

Draft Scoping Report in Support of the Waste Management License and Atmospheric Emissions License Application for the Proposed Processing of Hazardous Waste by Nova Resources South Africa (Pty) Ltd located in Sebokeng, Gauteng

DFFE Application Reference: Not Yet Available



Report Nr: 3301-ZANNVR-2024

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GENERAL INFORMATION	
Report Name:	Draft Scoping Report in support of the Waste Management License and Atmospheric Emissions License Application for the Proposed Processing of Hazardous Waste by Nova Resources South Africa (Pty) Ltd located in Sebokeng, Gauteng
Report number:	3301-ZANNVR-2024
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EAPASA Reg No.	2019/181 (Expires 28 Feb 2025)
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Date:	26 th July 2024

EXECUTIVE SUMMARY

Nova Resources South Africa (Pty) Ltd (Nova Resources) is a newly established company which currently leases a property located at Holding 13, Waterdal AH, Sebokeng, 1983, Gauteng (Corner of Main and 5th Streets, Waterdal AH, Sebokeng) which falls within the jurisdiction of the Emfuleni Metropolitan Municipality as well as the Sedibeng District Municipality.

Nova Resources intends to establish a waste recovery, recycling and treatment facility. The aim is to establish a combined facility which would be able to store and trade steel waste and or scrap metal as well as mill scale which is produced by local steel and foundry industries. In addition, Nova Resources intends to also accept shredder fluff (classified as general waste) for storage, sorting and screening to remove and separate fractions of Aluminium, Copper, Cables, Plastic, PVC and Rubber which can then be sold to local recyclers for re-use or recycling. In addition to the storage, sorting and screening activities, Nova Resources also propose to undertake the cold pelletizing of Electric Arc Furnace Dust (EAF Dust), also referred to as Zinc Dust for sale to external parties for further processing.

Cold pressed pelletizing involves low temperature consolidation, which does not alter the chemical properties of raw materials (in this case Zinc Dust). The process is safe and reliable, and the resulting pellets retain good reducibility characteristics. In metallurgical production, this can reduce raw material costs and improve productivity.

The aim is to install a pelletizing plant consisting of a mixer and a pelletizing press and associated conveyors. All equipment and waste related activities would be located within an existing warehouse located on Holding 13 of Waterdal AH. Zinc Dust, packaged in bulk bags would be transported from local steel manufacturers and industries and transport to the Nova Resources facility via truck. Upon arrival, the load would be inspected and offloaded using a forklift or front-end loader. Once offloaded the material would be manually fed into a mixer where a mixture of water (5%) and a binding material (cornstarch) will be added. Once the mixture reaches the desired consistency the mixer will feed the material to the cold press where the material will be shaped into pellets. The formed pellets will then be conveyed and transferred to a storage container for temporary storage before being loaded and shipped to external parties for further processing.

No heat will be required during the process. The Zinc dust will not be subject to any additional treatment other than mixing with a binder (cornstarch) and water for pelletizing. The chemical properties of the Zinc dust will not be altered in any way.

The design capacity of the planned pelletizing plant will be approximately 5 000 tons per month. Water used in the process will be reliant on municipal supply. Due to the design and input materials to be used, no waste will be generated. Spilled material along with rejected pellets will be recycled back into the process and recycled internally. No effluent or runoff water is anticipated as only enough water would be used in the process to dampen the mixture.

In terms of the National Environmental Management: Waste Act (No. 59 of 2008) (NEM: WA), waste management activities that are listed in regulations published under NEM: WA may not be undertaken without a Waste Management License (WML). The listed activities for which a WML is required are contained in Government Notice (GN) 921. Category A activities require a WML, and a Basic Impact Assessment (BA) process must be conducted, and Category B activities require a WML, and a full Scoping and Environmental Impact Assessment (EIA) process must be conducted.

The proposed waste management activities to be undertaken by Nova Resources therefore trigger the following activities as listed under Category B of GN 921:

GNR 921	Description of listed activity
B (2)	<i>The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises.</i>
B (3)	<i>The recovery of waste including the refining, utilization, or co-processing of the waste at a facility that processes in excess of 100 tons of general waste per day or in excess of 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.</i>
B (4)	<i>The treatment of hazardous waste using any form of treatment at a facility that processes in excess of 1 ton per day calculated as a monthly average, excluding the treatment of effluent, wastewater, sewage or organic waste using composting or any other organic waste treatment.</i>
B (10)	<i>The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).</i>

An application for a WML must therefore be submitted to the Department of Environmental Affairs, Forestry, Fisheries and the Environment (DFFE) which has been identified as the Competent Authority and a Full Scoping EIA process followed.

The facility will also utilize maximum storage space as is available on site for the storage of waste and has therefore applied for registration in terms of the Norms and Standards for the Storage of Hazardous Waste with the DFFE.

GNR 921	Description of listed activity
C (2)	<i>The storage of hazardous waste at a facility that has the capacity to store in excess of 80m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.</i>

The proposed activities will also trigger the requirement for an Atmospheric Emission Licence (AEL) in terms of the National Environmental Management Air Quality Act (No 34 of 2004) ("NEMAQA"). The proposed activity will trigger Subcategory 4.11 "Agglomeration Operations" in terms of GR 893 promulgated in terms of the National Environmental Management Air Quality Act (No 39 of 2004):

Description:	<i>Production of pellets or briquettes using presses, inclined discs or rotating drums.</i>		
Application:	<i>All installations.</i>		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		
Particulate matter	N/A	<i>New</i>	30
		<i>Existing</i>	100
Ammonia	NH ₃	<i>New</i>	30
		<i>Existing</i>	50

An application for an Atmospheric Emissions License (AEL) will therefore be submitted to the Sedibeng District Municipality (SDM).

Zantow Environmental Consulting Services CC (Zantow Environmental) has been appointed by Nova Resources as an Independent Environmental Assessment Practitioner (EAP) to facilitate the required application processes to obtain the required Waste Management License (WML) and Atmospheric Emissions License (AEL) as well as a registration in terms of the National Norms and Standards for the Storage of Waste.

The first phase of the EIA process is the Scoping Phase. This document was therefore drafted with the aim of providing Interested and Affected Parties (I&AP's) as well as relevant authorities and the Competent Authority with the scope of work associated with the EIA process in support of the WML application. A copy of the Draft Scoping Report will be made available for public review and comment, during which all I&APs were given the opportunity to comment on the proposed activities and the proposed scope of the EIA specialist studies.

This Scoping Report has been generated in terms of the Appendix 2 of the NEMA EIA Regulations (GNR 982). Refer to **Annexure A** of this report for a checklist to confirm that the Scoping Report conforms to the requirements of GNR 982. In terms of GNR 982, the objective of the scoping process is to, through a consultative process-

- Identify the relevant policies and legislation relevant to the activity;
- Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- Identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive 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;
- Identify the key issues to be addressed in the assessment phase;
- 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
- 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.

All comments and or communications received during the Public Participation Process will be considered by the EAP and incorporated into the Final Scoping Report which will be submitted to the Competent Authority for final consideration.

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ABBREVIATIONS AND ACRONYMS

AEL	Atmospheric Emissions Licence
PAEL	Provisional Atmospheric Emission Licence
BID	Basic Information Document
CA	Competent Authority
CO	Carbon monoxide
CO ₂	Carbon dioxide
DFFE	Department of Forestry, Fisheries and the Environmental Affairs
EA	Environmental Authorisation
EAF	Electric Arc Furnace
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Assessment Report
EMPr	Environmental Management Program
GEMF	Gauteng Environmental Management Framework
GDARD	Gauteng Department of Agriculture and Rural Development
GN	Government Notice
GWIS	Gauteng Waste Information System
I&APs	Interested and Affected Parties
LED	Local Economic Development
m ³	Cubic Meters
NEMA	National Environmental Management Act (No. 107 of 1998)
NEM:AQA	National Environmental Management Air Quality Act (No. 39 of 2004)
NEM:WA	National Environmental Management Waste Act (No. 59 of 2008)
NGO	Non-governmental Organisation
NO _x	Nitrogen oxides
NO ₂	Nitrogen dioxide
NWA	National Water Act (No.36 of 1998)
SANS	South African National Standards
SAWIC	South African Waste Information System
SDF	Spatial Development Framework
SO ₂	Sulphur dioxide
WML	Waste Management License
WUL	Water Use License
Zn	Zinc

DEFINITIONS

Commence	Means the start of any physical activity, including site preparation or any other activity on the site in furtherance of a waste management activity, but does not include any activity required for investigation or feasibility study purposes as long as such investigation or feasibility study does not constitute a waste management activity.
Container	means a disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste, and includes bins, bin-liners and skips.
Disposal	Means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land.
Dangerous Goods	Means goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "List of classification and labelling of chemicals in accordance with the Globally Harmonized Systems (GHS)" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards.
Development	means the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.
Expansion	Means the modification, extension, alteration and upgrading of a facility, structure or infrastructure at which a waste management activity takes place in such a manner that the capacity of the facility or the volume of waste recycled, used, treated, processed or disposed of is increased.
General waste	Means waste that does not pose an immediate hazard or threat to health or to the environment, and includes- a) domestic waste; b) building and demolition waste; c) business waste; d) inert waste; or e) any waste classified as non-hazardous waste in terms of the regulations made under section 69, and includes non-hazardous substances, materials or objects within business, domestic, inert, building and demolition wastes.
Hazardous waste	Means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles.
Recycle	Means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.
Re-use	Means the action or practice of using something again, whether for its original purpose (conventional reuse) or to fulfil a different function (creative reuse or repurposing).
Recovery	Means the controlled extraction or retrieval of any substance, material or object from waste.
Storage	The accumulation of waste in a manner that does not constitute treatment or disposal of that waste.
Treatment	Means the biological, chemical, or mechanical method(s) employed to remove pollutants from industrial or municipal wastes, change the character and composition of medical waste, or reduce or eliminate its potential for harm to living beings and the environment.
Waste	a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not

	<p>such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or</p> <p>b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette, but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste-</p> <ul style="list-style-type: none">i. once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;ii. where approval is not required, once a waste is, or has been re-used, recycled or recovered;iii. where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; oriv. where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.
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1. INTRODUCTION AND PROJECT BACKGROUND

This section will provide an overview of the proposed waste management activities, associated infrastructure and future operations of the facility. This section will include a baseline description of the infrastructure needed for the development and an overview of the process that will be implemented.

A description of all listed and specified activities triggered in terms of NEMWA which require a Waste Management License (WML) is provided in Section 5.3 whilst associated activities which are triggered in terms of NEMAQA which require an Atmospheric Emissions License (AEL) are provided in Section 5.4 of this report.

1.1. Process Description

Nova Resources South Africa (Pty) Ltd (Nova Resources) is a newly established company which currently leases a property located at Holding 13, Waterdal AH, Sebokeng, 1983, Gauteng (Corner of Main and 5th Streets, Waterdal AH, Sebokeng) which falls within the jurisdiction of the Emfuleni Metropolitan Municipality as well as the Sedibeng District Municipality.

The Sedibeng and surrounding areas are known for its industrial operations, of which the iron and steel industries make up the majority. In general, the steel and iron industry provide large scale employment opportunities to the local community as well as the supply of raw materials and products which makes up the backbone of the modern economy as we know it.

In the past majority of raw materials used in the production of iron and steel was mined minerals in the form of ore, however over time the cost of mining combined with the associated environmental impacts and depleting resources have led industries to rely on alternative raw materials and inputs in order to provide sustainable materials and products at a reasonable cost and price. Industries have over time therefore become more and more reliant on scrap steel as raw material.

Scrap metal, although cost effective is made up of several metallurgical elements and is not as pure as iron ore. One of the commonly used techniques to protect steel surfaces from corrosion is galvanizing with almost 50% of the world's zinc production consumed for this purpose. Worn steel elements are usually sent to metallurgical plants and are subjected to a remelting process through the use of an electric arc furnaces (EAF). During this process, zinc is evaporated, oxidized and then, as solid Zinc oxide (ZnO), transferred to dedusting devices. One ton of smelted steel scrap produces about 15–25 kg of EAF dust, in which the content of zinc is high (15–40%). In addition to the high Zinc content, EAF dust is also high in other metals such as iron, cadmium, nickel, chromium, manganese, carbon, tin, antimony and copper. The internal recycling and or re-use of EAF dust in the steel making industry is however not possible due to the high Zinc content. On the other hand, a significant iron content eliminates the possibility of treating the EAF dust as a raw material for the traditional hydrometallurgical Zinc manufacturing process.

Due to the high concentration of precious metals, specifically Zinc in the EAF dust (also referred to as Zinc dust) the material is considered to have a high metallurgical value with high recovery potential. To ensure rational and efficient utilization, Nova Resources propose to install a cold press pelletizing plant to transform the Zinc Dust into pellets, which can then be utilized for zinc smelting by external foundries. In total, Nova Resources plan to process and pelletize approximately 5 000 tons of Zinc Dust per month.

In addition to the proposed pelletizing plant, Nova Resources also intend to store and trade steel waste and scrap metal as well as Mill Scale. No processing of the scrap or steel waste will be required as the material would only be stored temporarily before being sold to external recyclers for processing.

Lastly, Nova Resources also intend to accept Shredder Fluff for storage, sorting and screening. The aim is to sort and screen out fractions of Aluminium, Copper, Rubber, PVC and Plastic which can then be sold to local recyclers for re-use or further processing. In total Nova Resources plan to process approximately 3 000 tons of shredder fluff per month.

- **Zinc Dust Cold Press Pelletizing**

Cold pressing pellets involve low temperature consolidation, which does not alter the chemical properties of raw materials. The process is safe and reliable, and the resulting pellets retain good reducibility characteristics. In metallurgical production, this can reduce raw material costs and improve productivity.

By doing so the need for disposal would be eliminated. In addition, recovered precious metals would become available to both national and international markets, relieving some pressure on both local and international mines and natural resources.

Zinc Dust, packaged in bulk bags would be transported from local steel manufacturers and industries and transport to the Nova Resources facility via truck. Upon arrival, the load would be inspected and offloaded using a forklift or front-end loader. Once offloaded the material would be manually fed into a mixer where a mixture of water (5%) and a binding material (cornstarch) will be added. Once the mixture reaches the desired consistency the mixer will feed the material to the cold press where the material will be shaped into pellets. The formed pellets will then be conveyed and transferred to a storage container for temporary storage. Once full, the container will be loaded onto a truck and dispatched to external parties for further processing. All operations are planned to be housed in an existing warehouse structure which is equipped with concrete floors.

No heat or chemicals will be required during the process. The Zinc Dust will not be subject to any additional treatment other than mixing with a binder and water for final pelletizing. The chemical properties of the Zinc Dust will not be altered in any way.

The maximum design capacity of the planned pelletizing plant will be no more than 5 000 tons per month. Water used in the process will be reliant on municipal supply. Due to the design and input materials to be used, no waste will be generated. Spilled material along with rejected pellets will be recycled back into the process and recycled internally. No effluent or runoff water is anticipated as only enough water would be used in the process to dampen the mixture.

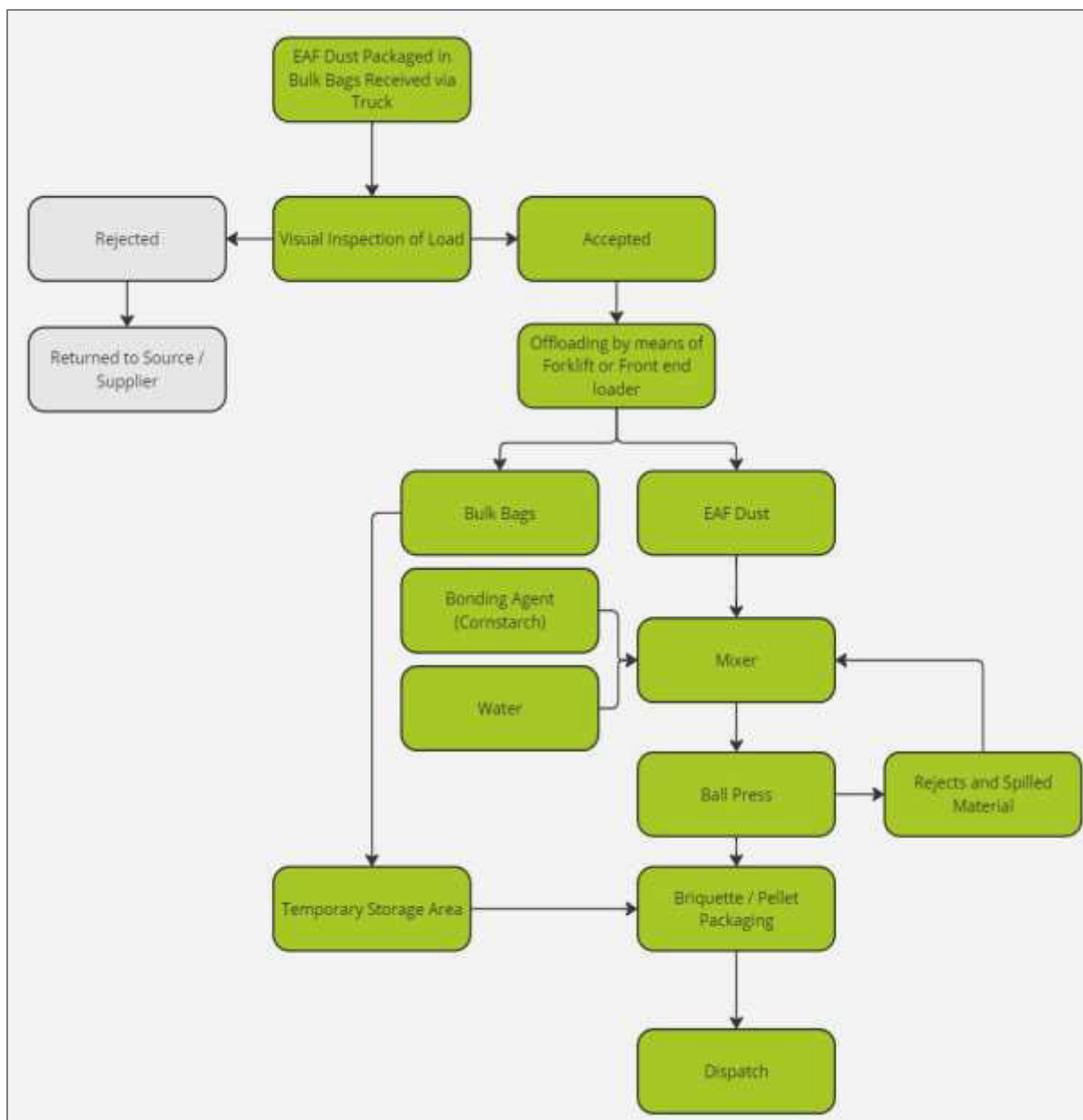


Figure 1: Zinc Dust Pelletizing Process Flow

- **Sorting and Screening of Shredder Fluff**

In addition to the pelletizing of Zinc Dust, Nova Resources also plan to receive and store shredder fluff which will then be sorted and screened to separate different fragments such as Aluminium, rubber, cables, copper, plastic and PVC which would then be sold to external recyclers for re-use and further recycling.

During operation, Nova Resources plan to accept and process a total of 3 000 tons of Shredder Fluff per month.

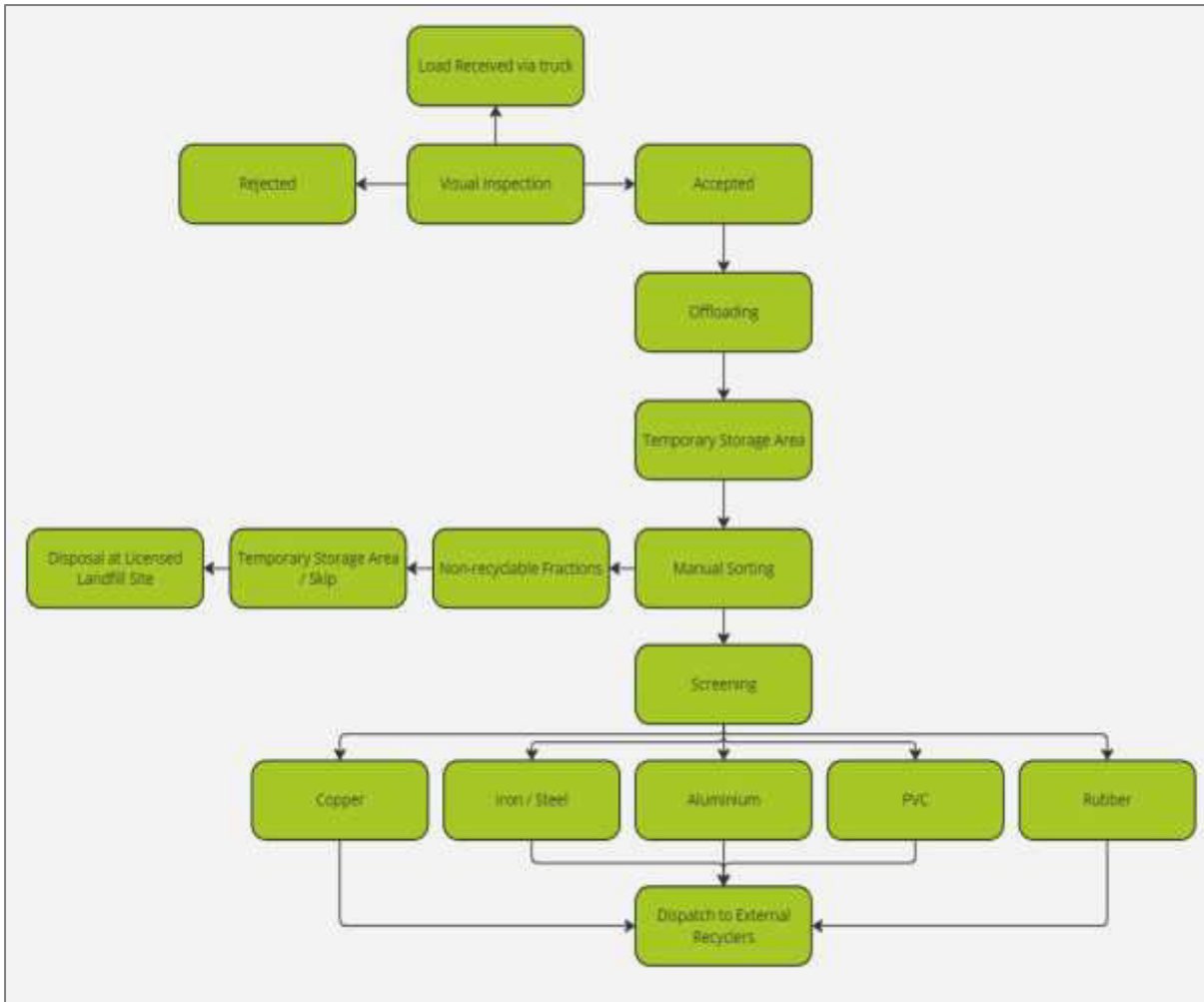


Figure 2: Shredder Fluff Sorting and Screening Process Flow

- **Storage of Waste**

The facility will also utilize maximum storage space as is available on site for the storage of waste and has therefore applied for registration in terms of the Norms and Standards for the Storage of Hazardous Waste with the DFFE.

In addition to the storage of Shredder Fluff and Zinc Dust, Nova Resources also intend to store and trade Mill Scale and Steel waste / Scrap metal. These materials will not be subjected to any processing but merely stored and traded.

1.2. Legal Requirements

In terms of the National Environmental Management: Waste Act (No. 59 of 2008) (NEM: WA), waste management activities that are listed in regulations published under NEM: WA may not be undertaken without a Waste Management License (WML). The listed activities for which a WML is required are contained in Government Notice (GN) 921. Category A activities require a WML, and a Basic Impact Assessment (BA) process must be conducted, and Category B activities require a WML, and a full Scoping and Environmental Impact Assessment (EIA) process must be conducted.

The proposed waste management activities to be undertaken by Nova Resources therefore trigger the following activities as listed under Category B of GN 921:

GNR 921	Description of listed activity
B (2)	<i>The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises.</i>
B (3)	<i>The recovery of waste including the refining, utilization, or co-processing of the waste at a facility that processes in excess of 100 tons of general waste per day or in excess of 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.</i>
B (4)	<i>The treatment of hazardous waste using any form of treatment at a facility that processes in excess of 1 ton per day calculated as a monthly average, excluding the treatment of effluent, wastewater, sewage or organic waste using composting or any other organic waste treatment.</i>
B (10)	<i>The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).</i>

Nova Resources is therefore applying for a WML in terms of NEMWA, for which a Full Scoping EIA process will be followed. Classification of the Zinc Dust which is planned to be processed has been classified as Hazardous and as such the DFFE has been identified as the Competent Authority (CA).

The facility will also utilize maximum storage space as is available on site for the storage of waste and has therefore applied for registration in terms of the Norms and Standards for the Storage of Hazardous Waste with the DFFE.

GNR 921	Description of listed activity
C (2)	<i>The storage of hazardous waste at a facility that has the capacity to store in excess of 80m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.</i>

The proposed activities will also trigger the requirement for an Atmospheric Emission Licence (AEL) in terms of the National Environmental Management Air Quality Act (No 34 of 2004) (“NEMAQA”). The proposed activity will trigger Subcategory 4.11 “Agglomeration Operations” in terms of GR 893 promulgated in terms of the National Environmental Management Air Quality Act (No 39 of 2004):

Description:	<i>Production of pellets or briquettes using presses, inclined discs or rotating drums.</i>		
Application:	<i>All installations.</i>		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		
Particulate matter	N/A	<i>New</i>	30
		<i>Existing</i>	100
Ammonia	NH ₃	<i>New</i>	30
		<i>Existing</i>	50

The facility will not require an Environmental Authorisation on terms of the National Environmental Management Act (No 107 of 1998) (NEMA) as NEMA Listing Notice 2, Activity 6 reads as follows:

“The development of facilities or infrastructure for any process or activity which requires a permit or license or an amended permit or license in terms of national or provincial legislation governing the generation release of emissions, pollution or effluent, excluding-

- i)

- ii) *activities which are included in the list of waste management activities published in terms of section 19 the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;*
- iii) *.....”*

As the Zinc Dust is classified as a waste the National Environmental Management: Waste Act, 2008 applies and only an application for a WML will be facilitated.

1.3. Purpose of this Document

The Full Scoping and EIA process must be followed as part of the application for the required WML which will be facilitated by the DFFE. The Application for the require AEL will be facilitated by the Sedibeng District Municipality. Finally, the application for the registration of the facility in terms of the National Norms and Standards will also be submitted to the DFFE as the Competent Authority.

This Scoping Report was therefore drafted in support of the WML application for the waste related activities proposed to be undertaken by Nova Resources. The first phase of the EIA process is the Scoping Phase. This document was therefore drafted with the aim of providing Interested and Affected Parties (I&AP's) as well as relevant authorities and the Competent authority with the scope of work associated with the EIA process in support of the WML application. A copy of the Draft Scoping Report will be made available for public review and comment, during which all I&APs were given the opportunity to comment on the proposed activities and the proposed scope of the EIA specialist studies.

This Scoping Report has been generated in terms of the Appendix 2 of the NEMA EIA Regulations (GNR 982). Refer to **Annexure A** of this report for a checklist to confirm that the Scoping Report conforms to the requirements of GNR 982. In terms of GNR 982, the objective of the scoping process is to, through a consultative process-

- Identify the relevant policies and legislation relevant to the activity;
- Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- Identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive 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;
- Identify the key issues to be addressed in the assessment phase;
- 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
- 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.

All comments and or communications received during the Public Participation Process will be considered by the EAP and incorporated into the Final Scoping Report which will be submitted to the Competent Authority for final consideration.

2. APPLICANT AND PRACTITIONER DETAILS

2.1. Details of the Applicant

Applicant	Nova Resources South Africa (Pty) Ltd
Contact person	Zhang Yong Qiang
Registration nr	9346775406
Tel	066 007 8022
Cell	066 007 8022
E-mail	nova-southafrica@outlook.com
Postal address	13 Marcia Street Cyrildene Johannesburg, Gauteng.
Site address	Holding 13, Waterdal AH, Sebokeng, 1983 Gauteng / Corner of Main and 5 th Streets, Waterdal AH, Sebokeng

2.2. Details of the Environmental Assessment Practitioner

Independent Environmental Assessment Practitioner	Zantow Environmental Consulting Services
Contact person	Karien Zantow
Cell	083 384 3641
E-mail	karien@zantow.co.za
Postal address	P.O Box 3858 Vanderbijlpark 1910
Physical address	C/O Chopin and Delius Streets Colosseum Building 1 st Floor, Unit 2 Vanderbijlpark, 1910
Professional Registrations	SACNASP: 400114/14 EAPASA: 2019/1871

2.3. Independence of Environmental Assessment Practitioner

Zantow Environmental is not in any manner affiliated to the applicant. Zantow Environmental also does not have any interest in secondary developments that may arise out of the authorisation of the proposed facility.

Zantow Environmental as the appointed EAP meets the requirements for independence as none of the project team members has and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the EIA Regulations, 2014. Zantow Environmental will also not have vested interest in the proposed activity proceeding; and also, has no, and will not engage in conflicting interests in the undertaking of the activity.

2.4. Expertise of the Environmental Assessment Practitioner

Refer to **Annexure B** for the EAP's curriculum vitae and EAPASA Registration.

- **Karien Zantow**

Karien Zantow obtained her degree from the University of Pretoria in BSc (Agric) Animal Science. The main subjects were Physiology, Nutrition, Ecology, Biochemistry, Toxicology, Plant production, Soil Science and Pasture Science. This degree provided her with a sound base and understanding of the environment.

Karien extended her knowledge in the environmental sciences by completing the BSc (Hons) Environmental Technology at the University of Pretoria. The honours degree presented by the Chemical engineering department addressed Environmental management that included South African environmental legislation, ISO 14001, Environmental impact assessments, Life cycle assessment, auditing and public participation. As well as the three specialized fields of study: Water (wastewater treatment and design), air (abatement equipment) and solid/hazardous waste management. She also completed a Post Graduate diploma in Environmental Sciences at the University of Witwatersrand which focussed on Environmental Law, Environmental Chemistry, Air quality and Energy, Waste and Wastewater management and Environmental Impact Assessments.

Karien Zantow has more than 15 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment.

- Teaching Business, subcontracted to Barlow World,
- Sappi Kraft Ngodwana,
- ArcelorMittal South Africa Vanderbijlpark Works, and
- Zantow Environmental Consulting Services.

During her career she has been involved with many large-scale site characterisation and remediation projects from the conceptual phase to implementation. Other projects include a variety of Waste Management Licences, Atmospheric Emissions Licences, other EIA's and Environmental Audits. Moreover, emission sampling and reporting forms a core component of Karien's scope of work.

Karien is also a registered Natural Science Professional with the South African Council for Natural Scientific Professions (Reg Nr 400114/14) and has been registered as an Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA) (Registration Nr 2019/1871).

- **Riette Landsberg**

Riette Landsberg obtained her B.Sc. degree from the North West University (Potchefstroom Campus) with main focus in Botany and Zoology in 2012. This degree provided her with a sound base and understanding of the environment. Riette then went on to complete her honours degree in Zoology with the main focus on water ecology at the North West University in 2013. The honours degree presented by the environmental science department addressed aspects of environmental management, an introduction to South African environmental legislation including ISO 14001, life cycle assessment and impact assessments. Riette has also attended various short courses on numerous subjects, including ISO 17025:2015 implementation, auditing, environmental legislation, financial provisions, waste management, environmental control, risk assessment, compliance assessment and implementation etc.

Riette was appointed by Zantow Environmental Consulting Services in 2013 and has since gained environmental management experience in several sectors including mining, industrial and local government sectors. Her duties entail the planning and execution of projects related to environmental

management, and legal compliance audits, Environmental Impact Assessments (EIA), compilation of Environmental Management Programmes, Environmental Risk Assessments, Environmental Management Systems and environmental monitoring.

3. LOCATION OF PROPOSED ACTIVITY

This section contains details of the property on which the proposed activity will be conducted.

3.1. Property Details

3.2. Location of the Facility

Nova Resources is located at Holding 13, Waterdal AH, Sebokeng, 1983 Gauteng (Corner of Main and 5th Streets, Waterdal AH, Sebokeng) and falls within the jurisdiction of the Emfuleni Metropolitan Municipality as well as the Sedibeng District Municipality.

Sebokeng, Units 11, 12 and 13 are located approximately 700 meters West of the site.

The Steelpark residential settlement is also located approximately 3 km to the south of the site.

Surrounding land use in majority consists of residential settlements, local businesses owned and operated by local entrepreneurs along with agricultural holdings and scattered industrial activities.

Table 1: Property details

Farm Name	Farm / Erf No	Portion(s)	Latitude	Longitude
Waterdal AH	13	0	26°34'24.07S	27°51'51.18E
Quaggasfontein Alias Lapdoorns	584	0	26°34'37.62S	27°51'52.48E
Quaggasfontein Alias Lapdoorns	584	19	26°34'14.99S	27°52'14.16E

Coordinates of the site selected for the planned waste management activities

Table 2: Site Coordinates

Reference point	Coordinates	
	Latitude	Longitude
A	26°34'19.98"S	27°51'50.02"E
B	26°34'21.43"S	27°51'47.55"E
C	26°34'28.08"S	27°51'52.15"E
D	26°34'26.59"S	27°51'54.72"E

3.3. Surveyor general codes

T	0	I	Q	0	0	0	0	0	0	0	0	0	5	4	8	0	0	0	0	0
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3.4. Property Zoning

The facility, as located on Holding 13, Waterdal AH, Sebokeng, is currently zoned as Agricultural. An application for the rezoning of the property from Agricultural to Industrial has however been submitted by the landowner (Nkala Attorneys) and is currently underway.

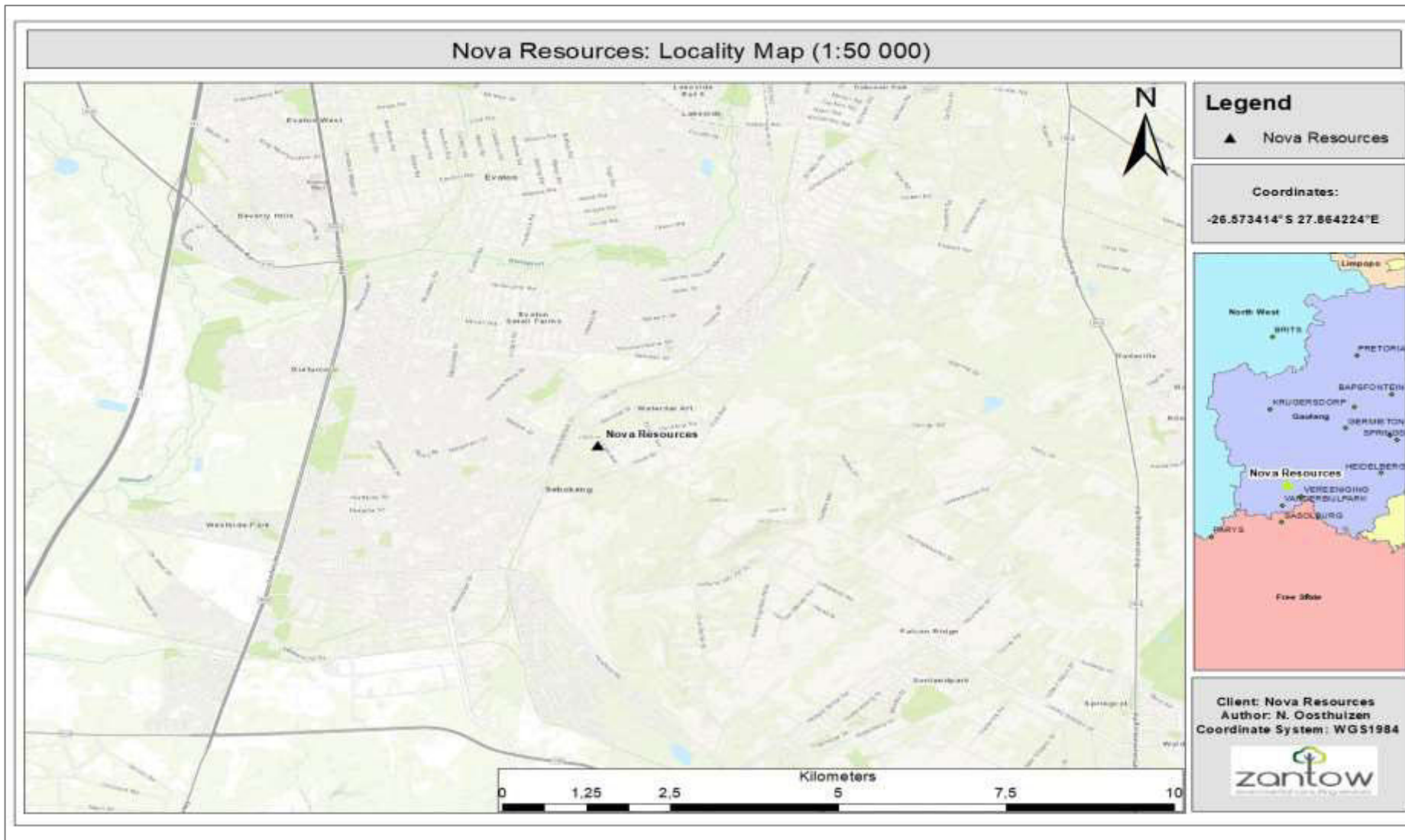


Figure 3: Location of the site (topo-cadastral)



Figure 4: Proposed Layout and Location

4. SUPPORTING INFRASTRUCTURE ASSOCIATED WITH THE FACILITY.

4.1. Site Description and Surrounding Infrastructure

4.1.1. Roads

The proposed site is located in Sebokeng, an established settlement located in the South of Gauteng. The site itself is located within a new development area which in the past, mainly consisted of open veld and agricultural holdings. In the last few years scattered settlements have been established and the area is now beginning to gain traction for development.

Roadways surrounding the site are well established, providing easy access to and from the site. The R54 regional road is located approximately 5.5 km south of the site and links up to Houtkop and Main Roads, both providing easy access to the development area and the proposed site.

The site is fenced off and equipped with a gate, from which access is gained. Once entered a single roadway travel from the gate to the existing warehouse which will house the waste related activities. Space surrounding the warehouse may also be developed and prepared to allow the temporary storage of additional waste streams as and when required.

No construction or development of additional roadways will be required to support the planned waste management activities. Existing infrastructure as is on site as well as surrounding the site will be sufficient and will require no alterations or additions.

Refer to Figures 3 and 4 under Section 3 for maps depicting the site's locations and associated access roads.

4.1.2. Security and Access Control

The site selected for the proposed development and operation of the waste management activities is equipped with a fence and walls to restrict unauthorised entry. The main entrance to the site is manned by security personnel. It is anticipated that when a waste load is received, or products dispatched that each load be documented and inspected before acceptance. If rejected the load would be sent back to the supplier. If accepted the load would be directed to the warehouse and or designated offloading area.

The access gate will be locked outside of operational hours.

4.1.3. Electricity and Energy Supply

Municipal electricity supply will continue to be the main source of electricity. No additional energy supplies will be required as the waste sorting, screening, mixing and cold press operations will not require any heat or alternative energy inputs.

4.1.4. Water Supply

The site and existing infrastructure are currently equipped with an existing municipal line which provides water. Water usage during operation would mainly consist of feed water to the pelletizing plant and mixer water would be used to dampen the mixture before being subjected to a cold press. An onsite office is also connected to the supply line which only uses water for domestic and sanitation purposes.

No additional water supplies will be required. The overall water usage for the site is not anticipated to increase significantly.

4.1.5. Waste Management

A Waste Management Plan (WMP) for the facility will be developed based on the waste that is expected to be generated when the facility is operational and included in the EIR phase of the application. The WMP will be updated once the facility is operational. The table below gives a summary of the waste expected to be generated:

Table 3: Waste Stream Assessment

Waste	Activity	On Site Waste Handling	Final Destination
General Waste: Paper, Domestic Waste	Administrative, Domestic waste	Waste is stored in skips and removed from site.	Local Municipal Landfill
General Hazardous Waste	Spill clean-ups, Used PPE	Hazardous waste skip / drum	Hazardous Waste Landfill
Waste Oil and used hydrocarbons	Equipment and machinery maintenance	External service provider to collect used oils and or hydraulic fluids in a sealable container.	Removed by external service provider for safe disposal or recycling.
Plastic	Shredder Fluff Sorting and Screening	Collection in bulk bags and or dedicated skips, bins or bunkers	Sold to external recyclers
Scrap Steel Waste			
Aluminium			
Copper			
PVC			
Rubber			
EAF/Zinc Dust Dust Spills	EAF/Zinc Dust pelletizing	Collected and returned to pelletizing plant mixer	Internal Recycling
Reject Pellets			

Based on the planned operations, the generation of additional waste streams is not anticipated.

4.1.6. Administrative Buildings

Buildings are available on-site for administrative purposes which will include financial arrangements, logistical arrangements, record keeping, etc. No changes to the existing admin building and office will be required other than paving of surface areas in preparation for waste storage.

4.2. Site Photos



Photo 1: External View of Warehouse



Photo 2: Internal View of Warehouse



Photo 3: Internal View of Warehouse



Photo 4: Side Access Point into the Warehouse



Photo 5: View of On-site Roadway Leading to the Warehouse



Photo 6: Access Gate and Security Office



Photo 7: View of Site Fence



Photo 8: Office and Administrative Building

5. LEGAL FRAMEWORK

This section covers the following legal and administrative framework documents:

- Constitution of the Republic of South Africa (No. 108 of 1996),
- National Environmental Management Act, 1998 (Act No. 107 of 1998),
- National Environmental Management: Air Quality Act 2004 (Act no. 39 of 2004),
- National Environmental Management: Waste Act 2004 (Act no. 29 of 2008),
- National Environmental Management Act, 1998 (Act No. 107 of 1998) - Gauteng Environmental Management Framework (GN 164, dated 2 March 2018),
- National Water Act (No. 36 of 1998), and
- Emfuleni Local Municipality Bylaws and Plans.

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

Section 24 Environment:

“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;*
 - ii) promote conservation; and*
 - iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”.*

The facility must be managed to prevent adverse environmental consequences and to meet the constitutional requirements.

The proposed Zinc Dust Pelletizing Plant and associated Shredder Fluff Sorting and Screening Operations will reduce the probability of waste to landfill by processing different waste streams and producing re-usable, recyclable products suitable for use by external parties.

5.2. National Laws and Regulations

5.3. National Environmental Management Act (No. 107 of 1998) as amended

As listed above, Section 24 of the Constitution of the Republic of South Africa of 1996 guarantees everyone has a right to an environment that is not harmful to their health and wellbeing and to have the environment protected for the benefit of present and future generations. In order to give effect to this right, the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) was promulgated and followed by the Environmental Impact Assessment Regulations. The aim of these publications and regulations is to provide for sustainable development and integrated environmental management in South Africa.

In terms of the NEMA activities that are listed in regulations published under NEMA may not be undertaken without an Environmental Authorisation (EA). An application for Environmental Authorisation for certain listed activities must therefore be submitted to the prescribed Competent Authority (CA), depending on the types of activities.

The current EIA regulations of 2014, Listing Notice 1 (as amended) lists those activities for which a Basic Assessment is required, while Listing Notice 2 (as amended) lists the activities requiring a full EIA

(Scoping and EIA processes). The EIA Regulations of 2014 define the processes that must be undertaken to apply for Environmental Authorisation.

The EIA Regulations will be followed throughout the application and assessment process.

• **NEMA Section 24L - Alignment of Environmental Authorisations**

- A competent authority empowered under Chapter 5 to issue an environmental authorisation and any other authority empowered under a specific environmental management Act may agree to issue an integrated environmental authorisation.
- An integrated environmental authorisation contemplated in subsection (1) may be issued only if –
 - the relevant provisions of this Act and the other law or specific environmental management Act have been complied with; and
 - the environmental authorisation specifies the-
 - provisions in terms of which it has been issued; and
 - relevant authority or authorities that have issued it.
- A competent authority empowered under Chapter 5 to issue an environmental authorisation in respect of a listed activity or specified activity may regard such authorisation as a sufficient basis for the granting or refusing of an authorisation, a permit or a licence under a specific environmental management Act if that specific environmental management Act is also administered by that competent authority.
- A competent authority empowered under Chapter 5 to issue an environmental authorisation may regard an authorisation in terms of any other legislation that meets all the requirements stipulated in section 24(4)(a) and, where applicable, section 24(4)(b) to be an environmental authorisation in terms of that Chapter.

• **NEMA Listed Activities Triggered**

NEMA Listing Notice 2, Activity 6 reads as follows:

“The development of facilities or infrastructure for any process or activity which requires a permit or license or an amended permit or license in terms of national or provincial legislation governing the generation release of emissions, pollution or effluent, excluding-

- i)
- ii) activities which are included in the list of waste management activities published in terms of section 19 the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;
- iii)

Therefore, in the event that an Atmospheric Emission License is required, a NEMA EIA is not required, only the NEMWA process will be required to be followed.

No other NEMA Listed Activities which would require an Environmental Authorisation will be triggered.

- **NEMA Gauteng Environmental Management Framework**

The Gauteng Environmental Management Framework (“GEMF”) provides for the exclusion of certain listed activities as specified in GNR 164 of March 2018, if the proposed facility falls within Zone 1 or Zone 5 of the GEMF.

The proposed facility does not fall within either Zone 1 or Zone 5 of the GEMF.

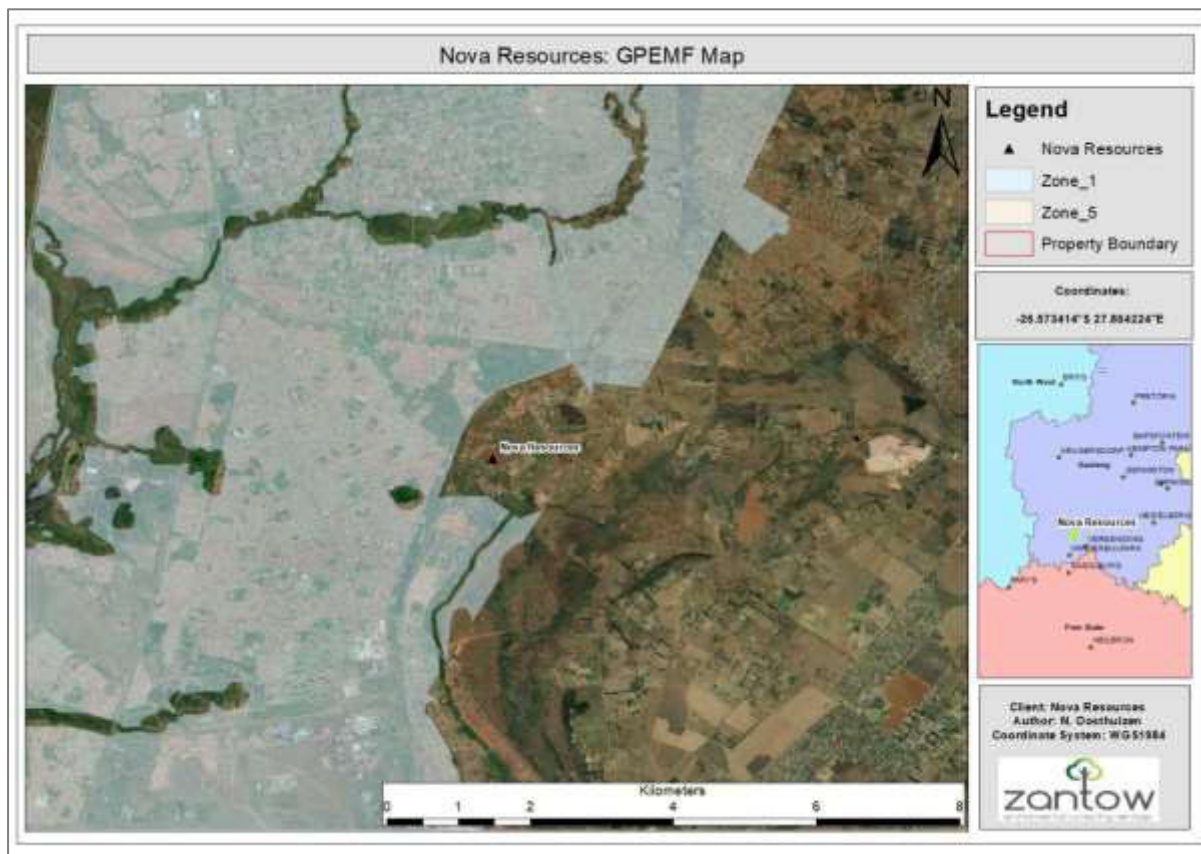


Figure 5: GEMF Map indicating the site location in relation to the Standard

- **Specifications for Pollution Buffers**

The GEMF standard outlines the following:

- “1) Buffer zones for pollution sources from various industrial facilities, as Indicated in point 2 and as per the Gauteng Pollution Buffer Zones Guidelines, March 2017, below must be adhered to.
- 2) The specific sizes for the preferred pollution buffer or minimum pollution buffer must be complied with as follows:
 - *Best case buffer of 1 500m and worst-case buffer of 750m must be maintained in category 1 industries, such as Sasol, Arcelor Mittal, 5caw Metal, Eskom power stations etc. as per paragraph 6.2.1 of the Gaute111 Pollution Buffer Zones Guidelines, March 2017.*
 - *Best case buffer of 500m and worst-case buffer of 250m must be maintained in category 2 industries, such as container depot In City Deep, panel beater workshops, tanneries etc. as per paragraphs 6.2.2 and 7.1 of the Gauteng Pollution Buffer Zones Guidelines, March 2017.*
 - *Best case buffer of loom and worst-case buffer of 50m must be maintained in category 3 industries, such as warehousing and distribution operations as per paragraphs 6.2.3 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.*

- *Best case buffer of 800m and worst-case buffer of 500m must be maintained for Sewage treatment works as per paragraphs 6.2A and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.*
- *Best case buffer of 400m and worst-case buffer of 200m must be maintained for general landfill sites (Communal, small, medium, and large) as per paragraphs 6.2.5 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.*
- *Best case buffer of 2000m and worst-case buffer of 1000m must be maintained for Hazardous Landfill sites as per paragraphs 6.2.5 and 7.1 of the Gauteng Pollution Buffer Zones Guidelines, March 2017.*
- *Best case buffer of 100m and worst-case buffer of 0m must be maintained for mine dumps (rock dumps or stockpiles) as per paragraphs & 2.6 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.*
- *Best case buffer of 1000m and worst-case buffer of 500m must be maintained for mine sump's dams and ash dumps as per paragraphs 6.Z.7 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017.*
- *Best case buffer of 5000m and worst-case buffer of 2000m must be maintained for the Pelindaba nuclear facility complex as per paragraphs 6.Z.8 and 7.1 of the Gauteng Pollution Buffer Zones Guideline, March 2017."*

Although the proposed site falls outside the bounds of both Zone 1 and Zone 5 of the GEMF, the applicable buffers and standards were still considered. The proposed facility falls within a Category 2 Industry. It is therefore recommended that a best-case pollution buffer of 500 m and a worst case of 250 m be maintained. The buffer zones for the proposed facility are indicated on the Figure below.

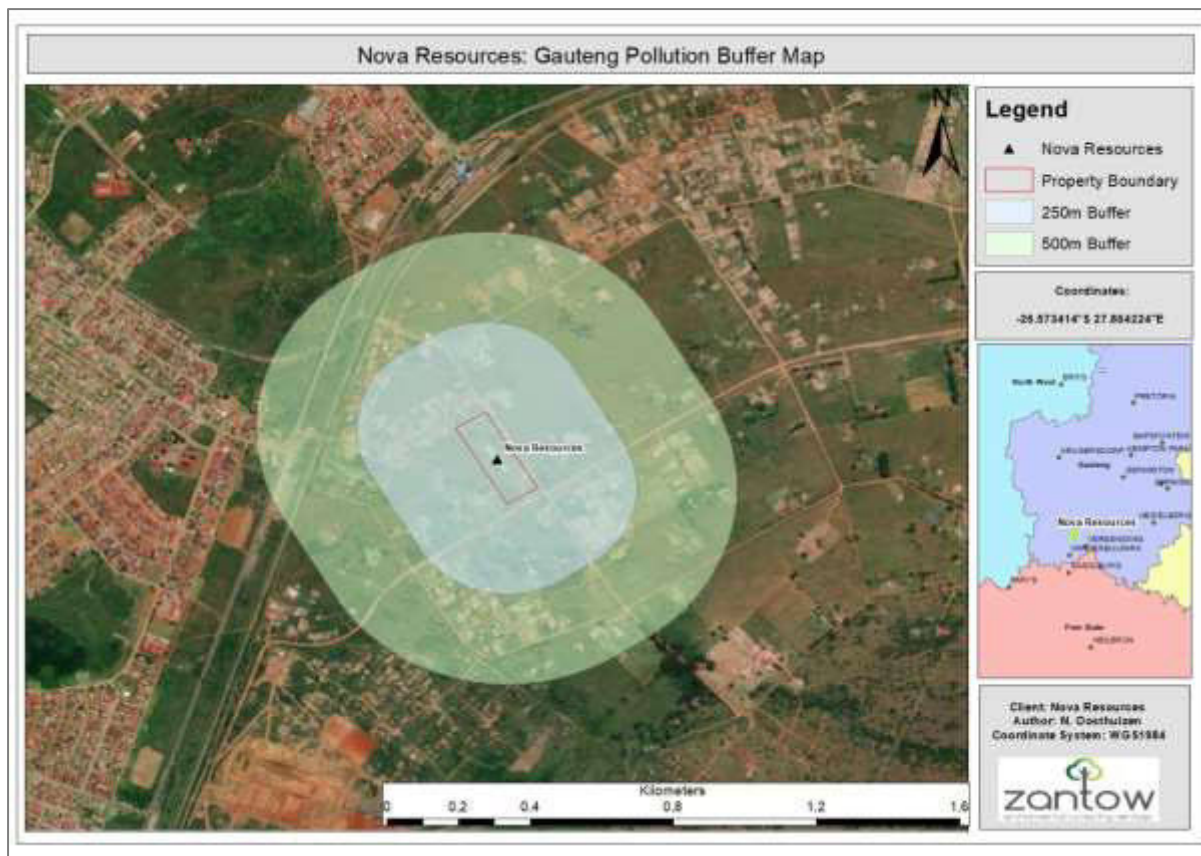


Figure 6: Gauteng Pollution Buffer Zones

The surrounding land uses within the buffer zones includes a mixture of residential, agricultural and commercial activities. There is no action is required in terms of this regulation as the facility proposed to be utilised is an existing site.

5.4. National Environmental Management Air Quality Act (No. 39 of 2004) (NEMAQA)

The objective of the National Environmental Management: Air Quality Act (No 39 of 2004) (NEMAQA) is to:

- a) *protect the environment by providing reasonable measures for-*
 - i. *the protection and enhancement of the quality of air in the Republic;*
 - ii. *the prevention of air pollution and ecological degradation; and*
 - iii. *securing ecologically sustainable development while promoting justifiable economic and social development, and*
- b) *generally, to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.*

The NEMAQA has devolved the responsibility for air quality management from the national sphere of government to local spheres of government (district and local municipal authorities). These authorities are tasked with baseline characterisation, management and operation of ambient monitoring networks, licensing of listed activities, and development of emissions reduction strategies.

The NEMAQA makes provision for the setting and formulation of national ambient air quality and emission standards.

- **List of activities Associated and Associated Minimum Emission Standards Identified in Terms of Section 21 of NEMAQA – GN 893 / 2013**

For operation of the proposed activity an Atmospheric Emissions License (AEL) will be required in terms of GN 893. The following listed activities have been deemed applicable:

Table 4: GN 893 Listed Activities Applicable

GN 893	Description
Subcategory 4.11	Agglomeration Operations
Description	Production of pellets or briquettes using presses, inclined discs or rotating drums.
Application	All installations.

Nova Resources will apply for an Atmospheric Emission License (AEL) with the Sedibeng District Municipality (SDM).

- **Ambient Air Quality Standards GN 1210 / National Ambient Air Quality Standard for Particulate Matter with Aerodynamic Diameter less than 2.5 Micron Meters (PM 2.5)**

Set out the limits for ambient air quality. Specific reference is made to Particulate Matter with Aerodynamic Diameter less than 2.5 Micron Meters (PM 2.5).

An Air Quality Impact Report was compiled by an external Specialist (Lethabo Ari Quality Specialists) (**Annexure E**) has confirmed that other than PM10 particulates, no other emissions are expected. The potential for the operations to generate PM2.5 particulates at levels likely to exceed the National Ambient Air Quality Standards is considered to be unlikely. No additional recommendations were therefore made by the specialist.

- **National Dust Control Regulations**

The purpose of the regulations is to prescribe general measures for the control of dust in all areas. The facility must ensure that dust fall must be kept below the prescribed threshold for non-residential areas.

The dust control regulations will not likely be applicable as the facilities dust generating impacts is not expected to be significant.

5.5. National Environmental Management Waste Act (No. 59 of 2008) Regulations (GNR 921) (NEMWA)

The objects of this Act are-

- to protect health, well-being and the environment by providing reasonable measures for-
 - minimising the consumption of natural resources,
 - avoiding and minimising the generation of waste,
 - reducing, re-using, recycling and recovering waste,
 - treating and safely disposing of waste as a last resort,
 - preventing pollution and ecological degradation,
 - securing ecologically sustainable development while promoting justifiable economic and social development,
 - promoting and ensuring the effective delivery of waste services,
 - remediating land where contamination presents, or may present, a significant risk of harm to health or the environment,
 - achieving integrated waste management reporting and planning, and
 - to ensure that people are aware of the impact of waste on their health, well-being and the environment.

Important definitions to consider in terms of this application:

“Commence” means *“the start of any physical activity, including site preparation or any other activity on the site in furtherance of a waste management activity, but does not include any activity required for investigation or feasibility study purposes as long as such investigation or feasibility study does not constitute a waste management activity”*

“Container” means *“a disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste, and includes bins, bin-liners and skips”*

“Disposal” means *“the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land”*

“Recovery” means *“the controlled extraction or retrieval of any substance, material or object from waste”*

Proposed to be amended to:

“Recovery” means *“the controlled extraction or retrieval of energy, or material from waste”*

“Recycle” means *“a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material”*

“Re-use” means *“to utilise the whole, a portion of or a specific part of any substance, material or object from the waste stream for a similar or different purpose without changing the form or properties of such substance, material or object”*

“Storage” means *“the accumulation of waste in a manner that does not constitute treatment or disposal of that waste”*

“Treatment” means *“any method, technique or process that is designed to-*

- a) *change the physical, biological or chemical character or composition of a waste, or*
- b) *remove, separate, concentrate or recover a hazardous or toxic component of a waste, or*
- c) *destroy or reduce the toxicity of a waste, in order to minimise the impact of the waste on the environment prior to further use or disposal”*

“Waste” means-

- a) *any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or*
- b) *any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette, but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste-*
 - i) *once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;*
 - ii) *where approval is not required, once a waste is, or has been re-used, recycled or recovered;*
 - iii) *where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or*
 - iv) *where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.”*

Proposed to be amended to

“Waste” means-

- a) any substance, material or object
 - i) that the generator of that substance, material or object has no further use for within its own processes, whether or not it has any commercial value for the generator, but which can be re-used, recycled, recovered or traded in by any person; or
 - ii) that is rejected, abandoned, discarded or disposed of, either temporary or permanently, or is intended to be discarded or disposed of by the generator of that substance, material or object, regardless of whether or not that substance, material or object has any commercial value for the generator or can be re-used, recycled, recovered or traded in by any person; or
- b) any other substance, material or object that may be defined as a waste by the Minister by notice in the Gazette; but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste-
 - (aa) once it is re-used, recycled or recovered or traded in by the holder of that waste or portion of waste in accordance with a condition stipulated in a valid waste management licence, where applicable, or in accordance with an applicable norm or standard made in terms of this Act; or
 - (bb) where the Minister has, in the prescribed manner, excluded the holder of any waste stream or a portion of a waste stream from the definition of waste, enabling the holder thereof to trade in the excluded waste stream or portion of the excluded waste stream, provided that the holder has satisfied the requirements of proving the environmentally safe use of the waste stream or portion of waste stream by it or any other person and committed to provide the Minister with annual reports of the use thereof”;

- **List of Waste Management Activities that have, or are likely to have, a detrimental effect on the environment – GN 921/2013**

According to GN 921 of 2013, “no person may commence, undertake or conduct a waste management activity listed in this Schedule unless a waste management licence is issued in respect of the waste management activity”.

The proposed development and operation of the Nova resources Waste Management facility will trigger the following Activities listed in Category B of GN 921:

Table 5: GN 921 Listed activities

GNR 921	DESCRIPTION
Category B	
Activity 2	The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises.
Activity 3	The recovery of waste including the refining, utilisation, or co-processing of the waste at a facility that processes in excess of 100 tons of general waste per day or in excess of 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.
Activity 4	The treatment of hazardous waste in excess of 1 ton per day calculated as a monthly average; using any form of treatment excluding the treatment of effluent, wastewater or sewage.
Activity 10	The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).

A full scoping and environmental impact reporting process must therefore be undertaken as part of the application to obtain a Waste Management License prior to the undertaking of the listed activities.

The “treatment” listed activity is not in our opinion applicable as the intention of the waste activities is not “in order to minimise the impact of the waste on the environment prior to further use or disposal”. The Listed Activity for “Treatment” was therefore excluded from the application.

- **Waste Classification and Management Regulations (23 August 2013)**

The purpose of these Regulations is to regulate the classification and management of waste, to prescribe requirements for the disposal of waste to landfill and prescribe general duties of waste generators, transporters and managers. The facility needs to comply with the requirements of the regulations.

Any and all waste streams which may be generated during the operation of the Nova Resources Waste Management Facility which are not previously classified will be classified and managed in terms of these regulations.

- **National Waste Information Regulations (13 August 2012)**

The purpose of these Regulations is to regulate the collection of data and information to fulfil the objectives of the national waste information system.

The need to register on the waste information system will be assessed. The facility is already registered, and additional registrations is not anticipated.

- **Gauteng Waste Information Regulations (15 September 2004)**

The objective of the regulations is to create a waste information system for Gauteng (GWIS). The facility must register with the Department and report the quantities of waste managed at the facility.

List of persons conducting the following activities within Gauteng Province must register on the Gauteng Waste Information System (Gauteng Waste Information System) in terms of Regulation 3(2) of National Waste Information Regulations, 2012:

Generators of waste

- Generators of hazardous waste in excess of 20kg per day,
- Recovery or recycling of waste (Waste Re-processor),
- Recovery of energy from general waste (more than 3 tons per day),
- Recovery of waste at facility that has a capacity to process more than 5 tons of general waste per day,
- Recovery of hazardous waste regardless of size or capacity of the facility,
- The scrapping or recovery of motor vehicles at a facility that has an operational area of more than 500m²,
- Recycling of waste that has the capacity to process more than of 5 tons of general waste per day, and
- Recycling of hazardous waste regardless of size or capacity of the facility.

Treatment of waste

- Treatment of general waste at a facility that has the capacity to process more than 10 tons of general waste per day excluding the treatment of effluent, wastewater or sewage, and
- Treatment of hazardous waste regardless of size or capacity of the facility.

Disposal of waste

- Disposal of general waste to land at a facility covering an area in excess of 200m², and
- Disposal of any quantity of hazardous waste to land.

Transportation of hazardous waste

- A person who transports more than 10kg/d of hazardous waste.

Transfer station of waste

- A person who operates a waste transfer facility that has capacity to store in excess of 100 m³ of general waste, and
- A person who operates a waste transfer facility that has capacity to store in excess of 35 m³ of hazardous waste.

The following activities are required to submit monthly data to the GWIS.

- A transporter removing hazardous waste from Gauteng Province for treatment or disposal to another province or country,
- A person who operates a general waste landfill site facility covering an area in excess of 200m²
- A person who operates a hazardous waste landfill site facility,
- A person who operates a general waste treatment facility that has the capacity to process more than 10 tons of general waste per day,
- A person who operates a hazardous waste treatment facility,
- A person who operates a recycling facility that has the capacity to process more than of 5 tons of general waste per day,
- A person who operates a hazardous waste recycling facility,
- A person who operates a facility for scrapping or recovery of motor vehicles that has an operational area of more than 500m²,
- A person who operates a facility that recover energy from general waste (more than 3 tons per day), and
- A person who operates a facility that recover waste at the facility that has a capacity to process more than 5 tons of general waste per day.

5.6. National Water Act (No. 36 of 1998)

The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which consider amongst other factors -

- meeting the basic human needs of present and future generations,
- promoting equitable access to water,
- redressing the results of past racial and gender discrimination,
- promoting the efficient, sustainable and beneficial use of water in the public interest,
- facilitating social and economic development,
- providing for growing demand for water use,
- protecting aquatic and associated ecosystems and their biological diversity,
- reducing and preventing pollution and degradation of water resources,
- meeting international obligations,
- promoting dam safety, and
- managing floods and droughts, and for achieving this purpose, to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation.

No water uses license or water use activity is applicable to the proposed project.

5.7. Emfuleni Municipal Spatial Development Framework (SDF) for 2021/2022

The site is allocated for the Agricultural activities in terms of the Emfuleni Spatial Development Framework (SDF) but is in the process of a rezoning application to industrial. The Municipality developed an updated SDF for 2021/2022 with strategic goals to reach by 2030 that is in line with the Sedibeng District Municipality's SDF as well as the Gauteng SDF.

These goals broadly relate to the development of urban and residential areas with specific mention to the upgrade of basic infrastructure as well as public transport, economic upliftment whilst complying with environmental and social needs of the residents.

Economical activities are primarily related to manufacturing with secondary major activities such as Trade and hospitality, Transport and Finance and Business Services. According to the latest census 61% of the working age population is currently economically active and the unemployment rate is currently at 39%. The manufacturing sector is Emfuleni's most important economic sector as it contributes to 41.3% of the local GDP, with basic iron and steel, heavy metal and engineering workshops being more prevalent.

The municipality conducted a Strategic Environmental Assessment (SEA) in order to determine the impacts of the spatial planning within the Municipal boundary. One of the major areas of concerns within the Vanderbijlpark area is the air space required for solid waste disposal. One of the main mitigations listed in the SEA is to promote recycling of waste at industrial level in order to reduce waste to landfill.

The proposed facility will create employment opportunities in the area and will increase its economic value. The proposed facility will also contribute to the SDF's goals by reducing waste to landfill, developing the industrial sector and creating employment opportunities.

5.8. Emfuleni Municipal Bylaws and Plans

- Emfuleni Local Municipality's Air Quality Management By-Laws (Dated 2017, Promulgated in May 2019)

The objective of the by-laws are to:

- (a) Give effect to the right contained in Section 24 of the Constitution by regulating air pollution within the area of the municipality's jurisdiction.
- (b) Provide, in conjunction with any other applicable law, an effective legal and administrative framework, within which the Municipality can manage and regulate activities that have the potential to adversely impact the environment, public health and well-being; and
- (c) Ensure that air pollution is avoided, or where it cannot altogether be avoided, mitigate or minimised.

The proposed facility will apply for an AEL with the SDM. An Air Quality Impact Study has been undertaken which identified key areas of concern and lists recommendations to ensure that operations are carried out in such a manner as to prevent or limit impacts on the receiving environment and the general area's overall air quality.

- Emfuleni Local Municipality's Solid Waste Management By-Laws (Dated 2017, Promulgated in May 2019)

The objective of the by-laws is to:

- (a) Give effect to the right contained in section 24 of the Constitution by regulating air pollution within the area of the municipality's jurisdiction.
- (b) Provide, in conjunction with any other applicable law, an effective legal and administrative framework, within which the Municipality can manage and regulate waste management activities.
- (c) Ensure that waste is avoided, or where it cannot be altogether avoided, minimized, re-used, recycled, recovered, and disposed of in an environmental sound manner; and
- (d) Promote and ensure an effective delivery of waste services.

The proposed facility will promote these by-laws by implementing waste management practices that will promote the recycling of waste. The proposed activity also reduces waste to landfill as the use of waste material will be the facility's main raw material

6. NEED AND DESIRABILITY

The below need and desirability for the proposed waste management facility to be operated by Nova Resources was considered in accordance with the requirements set out in the Integrated Environmental Management Guideline Series 9: Guidelines on Need and Desirability and in terms of the EIA Regulations, 2014.

6.1. Need and Desirability in Terms of Market Demand

One of the commonly used techniques to protect steel surfaces from corrosion is galvanizing with almost 50% of the world's zinc production consumed for this purpose. Worn steel elements are usually sent to metallurgical plants and are subjected to a remelting process through the use of an electric arc furnaces (EAF). During this process, zinc is evaporated, oxidized and then, as solid ZnO, transferred to dedusting devices. Statistics have shown that just one (1) ton of smelted steel scrap produces approximately 15–25 kg of EAF dust with a Zinc content ranging between 15% to 40%. In addition to the high Zinc content, EAF dust is also high in other metals such as iron, cadmium, nickel, chromium, manganese, carbon, tin, antimony and copper. The internal recycling and or re-use of EAF dust in the steel making industry is however not possible due to the high Zinc content. On the other hand, a significant iron content eliminates the possibility of treating the EAF dust as a raw material for the traditional hydrometallurgical zinc manufacturing process. Standard practice in the steel and foundry industry is therefore either storage of the EAF dust or alternatively disposal to landfill.

Due to the metal rich content of the EAF/Zinc Dust, disposal is not considered ideal. As such different methods of recovery and recycling are being considered. Nova Resources has therefore seen the need and is therefore proposing to develop a process to cold press the EAF/Zinc Dust into pellets which would be suitable for export and final smelting by potential clients.

The high concentration of precious metals, specifically Zinc in the EAF dust, provides the waste stream with a high metallurgical value and associated recovery potential. To ensure rational and efficient utilization, a cold press pelletizing process can be employed to transform the EAF dust into pellets, which can then be utilized for zinc smelting by specialised foundries.

Recovery of precious metals such a Zinc will not only reduce the need for raw material inputs from mining activities and relive stress on already scarce natural resources but will provide raw materials and commodities to both the National and international markets at a reasonable cost. Quality raw materials at a cheap price in turn support sustainable development as other products and materials can then be produced at a lower cost which in turn will provide relief to end users.

6.2. Need and desirability in terms of socio-economic benefits

The proposed project will provide employment opportunities for an additional ten (10) persons who will be sourced from the local community. Therefore, the proposed activities will contribute to local economic development and uplift the livelihoods of the persons that will be employed. In addition, the establishment and operation of the proposed pelletizing plant and associated sorting and screening operations will provide a sustainable feed of raw materials to local recyclers and industries, supporting functional operations to external industries by supply of raw materials, thus leading to additional job security for those already employed.

The supply of cost quality, cost effective and reliable raw materials to surrounding industries and recyclers also contribute to the local and regional economy through job creation and even ensuring the availability of specialized products and services at a lowered cost.

The activities will have numerous social and economic benefits in local context. These include:

- Job creation,
- Skills development,
- SMME development,
- Local economic development, and
- Contribution to local and national tax income (royalties, companies tax etc.).

6.3. Need and desirability in terms of the proposed location and accessibility

The site selected for the proposed development and operation of the Nova Resources Waste Management facility is located in Sebokeng in the southern region of Gauteng. The site is located approximately 5.5 km North of the R54 regional road and approximately 4 km East of the R28 regional road which connects Sebokeng to both Vanderbijlpark and Vereeniging's industrial areas.

The proposed site is located in a relatively new extension of Sebokeng with a mixture of scattered settlements, commercial, agricultural and industrial activities. The proposed activity will therefore fall in line with the major land use of the area. The location of the site is also considered to be ideal as major industry leaders such as ArcelorMittal and Cape Gate located approximately 20 km south-west of the site. The established road network between the site and surrounding industries makes the location of the proposed operation ideal. Transport of raw materials and products can easily be facilitated by road. Lastly, the site is already equipped with an existing warehouse which is ideally sized for the proposed operation. No additional development other than the establishment of the pelletizing plant within the warehouse would be required, thus eliminating the need to develop virgin land.

6.4. Need and desirability in terms of spatial development within the Sedibeng District Municipality Spatial Development Framework

According to the Sedibeng District Municipality's' (SDM) Spatial Development Framework (SDF) (2022), the unemployment rate in the Emfuleni Local Municipality (ELM) is currently at 54.45%. The area is known for its main industrial activity, being manufacturing. However, over the past 10 years the industry has declined leading to high unemployment rates in the area. One of the major goals of the SDF is to revitalize the manufacturing industry of the area. The proposed activity will provide ten (10) employment opportunities in the area. The facility will also ensure indirect economic growth of the area as it will ensure that it uses local suppliers and contractors as far as reasonably possible.

Consistent, reliable and cost-effective supply of raw materials to local recyclers and industries will also, indirectly support surrounding industries and provide job security to the local people as are already employed. In addition, the sustainable supply of raw materials will support cost effective manufacturing of products and materials which will also benefit the end users by lowering general costs of goods and services. In summary the operation of the proposed Zinc Dust cold pressed pelletizing plant in association with the waste sorting and screening activities will benefit the Sedibeng districts economy and its people.

6.5. Conclusion regarding the need and desirability of the proposed facility

From the discussion above, it is clear that a need exists for the reduction of waste in the Gauteng province. The local municipality is also in progress of rejuvenating the manufacturing industry in the area. The proposed facility will aid in this goal as well as the National goal of promoting the manufacturing of parts locally.

The proposed facility will create ten (10) employment opportunities in a region where the unemployment rate is high. The property where the proposed facility is to be established is located near the raw material to be used as well as its clients. The property is already transformed and therefore no virgin land will have to be transformed for the proposed activity to be undertaken.

7. DESCRIPTION OF REASONABLE AND FEASIBLE ALTERNATIVES

This section evaluates the alternatives that have been identified and will be included in the environmental impacts associated with the alternatives, compared to the proposed alternative. The pros and cons of the different alternatives will be highlighted to ensure that a transparent decision will be reached on the best alternative.

7.1. Site selection process

The site selection was based on availability of suitable properties close to the local industries which would be the main suppliers of raw materials as well as properties and or sites close to existing routes of transport as both raw materials and products will be subjected to transport both to and from the selected site. Although the site is currently zoned as agricultural, an application has been initiated by the landowner for rezoning to industrial.

Other factors which influenced the site selection process include available infrastructure and space. The selected site in its current state includes a warehouse large enough to house the proposed cold pressed pelletizing plant, additional equipment and machinery whilst still allowing enough room for raw material and or product storage. The need to develop virgin land would be eliminated. The proposed site is also not located near any sensitive environmental features that can be impacted by the proposed activities.

The only alternative which could be considered, however not desired, would be to purchase a separate property. Finding a vacant industrial property or space suitable for the planned waste management activities has proven to be difficult. In general, existing industrial properties are hard to come by as they are in such high demand. In turn, high demand for well-located industrial properties, equipped with warehousing, security, fencing, paved surfaces and adequate electricity supply tends to be expensive when renting.

In light of the current market status, the only feasible option would be to acquire a property within an alternative location, also located within relatively undeveloped area to the south of Sebokeng. Should an alternative location be approved instead of the proposed site and location, would require additional transport of raw materials and products via longer routes. Since the best alternative site is located in a relatively undeveloped area, majority of access roads are yet to be established. Transportation of large loads between the site, suppliers and end users via unpaved or gravel roads will increase overall fugitive dust emissions which would lead to nuisance conditions to surrounding communities. Increased emissions would also lower overall air quality for the direct area. Additionally, traffic flow will also be influenced. The location of the alternative site will also influence the accessibility of local people who would be sourced for employment opportunities. The rural location of the alternative site limits the availability of public transport, making the daily commute for potential employees difficult. Should reliable labour not be available the feasibility of the proposed operation and waste management activities will be negatively impacted. Considering these impacts and risks, the alternative is not considered feasible.

In summary, Table 6 contains an evaluation of the proposed site.

Table 6: Site Selection Matrix

Environmental consideration	Site evaluation	
	Yes	No
Within a 3000m radius of the end of an airport landing strip		x
Within an unstable area (fault zone, seismic zone, dolomite, sinkholes)		x
Within 500m of water resource		x
Nodality with respect to raw materials		x
The distance to the boundary of the nearest residential area	1 km	
Availability of land for extension of production volumes	x	
Accessibility in terms of road networks	x	
Suitability of zoning	x	

7.2. Technology Alternatives

According to the European Integrated Pollution Prevention and Control (IPPC) for Best Available Techniques (BAT), the technique for choosing the best available technology should consider potential environmental impacts associated with the chosen technology, the ease of implementing an environmental management system to manage and mitigate impacts, the economic efficiency, size and the raw material that is intended to be used. Therefore, different types of technology were considered alternatives for the proposed pelletizing plant.

7.3. Cold Rolled Hydraulic Press (Proposed Alternative)

Zinc dust is a solid waste generated by the steel and foundry industries with a high metal content. Zinc dust is considered a valuable commodity in the metallurgical industry as the dust has a high recovery value.

In order to make reasonable and effective use of the zinc dust, it is proposed that the material be mixed with a natural binder (cornstarch) and water before being cold pressed into pellets or briquets. Cold-pressed pellets can be formed under low temperatures and do not change the chemical properties of raw material. By implementing this technique, the raw materials characteristics are maintained which in turn reduces production costs.

Raw material (Zinc Dust), packaged in 1 ton bulk bags would be transported to the site via truck. Once the load has been accepted, the bulk bags will be offloaded using forklifts. Material will be added to the pelletizing plant and combined with a composite binder (cornstarch) and water. Once the mixture reaches the desired consistency the mix will be fed via conveyor belt to the rolling press which will form the pellets by means of hydraulic pressure. Formed pelletizing will then exit the press and be allowed to air dry before being packaged for transport to the end user for further processing.

The pelletizing plant will be electricity driven with no additional energy inputs needed. The formation curing of the pellets will also not need any heat inputs, thus limiting the potential for gas or exhaust emissions due to the combustion fossil fuels. Since no heat activation is required the need for artificial cooling is eliminated.

The need for extraction systems or dust suppression would also be limited as the product and material will be mixed with approximately 8% of water, creating a damp mixture. Due to the size and capacity of the planned production line, the existing municipal water supply is considered sufficient and no additional water inputs would be required. In addition, no effluent or steam would be generated which would require additional mitigation. The generation of waste would also be limited as spilled material and or misshapen or rejected pellets can be recycled back into the production line.

The proposed cold rolling hydraulic presses is also preferred as the equipment is designed to limit noise. In addition, the design reduces vibration during operation which could impact surrounding infrastructure and the receiving environment.

7.4. Heat Activated Pelletizing Press (Alternative 1)

The alternative to cold rolling pellets would be a heat driven press. Such a production line would consist of three components which would include a pressure system to form the pellets, a heating system, designed to activate the binding agent and to aid in the drying of the pellets and finally cooling and or extraction system. The plant design and composition would require more space than that of a cold press pellets plant. In addition, the need for heat inputs will require the installation of a boiler or generator which would be able to supply the production line with adequate heat for curing. Increased emissions are therefore anticipated which would impact overall air quality in the area. A suitable extraction system would need to be installed to regulate internal air quality when in operation which would also increase the overall projects capital inputs, putting more strain on the company even before operation can commence.

Operation of a heat activated pellets press would require additional energy inputs which may place strain on the local grid. In order to limit electricity consumption, the best option would be to install a coal boiler which in itself would generate additional emissions which would impact the local area and negatively impact air quality.

Economically, the installation and operation of a heat activated pelletizing plant is also not considered feasible. Additional infrastructure would need to be purchased, installed and maintained just to mitigate potential impacts on the environment and to ensure overall safety to operators and employees. The plant in itself would have a higher demand for electricity which increase operational costs. The use of a boiler to generate steam for heat regulation will also require the supply of coal and a notable increase in water consumption. Lastly, the use of heat activated binding agents may also influence the chemical composition and or characteristics of the Zinc Dust which in turn will affect end users as the product may no longer be suitable for further processing and or precious metal recovery.

In conclusion, a heat activated pelletizing press, although frequently used in the industry is not considered ideal.

7.5. No-go option (disposal of waste)

The no-go alternative entails the disposal of waste to a landfill site. The disposal of waste will decrease the available airspace for landfill disposal and additional land will be transformed eventually to accommodate increased disposal rates. Disposal of waste is seen as the least favourable option in terms of the National Waste Management Strategy (NWMS) and NEM:WA. Therefore, the disposal of waste to landfill is not seen as a favourable option compared to the recovery of waste at the proposed facility. Moreover, the socio-economic benefits associated with the expansion project will be negated if the activities do not proceed.

7.6. Conclusion Regarding the Consideration of Alternatives

The proposed property selected for the planned waste management activities is located on Holding 13, Waterdal AH, Sebokeng, just North of Vanderbijlpark' s industrial sector which would be the main source of raw materials and products. In addition, Vereeniging is also within close proximity, providing additional sources of raw materials and potential clients.

Existing infrastructure located on site provides an ideal setup for the planned pelletizing plant as electricity and water supplies are already in place. An established warehouse covering approximately 1 800 m² provides ample space which would in turn allow enough room for the installation and operation of the planned pelletizing plant, raw material and product storage as well as room for vehicle movement. The site is already fenced and equipped with security measures to prevent unauthorised entry.

Should the use of the proposed site be approved for the planned project, the need to develop and transform virgin land would be eliminated.

An alternative site was considered but excluded due to practical and financial reasons. Due to the current state of the industrial property market, the sourcing of suitable industrial space is difficult. High demand for prime industrial space, equipped with the required infrastructure such as access control and security, paved surfaces, warehouses with ample space and sustainable water and electricity supplies is difficult and in general expensive. As such the sourcing of a property or site outside the bounds of an established industrial area would be the best option. The establishment of a site within a new development area would however require the development and transformation of virgin land in order to support the needs of the industry. The applicant (Nova Resources) could potentially source a property at a reasonable cost, however development of such a property would quickly escalate the financial inputs even before operation can commence. In addition, lack of existing infrastructure such as roads, water and electricity supplies would also place more strain on daily operations. As such the alternative site and location was excluded and not considered further. The proposed site located on Holding 13, Waterdal AH, Sebokeng is therefore considered the best option.

In addition to the site location the proposed installation and operation of a cold rolled hydraulic press instead of a heat driven hydraulic press was found to be the best option. The sourcing, installation and operation of the cold rolled hydraulic press would require less financial inputs as little to no additional infrastructure and or support would be needed, whereas a heat driven pelletizing plant would need additional energy, water and raw material inputs. Since the cold rolled press and pelletizing plant is a wet based process, limited emissions and dust generation is anticipated. Although dust generation from the alternative heat-based process would also be limited, emissions from the associated boiler that would need to be installed to generate and regulate heat via steam would need to be mitigated. A stack and extraction system would thus be needed which in turn increases the installation and operational cost for the plant. Such a plant is also larger in scale and would use much needed space within the available warehouse, reducing storage space for product and raw materials. Such a plant is also more suitable for larger sized operations and therefore not considered the best suited for the proposed operations to be implemented and managed by Nova Resources. The cold rolled pelletizing plant has therefore been selected as the preferred alternative in association with the preferred site and location.

Should the application be rejected, there will be no opportunity to recycle or recover the waste (Zinc Dust) which in turn will result in disposal to landfill. The disposal of waste will decrease the available airspace for landfill disposal and additional land will be transformed eventually to accommodate increased disposal rates. Disposal of waste is seen as the least favourable option in terms of the National Waste Management Strategy (NWMS) and NEM:WA. Therefore, the disposal of waste to landfill is not seen as a favourable option compared to the recovery and or recycling of waste at the proposed facility. Moreover, the socio-economic benefits associated with the expansion project will be negated if the activities do not proceed.

8. DESCRIPTION OF THE BASELINE ENVIRONMENTAL CONDITIONS

The site has been completely transformed by the existing industrial activities. The following provides a description of the environmental features of the area.

8.1. Climate

The proposed site falls within the south of Gauteng which is characterised by warm temperate and summer rainfall. Precipitation is usually in the form of thundershowers, often accompanied by hail in the summer months followed by dry winters. The mean annual precipitation for the ranges between 600 mm to 800 mm with the dominant precipitation received during the months of October to March. Moreover, severe frequent frost occurs in the winters (Mucina and Rutherford, 2006).

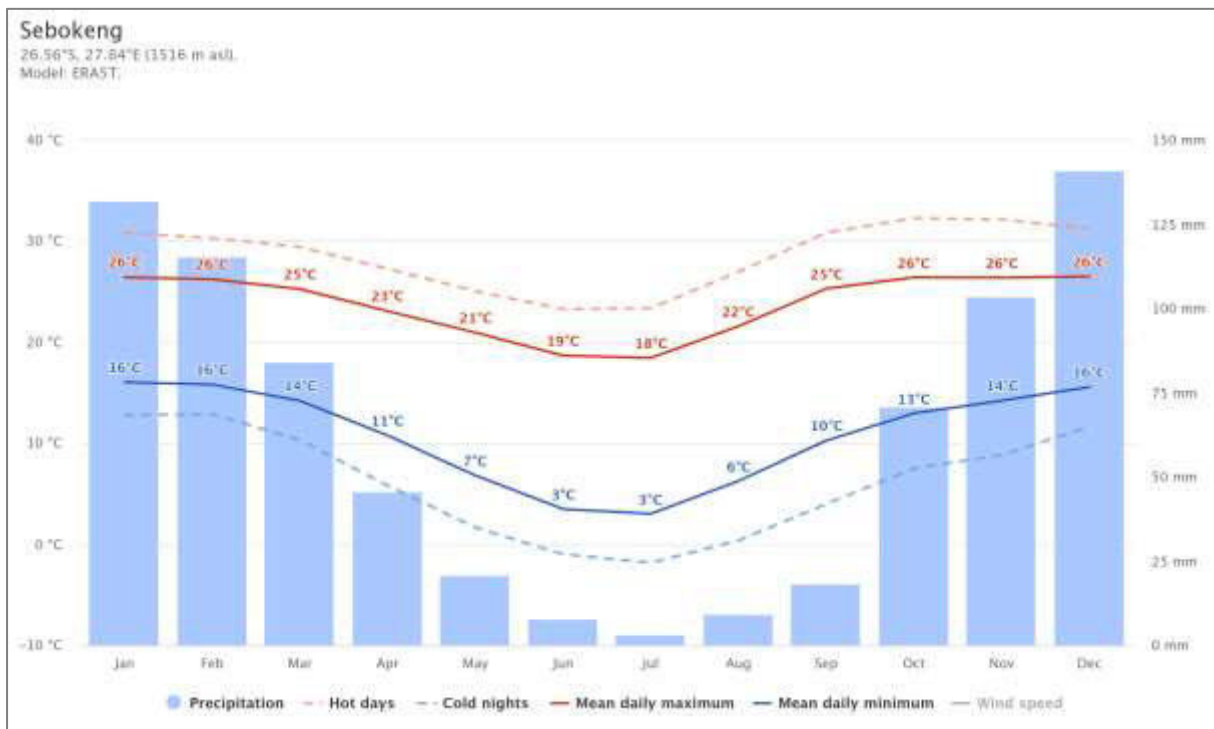


Figure 7: Average temperatures and precipitation for Sebokeng

8.2. Hydrology

The site is situated in the Vaal River Primary Catchment and the quaternary catchment C22H which feeds into the Rietspruit. No natural water resources are located on or within a 5 km radius of the site. The planned pelletizing plant in addition to raw material storage and handling activities will be confined to the existing warehouse. Runoff rainwater to be generated during a rainfall event would be diverted away from the operational area by means of gutters and an existing storm water trench. No waste or product is anticipated to come into contact with storm water during a rainfall event.

8.3. Topography

The site is generally flat. According to Mucina & Rutherford (2006) the greater study area is characterised by slightly undulated plains dissected by prominent rocky Chert ridges.

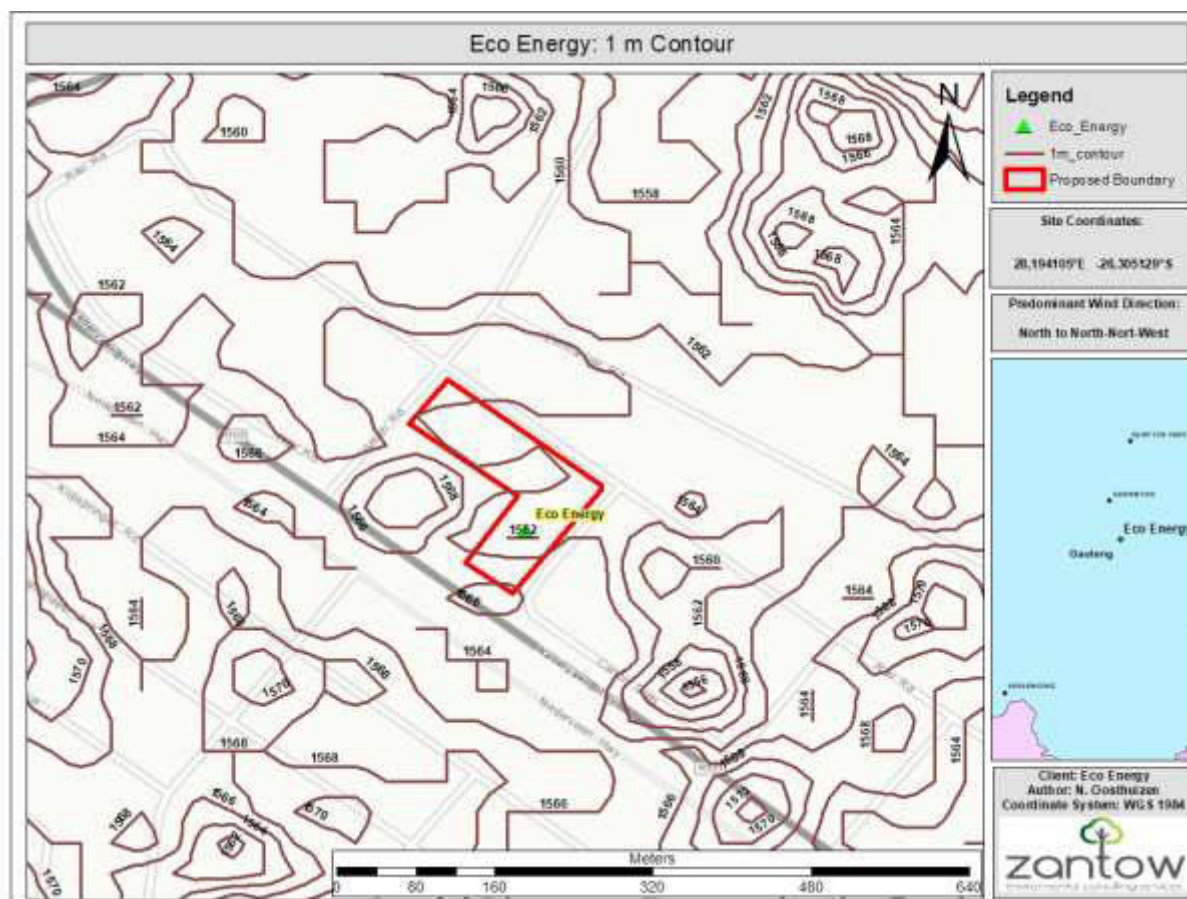
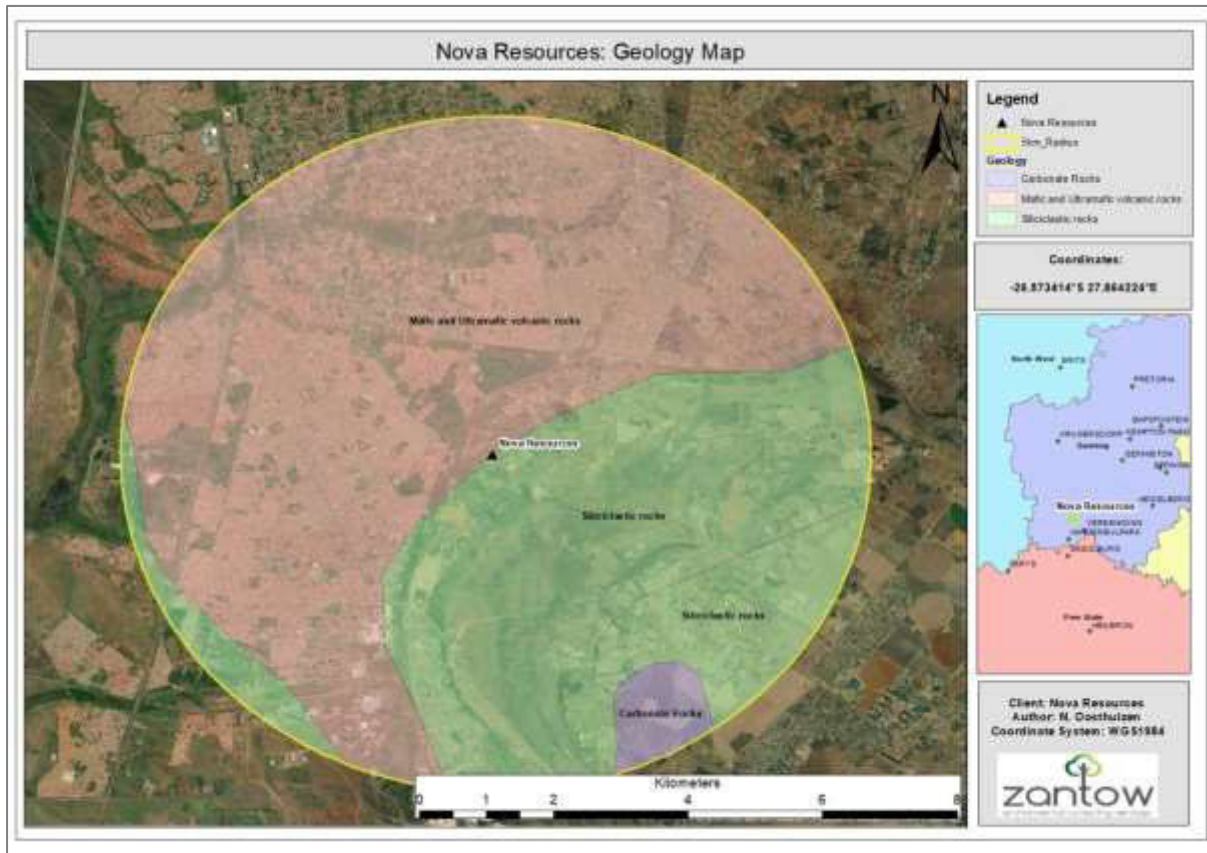


Figure 8: Contour Map of surrounding area

8.4. Geology and soils

According to Mucina & Rutherford (2006) the regional geology comprises of andesite's, agglomerate and Tuffs of the Hekpoort Formation belonging to the Pretoria Group within the Transvaal Supergroup. Typically, these igneous rocks are overlain by recent transported soil, either hillwash or alluvium. Typical

soil profile to be expected across the site and surrounding area includes Transported (Hillwash/Alluvium), Transported (Pebble Marker), Reworked Residual Andesite, Residual Andesite.



Simplified Geology Map for the Area

The data indicates that there is no dolomite in proximity to the proposed site.

8.5. Vegetation

The proposed site is considered to be disturbed and no longer representative of a natural vegetation composition characterised by the highveld biome. The site is equipped with a warehouse and separate holding which is currently used for administrative purposes.

Due to a lack of history, Google Earth was used to determine the history of the site. Based on historic aerial views of the site it was determined that the property was undeveloped until 2013 when the warehouse was constructed. From the aerial photographs it appears that the site may have been used for agricultural purposes. Since 2013, little change has been made to the existing infrastructure.

The site and surrounding properties consist of fairly flat terrain which has over time been subjected to small developments, settlements and agricultural activities which mainly include the grazing of livestock. The site itself is considered to be disturbed and is therefore characterised by pioneer grass species such as dry kikuyu grass and the common dry therneda grass. Additional vegetation species such as

SweetThorn (*Vachellia karroo*) and Sickle Bush (*Dichrostachys cinerea*) can also be found in areas surrounding the site.

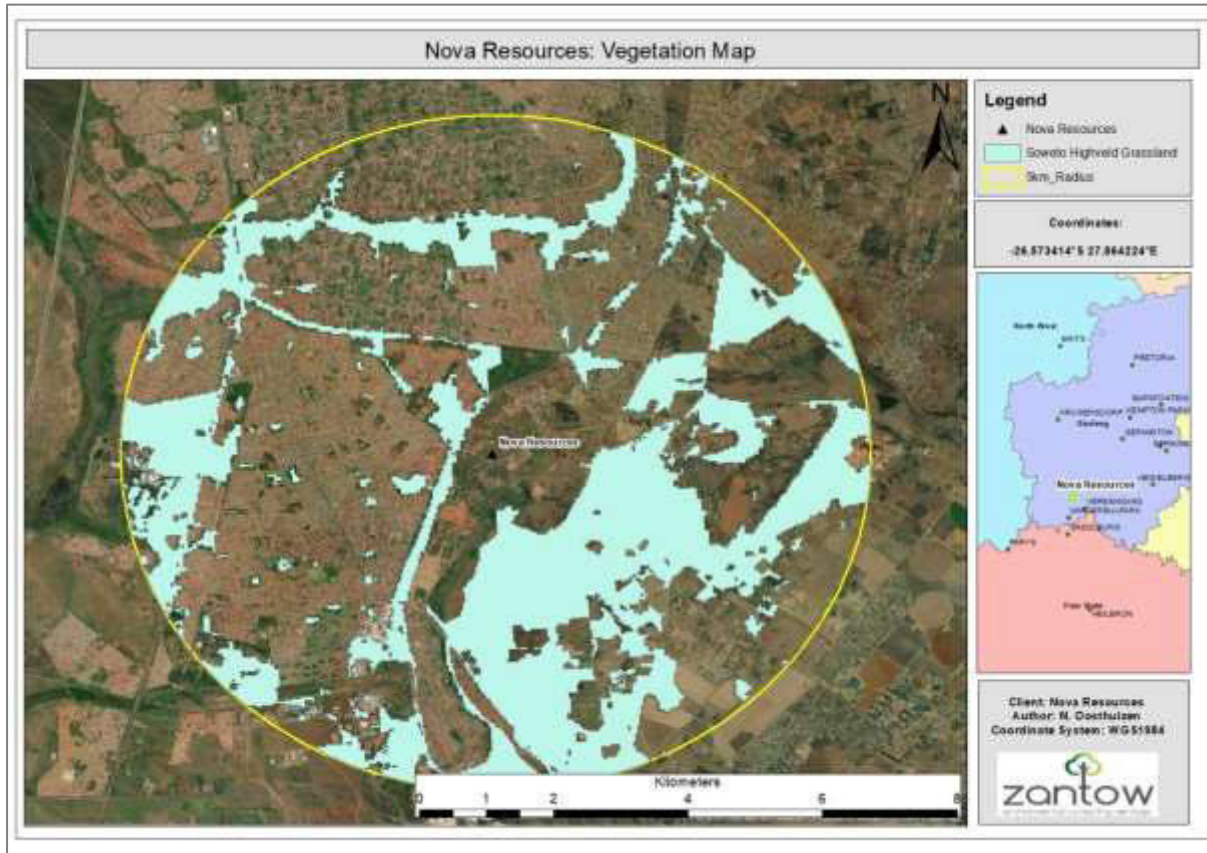


Figure 9: Vegetation map of the area

8.6. Socio-economic

The site is situated in Sebokeng, approximately 20 km north of Vanderbijlpark which falls within the jurisdiction of the Emfuleni Local Municipality.

The township of Sebokeng is divided into a number of zones ranging from Zone 3 to Zone 24, not forgetting the hostel residence towards the outskirts of the townships when entering from the South coming from Vanderbijlpark. The proposed site is located within one such outlying area, located just 1km East of Zone 11 which is separated by a railway line running through the area. Since the site is located in a relatively undeveloped area, majority of the social and or economic activities are limited to informal settlements scattered between agricultural holdings and plots. The largest development in the area consists of the Green Estate, which is in the process of construction, approximately 2km to the South of the proposed site.

The proposed project will provide employment opportunities for an additional 10 persons who would be sourced from the local community. By employing local people, the proposed activities will contribute to local economic development and uplift the livelihoods of the persons that will be employed.

The activities will have numerous social and economic benefits in local context. These include:

- i) Job creation
- ii) Skills development
- iii) SMME development

- iv) Local economic development
- v) Contribution to local and national tax income (royalties, companies tax etc.)

The proposed project will support the Municipalities SDF goals of revitalising the industrial sector with the promotion of small businesses and aid in the current unemployment.

8.7. Heritage Resources

The National Environmental Screening indicated that the site holds a low sensitivity towards heritage resources in the area. Since the site has already been transformed and the development footprint will not expand, it is not expected to encounter any heritage resources on-site.

8.8. Surrounding Land Uses

Majority of economic activity within the Sebokeng area consists of entrepreneurship as a means of earning an income. The types of businesses run by residents range from formal businesses such as beauty shops, pubs, petrol garages and night clubs to informal, usually home-based businesses such as spaza shops, hair salons and shebeens.

In 2002, Sebokeng's first Plaza, Sebokeng Plaza was opened to serve and employ the residents of Sebokeng and neighbouring townships and in 2009 they built another plaza which is Thabong, which was later upgraded to a Mall, not forgetting Mandela Square towards the North, which also created jobs for local residents.

The proposed site is located within an outlying area, located just 1km East of Zone 11 which is separated by a railway line running through the area. Since the site is located in a relatively undeveloped area, majority of the social and or economic activities are limited to informal settlements scattered between agricultural holdings and plots. The largest development in the area consists of the Green Estate, which is in the process of construction, approximately 2km to the South of the proposed site.

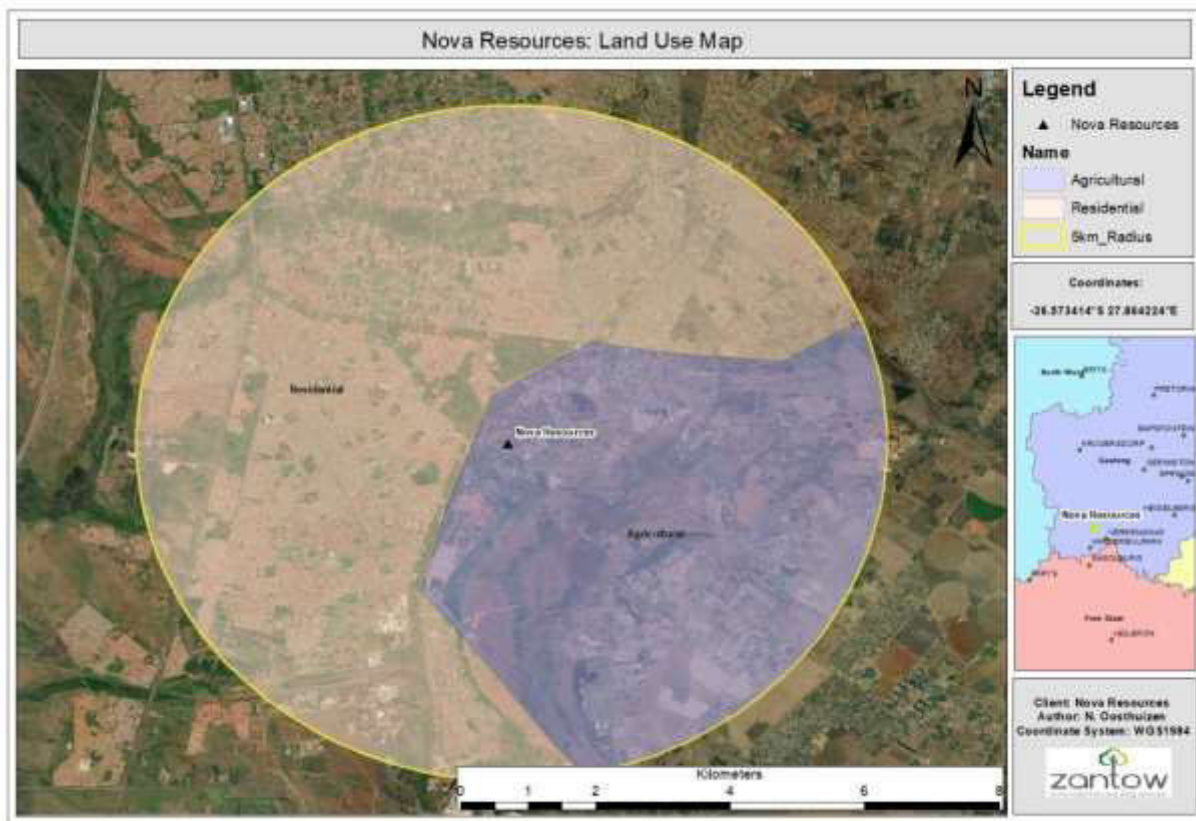
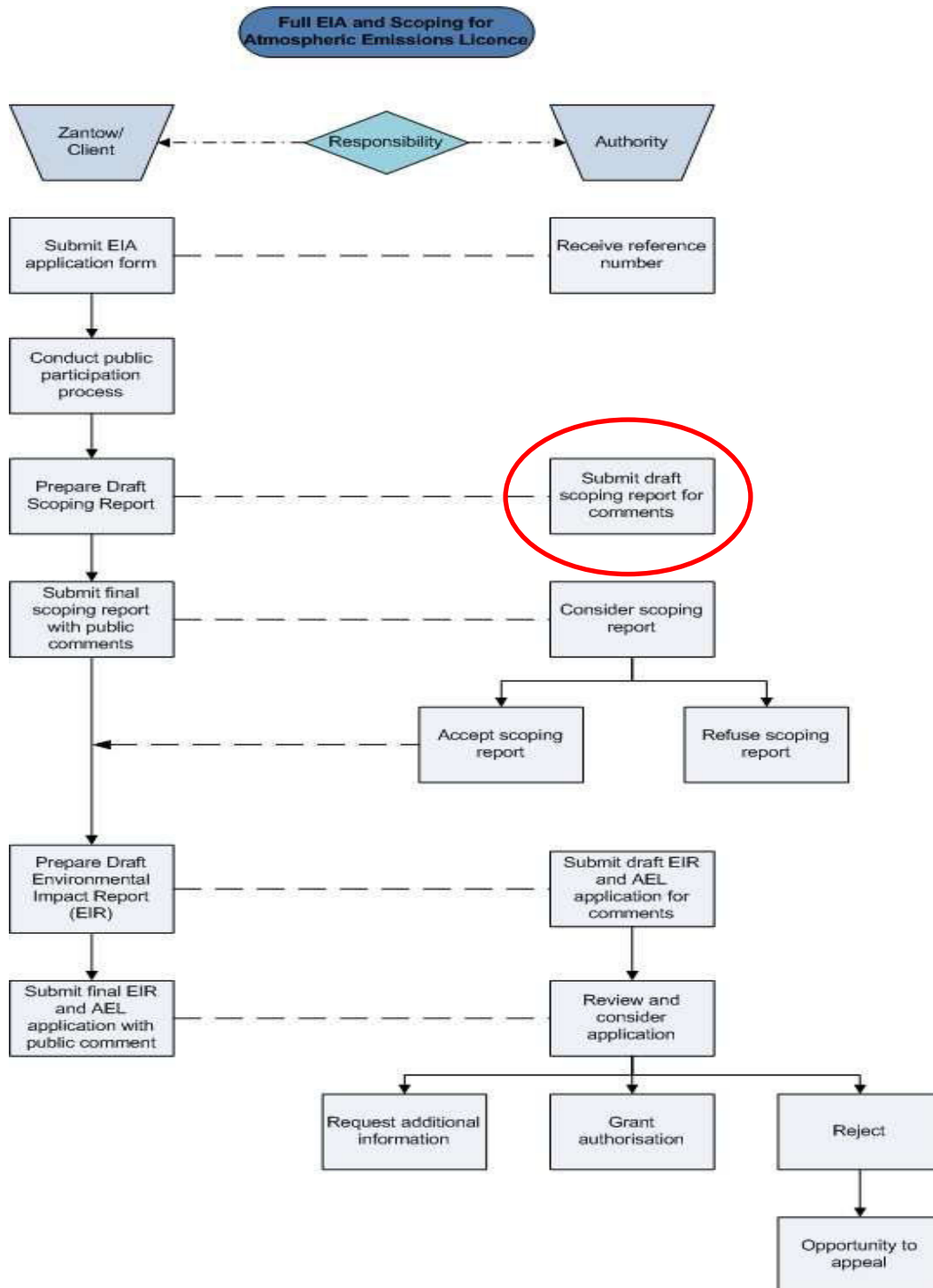


Figure 10: Surrounding Land Use

9. ACTIVITIES UNDERTAKEN AS PART OF THE EIA PROCESS



10. PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

A comprehensive impact assessment will be conducted to assess the significance of the potential environmental impacts associated with the proposed development and operation of a Zinc Dust cold pressed pelletizing plant by Nova Resources. Each identified alternative will be included in the impact assessment.

10.1. Assessment methodology

The assessment methodology that will be utilised in determining the significance of the potential impacts associated with the planned activities, on the biophysical and socio-economic environment is explained in the following sections. The methodology is broadly consistent to that described in Integrated Environmental Management Series.

In order to assess the significance as objectively as possible, the criteria as per the 1998 Department of Environmental affairs and Tourism (DEAT) guidelines and the 2002 DEAT Information Series document will be used as the basis for the assessment methodology adopted by Zantow Environmental Consulting Services.

The methodology applied to the assessment of the significance of potential impacts is based on the assessment criteria provided within the 1998 DEAT guidelines and the 2002 DEAT Information Series document (Impact significance, Integrated Environmental Management, Information Series 5). The methodology has been adapted to be more user friendly and applicable to industrial processes and a description of the nature, extent, duration, intensity, probability of the impact.

The significance of the impacts is determined through a synthesis of these criteria, ranking them as follows,

Table 7: Risk classification

Significance Rating (SR)	Significance
350 – 600	Severe
200 – 349	High
149 – 199	Medium
0 – 149	Low

For each impact identified, the Significance Rating (SR) is determined by various factors. Significance is described prior to mitigation as well as with the most effective mitigation measure(s) in place where so required.

The significant Rating is calculated as follows:

$$\text{Risk (SR)} = (\text{Duration} + \text{Probability} + \text{Magnitude}) \times \text{Severity} - (\text{Mitigation} + \text{Degree to which the impact can be reversed})$$

The criteria are defined as follows:

- **Duration** – Refers to timeframe of the impact (how long will it last)
- **Probability** – Refers to the likeliness (chance) of the event occurring
- **Extent** – Refers to the scale of the impact in case the aspect results into impact (how far will the impact reach)
- **Severity** – Refers to the degree to which the impacts can change the environment
- **Mitigation** – Refers to a control that can be implemented to reduce the significance of an environmental impact
- **Degree to which the impact can be reversed** – refers to the chance that the impact can be reversed by applying mitigation measures

A risk rating value is assigned accordingly as follows:

Table 8: Marks Awarded for Duration

Duration	Guidelines	Value
Permanent	Permanent	10
Long term	As long as the facility is in operation	7
Medium term	5-10 years	5
Short term	0-4 years	3

Table 9: Marks Awarded for Probability

Probability	Guidelines	Value
Definite	Where the impact will occur regardless of any prevention measures	10
Highly probable	Impact is likely to occur 11 – 15 times per year where it is most likely that the impact will occur (>70% and <90% sure)	8
Probable	It is probable that the impact will occur 5 to 10 times per year where there is a distinct possibility that the impact will occur (>40% and < 70% sure);	6
Improbable	Impact occurs very rarely (less than 5 times) throughout the year where the possibility of the impact to materialise is very low, either because of design or historic experience (<40% sure)	3
Imposable	No risk	0

Table 10: Marks Awarded for Extent

Extent	Guidelines	Value
International	Causes international impacts	10
National	Where the impact would have an impact on a national scale	9
Regional	Where the impact would extend to the region (municipal boundaries);	7
Local	Where the impact would be limited to the site and its immediate surroundings;	5
Immediate	Extending only as far as the activity	3

Table 11: Marks Awarded for Severity

Severity	Guidelines	Value
Highly significant	Causes irreparable damage	20
Severe	Where natural or social functions or processes are altered to the extent that they will temporarily or permanently cease.	15
Major	Where the affected environment is altered but natural and social functions and processes continue albeit in a modified way;	10
Minor	Where the impact affects the environment in such a way that the natural and social functions and processes are affected in an insignificant manner. The impact is of low order and therefore likely to have little real effect	5

Table 12: Marks awarded for Mitigation

Mitigation	Guidelines	Value
Engineering controls	An engineering control such as bund walls or lock out valves to control the activity	-10%
Administrative	Procedure or work instruction that guides or manage the activity	- 5%
Degree to which the impact can be reversed	Guidelines	Value
High	The impact can be reversed easily by applying little effort	- 8%
Medium	The impact can be reversed by applying effective mitigation measures	- 6%
Low	The chance of revering the impact is low and is not likely. However, by applying extensive measures the impact can be reversed	- 4%
None	Cannot be reversed	- 0%

Any potential impact with a Risk Rating (SR) above “**medium risk**” must be assigned a mitigation measure to mitigate impact. In this case, most of the impacts have been determined as a low or medium impact, mitigation measures were however still assigned from a responsible corporate citizen and precautionary approach principal.

The mitigation described in the Environmental Management Programme (EMPr) document will represent the full range of plausible and pragmatic measures but does not necessarily imply that they all should or will be implemented. The decision as to which mitigation measures to implement lies with the applicant and ultimately with the relevant competent authority.

10.2. Specialist Studies

This section will provide a summary of the specialist studies that will be undertaken as part of the EA application and EIA process. The findings of the specialist studies will provide input to the EIA and EMPr and will be included in the Environmental Impact Assessment Report (EIR).

10.3. Air Quality Impact Report

Specialist: Lethabo Air Quality Specialists

According to Section 22 of NEM:AQA, all activities listed by Section 21 require an Atmospheric Emissions License (AEL). The licensing authority is required to consider the likely impacts caused by pollutants emitted by the processes associated with the activity applied for and the effect of that pollution on the environment, including ambient air quality. As such, an atmospheric impact assessment has been undertaken in support of the EIA and AEL application process.

The study will assess the potential impacts to ambient air quality associated with proposed site activities using a Level 2 dispersion modelling assessment. Impacts to ambient air quality for process relevant pollutants, namely Particulate Matter and Ammonia will be simulated.

The scope of work and summary is provided below;

Scope of work:

The scope of work for the AIR is summarised as follows:

The Department of Environmental Affairs homogenised dispersion modelling in South Africa by publishing "Regulations Regarding Air Dispersion Modelling" in Government Notice GN R.533 on 11

July 2014 (GN R.533). Throughout this report mention is made of compliance with this set of Regulations.

The dispersion modelling study was carried out with EnviMan, a GIS-based emissions management software suite produced by Narsil AB in Sweden. The dispersion modelling component of the suite consists of the following four modules:

- evMapper: A map manipulation tool
- evEmissioner: An extensive, relational emissions data base
- evMet: A meteorological data management program
- evPlanner: The actual dispersion model

Refer to **Annexure E** for a copy of the AQIR.

10.4. Potential Environmental Aspects and Impacts Associated with the planned cold pressed pelletizing plant

The following environmental impacts associated with the proposed development and operation of a Zinc Dust Cold Pressed Pelletizing Plant have been identified and will further be assessed during the impact assessment phase and mitigation measures will be developed to manage the impacts.

Table 13: Environmental Aspects

Environmental aspects associated with the proposed activities	Potential Environmental Impacts
• Air quality and emissions	• Air pollution and nuisance conditions
• Noise generation	• Indirect emissions from electricity generation
• Surface vibrations	• Nuisance conditions to nearby communities • Environmental pollution
• Waste management	• Environmental pollution • Pollution of water resources and soil
• Increase in traffic volumes and potential congestion	• Traffic impacts
• Creation of employment opportunities • Support local economic development	• Socio economic benefits
• Resource consumption	• Water and electricity usage
• Water consumption and use	• Potential soil and or stormwater contamination
• Electricity consumption and use	
• Hydraulic and hydrocarbon handling and storage	

10.5. Proposed mitigation measures to be applied

The following mitigation measures are proposed to manage the proposed expansion and operational activities associated with the Zinc Dust Cold Pressed Pelletising Plant in order to prevent and mitigate potential environmental impacts:

- Compliance with the AEL requirements,
- Implement strict housekeeping measures,
- Develop and implement relevant operational procedures based on the content of the AEL, EMPr, WML and associated legislation,
- Implement appropriate spill response procedures
- Waste (general and hazardous) must be correctly managed to prevent nuisance conditions or environmental pollution.

Please note that the abovementioned mitigation measures are preliminary, and a comprehensive Environmental Management Programme (EMPr) will be generated. The draft EMPr will contain details of the aspects, impacts and proposed mitigation measures to manage the proposed activities. A copy of the EMPr will be included in the EIR for approval by the competent authority.

10.6. Residual impact ratings after mitigation measures have been applied

The proposed mitigation measures will reduce the significance of the potential environmental impacts associated with the activities. Therefore, the residual risk will be lower after mitigation measures have been applied.

11. PUBLIC PARTICIPATION PROCESS AND GOVERNMENT CONSULTATION

A comprehensive public consultation process was undertaken in terms of Section 41 of NEMA to inform the I&APs of the proposed activity and to allow them to raise any concerns or give comments regarding the application. This section will elaborate on the methods that will be used to inform potential I&APs of the project. Comments and concerns raised during the public participation process will be summarised in a comments and response report which will be included in the Final Scoping Report.

11.1. Public participation

The following processes will be followed to inform the public of the proposed project:

11.2. Placement of a legal advertisement

An advertisement will be placed in two (2) local newspapers circulated in the Sebokeng area in order to notify the potential I&APs of the proposed project and to inform them of the availability of the Draft Scoping Report for comment.

A notice will be placed in The Citizen Newspaper as well as the Sebokeng Star. Records of placement will be included in the Final Scoping Report.

11.3. Written notices:

Written notices informing identified I&APs of the application process and availability of the Draft Scoping Report for review and comment will be distributed by means of the following methods:

- E-mails,
- Registered post, and
- Hand deliveries.

A Basic Information Document (BID) will also be distributed to all identified I&APs along with the written notice.

Copies and records of distribution will be included in the Final Scoping Report.

11.4. Site notice

A site notice will be designed and displayed at the entrance of the proposed site selected for the proposed activity. Photographic proof of the notice will be included in the Final Scoping Report.

11.5. Public meeting

No public meeting is currently planned, however should formal requests be received during the public participation process such a meeting may be arranged and undertaken.

11.6. Circulation of the Draft Scoping Report for Comment

The Draft scoping Report will made available for review at the following locations:

Hard copy: Security Office
Holding 13, Waterdal AH, Sebokeng, 1983 Gauteng /
Corner of Main and 5th Streets, Waterdal AH, Sebokeng

Electronic copy: www.zantow.co.za (for download)
info@zantow.co.za (on request)

The relevant Departments will be provided with a copy of the Draft Scoping Report. Proof of distribution of the Draft Scoping Report will be included in the Final Scoping Report.

11.7. Engagement with Government Departments

A copy of the Draft Scoping Report will be provided to the Department of Environment Forestry and Fisheries as the Competent Authority and proof of submission and following communications and or comments included in the Final Scoping Report.

In addition, copies of the Draft Scoping Report will also be submitted to the Gauteng Department of Agriculture, Rural Development and the Environment (GDARDE) and Emfuleni Local Municipality for review and comment as commenting authorities. Proof of submission and following communications and or comments included in the Final Scoping Report.

11.8. Register of I&APs

A detailed register of potential I&APs will be developed and maintained throughout the EIA process. A summary of I&APs identified and engaged with during the EIA process will be included in the Final Scoping Report.

12. DECLARATION OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, Karien Zantow as a registered EAP compiled this report and declare that it correctly reflects the findings made. I further declare that I,

- Act as the Independent Environmental Practitioners who were responsible for the compiling of this Scoping Report,
- Conducted all work relating to this report in an objective manner even when this results in views and findings that is not favourable to the applicant,
- Declare that there are no circumstances that may compromise our objectivity in performing such work,
- Have the necessary expertise in conducting environmental impact assessments, including knowledge of the act, regulations and any other guidelines that have relevance to the activity,
- Will comply with the Act, regulations and all other applicable legislation,
- Will take into account, to the extent possible, the matters listed in the EIA regulations as published in Government Notice R982 as well as other legislation,
- Have no, and will not engage in, conflicting interests in the undertaking of the activity,
- Undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing,
 - any decision to be taken with respect to the application by the competent authority; and,
 - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority,
- Will ensure that the comments of all interested and affected parties have been considered and are recorded in this report that is submitted to the competent authority in respect of the application,
- Have kept a register of all interested and affected parties that participated in the public participation process,
- Have provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not,
- Declare that all the particulars furnished by me in this report are true and correct,
- Declare that no information provided to the Department was at no stage influenced by the applicant and that we as the appointed Environmental Assessment Practitioners have explained the potential consequences of submitting this application,
- Will perform all other obligations as expected from an EAP in terms of the Regulations; and
- Realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.



Karien Zantow
Environnemental Consultant
SACNASP Reg Nr 400114/14
EAPASA Reg 2019/1871

13. CONCLUSION

Nova Resources South Africa (Pty) Ltd (Nova Resources) is a newly established company which currently leases a property located at Holding 13, Waterdal AH, Sebokeng, 1983 Gauteng (Corner of Main and 5th Streets, Waterdal AH, Sebokeng) which falls within the jurisdiction of the Emfuleni Metropolitan Municipality as well as the Sedibeng District Municipality.

Nova Resources intends to establish a waste recovery, recycling and treatment facility. The aim is to establish a combined facility which would be able to store and trade approximately 5 000 tons per month of steel waste and or scrap metal as well as mill scale which is produced by local steel and foundry industries. In addition, Nova Resources intends to also accept shredder fluff (classified as general waste) for storage, sorting and screening to remove and separate fractions of Aluminium, Copper, Cables, Plastic, PVC and Rubber which can then be sold to local recyclers for re-use or recycling. It is anticipated that the sorting and screening activities will not exceed 3 000 tons per month.

In addition to the storage, sorting and screening activities, Nova Resources also propose to undertake the cold pelletizing of Electric Arc Furnace Dust (EAF Dust), also referred to as Zinc Dust for sale to external parties for further processing.

Cold pressed pelletizing involves low temperature consolidation, which does not alter the chemical properties of raw materials (in this case Zinc Dust). The process is safe and reliable, and the resulting pellets retain good reducibility characteristics. In metallurgical production, this can reduce raw material costs and improve productivity.

The aim is to install a pelletizing plant consisting of a mixer and a pelletizing press and associated conveyors. All equipment and waste related activities would be located within an existing warehouse located on Holding 13 of Waterdal AH. Zinc Dust, packaged in bulk bags would be transported from local steel manufacturers and industries and transport to the Nova Resources facility via truck. Upon arrival, the load would be inspected and offloaded using a forklift or front-end loader. Once offloaded the material would be manually fed into a mixer where a mixture of water (5%) and a binding material (cornstarch) will be added. Once the mixture reaches the desired consistency the mixer will feed the material to the cold press where the material will be shaped into pellets. The formed pellets will then be conveyed and transferred to a storage container for temporary storage before being loaded and shipped to external parties for further processing.

No heat will be required during the process. The Zinc dust will not be subject to any additional treatment other than mixing with a binder (cornstarch) and water for pelletizing. The chemical properties of the Zinc dust will not be altered in any way.

The design capacity of the planned pelletizing plant will be approximately 5 000 tons per month. Water used in the process will be reliant on municipal supply. Due to the design and input materials to be used, no waste will be generated. Spilled material along with rejected pellets will be recycled back into the process and recycled internally. No effluent or runoff water is anticipated as only enough water would be used in the process to dampen the mixture.

In terms of the need and desirability of the proposed activity, it is clear that a need exists for the reduction of waste in the Gauteng province whilst also supporting job creation and sustainable economic growth. As such the local municipality is in progress of rejuvenating the manufacturing industry in the area which alone provides majority of employment opportunities to surrounding communities. The proposed waste management facility will not only provide additional employment opportunities but also provide and support sustainable development by recovering and recycling waste which would have ended up at landfill. Recycling and recovery of waste has not only proven to be beneficial in terms of environmental impacts due to the reduction of waste but also shown to support

local manufacturing industries by providing re-usable and recycled raw materials at a reasonable cost that can be used for the production of products and materials that all can use.

The property where the proposed facility is to be established is located near local industries such as Cape Gate and ArcelorMittal who would be some of the main suppliers of materials to be accepted, stored and processed by Nova Resources. In addition, the site is also located close to existing roadways equipped to support transport of larger loads both to and from the site. In addition, the selected property is already equipped with enough space and the required infrastructure to support the planned activities. The need to develop virgin land and vegetation removal would also be eliminated. Municipal supply of both water and electricity would be sufficient to support the planned operations so no additional energy or water sources would need to be developed or established.

The proposed site, located on Holding 13 of Waterdal, Sebokeng has therefore been identified as the preferred alternative for the planned operation. In addition, several technologies and operational processes were considered for the planned pelletizing plant. Upon conclusion it was found that the proposed cold pressed pelletizing plant would be the most economic and sustainable option in comparison with a heat-based process. Cold pressed pelletizing eliminates the need for combustion and exhaust emissions. The process itself also utilises only 8% of water, thus limiting water intake and use. Lastly, since the product (Zinc Dust) is mixed with only water and a non-chemical binder (cornstarch) any spilled material or rejected pellets can be recycled internally, limiting waste generation.

Should the application be rejected, there will be no opportunity to reduce waste to landfill or to establish a new foundry that may employ more people. The disposal of waste will decrease the available airspace for landfill disposal and additional land will be transformed eventually to accommodate increased disposal rates. Disposal of waste is seen as the least favourable option in terms of the National Waste Management Strategy (NWMS) and NEM:WA. Therefore, the disposal of waste to landfill is not seen as a favourable option compared to the recovery of waste at the proposed facility. Moreover, the socio-economic benefits associated with the expansion project will be negated if the activities do not proceed.

The draft Scoping Report will be made available for comment to stakeholders on the 2nd August 2024 for 30 days. Once the Public Participation Process in support of the Scoping Phase of this application has concluded, a Final Scoping Report will be compiled, and all comments and responses included before submission to the Competent Authority for consideration.

14. REFERENCES

Emfuleni Local Municipality Spatial Development Framework 2017/20221

Department of Environmental Affairs and Tourism. 2005. Environmental Reporting: Integrated Environmental Management Information Series 17. Volume 3. Pretoria.

National Environmental Management Act (No. 107 of 1998). Government Gazette. South Africa, Cape Town.

National Water Act (No. 36 of 1998) Government Gazette. South Africa, Cape Town.

South African Waste Information System. Department of Environmental Affairs.

<http://sawic.environment.gov.za/>

National Environmental Management Waste Act (No. 59 of 2008). Government Gazette. South Africa, Cape Town.

National Environmental Management Act (No. 107 of 1998): Gauteng Provincial Environmental Management Framework Standard, Government Gazette 164

The Vegetation of South Africa, Lesotho and Swaziland, Ladislav Mucina and M. C. Rutherford, 2006

Annexure A

Content of Scoping Report Compared to GNR 982

Content of the scoping report in terms of Appendix 2 of the EIA regulations	
Requirement for the scoping report (Appendix 2 of GNR 982)	Page of scoping with information
(a) details of- (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	Section 2.2 (19) Section 2.4 (20) & Annexure B
(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;	Section 3.2 (P21) Section 3.3 (P21) Section 3.2 (P21)
(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;	Section 3 (P21)
(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;	Section 1.1 (P13) & Section 5 (P41) Section 5 (P27-38) Section 1 (P13) & Section 4 (24)
(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;	Section 5 (P27-38)
(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;	Section 6. (P39)
a full description of the process followed to reach the proposed preferred activity, site and location within the site, including -	Section 6. (P39)
(i) details of all the alternatives considered;	Section 7 (P41)

Content of the scoping report in terms of Appendix 2 of the EIA regulations	
Requirement for the scoping report (Appendix 2 of GNR 982)	Page of scoping with information
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 11 (P56 – P57)
(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;	Section 11 (P56 – P57)
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 6 (P39)) Section 8 (P45)
(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the 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;	Section 10 (P52)
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Section 10.1 (P52)
(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;	Section 10.5 (P64)
(viii) the possible mitigation measures that could be applied and level of residual risk;	Section 10.5 & Section 10.6 (P55 – P66)
(ix) the outcome of the site selection matrix;	Section 10.6 (P56)
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and	Section 7 (41)
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Section 7.6 (P43)
(i) a plan of study for undertaking the environmental impact assessment process to be undertaken, including-	Section 10 (P52)

Content of the scoping report in terms of Appendix 2 of the EIA regulations	
Requirement for the scoping report (Appendix 2 of GNR 982)	Page of scoping with information
(a) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	Section 7 (41)
(b) a description of the aspects to be assessed as part of the environmental impact assessment process;	Section 10 (P52)
(c) aspects to be assessed by specialists;	Section 10.2 (P52)
(d) a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;	Section 10 (P52)
(e) a description of the proposed method of assessing duration and significance;	Section 10.1 (P52)
(f) an indication of the stages at which the competent authority will be consulted;	Section 11.10 (P74)
(g) particulars of the public participation process that will be conducted during the environmental impact assessment process; and	Section 11.8 (P74)
(h) a description of the tasks that will be undertaken as part of the environmental impact assessment process;	Section 9 (P51)
(i) 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.	Section 10.1 (P52)
j) an undertaking under oath or affirmation by the EAP in relation to-	Section 12 (P58)
(a) the correctness of the information provided in the report;	
(b) the inclusion of comments and inputs from stakeholders and interested and affected parties; and	
(c) 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;	
(k) an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected	

Content of the scoping report in terms of Appendix 2 of the EIA regulations

Requirement for the scoping report (Appendix 2 of GNR 982)	Page of scoping with information
parties on the plan of study for undertaking the environmental impact assessment;	
(l) where applicable, any specific information required by the competent authority; and	Noted
(m) any other matter required in terms of section 24(4)(a) and (b) of the Act.	Noted

Annexure B
EAP Curriculum Vitae
&
EAPASA Registration



KARIEN ZANTOW

INTRODUCTION

Karien Zantow has more than 20 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment. Karien is the founding member of Zantow Environmental Consulting Services, who specialises in management of environmental projects and offers services in the preparation of a range of strategies to manage development and mitigation of potential impacts of any development or activities. Years of experience in the manufacturing industry and construction sector enables her to have a balanced approach to environmental management, with a commercial and sustainable perspective. Vast experience has been gained in the determination and improvement of legal compliance status and the development of prioritized and realistic action plans to achieve compliance. License and or environmental authorization applications can be concluded efficiently and cost effectively.

FIELDS OF EXPERTISE

Environmental Compliance Management

Air Quality Management

Water Management

Licensing, EIA's and permitting

Public Participation and Engagement

Legal Compliance Audits

Waste Management

Land Management & Remediation

Monitoring and Reporting

REGISTRATIONS / AFFILIATIONS

Registered Professional Natural Scientist with the South African Council for Natural Science as Environmental Science (Reg Nr 400114/14)

EDUCATION

BSc (Agric) Animal Sciences, Pretoria University

BSc (Hons) Environmental Engineering, Pretoria University

Post graduate Studies, Environmental Sciences, WITS University



KARIEN ZANTOW

PROFESSIONAL CAREER

2012 - Current

Zantow Environmental Consulting Services, MD

Karien is the founding member and has taken the position of Managing Director.

2006 -2012

ArcelorMittal South Africa Vanderbijlpark Works Environmental Manager

After one year Karien was promoted from Environmental Engineer to the Environmental Manager at ArcelorMittal Vanderbijlpark Works. The functions included the management of a 10 staff compliment department responsible for all environmental compliance and management functions.

She served on the Management Structure of Vanderbijlpark Works and was responsible to advise Top Management on strategic Environmental Management trends, changing legislation and ensuring legal compliance and highlight risks and provide solutions. She was responsible to drive the works to environmental compliance and ensure continued

improvement of the environmental footprint. This included the planning, prioritisation and funds management of the various environmental requirements. Under her management period remediation of various legacy issues commenced and was completed. This included the remediation of a waste disposal site and various contaminated land and dams, both organic and inorganic on a large scale. All functions related to waste, water and air quality management, from monitoring to licensing fell under her responsibility.

2004 -2006

Sappi Kraft Ngodwana

Environmental Engineer

As environmental engineer at Sappi, Karien was responsible for all aspects of environmental management in the industrial facility. This included but is not limited to the maintenance of the ISO 14001 Certification, monitoring of the plant environmental systems and operation to maintain compliance with environmental permits and other environmental requirements. This required the technical support and guidance to all levels of employees including top management. She was also the owner of all new environmental projects (example establishment of the continuous air emissions monitoring system,



KARIEN ZANTOW

ambient air quality monitoring station, waste minimisation, invader plant eradication and recycling initiatives). A key function was to manage and remediate the soil on the effluent irrigation pastures and develop and implement odour reduction strategies. This function further included the development of environmental procedures, reporting and recordkeeping. Experience was also gained in the development of the IWWMP and the Water Use License application and the associated Reserve Determination. Waste management functions included the day to day waste management and disposal practices, waste minimisation projects as well as the landfill extension project. Karien was responsible for the entire legal compliance program, public communication, and governmental liaison.

2002 -2004

Teaching Business - Subcontracted to Barlow World Junior Business and Environmental Analyst

Specifically focussing on the sustainability and impacts from the suppliers of Barlow world. Within the consulting firm, her responsibilities included the assessment and auditing of the suppliers. The duties and responsibilities included conducting in-situ assessment of their suppliers and conduct a sustainability profile of their business, assess and advice on implementing Black Economic Empowerment, as well as auditing the environmental, health and safety policies and procedures of the suppliers.

FIELDS OF COMPETENCE

National Environmental Management Act, National Environmental Management: Air Quality Act National Environmental Management: Waste Act, Environmental Conservation Act, 1998 National Water Act, 1998 Gas Act and regulations NEMA EIA regulations and EMF; Promotion to Access of Information Act; Applicable SANS standards Applicable Regulations

KEY EXPERIENCE

- Training and Awareness

Numerous training courses have been prepared and presented to customers, mainly in the mining and industrial sectors. The courses and lectures included all aspects on Environmental Management, ISO 14001, EMPr, Waste Management and Water Management. Some courses also addressed environmental legislation and liability for employees and directors. Training material has also been developed and provided to customers to be used as awareness training material.



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- Environmental Compliance and System Audits

Numerous environmental compliance audits have been conducted for facilities on existing environmental authorisations, permits or licenses. These are geared to determine compliance levels against the relevant conditions. Audits have been conducted on Water Use Licenses, Atmospheric Emission Licences, Waste Management Licenses, ECA and NEMA Authorisations and Permits and Discharge Permits as well as performance audits to EMPr's. Clients include but are not limited to:

Water Use License Audits	ArcelorMittal SA AfriSam Aquarella Investments
Waste Management License Audits	Bumatech Cape Gate Columbus Stainless Danone
Norms and Standards Audits	DMS Powders Eco Energy Infrabuild Cement Isanti Glass
Atmospheric Emission License Audits	Intocast Quarries JJ Martiz & Son Mines Metso Minerals Nampak Glass
Environmental Authorisation Audits	National Ceramic Industries Nafasi Water Norcross
Environmental Management Programme Audits	Palabora Mining Company Pinnacle Metals Rockfibre SA Saldanha Steel
Legal Compliance Audits	Vaal Sanitaryware / Lixil Africa Universal Oil Solutions Universal Recycling Company

- Environmental Impact Assessments

Numerous Environmental Impact Assessments has been completed for various customers for various projects. A few is listed below:

- Adient – Automotive Foam Plant and AEL
- AfriSam Roodepoort – Waste Disposal Site Decommissioning (Basic Assessment)



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- ArcelorMittal – Conversion of Galvanising Line, Waste Disposal Site Decommissioning
- ArcelorMittal – Proposed Waste Site Expansion (Full Scoping)
- Aveng Infraset – Closure of Quarry (Basic Assessment)
- Aveng Duraset (S24G and S22A Rectification Environmental Impact Assessment)
- Bumatech – Expansion of Waste processing site (Basic Assessment)
- Bright Refining (S24G and S22A Rectification Environmental Impact Assessment)
- Cape Gate – Abstraction of Water (Water Use License Application)
- Columbus Stainless – Proposed Dangerous Goods Storage (Basic Assessment)
- Canyon Coal – Proposed Coal Siding Project (Basic Assessment)
- Danone (Water Use License)
- Eco Energy – Decommissioning of Waste Processing Site (Basic Assessment / Waste License)
- Eco Energy – Proposed new Waste Processing Site (Basic Assessment / Waste License)
- Eco Energy – Section 24 G Rectification Environmental Impact Assessment)
- Flexilube SA – Expansion and modifications (Basic Assessment, Amendments)
- Goldplat Recovery - S22A Rectification Environmental Impact Assessment
- Intocast Quarries – EMPr Amendment and Waste License (Full Scoping)
- Retromin Refractories – Refractory brick processing plant (Basic Assessment / Waste License)
- Metso Minerals – Foundry Decommissioning Basic Assessment, Transfer Application
- National Ceramics – Gryphon (Water Use License), Gryphon (EA, AEL)
- National Ceramics – Gryphon (Water Use License), Gryphon (EA, AEL)
- National Ceramics – Pegasus (Atmospheric Emissions License (AEL) and Full Scoping EIA)
- Pinnacle Metals – Non Ferrous Recycling and Smelting plant (AEL and Full Scoping EIA)
- Reclite SA – Expansion of the Electronic and Electrical Waste processing facility
- SA Tank Terminals – Waste Treatment facility (AEL and Full Scoping EIA)

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- Terra Nova Meyerton – Section 22 A rectification AEL and Impact Report
- Terra Nova Vanderbijlpark – Ceramic Crucible Plant (AEL and Full Scoping EIA)
- Universal Oil Solutions – Oil Recycling Facility (Full Scoping / Waste License)
- Universal Recycling Company – Ferrous Yard Scrap Recycling (Basic Assessment)
- Universal Recycling Company – Non Ferrous Yard Scrap Recycling (Full Scoping)
- Waterberg Diesel Storage Facility (Basic Assessment)
- VIP Recycling (S24 G / Impact Report)
- SA Superslag (S24 G / Impact Report)

- Environmental Control Officer Functions

Various of our customers does not have dedicated environmental resources on their premises and therefore require regular interaction and assistance in maintaining their legal compliance to the various license conditions or duty of care requirements. To this effect, a customised solution is recommended and agreed with the customer. Listed below is some of the customers that we assist on a regular basis;

- | | |
|-------------------------------|-------------------|
| - National Ceramic Industries | - Pinnacle Metals |
| - Rockfibre SA | - UOS |
| - Knights Foundry | - Eco Energy |
| - Intocast Quarries | - Retromin |

- Site Assessments, Remediation Plans and ARPs

- | | |
|------------------------|----------------------------|
| - Nampak | - Lixil Krugersdorp |
| - Aquarella Investment | - JJ Maritz and Son Mining |
| - Intocast Quarries | - Cape Gate |
| - Vaal Santiwareware | - Delmore Extension |
| - Cobra Watertech | - New Way Power |



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FIELDS OF EXPERTISE

General

- Legal compliance audits
- Monitoring and Reporting programs
- Training
- Environmental Control Officer functions
- Environmental Monitoring and Auditing
- Annual Remediation Plans

Environmental Authorisation Applications

- Environmental Impact Assessment
- Environmental Management Plans
- Water Use License Application
- Waste License Applications
- Atmospheric Emission License applications
- Rectification Applications

Waste

- Waste Classification
- Integrated Waste Management Plans
- Waste Minimization Planning and implementation
- Waste Disposal Site Management and operational Plans
- Waste disposal site closure and remediation plans

Land Management

- Site Characterization



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- Remediation Plans
- License and authorization application

Air Quality

- Compilations and Verification of Emissions Inventory
- Emission Reduction Strategies
- NAEIS Reports, Annual Reports
- Compliance Inspections and Audits
- Postponement Applications and Amendments
- Monitoring In Accordance with New Emission Limits Standards Requirements

Water

- Water License Applications
- Integrated Waste and Water Management Plans (IWWMP)
- Storm Water Management Plans
- Water balances
- Borehole monitoring
- Surface water monitoring
- Data management and reporting



University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae Agriculturae with specialisation in Animal Science

with all the associated rights and privileges
was conferred on

KARIEN DE WET

in terms of the Higher Education Act, 1997 and
the Statute of the University


On behalf of the Council and Senate
(Sgd) CWI Pistorius
Vice-Chancellor and Principal

On behalf of the Faculty of
Natural and Agricultural Sciences
(Sgd) RM Crewe
Dean

(Sgd) NJ Grové
Registrar

Date of Conferment
15 April 2003

Certified a true translation of the original Certificate


Registrar

Signed at Pretoria on the twenty-first day of February, 2013



University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae Honores with specialisation in Environmental Technology

with all the associated rights and privileges
was conferred on

KARIEN DE WET

in terms of the Higher Education Act, 1997 and
the Statute of the University


On behalf of the Council and Senate
(Sgd) CWI Pistorius
Vice-Chancellor and Principal

On behalf of the Faculty of Engineering,
Built Environment and Information Technology
(Sgd) RF Sandenbergh
Dean

(Sgd) NJ Grové
Registrar

Date of Conferment
22 April 2004

Certified a true translation of the original Certificate


Registrar

Signed at Pretoria on the twenty-first day of February, 2013



herewith certifies that

Karien Zantow

Registration Number: 400114/14

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **12 March 2014**

Expires **31 March 2025**



A handwritten signature in black ink, appearing to read 'S. Neph'.

Chairperson

A handwritten signature in black ink, appearing to read 'N. S. S. S.'.

Chief Executive Officer



**Environmental Assessment
Practitioners Association
of South Africa**



Registration No. 2019/1871

Herewith certifies that

Karien Zantow

is registered as an

Environmental Assessment Practitioner

***Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as
amended).***

Effective: 01 March 2024

Expires: 28 February 2025

Chairperson

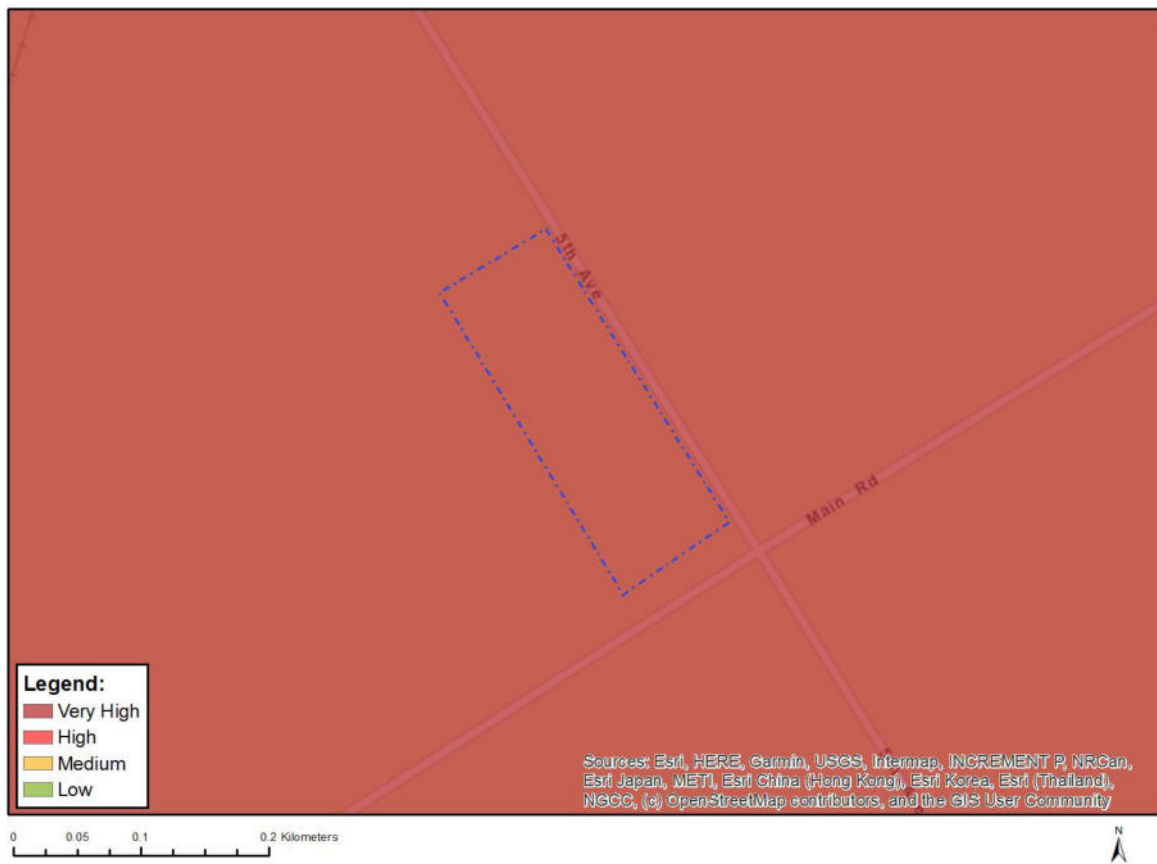
Registrar



Annexure C

Screening Tool Report

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	VU_Soweto Highveld Grassland

Annexure D

Site Sensitivity Verification Report

**ENVIRONMENTAL SITE SENSITIVITY VERIFICATION IN TERMS OF
THE NEMA EIA REGULATIONS AND APPLICATION FOR A WASTE
MANGEMENT LICENSE FOR THE PROPOSED FERROUS AND NON-
FERROUS WASTE PROCESSING FACILITY FOR NOVA
RESOURCES**



Report date: 26th July 2024
Report No: 3326-ZANNOV-2024

General Information	
Report Name:	Environmental Site Sensitivity Verification Report in Support of the Application for a Waste Management License for Nova Resources.
Site Verification Date:	5th April 2024
Report Date:	26th July 2024
Environmental Consultant	<p>Zantow Environmental Consulting Services CC Coliseum Building 1st Floor, Unit 2 Cnr Delius Street & Chopin Street Vanderbijlpark, 1911</p> <p>PO Box 3858 Vanderbijlpark, 1911</p> <p>Contact Person: Karien Zantow Tel: 083 384 3641 Fax: 016 932 4976 Email: karien@zantow.co.za</p>
Client:	<p>Nova Resources South Africa (Pty) Ltd</p> <p>Holding 13, Waterdal AH Sebokeng, 1983</p> <p>Contact Person: Zhang Yong Qiang Tel: 066 007 8022 Email: nova-southafrica@outlook.com</p>
Report Compiled by:	Riette Landsberg
Report Reviewed by:	Karien Zantow
Report Nr:	3326-ZANNOV-2024

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1. INTRODUCTION

1.1. Introduction to the proposed activity

Nova Resources South Africa (Pty) Ltd (Nova Resources) is a newly established company which currently leases a property located at Holding 13, Waterdal AH, Sebokeng, 1983 Gauteng. The site, which falls within the jurisdiction of the Emfuleni Metropolitan Municipality as well as the Sedibeng District Municipality proposes to establish a waste recovery, recycling and treatment facility.

The aim is to establish a combined facility which would be able to store and trade steel scrap metal as well as mill scale which is produced by local steel and foundry industries. In addition, Nova Resources intends to also accept shredder fluff (classified as general waste) for storage, sorting and screening to remove and separate fractions of Aluminum, Copper, Cables, Plastic, PVC and Rubber. The separated materials can then be sold to local recyclers for further re-use or recycling. These activities will be registered under the Norms and Standards.

In addition to the storage, sorting and screening activities, Nova Resources also proposes to undertake the cold pelletizing of Electric Arc Furnace Dust (EAF Dust), also referred to as Zinc Dust for sale to external parties for further processing. The Zinc dust has been classified as hazardous waste.

Cold pressed pelletizing involves low temperature consolidation, which does not alter the chemical properties of raw materials (in this case Zinc Dust) but binds the very fine dust into a pellet or briquette, which is then suitable for handling and remelting by a third party. The process is safe and reliable, and the resulting pellets retain good reducibility characteristics. In metallurgical production, this can reduce raw material costs and improve productivity.

The aim is to install a pelletizing plant consisting of a mixer and a pelletizing press and associated conveyors. All equipment and waste-related activities would be located within an existing warehouse located on Holding 13 of Waterdal AH. The Zinc Dust will be packaged by the generator in bulk bags. The bags will be transported from local steel manufacturers and industries and transport to the Nova Resources facility via trucks. Upon arrival, the load would be inspected and offloaded using a forklift or front-end loader. Once offloaded the material would be manually fed into a mixer where a mixture of water (5%) and a binding material (cornstarch) will be added. Once the mixture reaches the desired consistency the mixer will feed the material to the cold press where the material will be shaped into pellets. The formed pellets will then be conveyed and transferred to a storage container for temporary storage before being loaded and shipped to external parties for further processing.

The maximum design capacity of the planned pelletizing plant will be no more than 5 000 tons per month. Water used in the process will be reliant on municipal supply. Due to the design and input materials to be used, no waste will be generated. Spilled material along with rejected pellets will be recycled back into the process and recycled interlay. No effluent or runoff water is anticipated as only enough water would be used in the process to dampen the mixture.

In terms of the National Environmental Management: Waste Act (No. 59 of 2008) (NEM:WA), waste management activities that are listed in regulations published under NEM:WA may not be undertaken without a Waste Management License (WML). The listed activities for which a WML is required are contained in Government Notice (GN) 921. Category A activities require a WML, and a Basic Impact Assessment (BA) process must be conducted, and Category B activities require a WML, and a full Scoping and Environmental Impact Assessment (EIA) process must be conducted.

After consideration, it was determined that the proposed waste management activities to be implemented by Nova Resources will trigger Listed Activity 2, 3, 4 and 10 of Category B of GN 921. An

application for a Waste Management License, supported by a Full Scoping Environmental Impact Assessment Process is therefore underway.

1.2. Purpose of this Report

On the 20th of March 2020, the Department of Forestry, Fisheries and the Environment (DFFE) published procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of section 25(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for an Environmental Authorisations. These regulations requires that an applicant must conduct an environmental sensitivity assessment of the site by utilising the Departments national web based environmental screening tool.

When environmental sensitivities are identified for the site by utilising the screening tool, the Environmental Assessment Practitioner (EAP) must conduct a site sensitivity verification to confirm or dispute the current use of the land as well as the environmental sensitivity as identified by the screening tool.

The outcome of the site verification must be presented in the form of a report and contain the minimum requirements as set out in GN No. 320.

The aim of the Environmental Site Sensitivity Verification Report is to:

- Verify land use and theme sensitivities as identified by the DFFE Screening Tool;
- Confirm or disconfirm the need for a particular specialist assessment(s) as indicated by the DFFE Screening Tool; and
- Should the need for a specialist assessment be challenged, provide a motivation as to why the proposed a particular theme(s) is not applicable to the proposed development.

1.3. Expertise of the EAP conducting the site verification

Zantow Environmental Consulting Services has been appointed by the Nova Resources to facilitate the process for the Checklist of the Applicability of the NEMA EIA regulations for the proposed waste management activities located within the Nova Resources facility.

The following is a description of the EAP's expertise:

➤ **Karien Zantow**

Karien Zantow obtained her degree from the University of Pretoria in BSc (Agric) Animal Science. The main subjects were Physiology, Nutrition, Ecology, Biochemistry, Toxicology, Plant production, Soil Science and Pasture Science. This degree provided her with a sound base and understanding of the environment.

Karien extended her knowledge in the environmental sciences by completing the BSc (Hons) Environmental Technology at the University of Pretoria. The honours degree presented by the Chemical engineering department addressed Environmental management that included South African environmental legislation, ISO 14001, Environmental impact assessments, Life cycle assessment, auditing and public participation. As well as the three specialized fields of study: Water (wastewater treatment and design), air (abatement equipment) and solid/hazardous waste management. She also completed a Post Graduate diploma in Environmental Sciences at the University of Witwatersrand which focussed on Environmental Law, Environmental Chemistry, Air quality and Energy, Waste and Wastewater management and Environmental Impact Assessments.

Karien Zantow has more than 15 years of environmental experience in the construction, mining and industrial sectors working within the legislative environment.

- Teaching Business, subcontracted to Barlow World
- Sappi Kraft Ngodwana– As environmental engineer
- ArcelorMittal South Africa Vanderbijlpark Works
- Zantow Environmental Consulting Services

During her career she has been involved with many large-scale site characterisation and remediation projects from the conceptual phase to implementation. Other projects include a variety of Waste Management Licences, Atmospheric Emissions Licences, other EIA's and Environmental Audits. Moreover, emission sampling and reporting forms a core component of Karien's scope of work.

Karien is a registered Natural Science Professional with the South African Council for Natural Scientific Professions (Reg Nr 400114/14) as well as a Registered EAP (Reg Nr 2019/1871).

➤ **Riette Landsberg**

Riette Landsberg obtained her B.Sc. degree from the North West University (Potchefstroom Campus) with main focus in Botany and Zoology in 2012. This degree provided her with a sound base and understanding of the environment. Riette then went on to complete her honours degree in Zoology with the main focus on water ecology at the North West University in 2013. The honours degree presented by the environmental science department addressed aspects of environmental management, an introduction to South African environmental legislation including ISO 14001, life cycle assessment and impact assessments. Riette has also attended various short courses on numerous subjects, including ISO 17025:2015 implementation, auditing, environmental legislation, financial provisions, waste management, environmental control, risk assessment, compliance assessment and implementation etc.

Riette was appointed by Zantow Environmental Consulting Services in 2013 and has since gained environmental management experience in several sectors including mining, industrial and local government sectors. Her duties entail the planning and execution of projects related to environmental management, and legal compliance audits, Environmental Impact Assessments (EIA), compilation of Environmental Management Programmes, Environmental Risk Assessments, Environmental Management Systems and environmental monitoring.

A handwritten signature in black ink, appearing to read "Karien Zantow".

Karien Zantow
Environmental Consultant
SACNASP Reg Nr 400114/14
EAPASA Reg Nr 2019/1871

A handwritten signature in black ink, appearing to read "Riette Landsberg".

Riette Landsberg
Environmental Consultant

2. SITE SENSITIVITY VERIFICATION

The National web based environmental sensitivity screening tool was utilised in order to identify the potential site sensitivities. The report generated by the screening tool is attached to the report.

The screening tool identified the following sensitivities:

Table 1: Site Sensitivities as identified by the Screening Tool

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Palaeontology Theme		X		
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

In addition to compiling the Screening Tool Report, a site visit was conducted on the 5th April 2024 and in order to verify the current land use and environmental sensitivity of the site. Thereafter a desktop study was undertaken in order to ensure that the environmental site sensitivities identified are applicable.



Figure 1: Screening Tool Report Orientation Map

2.1. Desktop and Specialist Analysis

Using Google Earth Pro, a 3D satellite image of the study area was generated. Using historic data and information as available via Google earth, it was confirmed that the buildings on site have been there prior to the Nova Resources establishment on site.



Figure 2: Google Earth 3D Satellite image of the site – 2024



Figure 3: Google Earth 3D Satellite image of the site – 2022



Figure 4: Google Earth 3D Satellite image of the site – 2020



Figure 5: Google Earth 3D Satellite image of the site – 2018



Photo 3: View of warehouse and surrounding area on site



Photo 4: Site fence and access point



Photo 5: General site view



Photo 6: Site office and general site view

Based on the findings made during the site visit and outcome of the desktop assessment it was confirmed that the site is not used, nor planned to be used for agricultural development or activities.

3.2. Relative Animal Species Theme

The screening tool identifies the area as a **medium** sensitivity towards Animal species (Figure 7 below) due to the potential presence of the Makwassie musk shrew (*Crocidura maquassiensis*).

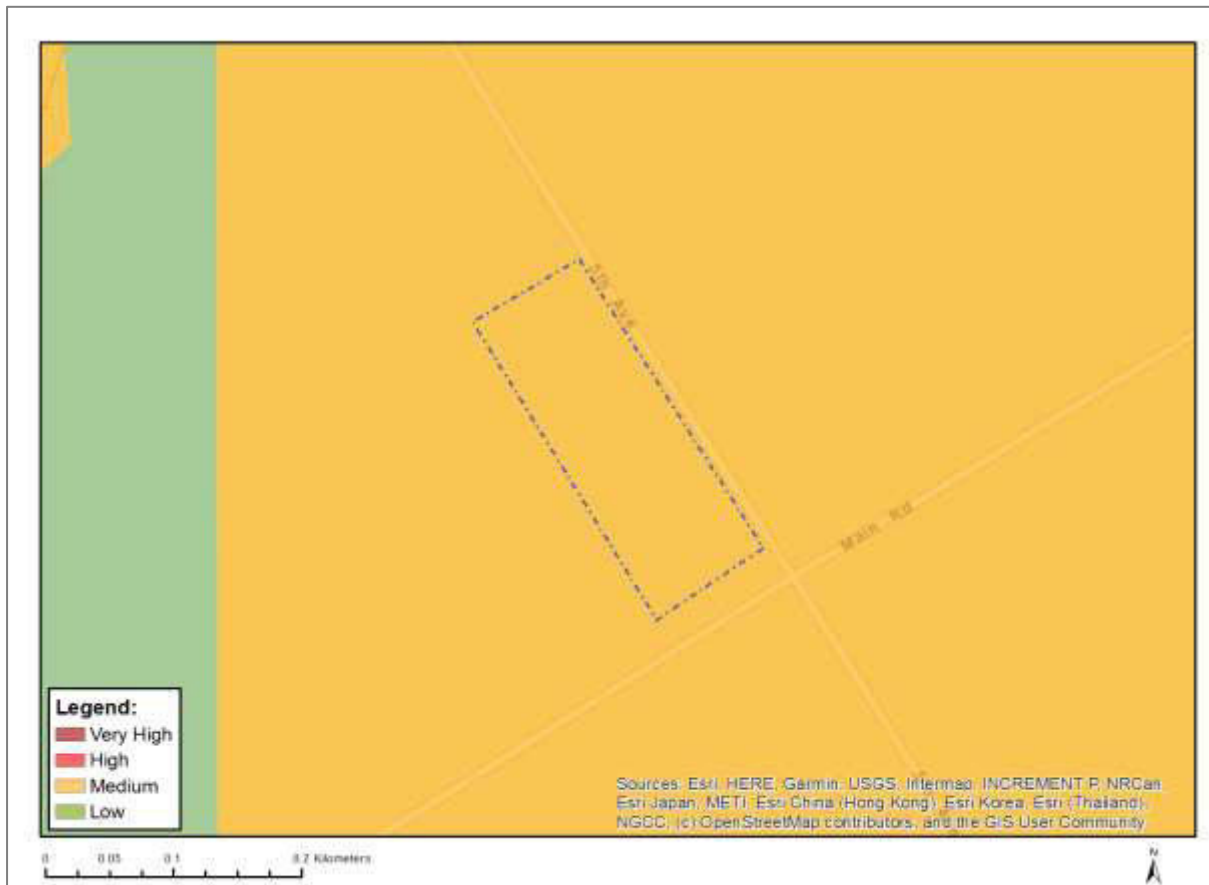


Figure 7: Animal Species Theme

The Makwassie musk shrew (*Crocidura maquassiensis*) is a species of mammal in the family Soricidae.

Little is known about the Makwassie musk shrew's habitats and ecology of this species. Literature provides some case studies which include a type specimen which was collected in a house whilst a second was collected from a grassy mountainside beneath a rock at approximately 1,580 m above sea level (Skinner & Chimimba 2005). Other specimens have also been found on rocky or montane grasslands of the Soutpansberg Mountains (Taylor et al. 2015). The Chase Valley Heights specimen was brought in by a domesticated cat from the garden (P. Taylor pers. comm. 2016). A specimen was identified in Kwazulu-Natal from an area characterized by a mixture of bracken and grasslands along the Tugela River. A specimen has also been documented along the coastal forest of the Kwazulu-Natal Province (Taylor 1998).

From the documented sightings and specimen collections, it has been stated that the Makwassie musk shrew may have a wide range of habitats, including urban and rural landscapes. This species is small, relatively rare and seldom caught in traps during sampling.

Its rarity is also corroborated through recent field studies in Mkhuzi and Phinda Game Reserves, KwaZulu-Natal where, despite being within the range of the species, it was not sampled whilst other *Crocidura* species were. Thus, this may be a naturally rare species that is difficult to identify and has been overlooked. Although more information and sampling is needed, this species is likely to persist in areas with moist conditions which are more prone along the coastlines of South Africa and or within wetland areas than the natural grasslands of the highveld where the proposed site is located.



In conclusion it has been determined that although the screening tool identified the Makwassie musk shrew as potentially present on site and within the surrounds, the potential for the presence is insignificant. The Makwassie musk shrew has never been identified within the area of Sedibeng or surrounds, further lowering the potential for the species presence.

The disturbance of the area also limits the presence of the Makwassie musk shrew's preferred habitat. The continued use of the site for industrial activities and associated development in the area also limits the potential for the species to thrive or survive.

The presence of the Makwassie musk shrew on site or within vicinity to the area has therefore been excluded as being likely. The relative animal species theme is therefore considered in the opinion of the EAP to be low to insignificant. No further assessment is therefore required.

3.3. Aquatic Biodiversity

The screening tool identifies the area as a **low sensitivity** towards aquatic species (Figure 8).

During the site inspection and assessment, it was confirmed that the area selected for the development is located approximately 3 km from the nearest water resource. Should the application for the proposed waste management activities be approved, the undertaking of the proposed activities would not have any impact on any aquatic ecosystem or the aquatic biodiversity of the area.



Figure 8: Aquatic Biodiversity Theme

The site visit confirmed the assessment to be accurate and correct. No additional assessments are required.

3.4. Archaeological and Cultural Heritage Theme

The screening tool identifies the area as a low sensitivity towards the archaeological and cultural heritage theme.



Figure 9: Archaeological and cultural heritage theme

The assessment concluded that no archaeological remains were located on the property. It has therefore been confirmed that the site and surrounding industrial property has low to insignificant archaeological or cultural heritage potential.

No additional assessments are required.

3.5. Civil Aviation Theme

The screening tool identifies the area as a **medium** sensitivity towards the civil aviation theme.



Figure 10: Civil aviation theme

The medium rating assigned by the National Screening tool has been contributed to the fact that located approximately between 8 and 15 km of other civil aviation aerodrome.

The proposed waste management activities as are being applied for by Nova Resources will however be confined to an existing warehouse and surrounding areas within the property boundary. No activities will exceed the maximum height of 4 meters above ground. The waste related activities will therefore not encroach into any restricted airspace. The proposed development will therefore have no impact on the operations of surrounding airspace.

3.6. Relative Defence Theme

The screening tool identifies the area as a low sensitivity towards the Relative Defence theme.



Figure 11: Relative defence theme

The proposed waste management activities to be undertaken by Nova Resources will have no impacts on local military operations or defence sites.

The site visit confirmed the assessment to be accurate and correct. No additional assessments are required.

**Photo 8: Site View - 2013****Photo 9: Site View - 2014**

During the development, no artefacts or remnants indicating presence of palaeontological artifacts were uncovered. In addition, studies and assessments as undertaken for areas surrounding the site were also consulted. Since the Sebokeng area is up and coming the area surrounding the site is flush with new developments. Local studies and assessments have also indicated that no traces of paleontological artifacts have been uncovered or identified, further lowering the overall likeliness of such artifacts being present in the area.

Finally, Nova Resources propose to utilise the site and associated infrastructure as in its current state. No additional excavation or development, other than surface area preparations for waste storage will be required.

It is therefore concluded that the site has a low to insignificant rating in terms of the Palaeontology Theme.

3.8. Plant Species Theme

The screening tool identifies the area as a low sensitivity towards the Plant Species Theme.



Figure 13: Plant Species Theme

The site visit confirmed the assessment to be accurate and correct. No additional assessments are required.

3.9. Terrestrial Biodiversity Theme

The screening tool identifies the area as a **very High** sensitivity towards the Terrestrial Biodiversity Theme.



Figure 14: Terrestrial Biodiversity Sensitivity

The **very High** sensitivity towards the Terrestrial Biodiversity Theme was identified due to the site falling within the Soweto Highveld Grassland biome.

During the site visit it was however determined that the site in its current state is developed. Infrastructure on site includes an administrative building, warehouse, roadway and a fence surrounding the property.

A desktop assessment was also undertaken, and Google Earth used to determine the history and timeline for the site. Based on the information available it was determined that majority of development occurred in 2013. The site, in its current state is therefore considered to be disturbed. The presence of fauna and flora supportive of the Soweto Highveld Grassland Biome is therefore no longer present on site (Refer to Photos 1 to 6 under Section 3.1 of this report).

The terrestrial biodiversity theme for the site is therefore considered to be low to insignificant. No additional assessment is recommended.

4. OUTCOMES OF THE SITE VERIFICATION

Based on the desktop analysis, the onsite inspection, and desktop assessment, it can be concluded that the proposed development footprint does not possess the Environmental Sensitivity as identified by the Screening Tool. It is however recommended that the facility:

- Implement the measures contained in the EMPr

Annexure E

Air Quality Impact Report



AIR QUALITY IMPACT ASSESSMENT

Prepared for

ZANTOW ENVIRONMENTAL CONSULTING SERVICES

**FINAL REPORT
JUNE 2024**

C H Albertyn, PrEng



Lethabo Air Quality Specialists (Pty) Ltd

CK 2018/109208/07

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AIR QUALITY IMPACT ASSESSMENT

1 INTRODUCTION

Zantow Environmental Consulting Services CC (ZECS) provides a variety of environmental services to various clients. One such client, Nova Resources South Africa Pty Ltd (Nova), wishes to operate a zinc briquetting plant in the Waterdal Agricultural Holdings area, adjacent to the Sebokeng residential area in Gauteng.

The area where the plant will be located is surrounded by small-scale agricultural dwellings with the Sebokeng residential area located approximately 500 metres from the north-western corner of Nova's site.

The process operated by the plant is included in the List of Activities that Result in Atmospheric Emissions, as published in Government Notice 893 of November 2013 (GN893) as amended. According to these Regulations, the planned operations fall under the following sub-category:

4.11: Agglomeration Operations: Production of pellets or briquettes using presses, inclined discs or rotating drums.

The sub-category applies to all installations and an atmospheric emissions license (AEL) is, therefore, required.

ZECS appointed Lethabo Air Quality Specialists (Pty) Ltd (LAQS) to carry out a specialist air quality impact assessment that can be submitted in support of an AEL application and this report discusses the steps followed by LAQS to comply with this requirement.

2 RELEVANT GOVERNMENT REGULATIONS

The following Government Regulations apply to this air quality impact assessment and are referred to in the report where applicable.

- 1 "*List of Activities That Result in Atmospheric Emissions*" as published in Government Notice 893 of 22 November 2018 (GN893), as amended
- 2 "*National Ambient Air Quality Standards*" as published in Government Notice 1210 of 24 December 2009 (GN1210)
- 3 "*Regulations Regarding Air Dispersion Modelling*" as published in Government Notice GN R.533 of 11 July 2014 (GN R.533)

Foundries are included in the *National List of Activities Which Result in Atmospheric Emissions*" as published in GN893, as amended, and emission limits for various pollutants are specified.

LAQS modelled the dispersion of various pollutants for which emission limits have been specified in GN893 and compared the outcome against official ambient air quality, standards where possible, as listed in GN1210.



3 PROCESS DESCRIPTION

Electric arc Furnace Dust, also referred to as Zinc Dust is a solid waste generated by the steel industry. Zinc is considered a metallurgical secondary resource with a high recovery value.

In order to make reasonable and effective use of zinc dust, the cold pressing pellet process is selected to form cold-pressed pellets, which can be used for zinc recovery and production.

Cold-pressed pellets are low-temperature consolidation and do not change the chemical properties of raw materials, and it retains the characteristics of good reducibility, which can reduce the cost of raw materials and improve productivity.

Zinc dust will be delivered to site in bulk bags and a storage capacity equal to 3 months' process, i.e. 15 000 tons, will be available on site.

This material will be loaded from the bags directly into a mixer where a compound adhesive agent (cornstarch) and water are added and mixed.

The mixture will be fed to a cold-press unit where pellets of specific size will be made through a cold-pressed moulding process. As it is a cold process, no heating energy will be required on site.

The pellets will be packaged and exported for blast furnace smelting.

No extraction system is used with the result that emissions can be expected to occur from the section of the plant where the zinc dust is handled, i.e. an area source.

As all operations occur in a fully-enclosed area, minimal emissions to atmosphere are expected.

4 ATMOSPHERIC EMISSION LICENSE REQUIREMENTS

The briquetting process is included in the "National List of Activities Which Result in Atmospheric Emissions" as published in Government Notice No. 893 on 22 November 2013 (GN893). The activity falls under the following category:

Subcategory 4.11: Agglomeration Operations

Description	Production of pellets or briquettes using presses, inclined discs or rotating		
Application	All installations		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3 kPa
Particulate matter	N/A	New	30
Ammonia	NH ₃	New	30

Table 1: Official Emission Limits, New Plant



Ammonia emissions are not expected as the process planned by Nova is a cold process and no sources of ammonia are identified.

5 DISPERSION MODELLING STUDY

The Department of Environmental Affairs homogenised dispersion modelling in South Africa by publishing "*Regulations Regarding Air Dispersion Modelling*" in Government Notice GN R.533 on 11 July 2014 (GN R.533). Throughout this report mention is made of compliance with this set of Regulations.

The dispersion modelling study was carried out with EnviMan, a GIS-based emissions management software suite produced by Narsil AB in Sweden. The dispersion modelling component of the suite consists of the following four modules:

- evMapper: A map manipulation tool
- evEmissioner: An extensive, relational emissions data base
- evMet: A meteorological data management program
- evPlanner: The actual dispersion model

5.1 evMAPPER

evMapper is a digital map compiler. It is used to define GIS map sets to be used by all EnviMan GIS modules. It can import a variety of digital maps and structure the data in suitable forms, e.g. sheets, objects, etc.

It is the basis of the EnviMan GIS suite as it defines all co-ordinates for subsequent use by the various EnviMan modules.

5.2 evEMISSIONER

evEmissioner is a comprehensive, relational emissions data base that locates emission sources at fixed co-ordinates on the map compiled with evMapper. Sources are placed on the map by the user and the co-ordinates are automatically generated by evMapper.

evEmissioner can handle particulate and gaseous emissions from the following sources:

- Point sources, e.g. industrial stacks
- Area sources, e.g. landfill sites
- Grid sources, e.g. complete informal settlement areas
- Line sources, e.g. motor vehicle emissions

Of these, only one area source will exist on Nova's site.

5.3 evMET

evMet uses meteorological data collected at ground level to calculate meteorological data sets used in dispersion modelling studies. Of primary importance are those parameters that determine scaling of the boundary air layer. These are:

- Wind speed



- Wind direction
- Temperature
- Solar radiation

These parameters are used by evMet to calculate all of the parameters, e.g. stability of the air boundary layer, mixing heights, climate sets, etc., which are required by evPlanner in calculating the dispersion of pollutants from a source.

5.4 evPLANNER

evPlanner is the dispersion module of the EnviMan suite and links with evMapper, evEmissioner and evMet to carry out dispersion modelling activities. It is designed to run simulations of air quality based on emission data created in evEmissioner for the following scenarios:

- Hypothetical weather definitions, i.e. user-supplied information about temperature, wind speed, wind direction, cloud cover, etc.
- True weather period, i.e. using recorded data from a weather monitoring station to simulate plume dispersion hour-by-hour over a defined period
- Statistical weather period, i.e. using a pre-calculated sample of various weather conditions that typically occur during a year. This allows the creation of annual air quality maps for comparison against national guidelines and limit values.

Of these scenarios, the statistical period is applicable to the study of plume dispersion from Nova's operations.

Planner makes use of three different dispersion models, two of which are aimed at motor vehicle emissions. The third, Aermot, is used for the purposes of calculating the dispersion of plumes from point, area and grid sources. Aermot is a USEPA-approved Gaussian plume dispersion model and is capable of simulating dispersion of pollutants over a distance up to approximately 50 km from the source.

Aermot is listed as an approved dispersion model in GN R.533.

5.5 INPUT DATA

5.5.1 evMapper

A bitmap of the area around Nova' site was obtained from Google Earth® and imported into evMapper as a suitable multi-layer digital map of the area was not readily available. The area where Nova will operate is demarcated in yellow.

The map is shown in Figure 1 below. For dispersion modelling purposes the area covered by the map was divided into a 25m x 25m grid.

The emissions data base (evEmissioner) links with the map and places emission sources on specific locations, as defined by the user.



Figure 1: Map covering 5 km x 3 km

5.5.2 evEmissioner

Compulsory information for area sources is:

- Dimensions of area where emissions occur
- Height of release
- Height and width of adjacent structures that could influence the wind profile
- Rate of release of pollutants

ZECS provided details of structures dimensions as the process will be housed inside a building. Emissions were assumed to occur at rooftop height through ventilation ports.

Output units:

Given an input of tons per annum, the output of evPlanner is in units of micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

5.5.3 evMet

No reliable local measured surface weather data, covering all of the parameters required by evMet, is readily available. Locally measured weather data is regarded as “reliable” if the monitoring station setup and operating principles meet the requirements of SANAS Report TR 07-03, “Supplementary Requirements for the Accreditation of Continuous Ambient Air Quality Monitoring Stations”.



GN R.533 allows the use of simulated mesoscale data in the absence of reliable surface data. Mesoscale models use gridded meteorological data and sophisticated physics algorithms to produce meteorological fields at defined horizontal grid resolutions and in multiple vertical levels over a large domain. Such models therefore offer an alternative to meteorological measurements as input for Gaussian-plume models and advanced dispersion models.

LAQS subsequently procured five years' hourly data from Meteoblue. Meteoblue is a meteorological service created at the University of Basel, Switzerland, and was the world's first weather service to offer weather prediction in a graphical synopsis for any arbitrarily chosen location on earth.

Meteoblue uses complex statistical techniques in conjunction with thousands of observations to remove systematic errors from our forecasts to provide accurate local weather conditions. In addition, Meteoblue conducts extensive and regular verification of its and other simulation models, comparing them to actual measurement and observation data.

5.5.4 evPlanner

evPlanner does not require any user input as it extracts data from evMapper, evEmissioner and evMet.

5.6 EMISSIONS

As mentioned in Section 3, no stack will be used through which emission may occur to atmosphere, but emission of particulate matter may occur from the section of the building in which zinc dust is handled. In the absence of specific site layout data, LAQS assumed that this section occupies approximately 1/3rd of Nova's buildings.

Estimated dimensions of the building are 30 x 15 x 8 metres (length, width, height).

The planned zinc pellet production rate is 5 000 tons per month, or 60 000 tons per annum.

No specific emission factors for a cold-pressed briquetting plant could be obtained. As a result, LAQS used emission factors specified by the Australian National Pollution Inventory system for the handling, transferring and conveying of metalliferous materials, as listed in their Emissions Estimation Technique Manual (EETM) for Mining, 2012.

This EETM gives a general particulate emission factor of 0.06 kg per ton of material, implying annual PM10 emissions of 3.6 tons per annum.

The EETM further states that the handling of material in a fully enclosed structure reduces emissions by 99%, implying annual emissions of 0.036 tons per annum. As no specific details of the building are available, LAQS assumed that a 99% reduction in emissions will not be achievable and assumed that 10% of the generated particulates will escape to atmosphere, yielding annual PM10 emissions of 0.36 tons.

It is further assumed that these emissions will be emitted at rooftop level as fugitive emissions. LAQS finally assumed that all particulate emissions will meet the definition of PM10 particulate matter. This is a conservative approach as PM10 particulate matter form a subset of total particulate matter.



6 RESULTS

LAQS modelled the dispersion of PM10 particulates only as no other emissions are expected. Please see Section 4.

The approach to the project was to determine both annual average ground-level concentrations and 99-percentile concentrations of PM10 particulates.

A 99-percentile level was chosen as it is the closest comparison to the ambient air quality limit exceedances allowed legally (please see Section 8 below).

In addition, the maximum estimated ground-level concentrations were determined and where these would occur. The annual average and 99-percentile concentrations at the nearest point of the Sebokeng residential area was determined as well.

All simulations were carried out for a receptor height of 2 metres above ground level and a plume dispersion period of 60 minutes. This simulation period ensured that very low winds, e.g. 1 m/s, would carry pollutants some distance from the plant.

In addition to the various pictures, results are summarised in tabular format in Table 2 below.



Figure 2: Annual Average PM10 Concentrations
Maximum scale is 10 $\mu\text{g}/\text{m}^3$; Air quality standard is 40 $\mu\text{g}/\text{m}^3$

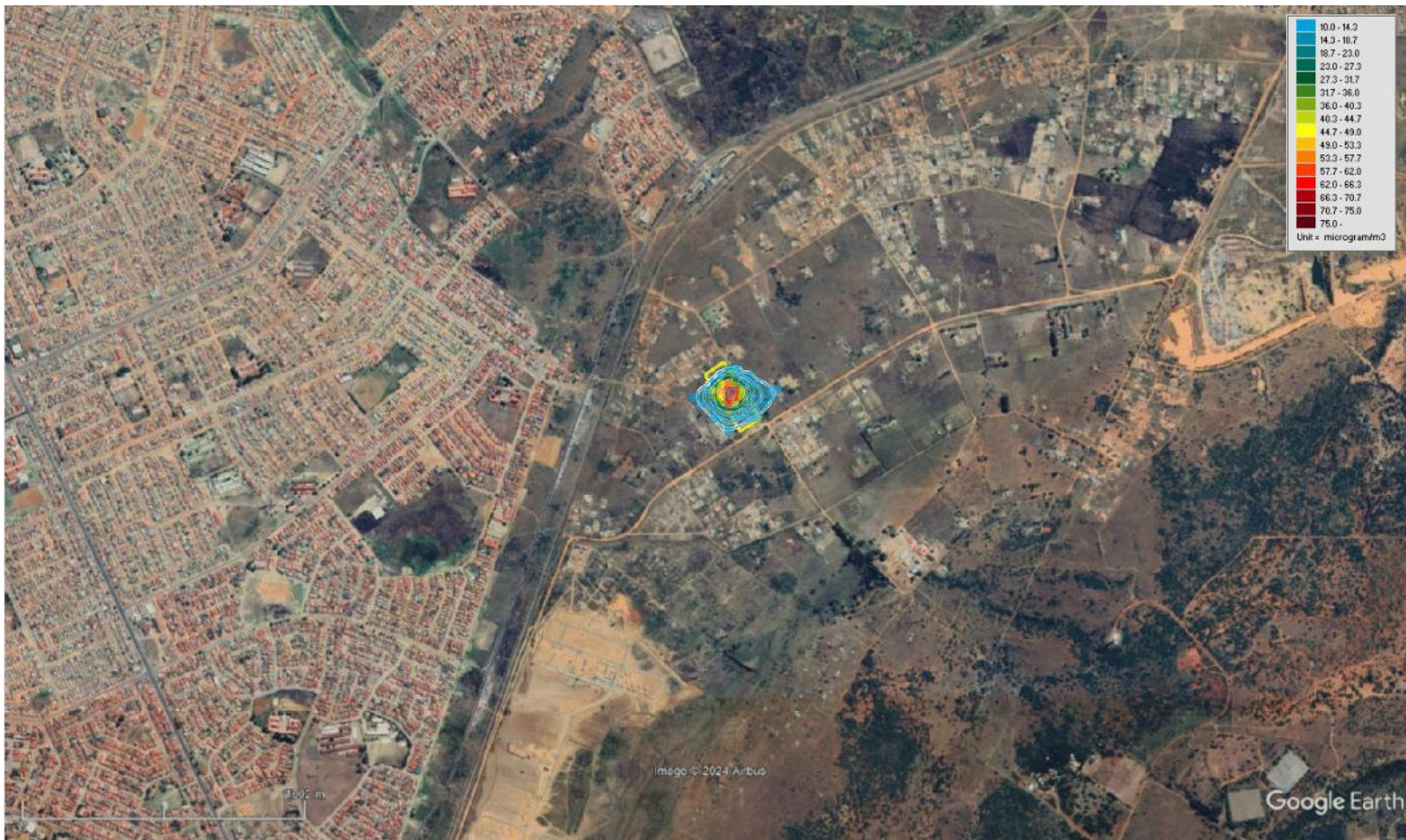


Figure 3: 99-percentile Daily Averaged PM10 Concentrations
Maximum scale is 50 $\mu\text{g}/\text{m}^3$; Air quality standard is 75 $\mu\text{g}/\text{m}^3$



	Maximum	AQ standard	Maximum	AQ standard
	Annual average		99-percentile	
Distance (m), Direction	On Nova site		On Nova site	
PM10, $\mu\text{g}/\text{m}^3$	27.1	40	99	75
Highest fence-line, $\mu\text{g}/\text{m}^3$	6		50	
Residential area				
PM10, $\mu\text{g}/\text{m}^3$	<0.1	40	0.4	75

Table 2: Results Summary, $\mu\text{g}/\text{m}^3$

7 DISCUSSION

7.1 MODEL RELIABILITY

The results of any computer model are only as reliable as the quality of the input data.

7.1.1 evEmissioner:

There is an unquantifiable degree of uncertainty in the annual mass emissions on which this assessment is based.

The emissions of particulate matter from the planned process were based on emission factors that were assumed to apply to the materials handling steps that will be taken by Nova. These emission factors are general by nature and it is possible that actual emissions may differ from those based on the emission factors.

In estimating annual PM10 emissions, LAQS followed a conservative approach by assuming that all particulate matter emissions comply with the definition of PM10 particulates. This is an overestimation as PM10 particulates form a subset of total particulate matter.

7.1.2 evMet:

The meteorological data assembled by LAQS is comprehensive and no gaps exist in the simulated data obtained from Meteoblue. LAQS is, therefore, of the opinion that a reliable meteorological data set could be compiled. The distribution of winds in the Sebokeng area is shown graphically in Figure 4 below. It shows that the wind rarely blows from a south-easterly direction and that the highest wind speeds are from a northerly direction.

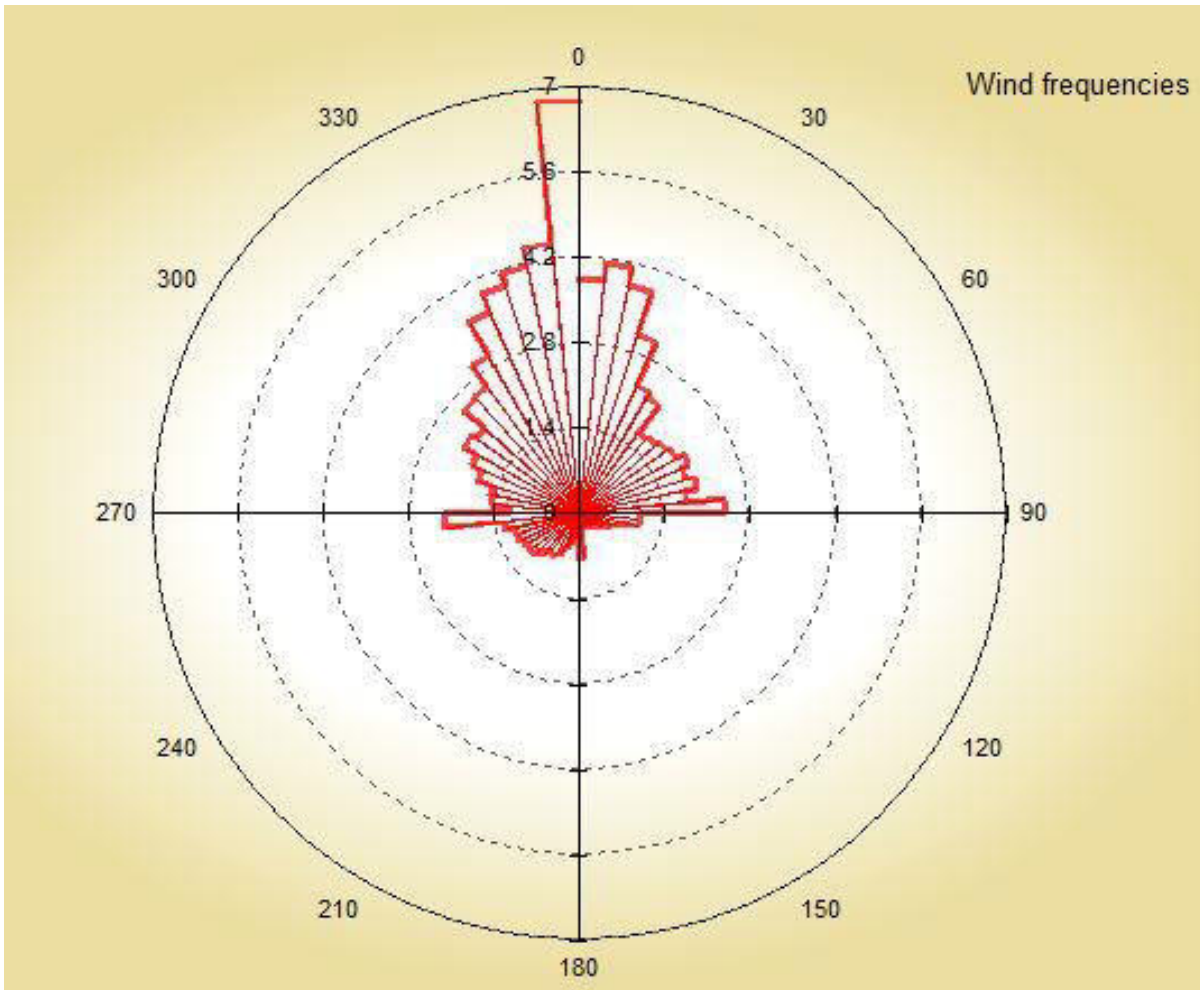


Figure 4: Frequency of Wind Direction

It must be borne in mind that this assessment is based on simulated meteorological data and not actually measured data. Nevertheless, MeteoBlue constantly optimise the algorithms used to simulate data, using several base stations in Switzerland as benchmark. LAQS is of the opinion that differences between simulated and actually measured data will be small.

7.1.3 evPlanner:

As was stated previously, the user provides no direct data input to evPlanner. It uses Aermot, a USEPA-approved Gaussian plume dispersion model, and there is no reason to doubt the reliability of the dispersion calculations. Aermot is also listed as an approved plume dispersion model in GN R.533.

8 IMPACT ON OVERALL AIR QUALITY

Ambient air quality standards for some pollutants were published by the Department of Environmental Affairs (DEA) in Government Notice No. 1210 on 24 March 2009 (GN1210). Of



the pollutants discussed in this study, ambient air quality standards for PM₁₀, SO₂, NO₂ and CO are included and the limits are:

PM₁₀

Annual average: 40 µg/m³, no exceedances

Maximum daily concentration: 75 µg/m³, 4 exceedances

The number of exceedances mentioned is approximately 1% of the time, i.e. daily exceedances of 4 times per year are marginally more than 1% of the time (3.65). Similarly, 88 exceedances of hourly limits form approximately 1% of the total number of hours per year (1% of 8 760 is 87.6). As a result, LAQS modelled 99-percentile concentrations to reflect the maximum level below which concentrations may occur for 1% of the time.

The South African ambient air quality standards are based on those applied by the European Union and are set at levels that ensure protection of the environment as a whole, including humans, fauna and flora. The levels are aimed at protecting the sensitive, frail elderly, etc., and concentrations below the air quality standards must, therefore, be regarded as “safe”.

8.1 ANNUAL AVERAGE CONCENTRATIONS

The highest annual average concentration of PM₁₀ is estimated to be 27.1 µg/m³ and the point of maximum concentration is estimated to occur on Nova’s site.

The maximum concentration anywhere along Nova’s fence-line is estimated to be 6 µg/m³ and the maximum annual average concentration at the nearest point in Sebokeng is estimated to be less than 0.1 µg/m³.

All of these concentrations are below the official ambient air quality standards.

8.3 99-PERCENTILE DAILY CONCENTRATIONS

The highest daily average concentration of PM₁₀ particulates is estimated to be less than 99 µg/m³ and is estimated to occur on Nova’s site. This concentration is in excess of the official ambient air quality standard.

The maximum concentration anywhere along Nova’s fence-line is estimated to be 50 µg/m³ and the maximum annual average concentration at the nearest point in Sebokeng is estimated to be 0.4 µg/m³. Both of these concentrations are below the official ambient air quality standards

8.5 INTERPRETATION OF RESULTS

The results reported above must be interpreted with care.

As it is reported, the results imply that ambient air quality standards will be exceeded in the vicinity of the plant, should emissions occur at the rate estimated by LAQS, as described in Section 5.6.

It must be borne in mind that LAQS followed a conservative approach in estimating emissions from the process, assuming that all emission meet the definition of PM₁₀ particulate matter.



In the absence of particle size distribution data it is not possible to estimate the actual emissions of PM10 particulates only.

9 CONCLUSIONS

Table 1 lists the maximum allowed concentrations of the controlled pollutants emitted from Nova' process as published in GN893. The annual emissions discussed in Section 5.6 were based on emission factors which are, by nature, general and not pollutant specific.

Where possible, LAQS followed a conservative approach to rather over-estimate emissions, resulting in a worst-case scenario.

The results of the dispersion modelling study show that the estimated maximum ground-level concentrations of PM10 particulates may exceed the ambient air quality standards on Nova's site, but not anywhere else.

Air pollutant concentrations on industrial sites are set at higher levels than ambient air quality standards, notably by the American Congress of Governmental Industrial Hygienists (ACGIH). ACGIH defines threshold limit values (TLVs) to which workers can be exposed for eight hours per day, day after day, without any adverse effects.

No TLV was set for PM10 particulates, but recommends the following: "airborne concentrations be kept below 3 mg/m³ (respirable particles) and 10 mg/m³ (inhalable particles) for insoluble particles of low toxicity." The values of 3 mg/m³ and 10 mg/m³ equate to 3 000 µg/m³ and 10 000 µg/m³ respectively, both of which exceed the ambient air quality standards by several orders of magnitude.

No exposure limits for zinc as metal has been set, but the ACGIH TLV for zinc oxide is 2 mg/m³ (respirable fraction) with a Short Term Exposure Limit (STEL) of 10 mg/m³ (respirable fraction).

LAQS concludes, therefore, that the impact of Nova' emissions on air quality in the vicinity of the plant, as well as at the nearest residential area in particular, will be low.

11 RECOMMENDATIONS

LAQS is of the opinion that no continuous emission monitoring equipment will be required to monitor the various emissions addressed by this report, but that estimated fence-line concentrations are monitored from time to time for comparison against the outcome of this air quality impact assessment.

Should the monitored results differ substantially from those estimated by the dispersion model, it should be used to adjust annual emissions from Nova's operations and the expected impact on air quality in the area re-investigated.

LAQS recommends that an atmospheric emissions license is issued for the operation of the briquetting plant.

Annexure F

Site Photos



Photo 1: Operational Area - North View



Photo 2: Operational Area-North-East View



Photo 3: Operational Area - East View



Photo 4: Operational Area – South-east View



Photo 5: Operational Area - South View



Photo 6: Operational Area - South-west View



Photo 7: Operational Area - West View



Photo 8: Operational Area - North-west View



Photo 9: External View of Warehouse / Operational Area



Photo 10 External View of Warehouse / Operational Area



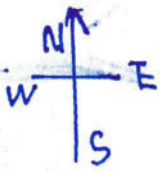
Photo 11: External View of Warehouse / Operational Area



Photo 12: Site Access

Annexure G

Layouts and Plant Designs



WORK ROOM

GATE 3

RAW MATERIAL AREA

PROCESS ZONE

PRODUCT AREA

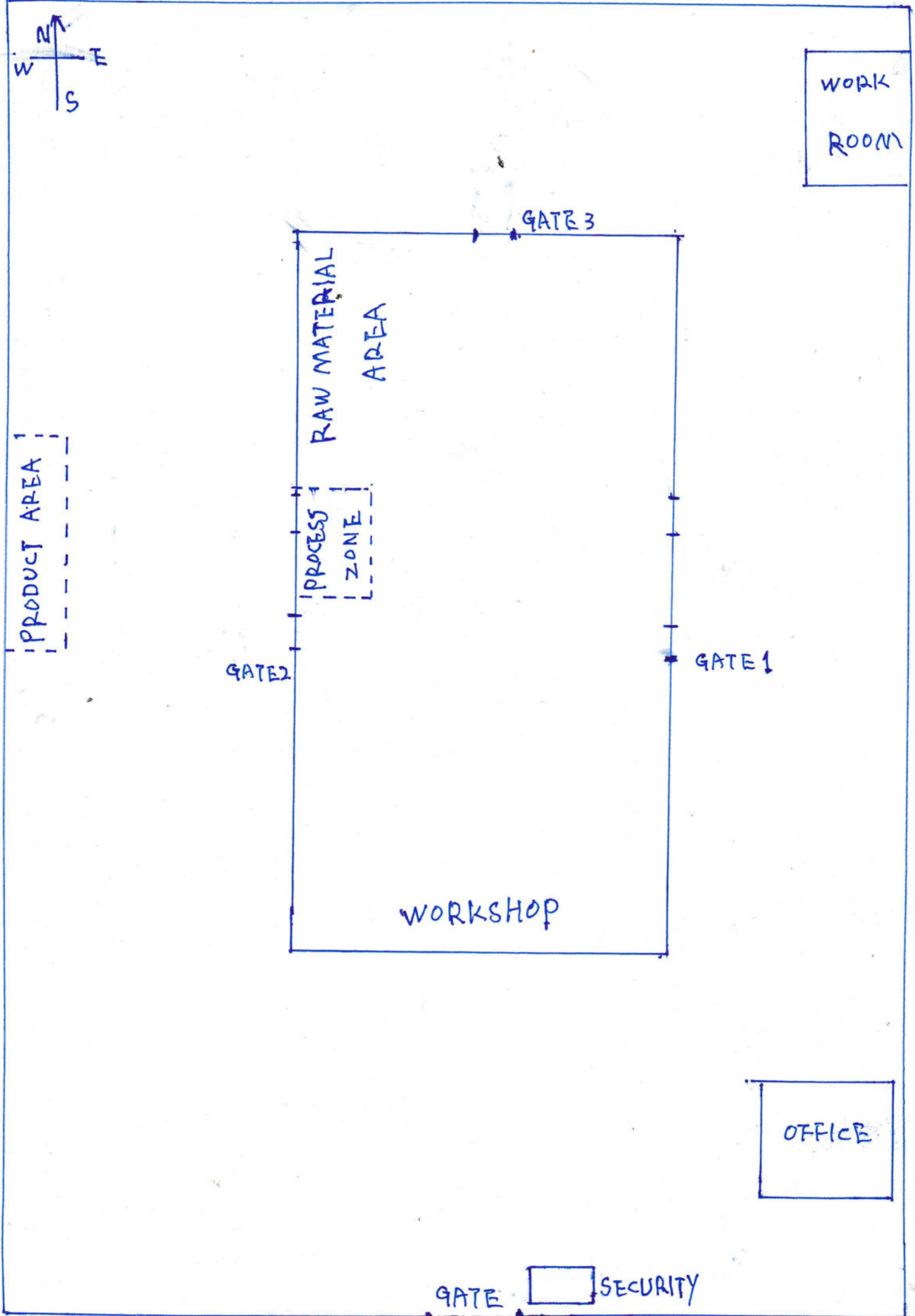
GATE 2

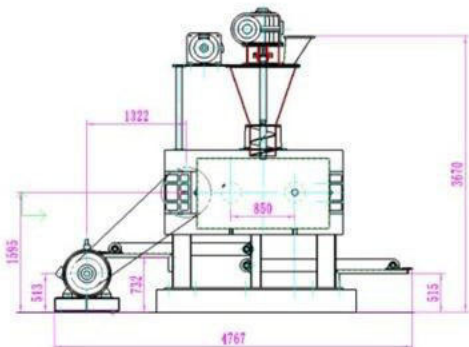
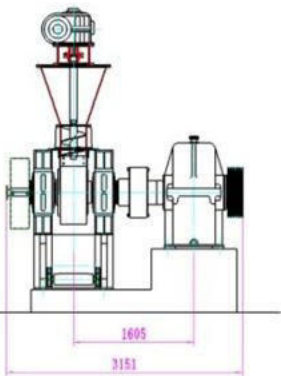
GATE 1

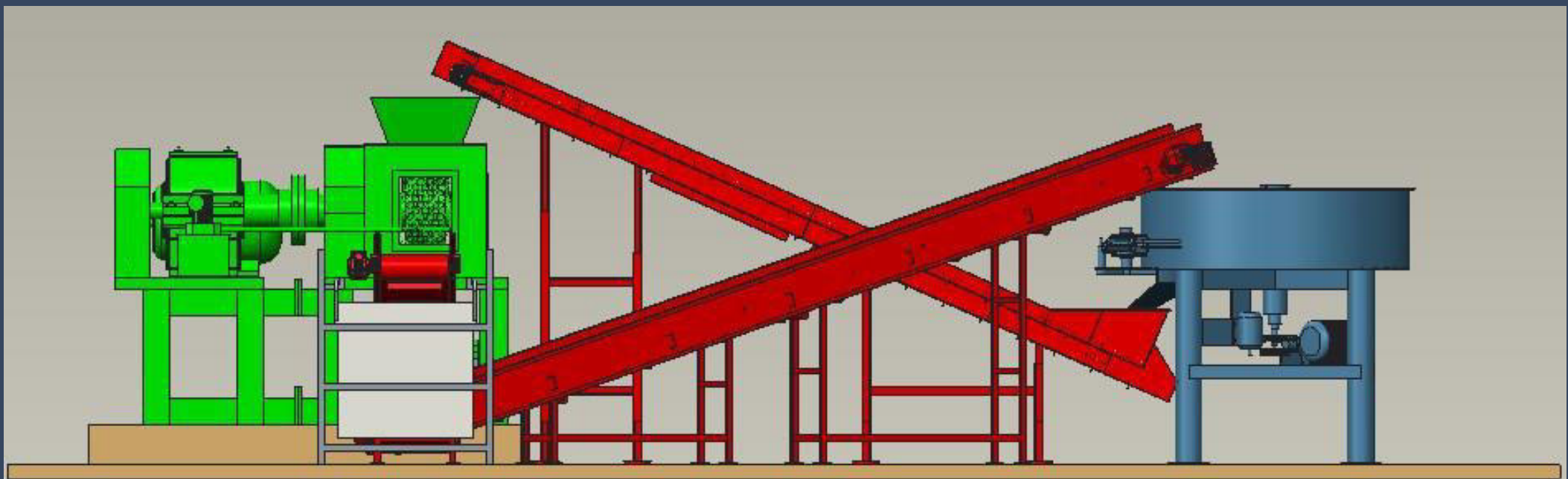
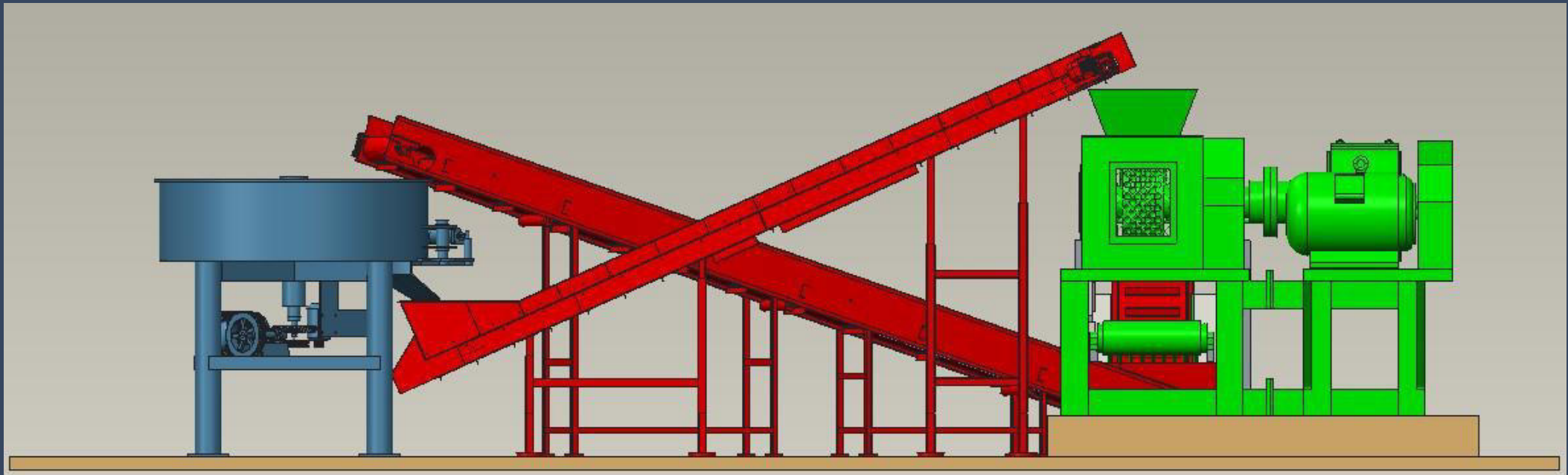
WORKSHOP

OFFICE

GATE SECURITY







Annexure H Public Participation

-- To Be Included in Final Scoping Report --