DMS Powders

Draft Environmental Management Programme for the Atmospheric Emission License Application for the R&D furnace at DMS Powders

Locality: Meyerton

Departmental Ref No: GAUT: 002/12-13/E0204

Date: 27 October 2014

SHANGONI
Management Services (Pty) Ltd

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMP)

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DATE: 27 October 2014

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PROJECT DETAILS

Gauteng Department of Agriculture and Rural Development

Reference No.: GAUT: 002/12-13/E0204

Project Title: Atmospheric Emission License Application for DMS Powders, Meyerton.

Project Number: DMS-EIA-12-01-31

Compiled by: Ms. Patricia van der Walt

Date: 27 October 2014

Location: Meyerton

Technical Reviewer: Lourens de Villiers

Signature

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

AEL		Atmospheric Emission License
AIR		Atmospheric Impact Report
AQO	-	Air Quality Officer
DMS	-	Dense Medium Separation
EAP	-	Environmental Assessment Practitioner
EIA	-	Environmental Impact Assessment
EIR	-	Environmental Impact Report
EMP	-	Environmental Management Programme
FeSi	-	Ferrosilicon
GN	-	Government Notice
NEMA	-	Environmental Management Act, 1998 (Act No. 107 of 1998) as amended
NEM:AQA	-	National Environmental Management: Air Quality Act, 2004 (Act No. 39, 2004)
R	-	Regulation
SDM	-	Sedibeng District Municipality
VTAPA	-	Vaal Triangle Air-shed Priority Area

REFERENCES

Airshed Planning Professionals (Pty) Ltd (November 2013), *Air Quality Impact Report for Dense Medium Separation Powders (Pty) Ltd in Meyerton*, Midrand, Gauteng,

DMS Powders Environmental Management Plan, ref 7, 2011, HSECQ 001 MP

Gauteng Province Air Quality Management Plan, GDARD, Aug 2009

National norms and standards for the assessment of waste for landfill disposal, General Notice No 635, Government Gazette No 36784 of 23 August 2013.

Inductotherm Corporation (2006), *The induction heating and melting safety fundamentals guide that might save your life.*

Vaal Triangle Airshed Priority Area Air Quality Management Plan, Government Notice No 613, Government Gazette No 32263, (May 2009).

1. INTRODUCTION

Dense Medium Separation Powders (Pty) Ltd is located within the boundaries of BHP Billiton (Metalloys), on Portion 4 of the farm Kookfontein 545 IQ in Meyerton, which is approximately 8.7km's to the north of Vereeniging. Dense Medium Separation (DMS) Powders produces ferrosilicon (FeSi) powders for use in dense media separation technology. The company has a granulated ferrosilicon production capacity of 30 000 tons per annum, milled production capacity of 34 675 tons per annum and an atomised production capacity of 12 000 tons per annum.

DMS Powders intends to install a small scale Research and Development (R&D) furnace at their current facility to serve as a test furnace for future recipes. The proposed R&D induction furnace will be used for product and process optimisation and to produce specialised products. The R&D test products will all be atomised products the same as the main plant but scaled down. The furnace will have a capacity of approximately 300kg per load, processing approximately 5 tons of raw materials per day. An electrostatic filter, able to filter particles above 0.01 micron, and stack emission monitoring equipment will be installed on the proposed R&D Furnace.

This Environmental Management Programme (EMP) document describes mitigation measures to be implemented during the installation/construction- and operational- phase of the proposed R&D Furnace. The responsibility for the implementation of this EMP on site rests with the appointed Facility Manager, but must ultimately be enforced by DMS Powders.

The EMP should be viewed as a dynamic document. Methods should be updated and improved during implementation, as site conditions become clearer and material or methods improve. The EMP attempts to provide the most practicable methods to promote sound environmental management during the lifespan of the project.

1.1 SPECIFIC TRIGGERED LISTED ACTIVITIES

The installation of the proposed R&D Furnace triggers the activities listed in *Category 4, Category 4, Subcategory 4.1: Drying and Calcining* and *Subcategory 4.9: Ferro-alloy production* in terms of Government Notice No. 893 of 22 November 2013 as contemplated in Section 21(1)(b) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA, 2004).

In terms of Section 22 of NEM: AQA, 2004; no person may conduct a listed activity without a Provisional Atmospheric Emission License or an Atmospheric Emission License (AEL). A person must apply for an AEL with the licensing authority of the area in which the activity is to be carried out, in this case the Sedibeng District Municipality.

Section 24 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA, 1998) applies to the AEL application for the proposed R&D Furnace. The installation of the proposed R&D Furnace therefore also requires environmental authorisation in terms activity 5 and 26 of Listing Notice 2 (Regulations R545: List of activities and competent authorities identified in terms of Section 24 (2) and 24D of the NEMA, 1998, dated June 2010) under the NEMA, 1998.

Regulation 545, Listing Notice 2: 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 of effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply".

Regulation 545, Listing Notice 2: Activity 26

"Commencing of an activity, which requires an Atmospheric Emission License in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), except where such commencement requires basic assessment in terms of Notice of No. R544 of 2010".

1.2 Compliance time frames

A new plant (the proposed R&D Furnace) must comply with the new plant minimum emission standards as contained in Part 3 on the date of publication of this notice (Refer to Table 1).

Table 1: Listed Activities in terms of Government Notice No. 893 of 22 November 2013

Category 4, Subcategory 4.1: Drying and Calcining			
Description	Drying and calcining of mineral solids including ore.		
Application	Facilities with capacity of more than 100 tons/month product.		
Substance or mixture of substances		**Plant Status**	**mg/Nm^3 under normal conditions of 273 Kelvin and 101.3 kPa**
Common Name	**Chemical Symbol**		
Particulate Matter	N/A	New	50
		Existing	100
Sulphur Dioxide	SO_2	New	1000
		Existing	1000
Oxides of Nitrogen	NO_x expressed as NO_2	New	500
		Existing	1200
Category 4, Subcategory 4.9: Ferro-alloy production			
Description	Production of alloys of iron with chromium, manganese, silicon or vanadium, the separation of titanium, slag from iron-containing minerals using heat.		
Application	All installations.		
Substance or mixture of substances		**Plant Status**	**mg/Nm^3 under normal conditions of 273 Kelvin and 101.3 kPa**
Common Name	**Chemical Symbol**		

Sulphur Dioxide	SO_2	New	500
		Existing	500
Oxides of Nitrogen	NO_x	New	400
		Existing	750
Particulate matter from primary fume capture system, open and semi-closed furnaces			
Particulate Matter	PM	New	30
		Existing	100
Particulate matter from primary fume capture system, closed furnaces			
Particular Matter	PM	New	50
		Existing	100
Particulate Matter from secondary fume capture system, all furnaces			
Particular Matter	PM	New	50
		Existing	100

2. ENVIRONMENTAL ASSESSMENT PRACTITIONER

Table 2: Environmental Assessment Practitioner

Name of firm	Shangoni Management Services	
Postal address	P.O. Box 74726 Lynnwood Ridge Pretoria 0040	
Telephone No.	012 807 7036	
Fax	012 807 1014	
E-mail	lourens@shangoni.co.za	
Team of Environmental Assessment Practitioners on project		
Name	**Qualifications & experience to conduct the EIA**	**Responsibility**
Lourens De Villiers	• MSc. Water Resource Management (UP) • BSc. (Hons) (PU for CHE) • More than 12 years' experience conducting Environmental Impact Assessments and Waste Management License Applications	Project Director
Lizette Crous	• Post Graduate Certificate Environmental Management (University of London) • 3 years' experience conducting Environmental Impact Assessments and Waste Management License Applications	EAP

Patricia van der Walt	• B.Sc. (Hons) (Applied Science in Environmental Technology) • 3 years' experience conducting Environmental Impact Assessments and Atmospheric Emission License Applications	EAP

3. SITE DOCUMENTATION

The following documentation must be available at the site office at all times:

- A copy of the Environmental Impact Assessment (EIA) Report;
- A copy of this Environmental Management Programme (EMP);
- A copy of the Environmental Authorisation; and
- Complaints register.

Note: Where any of the applicants contract details change (including the name of the responsible person, the physical or postal address and/ or telephonic details), the Department should be notified as soon as the applicant is certain of the new details.

4. LEGISLATION

4.1 LAWS OF GENERAL APPLICATION

- Constitution of the RSA, 1996 (Act No 108 of 1996);
- National Environmental Management Act, 1998 (Act No 107 of 1998);
- Environment Conservation Act, 1989 (Act No 73 of 1989);
- Promotion of Access to Information Act, 2000 (Act No 2 of 2000);
- Protected Disclosures Act, 2000 (Act No 26 of 2000).

4.2 AIR QUALITY AND NOISE

- Atmospheric Pollution Prevention Act, 1965 (Act No 45 of 1965);
- National Building Regulations and Building Standards Act, 1977 (Act No 103 of 1977);
- Environment Conservation Act, 1989 (Act No 73 of 1989) – Noise Control Regulations in terms of Section 25 of the Environment Conservation Act, 1989;
- National Environmental Management Act, 1998 (Act No 107 of 1998).

4.3 WATER MANAGEMENT

- National Water Act, 1998 (Act No 36 of 1998).

4.4 HAZARDOUS CHEMICALS AND SUBSTANCES

- Hazardous Substances Act, 1973 (Act no. 15 of 1973);
- Occupational Health and Safety Act, 1993 (Act No 85 of 1983) – GN 1179 of 25 August 1995 – Regulations for Hazardous Chemical Substances (HCS).

4.5 WASTE MANAGEMENT

- National Environmental Management: Waste Act (NEMWA) No 59, of 2008;
- Environment Conservation Act, 1989 (Act No 73 of 1989);
- National Road Traffic Act, 1996 (Act No 93 of 1996) – GN R225 of 17 March 2000 – National Road Traffic Regulations;
- Hazardous Substances Act, 1973 (Act No 15 of 1973);
- Occupational Health and Safety Act, 1993 (Act No 85 of 1993) – GN 1179 of 25 August 1995 – Hazardous Chemical Substance Regulations.

4.6 PLANNING OF NEW ACTIVITIES

- National Environmental Management Act, 1998 (Act No 107 of 1998).
- GN R.543, GN R.544, GN R.545 and GN R.546, dated June 2010.

4.7 BIODIVERSITY

- National Environmental Management Biodiversity Act, 2004 (Act No 10 of 2004);
- Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983);
- National Veld and Forest Fire Act, 1998 (Act No 101 of 1998)

4.8 LAND AND SOIL MANAGEMENT

- National Environmental Management Act, 1998 (Act No 107 of 1998);
- Environment Conservation Act, 1989 (Act No 73 of 1989).

4.9 HERITAGE RESOURCES

- National Heritage Resources Act No 25 of 1999 (Act No 25 of 1999).

4.10 PROTECTED AREAS

- National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003).

During the course of the project phases, the applicant and its contractors must comply with all other relevant legislation (including the bylaws of the local municipality).

5. ENVIRONMENTAL MANAGEMENT PROGRAMME

Refer to the tables below for the EMP. Responsibility is assigned to the relevant parties, keeping in mind DMS Powders are ultimately still responsible for ensuring implementation of the EMP. The EMP must be updated should any significant changes occur to the operations with regards to the proposed R&D Furnace. The mitigation measures are set out in the tables below.

5.1 SPECIFIC TRIGGERED LISTED ACTIVITIES

The installation of the proposed R&D Furnace requires environmental authorisation in terms activity 5 and 26 of Listing Notice 2 (Regulations R545: List of activities and competent authorities identified in terms of Section 24 (2) and 24D of the NEMA, 1998, dated June 2010) under the NEMA, 1998. Environmental authorisation of the activities will allow DMS Powders to obtain an Atmospheric Emission License in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), regulating activities that generate atmospheric emissions and present a significant detrimental effect in the environment, including health, social conditions, ecological conditions or cultural heritage. The focus of this Environmental Management Programme will primarily be on impacts relating to emissions from the R&D into the surrounding atmosphere.

5.1.1 Planning and Design Phase

Alternatives to activity, input and process, location, design and technology and scheduling were assessed in the Environmental Impact Assessment based on various environmental attributes such as physical (geology and soils, surface water quality and quantity, groundwater quality and quantity); biophysical (flora and fauna, sensitive environments); and social attributes (site of archaeological or cultural importance, land use issues, social health and welfare).

An Air Quality Impact Study as well as a Heritage Impact Assessment [requested by the South African Heritage Resources Agency (SAHRA)], were done to determine the nature and extent of the impact of the R&D Furnace on these aspects of the surrounding environment.

5.1.2 Pre-installation/construction and Installation/Construction Phase

DMS Powders has existing environmental management plans for all aspects of the environment. These plans are compiled into one document named DMS Powders Environmental Management plans (HSECQ 001 MP).

This document includes the following plans:

- Water Management Plan;
- Land Management Plan;
- Waste Management Plan;
- Air Pollution Prevention Plan; and
- Energy Management Plan.

Any waste, such as building rubble, generated during the installation/construction of the R&D Furnace should be managed according the Waste Management Plan for DMS Powders. Any other environmental aspects during the installation/construction phase should be managed according to the above plans. An independent Environmental Control Officer must ensure implementation of the Environmental Authorisation and existing Environmental Management Plans during the installation/construction phase.

5.1.3 Operational Phase

To ensure minimum impacts on the atmospheric environment it is recommended that the DMS Powders Air Quality Management Plan be expanded to include the mitigation measures listed in this Table 3.

Table 3: Environmental Management Programme (Operational Phase)

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
Operation of the proposed R&D Furnace	Stack emissions of Particulate matter, Carbon monoxide, Sulphur dioxide and Nitrogen dioxide and fugitive emissions from the furnace building.	In an Air Quality Impact Study done for DMS Powders by Airshed Planning Professionals (Pty) Ltd., emissions were quantified for the different point sources, fugitive dust sources and vehicle exhaust emissions and a source contribution analysis was done. It was then found that the proposed R&D furnace is expected to increase emissions from DMS Powders by less than 0.1% and its contribution to the predicted ground level concentrations and dust fall out concentrations were considered immaterial.	To ensure compliance with the minimum emission standards for a new plant and the National Ambient Air Quality Standards	• Installation of emission control technology -Electrostatic filter; and • Implementation of the Operational Maintenance and Monitoring Plan (Refer to Section 6)	Refer to Section 6	Upon installation of the R&D Furnace	Facility Manager
Operation of the proposed R&D Furnace	Equipment failure	Molten metal is inherently dangerous. When molten metal comes into contact with water or any liquid bearing material it instantaneously turns water into steam, expanding 1600 times its original volume producing explosion that endanger workers, the surrounding infrastructure and environment. The furnace coil requires continual cooling to increase electrical efficiency and to prevent it from melting. If an electrical or mechanical failure damages the cooling system a dangerous build-up of heat and resulting explosion.	To prevent emergencies such as equipment and control technology failure, and ensure the optimum operation of the R&D Furnace.	• Train employees on the environmental risk presented by the R&D Furnace and the manner in which their tasks must be performed; • A sufficient number of employees must receive training to cover for leave periods, absences due to illness and public holidays; • The facility manager is to maintain accurate records of any training undertaken; • Installation of a backup cooling system; • Installation of a dry spill pit in front of the induction furnace to contain any molten metal spills; • Installation of a ground leak detection system to provide protection against electrical shock and warning of metal to coil penetration; and • Implementation of the Operational Maintenance and Monitoring Plan (Refer to Section 6)	Refer to Section 6	Upon installation of the R&D Furnace	Facility Manager

Activity	Aspect	Impact	Objective	Management/ Mitigation Measure	Monitoring compliance and reporting	Timeframes	Responsible Party
Operation of the proposed R&D Furnace	Emissions into an Airshed priority area	DMS Powders falls within the Vaal Triangle Airshed Priority Area (VTAPA). Sources of atmospheric emission which contribute to air pollutant concentrations within the Area include industrial emissions from ferromanganese and ferrosilicon production, vehicle tailpipe releases, household fuel burning and fugitive dust sources. In addition to which pollution emitted outside of the area is dispersed into the area from distant natural and anthropogenic sources. The R&D Furnace and other emission sources of DMS Powders therefore contribute to the cumulative air quality impact.	To reduce the cumulative contribution of the R&D Furnace and all other emission sources at DMS Powders.	• Installation of R&D Furnace emission control technology -Electrostatic filter; • Implementation of the Operational Maintenance and Monitoring Plan (Refer to Section 6); • It is recommended that primary fume extraction be considered at the M8 induction furnaces and that extracted fumes be controlled through the use of a suitable air pollution control device such as a bag filter or electrostatic precipitator; • Secondary fume extraction and air pollution control should also be considered for the M9 Submerged arc furnace tapping area and to capture fumes escaping the primary extraction system; • Reduce fugitive dust emissions from the raw materials area; • Watering of the unpaved raw material area will reduce dust entrained by vehicles travelling within the raw materials area; • Store fine raw materials prone to dust emissions in bunkers or, if practical, use water suppression to keep material damp; • Dust emissions from coal/coke crushing can be reduced by 83% with the installation of an enclosure and dust extraction with a bag house; and • Reduce raw material handling steps as far as is practicable.	Refer to Section 6	Upon installation of the R&D Furnace	Facility Manager
Slag generation	Incorrect disposal of slag	Slag is a by-product of the metal smelting. Slag forms when rust, dirt and sand from the charge and refractory material erode and rise to the top of the bath. It is usually a mixture of metal oxides and silicon dioxide, and may contain metal sulphides and metal in elemental form. During tapping slag is skimmed from the surface of the molten metal and depending on its characteristics disposed of in landfills, sold as road ballast's, or used as a raw material in a furnace to produce a chemically related ferroalloy product.	To ensure correct disposal of slag to prevent soil, surface- and groundwater contamination.	• Slag from the proposed R&D Furnace is to be weighed and crushed and briquetted for recycling; • A sample of slag from current processes has been sent for analysis and will be screened in terms of the National norms and standards for the assessment of waste for landfill disposal; and • Implementation of the Operational Maintenance and Monitoring Plan (Refer to Section 6).	Refer to Section 6	Upon installation of the R&D Furnace	Facility Manager

5.1.4 Decommissioning/closure Phase

The decommissioning of the R&D furnace, while improbable in the foreseeable future, is a possibility. Should the R&D Furnace be decommissioned/closed, the operation of the R&D Furnace will be ceased. Such decommissioning would then entail the dismantling and removal of the furnace from the R&D building (currently an existing structure). During the decommissioning, no alterations will be made to the existing building and associated structures, such as floors, and it is highly likely that the building would be used for alternative industrial purposes, either by DMS Powders or a different company. The R&D building and its associated infrastructures will therefore not be decommissioned.

6. OPERATIONAL, MAINTENANCE AND MONITORING PLAN

This chapter provides information pertaining to the operational maintenance and monitoring of the R&D Furnace and other unit processes that may result in emissions (Registered in terms of APPA). Information regarding the monitoring of the R&D and other unit processes at DMS Powders was abstracted from an air quality impact study done for DMS Powders by Airshed Planning Professionals (Pty) Ltd and Section 5, 7, and 8 of Government Notice No. 248 as contemplated in Section 21(1)(a) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA, 2004).

By regular maintenance of equipment (cooling system, leak detection system, emission control technology-electrostatic filter, etc.) and facility structures (furnace refractory lining, building, etc.) the potential environmental impact, as a result of equipment or furnace failure, is significantly reduced. Operational areas of concern can be identified during monitoring of the environmental performance.

Anticipation of environmental problems through assessment of the environmental impact of the operation's working methods, followed by forward planning to prevent problems or at least limit their effects, is seen as the key to successful environmental management.

The following operational maintenance and environmental monitoring will need to be implemented:

Table 4: Operational, Maintenance and Monitoring Plan

Environmental aspect	Monitoring type	Parameter to be monitored or maintained	Frequency	Responsibility
Atmosphere	Continuous emission monitoring of Point source processes considered listed activities.	Concentration of: • Sulphur dioxide (SO_2) • Oxides of Nitrogen (NO_x) • Particulate Matter (PM) No more than five half-hourly average values in any day, and no more than ten daily average values per year, may be discarded due to malfunction or maintenance of the continuous measurement system. Other parameters: • Total volumetric flow of gas, expressed in normal cubic meters per unit time • Mass flow kg per unit time	Monthly or as prescribed in the AEL by the licensing authority.	Facility Manager
Atmosphere	Maintenance schedule	Emission monitoring system maintained to yield a minimum of 80% valid hourly average values during the reporting period. Spot measurements or correlation tests to verify the accuracy.	Bi-annually Keep calibration certificates and all evidence of tests and measurements done on record and available for the purpose of	Facility Manager

Environmental aspect	Monitoring type	Parameter to be monitored or maintained	Frequency	Responsibility
			environmental audits	
Atmosphere	Audit	Emission monitoring system must be audited by a SANAS accredited laboratory	At least once every two (2) years Keep certificates on record and available for the purpose of environmental audits	Facility Manager
Atmosphere	Periodic emission monitoring of processes not considered listed activities. Unit processes that may result in emissions that are not considered listed activities include; • Raw materials receipt, handling, preparation and storage;	Sampling and analysis of emissions should take place according to methods listed in schedule A of General Notice No. 248 of NEM: AQA. (Other methods may only be used upon written consent from the National Air Quality Officer) Sampling will take place using permitted feed-stock or raw material and under operating conditions that are representative of operating conditions in the reporting period. The method to be used for measuring dust fall out rate and the guideline for locating sampling points shall be ASTM D1739: 1970, or equivalent method approved by any internationally recognized body.	Annually unless otherwise prescribed in the AEL.	Facility Manager

Environmental aspect	Monitoring type	Parameter to be monitored or maintained	Frequency	Responsibility
	• M8 FeSi atomizing; • M9 FeSi granulation; • Milling; as well as • Product packaging and dispatch.	All tests will be conducted by SANAS accredited laboratories or laboratories accredited by similar foreign authorities.		
Atmosphere	Visual inspection of all point and fugitive dust sources should be done on a regular basis. No visible dust is an indicator of the effectiveness of mitigation measures employed on site.	Dust The method to be used for measuring dust fall out rate and the guideline for locating sampling points shall be ASTM D1739: 1970, or equivalent method approved by any internationally recognized body.	Monthly	Facility Manager
Atmosphere	Atmospheric Impact Report	Emission sources, pathways, receptors Certificates and other documentation Legality	Submit annually to the licensing authority	Facility Manager

Environmental aspect	Monitoring type	Parameter to be monitored or maintained	Frequency	Responsibility
Ground water	Quality monitoring	Components identified by in slag from current processes that has been sent for analysis and will be screened in terms of the National norms and standards for the assessment of waste for landfill disposal.	Annually	Facility Manager
Surface water	Quality monitoring	Components identified by in slag from current processes that has been sent for analysis and will be screened in terms of the National norms and standards for the assessment of waste for landfill disposal.	Annually	Facility Manager
Soil	Visual inspection	Erosion	Monthly	Facility Manager
		Soil contaminated with slag	Monthly	Facility Manager
	Safe disposal	Safe disposal certificate if slag were to be disposed at a hazardous landfill site.	With every disposal	Facility Manager
		Certificate indicating that the slag is suitable for disposal at a general landfill site in terms of the national norms and standards for the assessment of waste for landfill disposal, General Notice No 635, Government Gazette No 36784 of 23 August 2013.	Keep certificate on record and available for the purpose of environmental audits	Facility Manager
		Slag from the proposed R&D Furnace is to be weighed and crushed and briquetted for recycling.	Keep record of weights.	Facility Manager
Facility (Cooling system, leak detection system, refractory lining, emission control	Maintenance schedule	Condition	Monthly	Facility Manager

Environmental aspect	Monitoring type	Parameter to be monitored or maintained	Frequency	Responsibility
technology-electrostatic filter, etc.)				

7. ENVIRONMENTAL AWARENESS PLAN

The following Environmental Awareness Plan must be implemented by DMS Powders in order to inform their employees and contractors of the environmental risk that may result from their work. The plan must be conducted as part of the induction process for all new employees (including contractors) that will perform work in terms of the proposed activities. Proof of all training provided must be kept on-site.

The Environmental Awareness Plan is referred to as the “SHE match” training programme. The training programme focuses on the following aspects:

1. Explaining clearly what the environment is and what the environment consist of namely: air, water, soil, fauna, flora and people.
2. Once participants have grasped the description of what the environment entails, the training focuses on the potential impacts that the construction and operational activities may have on each one of these environmental components. This is done by making use of the aspect register, where each one of the environmental aspects and associated impacts has been identified.
3. To ensure that the training is effective, visual aids are used. Photos are taken of actual and potential impacts occurring on site and in some cases role-play is used to illustrate a potential impact.
4. The participants are then exposed to a poster that reflects the various environmental components. The various photos taken are posted on the poster on a rotational basis and the participants indicate (based on the visual component) what environmental component was or could have been affected by the activities portrayed on the photo.
5. By doing this the participants visualise the action as well as the potential consequence (environmental impact) of their action.
6. This general awareness training must be done before construction commences and also when new employees start work. The training should be done every two years during the Operational Phase. The poster is posted in the communal area where the impacts are visualised and the photos rotated on a monthly basis.