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MIDVAAL TYRE PYROLYSIS PLANT

Draft Scoping Version 1.0



" Changing the horizons of today for a brighter tomorrow "



Title: Midvaal Tyre Pyrolysis Plant
Client: Nienaber Vervoer & Bande
Consultant: P3 Consulting cc
Sub-Consultant: n/a
Project Name: Midvaal – Tyre Pyrolysis Plant
Project Number: 12/9/11/L734/3/24G
Status of Report: Draft Scoping
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Approved for P3 Consulting by:

.....

Pieter Colyn – **Public Participation Practitioner**

I. EXECUTIVE SUMMARY

The late Mr. P Nienaber accumulated around 22 – 25 million used tyres on his land – land known as Plot 110, Walker Fruit Farms, Meyerton / Midvaal Municipal area. Mr. Nienaber passed away during 2007 and his children inherited the land and his business.

In the time after the passing of Mr. Nienaber the new Waste Tyre Legislation/ Regulations were passed, effectively declaring the stock pile of tyres on the land of Mr. Nienaber as unlawful and not authorised. The children knew nothing about the change in law and as such had done nothing in the years past to rectify the matter and have the dump site registered and declared an official site with environmental plans in place for operations.

To date the estate of the late Mr. Nienaber has not been settled and the land has thus not been transferred into the names of those who inherited. Notwithstanding this the business had to continue and the sons of the late Mr. Nienaber has been running the business as best they can.

In an effort to get the dump site “legal” and in order to conform with legislation, the Nienaber brothers have opted to apply through a Section 24(G) application to have the matter of the dump site made legal and also to provide the authorities with a plan of action on how best to use / recycle the used tyres on the land. It is their intention to rid the land of the inherited “sins” of the late Mr. Nienaber by not only legalising but also working away the massive amounts of tyres on the land.

The Nienaber brothers have acquired a business partner from overseas who wishes to join them in establishing a tyre pyrolysis plant on the land in order to work away the stock piles of tyres. The process will yield bunker oil; scrap metal and carbon black residue. All three of these items will be sold onwards into respective industries in an effort to rid the land of waste while also economically and environmentally responsible eliminating the stock piles on hand.

In order to ensure that the envisaged plant is environmentally sound a special site visit to see a full tyre pyrolysis plant in operation will be undertaken during December 2011. The plant that will be visited is situated in the northern territories of China. A full environmental audit will be undertaken on the plant to evaluate its operations and make recommendations in order to ensure that the plant operations is sound and safe.

The application for the removal / recycling of the used tyres will be a “consent application” – it is an application where once the tyres have been worked away, the land is returned to full agricultural potential and no further storing and recycling of old rubber takes place.

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1. **PURPOSE OF THIS DOCUMENT**

It is the intention of Nienaber Vervoer, to install and operate a tyre pyrolysis plant on its land – land known as Plot 110 Walker Fruit Farms, Meyerton.

The aim of the development is to not only effectively “legalise” the waste dump in terms of legislation, but also provide a permanent solution in the working away of the used tyres in order to return the land to agricultural use.

The property is located at Plot 110, South Road, Walker Fruit Farms, Meyerton / Midvaal.

This type of undertaking and activity is regulated, amongst others by the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and Environment Impact Assessment Regulations promulgated under the Act, Regulations R543; R544; R545; R546 and R547 (dated 18 June 2010). The Act and Regulations require that an Environmental Impact Assessment (EIA) study be undertaken, by an Independent Environmental Practitioner.

In terms of R545 the proposed development is a listed activity.

Listing Notice 2: Listing of activities and competent authorities identified in terms of Section 24(2) and 24(D) of the Act.

Appendix 1 – Activity 5

The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice R544 of 2010 or included in the list of waste management activities published in terms of Section 19 of the National Management: Waste Act, 2008(Act 59 of 2008)(NEMWA) in which case that act will apply.

P3 Consulting cc, as independent consultants, has been appointed by the developer and proponent to project manage the EIA in order to evaluate the potential environmental and social impacts associated with the proposed project.

The first phase of the EIA is the Scoping Phase. This is the phase during which issues and concerns of various stakeholder groups are identified and evaluated to highlight the significant issues that may require further investigation and assessment by specialists. In this EIA, the Scoping Phase is critical as the process does have emissions and as such must comply amongst others with the National Environmental Management: Air Quality Act, 2004(Act 39 of 2007)(NEMAQA).

Specialist studies will therefore be identified early in the EIA Process, and all baseline information currently available will be included into the EIA studies.

According to the EIA Regulations, Interested and Affected Parties (I&APs) must be given the opportunity to comment on the proposed project and the findings of the impact assessment. The purpose of the Final Scoping Report (SR) is to provide interested and affected parties with

the opportunity to ensure that their comments have been accurately recorded and to review the Terms of Reference (ToR) for the proposed specialist studies (if required) to be undertaken. On the basis of comments received during public review of the Draft Scoping Report, a Final Scoping Report will be compiled and submitted to the relevant authorities for decision-making.

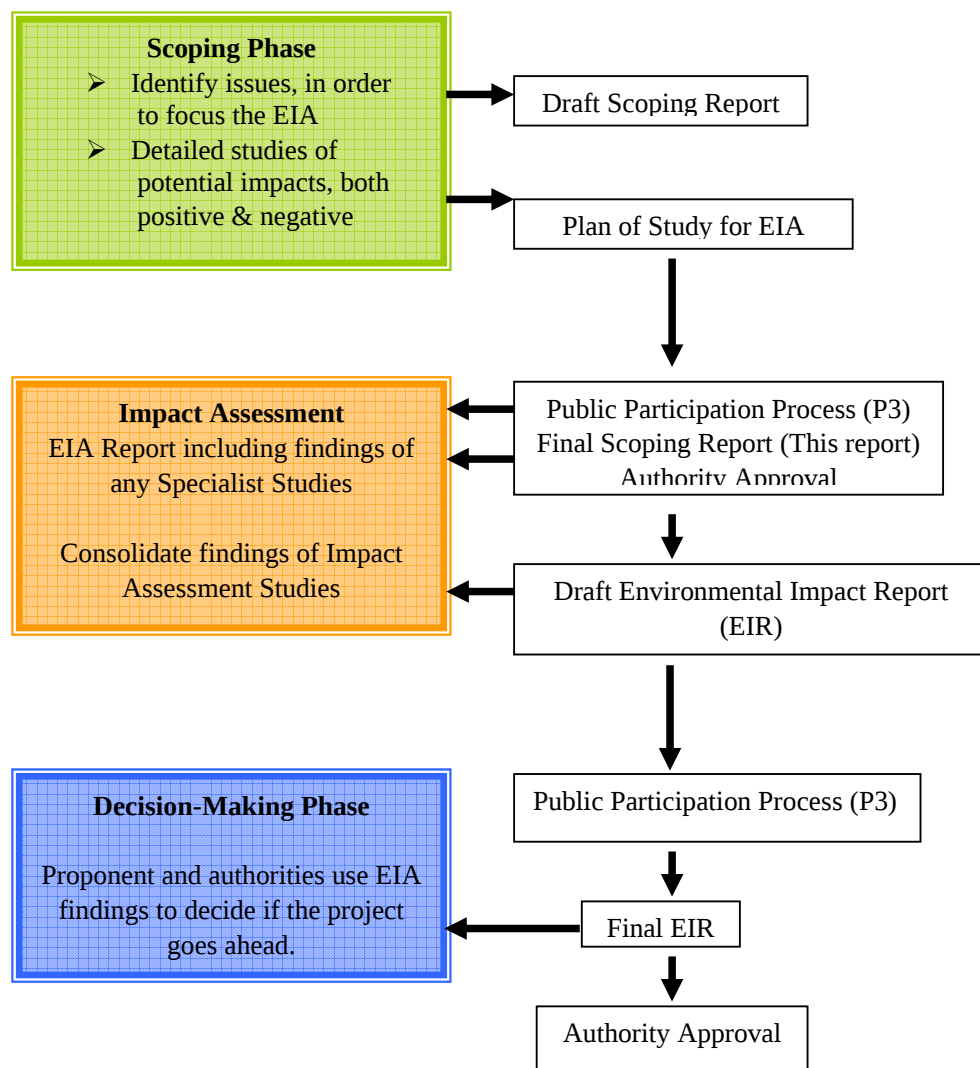
This Scoping Report contains:

- The background to the proposed project
- A description of the proposed project
- An overview of the EIA process, including the Public Participation Process (PPP)
- A description of the existing environment of the project area
- Potential environmental issues and impacts which have been identified
- The Terms of Reference for studies
- EIA methodology
- A list of all Interested & Affected Parties (I&AP) consulted and their comments

For activities listed in R545, a full Scoping EIA process is required.

Refer to Figure 1.

AN EIA CONSISTS OF SEVERAL PHASES



YOUR COMMENTS ON THE FINAL SCOPING REPORT

The Draft Scoping Report and its accompanying documentation will be available for public scrutiny from 27 October 2011 to 27 November 2011 (30 days). The Scoping Report includes the extent of any specialist studies to be undertaken as part of the EIA process within the Plan of Study for EIA. Copies of the Draft Scoping Report are placed at strategic places in the project area (see below).

List of public places where the Draft Scoping Report and its accompanying documentation are available:

Table 1: Draft Scoping Report in Public Places

PLACE	ADDRESS	TELEPHONE
Meyerton Library	Library Building, Civic Centre, Mitchell Str, Meyerton	016 360 7443
P3 Consulting	28 Marula Street, Dowerglen	011 454 4566
Environmental Health	Mr Ben Viljoen _ Midvaal Cnr Medley & Weilbach Rd, De Deur	016 988 1064

You may comment on this Report by:

- Writing a letter, or producing additional written submissions
- By email; telephone or fax to the Public Participation Office

PROJECT REFERENCE NUMBER
DEAT 12/9/11/L734/3/24G

NOTE: All correspondence must reflect the above reference number.

DUE DATE FOR COMMENT ON THIS DOCUMENT REMAINS OPENENDED UNTIL SUCH TIME THAT IT IS APPROVED BY THE RELEVANT AUTHORITY - GDARD

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TERMS & ABBREVIATIONS USED IN THIS REPORT

DSR	Draft Scoping Report
DEAT	Department of Environment, Agriculture & Tourism
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
FSR	Final Scoping Report
GDARD	Gauteng Department of Agriculture & Rural Development
I&AP	Interested and Affected Party
NEMA	National Environmental Management Act (Act 107 of 1998)
NWA	National Water Act (Act 36 of 1998)
PPP	Public Participation Process
RoD	Record of Decision

GLOSSARY OF TERMINOLOGY

“dangerous good” according to the regulations means goods that are capable of posing a significant risk to the health and safety of people or the environment and which are listed in South African National Standard No. 10228 designated “The identification and classification of dangerous goods for transport”, as may be amended from time to time.

Waste: Waste includes any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water resource in such a volume, composition or manner as to cause, or to be reasonably likely to cause the water resource to be polluted.

Hazardous Waste: Waste that may, by circumstance of use, quantity, concentration or inherent physical, chemical or infectious characteristics, cause ill-health or increase mortality in humans, fauna or flora, or adversely affect the environment when improperly treated, stored, transported or disposed of.

Non-Hazardous Waste: Waste that does not pose an immediate threat to people or the environment, i.e. household waste, building rubble and garden waste. It may however, with decomposition, infiltration and percolation, produce leachate with an unacceptable pollution potential.

2. OVERVIEW

The disposal and safe handling of second hand tyres and other heavy rubber products is a problem not only endemic to South Africa. The world over massive amounts of tyres are accumulated and held in storage without any meaningful progress being made to recycle and dispose of such tyres in an environmentally friendly manner.

On Plot 110 Walker Fruit Farms, Meyerton an amount of used tyres, estimated at between 22 and 27 million, has been accumulated over many years. The then owner of the land collected these tyres over many years and upon his death the land along with the tyres was inherited by his children.

Shortly after his death new legislation and regulations were promulgated which required that the storing / waste tyre dumps be registered and legalised by the authorities. The estate being in the process of finalisation for many years never complied with the required legislation and as such is today seen as an “illegal activity” in contravention of the act and its regulations.

The children of the late owner, having inherited the land and the “sins of the father” decided to have the waste dumps legalised / registered and also provide a more permanent solution to the problem in implementing a recycling plant that will work away the masses of tyres on site.

Being seen as an “illegal activity” has resulted in the decision to follow a Section 24(G) application route. Once a provisional Section 24(G) has been accepted by the authorities, in this case DEAT, a directive is handed down as to the next actions to be taken. In a letter confirming the registration of the Section 24(G) Application, DEAT instructed that a full Scoping EIA inclusive of Public Participation should be followed.

Therefore a Public Open Day Information Session has been arranged for Thursday 27 October 2011 on the land known as Plot 110 Walker Fruit Farms in which the general public will be granted the first opportunity to register and pose questions; objections and inputs.

Plot 110 Walker Fruit Farms currently hold around 22 000 tons of second hand tyres. At a recycling rate of 15 tons a day the envisage plant will take around 1466 days to work the tyres away. On an average 5 day week that calculates to a period of 293 weeks which is around 5.5 years. The installation and operation of a recycling plant will require a permit of at least 6 years in which the tyres can be worked away.

The envisage plant to be installed and operated is a *tyre pyrolysis plant*. Through a process of heating second hand tyres are broken down into oil; waste steel and carbon black residue. Carbon Black residue can be further refined in order to attain higher profits when sold to the tyre making industry.

As part of the feasibility study, the proponent must confirm the environmental viability of the proposed project by appointing independent environmental consultants to conduct an Environmental Impact Assessment (EIA).

2.1. WHO IS CONDUCTING THE EIA?

In terms of the National Environmental Management Act (NEMA) (Act 107 of 1998) and relevant regulations, Nienaber Vervoer has appointed **P3 Consulting**, as independent consultants to project manage the Environmental Impact Assessment (EIA) for the proposed Plot 110 Walker Fruit Farm Development.

P3 Consulting is an independent company, whom conducts EIAs and other environmental investigations through its panel of environmental consultants; public participation practitioners and experienced environmental managers. **P3 Consulting** prides itself on its integrity, independence and skill in assisting interested and affected parties to participate meaningful in the EIA process. **P3 Consulting** has no vested interest in the proposed project nor the outcome of the application, and has declared its independence as required by the EIA Regulations.

P3 Consulting cc is responsible for project management, the Public Participation Process and the compilation of all documents.

Contact: **P3 Consulting cc**
P.O. Box 628
Edenvale 1610
Tel: 011 454 4566
Fax: 0866 22 5552

P3 Consulting has sub-contracted **AVD Environmental Consulting** to undertake the required impact assessment and supporting specialist studies.

AVD Environmental Consulting is a company that provides a professional and cost effective consulting service in the fields of water, environmental and earth sciences. The Directors of AVD Consulting have many years of mining, exploration and consulting experience in Southern Africa. A team of highly trained staff with considerable experience in the fields of hydrogeology, geology, water management and social & environmental science are available.

Contact: **AVD Environmental Consulting**
Alta van Dyk
082 782 4005
alta@avdenvironmental.com

2.2. WHO WILL EVALUATE THE EIA?

Before the proposed project can proceed, the environmental impact assessment for the proposed project must be assessed, and based on the information provided in the EIA, the National Department – Department of Environment, Agriculture & Tourism (DEAT), will

issue a Record of Decision (RoD) / Environmental Authorisation (EA) regarding the proposed project, in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA). The RoD/EA will indicate whether DEAT authorises the proposed project to proceed or not, and if yes, under what conditions.

In the spirit of cooperative governance, the DEAT will consult with other government departments before making a decision. These could include:

- Department of Water Affairs and Forestry, (DWAF);
- Gauteng Department of Agriculture & Rural Development (GDARD);
- Department of Health;
- Department of Labour;
- Department of Public Works / Roads; and
- Meyerton / Midvaal Municipal Authority.

The proposed project has already been registered with the DEAT in Pretoria and an official project number was received: *DEAT 12/9/11/L734/24G*.

The EIA considers the full project life cycle for the proposed project, which consists of an installed and fully operational precious metals refining unit and all the other related infrastructure and buildings. (Pre- Construction; Construction; Operational and Decommissioning and Closure Phases).

2.3. THE EIA PROCESS

NIENABER Vervoer will be conducting a single Environmental Impact Assessment (EIA) for the entire proposed project. The EIA will include an Environmental Management Plan (EMP) which will include the management and mitigation measures for any impacts identified to occur during the different phases of the project (full life cycle) i.e.

- a) Pre-Construction;
- b) Construction;
- c) Operational; and
- d) Decommissioning and Closure.

2.4. LEGAL REQUIREMENTS PERTAINING TO THE PROPOSED PROJECT

Various components of environmental legislation as well as other legislation will be applicable to the proposed project. The following legislations is relevant to the proposed project:

2.4.1. National Environmental Management Act, 1998

The National Environmental Management Act 1998, (Act 107 of 1998) (NEMA), contains requirements regarding an EIA. It specifies that where an activity requires permission by law

and may significantly affect the environment, it is necessary for an applicant to undertake an EIA, which meets the minimum requirements of section 24(7) of NEMA. Such EIA must be presented to all organs of state, which are required to grant (or refuse) the permission that is required by law to undertake the proposed activity.

The minimum requirements of section 24(7) of NEMA are, in some ways, similar to those contained in the EIA regulations, but also require assessment of cumulative impacts, reporting on gaps in knowledge and determining the adequacy of predictive methods which are used in the EIA.

2.4.2. Government Notice No. R. 545 dated 18 June 2010

The Minister of Environmental Affairs and Tourism has in terms of section 24(2) and 24(D) of NEMA, made regulations pertaining to EIA's:

R. 545 – Listing 2 – Activity 5 states that:

- A Scoping EIA must be applied to an application if the authorisation applied for is in respect of an activity listed in the regulation.

Activity 5

The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice R544 of 2010 or included in the list of waste management activities published in terms of Section 19 of the National Management: Waste Act, 2008(Act 59 of 2008)(NEMWA) in which case that act will apply.

2.4.3. National Environment Management: Air Quality Act, 2004 (Act 39 of 2004)

The Act determines that municipalities may determine and enforce “local standards”.

Part 2: National, provincial and local ambient air quality and emissions standards.

Local Standards

11. (1) A municipality may in terms of a by-law –

- a) identify substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well-being or the environment in the municipality or which the municipality reasonably believes present such a threat; and***
- b) in respect of each of those substances or mixtures of substances, establish local standards for emissions from point, non-point or mobile sources in the municipality.***

2.4.4. Midvaal: Air Pollution Control By-Laws

Midvaal is currently investigating research in order to formulate and compile air quality guidelines. The official website of the municipality quotes as follows:

Air Quality Management in the Region:

Challenges, Impacts, Development, and Remedial Actions.

Air quality and its management are important as it affects factors of life such as the environment and

the health of its inhabitants. For example, acid deposition, smog, atmospheric ozone loss and the much aired greenhouse effect are some of the drastic effects of air pollution and poor air quality on the environment. The human health effects of poor air quality are far reaching, but principally affect the body's respiratory system and the cardiovascular system. The health effects caused by air pollutants may range from subtle biochemical and physiological changes to difficulty in breathing, wheezing, coughing and aggravation of existing respiratory and cardiac conditions. Air quality management is thus crucial as it is primarily the minimization, management and prevention of air pollution, which aims to improve areas with poor air quality and maintain good air quality throughout.

DEAT is responsible for regulating all industries and other enterprises undertaking so-called "scheduled processes", i.e. processes listed in the second schedule to the Atmospheric Pollution Prevention Act (APPA, Act No. 45 of 1965) which has the potential to release significant quantities of pollutants to the atmosphere.

The Minister of Environmental Affairs and Tourism declared the Vaal Triangle Airshed as the first national priority area in terms of section 18(1) of the Air Quality Act (Act No. 39 of 2004). The Vaal Triangle Airshed Priority Area (VTAPA) was declared as a priority area due to the concern of elevated atmospheric pollutant concentrations within the area, especially fine particulate matter.

In terms of section 15(2) of the Air Quality Act each municipality is required to develop an Air Quality Management Plan (AQMP). Such a plan must be included in the municipality's integrated development plan as contemplated in Chapter 5 of the Municipal System Act (Act No. 32 of 2000). Sedibeng's AQMP will thus have to achieve the following objectives:

- Improve ambient air quality;*
- Reduce negative impacts on human health and environment;*
- Address the effects of domestic fuel burning;*
- Address the effects of emission from industrial sources*
- Address effects from emission from any point or non-point sources of air pollution;*
- Implement the republic's obligations in respect of international agreements; and*
- Give effect to best practice in air quality management.*

The projects that have been proposed for inclusion in the 2009/10 IDP for the realization of the above objectives are i) the development of the Sedibeng AQMP, ii) the development of the Sedibeng AQMP Bylaws iii) the development of the Infrastructure Asset Management Plan for the Sedibeng air quality stations, iv) the establishment of the Air Quality Management System in the SDM and the Locals.

In the absence of any by-laws those passed by Johannesburg Metro will be used as general guidelines.

2.4.5. National Water Act, 1998

Water pollution control measures that may be enforced in terms of the National Water Act (1998) fall broadly into the following two categories:

- Source directed measures; and
- Resource directed measures.

All water users are subject to both resource directed and source directed pollution control requirements.

Resource directed measures: Resource directed measures must be implemented to ensure that the requirements of recognised surface and groundwater users are met. These measures are usually directed at ensuring that specific water quality objectives are met.

Source directed measures: Source directed measures are also implemented to protect the water resources. These measures are however usually based on best practice and industry norms and are implemented irrespective of whether the impact on the resource would be acceptable with or without such measures in place.

Water uses, where applicable and as defined in Section 21 of the Act, must be licensed by the Department of Water Affairs and Forestry.

2.4.6. Occupational Health and Safety Act, 1993

The by-products produced by the process i.e. bunker oil and carbon black are hazardous products and all possible care should be taken when handling such products.

Exposure to hazardous chemical substances: The regulations under the Occupational Health and Safety Act of 1993 requires that an employer shall ensure that employees are adequately trained and informed of the potential source of exposure, the risks of exposure, protection measures, personal protective equipment, maintenance and safety equipment, medical surveillance, safe working procedures and emergency actions.

The handling and storage of these substances must be carried out in accordance with the codes of practice published by the SABS (Codes 072; 0228; 0229).

3. BACKGROUND TO THE PROPERTY TO BE USED FOR THE PROPOSED PROJECT

3.1. THE PROPERTY

The property known as Plot 110, Walker Fruit Farms, Meyerton is part of the greater Midvaal Municipal Structure.

Fig 3.1: The property at 110 Walker Fruit Farms.

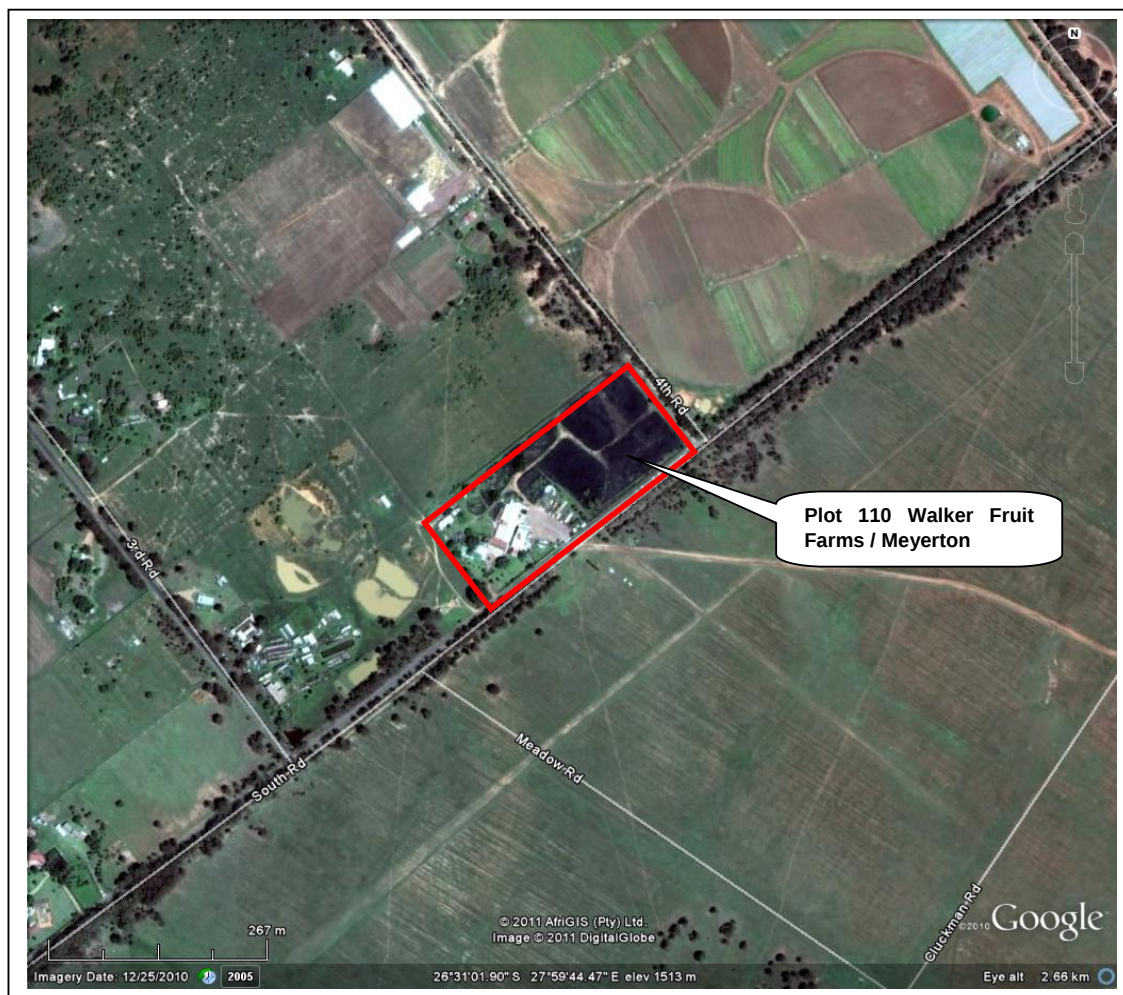


The actual property at Plot 110 South Road is approximately 4.03Ha and comprises the bulk stock piles; workshops and a house with 3 boreholes for the supply of water along with an Eskom connection for electricity.

3.2. LOCATION OF THE PROPERTY

The property known as Plot 110 South Road is located within the Walker Fruit Farm Agricultural Small holdings, De Deur / Meyerton / Midvaal Municipal Area.

Fig 3.2: Plot 110 in relation to other agricultural small holdings.



3.3. CURRENT LAND USE ACTIVITIES

The property known as Plot 110 is located within the Walker Fruit Farm Agricultural Holdings area. The area has different agricultural undertakings ranging from vegetable farming, to barren land, to horse & stable establishments to normal plot dwellings.

3.4. SURROUNDING LAND USE

Plot 110 is surrounded by plots with a variety of “plot” activities being undertaken. Plot 110 falls within an area identified by the municipal authority as an area for agricultural practices and not residential or industry development.

3.5. REZONING OF THE PROPERTY

No rezoning of the property will be required as the application will be for consent to install, operate, clean and rehabilitate. Once the used tyres have been worked away the operation will stop and the land will return to agricultural use and its full agricultural potential.

4. ENVIRONMENTAL CONTEXT / RECEIVING ENVIRONMENT

This section provides an outline of the receiving environment for the proposed project, in order to provide a perspective of the local environment within which the site exists, and within which the project will take place.

4.1. TOPOGRAPHY

The site is located within the Meyerton / Midvaal Municipal structure at an elevation of ± 1513 meters above mean sea level (mamsl). The site is gently sloping towards the south / south west, and drainage is carried towards the Vaaldam water catchment area.

4.2. CLIMATE

An understanding of the climatic conditions is necessary for the impact assessment. The main climatic conditions are outlined here.

4.2.1. Air temperatures

The average daily maximum temperatures range from 27.3° in January to 20.5° in June, with daily minimum values ranging from 16.5° in January to 5.2° in June / July.

4.2.2. Precipitation

The Mean Annual Precipitation (MAP) for this area over a 10 year period is approximately 879mm per year (the wettest year in a 10 year cycle) and 580mm per year (the driest year in a 10 year cycle).

4.2.3. Evaporation

The average S-Pan evaporation for the area, over a ten year cycle, has been calculated as being 786.3.

4.2.4. Wind Speed and Direction.

Dominant wind directions are from the north-east and east-north-east (summer) as well as the west and west-south-west (winter).

4.3. SEISMIC ACTIVITY

Regional seismic activity information obtained from the Council for Geosciences indicates that very low seismic activity has been recorded in the area.

4.3.1. RECEIVING WATER ENVIRONMENT

It is important to understand the rivers and water features surrounding the site, in order to assess the impact at the proposed project and the surface and groundwater resource. The receiving water environment is described briefly below.

4.3.2. Drainage Region

Plot 110 falls within the Vaal Dam catchment area and all water drains towards the Vaal Dam river system.

4.3.3. Fountains or springs

There are no fountains or springs on the property intended for the proposed development.

4.3.4. Boreholes

There are three boreholes in use for the supply of water.

4.4. SOILS AND GEOLOGICAL RECEIVING ENVIRONMENT

Site specific soils and the geological composition of the site will be determined during the EIA phase.

4.5. EXISTING INFRASTRUCTURE

Plot 110 Walker Fruit Farms falls within the Meyerton Municipal boundaries. This area forms part of the Greater Midvaal Municipal Structures. The land is zoned "agricultural small holdings".

4.5.1. Roads

The main feeder route from Johannesburg is R59 / Sybrand v Niekerk Motorway. A network of smaller roads service the agricultural small holdings in the area.

4.6. SERVICES

4.6.1. Electricity

Power is supplied via the Eskom supply lines.

4.6.2. Waste disposal

The owner of the land currently removes all refuse for disposal at the local municipal landfill site. There is currently no weekly municipal refuse removal service to the agricultural small holdings.

4.6.3. *Water supply*

Water is supplied from three boreholes on the property.

4.7. *SOCIO-ECONOMIC ENVIRONMENT*

This section provides a summary of the current socio-economic circumstances of the surrounding area.

4.7.1. *Population*

Midvaal Municipality has a total population of $\pm 64\ 641$, represented by $\pm 20\ 840$ households. The poverty rate for the area is, like the rest of South Africa, estimated at $\pm 25.7\%$ (Stats 2011).

4.7.2. *Employment status*

Employment sectors vary with the largest employers being Manufacturing; Agriculture; Construction and Wholesale.

With large unemployment numbers, households in many cases depend on a single income to sustain an enlarged circle of family.

5. DETAILED PROJECT DESCRIPTION

This chapter describes the proposed project, its infrastructure and other related activities.

5.1. MOTIVATION FOR THE PROPOSED PROJECT

Nienaber Vervoer wishes to install and operate a tyre pyrolysis plant on its property in order to work away the massive number of used tyres currently being stored on the property.

The aim of the development is to provide a permanent solution to the large volumes of used tyres on the property in an environmentally friendly way.

In order to ensure that the intended plant operation is indeed correct and environmentally acceptable (on South African standards) the applicant has appointed a consultant to inspect an operational plant and has requested that an environmental audit be undertaken prior to the actual ordering of the plant.

5.2. EXTERNAL CONSIDERATION

The property intended for the proposed plant operation is situated within an agricultural small holding area. The intent is to apply for consent use for a fixed period of time to work away the used tyres and then return the land to agricultural use.

5.3. INTERNAL CONSIDERATIONS

The intended premises is currently overstocked with large volumes of used tyres. These tyres can not be moved elsewhere and nor should they be left on site. They need to be worked away and recycled in a process that is environmentally acceptable.

5.4. TENANTS ON SITE

The property for the intended plant has no other tenants occupying any portion of the property. The entire property is intended for the use of the tyre pyrolysis plant until all the used tyres have been worked away.

5.5. THE PROPOSED DEVELOPMENT INFRASTRUCTURE

The proposed development will consist of a number of components:
They are:

- **The heating facility;**
- **Rotating oven;**
- **Oil extraction and storing;**
- **Waste steel dump;**
- **Carbon Black collection pit and bagging facility.**

5.5.1. The Rotating Oven

Shredded tyres are placed into the rotating oven and the oven is then sealed. Heat is transferred into the oven to heat up the tyres and dissolve the solid form. During this process Carbon Black is released as a powder and the oil contained within the rubber is extracted. Once the entire load in the oven has been dissolved the waste steel removed and the carbon black transferred to the carbon black bunker for storing before being placed in bags.

5.5.2. Oil Extraction

All rubber contains oil. During the process of heating and transforming of the solid rubber the oil is extracted and condensed into liquid and stored in an oil container on site.

5.5.3. The Carbon Black bunker

Carbon Black powder is very light and as such it can be dispersed with the slightest wind. In order to prevent this a carbon black bunker is installed below floor level and all carbon black from the oven is placed in the bunker. From the bunker holding carbon black is later mechanically pumped into large knitted plastic bags before being sold and shipped to the tyre manufacturing industry.

5.6. ACCOMPANYING INFRASTRUCTURE

A number of security measures will be implemented on site to ensure optimal security of the operations and those working on site. The premises will have strict access control. Loading bays for the removal of the oil; waste steel and carbon black will be provided. Bulk oil will be stored in an oil container within the required bunker system to prevent spillage and pollution.

5.7. ELECTRICAL SUPPLY

Electricity supply is from Eskom with a back-up generator to provide electricity in times of power cuts or national load shedding.

5.8. OTHER UTILITIES

A number of other utilities will be housed on the premises as part of the total development. These are described below.

5.8.1. Fire Water

Standard fire hoses connected to the municipal water supply will provide fire fighting capabilities as a first response should any fire develop within the building.

5.8.2. Other Fire Fighting Equipment

Other fire fighting equipment will also form part of the overall safety aspects of the proposed development i.e.

- Chemical and Dry Powder Extinguishers

- Buckets of sand
- Buckets for water

5.9. WATER AND EFFLUENT MANAGEMENT

Nienaber Vervoer will implement the principles of clean and dirty water separation on site. Clean storm water will be diverted away from the premises into the adjacent agricultural land. Any process water or water containing any form of waste will first and foremost be diverted to an inhouse waste water tank before being treated and the Ph balance neutralized to a level of Ph7.

5.9.1. Storm Water

As mentioned before, the proposed site is situated in an agricultural small holding area and as such all roof run-off will be allowed to flow onto the land adjacent to the plant.

5.9.2. Process Water and Effluent

Clean and dirty water separation on site will prevent the ingress of clean water into the dirty water system. Such preventative measures include:

- Diverting clean storm water from roofed areas away from working areas;
- Any water used in the process is contained and can under no circumstances be involved with the clean water system. Thus no process water can find its way into the receiving environment.

Process water will emanate from the cleaning of equipment, floors and machinery.

Effluent generated will follow the standard route into the on site septic tanks / French drain system that is currently operational on site.

5.10. WASTE MANAGEMENT

Municipal solid waste is collected by the owner and disposed of on the local municipal landfill site.

5.11. PROPOSED PROJECT SCHEDULE

The proposed project may only start once a positive RoD / EA is granted by the National Department of Environment (DEAT). This RoD / EA will only be provided once the full EIA has been completed and submitted for its approval to the Department. Refer to the table below for the proposed time schedule.

Table 5.1 Project Schedule

Phases	Description of Phase	Oct - Dec '11	Jan - Mar '12	Apr - May '12
Phase 1	• EIA Process • Design Phase			
Phase 2	• RoD • National authorisation			
Phase 3	• Installation • Commissioning Operation			

Should a positive RoD / EA be obtained, the proponent anticipates construction to start in the second quarter of 2012. Construction will be undertaken over a period of ± 3 months.

6. *ALTERNATIVES*

Alternatives in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to:

- The property on which or location where it is proposed to undertake the activity;
- The type of activity to be undertaken;
- The design or layout of the activity;
- The technology to be used in the activity; and
- The operational aspects of the activity.

For the Nienaber Vervoer Development the following alternatives have been considered:

6.1. *THE NO-GO OPTION*

This option entails the option of not proceeding with the activity, implying a continuation of the current situation / status quo.

However, during the assessment the EAP must consider both the possible positive as well as the possible negative impacts that may occur if the No-Go option was adopted i.e.

- Which potentially positive impacts will not occur;
- Which potentially negative impacts including biophysical, social and economic impacts will be avoided.

These comparative findings will form part of the final EIA Report.

Currently the Nienaber Vervoer operation is burdened with a massive amount of used tyres. These tyres need recycling in a responsible manner. If left unattended the NO-Go option will ensure a continuance of the current unacceptable practice and will be in violation of the act.

6.2. *LOCALITY ON-SITE*

The current building on site is a large voluminous structure within which the plant can be installed. The building is however the only structure that will be able to house the equipment as the rest of the remainder of the property is stacked to capacity with tyres.

6.3. *LOCATING TO A DIFFERENT SITE*

Another industrial area may well be considered. However Plot 110 is ideally situated for the operations. The tyres needing recycling will be on site and will not need transportation to a different site for working.

6.4. *PREFERRED ALTERNATIVES*

The property known as Plot 110, Walker Fruit Farms, is the preferred option for a number of reasons:

- The property belongs to Nienaber Vervoer;

- The Property is an agricultural smallholding needing rehabilitation;
-
-
- The property and its buildings has infrastructure ideally suited for the intended activity.

7. THE EIA PROCESS

This chapter is devoted to the interaction between *P3 Consulting cc*, I&APs; the Proponent as well as relevant Governmental Authorities.

7.1. OUR APPROACH TO THE ENVIRONMENTAL IMPACT ASSESSMENT

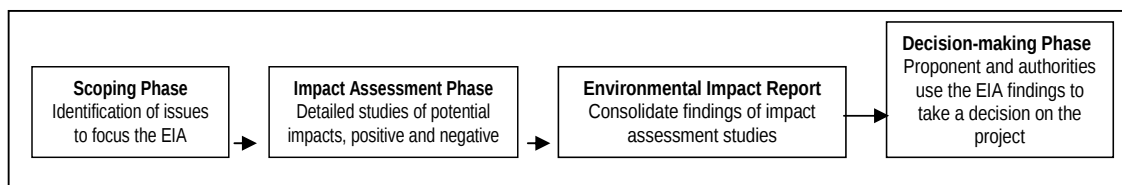
The term “environment” is used in the broadest sense in an EIA. It covers the physical; biological; social; economical; cultural; historical; institutional and political environments.

An EIA is a good planning tool. It identifies the environmental consequences of a proposed project from the beginning and helps to ensure that the project, over its life cycle, will be environmentally acceptable and integrated into the surrounding environment in a sustainable way.

In terms of the National Environmental Management Act, (Act 107 of 1998) and in compliance with the EIA requirements, two parallel processes will need to be followed in order to apply and receive an Environmental Authorisation (EA):

- An environmental technical process; and
- A Public Participation Process (PPP)

Figure 7.1 The EIA Process



7.2. EIA PROCESS

The technical process undertaken for this EIA is summarised below.

7.2.1. Application for authorisation

The initial application to DEAT of the proposed project was submitted to DEAT in Pretoria. P3 Consulting received under signature from DEAT the Project Registration number:

DEAT 12/9/11/L734/24G

7.2.2. *Pre-application consultation with DEAT*

A pre-application consultation was conducted with DEAT. The intention of the consultation was to ensure that the activity and application correspond with one another and also meet the requirements of the Authority in respect of incorporating any specific requirements of the department into the Final Scoping Report and Plan of Study for EIA.

7.2.3. *Draft Scoping Report and Plan of Study for EIA*

- *Information gathering*

P3 Consulting visited the proposed site to get first-hand understanding of the site and current operations of the area in general. During the initial visit as well as subsequent visits the team determined what information would be required for the impact assessment. Information was not only gathered from the receiving environment, but also through a Public Open Day Information Session on Thursday 27 October 2011 at the actual site.

7.2.4. *Contents of a Scoping Report*

A Scoping Report must contain all the information that is necessary for a proper understanding of the nature of issues identified during scoping. This includes:

- Details of the EAP who prepared the report and the expertise of the EAP who carried out the Scoping Procedure;
- A description of the proposed activity and reasonable alternatives;
- Description of the property on which the activity will be undertaken;
- The description of the environmental that may be affected by the activity and the manner in which the activity may affect the environment;
- Identification of all legislation and guidelines considered;
- The information with regards to the methodology that will be used in assessing potential impacts;
- Details pertaining to the Public Participation Process;
- Description of the tasks that will be undertaken as part of the environmental impact assessment process, indicating the stages where the competent authority will be consulted;
- Description of the method of assessing the environmental impacts.

The Draft Scoping Report is placed in the public domain and additional issues and concerns raised by I&APs are incorporated into a Final Environmental Scoping Report. This process may lead to the identification of additional studies which may be required for inclusion into the Impact Assessment Report.

7.2.5. *Final Environmental Scoping Report*

A Final Environmental Scoping Report is prepared at close of the public review period. This will allow all I&APs the opportunity to ensure that all aspects are taken into account and also afford all the opportunity to add any additional comments to the report. The Final Scoping Report will be submitted to GDARD and other authorities for consideration.

7.2.6. Impact Assessment Phase

The Impact Assessment Phase will focus on investigations as identified during the Scoping Phase. The specialist studies will be integrated as specialist reports into a Draft Environmental Impact Report (EIR). This Draft EIR report will be made available for public comment.

Once the public comment period has closed, all public comment will be incorporated into the Final Environmental Impact Report prior to its submission to the authorities for consideration and the issuing of a Record of Decision (RoD / EA).

Authorities will issue a RoD after having reviewed the Final Environmental Impact Report. The decision made will either authorise the proposed development to proceed and under specific conditions, or not. There will also be a 30-day appeal period during which appeals can be logged against the decision.

7.2.7. Environmental Management Plan (EMP)

If a positive decision is reached, the applicant will have to prepare an Environmental Management Plan (EMP). A draft EMP will form part of the EIR. The purpose of the EMP is to convert the findings of the Impact Assessment into the practical measures that the applicant will have to undertake to maintain environmentally sustainable operations. The authorities will be able to monitor the operations against the EMP.

7.3. PUBLIC PARTICIPATION PROCESS

The Public Participation Process is the cornerstone of the EIA process. The principles of NEMA govern many aspects of EIA's, including public participation. These include provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment, and ensuring the participation of as wide as possible an audience.

The Public Participation Process (PPP) was designed to provide sufficient and accessible information to interested and affected parties (I&APs) in an objective manner to assist them to:

- Raise issues of concern and provide suggestions to enhance benefits and address negative aspects;
- Contribute local knowledge and experience;
- Verify that their issues have been captured;
- Verify that their issues have been considered during the technical investigations; and
- Comment on the findings of the EIA.

The PPP during the Scoping Phase is summarized below.

7.3.1. Stakeholders consulted

The following stakeholders were consulted either by mail; telephone; personal interview or through the receiving of I&AP Registration papers.

- National Government – DEAT;

- Provincial Government – GDARD;
- Midvaal Municipality;
- Ward Councillor
- Adjacent Property Owners; and
- General Public and I&APs through the printed media.

7.3.2. *Announcing the opportunity to contribute*

The opportunity for stakeholders to participate in the EIA was announced as follows:

- **Site Notices** – site notices were displayed at the entrance to the proposed site in large poster formats to inform potential Interested & Affected Parties of the EIA and the proposed project;
- **Background Information Document (BID)** – BIDs were distributed to the neighboring premises requesting I&APs to register and become involved.
- **Municipal Authority** – Dept. Health at Midvaal Municipality was informed of the intended activity.
- **Newspapers** – Advertisements went into the local Newspaper.
- **Public Open Day** – a Public Open Day Information Session was held on site on 27 October 2011. The proposed project was introduced through a series of posters on display along with aerial photographs and design drawings.
 - o The Public Open Day also provided Background Information Documents; and
 - o All relevant legislation for those wishing to avail themselves of the legislation

7.3.3. *Raising issues for investigation*

Stakeholders were afforded the opportunity to raise issues and concern either in writing, by telephone; by fax or email if they were not able to attend the Open Day Information Session.

During the Open Day Information Session I&APs were interviewed personally and any issues and comments made were recorded for the Issues & Response Report.

7.3.4. *Availability of the Draft Scoping Report; Plan of Study for EIA*

All issues raised to date have been included into the Draft Scoping Report (Annexure A). The EIA Guidelines specify that stakeholders must have the opportunity to verify that their issues have been captured and considered and forms part of the terms of reference for the specialist studies, before the Report is submitted to the lead authority for decision making.

It has been decided to allow 30 days time for public comments on the report. The availability of the report has been announced by way of:

- Personal telephone calls;
- Fax & email contacts; and

The Draft Scoping Report and Plan of Study for EIA (Volume 1) was placed for input and comment in the public domain:

Table 7.1 Draft Scoping Report at Public Places.

PLACE	ADDRESS	TELEPHONE
Meyerton Library	Civic Centre Meyerton	016 360 7400
Office of P3 Consulting	28 Marula Street, Dowerglen	011 454 4566

The Draft Environmental Scoping Report has also been emailed to registered I&APs with email addresses.

7.4. PUBLIC PARTICIPATION DURING THE EIA PHASE

Once the Scoping Phase has been approved, the process will continue into the EIA Phase.

The Draft Environmental Impact Report (EIR) will be placed in the public domain for a period of 30 days at the same public places as tabled above. Registered I&APs will be notified of the availability of the Draft EIR by means of email; fax and in writing. The Draft Environmental Impact Report will have all the studies appended.

7.4.1. Notification of the Record of Decision

Once the lead authority has taken a decision, a Record of Decision will be issued. The public participation office will immediately notify all registered stakeholders of the Record of Decision, and also of the opportunity to appeal the RoD within 30 days.

A letter will be mailed, personally addressed to all stakeholders on the stakeholder database, summarising the RoD, offering a copy of the full text and explaining how to lodge an appeal should they wish to.

8. PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT - ASPECTS OF SPECIALIST STUDIES TO BE CONDUCTED DURING THE IMPACT ASSESSMENT PHASE OF THE EIA

8.1. BRIEF DESCRIPTION OF THE DEVELOPMENT TO BE UNDERTAKEN

8.1.1. Name of the applicant

Nienaber Vervoer
c/o Mr. Dewald Nienaber
Email: meerkat1@polka.co.za
Office: 083 2634578
Fax: 086 670 5312

8.1.2. Nature of the Development

The installation and operation of a tyre pyrolysis plant for the recycling of used tyres on Plot 110 Walker Fruit Farms, Midvaal.

8.1.3. Project Team

Company	Area of Responsibility
P3 Consulting cc P.O. Box 628 Edenvale 1610 Tel: 011 454 4566 Fax: 0866 22 5552	• Project Management • Public Participation Process • Compilation of documentation
AVD Environmental Consulting (Pty) Ltd P.O. Box 13048 Dowerglen 1012 Tel: 082 782 4005 Fax: 0866 343 967 alta@avdenvironmental.com	• Investigations • Technical Review

8.1.4. METHODS TO BE USE TO IDENTIFY THE IMPACTS

The impacts as listed will be used as a basis for the impact assessment. Each specialist will use check lists matrices, networks, overlays, geographical information systems, field visits, interviews etc. to gain information and present these in a specialist report (as required) which will be appended to the Draft Environmental Impact Assessment Report for public review.

8.2. GENERIC STRUCTURE FOR SPECIALIST STUDIES

The following generic structures will be used by each specialist (as required) in order to write up the findings for the impact assessment report. The descriptive text should be interpreted in the context of that specific specialist investigation.

8.2.1. Section 1: Introduction

This section will describe the scope and objectives of the specialist study.

8.2.2. Section 2: Approach and methodology

Within this section the specialist will be required to describe all available information that informed the study. Additional aspects as recorded during the I&AP Process will also be incorporated. The specialist will be required to detail the approach followed and the methods used, as well as all literature and research. The specialist will also be required to minute and attach any direct liaison with any I&APs such as land owners.

8.2.3. Section 3: Description of the aspects considered within the scope of the specialist study

This section of the report will include aspects around the identification of the key aspects of the project (including any alternative considered) that will be considered within the scope of the specialist's impact assessment. The impact assessment of the specialist will focus on the identification of aspects of the project that could potentially be the route causes of impacts on the environment, surrounding communities and the economy. The specialist will also give a clear identification of the project activities and the areas specified.

8.2.4. Section 4: Description of the affected environment

The area of impact will be described in the context of the local and regional environment, including the identification of agreed visions and objectives (i.e. the desired future state) for the area / site. Identify and describe the environmental baseline, trends, users and sensitive components and receptors of relevance to the specialist study. Opportunities and constraints presented by the receiving environment (including socio economic environment) will be identified. The description will be directed towards the identification of key issues, the assessment of impacts associated with the proposed project and recommendations for alternatives, management options and monitoring programmes.

8.2.5. Section 5: Identification of applicable policies, legislation standards and guidelines

Identification and summary of the key aspects of applicable policies, legislation, standards and guidelines that are specific to the specialist scope of work and that should be borne in mind in the decision making process.

8.2.6. Section 6: Identification of key issues and impacts

It will be required from each specialist to identify key issues and concerns associated with the proposed project based on the project description, understanding of the receiving environment, taking into account the issues and concerns raised through the consultation process. The identification of the impacts will take into account the different phases of the project, as identified. **It should however be noted that issues of potential causes of concern or interest do not necessarily translate into impacts.** The specialist will determine whether or not a concern raised will manifest as an impact, and if so, the significance of the impact.

8.2.7. Section 7: Impact Assessment

Drawing together the information provided in the preceding sections, the impact assessment section of the report will identify and describe the potential direct, indirect and cumulative impacts associated with the different phases of the development. A comparative assessment of the impacts for reasonable alternatives and for different environmental scenarios will be included.

Impacts will be described in terms of significance. The level of confidence in findings and key uncertainties will be clearly identified e.g. where information is insufficient to determine the impact significance, it will be clearly stated.

8.2.8. Section 8: Recommendation for management actions and alternatives not yet considered

Where possible, practical and reasonable management actions and alternatives to the project design will be recommended which will avoid, minimise, mitigate or compensate for negative impacts and enhance benefits. Where there is insufficient information or knowledge for the specialist to determine the significance of impacts with a reasonable level of confidence, the specialist will provide recommendations for additional investigations that will reduce the uncertainty in the impact assessment findings. These recommendations will need to be clearly motivated and will be included before the finalisation of the impact report. Recommendations will also include aspects around monitoring.

8.3. METHODOLOGY FOR THE ASSESSMENT OF IMPACTS

The significance of potential environmental impacts will be determined using a ranking scale, based on the following (terminology has been taken from the Guideline Documentation on EIA Regulations, of the Department of Environmental Affairs and Tourism, April 1998)

- Occurrence
 - o Probability of occurrence (how likely is it that the impact may occur?); and
 - o Duration of occurrence (how long may it last?)
- Severity
 - o Magnitude (severity) of impact (will the impact be of high, moderate or low severity?); and
 - o Scale / extent of impact (will the impact affect the national, regional or local environment, or only that of the scale?)

Each of these factors will be assessed for each potential impact using the following ranking scales:

<i>Probability:</i> 5 – Definite / don't know 4 – High probable 3 – Medium probability 2 – Low probability 1 – Improbable 0 – None	<i>Duration:</i> 5 – Permanent 4 – Long term (ends with the operational life) 3 – Medium term (5-15 years) 2 – Short term (0-5 years) 1 – Immediate
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<i>Scale:</i> 5 – International 4 – National 3 – Regional 2 – Local 1 – Site only 0 – None	<i>Magnitude:</i> 10 – Very high / don't know 8 – High 6 – Moderate 4 – Low 2 – Minor
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The final environmental significance of each potential impact will be assessed according to the following formula:

$$\text{Significance Points (SP)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$$

The maximum value is 100 significance points (SP). Potential environmental impacts were rated as high, moderate or low significance on the following basis:

- More than 60 points: **HIGH** environmental significance
- Between 30 and 60 points: **MODERATE** environmental significance
- Less than 30 points: **LOW** environmental significance

8.4. PROJECT PHASES

With the impact assessment, the following phases of the project will be taken into consideration.

8.4.1. Pre-Construction Phase

This includes all activities on and off-site up to the start of construction, and includes planning, design and construction activities.

8.4.2. Construction Phase

This phase includes the impacts associated with the actual construction activities. The impact assessment will include the activities which may have an impact on site as well as off-site.

8.4.3. Operational Phase

This will include activities related to the operation and maintenance of the proposed project.

8.4.4. Decommissioning

This includes the activities which may relate to the premises use after operations have ceased.

8.5. TERMS OF REFERENCE FOR SPECIALIST STUDIES IDENTIFIED.

The proposed development may have an impact on the following aspects:

- Possible impacts on the surface water resource due to management practices including accidental spillages, waste disposal practices and the use of hazardous materials;
- Possible impacts on air quality due to the creation of gasses;
- Changes in the visual impact and feel of sense of place due to increased lighting and infrastructure;
- Impacts on soils, land use, land capability and sensitive landscapes due to the development;
- Possible impacts on noise levels due to the operation of the intended activity.

The following specialist studies have been identified during the consultation process with the regulatory authorities and the I&APs. Each study ToR is described in short below and should be read in conjunction with section 6.3.

8.5.1. Surface water investigation

- Determine the current surface run-off water regime;
- Determine the possible impacts of the proposed development on the water quality and quantity of the surface water resource;
- Propose mitigation and management measures.

8.5.2. Air Quality

- Determination of possible impacts during the construction phase;
- Mitigation and management measures;
- Determination of possible impacts during the operational phase;
- Mitigation and management measures.

8.5.3. Socio-economic

- Creation of employment opportunities;
- Need:
 - o What is the socio-economic impact on existing operations;
 - o How big is the impact of the proposed project on the market;
 - o How will the proposed project impact on the present capacity of existing operation in the present day supply -in-demand situation as well as future capacity?
- Desirability:
 - o What will the impact of the proposed project be if placed at Plot 110;
 - o Will the proposed activity impact on the employment opportunities of others if allowed to continue?

8.5.4. *Visual Impact*

- Determination of the visual zone of influence;
- Identification of visual effects;
- Sensitivity of visual receptors;
- Mitigation and management measures.

8.5.5. *Noise Impact*

- Determination of increased noise levels due to operation;
- Mitigation and management measures.

8.5.6. *Need versus Desirability Study*

Need:

- How many similar operations will be affected by the proposed activity?
- How large is the market?
- What is the present performance and capacity of the existing operation?
- To what extent are the existing and other similar operations able to meet present and future demand?

Desirability:

- Will the proposed activity be feasible?
- What will the impact of the proposed activity be on existing and other businesses in the area (not just the immediate vicinity)?
- How many jobs is the proposed activity likely to cost and what are the social costs pursuant thereto?

8.5.7. *Alternative land uses*

- Current land use zoning
- Current land use
- Alternative land uses (other than a precious metals refining unit)
 - Commercial use; and/or
 - Residential purposes
- Economic viability of alternative land uses

9. CONCLUSION

The upgrading of the refining plant to a unit that is widely used in the European context is in fact a technology upgrade for the industry in South Africa. The envisage system has been extensively used in Europe and its success and safety has been proved. This measured against the strict environmental laws enforced by the EU makes the technology even more acceptable for South African application.

Not only will the upgrade in equipment benefit the used jewellery market it will also provide additional product back to the industry as well as creating some additional employment opportunities.

REPORT DISTRIBUTION RECORD

Project Title: Midvaal tyre pyrolysis
Project No: Nienaber Vervoer 001
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