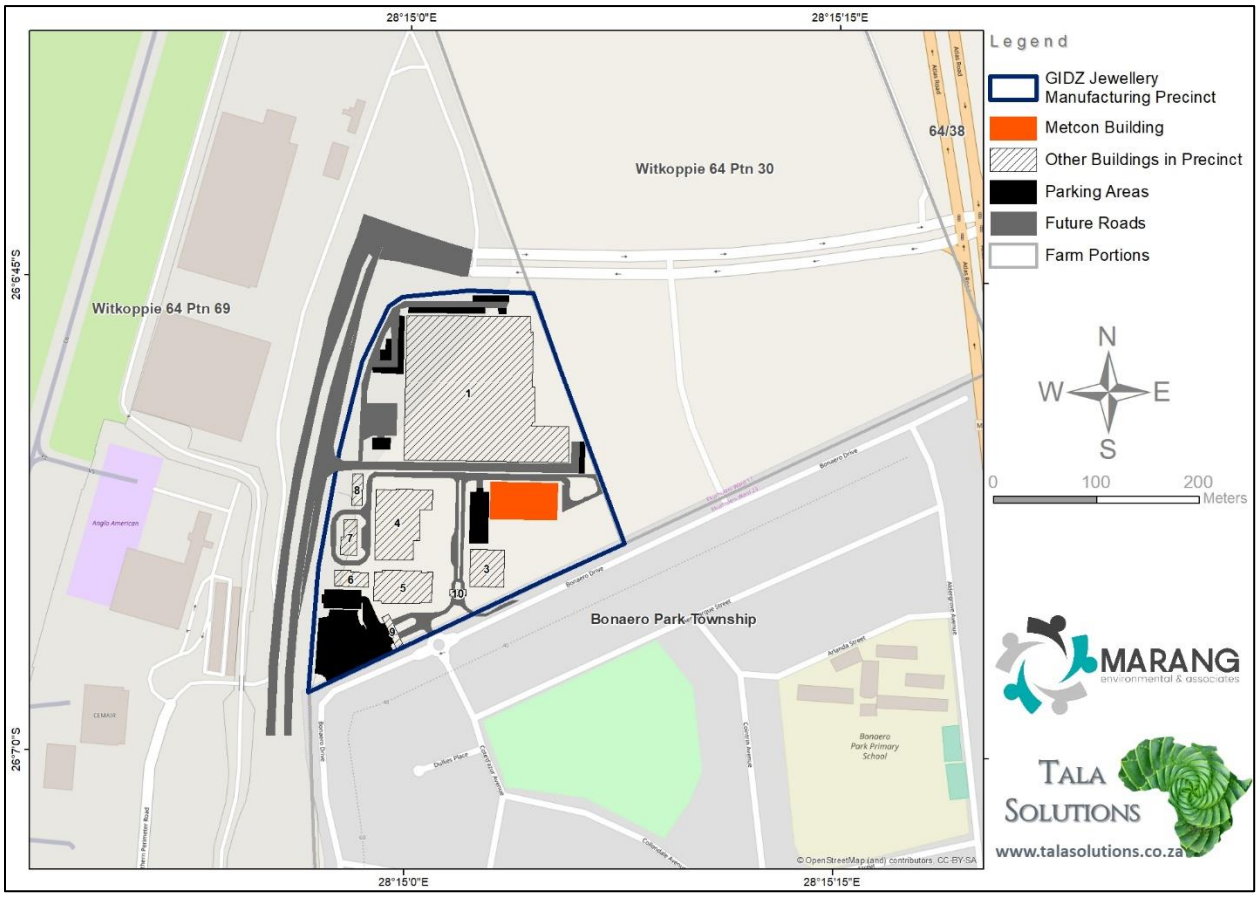

Figure 5-3: JMP Site Layout.

5.3. Topography

The topography surrounding the proposed development site is shown in **Figure 5-4** below. Surrounding elevations range from approximately 1376 – 1913 m above sea level. The proposed project site is situated approximately 1670 m above sea level; with increasing elevation towards the north-west.

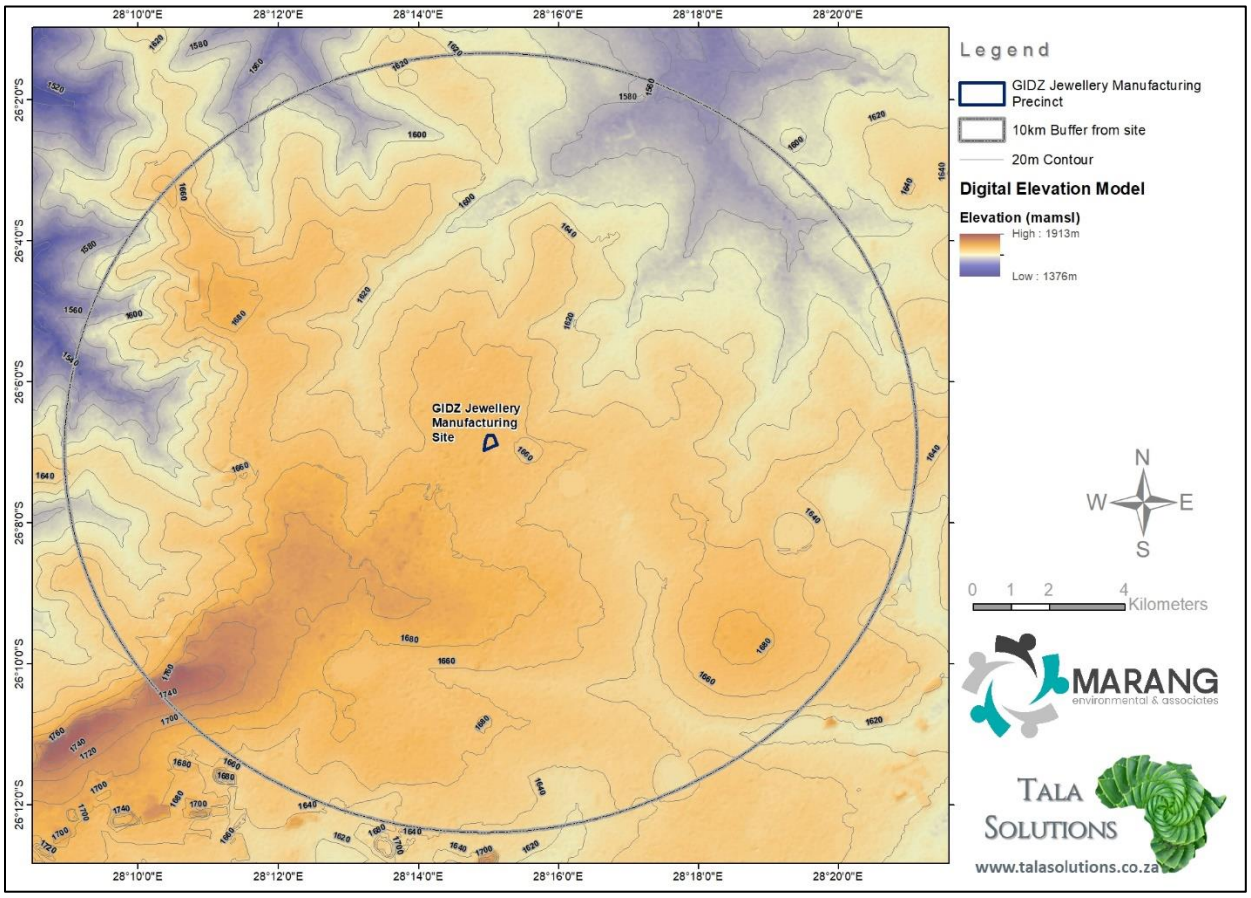

Figure 5-4: Topography surrounding MetCon Jewellery Precinct Facility.

5.4. Geology and Soil

The JMP development site sits on the Dwyka Group which is part of the oldest deposits found in the Karoo Supergroup basin (**Figure 5-5**). The geological history regarding the formation of the Karoo Supergroup records over 100 million years ago and was part of the supercontinent Gondwana, which was situated near the south pole and covered with ice. The development area is characterized by red, yellow, and greyish soils with low to medium base status, classified as Acrisols, which contain iron oxides such as hematite (Fe_2O_3) and goethite (FeOOH) with poor drainage (**Figure 5-6**). In addition, other soils with plinthic and gleyic properties may also be present.

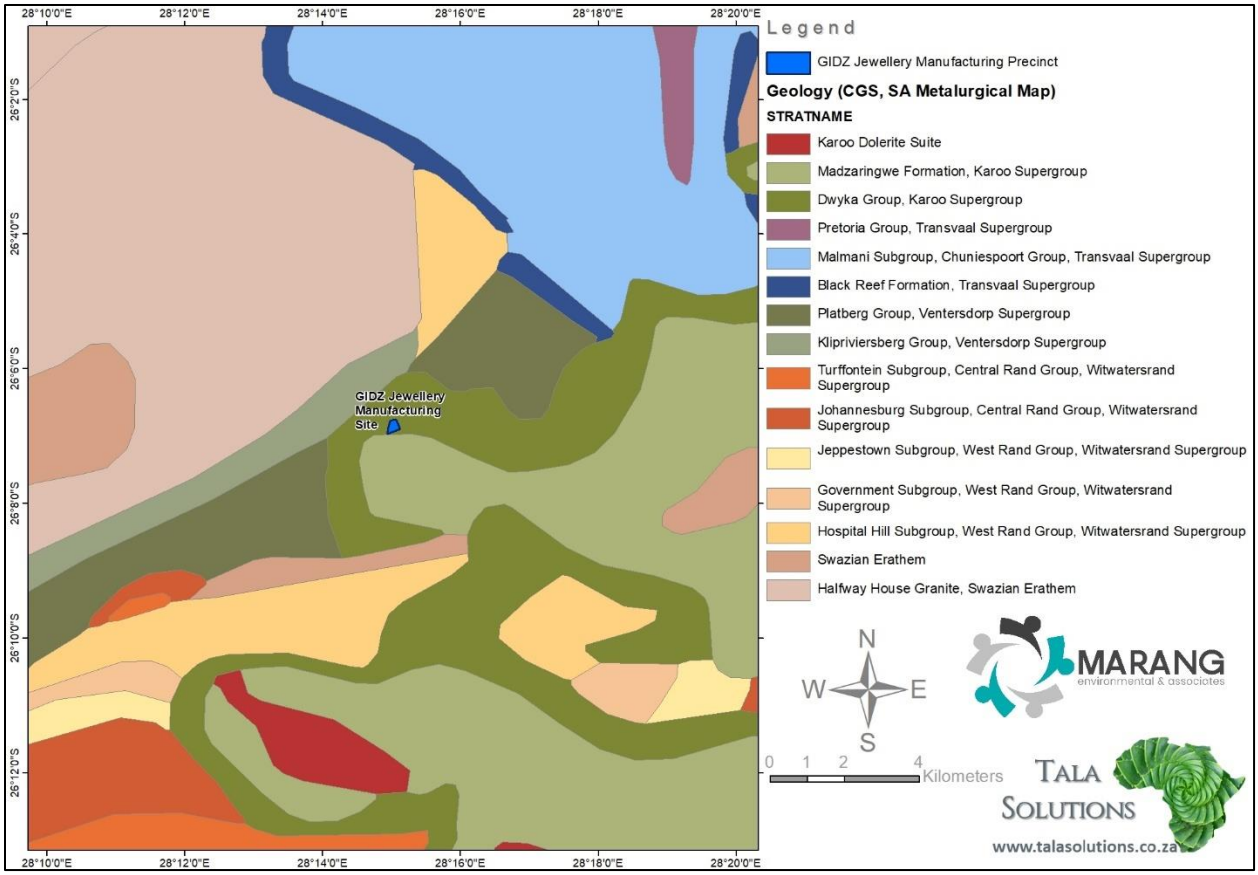

Figure 5-5: Geology of the area surrounding the proposed site.

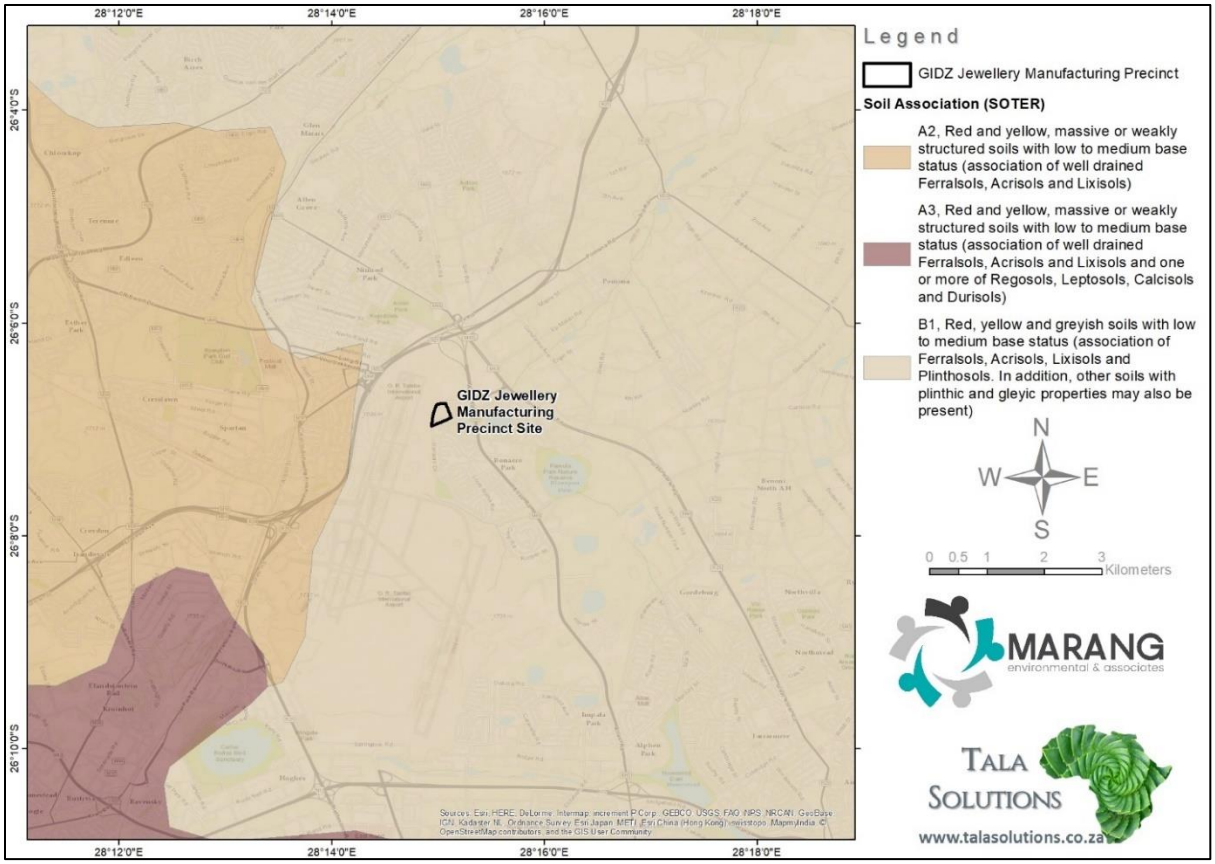

Figure 5-6: Soil characteristics of the development area.

5.5. Land use

The closest residential area is the urban residential area, Bonaero Park, which is located south of the project site (**Figure 5-7**). Some cultivated lands are sited within 500m north and north-east of the proposed development site. Urban built-up and urban smallholding areas are located approximately 1km north-east of the JMP site. The ORTIA runaway is located approximately 440 m west of the JMP site. The Kempton Park Central Business District (CBD), classified as urban commercial area, is situated further west, approximately 1.5km from the JMP site.

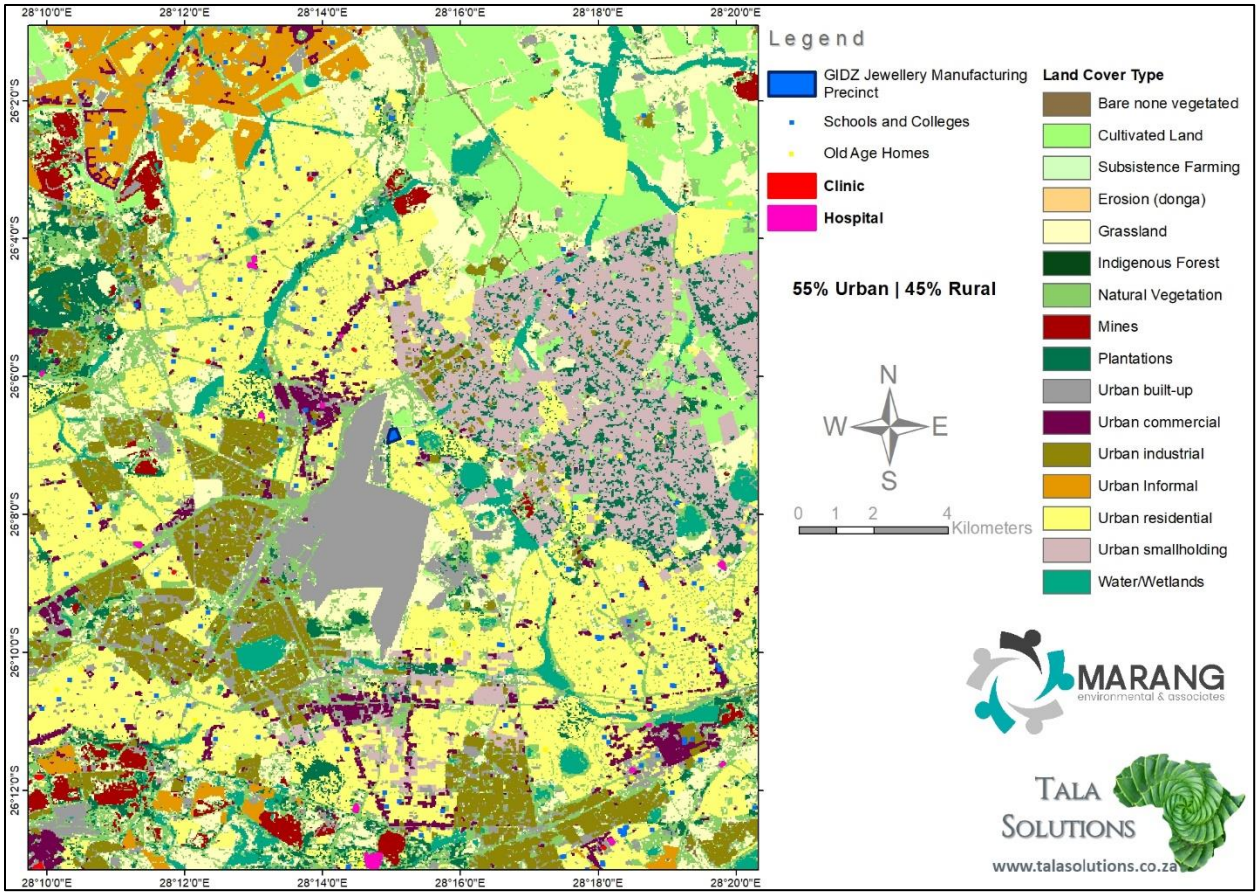

Figure 5-7: Map illustrating land use surrounding the JMP site.

5.6. Climate

Meteorological data for the project area was obtained from the ORTIA weather station for the period of January 2014 to December 2016. Details of the meteorological data obtained is summarised in **Table 5-5** below.

Table 5-5. Meteorological Data Details (SAWS, 2017).

Meteorological Data Details	
Met Data Information	**Description**
Source	South African Weather Services
Met data type	Surface Data
Station	OR Tambo International Airport
Latitude	26.143000° S
Longitude	28.234600° E
Time zone	UTC +2 hours
Period of record	January 2014 - December 2016
Met Station Parameters	**Description**
Anemometer height	Assumed 10m
Station base elevation	1711 m
Parameters	Wind speed, wind direction, cloud cover, temperature, relative humidity, rainfall
Format	Excel - hourly

5.6.1. Temperature and Relative Humidity

Monthly average temperatures and relative humidity profiles at the project site for the period of January 2014 to December 2016 are presented in **Table 5-6** below. Average monthly temperatures range from approximately 11.0 – 20.7 ºC (**Figure 5-8**). Highest temperatures are observed during the spring and summer months (September – February) and minimum temperatures are observed during the winter months (June – August). Relative humidity is the highest during late spring to autumn months (i.e. November – March), and lower but consistent for the rest of the year (i.e. May – October).

Table 5-6. Hourly Minimum, Maximum and Monthly Average Temperatures for January 2014 - December 2016.

MINIMUM, MAXIMUM AND MONTHLY AVERAGE TEMPERATURES (ºC)												
	JAN	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
Minimum	12.8	11.2	10.6	3.8	3.9	-1.3	-3.3	-1.9	3.3	2.8	4.4	10.5
Maximum	34.8	31	29.4	27.6	25.5	22.6	21.7	27.5	30.3	32.9	33	32.2
Average	20.7	20.7	19.0	16.9	15.1	11.4	11.0	14.5	17.7	19.6	19.0	20.8

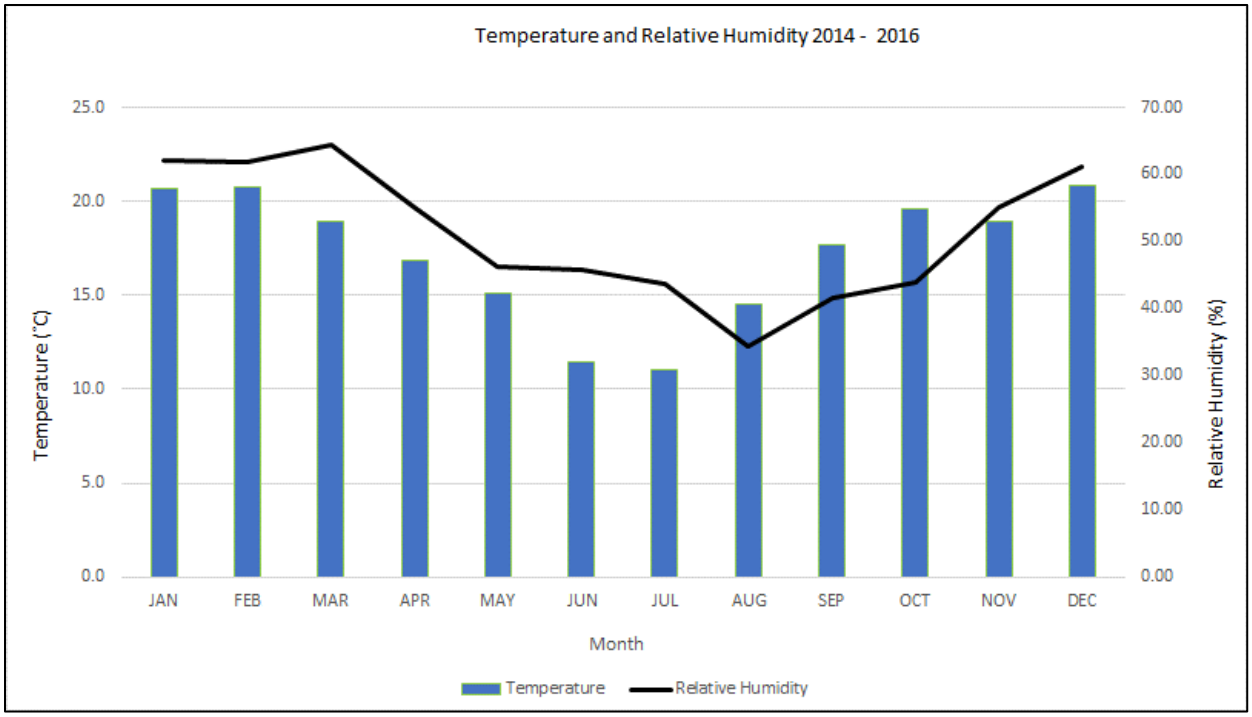

Figure 5-8: Monthly Average Temperature and Relative Humidity profiles for project site for January 2014 - December 2016.

5.6.2. Precipitation

Monthly total rainfall at the project site for the period of January 2014 to December 2016 is presented in Figure **5-9** below. The area receives most of its rainfall during the spring, summer and early autumn seasons during the months October - March. Little to no rainfall is observed during the late autumn and winter seasons from April to August (**Table 5-7**).

Table 5-7. Total Monthly Rainfall for January 2014 - December 2016.

TOTAL MONTHLY RAINFALL (mm)												
YEAR	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
2014	26.2	115.6	122.0	16.2	4.4	0.2	0.0	3.6	8.6	33.6	90.2	174.4
2015	155.0	27.8	52.2	23.2	0.0	3.4	8.2	1.4	31.2	17.6	63.0	62.4
2016	123.2	65.2	137.0	13.8	49.0	10.8	15.4	0.0	3.0	50.4	210.0	119.6

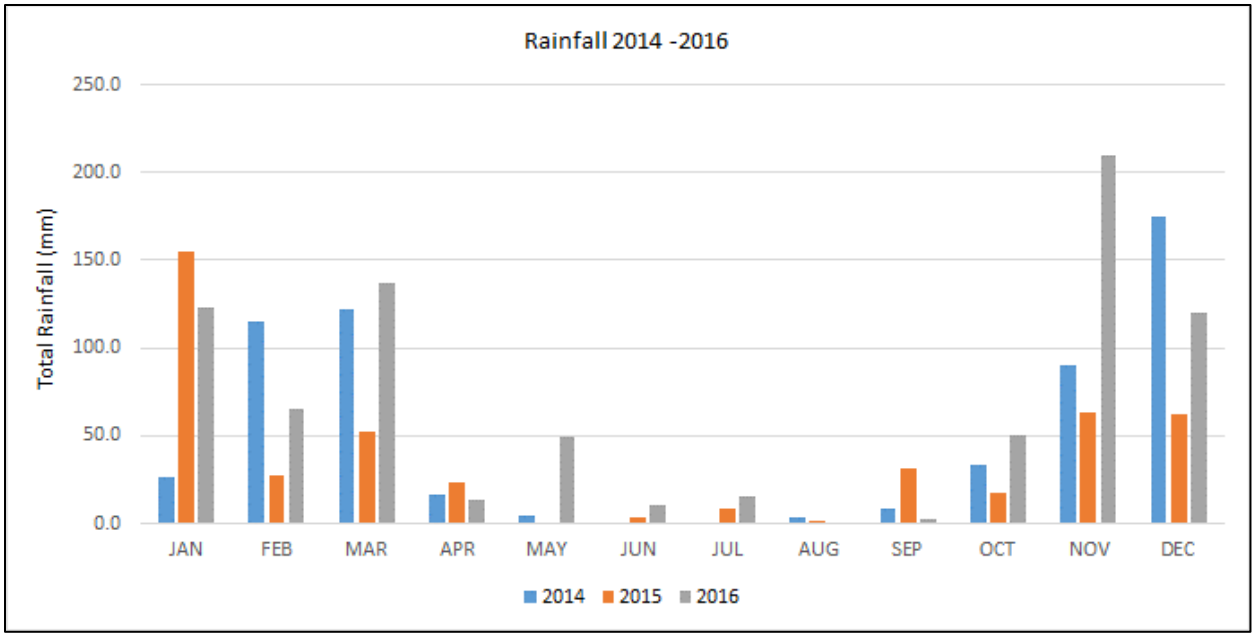

Figure 5-9: Total Monthly Rainfall (mm) for the project site for the period January 2014 - December 2016.

6. DESCRIPTION OF RECEIVING ENVIRONMENT

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

6.1. Biodiversity

The closest Critical Biodiversity Area (CBA) to the JMP site is approximately 500m east and is located outside the site boundary. As mentioned, the north-west boundary of the site overlaps onto an ESA according to the SANBI Gauteng Conservation Plan (2011) (**Figure 6-1**). According to the SANBI, ESAs are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of CBAs as well as delivering ecosystem services.

As mentioned in **Section 5.2**, most vegetation has been cleared at the site as per the previously authorised 6.5ha of the site. In addition, construction at the existing JMP site commenced in 2013 and is currently still underway. As such, much of the proposed project site has already been disturbed and a biodiversity assessment was thus not deemed necessary.

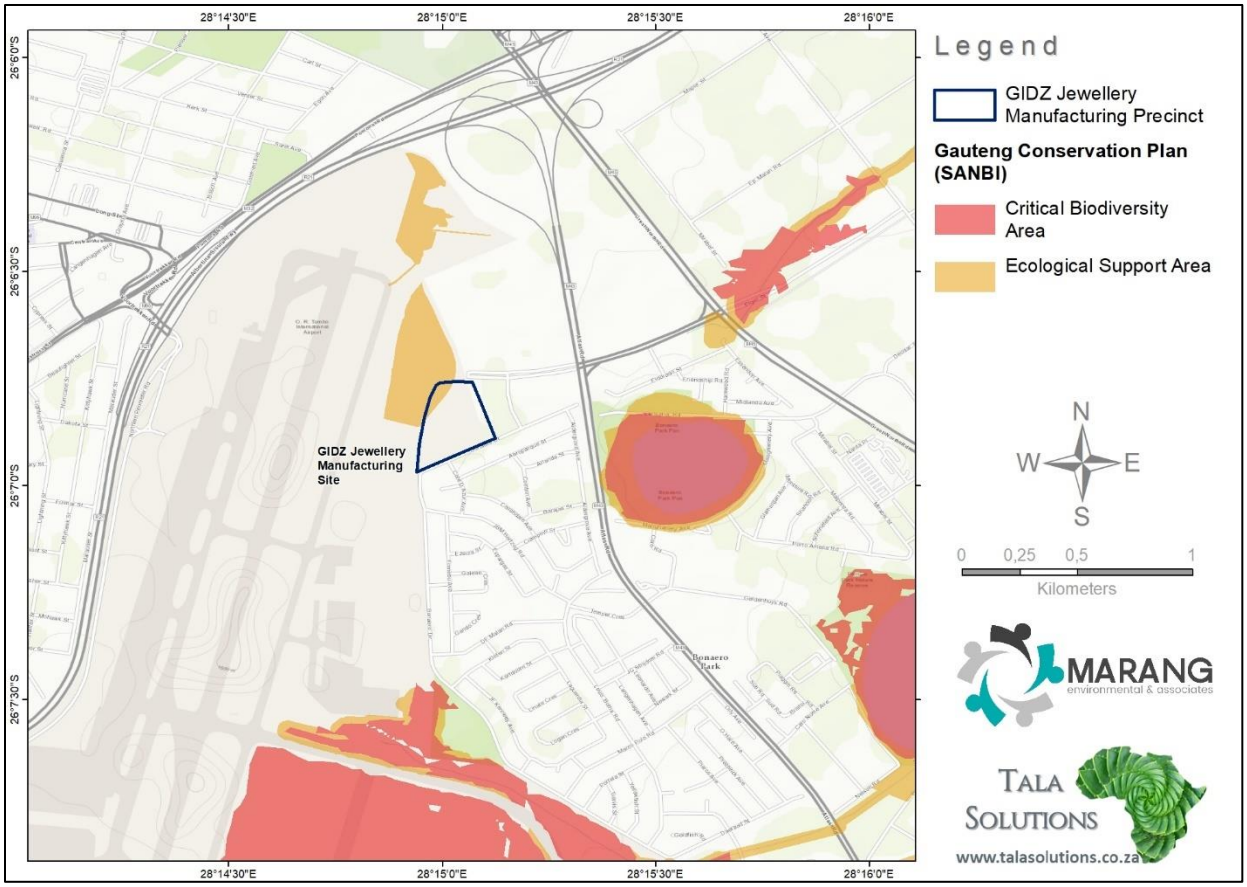

Figure 6-1: Map illustrating important Biodiversity areas around the JMP development site.

6.2. Surface water

A review of the original surface water findings, impacts and recommendations/mitigation measures, as provided in the FBAR compiled as part of the BA process undertaken in 2009 for the proposed development of the original JMP site, was undertaken by Stephen van Staden of Scientific Aquatic Services (SAS) and is provided in **Appendix 6B**.

A description of the receiving environment from a surface water perspective is provided in the sections below.

6.2.1. Details of Study area in terms of the National Freshwater Ecosystem Priority Area (NFEPA) (2011) database

According to the National Freshwater Ecosystem Priority Areas (NFEPA) database (NFEPA, 2011), the study area is situated within a sub-quaternary catchment considered an upstream management area, indicating that human activities need to be managed to prevent the downstream degradation of National Freshwater Ecosystem Priority Areas (NFEPAs) and Fish Support Areas. The NFEPA Database indicates the presence of a natural flat wetland which is situated in the western portion of the proposed JMP site. Additionally, one (1) natural depression feature is situated approximately 460m east of the proposed MetCon site. According to the NFEPA database, these wetland features are in a heavily to critically modified ecological condition.

According to the NFEPA Database, there are no rivers associated with the study area, nor are there any rivers situated within a 5km radius of the study area. In addition, the study area falls within the Mesic Highveld Grassland Group 3 wetland vegetation type, considered to be Least Threatened (SANBI, 2012; Mbona et al, 2014).

6.2.2. Details of Study area in terms of the Gauteng Conservation Plan (C-Plan V3.3, 2011)

According to the Gauteng Conservation Plan (C-Plan) (2011), there are no wetland or river buffers associated with the study area. However, a pan buffer is associated with the investigation area (within 500m of the project site) (**Figure 6-2**). In terms of the NWA, as amended, a Pan means *"any depression collecting water or that is inward draining or a flow through system with flow contributions from surface water, groundwater or interflow or combinations thereof"*. A regulated area of a watercourse, in terms of section 21(c) of the NWA Act, includes a 500m radius from the delineated boundary (extent of any wetland or pan). The north-western corner of the proposed site is situated within an ESA. ESAs are defined by GDARD as natural, near-natural, degraded or heavily modified areas required to be maintained in an ecologically functional state to support CBAs and/or Protected Areas.

Although rescinded as a policy document in the Gauteng Spatial Development Framework (SDF) in 2011, the Urban Edge nevertheless remains a useful indicator of where concentration [of development] should occur. According to the Gauteng C-Plan (2011) and the Gauteng Environmental Management Framework (EMF, 2015), the study area is located within the Urban Edge and the eastern half of the study area is situated within the EMF Zone 5, which is classified as an industrial and large commercial focus zone.

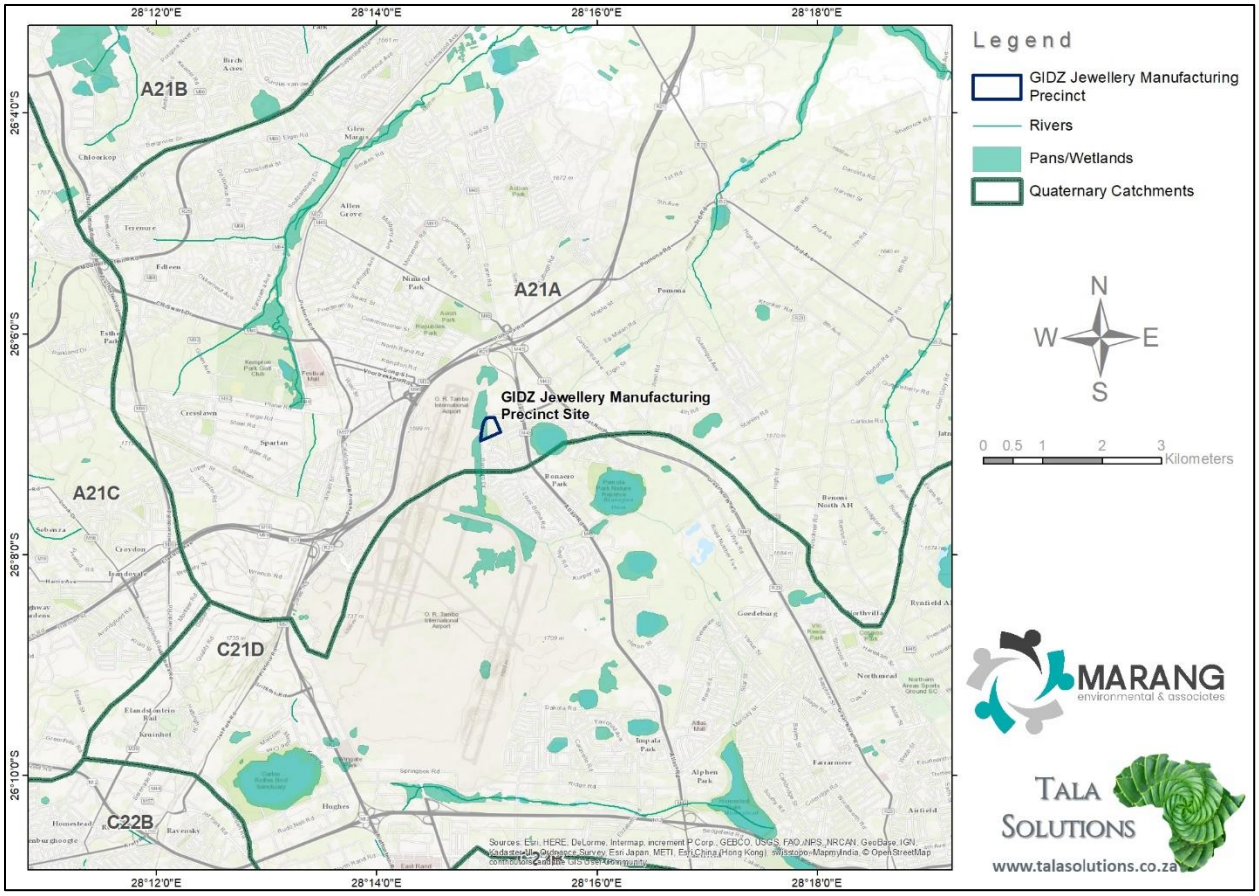

Figure 6-2: Map illustrating Surface Water features within the JMP development site and surrounding area.

6.3. Soils and Land Capability (i.e. Agriculture)

A review of the original soils and land capability (i.e. Agriculture) related findings, impacts and recommendations/mitigation measures, as provided in the FBAR compiled as part of the BA process undertaken in 2009 for the proposed development of the original JMP site, was undertaken by Stephen van Staden of Scientific Aquatic Services (SAS) and is provided in **Appendix 6C**.

The parameters which were assessed/investigated as part of the original BA process undertaken in 2009 from a soils and land capability perspective included soil instability and erosion. The BA process did not particularly asses and/or investigate agricultural potential.

A description of the receiving environment from a soils and land capability (i.e. Agricultural) perspective is provided in the section below.

6.3.1. Soil and Land Capability Desktop Analysis

The following data is applicable to the study area and the operations proposed at the MetCon facility, according to various data sources including, but not limited to, the Agricultural Geo-Referenced Information System (AGIS):

- The Mean Annual Precipitation (MAP) of the study area is estimated to range between 601 to 800 millimetres (mm) per annum (i.e. per year);
- The Soil and Terrain (SOTER) database indicates that the entire study area is comprised of slightly or moderately weathered parent material with good structural stability, classified as Plinthic Acrisols (ACp) (**Figure 6-3**);
- Geology 2001: According to the Geology 2001 layer the southern portion of the study area is underlain by Shale;
- The databases reviewed indicate that the entire study area is comprised of High potential arable land (class II), which implies that the site has high agricultural potential for cultivated crops;
- According to the AGIS database, the livestock grazing capacity potential is estimated to be approximately 3 ha per large animal unit (Morgenthal et al., 2005);
- The natural soil pH is estimated to be range between 5.5 and 6.4, indicating that the soils within the study area are anticipated to be slightly acidic to neutral, as interpolated from topsoil pH values obtained from the National Soil Profile Database (AGIS database);
- Soils 2001: According to the Soils 2001 Layer the entire portion of the study area is situated within an area where the soils are classified as Sandy loams dominant;
- According to the Gauteng Agricultural Potential Atlas database there no crops nor cultivation activities that were identified within the study area, however a small portion located in close proximity (east) of the study area is said to be under cultivated pastures;
- The desktop assessment indicates that there no Agricultural Hubs situated within the study area and the surrounding areas; and
- Some of the surrounding areas have been urbanized and no longer used for food production purposes.

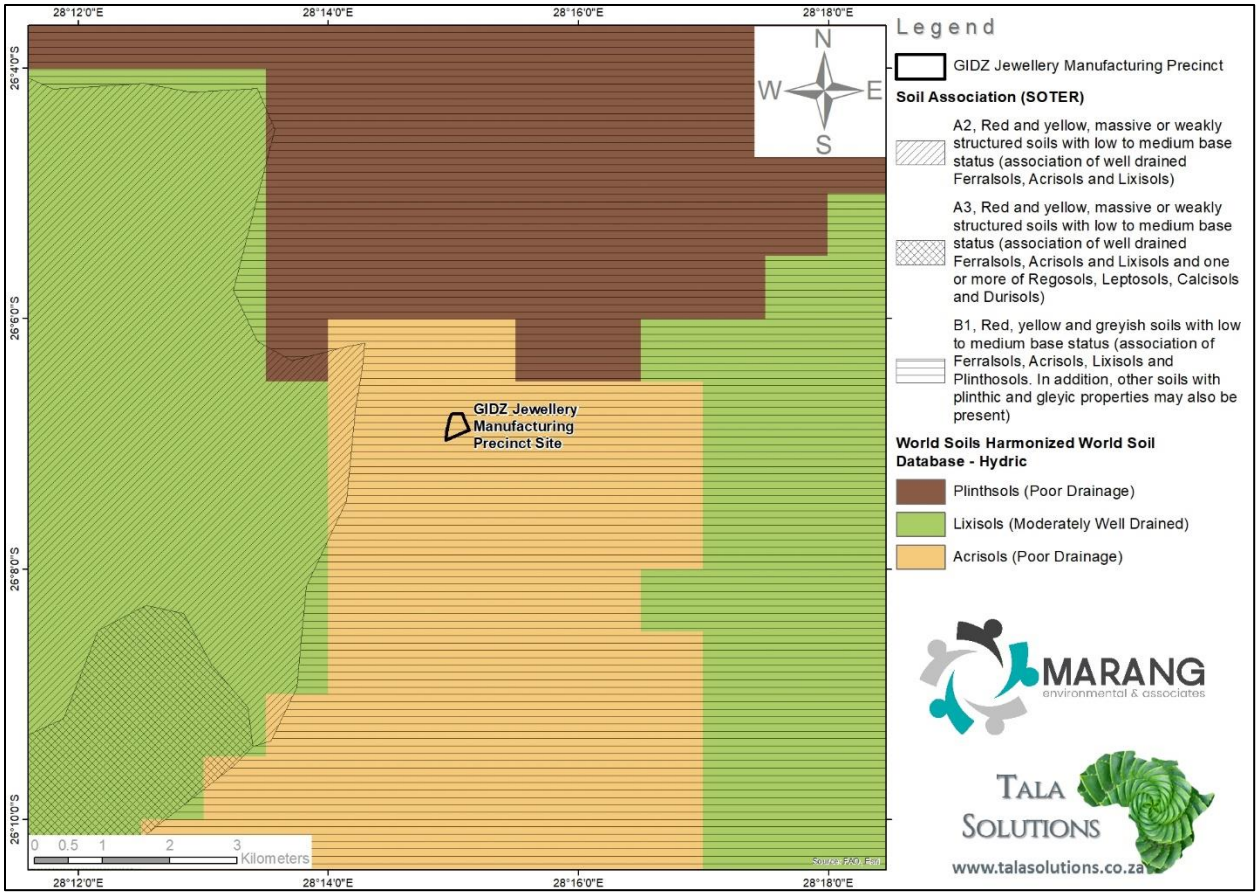

Figure 6-3: SOTER Database: Soil type of the JMP development site and surrounding areas.

6.4. Visual

A specialist review letter commenting on the visual related findings, impacts and recommendations/mitigation measures associated with the proposed development of the MetCon facility was undertaken by Stephen van Staden of Scientific Aquatic Services (SAS) and is provided in **Appendix 6D**.

A description of the receiving environment from a visual perspective is provided in the section below.

6.4.1. Visual Desktop Analysis

The following data is applicable to the Precious Metals Refinery Facility (PMRF), according to various databases including but not limited to Mucina & Rutherford (2012):

- The PMRF is situated within the Grassland Bioregion, the Mesic Highveld Grassland Bioregion and is characterised by the Soweto Highveld Grassland Vegetation Type, according to Mucina & Rutherford (2006) (See Appendix B of Visual Review Letter for further detail on the climate, topography and vegetation of the Soweto Highveld Grassland Vegetation Type);
- According to the South African Protected and Conservation Areas Databases (SAPAD & SACAD, 2018) and the National Protected Areas Expansion Strategy (NPAES, 2009), the following nature reserves are situated within a 10km radius of the PMRF:

- The Korsman Bird Sanctuary (Local Nature Reserve) is situated approximately 9.1km southeast of the PMRF. This Bird Sanctuary is otherwise known as the Westdene Pan Nature Reserve (Under SAPAD);
- The Pamula Park Private Nature Reserve is situated approximately 1.5km east of the PMRF; and
- No conservation areas are situated within a 10km radius of the PMRF.

- The eastern portion of the PMRF is situated within the Industrial and Large Commercial Zone (Zone 5) of the Environmental Management Framework (EMF, 2015) (**Figure 6-4**); and
- Based on digital satellite imagery of the PMRF and surrounding area, the PMRF is situated directly east of the OR Tambo International Airport, north of the residential area Bonaero Park and Club Africa & Jubilee Guest Lodge & Golf Driving Range is situated approximately 470m north of the PMRF and open grassveld is situated east of the PMRF. The elevation profile of the area indicates gently to moderately undulating terrain. Since the surrounding area has been subject to urban and industrial development and the PMRF is situated within a footprint site where buildings are already constructed, the visual character and sense of place of the area will not be affected negatively. Furthermore, the gently to moderately undulating terrain, existing vegetation associated with the residential and industrial areas and anthropogenic structures (buildings, storage facilities, factories, powerlines, houses etc.) serve to partially or completely obscure the view toward the PMRF from various sensitive receptors in the surrounding environment.

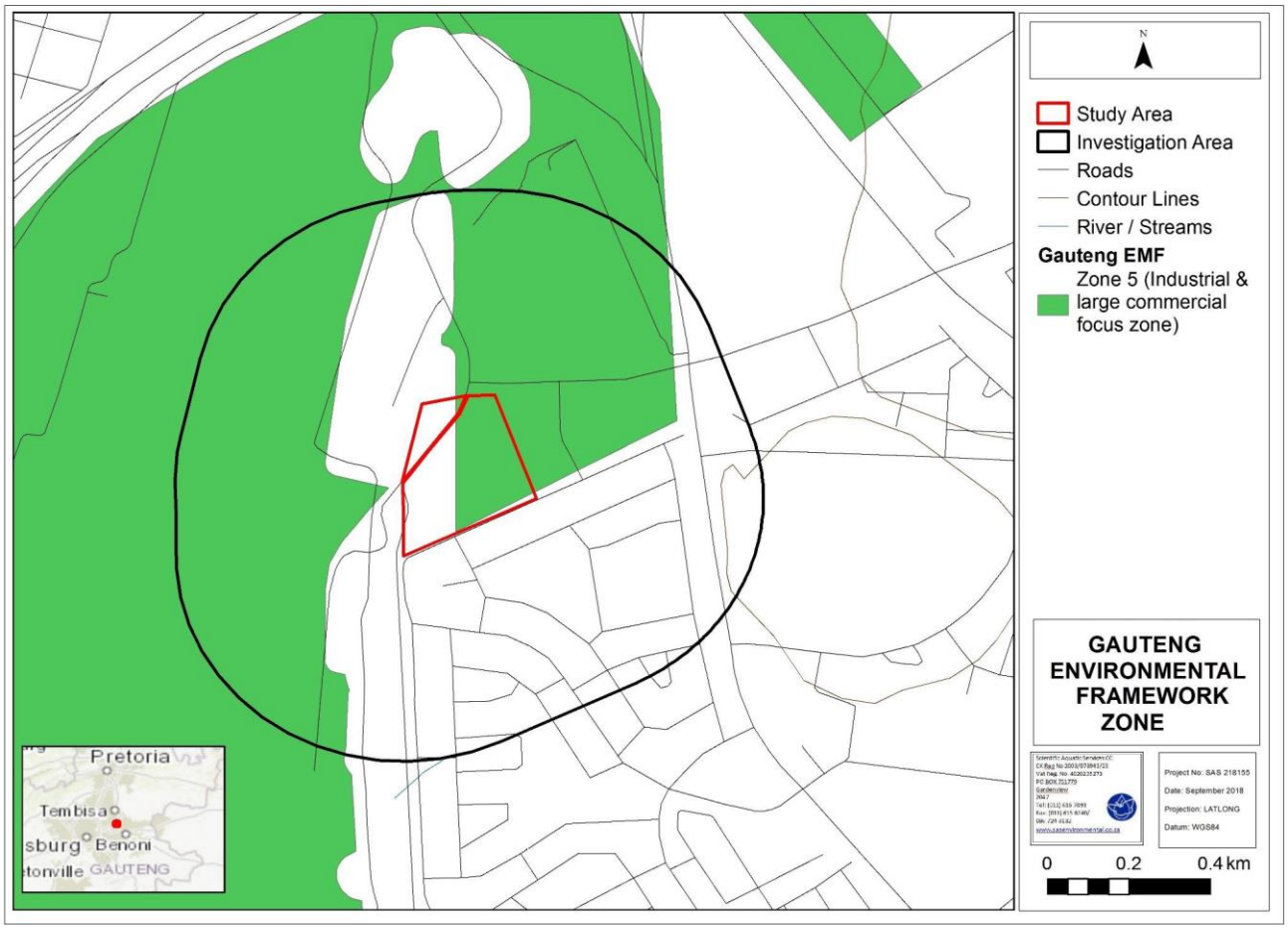

Figure 6-4. The Gauteng Environmental Management Framework Zone 5 applicable to the study area (Gauteng EMF, 2015).

6.5. Heritage

A Heritage Screening Assessment which provides the heritage related findings, impacts and recommendations/mitigation measures associated with the proposed development of the MetCon facility was undertaken by Polke Birkholtz of PGS Heritage and is provided in **Appendix 6A**.

A description of the receiving environment from a heritage perspective is provided in the section below.

6.5.1. History of site

The brief desktop study comprises two (2) components, namely an assessment of a historic topographic sheet to assess the historic nature of the study area as well as a brief discussion on palaeontology.

- Early Farm Ownership History:

The ownership history for the farm Witkoppie was located at the National Archives (National Archives, RAK, 2874). As the historic property description for the study area is not known, only the early component of the farm ownership history will be discussed below.

The farm Witkoppie, which at the time comprised farm number 87 of the Suikerboschrand District, was first inspected on 24 April 1862 by J.G. Marais. On 13 January 1863 the farm was transferred to its first owner, Daniel Jacobus Oosthuizen. Oosthuizen remained in possession of the farm for more than five years. On 22 October 1868, the farm was transferred to Jacobus Steenkamp. Steenkamp owned the farm for only a year when, on 1 November 1869, the farm was transferred to Jan Hermanus Cronjé. For the subsequent three years, J.H. Cronjé remained in possession of the farm. On 28 February 1873 the farm was transferred to Abraham Cronjé, Johan Andries Muller and Cornelis Johannes Muller.

On 7 February 1874 a one third portion of the farm was transferred from Cornelis Johannes Muller to Daniel Wynand du Preez. On 18 April 1876, another one third portion of the farm was transferred from Abraham Cronjé to the same Daniel Wynand du Preez and on 20 February 1877 the third portion was transferred from Johan Andries Muller to Daniel Wynand du Preez. This last transaction meant that the entire farm was now owned by Daniel Wynand du Preez.

On 4 September 1886 the entire farm was transferred from Daniel Wynand du Preez to Charles Daniel Rudd, Cecil John Rhodes and Harry Stratford Caldecott. Cecil John Rhodes (5 July 1853 – 26 March 1902) was a famous British imperialist, businessman, mining magnate and politician. Charles Daniel Rudd (22 October 1844 – 15 November 1916) was a business partner of Rhodes and the two men inter alia were founding directors of the De Beers Diamond Mine (www.wikipedia.org). Harry Stratford Caldecott is known to have been a lawyer and Rudd's brotherin- law (Rotberg, 1990). The acquisition of the farm Witkoppie by mining men such as Rhodes and Rudd at this particular time was no coincidence. Seven months earlier, in February 1886, George Harrison had discovered an outcrop of the Witwatersrand Main Reef on the farm Langlaagte, a discovery which directly resulted in the Witwatersrand gold rush and establishment of Johannesburg (www.wikipedia.org). It is important to note that the acquisition of the farm Witkoppie by these three men did not mean that they had any intention of living on the farm or farming here. This acquisition was one of many that especially Rhodes and Rudd made during the rush for gold mining properties along the Witwatersrand during this time.

On 20 December 1888 three portions of the farm Witkoppie were transferred collectively from the three owners to each owner individually. In this way, Portion A was transferred to Cecil John Rhodes, Portion B to Charles Daniel Rudd and Portion C was transferred to Harry Stratford Caldecott. On 24 May 1889 the three portions were transferred from Rhodes, Rudd and Caldecott to the Witkopje Estate and Gold Mining Company Limited. On 31 March 1892, the three portions were transferred from the Witkopje Estate and Gold Mining Company Limited to Isaac Lewis. This meant that Isaac Lewis was now the owner of the entire farm Witkoppie. Lewis was an industrialist and businessman who for most of his life was in partnership with his friend and nephew Sammy Marks under the business name Lewis & Marks. On 16 July 1892, the three farm portions were transferred from Isaac Lewis to the New Witkopje Estate and Gold Mining Company Limited.

The available farm ownership history ends with this transfer of 16 July 1892. It can be assumed that for the subsequent decades this history would have revolved around gold mining companies. Over time, individual persons would also have become owners of portions of the farm Witkoppie.

- Historical Aerial Photographs:

Aerial photographs provide a valuable tool in assessing the characteristics of a particular portion of land over time. A sequence of aerial photographs depicting the study area was obtained from National Geo-Spatial Information at the Department of Rural Development and Land Reform in Cape Town.

- The 1941 Aerial Photograph:

The 1941 aerial photograph (NGI, Aerial Photographs, 162_07_57193) represents the oldest aerial photograph depicting the study area that could be found. It was taken in October 1941. The following observations can be made from the depiction of the study area on this 1941 aerial photograph:

- A plantation is located across the study area and its surroundings.
- No buildings or other possible heritage features are shown within the study area or its
- immediate surroundings.
- No evidence for what is today known as the OR Tambo International Airport can be seen
- on the image.

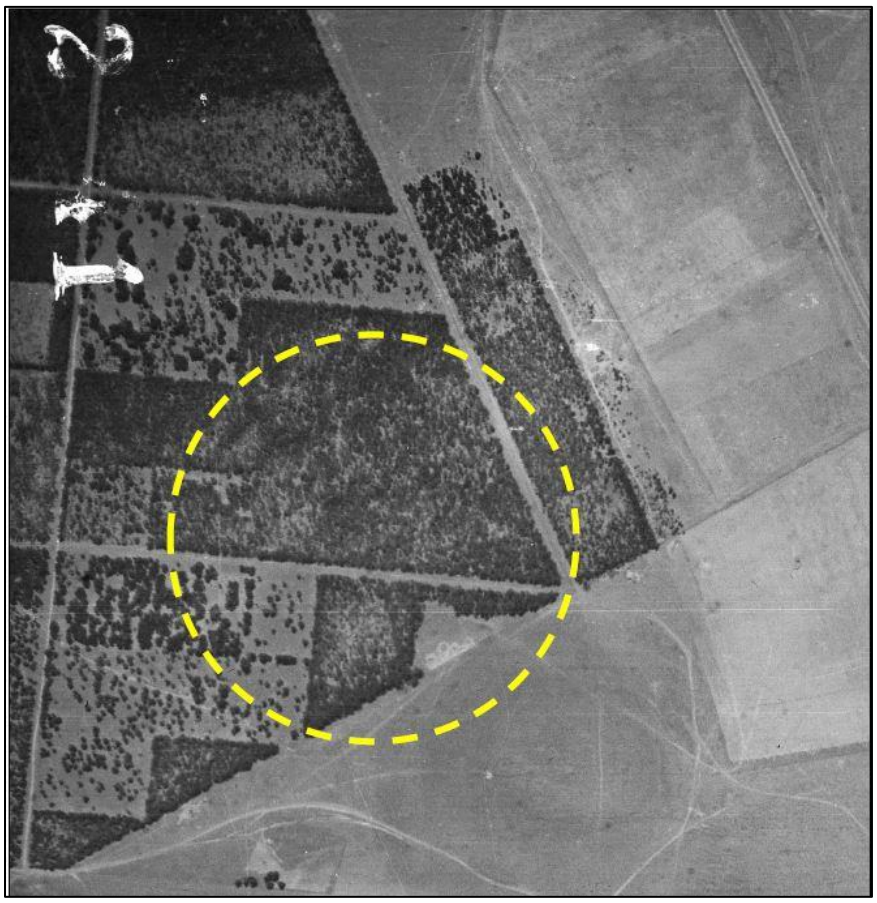

Figure 6-5: Section of the 1941 photograph (NGI, Aerial Photographs, 162_07_57193) showing the study area and its surroundings. The approximate position of the study area is marked in stippled yellow line.

- The 1952 Aerial Photograph:

The 1952 aerial photograph (NGI, Aerial Photographs, 314_04_44444) represents the second oldest aerial photograph depicting the study area that could be found. This particular aerial photograph was taken on 12 March 1952. The following observations can be made from the depiction of the study area on this 1952 aerial photograph:

- The plantation which had characterised the study area on the 1941 aerial photograph, had almost entirely been removed on this 1952 aerial photograph.
- No buildings or other possible heritage features are shown within the study area or its immediate surroundings.
- It is clear from the surroundings of the study area that construction work on what was then known as the Jan Smuts International Airport was already well underway. The main runway which at present extends some distance further to the north, was much shorter at the time (see bottom left corner of the depiction).

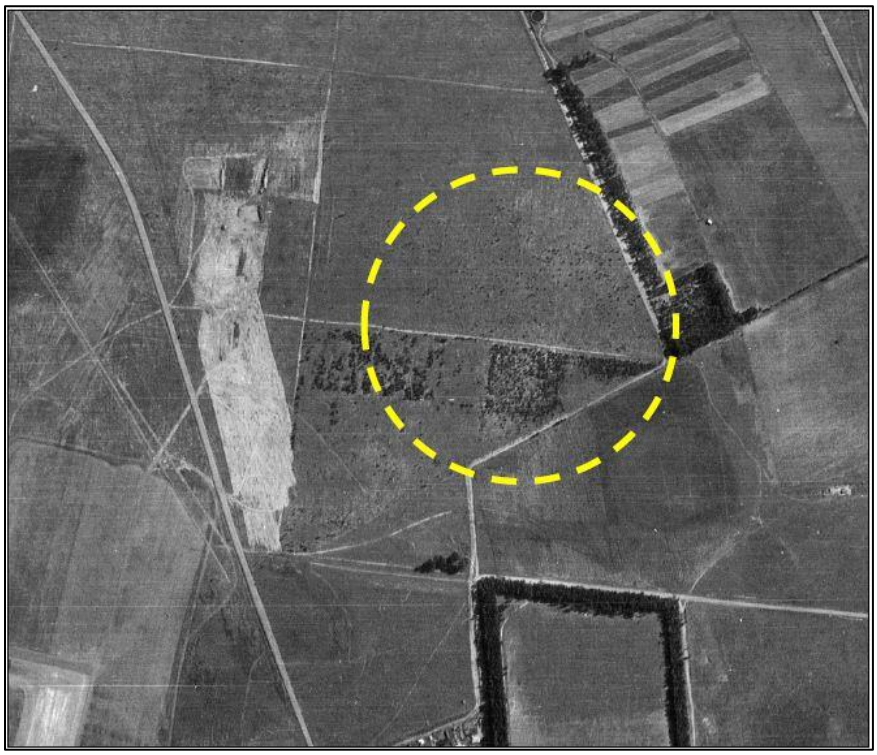

Figure 6-6: Section of the 1952 image (NGI, Aerial Photographs, 314_04_44444) showing the study area and its surroundings. The position of the study area is marked in stippled yellow line. The northern edge of the main runway at the airport can be seen in the bottom left-hand corner.

- The 1969 Aerial Photograph:

The 1969 aerial photograph (NGI, Aerial Photographs, 273_1969_02_7490) represents the third oldest aerial photograph depicting the study area that could be found. The following observations can be made from the depiction of the study area on this 1969 aerial photograph:

- Within the study area, the trees from the plantation which had been partially removed between 1941 and 1952, appear to have expanded in an uncontrolled way across the study area. A number of smaller saplings can be seen.
- No buildings or other possible heritage features are shown within the study area or its immediate surroundings.
- The main runway at the airport was extended by some distance in a northern direction to its general position and length today.
- Immediately south of the study area, the residential area known as Bonaero Park is shown.

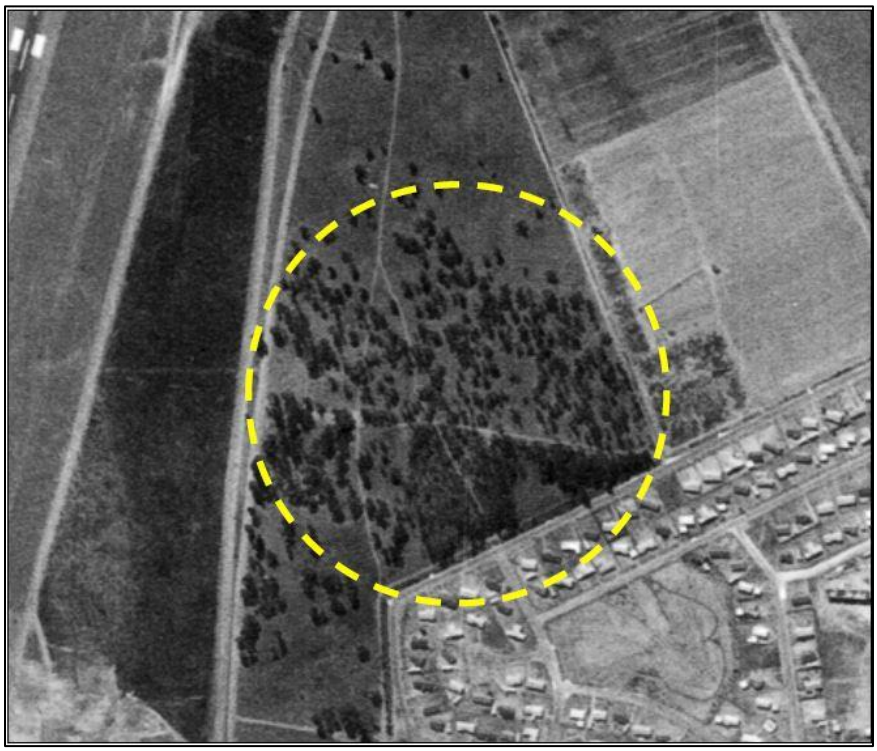

Figure 6-7: Section of the 1969 photograph (NGI, Aerial Photographs, 273_1969_02_7490) showing the study area and surroundings. The position of the study area is marked in yellow stippled line. The residential area known as Bonaero Park is shown for the first time south of the study area. A section of the main runway at the airport can be seen in the top left-hand corner.

- The 1976 Aerial Photograph:

The 1976 aerial photograph (NGI, Aerial Photographs, 775_02_0282) represents the fourth oldest aerial photograph depicting the study area that could be found. This particular aerial photograph was taken on 8 June 1976. The following observations can be made from the depiction of the study area on this 1976 aerial photograph:

- Within the study area, sections of the plantation depicted on the 1941 aerial photograph, can still be seen. Some surface excavation and earthworks appear to have taken place within the study area.
- No buildings or other possible heritage features are shown within the study area or its immediate surroundings.

- In the surroundings of the study area, the first appearance of hangars on this side of the airport is shown. These first two hangars appear to be located where the hangars of the company Cem Air are located today.

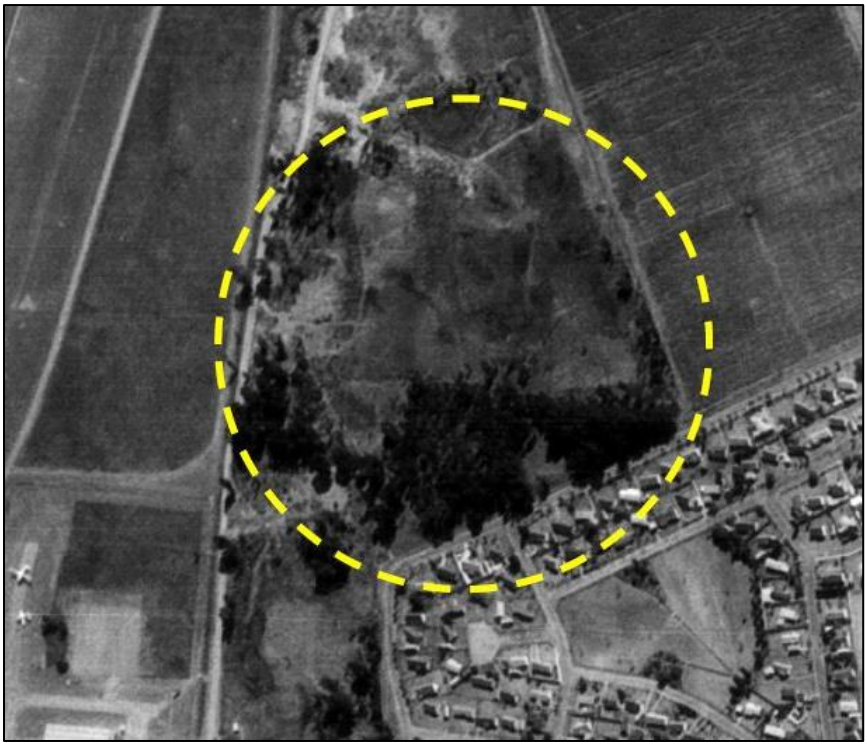

Figure 6-8: Section of the 1976 photograph (NGI, Aerial Photographs, 775_02_0282) showing the study area and surroundings. The position of the study area is marked in yellow stippled line.

6.6. Air quality

An Air Quality Impact Assessment was undertaken by Sophia Rosslee of Marang Environmental and Associates (Pty) Ltd and is provided in **Appendix 6F**. As part of the Air Quality Impact Assessment, a Baseline Air Quality Assessment was undertaken to determine the prevailing meteorological conditions at the site, as well as to establish baseline concentrations of key air pollutants of concern, identify existing sources of emissions and identify key sensitive receptors surrounding the project site.

The findings of the Baseline Air Quality Assessment are provided in the sections below.

6.6.1. Sensitive Receptors

A sensitive receptor is defined as a person or place where involuntary exposure to air pollutants released by the site's activities could take place. Identified urban/residential areas which are located within 10km of the proposed facility are given in **Figure 6-9** below. Bonaero Park is situated along the south-eastern border of the JMP site.

Hospitals and schools located within 5km from the site are given in **Table 6-1**. No old age homes were identified to be within 5km of the site (through a desktop study).

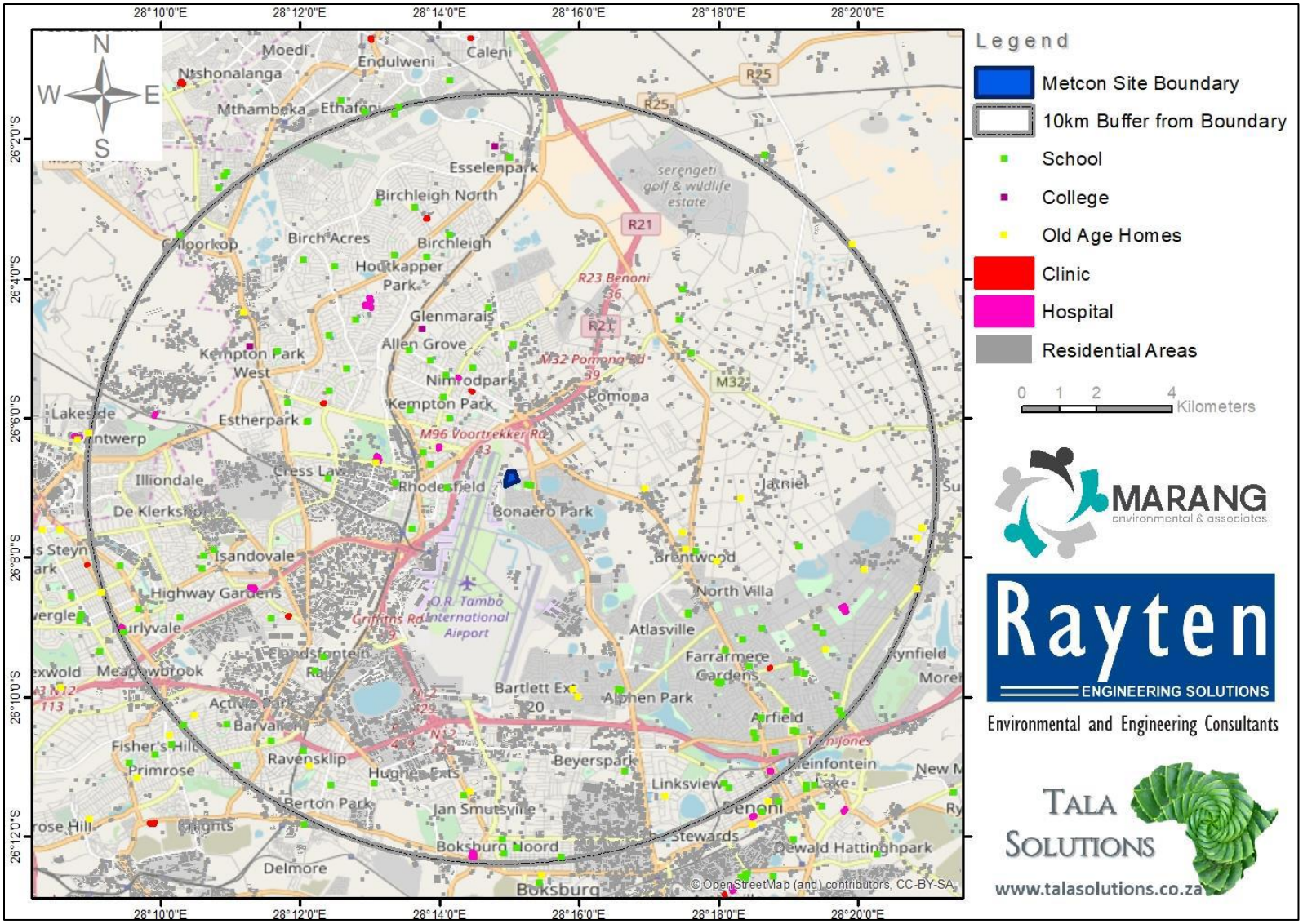

Figure 6-9. Residential receptors surrounding MetCon Jewellery Precinct Facility.

Table 6-1. Discrete receptors within 5km of proposed MetCon Jewellery Precinct Facility. Receptors were identified through a desktop study.

Receptor	Co-ordinate		Elevation	Type	Approx. Distance	Direction from project site
	x	Y	m		km	
Edu 1+2+3	-26.11687	28.25514	1669.69	Residential	0.3	E
Edu 4	-26.11042	28.23167	1666.95	Residential	1.79	WNW
Edu 5	-26.9976	28.23642	1673.96	Residential	2.58	NW
Edu 6	-26.10671	28.22901	1664.51	Residential	2.31	WNW
Edu 7	-26.11422	28.22291	1651.71	Residential	2.76	W
Edu 8	-26.11378	28.20704	1670.91	Residential	4.37	W
Edu 9+10	-26.10094	28.20106	1664.21	Residential	5.02	WNW
Edu 11	-26.08054	28.25125	1655.04	Residential	3.60	N
Hosp 1	-26.10764	28.23327	1652.32	Residential	1.96	NW
Hosp 2	-26.09377	28.24099	1671.83	Residential	2.56	NNW
Hosp 3	-26.09648	28.20458	1662.07	Residential	4.99	WNW
Hosp 4+5	-26.10953	28.21753	1651.41	Residential	3.36	W
Hosp 6	-26.09011	28.23783	1669.70	Residential	2.89	NNW
Hosp 7	-26.09314	28.24097	1671.22	Residential	2.45	NNW
Notes: Edu = educational/training facility Hosp = hospital / clinic Distance = indicated from centre of site						

6.6.2. Baseline Assessment

6.6.2.1. Meteorological Overview

Meteorological processes will determine the dispersion and dilution potential of pollutants emitted into the atmosphere. The vertical dispersion of pollution is governed by the stability of the atmosphere and the depth of the surface mixing layer. Horizontal dispersion of pollution is defined by dominant wind fields. Therefore, meteorological parameters including temperature, precipitation, wind speed and wind direction are of significance as they will influence the degree to which pollution will accumulate or disperse in the atmosphere.

As per the Code of Practice for Air Dispersion Modelling in Air Quality Management in South Africa (DEA, 2014), representativeness of the meteorological data is influenced by the following four factors:

- Proximity of the meteorological site to the area being modelled;
- Complexity of the terrain;
- Exposure of the meteorological measurement site; and
- Period of data collection.

Meteorological data for the project area was obtained from the Johannesburg/OR Tambo International Airport (hereafter “OR Tambo Station” - 26.143000° S; 28.234600° E) for the period of January 2014 to December 2016. Details of the meteorological data obtained is summarised in **Table 6-2** below.

Table 6-2. Meteorological Data Details (SAWS, 2017).

Meteorological Data Details	
Met Data Information	**Description**
Source	South African Weather Services
Met data type	Surface Data
Station	OR Tambo International Airport
Latitude	26.143000° S
Longitude	28.234600° E
Time zone	UTC +2 hours
Period of record	January 2014 - December 2016
Met Station Parameters	**Description**
Anemometer height	Assumed 10m
Station base elevation	1711 m
Parameters	Wind speed, wind direction, cloud cover, temperature, relative humidity, rainfall
Format	Excel - hourly
Models used to process met data	
Model used to process data for wind roses	WR Plot
Model used to process data for AERMOD	AERMET

6.6.2.2. Local Wind Field

Figure 6-10 provides the period wind rose plot for the MetCon Jewellery Precinct Facility for the period January 2014 to December 2016. The predominant wind directions for the period are observed from the north-west (~14% of the time), north (~12.5% of the time) and north-north-west (~11.2% of the time). Wind speeds for the three (3)-year period are generally moderate to fast with calm conditions, defined as wind speeds less than 1 m/s, observed for 2.14 % of the time.

The morning (AM) and evening (PM) period wind rose plots for the period January 2014 to December 2016 are given in **Figure 6-11** and show diurnal variation in the wind field data. During the morning (AM) period, high frequency winds are observed from the north, north-north-east and north-west; as opposed to the evening (PM) period, where winds are predominantly observed from the north west (**Figure 6-11**).

Seasonal variation in winds at the MetCon Jewellery Precinct Facility is shown in **Figure 6-12**. During the spring and summer seasons, winds originate predominantly from the northerly and north-westerly sectors. During the autumn season, winds originate predominantly from the north-westerly and west-north-westerly sectors. Winter months, in particular, exhibit greater variation in wind direction. with prevailing winds observed from the north-westerly, northerly and south-south-westerly quadrants.

Based on the prevailing wind fields for the period January 2014 to December 2016, emissions from operations at the facility will likely be transported towards the south-easterly, southerly, and south-south-

easterly quadrants. Moderate to fast wind speeds observed during all time periods may result in effective dispersion and dilution of emissions.

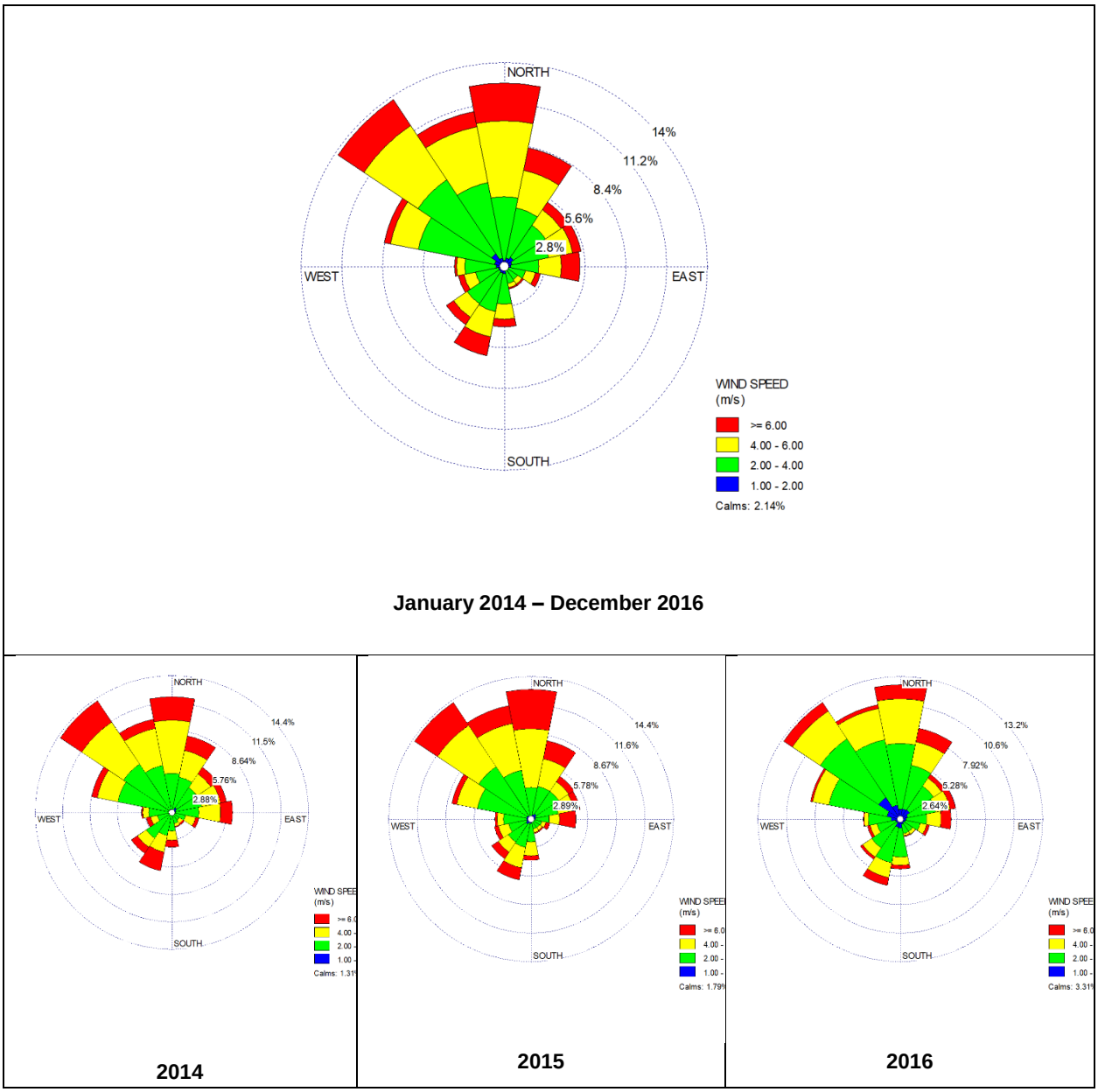

Figure 6-10: Period Wind Rose Plots for the project site for the period January 2014 - December 2016.

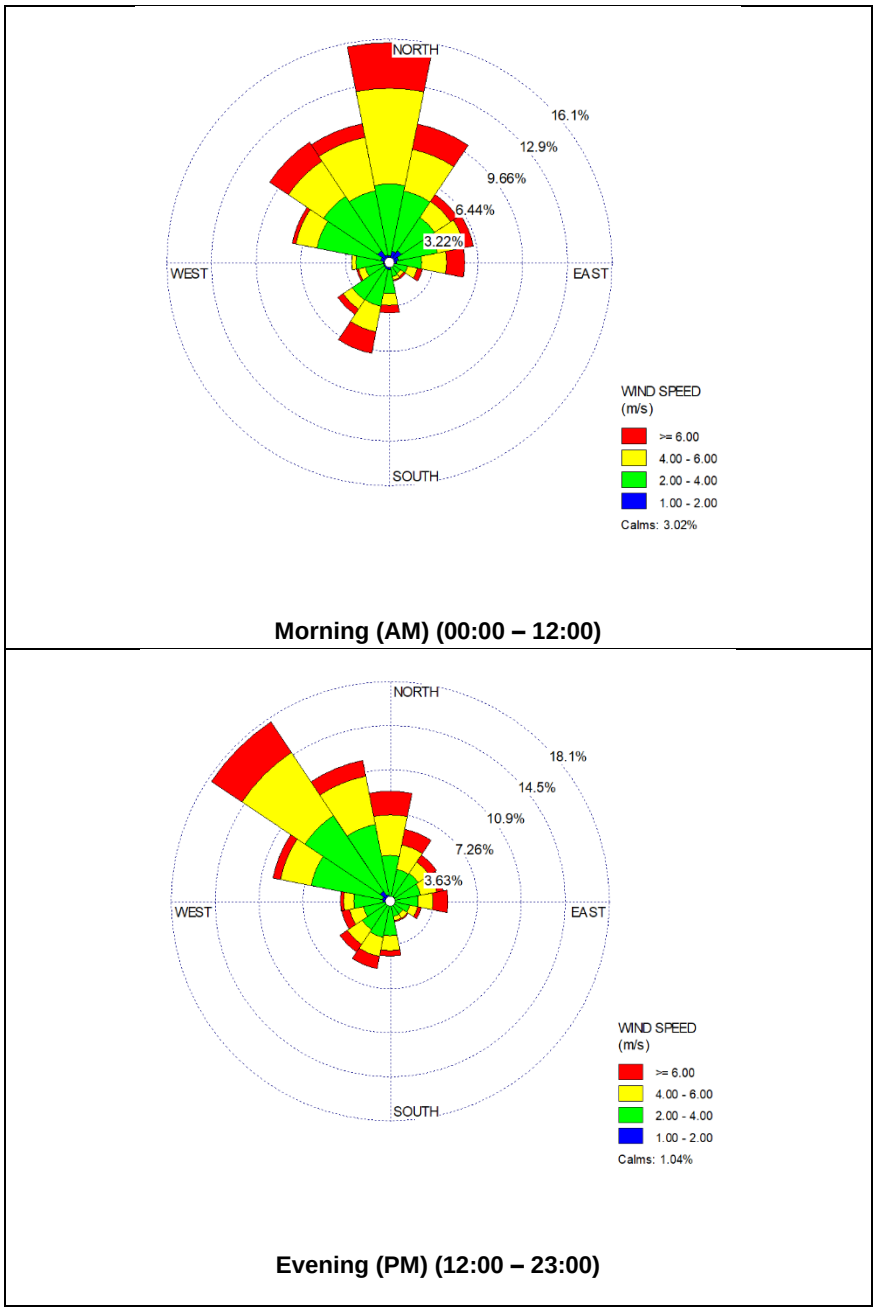

Figure 6-11: Morning (AM) (00:00 - 12:00) and Evening (PM) (12:00 - 23:00) Period Wind Rose Plots for the project site for the Period January 2014 - December 2016.

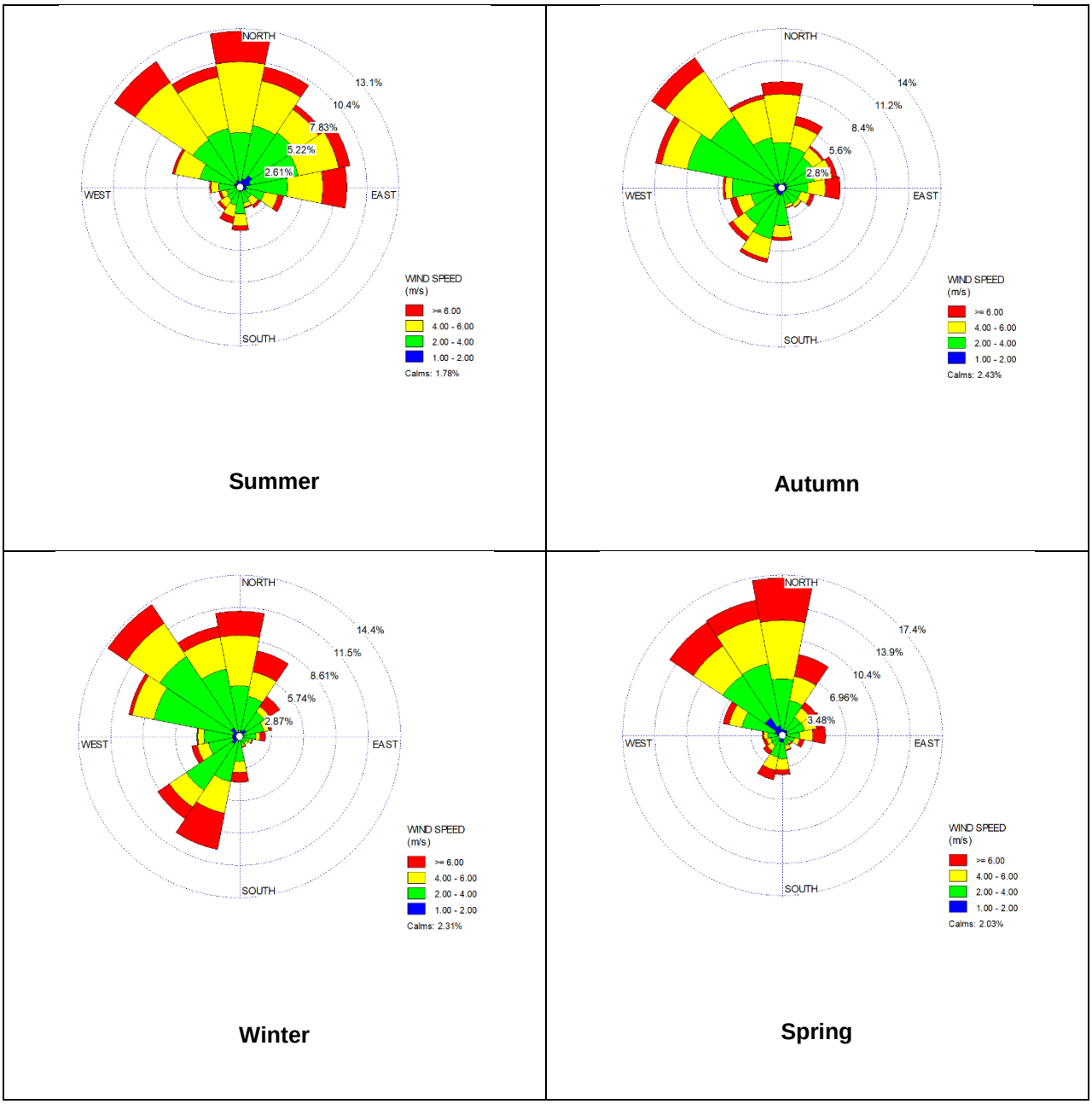

Figure 6-12: Seasonal Variation of Winds for the Project Site for the Period January 2014 - December 2016.

6.6.3. Baseline Air Quality Concentrations

The existing air quality situation is usually evaluated using available monitoring data from permanent ambient air quality monitoring stations and dust fallout networks operated near the project site. For the Air Quality Impact Assessment, which was undertaken as part of this EIA process, air quality data used was from the Bedfordview Air quality monitoring station, which is located approximately 13km south-west of the proposed site. Ideally the ORTIA air quality monitoring station would have been used for the assessment, however, a significant amount of air quality information was missing from the ORTIA air quality monitoring

station, which was subsequently confirmed as currently not working. The monitoring station at Bedfordview was thus used for the purposes of this investigation as it is the second nearest station and would provide the most accurate data. If the ORTIA monitoring station becomes functional again, data from this station may be used going forward, and the Air Quality Impact Assessment Report will be updated accordingly.

There was inadequate data from the station to present background concentrations for PM_{10}, benzene and CO concentrations at the study site. However, there was background data available for $PM_{2.5}$, SO_2, NO_2 and ozone (O_3), which is discussed below in section 6.6.4.1 below. Details of the station are provided in **Table 6-3** below.

Table 6-3. Air Quality monitoring station details.

Bedfordview	
Site Id:	192
Site Code:	1
Site Name:	Bedfordview
Provider:	Ekurhuleni Metropolitan Municipality
Network:	Ekurhuleni Metro
Description:	Traffic related pollution from adjacent N3 freeway.
Location:	N3 Freeway
Longitude:	28.133194
Latitude:	-26.178611
Data Interval:	10
Height above sea level (m):	1632
Monitoring Start Date:	2006/01/07
Province:	Gauteng
Municipality:	Ekurhuleni Metropolitan
Equipment Owner:	Ekurhuleni Metropolitan Municipality
Land Owner:	Ekurhuleni Metro
Equipment Housing:	Shelter
Monitoring Objectives:	Traffic pollution from the N3 highway
Site Topography:	Flat Terrrain
Location and Description of Emission Sources:	vehicle emissions
Site Classification:	Traffic
Technician:	Rufus Sebati
SANAS Accredited:	Yes

6.6.3.1. Baseline $PM_{2.5}$, NO_2, SO_2 and O_3 Concentrations

Data were analysed for the period of January 2014 to December 2017. Daily and hourly average $PM_{2.5}$, NO_2, SO_2 and O_3 concentrations for the period of 01 January 2014 – 31 December 2017 were investigated and it was found that daily average concentrations range from 5 – 35 µg/m3 for $PM_{2.5}$, 1 – 180 ppb (1.88 – 338.4 µg/m3) for NO_2, 1 – 68 ppb (2.62 – 178.16 µg/m3) for SO_2, and 5 – 65 ppb (10 – 130 µg/m3) for O_3. Maximum hourly average concentrations were 110 µg/m3 for $PM_{2.5}$, 375 ppb (705 µg/m3) for NO_2, 250 ppb (655 µg/m3) for SO_2 and 100 ppb (200 µg/m3) for O_3.

Exceedances of the daily and hourly ambient air quality standards, where applicable, were observed for $PM_{2.5}$, NO_2, SO_2 and O_3. The 2014 - 2015 period is generally characterised by higher concentrations of all pollutants, while the 2016 – 2017 period is characterised by lower concentrations. Higher concentrations are generally observed over the winter to early spring seasons.

6.6.4. Surrounding Sources of Air Pollution

Existing key sources of air pollution surrounding the proposed MetCon facility were identified during a desktop exercise and were identified to be:

- Wind erosion from exposed areas (e.g. stockpiles, open storage piles, exposed cultivated fields, degraded land, etc.);
- Potential veld fires;
- Agricultural activity and biomass burning;
- Refuse dumps,
- Industrial activity,
- Treatment plants;
- Township/Informal settlements;
- Vehicle emissions.

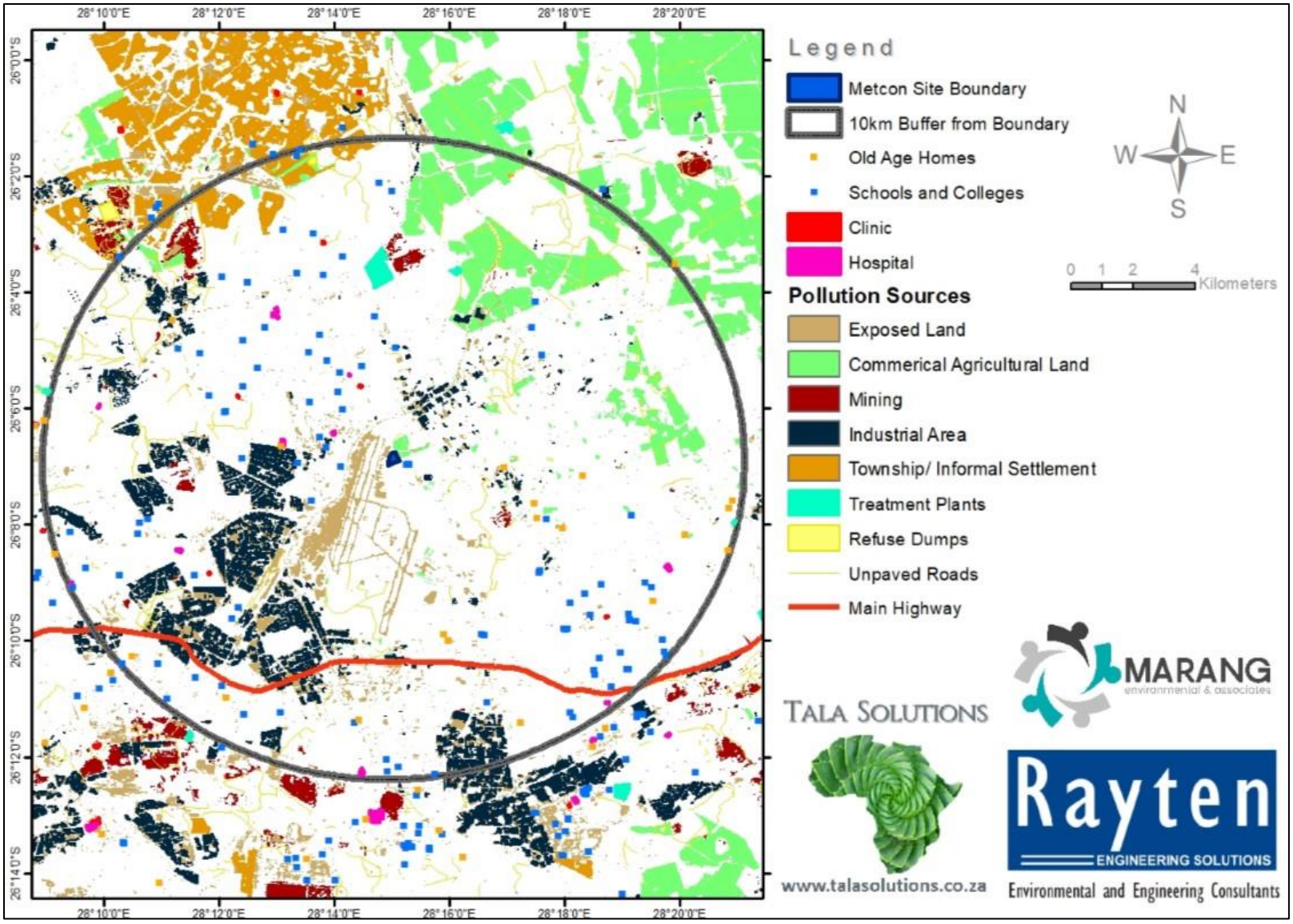

Figure 6-13: Identified surrounding emission sources within 10km of the proposed JMP MetCon facility.

6.6.4.1. Wind Erosion from Exposed Areas

There are open exposed areas such as bare soil, eroded natural land, etc. and stockpiles/storage piles surrounding the proposed site which represent a source of dust in the area. Dust emissions due to the erosion of open storage piles and exposed areas occur when the threshold wind speed is exceeded. The threshold wind speed is dependent on the erosion potential of the exposed surface, which is expressed in terms of the availability of erodible material per unit area (mass/area). Any factor which binds the erodible material or otherwise reduces the availability of erodible material on the surface thus decreases the erosion potential of the surface. Studies have shown that when the threshold wind speeds are exceeded, particulate emission rates tend to decay rapidly due to the reduced availability of erodible material.

6.6.4.2. Veld Fires

Veld fires could occur in surrounding open areas. Veld fires are a source of air pollutants, such as particulate matter, VOCs and CO. The intensity and frequency of veld fires depends on meteorological conditions, plant material characteristics and amount of combustible material over an area. Over most parts of South Africa, a higher frequency of veld fire incidents occurs during the dry winter season, when there is a greater amount of combustible plant material (fuel load) associated with a low moisture content. In the Western Cape, veld fires are most common during the dry summer months. Although veld fires are a naturally occurring phenomenon, they are a key source of emissions that contribute to background air pollution.

6.6.4.3. Agricultural activity and biomass burning

There are agricultural areas north to north-east of the project site. Emissions from agricultural activities are difficult to control due to the seasonality of emissions and the large surface area producing emissions. Expected emissions resulting from agricultural activities include particulates associated with wind erosion and burning of crop residue, chemicals associated with crop spraying and odiferous emissions resulting from manure, fertilizer and crop residue. Dust associated with agricultural practices may contain seeds, pollen and plant tissue, as well as agrochemicals, such as pesticides. The application of pesticides during temperature inversions increases the drift of the spray and the area of impact.

Dust entrainment from farming vehicles travelling on gravel roads may also cause increased particulates in an area. Dust from traffic on gravel roads increases with higher vehicle speeds, more vehicles and lower moisture conditions. The seasonal burning of the veld from July to September for field clearing in preparation for planting is also a source of smoke. The nature of the activity has a potential impact on air quality in the area.

6.6.4.4. Domestic Fuel Combustion

There are townships/informal settlements (that were identified during the desktop study) located within a 2km radius north-west from the site, and further off in the south-eastern quadrant. Domestic fuel combustion is prevalent in informal settlements where solid fuels are mostly used for cooking and indoor heating purposes. Indoor heating occurs more frequently in the cold late autumn to early spring months. Emissions from the solid fuels are thus expected to be high during the same months, and comparatively low during the warm spring and summer months. Combustion of domestic solid fuels results mainly in production of CO and particulates. If coal is being used, SO2 and H2S might be additionally emitted in relatively smaller quantities.

6.6.4.5. Urban Industrial Activities

There are several urban industrial activity areas surrounding the project site. The following activities are some common sources of air pollutants in industrial areas:

- Boiler stack emissions;
- Mobile equipment exhaust emissions (forklifts, front-end-loaders, bull dozers, etc.);
- Furnaces (e.g. foundries, metallurgical plants, etc.);
- Material handling & storage;
- Fuel combustion installations & activity;
- Material incineration;
- Chemical treatment and processes; and
- Crushing & screening of dry material.

Emissions from urban industrial activities can be controlled by use of suitable, specific abatement equipment and implementation of air pollution control measures. Expected emissions resulting from urban industrial activities include particulates, VOCs and gases such as NO_x, SO_2 and CO.

6.6.4.6. Landfill Dumps

There is a landfill dump approximately 9.5km north-north-west of the study site. The main processes associated with gas emissions at landfills are:

- evaporation of VOCs (e.g., solvents);
- chemical reactions between waste components; and
- microbial action (i.e. decomposition), during which bacteria breakdown organic waste.

Gases released from landfills include mainly CH_4 (Methane) and CO_2, both of which are greenhouse gases. Trace amounts of other VOCs are also released.

6.6.4.7. Treatment Plants

There are sewage treatment plants approximately 7km north of the project site. Operation of such treatment plants triggers the direct emission of greenhouse gases such as CO_2, CH_4, and nitrous oxide (N_2O) from biological processes. Hydrogen sulphide (H_2S) is also produced as a by-product of decomposition of organic material. Sewage treatment works are generally associated with odour impacts.

6.7. Noise

A specialist review letter commenting on the noise related findings, impacts and recommendations/mitigation measures associated the proposed development of the MetCon facility was undertaken by Morné de Jager of Enviro Acoustic Research (EAR) and is provided in **Appendix 6**E.

A description of the receiving environment from a noise perspective is provided in the sections below.

6.7.1. Potential sources of noise

Based on the Air Quality Impact Assessment compiled for the project, the potential sources of noise would be:

- A baghouse Stack (with an associated blower). The stack may be 20 m high and generate 99 dBA (based on a stack diameter of 0.58 m, exit velocity of 21 m/s);
- A Scrubber Stack (with an associated blower). The stack may be 5 m high and generate 94 dBA (based on a stack diameter of 0.36 m, exit velocity of 24 m/s);
- A blower generating 105 dBA, located on the far side of the building. This is an unmitigated scenario with the blower not enclosed (which will reduce noise levels from the blower).

These conceptual noise sources are illustrated in **Figure 6-14** below. This assessment considers both the day (06:00 – 22:00) and night-time (22:00 – 06:00) scenario.

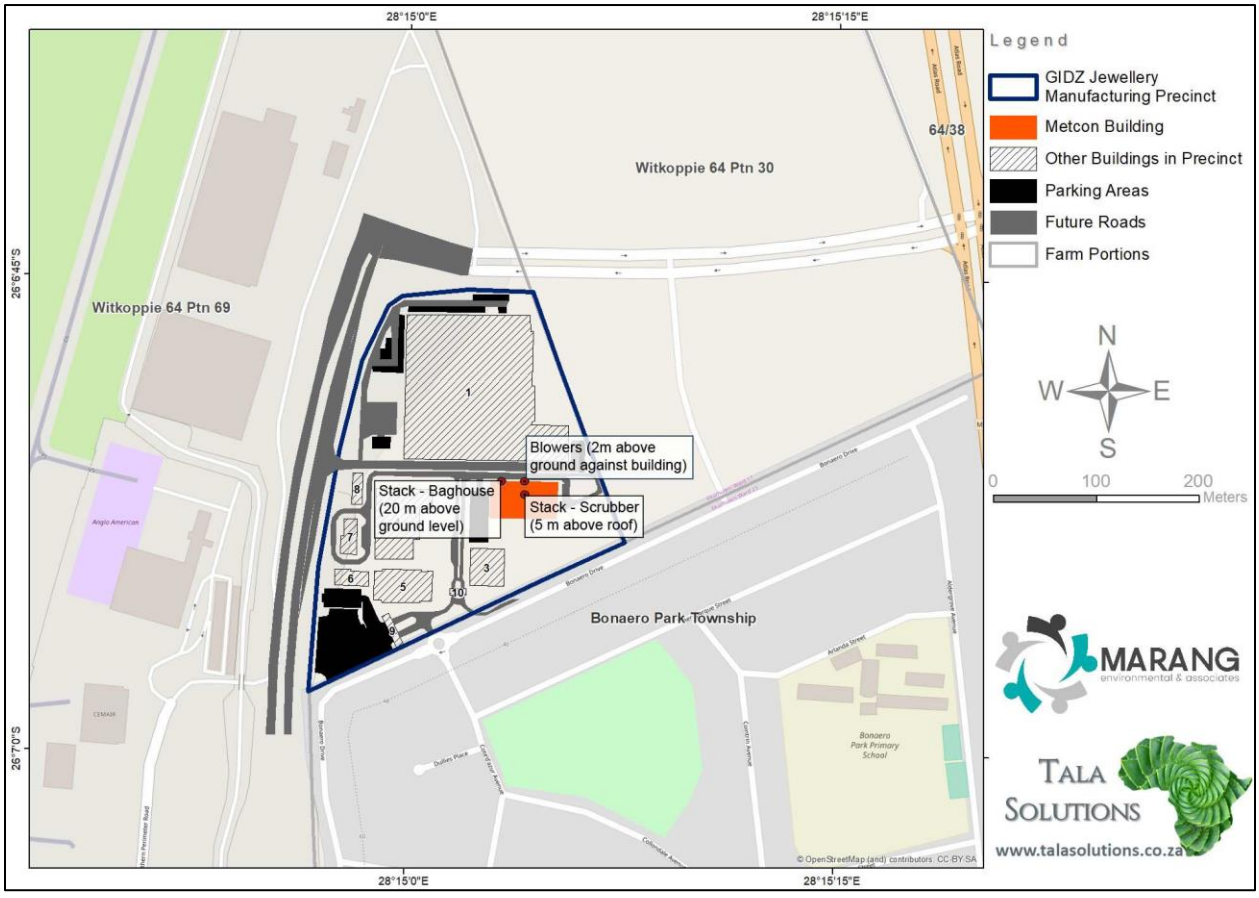

Figure 6-14. Description of main buildings and measurement locations

6.7.2. Other noise sources of significance

Other noise sources in the area include:

- The ORTIA with flights landing and taking off from around 05:00 – 24:00. The project area is within 1,000 m and noises from the airport definitely impact on this area, with the noises from planes raising the ambient sound levels every few minutes.

- The busy R21, M43 and M45 are within 2,000 m from this development area. This will raise ambient sound levels resulting in a constant drone both night and day in this development area.

6.7.3. Potential noise sensitive receptors

The residential suburb of Bonaero Park is located just south-east from the proposed MetCon operation with the closest residential dwellings situated approximately 150m away. Considering the location of the residential area as well as the developmental character of the area, it is likely that the residential area falls within the typical noise rating level for an Urban District with one or more of the following: workshops; business premises and main roads. The acceptable zone sound level is 60 and 50 dBA during the day and night-time periods respectively. It should be noted that this is higher than the noise levels recommended by the World Health Organization for residential use at night (45 dBA).

6.7.4. Appropriate noise limits and legal framework

The Gauteng Noise Control Regulations (GN R. 5479 of 20 August 1999) is based on the National Noise Control Regulations, and most of the regulations are the same. It prohibits the generation of a disturbing noise in any manner (Regulation 8) and defines and prohibits activities that can result in a noise nuisance (Regulation 9). Regulation 11(1) allows a local authority to designate a noise-controlled area as well as zone sound levels for specific areas and during specific times. It is not known if the area surrounding the ORT airport was designated as a noise control area (although considered highly unlikely).

The Gauteng Provincial Noise Control Regulations define a **"disturbing noise"** as:
"means a noise level that causes the ambient noise level to rise above the designated zone level, or if no zone level has been designated, the typical rating levels for ambient noise in districts, indicated in table 2 of SABS 0103[1].

Typical rating levels for ambient noise in different districts are given in **Table 6-4** below (from Table 2, SANS 10103:2008).

It must be noted that SANS 10103:2008 does state *"for industries legitimately operating in an industrial district during the entire 24 h day/night cycle, LReq,d = LReq,n =70 dBA can be considered as typical and normal".* There is, however, no noise limits for industry and 61 dBA will be used as a reasonable noise limit at the industrial boundary closest to any residential area. This however has certain risks, especially when a residential area is located next to, in the close vicinity of an industrial area or activity. The World Health Organization recommends an outdoor noise level of 45 dBA at night to allow people acceptable quality of sleep.

Considering the developmental character of the area, as well as acceptable noise limits to allow a reasonable quality of sleep, night-time ambient noise levels (outside) should not exceed 50 dBA (the zone sound level).

[1] The latest SANS 0103 was renamed SANS 10103:2008

Table 6-4. Typical rating levels for noise in districts.

1	2	3	4	5	6	7
Type of district	**Equivalent continuous rating level ($L_{Req,T}$) for noise** dBA					
	Outdoors			**Indoors, with open windows**		
	Day/night $L_{R,dn}$[a]	**Daytime $L_{Req,d}$**[b]	**Night-time $L_{Req,n}$**[b]	**Day/night $L_{R,dn}$**[a]	**Daytime $L_{Req,d}$**[b]	**Night-time $L_{Req,n}$**[b]
a) Rural districts	45	45	35	35	35	25
b) Suburban districts with little road traffic	50	50	40	40	40	30
c) Urban districts	55	55	45	45	45	35
d) Urban districts with one or more of the following: workshops; business premises; and main roads	60	60	50	50	50	40
e) Central business districts	65	65	55	55	55	45
f) Industrial districts	70	70	60	60	60	50

6.7.5. Projected noise levels

Potential noise level contours are presented in **Figure 6-15** below. Based on the noise contours, the first row of houses may be subject to noise levels of 45 – 49 dBA.

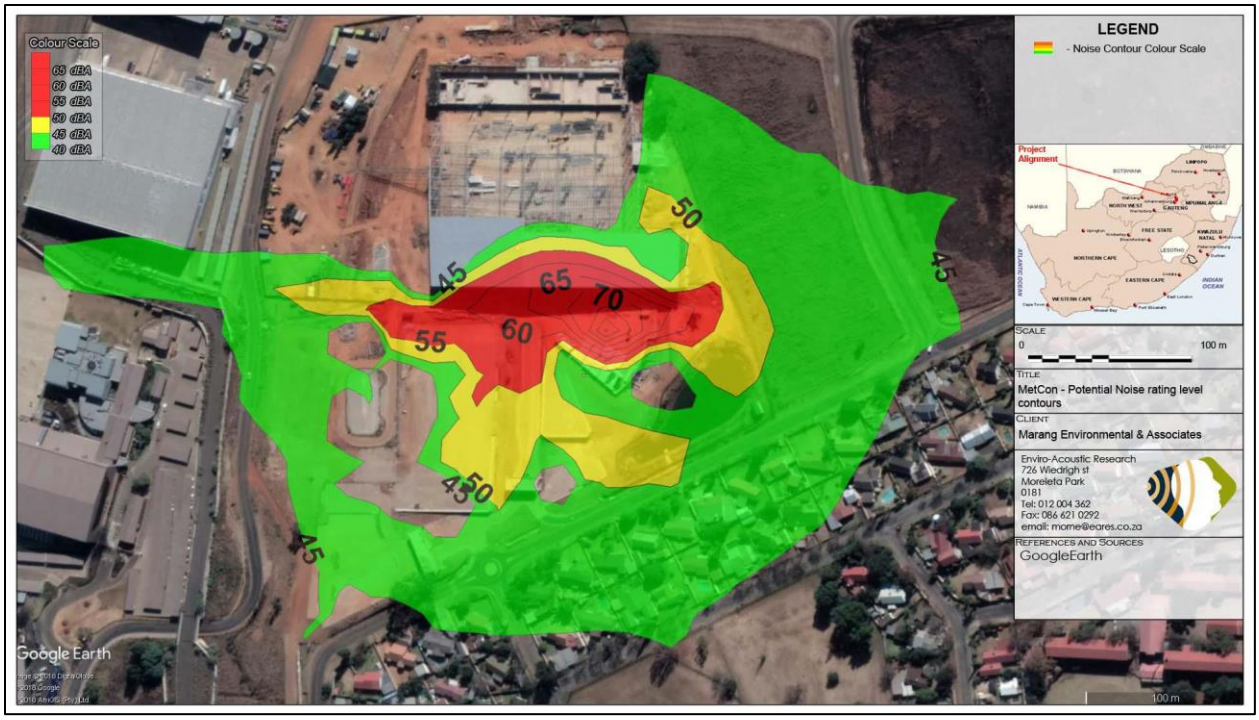

Figure 6-15: Potential noise rating levels in contours of constant sound levels.

7. IDENTIFICATION OF POTENTIAL IMPACTS

During the BA that was undertaken in 2009, the overall potential impacts of the proposed development were identified through a desktop study, a site visit, specialist studies and comments received during the public participation process. An assessment of the potential impacts was provided, identifying the impacts that are potentially significant including management recommendations and mitigation measures to reduce the impacts.

A Scoping Geotechnical Report (assessing the topography, vegetation, geology, and surface and ground water in a geotechnical viewpoint) was also compiled as part of the BA process undertaken for the original JMP project in 2009 and is thus also available (**Appendix 9**). While this report raised concerns about the presence of a large trench that discharges to the "*triangular very wet area*" (wetland), it recommended feasible mitigations and concluded that the proposed development has "*no fatal flaw*s". Furthermore, a more extensive geotechnical assessment was completed for the JMP development site in 2015, approximately four (4) years after the EA was issued, which also was in consonance with the findings of the initial Scoping Geotechnical Report. This above-mentioned geotechnical assessment has also been provided in **Appendix 9**.

A detailed Geotechnical study and Traffic Impact (scoping and extensive) Assessment, which were completed recently in 2015 and 2016 respectively, for the same JMP development site, are also available. The Traffic Impact Assessment recommended road upgrades which will see the surrounding road network being able to accommodate the development traffic at acceptable levels, and further concluded that the development be approved from a traffic point of view.

The above-mentioned Geotechnical and Traffic Specialist assessments will be reviewed as part of this EIA process for the proposed development and inclusion of the MetCon facility to certify that the specialist assessments are still relevant, and the findings remain valid. Ideally, the specialists who conducted the respective studies / assessments will be consulted in order to undertake this review and provide confirmation. Proof that the specialists have been consulted in order to review the above-mentioned studies / assessments is provided in **Appendix 9**.

Furthermore, Marang has also completed a Full AQIA in March 2018 to assess the impacts of the proposed MetCon facility on air quality. This has been included in **Appendix 6F**.

After satisfactory consultation with the DEA, Marang has gathered that the following specialist reviews will be required in terms of the Section 12(2), Chapter 3 of the NEMA Regulations, 2014, as amended:

- Heritage;
- Noise;
- Visual;
- Soil and Land Capability; and
- Surface Water.

7.1. Methodology for Assessing Impacts

Impacts of the proposed project on the environmental sensitivities outlined in section 6 of this report above have been quantified using the EIA methodology detailed in **Table 7-1** below. This EIA methodology assists in evaluating the overall effect of the proposed development on the environment. The determination of the effect of an environmental impact on an environmental parameter have been determined through a systematic analysis of the various components of each impact. The evaluation of predicted impacts has been undertaken through an assessment of the significance of the impacts. Each impact has been assessed through the Planning, Construction, Operation and Decommissioning phases of the prosed development, where relevant. Where required, the proposed mitigation measure have been detailed.

7.1.1. Determining Significance of Impacts

Table 7.1-1 below provides an explanation of the parameters used to determine the significance of an impact, as well as what "*significance*" means in the context of this impact assessment. 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. The total number of points scored for each impact indicates the level of significance of the impact.

Table 7.1-1. Description of parameters used to establish impact significance.

Extent = E *(The area over which the proposed impact will be experienced).* **5**: International **4**: National **3**: Regional **2**: Local **1**: Site	***Reversibility = R*** *(The degree to which the proposed impact can be reversed upon completion of the proposed development/ activity).* **4**: Irreversible **3**: Barely Reversible **2**: Partly Reversible **1**: Completely Reversible
Status of Impact **+**: Positive (A benefit to the receiving environment)	

N: Neutral (No cost or benefit to the receiving environment) **-**: Negative (A cost to the receiving environment)	
Magnitude = M *(The severity of the proposed development/activity)*. **5**: Very high/ don't know **4**: High **3**: Moderate **2**: Low **1**: Minor **0**: Not applicable/none/negligible	***Duration = D*** *(The timeframe for which the proposed impact will be experienced).* **5**: Permanent **4**: Long-term (ceases with the operational life) **3**: Medium-term (5-15 years) **2**: Short-term (0-5 years) **1**: Immediate **0**: Not applicable/none/negligible
Probability = P *(The likelihood / degree of certainty of the proposed impact occurring).* **5**: Definite/don't know **4**: Highly probable **3**: Medium probability **2**: Low probability **1**: Improbable	***Cumulative Effect = C*** *(The impact of the proposed development/ activity on the environmental parameter being assessed when added to other existing or potential impacts).* **4**: High Cumulative Impact **3**: Medium Cumulative Impact **2**: Low Cumulative Impact **1**: No Cumulative Impact **0**: Not applicable
Loss of Resources = L *(The degree to which a given resource will be lost as a result of the proposed development / activity.)* **4**: Complete Loss of Resources **3**: Intermediate Loss of Resources **2**: Low loss of resources **1**: No Loss of resources	

Significance will be determined through the *Marang methodology for determining significance*. Significance will be determined through a synthesis of the assessed 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:

(Extent + probability + reversibility + loss of resources+ duration + cumulative effect) x magnitude/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.

Significance	***Environmental Significance Points***	***Colour Code***
High (positive)	>90	H
Medium (positive)	30 to 90	M
Low (positive)	<30	L
Neutral	0	N
Low (negative)	<-30	L
Medium (negative)	-30 to -90	M
High (negative)	>-90	H

7.1.2. Impact Rating System

The impact assessment must take account of the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the mitigation of

the impact. Impacts have been consolidated into one (1) rating. An example of the impact assessment table used to assess the environmental impact associated with the proposed project are detailed below in **Table 7.1-2**.

Table 7.1-2. Example of impact assessment table

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Description of environmental impact		
Extent (E)	Description of the area over which the proposed impact will be experienced.	2	1
Probability (P)	Description of the likelihood/degree of certainty of the proposed impact occurring.	4	2
Reversibility (R)	Description of the degree to which the proposed impact can be revered upon completion of the proposed development / activity.	2	1
Loss of Resources (L)	Description of the degree to which a given resource will be lost as a result of the proposed development / activity.	4	1
Duration (D)	Description of the time frame for which the proposed impact will be experienced.	5	0
Cumulative Effect (C)	Description of the impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	4	0
Magnitude or Intensity (M)	Description of the severity of the proposed development / activity.	5	2
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required.	- 105 (High negative)	+ 10 (Low positive)
Mitigation Measures	Detail the mitigation measures required to reduce the impacts that will arise from the proposed development / activity. The measures mentioned will be detailed in the EMPr as well.		

Marang's Impact Rating Methodology is presented in **Appendix 10**.

7.2. Identification of Potential Impacts

The proposed project is likely to result in a variety of positive and negative impacts. Additionally, the proposed project 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.

The scoping report assists in identifying these potential and cumulative impacts, which will then be assessed at a more detailed level during the EIA phase of the proposed project. Furthermore, further details associated with the construction and operation of the various activities and the impacts associated with these that become available later in the EIA process will be discussed in detail in the EIA Phase.

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

7.2.1. Surface Water Impact Assessment

Table 7.1-3 and **Table 7.1-4** present the significance of potential impacts on the ecology of the wetlands associated with the proposed precious metal refinery facility and its investigation area during the construction and operational phases respectively. In addition, it also indicates the required mitigatory measures needed to minimise the perceived impacts of the proposed development and presents an assessment of the significance of the impacts taking into consideration the available mitigatory measures and assuming that they are fully implemented.

Following the assessment of the wetlands, an impact assessment was applied to ascertain the significance of perceived impacts on the key drivers and receptors (hydrology, water quality, geomorphology, habitat and biota) of the assessed wetlands associated with the proposed development.

The following potential impacts have been identified for the proposed project and will be further investigated in the EIA phase, if required.

- **Construction Phase**

The following are the potential impacts during construction phase:

- Earthworks, leading to the exposure of soils, and thus to increased runoff, erosion, and the potential for sedimentation of the wetlands;
- Soil stockpiling;
- Increased sedimentation of the wetland habitat, leading to changes in instream habitat and potentially altering surface water quality (if present);
- Decreased ecoservice provision by the wetlands; and
- Proliferation of alien vegetation due to disturbances.

Table 7.1-3. Construction Phase Surface Water Impact Assessment

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Site preparation prior to construction activities related to the construction of the proposed precious metal refinery facility, including placement of contractor laydown areas and storage facilities within the 500m GN509 Zone of Regulation of a wetland.		
Potential Impacts	• Earthworks, leading to the exposure of soils, and thus to increased runoff, erosion, and the potential for sedimentation of the wetlands; • Soil stockpiling; • Increased sedimentation of the wetland habitat, leading to changes in instream habitat and potentially altering surface water quality (if present); • Decreased ecoservice provision by the wetlands; and • Proliferation of alien vegetation due to disturbances.		
Extent (E)	Description of the area over which the proposed impact will be experienced.	2	2
Probability (P)	Description of the likelihood/degree of certainty of the proposed impact occurring.	2	1

Reversibility (R)	Description of the degree to which the proposed impact can be revered upon completion of the proposed development / activity.	2	1
Loss of Resources (L)	Description of the degree to which a given resource will be lost as a result of the proposed development / activity.	1	1
Duration (D)	Description of the time frame for which the proposed impact will be experience	2	2
Cumulative Effect (C)	Description of the impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	2	1
Magnitude or Intensity (M)	Description of the severity of the proposed development / activity.	1	1
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required	- 11 (low negative)	- 8 (Low negative)
Mitigation Measures	• Contractor laydown areas and material storage facilities must be placed within the study area and must not be placed within 30m of the wetlands in line with GDARD and NEMA requirements; • All vehicle re-fuelling is to take place on a sealed surface within the study area and must not be permitted to occur within 30m of the wetlands; • All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is absolutely essential; • Retain as much indigenous vegetation as possible; • Excavated materials should not be contaminated, and it should be ensured that the minimum surface area is taken up, however, the stockpiles may not exceed 2m in height; • All exposed soils and temporary stockpiles must be protected for the duration of the construction phase in order to prevent erosion and sedimentation of the wetlands; and • Immediate revegetation of all stockpiles which are to remain on site post-construction.		

- **Operational Phase**

The following is the potential impact during operational phase:

- Contaminated runoff may reach the wetlands resulting in impaired surface water quality.

Table 7.1-4. Operational Phase: Surface Water Impact Assessment

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Operation of the precious metal refinery facility.		
Potential Impacts	• Contaminated runoff may reach the wetlands resulting in impaired surface water quality.		
Extent (E)	Description of the area over which the proposed impact will be experienced.	2	2
Probability (P)	Description of the likelihood/degree of certainty of the proposed impact occurring.	2	1

Reversibility (R)	Description of the degree to which the proposed impact can be revered upon completion of the proposed development / activity.	2	2
Loss of Resources (L)	Description of the degree to which a given resource will be lost as a result of the proposed development / activity.	2	2
Duration (D)	Description of the time frame for which the proposed impact will be experience	1	1
Cumulative Effect (C)	Description of the impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	2	1
Magnitude or Intensity (M)	Description of the severity of the proposed development / activity.	2	1
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required	- 22 (low negative)	- 9 (Low negative)
Mitigation Measures	• Clean and dirty water management must take place in order to prevent contaminated runoff from the precious metal refinery facility creating preferential flow paths which may reach the wetlands. Clean and dirty water management systems must be implemented prior to commencement of construction; and • Suitable waste disposal facilities should be provided. These facilities should regularly be emptied and taken to a registered waste disposal facility; and • All recyclable waste should be recycled as far as possible.		

Based on the outcome of the impact assessment, all the activities associated with the construction and operational phases were determined to have a low impact significance on the wetlands, prior to and following the implementation of mitigation measures. This is mainly due to the distance between the activities and the wetlands, and the presence of existing development between the study area and wetlands. However, specific mitigation measures are recommended to be implemented to ensure a very low impact significance and reduce overall potential impacts to the wetlands.

7.2.2. Soils and Land Capability Impact Assessment

7.2.2.1. Activities

The potential impact triggers at various phases of the proposed development are presented in **Table 7.1-5** and **Table 7.1-6** below.

Table 7.1-5. Summary of the anticipated activities for the proposed development

Phase	Activities
Construction	- Topsoil stripping and stockpiling; - Establishment of surface infrastructure; and - Waste Management.
Operational	- Operation of facility; and - Waste Management.

- **Construction Phase**

The following potential impacts have been identified during the construction phase:

- Earthworks, leading to the exposure of soils, and thus leading to dust emission, erosion and potential loss of soil;
- Soil compaction as a result of laydown area and construction machinery/equipment;
- Spillage of hydrocarbons resulting from construction vehicles, leading to soil contamination; and
- Proliferation of alien vegetation due to disturbances, leading to change of soil chemistry and quality.

Table 7.1-6. Construction Phase: Soil and Land Capability Impact Assessment

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Site preparation prior to construction activities related to the construction of the proposed precious metal refinery facility, including topsoil stripping, excavation and stockpiling activities.		
Potential Impacts	• Earthworks, leading to the exposure of soils, and thus leading to dust emission, erosion and potential loss of soil; • Soil compaction as a result of laydown area and construction machinery/equipment; • Spillage of hydrocarbons resulting from construction vehicles, leading to soil contamination; and • Proliferation of alien vegetation due to disturbances, leading to change of soil chemistry and quality.		
Extent (E)	Description of the area over which the proposed impact will be experienced.	2	2
Probability (P)	Description of the likelihood/degree of certainty of the proposed impact occurring.	5	2
Reversibility (R)	Description of the degree to which the proposed impact can be revered upon completion of the proposed development / activity.	2	1
Loss of Resources (L)	Description of the degree to which a given resource will be lost as a result of the proposed development / activity.	2	1
Duration (D)	Description of the time frame for which the proposed impact will be experience	2	2
Cumulative Effect (C)	Description of the impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	2	1
Magnitude or Intensity (M)	Description of the severity of the proposed development / activity.	1	1
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required	- 15 (low negative)	- 9 (Low negative)
Mitigation Measures	• All development footprint areas to remain as small as possible; • Laydown areas should be located within disturbed soils (anthrosols) to avoid compaction of natural soils • All exposed soils and temporary stockpiles must be protected for the duration of the construction phase in order to prevent erosion;		

	• Stockpile height should not exceed 2 meters (m) • Vehicle re-fuelling is to take place on a sealed surface within the study area; and • Contamination prevention measures should be addressed in the Environmental Management Programme (EMPr) for the proposed development, and this should be implemented and made available and accessible at all times to the contractors and construction crew conducting the works on site for reference.

- **Operational Phase**

The following are the potential impacts during operational phase:

- Movement of transport vehicles off demarcated roads, thus leading to soil compaction in untarred/unpaved surfaces which consist of soil material; and
- Contaminated surface runoff water resulting in soil contamination of the surrounding soils.

Table 7.1-7. Operational Phase: Soil and Land Capability Impact Assessment

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Operation of the precious metal refinery facility and waste management.		
Potential Impacts	• Movement of transport vehicles off demarcated roads, thus leading to soil compaction in untarred/unpaved surfaces which consist of soil material; and • Contaminated surface runoff water resulting in soil contamination of the surrounding soils.		
Extent (E)	Description of the area over which the proposed impact will be experienced.	2	2
Probability (P)	Description of the likelihood/degree of certainty of the proposed impact occurring.	2	1
Reversibility (R)	Description of the degree to which the proposed impact can be revered upon completion of the proposed development / activity.	2	1
Loss of Resources (L)	Description of the degree to which a given resource will be lost as a result of the proposed development / activity.	2	2
Duration (D)	Description of the time frame for which the proposed impact will be experience	3	2
Cumulative Effect (C)	Description of the impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	2	1
Magnitude or Intensity (M)	Description of the severity of the proposed development / activity.	2	1
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required	- 26 (low negative)	- 9 (Low negative)
Mitigation Measures	• All vehicle should remain within demarcated roads as far as practically possible; • Stormwater management must take place in order to prevent contaminated runoff from the precious metal refinery facility; • Waste product should be recycled as best as practically possible so as to minimise sources of soil contamination; and		

	• Contamination prevention measures should be addressed in the Environmental Management Programme (EMPr) for the proposed development, and this should be implemented and made available and accessible at all times to the contractors and construction crew conducting the works on site for reference.

7.2.3. Visual Impact Assessment

The tables below present the significance of potential visual impacts that the proposed PMRF might have on the sense of place, visual character and overall aesthetics of the receiving environment. In addition, the tables below present recommendations and mitigation measures have been developed which will assist in minimising the PMRF's visual impact throughout the construction and operational phases of the project and an assessment of the visual impacts taking into consideration the mitigatory measures and assuming that they are fully implemented.

- **Construction Phase:**

The following are the potential impacts during construction phase:

- Excavation activities for the laying of the foundation for the proposed PMRF;
- Stockpiling of topsoil during excavation activities, potentially altering landform;
- Dust generation due to excavation and general construction activities including movement of construction vehicles and human activity leading to dust suppression;
- Construction of the Precious Metal Refinery Facilities (including the bag filtration plant and scrubber and associated stacks);
- Placement of temporary contractor's laydown areas and storage facilities in higher lying areas or in close proximity to Bonaero Park, and outside the demarcated footprint area; and
- Security lighting around the perimeter of the PMRF.

Table 7.1-8. Construction Phase: Visual Impact Assessment.

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Further site preparation for construction activities related to the proposed Precious Metal Refinery Facility (PMRF), including excavation and stockpiling, laying of foundation for the buildings, construction of these buildings and associated stacks, placement of temporary contractor laydown areas and storage facilities if necessary.		
Potential Impacts	• Excavation activities for the laying of the foundation for the proposed PMRF; • Stockpiling of topsoil during excavation activities, potentially altering landform; • Dust generation due to excavation and general construction activities including movement of construction vehicles and human activity leading to dust suppression; • Construction of the Precious Metal Refinery Facilities (including the bag filtration plant and scrubber and associated stacks); • Placement of temporary contractor's laydown areas and storage facilities in higher lying areas or in close proximity to Bonaero Park, and outside the demarcated footprint area; and • Security lighting around the perimeter of the PMRF.		
Extent (E)	Description of the area over which the proposed impact will be experienced.	2	1
Probability (P)	Description of the likelihood/degree of certainty of the proposed impact occurring.	5	5
Reversibility (R)	Description of the degree to which the proposed impact can be revered upon	2	1

	completion of the proposed development / activity.		
Loss of Resources (L)	Description of the degree to which a given resource will be lost as a result of the proposed development / activity.	1	0
Duration (D)	Description of the time frame for which the proposed impact will be experience	2	2
Cumulative Effect (C)	Description of the impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	2	1
Magnitude or Intensity (M)	Description of the severity of the proposed development / activity.	2	1
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required	- 28 (low negative)	- 10 (Low negative)
Mitigation Measures	• The development footprint area should remain as small as possible; • No rubble should be disposed of at random within the site, but within relevant removable bins, where recyclable and non-recyclable waste is kept separate; • Contractor's laydown areas and temporary storage facilities should be located within the development footprint and cordoned off with shade cloth to conceal and minimise the visual impact; • Any topsoil stockpiled should either be utilised during landscaping or it should be shaped and rounded to blend in with the surrounding landscape and to minimise visual contrast; • Vegetation, especially large and tall trees bordering the Bonaero Park residential area south of the PMRF should be retained if feasible; • It must be ensured that the buildings fit into its surroundings through the appropriate use of colour and material selection. Natural Colours should be used in all instances. Should the stacks comprise metal surfaces, it must be painted in a colour that blends in with the natural environment. White structures are to be avoided; • A dust management plan must be implemented to reduce dust generation. Such dust control measures may include, but is not limited to; watering of the footprint area and any access roads, speed limits of 20km/h must be adhered to and should it be practical stockpiles should be covered with a tarpaulin on windy days to avoid soil and dust being blown away; • Construction activities should be restricted to daylight hours as far as possible; • A lighting engineer may be consulted to assist in the placement of temporary and permanent light fixtures, to reduce the visual impact associated with glare and light trespass; and • No naked / unshielded light sources are to be used. It is recommended that "full cut-off" light fixtures that direct light only below the horizontal is to be used.		

- **Operational Phase**

The following potential impacts have been identified during the operational phase:

- Operational activities of the PMRF and gas emissions at the stacks;
- An increase in vehicular movement and level of human activity in the area due to operational activities;

- Exterior and security lighting around the buildings and parking facilities, possibly contributing to light pollution;
- Potential lighting at night from operational vehicles; and
- Light sources temporarily stationed for maintenance activities conducted at night, in case of emergencies.

Table 7.1-9. Operation Phase: Visual Impact Assessment.

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Operation of the Precious Metal Refinery Facility (PMRF) and emissions from the stacks		
Potential Impacts	• Operational activities of the PMRF and gas emissions at the stacks; • An increase in vehicular movement and level of human activity in the area due to operational activities; • Exterior and security lighting around the buildings and parking facilities, possibly contributing to light pollution; • Potential lighting at night from operational vehicles; and • Light sources temporarily stationed for maintenance activities conducted at night, in case of emergencies.		
Extent (E)	Description of the area over which the proposed impact will be experienced.	2	1
Probability (P)	Description of the likelihood/degree of certainty of the proposed impact occurring.	4	4
Reversibility (R)	Description of the degree to which the proposed impact can be revered upon completion of the proposed development / activity.	2	1
Loss of Resources (L)	Description of the degree to which a given resource will be lost as a result of the proposed development / activity.	1	0
Duration (D)	Description of the time frame for which the proposed impact will be experience	2	2
Cumulative Effect (C)	Description of the impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	1	1
Magnitude or Intensity (M)	Description of the severity of the proposed development / activity.	2	1
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required	- 24 (low negative)	- 9 (Low negative)

Mitigation Measures	• It is recommended that routine maintenance on buildings and other structures be implemented, to ensure that the paint of buildings is not weathered and that the buildings fit into the colour palette of the surroundings; • In the event that a green open space is demarcated and landscaped, it must be ensured that the vegetation be maintained and controlled to reduce the risk of potential alien floral species proliferation and to keep it aesthetically appealing to the receiving environment; • It is recommended that maintenance activities should not take place at night or on weekends, unless absolutely essential; • Making use of motion detectors on security lighting at buildings and parking facilities, ensures that the site will remain in relative darkness, until lighting is required for security and maintenance purposes; • No naked / unshielded light sources are to be directly visible from a distance; and • The PMRF should be screened through the use of a clearVU fence, or equally approved, which will result in a more unified and tidy appearance.

Based on the outcome of the Visual Impact Assessment, it is evident that all the activities associated with the construction and operational phases of the proposed PMRF were determined to have a low impact significance on the sense of place and visual character of the area, prior to the implementation of mitigation measures. The contributing factors to the low impact significance levels include the current land use of the surrounding area characterised by urban and industrial development, the maximum height of 12m (equivalent to 2 storey) of the proposed PMRF buildings not exceeding the height of the surrounding buildings and the JMP buildings already constructed. From the above-mentioned factors it can be concluded that the PMRF is in keeping with the sense of place and visual character of the area. It should however be noted that due to the height of the stacks at 25m, these structures are likely to be more visible from various viewpoints in the surrounding area, however it is not considered significantly intrusive.

However, specific mitigation measures as provided in the tables above are recommended to be implemented to ensure an even lower impact significance and reduce overall potential visual impacts on the receiving environment.

7.2.4. Heritage Impact Assessment

Due to the fact that no heritage or archaeological resources were identified during the desktop investigation and site walkthrough, no impacts are anticipated from a heritage point of view. As such, the Heritage Specialist did not undertake an impact assessment as part of his review.

7.2.5. Air Quality Impact Assessment

The level of impact of proposed activities associated with the MetCon facility is assessed in **Table 7.1-10** below.

Table 7.1-10. Operational phase: Air Quality Impact Assessment

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Air Quality		

Extent (E)	Area over which the proposed impact will be experienced.	2	2
Probability (P)	Likelihood/degree of certainty of the proposed impact occurring.	3	3
Reversibility (R)	Degree to which the proposed impact can be revered upon completion of the proposed development / activity.	2	2
Loss of Resources (L)	Degree to which a given resource will be lost as a result of the proposed development / activity.	2	2
Duration (D)	Time frame for which the proposed impact will be experience.	4	4
Cumulative Effect (C)	Impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	2	2
Magnitude or Intensity (M)	Severity of the proposed development / activity. Activity may be audible during the day.	1	1
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required	- 15 (low negative)	- 15 (Low negative)
Mitigation Measures	The proposed facility must install abatement equipment (baghouse and scrubber) as per their current design at the existing MetCon Centurion Plant. The abatement equipment must achieve at least 90% control efficiency and must ensure compliance with the minimum emission standards for sub-category 4.17 in terms of S21 of the NEM:AQA listed activities. Additional recommendations include: • MetCon must apply for an AEL prior to the commencement of operations. All conditions of the AEL must be complied with. • Appoint a responsible person, such as an emission control officer or safety, health & environmental manager, to ensure compliance with the AEL. • Once operational, conduct stack emissions monitoring on all stacks for the relevant listed activity and ensure compliance with the minimum emission standards, with the use of abatement equipment. Ensure that monitoring is undertaken in accordance with nationally or internationally acceptable methods. • Ensure that all unit processes & apparatus used for undertaking the listed activity in question, and all appliances and mitigation measures for preventing or reducing emissions, are at all times properly maintained and operated. • Submit an annual AEL report within the required timeframe. • Submit compliance audit reports annually. • Once operational, maintain and report monthly to the authority a complaint register. Should a complaint be logged, a report in the required format as per the AEL, should be submitted to the authority. • Register and report on the NAEIS. Category A (listed activities) are required to report their emissions on the NAEIS annually. The NAEIS is a national emissions inventory. • Maintenance and pollution prevention plans should be developed for the facility. • Undertake regular training of all key employees to ensure effective implementation of the AEL requirements, maintenance and pollution prevention plans.		

7.2.6. Noise Impact Assessment

7.2.6.1. The preliminary significance of the noise impact

Ambient sound levels in the vicinity of the residential area would be impacted by the roads and existing activities such as the adjacent airport. The project may be audible during the day, but, if the operation is active at night, it may be clearly audible and may raise the ambient sound levels. Mitigation may reduce the

noise levels, but the developer must consider the proposed measures during the planning stage to unsure that the recommendations are considered during this early phase.

Table 7.1-11. Impact Assessment considering daytime (06:00 - 22:00) noise levels

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Noise Generation: Noise generation during day-time operations having the possibility of being a nuisance to adjacent landowners.		
Extent (E)	Area over which the proposed impact will be experienced.	2	2
Probability (P)	Likelihood/degree of certainty of the proposed impact occurring.	1	1
Reversibility (R)	Degree to which the proposed impact can be revered upon completion of the proposed development / activity.	1	1
Loss of Resources (L)	Degree to which a given resource will be lost as a result of the proposed development / activity.	1	1
Duration (D)	Time frame for which the proposed impact will be experience.	4	4
Cumulative Effect (C)	Impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	2	2
Magnitude or Intensity (M)	Severity of the proposed development / activity. Activity may be audible during the day.	1	1
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required	- 12 (low negative)	- 12 (Low negative)
Mitigation Measures	No additional mitigation required.		

Table 7.1-12. Impact Assessment considering night-time (22:00 – 06:00) noise levels

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Noise Generation: Noise generation during night-time operations having the possibility of being a nuisance to adjacent landowners.		
Extent (E)	Area over which the proposed impact will be experienced.	2	2
Probability (P)	Likelihood/degree of certainty of the proposed impact occurring.	1	1
Reversibility (R)	Degree to which the proposed impact can be revered upon completion of the proposed development / activity.	1	1
Loss of Resources (L)	Degree to which a given resource will be lost as a result of the proposed development / activity.	1	1
Duration (D)	Time frame for which the proposed impact will be experience.	4	4
Cumulative Effect (C)	Impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	2	2

Magnitude or Intensity (M)	Severity of the proposed development / activity. Activity may be audible during the day.	1	1
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required	- 12 (low negative)	- 12 (Low positive)
Mitigation Measures	If night-time activities are required, MetCon should measure the typical night-time ambient sound levels in the area prior to the project being developed (over the full night-time period). Once operational, measurements must be repeated to confirm that the implementation of the project did not raise the noise levels with more than 7 dB (Noise Control Regulations), ideally, no more than 3 dB (International Finance Corporation recommendation). Other measures include: • Minimise night-time activities that will require the use of the baghouse stack and blowers at night. • The design of the baghouse stack exit to ensure a more flared design, or the use of a silencing system at the exit. • Enclose the blowers in a structure to reduce the noise levels from this source. • The reduction of the gas exit velocities at night. The night-time noise level can be reduced with the implementation of the correct mitigation measures that will reduce the significance of the noise impact.		

7.2.6.2. Recommendations on the way forward

If only daytime activities are planned, no mitigation measures are recommended.

If night-time activities are planned (after 22:00 at night, before 06:00) it is recommended that MetCon:

- measure the typical night-time ambient sound levels in the area prior to the project being developed (over the full night-time period). Once operational, measurements must be repeated to confirm that the implementation of the project did not raise the noise levels with more than 7 dB (Noise Control Regulations) and ideally, does not raise the ambient sound levels with more than 3 dB (International Finance Corporation recommendation).
- select appropriate noise mitigation measures (to be considered during the planning stage) which may include:
    - Eliminating the noise source where possible at night;
    - The installation of one or more acoustical silencer(s) or enclosures;
    - Acoustical treatment of ducts and exhaust stacks;
    - A change in equipment, controlling the speed of the fans/blowers; and
    - Moving the noise source further from the residential area (if possible).

7.3. Environmental Management Programme (EMPr)

The Environmental Management Programme (EMPr) is a detailed plan for the implementation of the mitigation measures to minimize the negative environmental impacts highlighted in the Environmental Impact Assessment Report (EIAr). The initial EMPr which was completed during the BA process will be reviewed and incorporated into the one which will be produced during the EIA phase of this proposed project. The EMPr will contribute to the preparation of the contract documentation by developing clauses to which the contractor must adhere for the protection of the environment.

The EMPr for this project will be compiled during the EIA phase and will include a construction and operational phase environmental monitoring plan specifying how the construction and operation of the project is to be carried out. The EMPr will include the actions required for the Post-Construction Phase (Operation Phase) to ensure that all the environmental impacts are managed for the duration of the project's life-cycle and will ensure environmental good practice. The Operation Phase mitigation measures will require more detailed work in interpreting the specialist reports.

The EMPr will be included with the DEIAr for submission to the adjudicating authority. The EMPr for the proposed development will be in line with Appendix 4 of the EIA Regulations, 2014 of the NEMA Act, as amended and as published under GN R. 326 (EIA Regulations).

7.3.1. Contents of the EMPr

The EMPr will comply with section 24N of the NEMA, 1998 (Act No. 107 of 1998) and will include —

a) details of–
    i. the EAP who prepared the EMPr; and
    ii. the expertise of that EAP to prepare an EMPr, including a curriculum vitae;
b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;
c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers;
d) A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the Environmental Impact Assessment (EIA) process for all phases of the development including-
    i. planning and design;
    ii. pre-construction activities;
    iii. construction activities;
    iv. rehabilitation of the environment after construction and where applicable post closure; and
    v. where relevant, operation activities;
e) A description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);
f) A description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to –
    i. avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
    ii. comply with any prescribed environmental management standards or practices;
    iii. comply with any applicable provisions of the Act regarding closure, where applicable; and
    iv. comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;
g) The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);
h) The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);
i) An indication of the persons who will be responsible for the implementation of the impact management actions;

j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;
k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);
l) A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;
m) An environmental awareness plan describing the manner in which-
    i. the applicant intends to inform his or her employees of any environmental risk which may result from their work; and
    ii. risks must be dealt with in order to avoid pollution or the degradation of the environment.
n) Any specific information that may be required by the competent authority.

8. PUBLIC PARTICIPATION PROCESS

Public participation is the foundation of any impact assessment process. The principles set out in Chapter 6 of the 2014 EIA Regulations (as amended), govern the EIA process, including public participation. The Public Participation Process (PPP) for the EA Application is being conducted according to Section 41 of the 2014 EIA Regulations (as amended). The PPP includes provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment, and ensuring the participation of previously disadvantaged people, women and the youth.

The public participation process is based on two primary factors; firstly, ongoing interaction with the 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 presented to stakeholders, giving them the opportunity to give further comments and verify all captured comments.

Inputs into the public participation process by members of the public and stakeholders can be given at two stages of the EIA process, open for thirty (30) days each. The two stages of the PPP will be conducted during the Scoping phase and the EIA phase of the EIA process respectively. Registration as an Interested and Affected Party (I&AP) for the project can take place at any time during the two phases of the impact assessment before the Final Environmental Impact Assessment report (FEIAr) is submitted to the relevant decision-making authority (namely the DEA). There are however set periods in which comments are required from I&APs, stakeholders, LOs and/or OoS/Authorities in order to ensure that these are captured in time for the submission of the various reports. The comment periods during the Scoping Phase were implemented according to the 2014 NEMA EIA Regulations (as amended). The comment periods during the Scoping Phase (as set out by 2014 EIA Regulations, as amended) are as follows:

- Background Information Document (BID): 4 Calendar weeks, but also as and when an I&AP registers;
- Comment period for the DSR and FSR: 4 Calendar weeks (30 days) for each report; and
- Any public participation process must be conducted for a period of at least 30 days.

The 2014 EIA Regulations (as amended) emphasise the importance of public participation. In terms of these regulations, registered interested and/or affected parties –

- may participate in the application process;
- may comment on any written communication submitted to the competent authority by the applicant or environmental consultant;

- must comment within the timeframes as stipulated by the EIA Regulations;
- must send a copy of any comments to the applicant or Environmental Assessment Practitioner (EAP) if the comments were submitted directly to the competent authority; and
- Must disclose any direct business, financial, personal or other interests that the person has in the application being granted or refused.

Further, in terms of the 2014 EIA Regulations (as amended), the EAP:

- manages the application process;
- must be independent;
- must undertake the work objectively – even if this results in views and findings that are not favourable to the applicant;
- must disclose material information that may influence the decision; and
- must conduct a public participation process.

The following actions will be taken upon receiving comments/queries/issues:

- The contact details provided will be entered into the project database for use in future notifications.
- Confirmation receipts will be sent to those submitting comments.
- Comments will be addressed in the Comments & Response Report (C&RR) – **Appendix 7E**.

8.1. Objectives of the Public Participation Process

An understanding of what public participation is, and is what it is not, needs to be explored and must be clarified.

Public Participation is:

- A communication mechanism to inform I&APs regarding a proposed project; and
- A communication mechanism to record comments and/or concerns raised during the relevant phases of the EIA process by I&APs regarding a proposed project.

What Public Participation is not:

- A marketing exercise;
- A process to address grievances but rather to record comments and/or issues/concerns raised; and
- One-on-one consultation with each I&AP during the EIA process (not relevant to possibly affected landowners identified).

The primary aims of the PPP are:

- To inform I&APs and key stakeholders of the proposed 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 proposed development;
- To promote transparency and an understanding of the proposed 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 proposed 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 and
- To encourage co-regulation, shared responsibility and a sense of ownership.

In addition to the guidance of the PPP in the 2014 EIA Regulations (as amended), every effort was also made to conform to the requirements of the Promotion of Administrative Justice Act 2000 (Act No. 3 of 2000).

8.2. Public Participation to date

The public participation process was initiated in September 2018 with the issuing of the BID and initial landowner and stakeholder consultation. Site notices (as per regulations) were placed near the study area during a site visit on the 13th of September 2018. In addition, posters were erected near the study area and Background Information Document (BIDs) were distributed at the Bonaero Park Public Library. Proof of the site notices and posters which were erected is included in **Appendix 7A**. In addition, proof of the BID distribution is also included in **Appendix 7A**. Public notification of the EIA process was advertised in a local/regional newspaper (namely the Daily Sun) on the 12th of September 2018, as required in terms of the 2014 EIA Regulations (as amended). Proof of this is included in **Appendix 7C**. The information gathered on the initial BA process undertaken in 2009 for the original JMP development, as well as the site visit undertaken as part of this EIA process, also formed part of the database with surrounding landowner and other potential I&APs.

It should be noted that the DSR was released for a thirty (30)-day public review and comment period on the 18th of September 2018. Notifications were sent to all registered I&APs, stakeholders, LOs and OoS/Authorities informing them of the availability of the DSR and their opportunity to comment. These notifications contained links to download electronic copies of the DSR. In addition, hard copies could be made available per request. Proof of notifications and all correspondence with registered I&APs, stakeholders, LOs and OoS/Authorities is provided in **Appendix 7D** and **Appendix 7I**. A hard copy of the DSR was also made available at the Bonaero Park Public Library and all registered I&APs, stakeholders, LOs and OoS/Authorities were informed of this accordingly. Proof that a hard copy of the DSR was made available at the Bonaero Park Public Library is provided in **Appendix 7C**.

The DSR was made available for public review for a thirty (30) day period from Tuesday the 18th of September 2018 to Thursday the 18th of October 2018. Comments received on the DSR were addressed where possible and incorporated into this FSR (detailed in section 8.6.1). The FSR will be made available for public review and comment for a period of thirty (30) calendar days, from Thursday 01 November 2018 to Friday the 30th of November 2018. Notifications will be sent to inform all registered I&APs, stakeholders, LOs and OoS/Authorities of the availability of the FSR.

Members of the public who wished to be registered on the database as an I&AP were able to do so via telephone, fax, email, mail or Marang's website (www.maranggroup.co.za). In addition, should any stakeholders or I&APs wish to be to be registered on the database, they will be afforded the opportunity to do so.

Ongoing consultation with key stakeholders (e.g. provincial, district and local authorities, relevant government departments, local business etc.) and identified I&APs ensured that I&APs were kept informed regarding the EIA process. Networking with I&APs will effectively continue throughout the Scoping Phase

of the project until the FSR and EIA Plan of Study are submitted to the DEA. Where required, stakeholders and I&APs were engaged on an individual basis.

During the EIA process, consultations were held with individuals, businesses, institutions and organisations, and the following sectors of society have been identified and were afforded the opportunity to comment (the full stakeholder database list is included in **Appendix 7F**):

- National Authorities;
- Provincial Authorities;
- City of Ekurhuleni (CoE);
- Government Structures such as SAHRA, SANBI, SANRAL, Eskom Telkom, etc.;
- Regional and local media (advertisements and public documents e.g. BID);
- Business and commerce;
- Nearby Schools and/or Universities or Colleges;
- Department of Environmental Affairs: Biodiversity Section;
- Department of Water and Sanitation (DWS);
- Gauteng Industrial Development Zone (GIDZ);
- Gauteng Infrastructure Financing Agency (GIFA);
- Gauteng Growth and Development Agency (GGDA);
- Gauteng Province Economic Development (GDED);
- Community representatives such as Ward Councillors;
- Adjacent and/or Surrounding Landowners;
- Airports Company South Africa (ACSA);
- South African Civil Aviation Authority (SACAA); and
- Air Traffic and Navigation Services (ATNS).

Two Focus Group Meetings (FGMs), namely a Landowner (LO) and Stakeholder FGM and Organs of State/Authority FGM, and one Public Meeting were undertaken during the scoping phase of this EIA process. The two FGMs were undertaken on Friday the 12th of October 2018, while the Public Meeting (PM) was undertaken on Saturday the 13th of October 2018. The above-mentioned meetings are detailed in section 8.8 and 8.9.

The stages that typically form part of the public participation process during the Scoping and EIA phases respectively are reflected in the figure below.

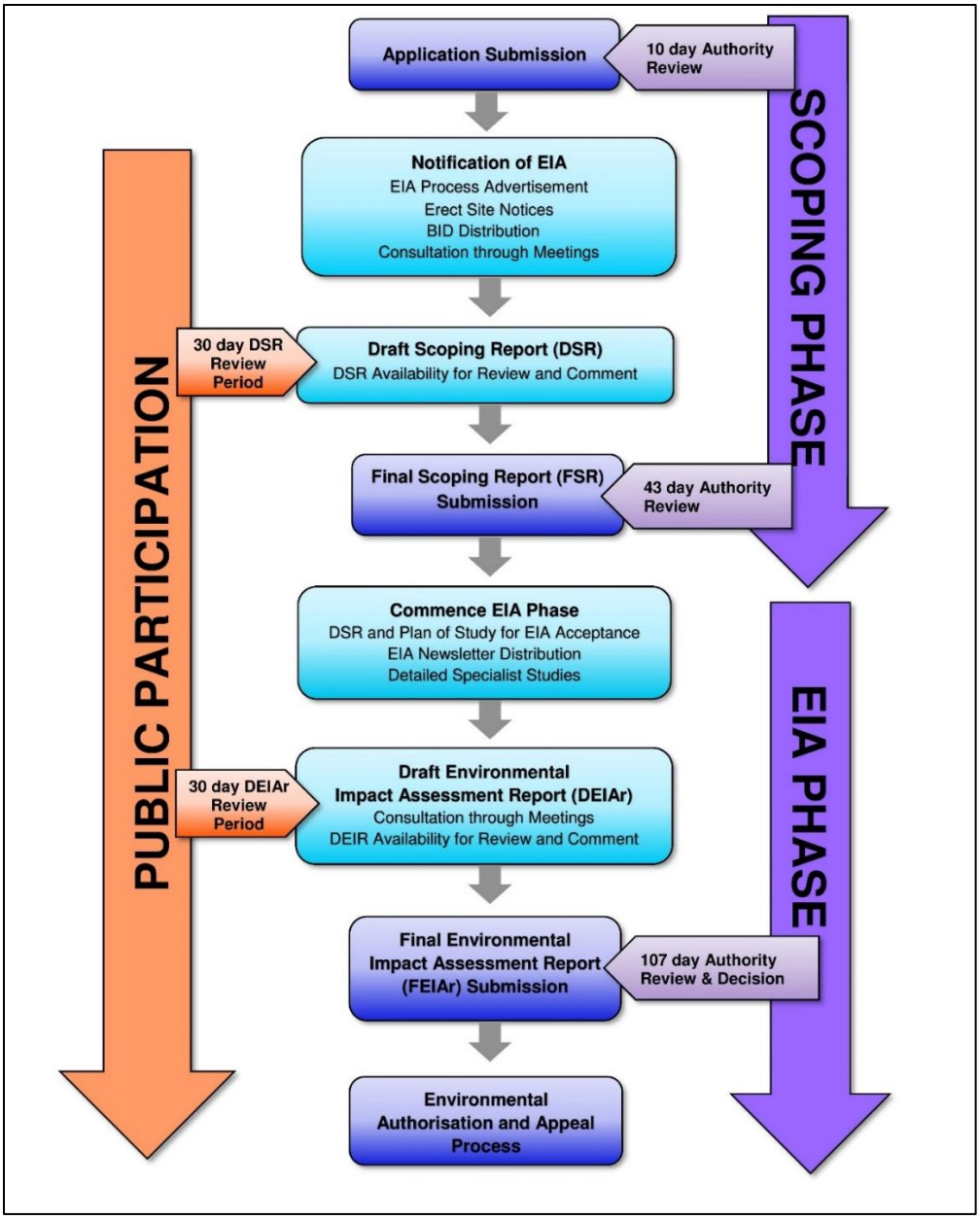

Figure 8-1: Typical EIA process

8.3. Consultation and Public Involvement

Relevant issues to be incorporated in the FSR were identified and confirmed through a consultation process. Telephonic discussions and one-on-one consultations were undertaken where relevant. Meetings with the public, landowners and authorities also took place prior to the release of the FSR in order to identify key issues, needs and priorities for input into the proposed project. Special attention was paid to the consultation with possibly affected landowners and communities within the study area to try and address their main concerns.

As mentioned, two FGMs and one Public Meeting were undertaken during the scoping phase of this EIA process. These meetings are detailed in section 8.8 and section 8.9. In addition, the Minutes of these meetings are provided in **Appendix 7G** (including a copy pf the presentation which was given during these meetings).

Upon the DEA's acceptance of the FSR and approval of the Plan of Study for the EIA Phase, an EIA Newsletter will be prepared and distributed. The EIA Newsletter will provide a brief overview of the Scoping Phase and provide an overview of the process to be followed during the EIA Phase.

The public participation process will come to a close for the proposed development when the decision on environmental authorisation (EA) is received and is made available to the public. All registered I&APs will be notified of the EA and appeal process.

8.4. Stakeholders and I&APs

In order to identify potential I&APs, the following mediums were made use of:

- print media – EIA process advertisements (Proof is included in **Appendix 7C**);
  - The Daily Sun (English).
- site notices throughout the study area (Proofs included in **Appendix 7A**);
- referrals; and
- requesting databases and/or contact information from NGOs / CBOs and other organisations

In addition, site notices were erected throughout the Bonaero Park area in order to inform potential I&APs of the Public Meeting which was undertaken. Proof of these notices is included in **Appendix 7B**. It should be noted that the Ward Councillor for Bonaero Park (Ward 23), namely Mr Andre du Plessis, was contacted in order to assist in notifying community members of the Public Meeting. Proof of correspondence with Mr du Plessis is included in **Appendix 7D**.

A full database list of registered I&APs was compiled and is included in **Appendix 7F**.

Other important stakeholders (such as parastatals, municipalities and other governmental departments etc.) relevant to the study area will be contacted and included in the database. The I&AP database is a working database that allows potential I&APs identified throughout the Scoping and EIA Phase process to be added/removed.

8.5. Notification and Announcement of the Opportunity to Participate

Opportunities for participation for I&APs, stakeholders and LOs during the EIA process are as follows:

Scoping Phase:

- Newspaper advert released on 12 September 2018 to advertise EIA process and announce the commencement of the PPP (**Appendix 7C**);
- PPP invitation notifications to identified I&APs, stakeholders, LOs and OoS/Authorities – via email, telephone, fax, etc. (**Appendix 7D**);
- I&APs, stakeholders, LOs and OoS/Authorities with e-mail addresses were sent notification of commencement of EIA process and a copy of the BID (13 September 2018) (**Appendix 7D**);
- Correspondence through Ward 23 Councilor (namely Mr. Andre du Plessis);
- Placement of Site Notices at the site (**Appendix 7A**);

- Placement of Site notices advertising the Public Meeting (**Appendix 7C**);
- Public Meeting and FGM email invitations (**Appendix 7D**);
- One (1) Public Meeting; and
- Two (2) FGMs – One (1) OoS/Authority FGM and one (1) LO and Stakeholder FGM.

EIA Phase:

- PPP invitation notifications to newly identified and already identified I&APs, stakeholders, LOs and OoS/Authorities during the EIA phase – via email, telephone, fax, etc.;
- Placement of Site Notices in the advertising the Public Meeting to be undertaken during the EIA phase;
- Correspondence through Ward 23 Councillor (namely Mr. Andre du Plessis);
- Public Meeting and FGM email invitations;
- One (1) Public Meeting; and
- Up to two (2) Focus Group Meetings.

Notifications will be sent to all registered I&APs, stakeholders, LOs and OoS/Authorities regarding the open, and close of the PPP processes as well as five (5) days before each PPP closing date as a reminder to comment.

8.6. Notification of Potential Interested and/or Affected Parties (I&APs)

Communication with I&APs was conducted by means of telephone and email in order to obtain the necessary background information to compile this report. The advertising process was followed in terms of regulation 41 of the 2014 EIA Regulations (as amended) published in GN R. 326 in Government Gazette No. 40772 of 7 April 2017.

An advertisement was placed in the Daily Sun newspaper on 12 September 2018 (**Appendix 7C**). In addition, many site notices (as per regulations) were placed near the study area during a site visit in September 2018 (**Appendix 7A**).

As I&APs and stakeholders respond to these advertisements, they will be registered on the project database and sent the BID.

8.6.1. Summary of Comments Received to date

I&AP / Stakeholder / LO / Authority	Date Comment was Received	Comment(s)
Ms./Mrs. Anel Hietbrink: Environmental Assessment Practitioner (EAP), Legislative Compliance Department of Environmental Resource and Waste Management – City of Ekurhuleni (CoE)	21 September 2018	The City OF Ekurhuleni has been made aware of the proposed development of a refinery at the Jewelry Factory, Bonaero Park. Please ensure that one (1) hard copy and (1) soft copy is delivered to our offices for comment. Attention: Divisional Head - Legislative Compliance Environmental Resource and Waste Management Department City OF Ekurhuleni, Edenvale Civic Centre, Cnr Van Riebeeck and Hendrik Potgieter Street, Edenvale (C/O Sifiso Ndwandwe – Office 201)
Mr. Ivan Riggs: Regional Manager, Directorate Land Use and Soil Management - Department of Agriculture, Forestry and Fisheries (DAFF)	27 September 2018	Since the site situate in an urban/industrial area, the Conservation of Agricultural Resources Act, 43 of 1983, in terms of which Mr. David Kleyn would have had interest in his official capacity does not apply. I therefore decline your invitation to provide comment or participate in the EIA process for this development.
Ms./Mrs. Lizelle Stroh: Obstacle Inspector, PANS-OPS Section, Air Navigation Services Department – South African Civil Aviation Authority (SACAA)	28 September 2018	Please take note of an Aviation height restriction around OR Tambo, that shall not be exceeded to an all-inclusive height, the reason of the required approval from the SACAA and shall only be considered once a formal application has been received, please follow the SACAA procedure: http://www.caa.co.za/Pages/Obstacles/Urgent-notices.aspx (complete form Part 139-27). The following information shall be included: • The global coordinates in degrees of longitude and latitude to an accuracy of one tenth of a second to the WGS-84 geodetic system. • The ground elevation of the site above mean sea level (MSL) to an accuracy of 1 metre. • The total all-inclusive height of the proposed structure above ground level (AGL).

		• Detailed drawings indicating a plan view and all side elevations with detail of all construction materials also include detail of external lighting systems and signs that may be used (if available at this stage). • Proof of consultation with ACSA and ATNS indicating their respective approval of the proposed project, clearly indicating any conditions or mitigating actions they may have or require. • Please take note of the use of non-reflecting/no glare finishing with curved structures to have a minimal impact on Aviation. It should also be considered that temporary construction equipment that may be used in such a project is also subject to prior approval and possible conditions.
Tendani Rambuda: Gauteng Department of Agriculture and Rural Development (GDARD)	05 October 2018	Please assist by providing DEA Reference number for the draft scoping report: proposed development and inclusion of the metal concentrators (MetCon) refinery facility.
Tendani Rambuda: Gauteng Department of Agriculture and Rural Development (GDARD)	08 October 2018	The Department would like to comment as follows: **Alignment of the activities with applicable legislation and policies** The Gauteng Provincial Environmental Management Framework (2015) (GPEMF) identifies the proposed site as Zone 4 and 5. Zone 4 is a normal control zone dominated by agricultural uses, and Zone 5 Industrial and large commercial zone which intends to streamline non-polluting industrial and large-scale commercial activities and in line with Gauteng Spatial development framework (2011). **GDARD's Guideline, Requirements and Other Environmental Attributes:** a) According to Gauteng Conservation Plan Version 3.3, the north-west part of the site is within Ecological support area (ESA) and a small portion in the middle is characterized by primary vegetation. b) There are no compelling environmental sensitive features depicted by Conservation Plan version 3.3. Motivation for the unattainability of alternatives has been discussed including the No-Go. **Recommended Conditions:** a) Indiscriminate clearance of vegetation must be avoided, and minimal disturbance be kept to ensure biodiversity value of the area is maintained.

		b) Any digging of trenches and vehicle movement in the area must be limited to within the servitude line with no destruction of vegetation. c) Even through it is noted from the Heritage Report that no evidence of heritage sites was found, should any archaeological sites or graves be exposed during construction work, it must be immediately reported to a heritage practitioner so that an investigation and evaluation can be conducted. d) All waste generated during construction and operational phase must be managed in accordance with the hierarchy of waste management principles and disposal at an authorized landfill site must be the last option. Proof of disposal of waste must be kept on site and made available to the Department upon request. Waste must be separated at source and record of recyclable materials must be submitted to this Department's Waste and Pollution Management Directorate. **<u>Other issues of concern</u>** • It is recommended that "the preferred proposed site used for the jewellery manufacturing Precinct development" is followed as it poses less compelling environmental constraints. • A site-specific Storm Water Management Plan in line with the Ekurhuleni Metropolitan Municipality's requirements must be submitted to the Municipality for approval and such approval must be attached to the Environmental Impact Assessment Report. • Details on how the recommendations and proposed road upgrades will be implemented as outlined in section 7 of the report must be contained in the draft Environmental Impact Assessment Report and how it will be implemented to accommodate future traffic congestion. The road upgrade must be limited within the servitudes as per the recommended and approved site plans on Traffic Assessment (**Appendix 9C**). • At least an A3 Locality map, Layout Plan and Facility illustrations must be used to properly display the site location, and these must be in colour. • The site photos and site notices are noted; however, they must also be in colour. • The newspaper advert must be legible and clear.
Ms./Mrs. Victoria Bota: Environmental Coordinator,	10 October 2018	How is SANRAL affected by this proposed activity?

Northern Region – South African National Roads Agency Limited (SANRAL)		
Mr. Malcolm Moore: Group Project & Risk Manager – In2Food Group (Pty) Ltd	12 October 2018	Following today's introductory and information meeting, we wish to highlight the following inconsistencies and concerns: 1. According to recent communication received from the GIDZ, portion 69 of the farm Witpoortjie 64-IR (as per the Title Deeds) is no longer the correct description of the location of the JMP Precinct. The initial description of the 7,5ha under lease from ACSA by GIDZ was Portion 69 of the Farm Witkoppie; ACSA undertook a consolidation of 4 different land parcels and the various portions were integrated and renamed to Portion 282 of the Farm Witkoppie 64-IR. This is the Airport in its entirety, but includes the 7,5ha under lease from ACSA; GPG, through GDED and Gauteng IDZ, is leasing a remainder of the Portion 282 of the Farm Witkoppie 64, measuring approximately 7,5ha. We are in the process of verifying this information and would suggest that proof be received from the Deeds Office. 2. The proposed additional parking area of 1ha on the North Western boundary of the JMP Precinct is already occupied by In2food Group in terms of our Lease Agreement with the GIDZ and is currently under construction. 3. We are concerned about the emissions from such a refinery, particularly in view of the proximity to the In2food plant, the hazardous chemical used and the potential contamination of our food products. 4. The In2food site will be a Solid Green 5-star rated facility. The impact of such a development on this rating would need to be investigated. 5. Security by means of a solid wall between the 2 sites is not negotiable. This was previously agreed to by the GIDZ, however, for reasons unknown to us, has been put on hold.

		6. A Risk analysis and a proactive Disaster management plan is to be made available as such an occurrence could present serious consequences for food contamination. Public Liability insurance would need to include such an eventuality and In2food would require sight of this.
Mr. Andre du Plessis – Ward 23 Councillor, City of Ekurhuleni (CoE)	20 October 2018	Please be reminded to investigate and report back on the Air Quality station within the OR Tambo International Airport, as well the outcomes from discussions with the Ekurhuleni Council, Water and Sewer department regarding the sewer connection?
Mr. Robert January: Attorney representing Owners of Portion 30 of the Farm Witkoppie No. 64-IR (Ansha 2 Trust) - Glyn Marais Incorporated.	22 October 208	1. We act for the Ansha 2 Trust (Master's Reference: IT104086/2005), represented by Mrs. Sharmaine Labuschagne, in her capacity as a trustee of the Ansha 2 Trust, which is the registered owner of Portion 30 (a portion of Portion 11) of the Farm Witkoppie No. 64 IR). 2. We refer not the draft scoping report (the "DSR") and the appendices made available on your website, as well as the focus group meeting that was held at your offices on 12 October 2018. 3. The road interface and access to the MetCon refinery Facility in the JMP is of particular concern to our client. Please will you address the following comments and make available to us the following on behalf of our client: o a copy of the land use rights application that was submitted to the Ekurhuleni Metropolitan Municipality (the "Municipality") and/or the approval thereof. While the site plan refers to have been approved by the Municipality, the land use rights are marked as "proposed"; o the status of the town planning process. In this regard, we require a copy of the land use rights application that was submitted to the Municipality; and o explain on what basis the proposed development complied the Municipality's Regional Spatial Development Framework. We understand that the site for the proposed development is currently zoned for transportation and remains a farm portion. Only one (1) land use is permitted under this zoning and it appears that the propose development is illegal. 4. We have been furnished with a copy of the letter dated 17 October 2018 addressed to you by Mills and Otten Proprietary Limited, who is representing the Truzen 105 Trust, the leaseholder of our client's land. Our client supports the comments and concerns raised by them in their aforementioned letter. 5. Our client's comments and request for information contained in this letter is not exhaustive of its concerns on relation to the DSR and the proposed development. Our client reserves its rights to raise further comments and requests for information

		once you have addressed the comments and furnished the information referred to in this letter.
Ms./Mrs. Kirstin Otten: Director - Mills & Otten Environmental Consultants (Representing owner and lease hold owner of Portion 30 of the Farm Witkoppie No. 64-IR)	22 October 2018	1. It is requested that a copy of the application form be made available. 2. What is the status of town planning process? Please provide proof of the application and/or approval. Currently the land is zoned for transportation and remains a farm portion. Only one land use is permitted under such zoning and the development therefore is illegal. How the proposed development complies with the RSDF should also be explained. 3. Reference is made to a stack height of 30m. It was explained that this was based on an existing plant. More information is needed to the actual design of the facility and what height will be approved in terms of proximity to the airport. 4. The original EA is dated July 2011 and was valid for a period of two (2) years. It is queried as to when the activity commenced. Evidence on Google earth indicates that the clearance of vegetation only commenced in October 2015. Clarification on this fact is requested as the development may be illegal in that the EA had expired. 5. The additional 1 hectare of land that is included in the current EIA process has already been developed as per admission of In2Food Group. This area will not be used as parking as stated in the Scoping Report but rather forms part of In2Food Group development. Please clarify. 6. Please confirm what is the total volume of hazardous materials to be stored at the Metcon Facility. 7. We request the details of the proposed effluent treatment, both in terms of volume and the nature of effluent treatment itself. 8. As discussed, the number of employment opportunities (report states 3000 during construction and 500 during operational phase) appears to be grossly overstated. Please can this be more accurately confirmed. 9. It is requested that an accurate layout of the facility be provided and in particular where the noisy elements will be located (stacks, blowers etc.). 10. The Air Quality Impact Assessment report refers to SA standards, where available. However, for most of the likely contaminants there is no SA standard. It is therefore requested that international standards or WHO standards be referenced in order to contextualise the results and understand the possible risk. 11. The baseline air quality measurements used desk top study results from a station some 15 kilometers away. There are no on-site measurements. It is stated in the report that the station in Bedfordview is located to gain an insight into impact of traffic

		on air quality. This is not considered indicative and local air quality should be addressed as there could be significantly different influences in this area. 12. The process flow diagram does not include the jeweller sweeps process. Please can this be amended to include this burning process. 13. The traffic impact study is a review of a study undertaken in 2014 and dated 2016. The study still refers to the entire precinct being a jewellery manufacturing plant, however it is now known that about 50% of the property is currently being developed by In2Food Group. The projected traffic volumes must therefore be re-assessed. The study refers to two main accesses off Bonaero Drive and it is our understanding that the Council will not approve access off this road for industrial purposes. The traffic study is considered out of date and based on incorrect information and should be re-done.
Mr. Sifiso Ndwandwe: Environmental Legal Administrator, Legislative Compliance, Department of Environmental Resource and Waste Management – City of Ekurhuleni (CoE)	22 October 2018	Herewith kindly find comments by the City of Ekurhuleni. 1. The Environmental Resource Management Department in rendering its comments assessed the environmental parameters/constraints of the property against the following environmental tools: o Provincial Environmental Management Framework, 2015; o Ekurhuleni Biodiversity and Open Space Strategy (EBOSS), 2008; o Grand Open Space Plan, 2013; o The Ekurhuleni Bioregional Plan, 2012; and o Applicable Environmental Legislation. 2. Based on the above tools and the information contained in the application, the department comments as follows: o The property consists of ***"Ecological Support Areas"***, ***"Other Natural Areas"*** and ***"No Natural Remaining"*** in terms of the Bioregional Plan 2012; ***"Ecological Support Area 1"***, are natural, near natural and degraded areas required to be maintained in an ecologically functional state to support Critical Biodiversity Areas. ***"Ecological Support Area 2"***, areas with no natural habitat which retain potential importance for supporting ecological processes.

		○ The Conservation Plan indicates that the property has both ***Irreplaceable Sensitive Sites*** and **– Vegetation**, and falls within a **Secondary Open Space Node for ecological support areas**. ○ It should be noted that according to the City of Ekurhuleni's ArcGIS database, the proposed development is located on Portion 282 of the Farm Witkoppie No. 64 IR and not the Remainder of Portion 69 as indicated within the report. ○ The applicant must consult with the relevant City of Ekurhuleni Department about the AEL application and requirements. ○ The applicant must ensure that in the case of an emergency that no contaminants enter the adjacent wetland or the City of Ekurhuleni storm water system. The applicant must install the necessary mitigation measures, i.e., cut-off drains, on the perimeter of the property to prevent accidental pollution of the adjacent wetland and CoE storm water system in the case of an emergency. ○ A wetland is identified on the proposed property. A copy of the application and GA must be forwarded to this Department for comment. ○ AS indicated within the DSR, the following studies, and additional studies must be compiled: - Air Quality Study and dispersion modelling; - Noise Impact Assessment; - Visual Impact Assessment; - Storm water Impact Study and Management Plan; and - Emergency Response Plan. **Comments from City Planning Department:** 1. The subject property appears to be part of Portion 282 of the Farm Witkoppie No. 64-IR, and not Portion 69, which is inf act the railway line west of the airport. 2. Based on Portion 282 – this part of this Portion is zoned "Transportation" – which does not include the proposed manufacturing or refining uses. 3. The property must therefore be zoned appropriately and may require a township establishment. 4. In terms of the RSDF Region A, this site is earmarked for "Airport Related Uses" and this proposal does therefore align to the RSDF. Further, the use may be seen as a "Noxious Industry", and this would not be consistent with the spatial framework for the area – however it needs to be determined whether the use is in fact deemed to be noxious or not.

		5. It is critical that the comments of ACAS be obtained as part of this process as well. All activities to be undertaken on the said property must be in accordance with all applicable By-Laws, policies and requirements of the Ekurhuleni Metropolitan Municipality. It should be noted that, in terms of Section 24F of the NEMA, Act No. 107 of 1998, as amended, no listed activity may commence prior to an environmental authorization being granted by the competent authority.
Ms./Mrs. Puleng Makhetha: Junior Airports Planner, Corporate Office – Airports Company South Africa (ACSA)	22 October 2018	1. <u>Height</u> • The following is mentioned in the report: o The baghouse stack may be 20m high; and o Scrubber Stack may be 5m high. • AS a result of the proposed development being in close proximity to the ORTIA, the height of the proposed (permanent/temporary) structures must be kept at a minimum (pre-construction, during and after the construction) in order to ensure that they do not fall within the Airport's runway obstacle limitation surfaces. • The proposed development is less than 1 kilometer from the airport's runway and falls within the transitional and take-off climb obstacle surface. In light of this, comments must be sought from ATNS, on what the acceptable height is for the proposed equipment (baghouse stack and scrubber stack). Please revert back to ACSA once comments on height restrictions have been received from ATNS, for our final comments. 2. <u>Noise:</u> • In terms of airport noise, the proposed development will e subjected to adverse noise pollution, as a result of its proposed location being in close proximity to the OR Tambo International Airport. IN light of this, please refer to the attached ultimate airport noise contours, together with the "**SANS 10103**: *measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication*" as a guide to ensure that suitable placement of land uses within the airport noise contours.

		• The Airports Company South Africa will not be held liable for the negative impact of aircraft noise and/or any other impacts associated with the close proximity to the ORTIA that could jeopardize the future success of this development. 3. <u>Storm water management:</u> • The effects that the proposed development may have on storm water runoff, and the attenuation thereof, in relation to the airport must be assessed and addressed. However, this is mentioned in the draft Scoping report where it is stated that *the previously conducted Geotechnical Specialist assessments will be reviewed as part of this EIA process for the proposed development and inclusion of the MetCon facility to certify that the specialist assessments are still relevant, and whether the findings remain valid*. 4. <u>Traffic Impact:</u> • The effects that the proposed development may have on the generation of traffic must be assessed and addressed. However, this is mentioned in the draft Scoping report where it is stated that *the previously conducted Traffic Specialist Assessment will be reviewed as part of this EIA process for the proposed development and inclusion of the MetCon facility to certify that the specialist assessments are still relevant, and whether the findings remain valid*. 5. <u>Communication, navigation and surveillance:</u> • Air Traffic Navigation Services (ATNS) should be contacted for comments in this regard. 6. <u>Aircraft glare, visual impact (lighting and dust):</u> • It is important that the (temporary or permanent) materials used for the proposed development (pre-construction, during and after construction) do not give rise to glare or impaired vision, as the proposed development site is very close to the airport runway. The mitigation measures discussed under “visual impact” must therefore address all of the above. 7. <u>Any building plans related to the proposed development should be shared with ACSA for comments:</u>

		• As “interested and affected parties”, the Airports Company South Africa must be granted the opportunity to provide comments on the building plans for the proposed development. • Please include the following additional representative from ACSA as an I&AP: **Name:** Thabo Mogalanyane **Email:** Thabo.Mogalanyane@airports.co.za **Designation:** Senior Manager – Site Maintenance & Engineering
Ms./Mrs. Simphiwe Masilela: Obstacle Evaluator – Air Traffic Navigation Services (ATNS)	22 October 2018	We will not be able to attend the public meetings; however, we request that you please update us should there be any new developments that may affect our interests. When the project is ready for construction, we will need to conduct an ANNEX14 Obstacle Limitation Surface (OLS) assessment as the proposed falls within the 15km radius from O.R Tambo International Airport. Please note that there is a fee attached to the Annex 14 assessment, we will duly conduct the formal assessment as required when the project is ready for construction. Please keep in mind that for us to carry out a successful assessment we require the following information: 1. Location (Co-ordinates WGS84 system) 2. Site/Ground Elevation (AMSL) 3. Height to the top of structure (in meters) Furthermore, we kindly request that all queries or new applications to be forwarded to the Obstacle Evaluators on the following: obstacleEvaluator@atns.co.za
Ms./Mrs. Puleng Makhetha: Junior Airports Planner, Corporate Office – Airports Company South Africa (ACSA)	23 October 2018	The O.R. Tambo International Airport noise contours were forwarded to Marang as a supporting document to the comments submitted on the 22nd of October 2018.
Ms./Mrs. Lizelle Stroh: Obstacle Inspector, PANS-OPS Section,	24 October 2018	Please find the extract from the SA Civil Aviation Authority regulation applicable to the Development.

Air Navigation Services Department – South African Civil Aviation Authority (SACAA)		Application can be done online on the CAA website: www.caa.co.za. On the home page go to the pull-down menu "**Information for the industry"** and click on **"Obstacles"** on the pull-down menu. This will take you to the Obstacles page. On the left-hand side of the Obstacles page, find **"Obstacles: Important Links"** On the right-hand side find **"Forms"** – The appropriate form is **CA-139-27.** Please cc yourself a copy of the completed form for your records before submitting – the data in the form cannot be saved. Note; - In your case the "substructure" will be the building. Ground elevation is the ground height of the building AMSL There is a fee of R870,00 applicable and you will receive an invoice. Please upload any additional information that may be applicable with the application. Kindly provide a kml (Google earth file) reflecting the footprint of the proposed development site.
Ms./Mrs. Lizelle Stroh: Obstacle Inspector, PANS-OPS Section, Air Navigation Services Department – South African Civil Aviation Authority (SACAA)	26 October 2018	Thanks for the Google kml file, the CAA would await the application and other documentation as was requested as part of the application process.
Mr. Sala Edwards – Resident of Bonaero Park	27 October 2018	One (1) question that slipped my mind on the day (of the public meeting) is will they be using Cyanide in the processes at all and if so, how will this be cleaned/ cleared out?
Mr. Andre du Plessis – Ward 23 Councillor, City of Ekurhuleni (CoE)	28 October 2018	Unfortunately, I am not able to accept your response regarding the sewer connection for this development. If an additional environmental impact assessment needs to be done, then so be it.

		I am concerned that a path of least resistance is being taken, without consideration for the inconvenience to the broader Bonaero community and the further degradation of the environment. Surely, as Environmental practitioners, this should be your major focus? My explanations delivered at the public meeting were very clear, explaining that, the existing infrastructure does not have the capacity for additional sewer volumes, which will be created by this development. Additional sewer volumes added to this, already failing and inadequate sewer infrastructure, will inevitably result in more regular sewer overflows, especially in the vicinity of the wetland, resulting in further pollution of this wetland and health risks to the affected community. I have clearly outlined the scenario to you and explained the fact that it was non-negotiable for the developer to link their sewer system directly to the nearby sewer pump station, unless Ekurhuleni upgrades their supporting infrastructure, before this development is operational. Please can you arrange an urgent and joint meeting, with your client, the Ekurhuleni HOD for Water and Sanitation, together with the HOD for Environment, in order for us all to discuss this issue and reach an amicable agreement?
Ms./Mrs. Kirstin Otten: Director - Mills & Otten Environmental Consultants (Representing owner and lease hold owner of Portion 30 of the Farm Witkoppie No. 64-IR)	29 October 2018	Thank you for the minutes There are some typing errors which should be corrected. Furthermore, my own records of the volumes of hazardous material are different to what is recorded in the minutes. Many of the questions have not yet been answered, when will this be done? In the final report or under separate cover?
Ms./Mrs. Kirstin Otten: Director - Mills & Otten Environmental Consultants (Representing owner	29 October 2018	I have noted that the GIDZ claims to have commenced with the project in 2013 by erecting a billboard. Can we please get a copy of this letter of notification and any response received from GDARD in this regard.

and lease hold owner of Portion 30 of the Farm Witkoppie No. 64-IR)		I would also like to understand how the erection of a billboard is considered commencement when it was not a listed activity in the original application and may in fact not be a relevant activity for the site.

Copies of all comments received during the scoping phase, as well as all correspondence, is included in **Appendix 7D**. All issues, comments and concerns raised during the public participation process to date were captured in the Comments and Response Report (C&RR) which is included in **Appendix 7E** of the FSR. The C&RR details all issues, comments and concerns raised and also details how the comments and/or issues/concerns have been taken into consideration and/or addressed.

In addition, the minutes of the Public Meeting and FGMs which were undertaken are also provided in **Appendix 7G** of this FSR. The comments, issues and concerns raised during these meetings have been detailed in these meeting minutes.

8.7. Proof of Notification

Appendix 7 includes all proof of notification of Interested and Affected Parties. All proof of notification of I&APs will be recorded and incorporated in the impact assessment process. The following types of proofs will be recorded:

- Site notice text (**Appendix 7A**);
- Photographs of site notices (**Appendix 7A**);
- Proof of advertisements in the newspapers (**Appendix 7C**);
- Background Information Document (BID) (**Appendix 7B**); and
- Correspondence to registered I&APs and key stakeholders (**Appendix 7D**).

8.8. Focus Group Meetings (FGMs)

Focus Group Meetings (FGMs) are smaller meetings with specific groups or organisations who have similar interests in or concerns about the project.

It should be noted that two (2) Focus Group Meetings (FGMs) were held on Friday the 12th of October 2018, during the DSR comment period. This included an Authority FGM, which was undertaken with a member of the CoE, as well as a Landowner and Stakeholder FGM which was undertaken with affected and/or surrounding landowners and stakeholders (such as the other tenants of the JMP). Affected landowners and stakeholders and authorities were invited to the respective FGMs via e-mail. Proof of the invitations that were sent out to all registered landowners, stakeholders and OoS/Authorities s is provided in **Appendix 7B**.

The above-mentioned Authority and Landowner and Stakeholder FGMs were held as follows:

DATE	TIME	MEETING TYPE	VENUE
Friday 12 October 2018	10:00 – 12:00	Authorities FGM	Marang Environmental and Associates (Pty) Ltd Boardroom: Building 2, Boskruin Office Park, President Fouche Drive, Randburg.
Friday 12 October 2018	13:00 – 15:00	Landowners and Stakeholders FGM	Marang Environmental and Associates (Pty) Ltd Boardroom: Building 2, Boskruin Office Park, President Fouche Drive, Randburg.

Minutes of the above-mentioned FGMs were compiled and forwarded to all attendees for their review and comment. These are presented in **Appendix 7G**. The presentation which was given during the respective FGMs in also included in **Appendix 7G**.

The primary aim of these meetings was to:

- disseminate information regarding the proposed development to I&APs;
- provide I&APs with an opportunity to interact with the EIA team and the GIDZ representatives present;

- supply more information regarding the EIA process;
- answer questions regarding the project and the EIA process;
- receive input regarding the public participation process and the proposed development.

8.9. Public Meeting

A Public Meeting was held on Saturday the 13th of October 2018, during the DSR comment period. The Public Meeting was held in order to provide I&APs and members of the local community with information regarding the proposed development, present the receiving environment and invite I&APs and members of the local community to raise any further comments and/or concerns that they may have.

The above-mentioned Public Meeting was held as follows:

DATE	TIME	MEETING TYPE	VENUE
Saturday 13 October 2018	09:30 – 11:30	Public Meeting	Airports Christian Fellowship (ACF) Church, 29 DF Malan Drive, Bonaero Park

Invitation letters were sent out via e-mail to all registered I&APs and stakeholders on the project's database. Proof of the invitations that were sent out to all registered I&APs and stakeholders is provided in **Appendix 7B**. In addition, site notices were erected in the suburb of Bonaero Park in order to advertise the Public Meeting. Proof of this is provided in **Appendix 7B**. It should also be noted that the Ward Councillor for Bonaero Park (Ward 23), namely Mr Andre du Plessis, was contacted in order to assist in notifying community members of the Public Meeting. Proof of correspondence with Mr du Plessis is included in **Appendix 7D**.

Draft minutes of the Public Meeting (including the presentation) are included in **Appendix 7G**.

8.10. Comments and Response Report (C&RR)

The Comments and Response Report (C&RR) has documented all issues, comments and concerns raised during the public participation process to date. This report is included in **Appendix 7E** of this FSR. The C&RR provides a summary of the issues raised, as well as responses which were provided to I&APs. The information was incorporated into the evaluation of relevant impacts in the FSR. All comments received during the scoping phase PPP and review period of the DSR have been included in the C&RR.

8.11. Comments on Draft Scoping Report (DSR)

The DSR was made available for a period of thirty (30) days for public comment and review after submission to the DEA. The DSR was thus made available from Tuesday the 18th of September 2018 to Thursday the 18th of October 2018. Written notice was given to all registered I&APs, stakeholders, LOs and OoS/Authorities on the database that the DSR was available for public review. These notifications contained links to download electronic copies of the DSR. In addition, hard copies could be made available per request.

Proof of notifications and all correspondence with registered I&APs, stakeholders, LOs and OoS/Authorities is provided in **Appendix 7D** and **Appendix 7I**. A hard copy of the DSR was also made available at the

Bonaero Park Public Library and all registered I&APs, stakeholders, LOs and OoS/Authorities were informed of this accordingly.

Electronic copies (CD) of the report were also be made available and distributed on written request.

8.12. Authority Review of the Draft Scoping Report (DSR)

In terms of section 40 (2) of the 2014 EIA Regulations (as amended), under Government Notices No R. 326, public participation must include consultation with "*all organs of state which have jurisdiction in respect of the activity to which the application relates*".

Table 8-1 below includes all the organs of state/Authorities who were notified of the availability of the DSR and e-mailed links to download electronic copies of the DSR (including all appendices). It should be noted that these OoS/Authorities were also afforded the opportunity to request hard copies of the DSR (including all appendices). Telephonic low-up with stakeholders was done in order to provide them with ample opportunity to comment during the DSR comment and review period.

Table 8-1. Authorities follow-up consultation.

DISTRIBUTION OF DRAFT SCOPING REPORT (DSR) TO ORGANS OF STATE/AUTHORITIES FOR COMMENT					
Name	**Surname**	**Company/Department**	**Position**	**Email Address**	**Response / Receipt of Comments**
CITY OF EKURHULENI (COE)					
André	Du Plessis	City of Ekurhuleni (CoE)	DA Ward Councillor: Ward 23	Andre.DuPlessis@ekurhuleni.gov.za	Access to an electronic copy of the report was posted 18 September 2018. Comments were received from Andre du Plessis during the public meeting which was undertaken on the 13th of September 2018. Minutes of this public meeting are provided in **Appendix 7G**. Additional comments were also received on the 20th of October 2018 and 28th of October 2018 respectively. These have been provided in this FSR and were incorporated into the C&RR which is provided in **Appendix 7E**. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.
Tracey	Bulter	City of Ekurhuleni (CoE)	DA Ward Councillor: Ward 17	starr@polka.co.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments have however been received to date. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.

Flip	Visser	City of Ekurhuleni (CoE)	Air Quality Official	flip.visser@ekurhuleni.gov.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments have however been received to date. Marang contacted Flip Visser on the 23rd / 24th of October and were informed that there were no comments on the DSR from his side. Marang is however still busy with the AEL application. The CoE will be included in all corresponded with regards to the AEL application and air quality related matters.
Imanuel	Joemath	City of Ekurhuleni (CoE)	Environmental Health Practitioner	Imanuel.joemath@ekurhuleni.gov.za	The CoE's environmental department submitted comments on the DSR on the 22nd of October 2018.
Sifiso	Ndwandwe	City of Ekurhuleni (CoE)	Legislative Compliance: Environmental Resource and Waste Management Department	Sifiso.Ndwandwe@ekurhuleni.gov.za	
Gerard	MacCarron	City of Ekurhuleni (CoE)	Environmental Assessment Practitioner (EAP)	Gerard.MacCarron@ekurhuleni.gov.za	
Anél	Hietbrink	City of Ekurhuleni (CoE)	Environmental Assessment	Anel.Hietbrink@ekurhuleni.gov.za	

			Practitioner (EAP)		
Lilian	Letsatsi	City of Ekurhuleni (CoE)	Environmental Assessment Practitioner (EAP)	Lillian.Kwakwa@ekurhuleni.gov.za	Lilian Letsatsi attended the OoS/Authority FGM which was undertaken on the 12th of October 2018. Comments were provided on her behalf during this FGM. In addition, the CoE's environmental department submitted comments on the DSR on the 22nd of October 2018.
DEPARTMENT OF ENVIRONMENTAL AFFAIRS (DEA): BIODIVERSITY AND CONSERVATION BRANCH					
Seoka	Lekota	Department of Environmental Affairs (DEA): Biodiversity Conservation Branch	Biodiversity Control Officer	slekota@environment.gov.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments have however been received to date. Attempts were made to contact Mr. Lekota on the 23rd/24th of October 2018 to no avail. A message was left with Mr. Lekota. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.
DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES (DAFF)					
Ivan	Riggs	Department of Agriculture, Forestry and Fisheries (DAFF)	Regional Manager: Directorate Land Use and Soil Management	Ivanr@daff.gov.za	Initial comments on the project were received from Mr. Riggs on the 27h of September 2018. Mr. Riggs declined the invitation to provide comment or participate in the EIA process for this development.

					Access to an electronic copy of the report was however posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. Mr. Riggs was contacted by Marang on the 23rd/24th of October and it was stated that Mr. Riggs did not have any comments.
Mashudu	Marubini	Department of Agriculture, Forestry and Fisheries (DAFF)	Land use & Soil Manager	MabuleR@daff.gov.za / MashuduMa@daff.gov.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments have however been received to date. Attempts were made to contact Mr. Mashudu on the 23rd/24th of October 2018 to no avail. Any comments received after the FSR has been submitted will be forwarded to the DEA.
GAUTENG DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT (GDARD)					
Boniswa	Belot	Gauteng Department of Agriculture and Rural Development (GDARD)	Enforcement-Section 24G	Boniswa.belot@gauteng.gov.za	Comments on the DSR were received from GDARD on the 8th of October 2018

Abimbola	Olowa	Gauteng Department of Agriculture and Rural Development (GDARD)	Chief Director: Compliance and Enforcement	abimbola.olowa@gauteng.gov.za	
Tendani	Rambuda	Gauteng Department of Agriculture and Rural Development (GDRAD)	Control Environmental Officer: Impact Management	Tendani.Rambuda@gauteng.gov.za	
DEPARTMENT OF WATER & SANITATION (DWS)					
Phillimon	Khwinana	Department of Water & Sanitation (DWS)	Upper Vaal Water Management Area	KhwinanaP@dws.gov.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments have however been received to date. Attempts were made to contact Mr. Khwinana on the 23rd/24th of October 2018 to no avail. Any comments received after the FSR has been submitted will be forwarded to the DEA.
AIRPORTS COMPANY SOUTH AFRICA (ACSA)/ OR TAMBO INTERNATIONAL AIRPORT (ORTIA)					
Puleng	Makhetha	Airports Company South Africa (ACSA)	Junior Airport Planner - Corporate Office	puleng.makhetha@airports.co.za	Comments on the DSR were received from ACSA on the 22nd of October 2018.
Musa	Dlamini	Airports Company South Africa (ACSA)	Airports Environmental Manager	musa.dlamini@airports.co.za	
SOUTH AFRICAN CIVIL AVIATION AUTHORITY (SACAA)					

Lizelle	Stroh	South African Civil Aviation Authority (SACAA)		strohl@caa.co.za	Initial comments on the project were received from SACAA on the 28th of September 218. In addition, comments on the DSR were received from SACAA on the 24th of October 2018.
AIR TRAFFIC & NAVIGATION SERVICES (ATNS)					
Simphiwe	Masilela	Air Traffic & Navigation Services (ATNS)	Obstacle Evaluator	ObstacleEvaluators@atns.co.za	Comments on the DSR were received from ATNS on the 9th of October 2018.
SOUTH AFRICAN HERITAGE RESOURCE AGENCY (SAHRA)					
Andrew	Salomon	South African Heritage Resource Agency (SAHRA)	Heritage Officer: Archaeology, Palaeontology and Meteorites Unit	asalomon@sahra.org.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. It should also be noted that the DSR was uploaded to the SAHRIS online system and a comment requested. Marang were informed by Mr. Salomon that SAHRA will only provide comments via the SAHRIS online system, and not via email. No comments have however been received to date. Any comments received after the FSR has been submitted will be forwarded to the DEA.
PROVINCIAL HERITAGE RESOURCES AUTHORITY GAUTENG (PHRAG)					
Tebogo	Molokomme	Provincial Heritage Resources Authority Gauteng (PHRAG)		tebogo.molokomme@gauteng.gov.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and

					OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. It should also be noted that the DSR was uploaded to the SAHRIS online system and a comment requested. No comments have however been received to date. Attempts were made to contact Tebogo Molokomme on the 23rd/24th of October 2018 to no avail. A message was left on his cell phone. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.
TELKOM					
Pricilla	Niewenhuis	Telkom	Telkom Gauteng Central Regional Manger	gautengwayleaves@telkom.co.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments have however been received to date. Marang contacted Pricilla Niewenhuis on the 23rd/24th of October 2018 and were informed that Telkom do not have any comments on the DSR.
TRANSNET FREIGHT RAIL					
Livhuwani	Ndou	Transnet Freight Rail	Environmental Manager: Freight Rail	livhuwani.ndou@transnet.net	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an

					email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments have however been received to date. Attempts were made to contact Livhuwani Ndou on the 23rd/24th of October 2018 to no avail. A message was left for him. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.
SOUTH AFRICAN NATIONAL ROADS AGENCY LIMITED (SANRAL)					
Victoria	Bota	South African national Roads Agency Limited (SANRAL)		Botav@nra.co.za	Initial comments on the project were received from Victoria Bota on the 10th of October 2018. Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments on the DSR have however been received to date. Attempts were made to contact Victoria Bota on the 23rd/24th of October 2018 to no avail. A message was left for her. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.

GAUTENG DEPARTMENT OF ECONOMIC DEVELOPMENT (GDED)					
Jerry	Khumalo	Gauteng Department of Economic Development (GDED)	Head of Department (HOD)	jerry.khumalo@gauteng.gov.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments on the DSR have however been received to date. Attempts were made to contact the GDED to no avail. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.
Alfred	Tau	Gauteng Department of Economic Development (GDED)		alfred.tau@gauteng.gov.za	
GAUTENG INFRASTRUCTURE FINANCING AGENCY (GIFA)					
Albertina	Tshisikule	Gauteng Infrastructure Financing Agency (GIFA)		a.tshisikule@gifa.co.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments on the DSR have however been received to date. Attempts were made to contact the GIFA to no avail. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.
GAUTENG GROWTH AND DEVELOPMENT AGENCY (GGDA)					

Mothibedi	Matshele	Gauteng Growth and Development Agency (GGDA)	Senior Project Manager EPMO	thibim@ggda.co.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit comments. No comments on the DSR have however been received to date. Attempts were made to contact the GGDA to no avail. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.
ESKOM					
John	Geeringh	Eskom	Chief Planner	GeerinJH@eskom.co.za	Comments were received from Mr. Geeringh on the 11th of September 2018. It was stated that he did not have any comments regarding this proposal. No other comments have been received to date. Marang will however continue to pursue comments.
SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE (SANBI)					
Sagwata	Mnayike	South African National Biodiversity Institute (SANBI)	Biodiversity Planning & Implementation	S.Manyike@sanbi.org.za	Access to an electronic copy of the report was posted 18 September 2018. Marang sent an email on the 12th of October 2018 to remind I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period was ending. In addition, an email was sent on the 19th of October 2018 informing all I&APs, stakeholders, LOs and OoS/Authorities that the DSR comment period had ended and reminding them to submit

					comments. No comments on the DSR have however been received to date. Attempts were made to contact SANBI to no avail. Marang will continue to pursue comments. Any comments received after the FSR has been submitted will be forwarded to the DEA.

9. CONCLUSIONS AND RECOMMENDATIONS

During the original BA process undertaken in 2009, overall potential impacts of the proposed development were identified through a desktop study, a site visit, specialist studies and comments received during the public participation process. An assessment of the potential impacts was provided, identifying the impacts that are potentially significant including management recommendations and mitigation measures to reduce the impacts.

The FBAR compiled as part of the BA process undertaken for the original JMP project in 2009 concluded that the development of the JMP on the OR Tambo International Airport IDZ, is "*in line with the region's Spatial Development Plan*", as well as the adjacent land uses. It further states that the development will provide a number of "*job opportunities during the construction phase*" and thereby enhance the local economy. The property on Portion 282 of the Farm Witkoppie No. 64 - IR has "*no ecological, archaeological or geohydrological sensitivities*" which may be impacted on by the proposed development. If all mitigation measures as stipulated in the FBAR and in the EMPr are implemented, the significance of most, if not all, and the potential impacts, as listed above, will be "*reduced to 'medium' and 'low'" and reach "environmentally acceptable levels*".

With regards to the specialist reviews which have been conducted as part of the EIA process for the proposed development and inclusion of the MetCon facility within the JMP site, the overall conclusions of the reviewed specialist assessments are congruous with the first findings of the BA undertaken in 2009, highlighting no fatal flaws posed by the proposed project to the receiving environment. The above-mentioned report provides a broad introduction to the issues that are pertinent to the proposed MetCon facility and highlights important issues that may be further investigated during the EIA Phase of the project. The EIA Phase will draw on the above information and make use of the recommended specialist studies to reach an objective decision on the overall impact of the proposed development.

The EIA Phase will, where possible, culminate in the compilation of detailed mitigation measures to reduce impacts and the identification of sensitive areas within the site which may require more specific management measures. The EIA Phase will also aim to optimise and improve potential positive impacts that may result from the proposed development.

Detailed mitigation and management measures will also be included in the EMPr which will be compiled as part of the EIA phase, in response to the detailed assessment. Should this project receive a positive EA, the EMPr will guide the project proponent and appointed contractor(s) through the final design, construction and operational phases of the proposed project.

9.1.1. Summary of Findings, Conclusions and Recommendations

A summary of the findings, conclusions and recommendations for each specialist review and/or assessment undertaken as part of this scoping process is provided in the table below.

Table 9-1. Summary of Findings, Conclusions and Recommendations for Specialist Reviews/Assessments

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
Surface Water	None	From the results of the review, it was determined that the findings of the Basic Assessment Report (BAR) are likely to still hold true but are not absolute. The recommendations presented in the BAR and EMPr are appropriate, relevant/necessary, sensible and achievable; and the proposed mitigatory measures are considered the best options available. Additional information from desktop sources and national and provincial databases to assist with decision making for the additional listed activities for which authorisation is now required have been provided in the report. The information on the adjacent wetlands has been presented, at a high level, in the report. This information was used to inform the impact assessment undertaken according to the Marang Impact Rating methodology. Based on the findings of the impact assessment, the construction and operation of the proposed precious metal refinery facility poses a low significance of impact on the freshwater resources of the area. Due to the distance between the activities and the watercourses in the area, and the presence of existing developments between the study area and watercourses of the area, limited to negligible impact from the proposed activities on the wetlands is expected to occur. Fulfilment of Regulation GN R. 509 of 2016 now needs to be considered as delineated pans are located within 500m of the proposed development site. As such, the Department of Water and Sanitation (DWS) Risk Assessment Matrix as promulgated in Regulation GN R. 509 of 2016 and the appropriate water use authorisation process (namely a General Authorisation) will be undertaken as part of this EIA process. • ***Construction Phase Recommendations***:	Yes. A DWS Risk Assessment Matrix as promulgated in Regulation GN R. 509 of 2016 and the appropriate water use authorisation process (namely a General Authorisation) will be undertaken as part of the EIA process. This is detailed in section 10, Plan of Study for the EIA.

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		○ Contractor laydown areas and material storage facilities must be placed within the study area and must not be placed within 30m of the wetlands in line with GDARD and NEMA requirements; ○ All vehicle re-fuelling is to take place on a sealed surface within the study area and must not be permitted to occur within 30m of the wetlands; ○ All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is absolutely essential; ○ Retain as much indigenous vegetation as possible; ○ Excavated materials should not be contaminated, and it should be ensured that the minimum surface area is taken up, however, the stockpiles may not exceed 2m in height; ○ All exposed soils and temporary stockpiles must be protected for the duration of the construction phase in order to prevent erosion and sedimentation of the wetlands; and ○ Immediate revegetation of all stockpiles which are to remain on site post-construction. • ***Operational Phase Recommendations***: ○ Clean and dirty water management must take place in order to prevent contaminated runoff from the precious metal refinery facility creating preferential flow paths which may reach the wetlands. Clean and dirty water management systems must be implemented prior to commencement of construction; and ○ Suitable waste disposal facilities should be provided. These facilities should regularly be emptied and taken to a registered waste disposal facility; and ○ All recyclable waste should be recycled as far as possible.	
Soil and Land Capability	None	From the results of the review, it was determined that the findings of the Basic Assessment Report (BAR) are likely to still hold true but are not absolute. The recommendations presented in the BAR and Environmental Management Programme EMPr are appropriate, relevant/necessary, sensible and achievable;	No

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		and the proposed mitigatory measures outlined in this report are considered the best options available. The study area is located within a highly industrialised and urbanised area with no active agricultural practices within or in the immediate vicinity of the study area. The eastern half of the study area is situated within the Environmental Management Framework (EMF) Zone 5 (Industrial and large commercial focus zone) (EMF, 2015). The proposed facility falls within the EMF Zone 5. In addition, the study area is currently under development and the soils have been anthropogenically transformed, thus these soils are likely to have little to no bearing on agricultural productivity. Thus, from a soil, land use and land capability point of view, the impact significance on the loss of high agricultural potential soils is anticipated to range between very low and negligible. Based on the findings of the impact assessment, the construction and operation of the proposed precious metal refinery facility poses a low significance of impact on soil, land use and land capability. Additional information from desktop sources and national and provincial databases to assist with decision making for the additional listed activities for which authorisation is now required have been provided in the specialist review. • ***Construction Phase Recommendations***: o All development footprint areas to remain as small as possible; o Laydown areas should be located within disturbed soils (anthrosols) to avoid compaction of natural soils; o All exposed soils and temporary stockpiles must be protected for the duration of the construction phase in order to prevent erosion; o Stockpile height should not exceed 2 meters o Vehicle re-fuelling is to take place on a sealed surface within the study area; and o Contamination prevention measures should be addressed in the Environmental Management Programme (EMPr) for the proposed development, and this should always be implemented and made	

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		available and accessible to the contractors and construction crew conducting the works on site for reference. • ***<u>Operational Phase Recommendations</u>***: o All vehicles should remain within demarcated roads as far as practically possible; o Stormwater management must take place to prevent contaminated runoff from the precious metal refinery facility; o Waste product should be recycled as best as practically possible to minimise sources of soil contamination; and o Contamination prevention measures should be addressed in the EMPr for the proposed development, and this should be implemented and made available and accessible at all times to the contractors and construction crew conducting the works on site for reference.	
Visual	None	It was evident from the review of the Basic Assessment Report (BAR) that very little to no information was presented on visual impacts. However, based on the geographic setting of the proposed Precious Metals Refinery Facility (PMRF), the development is not likely to lead to any change in the visual character and sense of place of the surrounding environment. Both the EMPr and the Environmental Authorisation set conditions to limit the visual impact of the development. Should these conditions be adhered to, the significance of the impact on visual resources and the visual landscape are considered negligible. The development of the proposed PMRF is located within a highly industrialised and urbanised area, with the eastern portion of the proposed PMRF situated within the Industrial and Large Commercial Zone (Zone 5) of the Environmental Management Framework (EMF, 2015). Since the surrounding area has been subject to development and the proposed PMRF is situated within a footprint where buildings are already constructed, the visual character and sense of place of the area will not be significantly negatively affected. Furthermore, since the proposed PMRF is situated adjacent to the OR Tambo International Airport, none	No

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		of the buildings are permitted to be higher than two storeys (approximately 12m), therefore the proposed buildings associated with the PMRF is congruous with the surrounding existing buildings from the Jewellery Manufacturing Precinct (JMP). Based on the findings of the impact assessment, the proposed PMRF poses a low significance of impact on the visual character and aesthetics of the area. Additional information from desktop sources with emphasis on climate, topography, land uses and land cover as well as protected areas within a 10km radius from the proposed development was gathered to assist with decision making for additional listed activities for which authorisation may be required. • ***Construction Phase Recommendations:*** o The development footprint area should remain as small as possible; o No rubble should be disposed of at random within the site, but within relevant removable bins, where recyclable and non-recyclable waste is kept separate; o Contractor's laydown areas and temporary storage facilities should be located within the development footprint and cordoned off with shade cloth to conceal and minimise the visual impact; o Any topsoil stockpiled should either be utilised during landscaping or it should be shaped and rounded to blend in with the surrounding landscape and to minimise visual contrast; o Vegetation, especially large and tall trees bordering the Bonaero Park residential area south of the PMRF should be retained if feasible; o It must be ensured that the buildings fit into its surroundings through the appropriate use of colour and material selection. Natural Colours should be used in all instances. Should the stacks comprise metal surfaces, it must be painted in a colour that blends in with the natural environment. White structures are to be avoided; o A dust management plan must be implemented to reduce dust generation. Such dust control measures may include, but is not limited to; watering of the footprint area and any access roads, speed limits of 20km/h must be adhered to and should it be practical stockpiles should	

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		be covered with a tarpaulin on windy days to avoid soil and dust being blown away; o Construction activities should be restricted to daylight hours as far as possible; o A lighting engineer may be consulted to assist in the placement of temporary and permanent light fixtures, to reduce the visual impact associated with glare and light trespass; and o No naked / unshielded light sources are to be used. It is recommended that "full cut-off" light fixtures that direct light only below the horizontal is to be used. • ***Operational Phase Recommendations:*** o Operational activities of the PMRF and gas emissions at the stacks; o An increase in vehicular movement and level of human activity in the area due to operational activities; o Exterior and security lighting around the buildings and parking facilities, possibly contributing to light pollution; o Potential lighting at night from operational vehicles; and o Light sources temporarily stationed for maintenance activities conducted at night, in case of emergencies. o It is recommended that routine maintenance on buildings and other structures be implemented, to ensure that the paint of buildings are not weathered and that the buildings fit into the colour palette of the surroundings; o In the event that a green open space is demarcated and landscaped, it must be ensured that the vegetation be maintained and controlled to reduce the risk of potential alien floral species proliferation and to keep it aesthetically appealing to the receiving environment; o It is recommended that maintenance activities should not take place at night or on weekends, unless absolutely essential; o Making use of motion detectors on security lighting at buildings and parking facilities, ensures that the site will remain in relative darkness, until lighting is required for security and maintenance purposes;	

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		○ No naked / unshielded light sources are to be directly visible from a distance; and ○ The PMRF should be screened through the use of a clearVU fence, or equally approved, which will result in a more unified and tidy appearance	
Heritage	None	A brief desktop study was undertaken which consisted of an assessment of old aerial photographs. Aerial photographs taken in 1941, 1952, 1969 and 1976 were obtained and included in the study. Neither one of these images depict any buildings or heritage sites within the study area. In 1941 a plantation was growing across the study area and its surroundings. Eleven years later, in 1952, this plantation had almost entirely been cut down. By 1969 the remaining trees from the plantation started growing and expanding again, albeit in an unmanaged way suggesting that the study area was not farmed or formally used for any particular purpose. By 1976 signs for earthworks and excavations within the study area started appearing, although sections of it still comprised trees. The site was assessed in the field by way of a brief walkthrough undertaken by Polke Birkholtz, an experienced archaeologist / heritage specialist. The fieldwork showed that the study area is almost entirely disturbed and construction on the jewellery precinct is at an advanced stage. The following recommendations are made: ▪ Despite the fact that study area was assessed by way of a detailed investigation of aerial photographs, no evidence for any buildings or heritage sites could be found on any of these old depictions of the study area. Furthermore, the walkthrough also did not reveal any evidence for archaeology or heritage, even though sections of intact soil profiles that were exposed by construction were scrutinised during the walkthrough. As a result, it is my professional opinion that there is no need for a Heritage Impact Assessment on this project.	No. It is the specialist's professional opinion that there is no need for a Heritage Impact Assessment.
Air Quality	None	Particulate and gaseous emissions were identified for operations associated with the proposed facility and will be emitted from the following key sources: ▪ Jewellers secondary gold material incineration in roasting oven;	No. It should however be noted that an AEL will be obtained for the proposed development.

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		▪ Gas (fuel) combustion installation (roasting oven); ▪ Chemical refining process; ▪ Melting of material in induction furnaces and adding fluxes; and ▪ Casting of material. The abovementioned activities trigger sub-category 4.17 (precious and base metal production and refining) and 4.2 (combustion installations) in terms of S21 of NEM:AQA (Act No. 39 of 2004). As such, the proposed facility requires an AEL to operate. While there were other identified existing key sources of air pollution surrounding the project site which also need to be taken into account, Marang predicted low unmitigated incremental concentrations. MetCon do plan to install abatement equipment, as per their current design at the MetCon Centurion Plant. Under the mitigated scenario, very low concentrations were observed within 2 km from the facility, as the abatement equipment (scrubber and baghouse) has an associated emission control efficiency of approximately 98%. Therefore, Marang further concluded that the development be approved from an Air Quality point of view. • ***Operational Phase Recommendations***: o The proposed facility must install abatement equipment (baghouse and scrubber) as per their current design at the existing MetCon Centurion Plant. The abatement equipment must achieve at least 90% control efficiency and must ensure compliance with the minimum emission standards for sub-category 4.17 in terms of S21 of the NEM:AQA listed activities. Additional recommendations include: o MetCon must apply for an AEL prior to the commencement of operations. All conditions of the AEL must be complied with. o Appoint a responsible person, such as an emission control officer or safety, health & environmental manager, to ensure compliance with the AEL. o Once operational, conduct stack emissions monitoring on all stacks for the relevant listed activity and ensure compliance with the minimum	

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		emission standards, with the use of abatement equipment. Ensure that monitoring is undertaken in accordance with nationally or internationally acceptable methods. o Ensure that all unit processes & apparatus used for undertaking the listed activity in question, and all appliances and mitigation measures for preventing or reducing emissions, are at all times properly maintained and operated. o Submit an annual AEL report within the required timeframe. o Submit compliance audit reports annually. o Once operational, maintain and report monthly to the authority a complaint register. Should a complaint be logged, a report in the required format as per the AEL, should be submitted to the authority. o Register and report on the NAEIS. Category A (listed activities) are required to report their emissions on the NAEIS annually. The NAEIS is a national emissions inventory. o Maintenance and pollution prevention plans should be developed for the facility. o Undertake regular training of all key employees to ensure effective implementation of the AEL requirements, maintenance and pollution prevention plans.	
Noise	None	If only daytime activities are planned, no mitigation measures are recommended. If night-time activities are planned (after 22:00 at night, before 06:00) it is recommended that MetCon: ▪ measure the typical night-time ambient sound levels in the area prior to the project being developed (over the full night-time period). Once operational, measurements must be repeated to confirm that the implementation of the project did not raise the noise levels with more than 7 dB (Noise Control Regulations) and ideally, does not raise the ambient sound levels with more than 3 dB (International Finance Corporation recommendation). ▪ select appropriate noise mitigation measures (to be considered during the planning stage) which may include: o Eliminating the noise source where possible at night;	No.

Aspect	Fatal flaws	Outcomes & Recommendations	Further Investigations
		○ The installation of one or more acoustical silencer(s) or enclosures; ○ Acoustical treatment of ducts and exhaust stacks; ○ A change in equipment, controlling the speed of the fans/blowers; ○ Moving the noise source further from the residential area (if possible). • ***Operational Phase Recommendations***: ○ No additional mitigation required for activities during daytime (06:00 – 22:00) operations. ○ If night-time activities are required, MetCon should measure the typical night-time ambient sound levels in the area prior to the project being developed (over the full night-time period). Once operational, measurements must be repeated to confirm that the implementation of the project did not raise the noise levels with more than 7 dB (Noise Control Regulations), ideally, no more than 3 dB (International Finance Corporation recommendation). ○ Other measures include: - Minimise night-time activities that will require the use of the baghouse stack and blowers at night. - The design of the baghouse stack exit to ensure a more flared design, or the use of a silencing system at the exit. - Enclose the blowers in a structure to reduce the noise levels from this source. ○ The reduction of the gas exit velocities at night.	

10. PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

The EIA phase of the application will include the review of the impacts, recommendations and mitigation measures outlined in the FBAR that was approved in 2011. Furthermore, issues identified during the Scoping phase will be investigated further during the EIA phase of the proposed project. Mitigation measures will be formulated, and these will be included in the EMPr. The sections below confirm the process to be undertaken by the EAP in the EIA Phase of the project.

This information will assist DEA in making an informed decision with regards to the proposed development.

10.1. Aim of the EIA Phase

The aim and objectives of the EIA phase will be in line with Section 2 of Appendix 3 of the 2014 EIA Regulations (as amended). The aim of the EIA phase is to:

- To further determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- To further describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;
- To further identify the location of the development footprint within the approved site as contemplated in the accepted scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- To further determine the—
    - nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
    - degree to which these impacts—
        - can be reversed;
        - may cause irreplaceable loss of resources, and
        - can be avoided, managed or mitigated;
- To further identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;
- To further identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity;
- To further identify suitable measures to avoid, manage or mitigate identified impacts; and
- To further identify residual risks that need to be managed and monitored.

The following tasks will form part of the EIA Phase:

- A comprehensive Public Participation Process;
- Update specialist studies (if required);
- Compilation of an Environmental Impact Assessment Report (EIAr);
- Compilation of an Environmental Management Programme (EMPr);
- Make Draft EIAr available for public comment and review;
- Submit Final EIAr to DEA; and

- Await decision.

10.2. Competent Authority Consultation

The stages at which the competent authority (namely the DEA) will be consulted are as follows:

- Submission of FSR for comment and review;
- Response from competent authority regarding acceptance of FSR;
- Submission of DEIAr and Draft EMPr for comment and review;
- Submission of FEIAr and Draft EMPr with comments; and
- Response from competent authority regarding acceptance of FEIAr and Final EMPr.

Additional consultation may occur with the DEA during the EIA process should the need arise.

10.3. Specialist studies

A number of specialist studies have already been completed during both the BA process for the JMP site and the scoping phase of the MetCon EA application.

The following specialist studies have already been completed for the greater JMP and MetCon site:

- Geotechnical Study (Lukhanyo Gqobo – Earth Investigation Laboratories);
- Traffic Impact Assessment (Bonginkosi Msiya – Phunga Holdings (Pty) Ltd); and
- Air Quality Impact Assessment (Sophia Rosslee – Marang Environmental & Associates (Pty) Ltd).

Furthermore, the following specialist reviews have been undertaken during the scoping phase as part of this EIA process, as per consultation with the DEA:

- Heritage Review (Polke Birkholtz – PGS Heritage);
- Noise Review (Morné de Jager – Enviro Acoustic Research CC);
- Surface Water Review (Stephen van Staden – SAS Environmental Group of Companies);
- Soils and Land Capability Review (Stephen van Staden – SAS Environmental Group of Companies); and
- Visual Impact Review (Stephen van Staden – SAS Environmental Group of Companies).

In light of the above, the following specialist studies and reviews will form part of the EIAr:

- Geotechnical Study (Lukhanyo Gqobo – Earth Investigation Laboratories);
- Traffic Impact Assessment (Bonginkosi Msiya – Phunga Holdings (Pty) Ltd);
- Air Quality Impact Assessment (Sophia Rosslee – Marang Environmental & Associates (Pty) Ltd);
- Heritage Review (Polke Birkholtz – PGS Heritage);
- Noise Review (Morné de Jager – Enviro Acoustic Research CC);
- Soils and Land Capability Review (Stephen van Staden – SAS Environmental Group of Companies);
- Visual Impact Review (Stephen van Staden – SAS Environmental Group of Companies); and
- Surface Water Review (Stephen van Staden – SAS Environmental Group of Companies), including a freshwater verification and General Authorisation (GA) water use application in terms of the NWA, 1998 (Act 36 of 1998).

These studies have involved assessing the potential impacts that have been identified during the scoping phase, in addition to any new issues that are identified during the detailed assessments and public participation processes.

10.4. Proposed Methodology for Assessing Environmental Impacts

Impacts of the proposed project on the environmental sensitivities will be quantified using the EIA methodology detailed in the table below. This EIA methodology assists in evaluating the overall effect of the proposed development on the environment. The determination of the effect of an environmental impact on an environmental parameter will be determined through a systematic analysis of the various components of each impact. The evaluation of predicted impacts will be undertaken through an assessment of the significance of the impacts. Each impact will be assessed through the Planning, Construction, Operation and Decommissioning phases of the prosed development, where relevant. Where required, the proposed mitigation measure have been detailed.

- **Determining Significance of Impacts**

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale (i.e. site, local, national or global) whereas Intensity is defined by the severity of the impact (e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence.

The table below provides an explanation of the parameters used to determine the significance of an impact, as well as what "*significance*" means in the context of this impact assessment. 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. The total number of points scored for each impact indicates the level of significance of the impact.

Description of parameters used to establish impact significance.

Extent = E *(The area over which the proposed impact will be experienced).* **5**: International **4**: National **3**: Regional **2**: Local **1**: Site	***Reversibility = R*** *(The degree to which the proposed impact can be reversed upon completion of the proposed development/ activity).* **4**: Irreversible **3**: Barely Reversible **2**: Partly Reversible **1**: Completely Reversible
Status of Impact **+**: Positive (A benefit to the receiving environment) **N**: Neutral (No cost or benefit to the receiving environment) **-**: Negative (A cost to the receiving environment)	
Magnitude = M *(The severity of the proposed development/activity)*. **5**: Very high/ don't know **4**: High **3**: Moderate **2**: Low **1**: Minor **0**: Not applicable/none/negligible	***Duration = D*** *(The timeframe for which the proposed impact will be experienced).* **5**: Permanent **4**: Long-term (ceases with the operational life) **3**: Medium-term (5-15 years) **2**: Short-term (0-5 years) **1**: Immediate **0**: Not applicable/none/negligible

Probability = P *(The likelihood / degree of certainty of the proposed impact occurring).* **5**: Definite/don't know **4**: Highly probable **3**: Medium probability **2**: Low probability **1**: Improbable	***Cumulative Effect = C*** *(The impact of the proposed development/ activity on the environmental parameter being assessed when added to other existing or potential impacts).* **4**: High Cumulative Impact **3**: Medium Cumulative Impact **2**: Low Cumulative Impact **1**: No Cumulative Impact **0**: Not applicable
Loss of Resources = L *(The degree to which a given resource will be lost as a result of the proposed development / activity.)* **4**: Complete Loss of Resources **3**: Intermediate Loss of Resources **2**: Low loss of resources **1**: No Loss of resources	

Significance with be determined through the *Marang methodology for determining significance*. Significance will be determined through a synthesis of the assessed 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:

(Extent + probability + reversibility + loss of resources+ duration + cumulative effect) x magnitude/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.

Significance	***Environmental Significance Points***	***Colour Code***
High (positive)	>90	H
Medium (positive)	30 to 90	M
Low (positive)	<30	L
Neutral	0	N
Low (negative)	<-30	L
Medium (negative)	-30 to -90	M
High (negative)	>-90	H

- **<u>Impact Rating System</u>**

The impact assessment must take account of the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact will also be assessed according to the project stages:

- Planning;
- Construction;
- Operation; and
- Decommissioning.

Where necessary, the proposal for mitigation or optimisation of an impact will be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance is also been included.

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the mitigation of the impact. Impacts have been consolidated into one (1) rating. An example of the impact assessment table used to assess the environmental impact associated with the proposed project is detailed in the table below.

Example of impact assessment table

IMPACT RATING TABLE FORMAT			
Item	Description	Pre-mitigation impact rating	Post mitigation impact rating
Environmental Parameter	Description of environmental impact		
Extent (E)	Description of the area over which the proposed impact will be experienced.	2	1
Probability (P)	Description of the likelihood/degree of certainty of the proposed impact occurring.	4	2
Reversibility (R)	Description of the degree to which the proposed impact can be revered upon completion of the proposed development / activity.	2	1
Loss of Resources (L)	Description of the degree to which a given resource will be lost as a result of the proposed development / activity.	4	1
Duration (D)	Description of the time frame for which the proposed impact will be experienced.	5	0
Cumulative Effect (C)	Description of the impact of the proposed development / activity on the environmental parameter being assessed when added to other existing or potential impacts.	4	0
Magnitude or Intensity (M)	Description of the severity of the proposed development / activity.	5	2
Environmental Significance Points	Description of the importance of the proposed impact which indicates the Mitigation required.	- 105 (High negative)	+ 10 (Low positive)
Mitigation Measures	Detail the mitigation measures required to reduce the impacts that will arise from the proposed development / activity. The measures mentioned will be detailed in the EMPr as well.		

10.5. IMPACT IDENTIFICATION AND ASSESSMENT

A number of aspects for impact assessment were identified during the scoping phase of the application based on previous assessments (BA for JMP), the public participation process, and Marang's previous experience with EIAs.

Various impacts have been identified as detailed in the table below.

Table 10.5-1. Environmental Impacts Identified by Specialists

Environmental Aspect	**Potential Impact**

Noise generation	Possible increase in noise levels during construction, operational and decommissioning phases.
Dust generation	Possible increase in dust levels during construction and decommissioning phases.
Traffic congestion	Traffic may be affected during the construction and operational phases.
Sanitation	Potential impacts during construction phase.
Solid waste	Building waste will be generated during the construction and decommissioning phases. Solid waste during operation is associated with normal domestic waste as well as hazardous waste generated by the on-site oil/water separator.
Visual Impact	Visual impact may occur during the construction and operational phases.
Surface water	Impacts as identified in specialist review.
Soil and land capability	Possible impacts during the construction phase.
Air quality	Possible cumulative impacts associated with an increase in emissions from the site.
Social and socio-economic Impacts	Job creation and economic implications in line with the GIDZ objectives.
Safety and Security	Possible impacts throughout project.
Heritage/Cultural Impacts	None identified through specialist study

10.6. Environmental Management Programme (EMPr)

In accordance with the EIA Regulations, 2014 (as amended) a draft Environmental Management Programme (EMPr) will be included within the Environmental Impact Assessment Report (EIAr). The EMPr will include the mitigation measures formulated by the various specialists and project EAP.

10.7. RECOMMENDATIONS

It is recommended that the specialist studies pertaining to certain aspects be carried forward into the EIA Phase, namely, those studies mentioned above. Various issues and concerns have been identified which require detailed assessment and thus it is recommended that the EIA phase be allowed to continue in order to assess these and the impacts associated.

10.8. Public Participation

The Public Participation during the EIA Phase will involve the following:

Public Participation activities still to take place.

ACTIVITY	FUNCTION
Prepare and distribute EIA newsletter	Notify registered I&APs, stakeholder, Landowners and Organs of State/Authorities of outcome of the Scoping Phase (including timeframes and when their input is required).
Focus Group Meetings (FGMs)	Meeting to provide feedback on the findings of the detailed specialist studies to key stakeholders (specifically the Local and District Municipalities and Landowners)
Public Meeting	Provide feedback on the findings of the detailed specialist studies to the general public.
Public comment period	Notification of I&APs, stakeholder, Landowners and Organs of State/Authorities of the availability of the EIAr reports for public comment and review.
Notification of granting or refusal of Environmental Authorisation (EA)	Informing of all registered I&APs, stakeholder, Landowners and Organs of State/Authorities of the EA
Environmental Authorisation (EA) appeal period	Receive any appeals and forward to DEA

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