

Draft Air Quality Management Plan

DAS Steel Mini Steel Foundry

15 August 2012



DAEA Reference : DM/0053/2011



DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE CONSTRUCTION OF THE DAS STEEL MINI FOUNDRY

TERRATEST NO.: 41190		DATE: August 2012		REPORT STATUS: Draft	
CARRIED OUT BY: PO Box 794 Hilton 3245 Phone: (033) 343 6789 Fax: (033) 343 6788			COMMISSIONED BY: DAS Steel (Pty) Ltd PostNet Suite 10243 Private Bag X7005 Hillcrest 3650 Durban RSA		
AUTHOR: Grant von Mayer			CLIENT CONTACT PERSONS: Suresh Mirchandani		
SYNOPSIS:					
KEY WORDS: FERROUS INDUSTRY, ENVIRONMENTAL AUTHORISATION, AIR EMISSIONS APPLICATION, WASTE MANAGEMENT LICENSE, CATO RIDGE, ETHEKWENI, KWAZULU NATAL.					
© COPYRIGHT: Jeffares and Green (Pty) Ltd.					
QUALITY VERIFICATION:					
This report has been prepared under the controls established by a quality management system that meets the requirements of ISO9001: 2008 which has been independently certified by DEKRA Certification under certificate number 90906882					
Verification	Capacity	Name	Signature	Date	
By Author	Senior Scientist	G von Mayer		15/06/11	
Checked by	Associate	M van Rooyen		23/06/11	
Authorised by	Director			27/06/11	

TABLE OF CONTENTS

DEFINITIONS	I
1 INTRODUCTION	- 1 -
2 MECHANISMS REQUIRED TO ADDRESS AIR QUALITY IMPACTS	- 1 -
2.1 LEGAL ASPECTS	- 1 -
2.2 CONSTRUCTION ASPECTS	- 1 -
2.3 COMMISSIONING ASPECTS	- 2 -
2.4 MANAGEMENT ASPECTS	- 2 -
2.5 TECHNOLOGICAL ASPECTS	- 4 -
2.6 MONITORING ASPECTS	- 4 -
2.7 EMERGENCY ASPECTS	- 4 -
3 REQUIREMENTS FOR SOURCE EMISSIONS MONITORING	- 4 -

LIST OF TABLES

TABLE 1: SUB- CATEGORY 4.9 – FERROY-ALLOY PRODUCTION	- 5 -
TABLE 2: SUB-CATEGORY 4.10 - FOUNDRIES	- 5 -

Definitions

The National Environmental Management Act (NEMA) and the National Environmental Management Air Quality Act (NEMA:QA) provide definitions which are pertinent to the management of waste.

“acceptable exposure” means the exposure of the maximum permissible concentration of a substance to the environment that will have a minimal negative effect on health or the environment

“activity” means an activity identified in any notice published by the Minister or MEC in terms of section 24D(1)(a) of the Act as a listed activity or specified activity;

“air emissions license” means the authorisation issued under the auspices of the National Environmental Management Air Quality Act by the licensing authority which is the eThekweni Metropolitan Municipality. Abbreviation **AEL**.

“best practicable environmental option” means the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term;

“commence” means the start of any physical activity on the site in furtherance of a listed activity;

“community” means any group of persons or a part of such a group who share common interests, and who regard themselves as a community;

“Constitution” means the Constitution of the Republic of South Africa, 1996;

“design capacity” means the capacity as installed;

“environmental authorisation”, means the authorisation by a competent authority of a listed activity in terms of this NEMA;

“fugitive emissions” means emissions to air from a facility other than those emitted from a point source.

“high-risk activity” means an undertaking, including processes involving substances that present a likelihood of harm to health or the environment;

“independent”, in relation to an EAP or a person compiling a specialist report or undertaking a specialised process or appointed as a member of an appeal panel, means—

(a) that such EAP or person has no business, financial, personal or other interest in the activity, application or appeal in respect of which that EAP or person is appointed

in terms of these Regulations other than fair remuneration for work performed in connection with that activity, application or appeal; or

(b) that there are no circumstances that may compromise the objectivity of that EAP or person in performing such work;

“listed activity”, means an activity identified in terms of section 21 of the NEM:AQA and GN248 of 31 March 2010;

“normal operating conditions” means any condition that constitutes operation as designed;

“particulate matter” means total particulate matter that is solid matter contained in the gas stream as well as insoluble and soluble matter contained within the entrained droplets of the gas stream;

“pollution” means any change in the environment caused by -

- (i) substances;*
- (ii) radioactive or other waves; or*
- (iii) noise, odours, dust or heat,*

emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or wellbeing or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

“Resident Engineer” – Engineer responsible for the construction of the plant. Known as the RE.

“sustainable development” means the integration of social, economic and environmental factors into planning, implementation and decision making so as to ensure that development serves present and future generations;

“upset conditions” means any temporary failure of air pollution control equipment or process to operate in a normal or usual manner that leads to an emission standard being exceeded.

1 Introduction

The Air Quality Management Plan (AQMP) has been compiled based on the specialist input from WSP Environmental (PTY) Ltd (Ref no. 27369 dated July 2012). The objectives of the plan are as follows:

- To limit the impact on air quality through correct plant operating conditions;
- To ensure the impacts on air quality due to normal operating conditions are minimal and mitigated;
- To reduce impacts on air quality during abnormal operating conditions;
- Comply with all applicable National Environmental Management Air Quality Management (NEM:AQA) regulations, standards and guidelines for the protection of the occupational and ambient environment; and
- To adopt the best practical means available to prevent or minimise adverse air pollution impacts.

2 Mechanisms Required to Address Air Quality Impacts

The mitigation and management measures described below are proposed mechanisms required to address air quality related aspects at the proposed plant. These are not necessarily related to a specific operational phase of the plant, but overall plant performance during all phases of the operation.

Management recommendations for the foundry are as follows:

2.1 Legal Aspects

- The appropriate Atmospheric Emissions Licence (AEL) must be obtained before the micro-foundry is commissioned.
- Conditions from AEL must be included in the overall management plan for the plant.
- Scheduled Trade Permits from eThekweni Metropolitan Municipality must be applied for.

2.2 Construction Aspects

- Sustainable erosion control measures (for wind and water erosion) will be implemented and maintained where necessary in areas disturbed by the construction operations.

- Fugitive dust abatement measures (wetting, soil stabilisers) should be applied to bare surfaces in windy conditions and on trafficked areas.
- The Resident Engineer (RE) is responsible for the monitoring of fugitive dust during the construction phase.
- A Complaints and Incidents Register should be established for the construction phase and is to be implemented by the RE.

2.3 Commissioning Aspects

- After plant commissioning, stack tests on all baghouse stacks is required to verify emission inputs as per the AQIA.
- A site inspection by an independent scientist is required for verification of design specification versus built specification as per the AQIA and Noise Impact Assessments.
- A report should be generated based on the findings of the commissioning phase and submitted to authorities upon request.

2.4 Management Aspects

The management aspects refer to the operational controls relating to procedures, training, record keeping and management of the operation of the plant.

- Abatement technology for all processes onsite must be correctly operated at all times and maintained on a regular basis.
- A register for equipment and abatement technology maintenance must be retained on record.
- A procedure to demonstrate to the regulator that all reasonably practicable steps are taken during start-up and shut down, and during changes of fuel or combustion load in order to minimise emissions.
- Develop and implement a comprehensive maintenance and housekeeping plan for the plant.
- Develop and maintain records of audits, inspections, tests and monitoring, and visual assessments.
- Implement a routine maintenance programme to ensure emission control devices are in proper working order, and that vents and ductwork are cleaned to prevent the accumulation of materials

- Regular inspections for leaks, blockages and other failures in the abatement control systems.
- Operations such as handling and transfer of dusty materials as well as handling of odorous raw materials should be controlled to minimise fugitive emissions.
- Where dusty materials are handled, dust should be controlled by covering of skips and vessels, spraying water on unpaved roads/areas onsite and minimising spills. Fugitive dust from outdoor or uncovered stockpiles must be minimised through stockpile placement and stockpile minimisation where practicable.
- All spillages must be immediately removed and disposed of correctly and raw material deposits cleared at least twice weekly (dependant on the nature or the material). Dry sweeping is not permitted where it will result in further generation of airborne dust. In such instances, vacuum cleaning and wet methods (where appropriate) must be employed.
- Vehicles and equipment should undergo regular inspection in order to ensure that they are in good working order and thus prevent excessive emissions of noise or fumes.
- External surfaces of the process buildings, roofs, guttering, ancillary plant, roadways and open yards and storage areas should be inspected at least annually. Cleaning operations should be carried out if necessary to prevent the accumulation of dusty material, using methods which minimise the emission of particulate matter into the air.
- A complaints register must be developed for interested and affected parties to register complaints and receive feedback. The register must be maintained throughout the operation of the foundry and must include the following:
 - Development of emissions / noise incident reporting procedure;
 - Provide a dedicated telephone number for the lodging of complaints;
 - Ensure all complaints are recorded and investigated;
 - Document the investigation of complaints;
 - Document any mitigation measures that are implemented; and
 - Document the close out and feedback of the resolution of the complaint.

2.5 Technological Aspects

- Ensure that all operations which generate emissions to air are contained and adequately extracted to a suitable abatement plant, and where this is necessary, to meet specified emission limit values.
- Ensure that stack heights are as per manufacturer specifications in order to ensure adequate dispersion under normal conditions.
- Ensure that stacks are not fitted with any restriction at the final opening such as a plate, cap or cowl, with the exception of a cone which may be necessary to increase the exit velocity of the emissions.
- The operation must make use of fuel types with the lowest practical sulphur levels in an attempt to lower emissions from the process.

2.6 Monitoring Aspects

- Baseline Particulate Matter monitoring is undertaken to augment the existing information both during construction and prior to commissioning.
- Annual stack tests will be conducted as per the listed activities and associated emissions standards.
- Particulate Matter Fallout monitoring network to be implemented, on the fence line and in areas, to validate the predicted plumes.

2.7 Emergency Aspects

- Plant operations for specific sections of the plant must cease in the event that emission control measures for that section are out of order.
- In the case of abnormal emissions arising from an incident, ensure that the following occurs:
 - Investigate the undertaking of remedial action immediately;
 - Promptly record the events and actions taken; and
 - Ensure the regulator is made aware, without delay, as per Environmental Authorisation conditions.

3 Requirements for Source Emissions Monitoring

Annual stack tests are likely to be requirement of the AEL. Below is the list of all applicable Listed Activities, as published in terms of Section 21 of the National Environmental

Management: Air Quality Act, 2004 (Act No. 39 of 2004), proposed to be conducted at the premises in terms of this application.

Table 1: Sub- category 4.9 – Ferroy-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		Plant Status	mg/Nm under normal conditions of 273 Kelvin and 101.3 kPa
Common Name	Chemical Symbol		
Sulphur dioxide	SO ₂	New	500
Oxides of nitrogen	NO _x expressed as NO ₂	New	400
Particulate matter from primary fume capture system, open and semi-closed furnaces			
Particulate matter	N/A	New	30
Particulate matter from primary fume capture system, closed furnaces			
Particulate matter	N/A	New	50
Particulate matter from secondary fume capture system, all furnaces			
Particulate matter	N/A	New	50

The following special arrangements shall apply:

- Secondary fume capture installations shall be fitted to all new furnace installations.
- Emission of Zn, Al, Cr(VI), Mn and V from primary fume capture systems of ferrochrome, ferromanganese and ferrovandium furnaces respectively to be measured and reported to licensing authority annually.

Table 2: Sub-Category 4.10 - Foundries

Description	Production and casting of iron and its alloys		
Application	All installations		
Substance or Mixture		Plant Status	mg/Nm under normal conditions of 273 Kelvin and 101.3 kPa
Common Name	Chemical Symbol		
Particulate matter	N/A	New	30
Sulphur dioxide	SO ₂	New	40 0
Oxides of nitrogen	NO _x expressed as NO ₂	New	40 0

