2023

WASTE MANAGEMENT PLAN
FOR
THE PROPOSED NEOSERVE (PTY) LTD'S ACTIVITIES PLANNED TO BE UNDERTAKEN AT 30 FRANSEN STREET, CHAMDOR, KRUGERSDORP, GAUTENG PROVINCE

GDARDE Reference Number:
002/23-24/W0016

Project Number:
DTS-P-23118

Report Number:
NEO-WA-01-104-23-00

Compiled by: Environmental Edge (Pty) Ltd
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Report Type:	Waste Management Plan
Project Title:	Waste Management Plan for the Proposed Neoserve (Pty) Ltd's Activities Planned to be Located at 30 Fransen Street, Chamdor, Krugersdorp, Gauteng Province
Site Location:	30 Fransen Street, Chamdor, Krugersdorp, Gauteng Province
Compiled For:	Neoserve (Pty) Ltd
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Date:	30 October 2023

Declaration:

I hereby declare:

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

Quality Control and Authorisation:

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LIST OF ABBREVIATIONS

AEL	Atmospheric Emission Licence
DEADP	Department of environmental affairs and development planning
DAFF	Department of Agriculture forestry and fisheries
DEFF	Department of Environment, Forestry and Fisheries
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
EIA	Environmental Impact Assessment
EIAr	Environmental Impact Assessment Report
GDARDE	Gauteng Department of Agriculture, Rural Development and the Environment
GN	Government Notice
GWIS	Gauteng Waste Information System
ISP	Industrial Symbiosis Programme
NCPC-SA	National Cleaner Production Centre South Africa
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM:WA	National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)
RECP	Resource efficiency and cleaner production
SACNASP	South African Council for Natural Scientific Professions
SHE	Safety Health and Environment
WML	Waste Management License
WMP	Waste Management Plan

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1. INTRODUCTION

Neoserve (Pty) Ltd, hereafter referred to as “Neoserve” or “the Company”, plans to occupy and operate an existing facility located at 30 Fransen Street, Chamdor, Krugersdorp, Gauteng Province. Neoserve plans to operate a foundry which will process scrap metal and cast it into aluminium, iron and steel, and bronze products. As such, the facility requires a Waste Management License and an Atmospheric Emission Licence (AEL) to operate their proposed activities.

Environmental Edge (Pty) Ltd, hereafter referred to as “Environmental Edge”, was appointed by Neoserve to compile this Waste Management Plan as part of their Waste Management Licence and AEL application processes for their facility.

In terms of the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008), as amended (NEM:WA), the development triggers Activity 3(5), 3(6) and 3(12) of Category A:

Table 1-1. Listed Activities triggered by the activity at Neoserve.

No.	Activities listed in terms of Government Notice R921 of the National Environmental Management Waste Act (No. 59 of 2008, as amended)	Activity details (clear description including extent i.e., GPS coordinates)
1	Category A: Activity 3(5) The recovery of waste including the refining, utilisation, or co-processing of waste in excess of 10 tons but less than 100 tons of general waste per day or in excess of 500kg but less than 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.	The proposed development is set to process waste tyres at capacities in excess of the thresholds. Coordinates: Latitude: 26° 9'12.24"S Longitude: 27°48'11.82"E
2	Category A: Activity 3(6) The treatment of general waste using any form of treatment at a facility that has the capacity to process in excess of 10 tons but less than 100 tons.	
	Category A: Activity 3(7) The treatment of hazardous waste using any form of treatment at a facility that has the capacity to process in excess of 500kg but less than 1 ton per day excluding the treatment of effluent, wastewater or sewage.	
3	Category A: Activity 3(12) The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).	

In addition, Neoserve’s proposed activities also trigger sub-categories 4.21 and 8.1 of Categories 4 (Metallurgical Industries) and 8 (Thermal Treatment of Hazardous and General Waste) in terms of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA) and require an AEL to operate. An AEL Application will be lodged with the West Rand District Municipality once the WML is approved and issued by the Gauteng Department of Agriculture, Rural Development and the Environment (GDARDE) for the facility. A description of the listed activities is given in Table 1-1 below.

Table 1-2: Listed activities triggered by Neoserve in terms of section 21 of NEM:AQA.

Category	Sub-category	Name of Listed Activity	Description	NOTES (REASONS)
4	4.21	Metal Recovery	The recovery of metal from any form of scrap material by the application of heat.	Proposed activities will include the recovery of metal wires embedded inside waste tyres.
8	8.1	Thermal Treatment of Hazardous and General Waste	Facilities where general and hazardous waste are treated by the application of heat. All installations treating 10 kg per day of waste.	Proposed development aims to include the combustion and processing of waste tyres including the treatment of general and hazardous waste. This will require an Atmospheric Emissions License in terms of Section 21 of NEM:AQA.

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As part of the application processes, a Waste Management Plan must be compiled as an extension of the impact assessment report for the activity and included within the final report, therefore, this plan is an integral part of the final reports for Neoserve.

1.1. Project Applicant

Neoserve (Pty) Ltd
2023/755315/07
30 Fransen Street, Chamdor,
Krugersdorp,
Gauteng Province
troym@dtssa.co.za
Responsible Person: Troy Marais

1.2. Environmental Assessment Practitioner

Mr. Sindiso Lubisi (Principal EAP)
Sindiso Lubisi is a Registered EAP (Reg. 2020/1401) with the Environmental Assessment Practitioners Association of South Africa (EAPASA) and is also a Professional Natural Scientist (Reg. 122081) with the South African Council of Natural Scientists (SACNASP).

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

Mr. Cyril Kamogelo Legong (EAP)
Cyril Kamogelo Legong is a Registered Candidate EAP (Reg. 2021/3159) with the Environmental Assessment Practitioners Association of South Africa and is also a Candidate Natural Scientist (Reg. 125866) with the South African Council of Natural Scientists (SACNASP).

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

Ms. Annamarie Martin (EAP)
Ms. Annamarie Martin is an Environmental Assessment Practitioner with extensive experience within the environmental space. She acquired a BSc. Honours in Conservation Biology,

She further, holds a Masters in Botany with a specialization in Plant Physiology and Water relations with vast experience as a Natural Resources auditor in LUSM (land use and soil management) directorate of the then National Department of Agriculture forestry and fisheries (DAFF), which included the administration of the Conservation of Agricultural Resources Act (Act No. 43 of 1983) while co-regulating with Department of environmental affairs and development planning (DEADP) and various other stakeholders. She has further been involved in various projects that include but are not limited to Section 24G EA application, EA Application, AEL Application, WML Application, including auditing and reporting.

2. PROJECT DESCRIPTION

2.1. Project Background

A detailed background of Neoserve can be found in the Environmental Impact Assessment Report (EIAr). The summary below is included to provide context and background.

The facility in which the proposed activities are to be housed is within an industrial facility. Required operational equipment will simply be commissioned with no extensive construction as the infrastructure (buildings) already exist.

Neoserve plans to recycle waste tyres using specialised tyre pyrolysis equipment which will be connected to the same emissions extraction unit (stack). The company also plans to treat general and hazardous waste using a dedicated furnace on site.

The proposed development must obtain a Wate Management Licence through a BA process from the GDARDE. As such, any work related to the commissioning and preparation of the facility for the proposed activities has not commenced, pending the necessary approvals and authorisations.

2.2. Technical project description

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

The proposed pyrolysis plant project entails refining about 30 tons of domestic and industrial waste mainly waste tyres/rubber per day through a pyrolysis process to recover the product of carbon black, scrap steel and pyrolysis oil. The industrial waste that will be sourced is expected to be mainly non-hazardous and on ad hoc basis hazardous.

The overall project will entail the acquisition of waste tyres, rubber and industrial waste material from suppliers. Thereafter the waste material will be temporary stored and then loaded into pyrolysis reactors where it would undergo a pyrolysis process thus the recovery of 1 - carbon black which will be off-loaded and placed in marked bags 2 - scrap steel that will be manually collected and lastly 3 - pyrolysis oil that will be stored in the tanks.

The plant will process 30 tonnes of waste tyres or rubber per day (tpd), producing 16.5 tonnes of pyrolysis oil daily. By-products from the process will be carbon black (10.5 tpd) and scrap steel (3 tpd). The waste tyres and rubber waste will be delivered to the plant by trucks is expected to be two 3.5-ton trucks/day and one 10-ton truck per day. The pyrolysis oil will be collected every second day by oil tankers (20 ton) and oil trucks (6 ton).

The plant will be a XY-8-P batch pyrolysis machine with two reactors. The capacity of the reactors is 10 MT/batch. The heating system will comprise of a burning room operating at a temperature of 1,100°C using 60 kg/hr of oil, but also fuelled by coal, wood or carbon black pellets. There will be 12 gas burners and six oil burners, including a draft fan and blower. The cooling system will comprise of two buffer gas separators, four sets of vertical condensers, two oil tanks with an oil pump, and a cooling water tower with pumps. There will also be gas and smoke purifying systems, with spraying tower and absorption tower. Waste gas will be burnt, and this was assumed to be controlled indoors. Carbon black will be discharged though a bin within the plant building.

A process diagram for Neoserve is provided in Figure 2-1 below.

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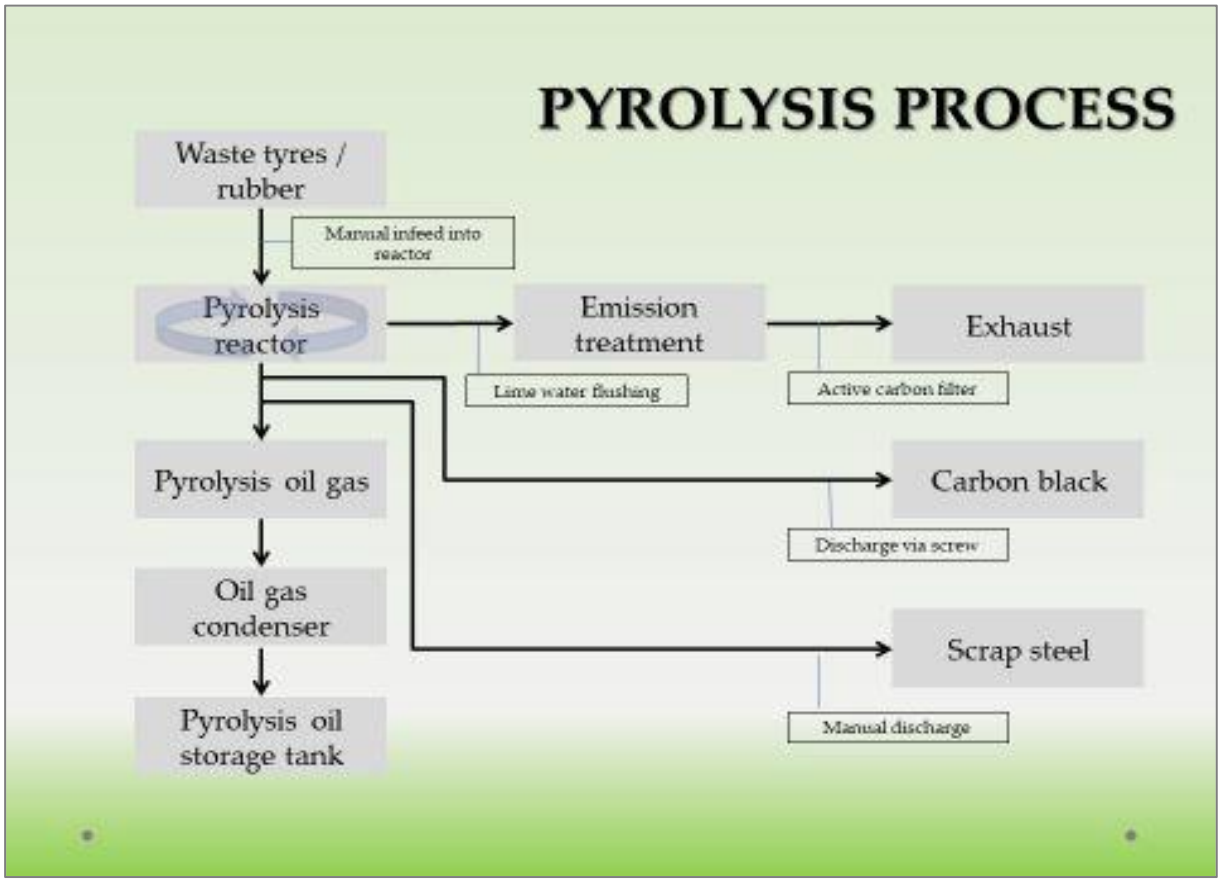

Figure 2-1: Neoserve process diagram.

2.3. Locality

Neoserve's surrounding area includes residential areas such as Silverfields, Mindalore and Princess to the north-east, Witpoortje 2451Q, Grobler Park, Florida Park, and Roodepoort West to the east, and Witpoortjie to the south-east. In addition, the Tshepisong, Kagiso and Sinqobile townships are located south, south-west and north-west of the proposed plant. The town of Krugersdorp is located over 5 km from the site, towards the north.

The proposed location sits within an industrial area. The R28, R24, and R41 provincial roads run adjacent to the proposed plant, to the west, north and south, respectively.

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

Table 2-1: Cadastre Information.

Portion	1
ERF	256
Portion Name	CHAMDOR

Table 2-2: Approximate corner points of the Neoserve facility.

Corner	Latitude	Longitude
Point/Corner 1	26° 9'13.37"S	27°48'11.64"E
Point/Corner 2	26° 9'13.44"S	27°48'13.27"E
Point/Corner 3	26° 9'13.05"S	27°48'13.09"E
Point/Corner 4	26° 9'12.60"S	27°48'12.98"E
Point/Corner 5	26° 9'12.61"S	27°48'12.81"E
Point/Corner 6	26° 9'10.87"S	27°48'11.81"E
Point/Corner 7	26° 9'11.46"S	27°48'10.50"E

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

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Point	Latitude (S)	Longitude l
Centre Point	26° 9'12.24"S	27°48'11.82"E

Table 2-4: 21 Digit Surveyor General code.

21 Digit SG Code																				
T	0	I	Q	0	0	5	6	0	0	0	0	0	1	6	8	0	0	0	0	0

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Figure 2-2: Neoserve Site Layout Map

3. BACKGROUND ON WASTE MANAGEMENT

3.1. Legislation

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

The national environmental management: waste act was proclaimed mainly to promote an integration of several legislation to achieve an integrated waste management system which seeks to:

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

The objectives of this Act are:

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

b) to ensure that people are aware of the impact of waste on their health, well-being and the environment;

c) to provide for compliance with the measures set out in paragraph (a); and

d) generally, to give effect to section 24 of the Constitution in order to secure an environment

Waste management activities that are listed in regulations published under NEM:WA may not be undertaken without a Waste Management Licence (WML). The listed activities for which a WML is required are contained in Government Notice (GN) 921 published in Gazette No 37083 on 29th of November 2013, as amended. Category A activities require a WML and a Basic Assessment (BA) must be conducted, and Category B activities require a WML and a full Scoping and Environmental Impact Assessment (EIA) must be conducted. Category C activities are not required to have an WML but need to comply with the National Norms and Standards.

The NEM: WA introduced the concept of dealing with waste according to a waste management hierarchy (Figure 3-1). The hierarchy approach places emphasis on waste reduction, followed by re-use, then recycling and composting, recovery for energy production and disposal as the last resort. With this hierarchical approach in mind, companies can develop plans to manage the waste they produce at their facilities. By examining each aspect of waste, they will be able to ensure that the

amount of waste that is ultimately disposed of in a landfill is significantly reduced. that is not harmful to health and well-being.

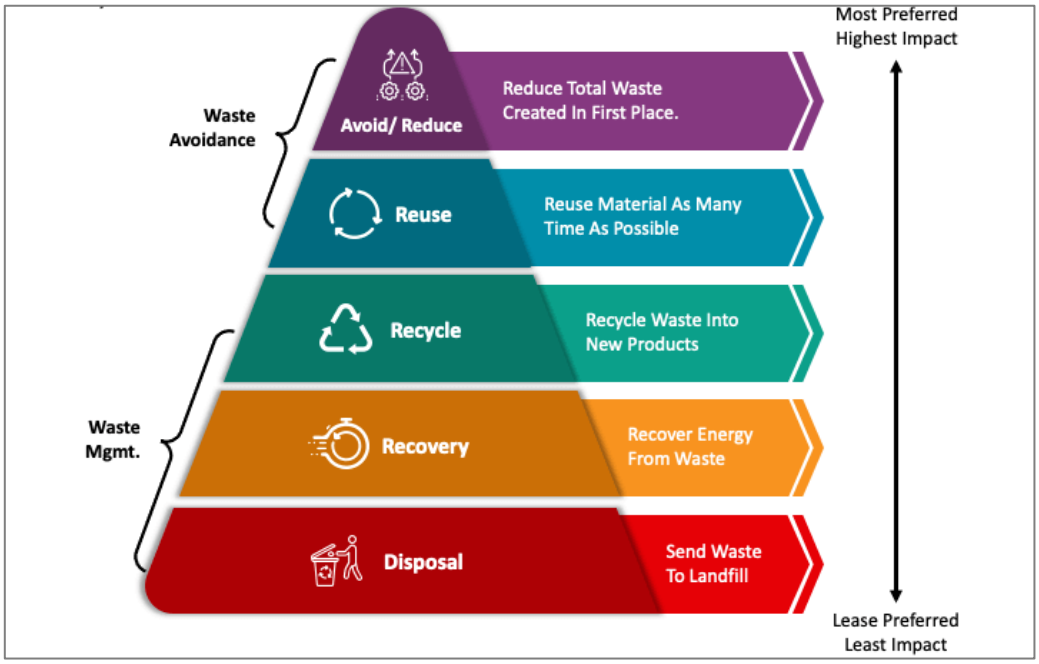

Figure 3-1: Waste Management Hierarchy Diagram

The principles of waste management hierarchy are the following:

- Polluter pays principles – all cost associated with waste management should, where possible, be borne by the waste generator;
- User pays principle – all cost associated with the use of a resource should, where possible, be included in the price of the goods and services developed form the resource;
- Product stewardship principle -the producer or imported of a product should take all reasonable steps to minimise environmental harm from the production, use and disposal of the product.
- Additional philosophies relating to waste and hazardous material management on site will be to:
- Conduct hazardous material handling and storage in an environmentally conscious manner at all times on site;
- Ensure a cradle to grave philosophy regarding any waste generated on site.
- Create awareness of the creation, reuse and final disposal of waste and ensure all in conducted in an environmentally responsible manner.

4. WASTE CLASSIFICATION

4.1. Solid waste characterisation

4.1.1. General waste

Based on NEM:WA, 2008 as amended, waste is classified into two categories, namely general waste and hazardous waste. General waste is waste which does not pose an immediate hazard or threat to health or to the environment and includes (Table 4-1):

- Domestic waste;

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- Building and demolition waste;
- Business waste; and
- Inert waste.

Table 4-1: Description of General Waste categories

Subcategory	Description
Domestic waste	Waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes, which include: • garden and park waste • municipal waste • food waste
Building and Demolition waste	Waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition, which include: • discarded concrete, bricks, tiles and ceramics • discarded wood, glass and plastic • discarded metals • discarded soil, stones and dredging spoil • Other discarded building and demolition wastes
Business waste	Waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes, which includes: • Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing; • Wastes from wood processing, and the production of panels and furniture, pulp, paper and cardboard; • Wastes from the leather, fur and textile industries; • Wastes from thermal processes; • Waste from the photographic industry; • Wastes from shaping and physical and mechanical surface treatment of metals and plastics; • Oil wastes and wastes of liquid fuels • Food wastes • Wastes from waste management facilities
Inert waste	Waste that— • does not undergo any significant physical, chemical or biological transformation after disposal; • does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and • does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant; and which include: o discarded concrete, bricks, tiles and ceramics o discarded glass o discarded soil, stones and dredging spoil.

4.1.2. Hazardous waste

According to NEM:WA, 2008 as amended, 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 (Table 4-2).

Table 4-2: Description of Hazardous Waste categories

Subcategory	Description
Hydrocarbon waste	Oily substances arising as a waste product of the use of oils/greases in a wide range of industrial and commercial activities, such as engineering, power generation and vehicle maintenance. Liquid and solid waste containing hydrocarbons which occur as a result of spillages, as waste oils from maintenance, hydrocarbon containers and oil contaminated materials.

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Asbestos waste	Waste materials containing Anon friable and/or 'friable' asbestos material in a concentration greater than 1% asbestos by volume. Asbestos in a fibre form can be, when dry, crumbed or reduced to powder by hand pressure.
Chemical waste	Chemical waste includes solids, liquids or gases containing or contaminated with any of the following: (these include certain paints, disinfectants, cleaning agents, batteries, explosives etc) • Flammable wastes; • Leachate toxic materials (e.g. heavy metals, pesticides); • Corrosives; • Reactives such as oxidizers, explosives, unstable materials and water-reactive materials; • Toxic materials including mutagenic, carcinogenic, acute or chronic toxicity materials; • Polychlorinated biphenyls (> 50 ppm concentration)
Fluorescence Tube waste	Burnt out fluorescent light bulbs containing toxic materials such as mercury, cadmium and lead.
Medical waste	Anatomical materials used in the clinic such as soiled surgical dressings, hypodermic needles, sharps and other materials requiring special disposal procedures.
Mixed waste	Waste that has not been subjected to any form of screening and/or separation and therefore comprises an undetermined ratio of general and hazardous waste. Waste of this type is considered hazardous by means of the precautionary principle
Mineral waste	Mixed operational waste that is generated as a result of the spillage of minerals from materials conveyance systems, stormwater drains (silt) and settled dust from the off-gas filtration plant. Constituents often include: • Baghouse filter dust • Ash from re-heater • Process water sludge
Sewage waste	Untreated sewage requiring treatment in a sewage treatment works
Wastewater Treatment Sludge	Sludge emanating from the wastewater treatment works may comprise high salt content, metal content and oily sludges

5. NEOSERVE WASTE

5.1. Waste Impact Assessment

Findings of the environmental impact assessment regarding waste per project phase are outlined below:

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

Construction phase:
There are no impacts associated with the construction phase which would only include the commissioning of the required operational equipment inside the existing infrastructure building. Commissioning will be contracted to a suitably qualified service provider.

Operational phase:
By-products from the pyrolysis process including char, Carbon Black, fibres, pyrolysis oil and/or steel will be produced from the proposed production processes. Where any of these cannot be re-used or processed further at the site, the possibility of selling them to a third-party recycler, or processer must be explored as priority option. Where any cannot be sold, it must therefore, be disposed accordingly at a licensed landfill site.

General domestic waste such as paper, plastic, organic, glass, etc., shall be placed in separate bins and an accredited waste collector will be appointed to collect it for recycling.

No effluent shall be produced from the proposed production processes.

Decommissioning phase:

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The site infrastructure is perceived as permanent with the operations planned to take place indefinitely to a point where it may be sold to a potential buyer(s). As such, waste generated from decommissioning the site facilities are rather explained as mitigations in the EMPr.

As such, the impact significance of the facility's waste is considered low as most of its production waste provide the option to be reused or recycled by Neoserve, or third-party processers.

Table 5-1: Solid waste impact assessment – Construction/ Commissioning

IMPACT TABLE FORMAT			
	Description	Before Mitigation	After Mitigation
Assessment	*Solid Waste Impact. (Construction)*		
Extent (Ex)	Impacts during the operational phase remain low as none of the waste ends up at a disposal facility. However, waste from decommissioning of the site may have some local impacts which may be decreased through implementation of mitigations.	2	1
Probability (Pr)	The impact is likely occurring (Between a 50% to 75% chance of occurrence).	3	2
Reversibility (Re)	The impact is partly reversible but more intense mitigation measures are required.	2	2
Irreplaceable loss of resources (L)	The impact results in marginal loss of resources.	2	2
Duration	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years). However, mitigations may decrease these to almost none.	2	1
Cumulative effect (CE)	The impact would result in minor cumulative effects. Mitigations would result in negligible to no cumulative effects.	3	1
Intensity/magnitude (M)	Impact alters the quality, use and integrity of the aspect but would still continue to function.	2	1
Significance Rating	Description of the importance of the impact which indicates the Mitigation required.	-28 (Negative Low Impact)	-9 (Negative Low Impact)
Mitigation measures	• For by-products from the pyrolysis process including char, Carbon Black, fibres, pyrolysis oil and/or steel which cannot be re-used or processed further at the site – the possibility of selling them to a third-party recycler, or processer must be explored as priority option. Where any cannot be sold, it must therefore, be disposed accordingly at a licensed landfill site.		

Table 5-2: Solid waste impact assessment. – Operational Phase.

IMPACT TABLE FORMAT			
	Description	Before Mitigation	After Mitigation
Assessment	*Solid Waste Impact. (Operational phase)*		
Extent (Ex)	Impacts during the operational phase remain low as none of the waste ends up at a disposal facility. However, waste from decommissioning of the site may have some local impacts which may be decreased through implementation of mitigations.	2	1
Probability (Pr)	The impact may occur (Between a 25% to 50% chance of occurrence.	2	1
Reversibility (Re)	The impact is partly reversible but more intense mitigation measures are required.	2	2
Irreplaceable loss of resources (L)	The impact results in marginal loss of resources.	2	2
Duration	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural	2	1

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	processes thereafter (2 – 10 years). However, mitigations may decrease these to almost none.		
Cumulative effect (CE)	The impact would result in minor cumulative effects. Mitigations would result in negligible to no cumulative effects.	3	1
Intensity/magnitude (M)	Impact alters the quality, use and integrity of the aspect but would still continue to function.	2	1
Significance Rating	Description of the importance of the impact which indicates the Mitigation required.	-26 (Negative Low Impact)	-8 (Negative Low Impact)
Mitigation measures	• For by-products from the pyrolysis process including char, Carbon Black, fibres, pyrolysis oil and/or steel which cannot be re-used or processed further at the site – the possibility of selling them to a third-party recycler, or processer must be explored as priority option. Where any cannot be sold, it must therefore, be disposed accordingly at a licensed landfill site.		

5.2. Waste management practices

5.2.1. Storage and disposal

The facility plans to use sand in their metal production processes. The waste that is generated from their casting processes mainly include waste sand, slag and metal dust. Neoserve will also generate general waste, which will be stored within dedicated waste bins. A baghouse is also planned to be installed – attached to the molding machine to prevent any dust from being released into the air. The possibility of also connecting the sand mixer and the reclamation silo should be explored to prevent dust and spillages on the ground.

Where sand cannot be recycled, options of selling it to brick makers and or other recyclers must be explored before opting for disposal. There may also be possibilities to sell metal dust to third party companies which produces exothermic sleeves and associated products for foundries.

5.2.2. Training and awareness

Although their practices are commendable, they still can improve on their waste management techniques including but not limited to having signage to show the various storage areas. Neoserve should have a waste management programme that will help improve on their waste management practices. The awareness programme may consist of:

- Induction for employees and contractors;
- Official on-site instruction guidelines;
- Supervision and inspection training.

The content of awareness programmes must include:

- Identification and classification of waste streams and/or the types of waste;
- Instruction on hazards associated with hazardous wastes,
- Precautionary measures and handling measures;
- Waste Management Procedures for the handling, storage and disposal of waste.
- The detrimental effects of poor waste management practices.

5.2.3. Inspections, Monitoring

Inspections are essential to ensure the effective implementation of the WMP and to minimise impacts on the surrounding environment. It is recommended that the following checks occur on site in association with this WMP:

- Review of the WMP (at least once a year or should there be a change in the process or waste streams);
- Weekly internal site inspections to check compliance against the WMP recommendations;

- A compliance audit (at least once a year as per the EA) from an independent contractor to check overall compliance against the WMP;
- Regular internal inspections on the status of:
    - Types and quantity of waste generated;
    - Waste classification (have all waste streams been correctly classified, are there any new waste materials that need to be accounted for);
    - Waste separation (is this done, if so, is it done correctly, is there secondary contamination of waste);
    - Waste storage practices (e.g., is waste appropriately stored and its storage area appropriately marked);
    - Waste disposal (the frequency at which waste is removed and records of waste removal and disposal site);
    - Waste disposal certificates and registers (e.g., have these been filled in correctly and kept up to date);
    - Waste management records (have these been filled in correctly and properly archived);
    - Waste management procedures (are these still up to date and relevant, are they being implemented properly);
    - Waste management training (has training been conducted, are there records to prove this and is the training effective).
- Waste management records and documentation must be kept for a minimum of 5 years.

5.2.4. Registrations and Reporting

The company must register on the Gauteng Waste Information System (GWIS) and report their monthly recycled waste tonnages. GWIS is the provincial inventory intended to provide the public, business, industry and government with access to information on the management of waste within the Gauteng Province, by capturing routine data on the tonnes of waste transported, treated, landfilled and recycled in the province on a monthly and annual basis. The system was implemented in the Gauteng province in 2004 under the Provincial Regulations (Gauteng Waste Information Regulations, 2004. Gazette No: 372, Notice No: 3035b).

Neoserve should also register on the National Cleaner Production Centre South Africa (NCPC-SA) Industrial Symbiosis Programme (ISP) for the purpose of sourcing input material and identifying potential third party companies that can further recycle the company's generated waste. This is a free facilitation service that promotes the exchange of residual resources from one company with another company that can make use of it. The NCPC-SA is a South African government national initiative that promotes the use of resource efficiency and cleaner production (RECP) approaches to aid industry in cutting costs through reduced energy, water, and material usage, as well as waste management.

The goal of the ISP program is to establish a platform for mutually beneficial economic, social, and environmental advantages. Material, energy, water, production waste, assets, logistics, or expertise are all examples of resources that can be shared or exchanged.

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5.3. Recommended waste mitigation measures

Measures	Mitigation intended	Monitoring		Responsible Person
Waste Storage	• All input tyres must be stored on a designated hard surface contained by a bund. • The tyres storage areas must be treated as a hazardous storage with restricted access and adequate firefighting equipment placed around the area. • All occupational health and safety precautions must be adhered to in terms of the relevant Acts including the OHS Act. • Designated waste skips for different waste materials (general, hazardous, recyclable, etc.) should be made available on site. • Waste storage areas should be easily identified and marked, using labels and/or signs. • Access to hazardous wastes storage areas should be restricted to those who are responsible for the handling of the waste materials. • No waste must be stored on the floor, all waste must be contained within the available skips, containers and bins.	• Visual Monitoring	• Ongoing during operation	• SHE Manager, Applicant

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Measures	Mitigation intended	Monitoring		Responsible Person
	• Should the skips, containers or bins not be enough for the storage of certain waste types, then well-defined waste storage areas should be allocated. All waste must be stored on impermeable surfaces and preferably in bunded areas, to prevent potential infiltration into storm water systems. • Neoserve must have at least 3 recyclable waste bins or containers that are strategically placed around the facility, these bins or containers should promote the separation of general waste and have appropriate signage. E.g., plastic, paper, glass. • Hazardous waste materials must be stored in either a sealed unit or under a roof as to prevent exposure to rainwater and infiltration into the storm water management system. Empty chemical containers and or oil bins must be stored under cover and in bunded areas, to prevent any potential leaking into storm water management system. • Bottoms of skips, containers or bins which are in contact with soil must be protected from corrosion by ensuring the base is made from corrosion resistant material or the container has a cathodic protection system. • A hazardous waste container resting on the ground must be underlain by barriers, which will not deteriorate with permeability rate of the waste stored. • A liquid waste container (should this be needed) must be of enough strength and structural integrity to ensure that it is unlikely to burst or leak in its ordinary use. • Any waste that is spilled, blown by wind or leaked must be cleaned up and contained immediately. Such a situation must be treated as an urgent matter. Such occurrence must be treated as an incident and an incident register must be completed with a copy sent to the relevant authorities. • All material used for the mopping up of surface spillages should be stored in a container labelled “used material” and removed on a regular basis by an approved hazardous waste disposal contractor. • Any raw material must be stored in a designated area that is marked and labelled within the facility. • Old foundry equipment that is no longer of use, molding boxes not being used, and other obsolete waste material including waste drums must be removed and not stored on site. • All waste must not be stored on site for more than 18 months from the date that the waste is generated.	• Internal audit reports (i.e. checklists) • Non-conformance reports • Incident reports	• Weekly audits	• SHE Manager, Applicant
Waste Disposal	• Waste should be separated for recycling such as general wastes including paper, plastic, cans and glass. • For production waste or by-products such as char, carbon black, fibres, pyrolysis oil and/or steel, possibilities of selling or giving it to third-party recyclers must be explored. • All waste (that cannot be recycled or re-used) must be disposed of by an approved disposal contractor at a registered landfill site. Waste disposal certificates must be obtained and kept. • Waste must be collected and disposed of on a regular basis (i.e., weekly) to prevent the accumulation of waste on site. Long term storage of waste materials on site should not be allowed.	• Visual Monitoring	• Ongoing during operation	• SHE Manager, Applicant
		• Internal audit reports (i.e. checklists) • Non-conformance reports • Incident reports	• Weekly audits	• SHE Manager, Applicant

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Measures	Mitigation intended	Monitoring		Responsible Person
	• Soil which is contaminated by hazardous spillages including any suspicion of such contamination through paved areas, must be excavated to contamination depths immediately. Such soil must be disposed of by a registered hazardous waste collector. • A waste disposal register must be implemented, and records should be kept on site, registering all quantities and types of disposed and received waste. • The company should investigate opportunities to find alternative use for their general waste such as selling it to someone who can use it.	• Waste disposal certificates • Waste register	• Ongoing during operation	• SHE Manager, Applicant • Contractors
Separation of Waste	• All hazardous and general waste needs to be separated. • There must be no co-disposal of general and hazardous waste. • Company specific procedures must be documented to prevent mixing of waste streams. These procedures will assist in waste management training and auditing. • Skips, containers and bins must be labelled for their respective wastes (i.e., general, hazardous, recyclables). • Designated waste areas must be labelled and defined within the facility. • Hazardous waste storage areas should include information on the potential hazards posed by the waste (e.g., flammable). • Waste bins that promote the separation of general waste must be strategically placed in different areas within the facility and should have proper signage.	• Visual Monitoring	• Ongoing during operation	• SHE Manager, Applicant
		• Internal audit reports (i.e., checklists) • Non-conformance reports • Incident reports	• Weekly audits	• SHE Manager, Applicant
General	• No burning of any waste is to be permitted within the facility. • Approved and certified waste disposal contractors must be appointed for the disposal of waste. • Waste must be disposed of at a registered waste site. • All waste disposal certificates must be kept on record. • All waste generated, handled, stored and disposed must be recorded. • All waste management procedures must be reviewed and kept up to date. • A training and awareness program must be implemented.	• Visual Monitoring	• Ongoing during operation	• SHE Manager, Applicant
		• Internal audit reports (i.e. checklists) • Non-conformance reports • Incident reports	• Weekly audits	• SHE Manager, Applicant
		• Waste management procedures documents	• Ongoing during operation	• SHE Manager, Applicant

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