



Esicongweni Environmental Services

ARCELORMITTAL SOUTH AFRICA VANDERBIJLPARK WORKS

**EXTERNAL AUDIT ON ROD FOR
GALVANISING LINE NO. 5**

June 2021



REPORT TITLE:

ARCELORMITTAL SOUTH AFRICA, VANDERBIJLPARK WORKS, EXTERNAL AUDIT ON ROD FOR GALVANISING LINE NO.5

PREPARED BY

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JM Bezuidenhout

KEYWORDS:

external audit, license, compliance, ArcelorMittal,
Galvanizing line no 5

CO-ORDINATES:

Longitude 26°37'50.07" S

Latitude 27°52'28.75" E

LOCATION:

ArcelorMittal Vanderbijlpark Works, Vanderbijlpark,
Gauteng Province

DATE:

17 June 2021

ARCELORMITTAL PERSONNEL:

Mr Johan Hattingh
Mr Terrence Wilson

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Addendum G – Air Quality Management and Audit Plan

Abbreviations

C	-	Compliance
NC	-	Non-Compliance
WUL	-	Water Use License
AMSA	-	ArcelorMittal South Africa Limited
AMVW	-	ArcelorMittal South Africa Vanderbijlpark Works
EES	-	Esicongweni Environmental Services cc
DEA	-	Department of Environmental Affairs
DWA	-	Department of Water Affairs
DWAF	-	Department of Water Affairs and Forestry

DWS	-	Department of Water and Sanitation
IWWMP	-	Integrated Water and Waste Management Plan
RSIP	-	Rehabilitation Strategy and Implementation Program
ECA	-	Environment Conservation Act
RoD	-	Record of Decision
CETP	-	Central Effluent Treatment Plant
WUA	-	Water User Association
COG	-	Coke Oven Gas
CETP	-	Central Effluent Treatment Plant
GDACE	-	Gauteng Department of Agriculture, Conservation and Environment
GDARD	-	Gauteng Department of Agriculture and Rural Development
BAT	-	Best Available Technology
CRMF	-	Consolidated Residue Management Facility
Galv	-	Galvanizing Line no 5

1. INTRODUCTION

ArcelorMittal South Africa Limited (AMSA) is the largest steel producer on the African continent. ArcelorMittal operates an integrated production facility north of the town of Vanderbijlpark, Gauteng (Figure 1). The plant has been operational since 1952 and the products are sold on both the local and international markets.

AMSA Vanderbijlpark Works (AMVW) embarked on a holistic integrated environmental study during the period 2000 to 2003 to obtain a better understanding of the environmental risks that the company faced. The main driver of the company's environmental improvement initiatives has been environmental legislation that was supported by environmental management systems certified in accordance with the ISO14001 standard.

A record of decision (RoD) was issued to ArcelorMittal for the construction and operation of the heat-to-coat galvanising technology for the proposed galvanising line no.5 within the existing galvanising plant (Figure 2). This RoD is issued in terms of sub-regulation 1(c)(ii) and 9 of GN R.1182 (as amended) under section 21 of the Act.

The RoD was issued by the Gauteng Department of Agriculture, Conservation and Environment (GDACE) in 2005, and subsequently two addendums were issued in 2009 and 2011, respectively.

Esicongweni Environmental Services (EES) was appointed by AMSA to undertake an external audit of conditions relating to this RoD.

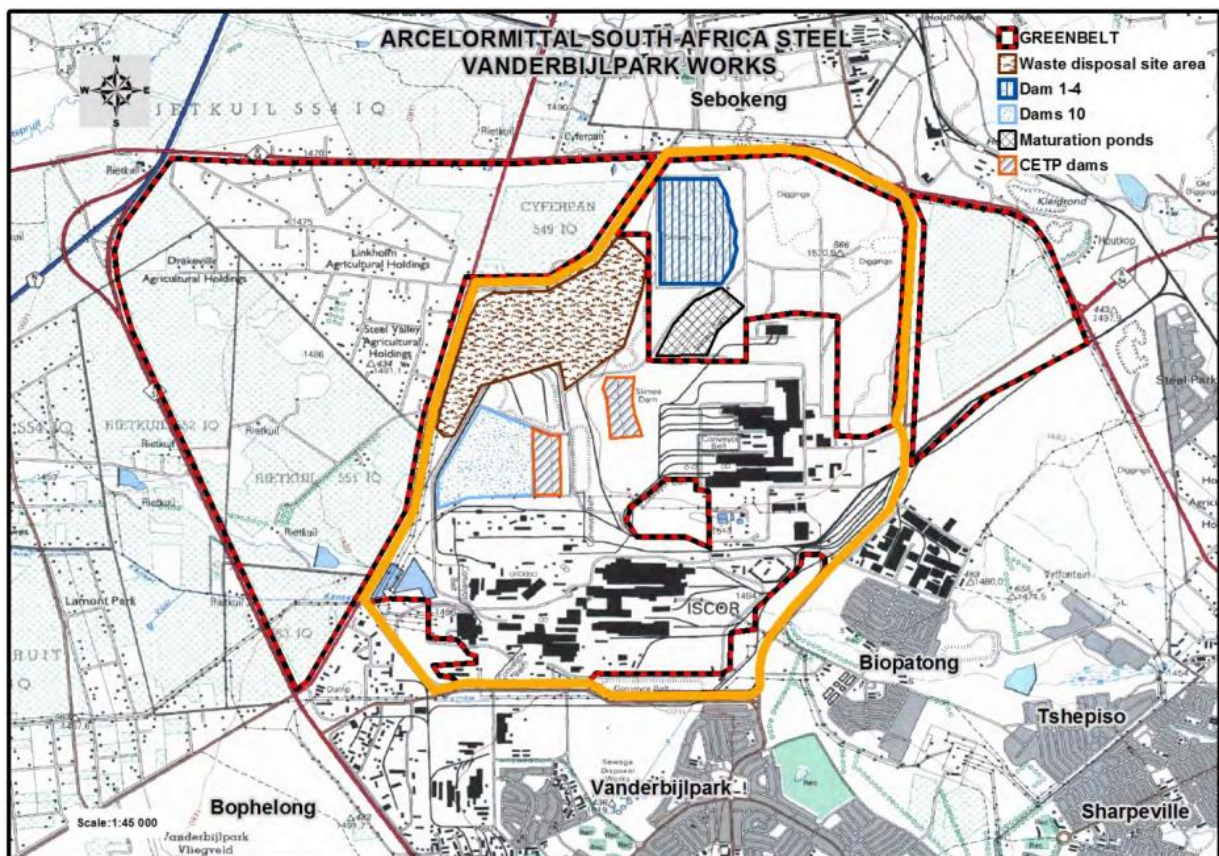


Figure 1: Site Locality

2. AUDIT OBJECTIVES

The external compliance audit was structured to assess the performance and status of the RoD and consisted of the follows:

- Review of the RoD conditions to identify information required from ArcelorMittal to provide a comprehensive evaluation.
- Appraisal of information gathered to determine the status of ArcelorMittal's compliance to respective RoD conditions.
- Site reconnaissance and interviews to further assess possible issues highlighted during the desktop review.
- Review of RoD conditions against current operations including itemized conditions and compliance status.
- Interpret available data and test results; and,
- Make recommendations regarding non-compliance.

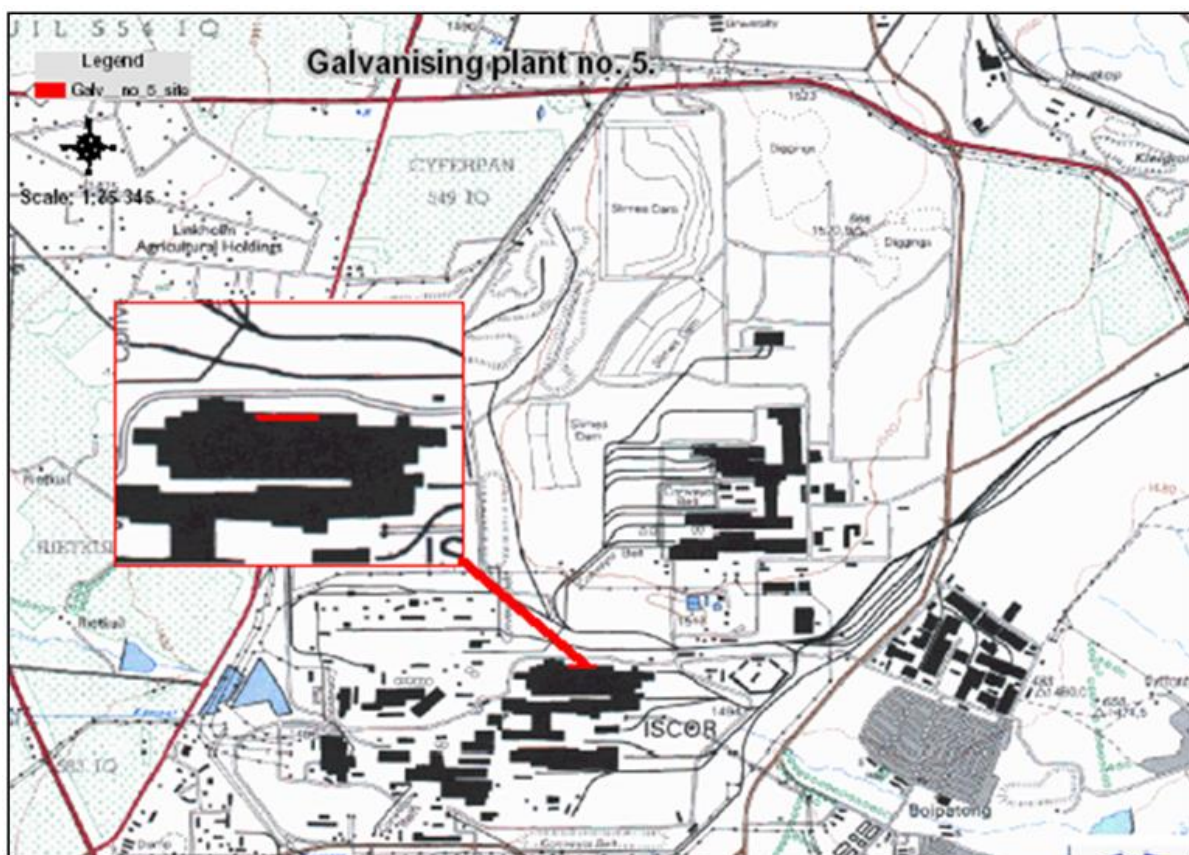


Figure 2: Location of galvanising line no.5 wrt bigger plant

3. AUDIT METHODOLOGY

The RoD was audited on 17 June 2021. The RoD was audited by Martin Bezuidenhout of *Esicongweni Environmental Services* and Mr Terrence Wilson of *ArcelorMittal South Africa* was in attendance to supply information. The photos in this report were taken during the audit.

The external audit was conducted according to the following framework:

- General meeting and discussion with Mr Terrence Wilson and Mr Johan Hattingh to discuss general conditions specific to the RoD.
- Desk study whereby the required documentation was audited.

- Detailed inspections of the facilities mentioned in the RoD.
- Administrative meeting to collate relevant documentation for discussion and review.
- Compilation and submission of the audit report which includes findings of the audit.

The RoD conditions were tabled, and the conditions were ranked either Compliant (C) or Non-compliant (NC). Some lines in the RoD are statements and not conditions as per say. Those statements were marked as N/A.

4. AUTHORISED ACTIVITIES

An Environmental Impact Assessment (EIA) was undertaken in 2004/2005 and a positive RoD was issued by the GDACE in 2005. RoD reference number GAUT 002/04-05/1633 (**Addendum A**) authorizes ArcelorMittal South Africa, Vanderbijlpark Works to construct and operate the heat-to-coat galvanising technology for the proposed galvanising line no.5 within the existing galvanising plant.

The activities are authorized in terms of sub-regulation 1(c)(ii) and 9 of GN R.1182 (as amended) under section 21 of the Act. The RoD was issued on 17 May 2005 and two subsequent Amendments were issued on 17 November 2009 and 4 October 2011.

It is stated in the RoD that the RoD can be reviewed by the department by means of notice. No review notice was received by the department up to date.

The civil construction commenced in April 2006 and commissioning was completed by January 2007.

5. APPRAISAL OF LISENCE CONDITIONS

The RoD consists of 49 conditions. Each condition is tabulated in this report alongside a brief commentary in respect of compliance.

RoD Summary

RoD Number	GAUT 002/04-05/1633
Date of RoD issue	17/05/2005
Number of amendments	2
RoD Amendment Number	GAUT 006/09-10/N0063
Date of Amendment issued	17/11/2009
RoD Amendment Number	GAUT 006/11-12/E0014
Date of Amendment issued	04/10/2011
Date of next review	By means of notice from Department
Date of expiry	No expiry
RoD location	ArcelorMittal South Africa Vanderbijlpark Works Delfos Boulevard, Vanderbijlpark, on the remaining extent of Portion 1 of the Farm Vanderbijlpark 550 IQ Gauteng Province The site falls within the jurisdiction of the Emfuleni Local Municipality

The RoD was issued subject to conditions presented within the RoD. No findings or non-compliances were raised during the previous audit conducted in 2019.

Table 1: RoD Conditions

Condition Number	Permit Condition	Compliance Status	Recommendation / Comment
1	DESCRIPTION, EXTENT AND LOCATION OF THE ACTIVITY		
	<p>The proposed galvanising line no. 5 must be constructed within the existing galvanising plant.</p> <p>Delfos Boulevard, Vanderbijlpark, on the remaining extent of Portion 1 of the Farm Vanderbijlpark 550 IQ. The site falls within the jurisdiction of the Emfuleni Local Municipality.</p>	C	Galvanising line no.5 was constructed over the previously discontinued galvanising line no. 1 and 2 within the existing galvanising plant.
2	KEY FACTORS INFORMING THE DECISION		
Amend '11	<p>List of all the documentation considered during the decision-making process.</p> <p>List of all the applicable legislation.</p> <p>Findings made during the site visit by the department.</p> <p>Note that finding 2.2 (k) was deleted via an amendment.</p>	N/A	Not an auditable condition.
3	CONDITIONS		
3.1	Description and extent of the activity		
	<p>The authorization applies in respect of the construction and operation of the heat-to-coat galvanising technology.</p> <p>The extent of the process is summarized in this section.</p>	N/A	Not an auditable condition.
3.2	Specific conditions		
a)	Authorization is only granted for the heat-to-coat galvanizing technology for the proposed galvanizing line no.5 within the existing MSVS galvanizing plant and/or building.	C	Heat-to-coat galvanizing technology was implemented.
b)	An updated project schedule with time-frames must be submitted to the Department 30 (thirty) calendar days prior to the commencement of construction activities. The schedule must	C	The project schedule with timeframes was submitted on 15 November 2005.

	clearly indicate the different phases of construction (as applicable) and commissioning.		
c)	The Department must be informed of the start of commissioning at least 30 (thirty) calendar days prior to the commencement thereof.	C	The Department was informed of the commissioning on 25 January 2007.
d)	Final design plans for new and upgraded containment areas (collection sumps etc.), galvanizing line no.5 site layout must be provided 30 (thirty) calendar days prior to the commencement of construction. The above design plans must include information on specific pollution prevention measures (e.g. impermeable layers, leak detection system etc.) and compliance with relevant SABS standards.	C	The design plans were submitted to the Department on 15 November 2005, together with the project schedule, and the required mitigation measures were provided.
e)	Effluent from galvanizing line no.5 must be segregated into strong and dilute effluents in order to allow the Zero Effluent Discharge system to function optimally.	C	<p>It was confirmed during the physical inspection that Cr containing effluent is separated from non-Cr containing effluent.</p> <p>Both effluent streams are diverted to the Central Effluent Treatment Plant (CETP) for treatment.</p> <p>At the time of the audit AMVS was not ZED but not because of the galv line no.5.</p> <p>Refer to the WUL with reference number 20035016 (File No: 16/2/7/C222/B11).</p>
f)	An auditable Preventative Maintenance Plan must be developed to ensure that all environmentally critical equipment such as alkali wash scrubber, extraction system, fume extraction equipment (if later installed) is maintained as required. The management of Mittal Steel Vanderbijlpark Steel are to commit to the budget to undertake the required preventative maintenance. A discussion on the implementation of and compliance with the maintenance plan must be included in the bi-annual audit reports.	C	<p>The Preventative Maintenance Plan was observed during the audit. Job cards are generated on the SAP system that list all the actions required. The system also follow-up and tracks the progress.</p> <p>Refer to Addendum F for a sample of a typical Job Card for the Galv Line no.5.</p>
g)	A detailed Environmental Management Plan (EMP) for the implementation of the project must be submitted to the Department for approval 30 (thirty) calendar days prior to the commencement of	C	The first EMP was submitted to the Department on 15 November 2005, with the project schedule.

	construction activities. The EMP must specifically include, inter alia:		An updated EMP was again submitted in 2017. Evidence of continual correspondence was observed during the audit to follow up with the Department wrt approval of the updated EMP.
i)	An auditable plan for monitoring all facets of the galvanizing line no.5 project implementation and operation.	C	The plan makes provision to monitor all facets of the galvanizing line no.5 project during implementation and operation.
ii)	A proposed surface water monitoring regime, which will be in line with the DWAF Water License. The graphically represented results of this monitoring are to be included in a bi-annual audit, which must be submitted to this Department for review to determine if the remedial measures have been successful or if further remediation is required.	C	A Surface water monitoring program is included in the EMP. The Surface water monitoring is also managed via the WUL. Refer to external audit for the WUL submitted to the department for detail.
iii)	Proposed methods of reducing spillages at the process water sumps.	C	During the site visit bund walls were observed as prescribed in the EMP.
iv)	The EMP must include an Air Quality Monitoring plan based on the requirements of Condition 3.2(h).	C	Refer to condition 3.2 (h) Refer to AEL with reference number AEL0003/SDM/2012 AMVW has an extensive Air Quality Monitoring Program that includes the Galv Line no 5. The AEL requires SO ₂ and NO _x measurements bi-annually.
v)	The EMP must also include a hazardous waste management plan.	C	Site specific waste management plan and also waste management procedure observed during the audit. Refer to procedure with reference number SHERQ-SYS-061 ver15.
vi)	A diagram indicating all unpaved surface areas, including bunds and storm water channels, and any areas identified for storm-water and surface water and surface water management. Plans must be developed to ensure that all surface areas are protected from spillage and erosion.	C	An Annexure in the EMP contains the diagram mentioned. Also refer to Addendum E of this report.

vii)	Procedures for the monitoring of noise to ensure compliance with Gauteng Noise Control Regulations and relevant requirements of the Occupational Health and Safety Act.	C	Included in the Occupational Hygiene survey that are conducted every 2 years. A detail OHS Survey was presented during the audit for 2020 and 2021 as well as the scheduled planning for 2022 for the different plants including the Galv Line no 5.
h)	In order to provide empirical data which will verify the assumptions made in the Air Quality Report, the following Air Quality Management, Monitoring and Reporting Regime must be implemented and reported on in the bi-annual environmental performance audits as applicable:		Refer to condition 3.2 (g)(iv)
i)	The stack monitoring must be conducted quarterly for the first year and the following parameters be tested for chromium: <ul style="list-style-type: none"> • Hexavalent chrome (Cr(vi) and total • Metal oxides • Particulate matter • Sulphur dioxide (SO₂) • Oxides of nitrogen (NO_x) • Carbon dioxide (CO₂) • Carbon monoxide (CO) 	N/A	Monitoring was conducted quarterly for the first year. This is an historical condition only applicable to the first year and not applicable for this audit cycle.
ii)	The monitoring results for the above parameters must be graphically represented and included in the bi-annual audit report. Emissions must be presented at the following reference conditions: 11% O ₂ ; 273 Kelvin, 101, 3 KPa.	N/A	The results were graphically represented in the first report. This is an historical condition only applicable to the first year and not applicable for this audit cycle.
iii)	The stack must be so designed that if the monitoring results in the first year indicate that there is a need for further or improved mitigation a scrubber can be installed in the stack.	C	The stack was designed so that a scrubber can be installed. Studies indicated that no scrubber is needed.
iv) Amend '11	The Galvanising Line (Galv 5) must comply with the conditions prescribed in the APPA Registration Certificate.	C	Refer to condition 3.2 (g)(iv) Refer to AEL with reference number AEL0003/SDM/2012

v)	Additional monitoring at the Chromic Acid application area (station 5) must be undertaken and methodology developed to measure fugitive emissions at ventilation areas within the galvanizing building.	C	A risk assessment study during the Occupational Health survey indicated that the chrome levels measured were below detectable limits.
vi)	A long-term Air Quality Management and Audit Plan should be compiled for the MSVS Galvanising Plant based on the outcome of the above monitoring results. These plans must consider international standard and best practice.	C	<p>The Air Quality Management and Audit Plan was submitted in 2011. The plan and monitoring requirements were based on the conditions in the AEL.</p> <p>The monitoring results have been compared against national standards and it was found that no additional management measures need to be taken at the Galvanising Plants.</p>
vii)	By and large, Mittal Steel Vanderbijlpark Steel (MSVS) is located in a hotspot and is increasing its production capacity. Therefore, it is essential that MSVS consider lowering general emissions more than the applicable standards required. Furthermore, the Air Quality act required the management of ambient air quality and it is thus important that MSVS define emission reduction strategies to make provision for new and applicable international standards.	C	<p>An Air Quality Management and Audit Plan for the Galv Line no 5 was presented during the audit. Refer to Addendum G.</p> <p>An Emission Reduction Plan was also developed for the entire AMVW site that included the consideration of emissions from the Galv Line no 5.</p> <p>Applicable standards that provision were made applicable:</p> <ol style="list-style-type: none"> 1. Work's Atmospheric Emissions Licence (AEL0003/SDM/2012) 2. National Environmental Management: Air Quality Act. National Minimum Emission Standards (as amended) 3. US EPA Method 0060 and US EPA Method 0061
i)	Detailed and up to date records must be kept of all incident and complaints and complaints pertaining to the galvanizing line no.5 project, how these were managed, and the recurrence thereof prevented. These records must be made available to the Department within 14 (fourteen) calendar days upon written request by the Department.	C	<p>No incidents were registered during the audit period for the Galv Line no 5.</p> <p>AMVW have an internal incident system in place (PIVOT) to register and follow up all incidents.</p>

j)	This Department and the Department of Water Affairs and Forestry must be informed of any major environmental and pollution incident relating to the galvanizing line no.5 project within 24 (twenty four) hour of such incidents occurring.	N/A	Refer to condition 3.2 (i) Not Applicable for this audit period.
k)	Mittal Steel Vanderbijlpark Steel flares about 15% of excess gas from Coke Ovens. MSVS must consider using such waste gases from Coke Ovens and other sources within the industry as a fuel resource to heat the strip surface during cleaning in a direct-fired furnace.	C	The coke oven clean gas and water (COCGW) project is underway. Refer to external audit report on RoD with Reference number COCGW-03-2021. Studies indicated that with current gas quality it is not feasible to utilize the excess gas.
l)	MSVS must investigate alternative (e.g. cleaning of chromic acid drums for reuse) other than disposal of the drums to the hazardous waste site. The investigation and its finding to these alternatives must be submitted to this Department for approval within 6(six) months from date of signature of this letter.	C	A report was submitted in November 2005. An investigation was underway to convert from Cr-flakes to a Cr-solution that would eliminate drums but reverted back to the flakes system due to technical/supplier issues.
m)	Chromic acid tank sludge and alkali sludge must be disposed of at an H: H hazardous waste disposal site.	C	A thin layer of sludge was removed from the cleaning/alkali section (<100kg). This sludge was disposed of in a hazardous skip for disposal at an external, licensed facility. No further need to dispose of sludge during the audit period due to the small quantities generated.
n)	MSVS must consider reusing treated process water within the galvanizing plant to reduce freshwater intake from the Vaal Dam and Vaal River.	C	Most treated wastewater is processed via the main treatment plant (MTP) for re-use. Refer to external audit report in the WUL.
o)	The operation of the galvanizing line no.5 and the galvanizing plant as a whole must comply with the Occupational Health and Safety Act (No.85 of 1993) and sound Occupational Hygiene procedures implemented and improved upon. Engineering control measures must be considered as first choice for mitigation.	C	AMVW is OHSAS 18001 certified company. During the site inspection the safety systems were evident.
p)	The recommendations contained in the specialist studies submitted in support of the application for authorization of the galvanizing line no.5 project is regarded as an extension of the conditions of this	C	AMVS acknowledged the recommendations in the specialist reports.

	authorization. Implementation of or compliance with these recommendations must be discussed as part of the quarterly progress reports and bi-annual environmental performance audits thereafter.		The recommendation to convert from a Cr6 to a Cr3 system is continually under investigation. The most recent trials with Cr3 solution were done on 2 coils on 14 April 2021. Samples are currently being assessed in Germany. AMVW awaits feedback on results.
q)	All potential emergencies that can be expected from the galvanizing line no.5 must be in conjunction with the existing Galvanising Plant and Mittal Steel emergency response procedures.	C	An emergency response plan has been developed for the entire Works. An emergency response plan has also been developed for the Galv Line no 5. Refer to document with reference number CMSCOATGEN002 ver 5.
r)	The Department of Water Affairs and Forestry's requirements and /or conditions pertinent to the proposed project must be complied with.	C	Refer to external audit report on the WUL.
s)	An independent Environmental Control Officer (ECO) with an understanding of the heat-to-coat galvanizing process must be appointed for the duration of construction and commissioning, to monitor and report on compliance with the conditions of this authorization.	C	Mr Terrence Wilson was appointed as the ECO dated December 2010.
3.3	General conditions		
a)	Any changes to or deviations from, the project description set out in this letter must be approved, in writing, by the Department before such changes of deviations may be affected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations.	N/A	No change to the project scope up to the date of the audit. Two amendments were issued since the original RoD. No additional information requested by the department. Not applicable for the time of the audit period.
b)	This Department may review the conditions contained in this letter from time and may, by notice in writing to the applicant, amend, add or remove a condition.	N/A	AMVW take note of this condition. Up to date the department gave no indication for a review. Not applicable for the time of the audit period.

c)	The applicant must notify the Department, in writing, at least 10 (Ten) days prior to the change of ownership, project developer or the alienation of any similar rights for the activity described in this letter. The applicant must furnish a copy of this document to the new owner, developer of person to whom the rights accrue and inform the new owner, developer or person to whom the rights accrue that the conditions contained herein are binding on them.	N/A	AMVS take note of this condition. Not applicable for the time of the audit period.
d)	Where any of the applicant's contact details change, including the name of the responsible person, the physical or postal address and/or telephonic details, the applicant must notify the Department as soon as the new details become known to the applicant.	N/A	AMVS take note of this condition. Not applicable for the time of the audit period.
e)	Authorization for the activity is granted in terms of the Environmental Conservation Act, 1989 (Act 73 Of 1989) only and does not exempt the holder from compliance with other relevant legislation.	N/A	AMVS take note of this condition. AMSA is a listed company and are committed to comply to all legislation. A legal register was observed during the audit.
f)	The application shall be responsible for ensuring compliance with the conditions contained in this letter by any person acting on his behalf, including but not limited to, an agent servant, or employee or may person rendering a service to the applicant in respect the activity, including but not limited to, contractors and consultants.	C	All employees and contractors undergo SHE training. Employees and contractors also receive site specific training. Training matrix was observed during the audit.
g)	Departmental officials shall be given access to the property referred to in 1 above for the purpose of assessing and/or monitoring compliance with the conditions contained in this document at all reasonable times.	N/A	AMVS take note of this condition. No visit from the department during the time of the audit.
h)	The application must notify the Department within 24 (twenty-four) hour if any condition of this authorization cannot, or is not, adhered to. The notification must be supplemented with reasons for non-compliance.	N/A	AMVS take note of this condition. No reportable incident at the Galv Line no 5 for the audit period was registered.
3.4	Reporting Requirements		
a) Amend '09	The following Occupational Hygiene surveys and assessments must be performed by an independent Occupational Hygienist (OH) within the operational area after commissioning has been	C	Hazardous chemical substance exposure survey was conducted Nov 2020 by Gijima, an independent Occupational Hygienist, Approval No: OH0029 - CI 017.

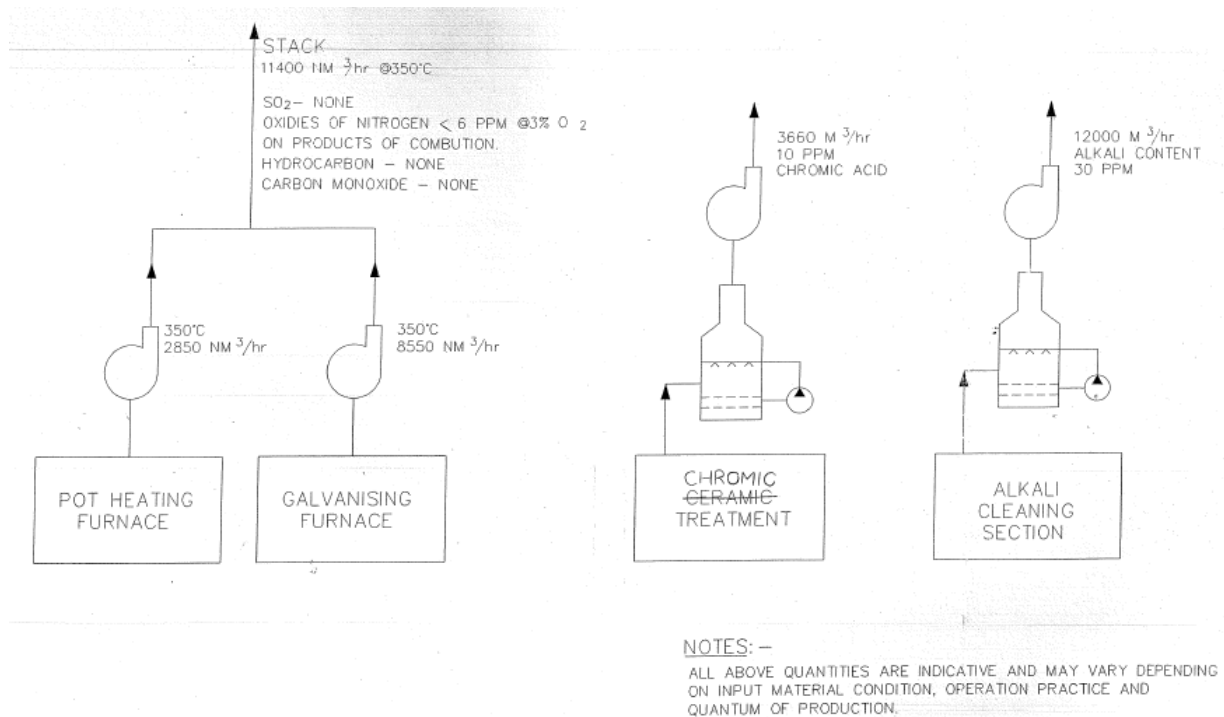
	<p>completed and normal galvanizing process is underway, and the results submitted to this Department three (3) months after commissioning of the Galvanizing Line no.5 project, and every two (2) year thereafter:</p> <ul style="list-style-type: none"> • Initial hazardous chemical substance risk assessments. • Baseline personal air sampling surveys. • Site noise surveys. • Any other factors identified by an approved Inspection Authority. 		<p>Baseline personal air sampling is also conducted by Gijima.</p> <p>The noise survey was conducted in Jan 2020 by Nershco, Approval No: OH102-CI036.</p>
b)	<p>A summarized quarterly progress report on the implementation of galvanizing line no.5 project must be submitted to the Department, the first report being due 90 (ninety) calendar days after construction commences, and every 90 (ninety) calendar days thereafter. These progress reports must address, inter alia, the following:</p> <ul style="list-style-type: none"> • Records of any major incidents (see 3.2(i) above) • Decommissioning of infrastructure (if any) • Results on the stack monitoring for the following parameters (when it becomes applicable): <ul style="list-style-type: none"> ○ Hexavalent chrome (Cr(VI)) and total chromium ○ Metal oxides ○ Particulate matter ○ Sulphur dioxide (SO₂) ○ Oxides of nitrogen (NO_x) ○ Carbon dioxide (CO₂) ○ Carbon monoxide (CO) • Outcome of occupational health audits • Monitoring of activities in terms of the environmental management plan • Any steps taken to rectify areas of non-compliance with environmental requirements. 	N/A	<p>The reports were submitted during the construction phase as required.</p> <p>Once construction was completed the requirement for the reports is not necessary anymore.</p>
c) Amend '09	<p>An Environmental performance audit conducted by independent accredited auditor must be submitted to the Department for review every two (2) year thereafter. The audit must include, inter alia, the following (results in graph format as applicable):</p>	C	<p>The last audit was done in Aug 2019 and did include all the required information.</p>

i)	Air quality monitoring and reporting as required by Condition 3.2(h)		Refer to section 6.1 of this report.
ii)	Discussions on the implementation (or not) of recommendations as contained in the Environmental Impact Report and specialist Studies		Refer to section 6.2 of this report.
iii)	Discussion on the following as provided for in the EMP" a) Description of the general state of plant b) Occupational health and safety surveys c) Explanation to the spikes that may occur in the quality monitoring data d) Log of the wastes that were generated and where disposed of e) Any environmental incident logs		a) Refer to section 6.3 of this report. b) Refer to section 6.4 of this report. c) Refer to section 6.1 of this report. d) Refer to section 6.5 of this report. e) Refer to section 6.6 of this report.
iv)	Discussion on the implementation of and compliance with the Preventative Maintenance Plan (see 3.2(f) above)		Refer to section 6.7 of this report.
v)	Records of any major incidents (see 3.2(i) above)		Refer to section 6.6 of this report.
vi)	Reporting on compliance with the provisions of this authorization and the environmental management plan, and steps taken to rectify non-compliance.		Refer to Table 1: RoD Conditions (this table)
vii)	Details on the quality and quantity of any discharge (air, water and land), and reasons for discharge, how these were managed, and how the recurrence thereof will be prevented.		Refer to section 6.8 of this report.
3.5	Duration of authorization		
	If the activity by this letter does not commence within 6 (six) months from the date of signature of this letter, the authorization will lapse and the applicant need to re-apply for authorization in terms of the above legislation or any amendments thereto.	N/A	The activity started within the required 6 months. This is an historical condition and not applicable to the auditable period.
4	CONSEQUENCES OF NON-COMPLIANCE		
	The applicant must comply with the conditions set out in this letter. Failure to comply with any of the above conditions may result in, inter alia, the Department withdrawing the authorization, issuing to address the non-compliance - including an order to cease the activity - as well as instituting criminal and/or civil proceedings to enforce compliance.	N/A	AMVS take note of this condition. Not an auditable condition.

6. REPORTING REQUIREMENTS

6.1 Air Quality Monitoring and Reporting

Refer to condition 3.2 (h) and 3.4(c)(i)



Flow diagram for emission of dust and fumes

An AEL was issued by the District Municipality in September 2018 with reference number AEL0003/SDM/2012. The AEL is valid until September 2023 and was audited in November 2020. Refer to external audit report with reference number CIG/ENVSOL/20/PROJ/0018. The monitoring requirements in the RoD have also been amended in 2011 to align with the requirements of the AEL.

Emissions resulting from the direct-fired furnace stacks include oxides of nitrogen (NO_x), carbon monoxide (CO) and small amounts of Sulphur Dioxide (SO₂). According to the design specifications NO_x will be the only pollutant resulting from the combustion of natural gas used as fuel at the direct-fired furnace. Oxides of nitrogen (NO_x) concentrations were found to be insignificant.

Emission limits is set out on page 52/75 in the AEL as follow:

Point Source Code	Pollutant Name	Maximum Release Rate			Duration of Emissions
		(mg/Nm ³)	Date to be Achieved By	Average Period	
Galv 5	SO ₂	500	Immediately	Hourly	Continuous
	NO _x	2,000 500	Immediately April 2020	Hourly Hourly	Continuous

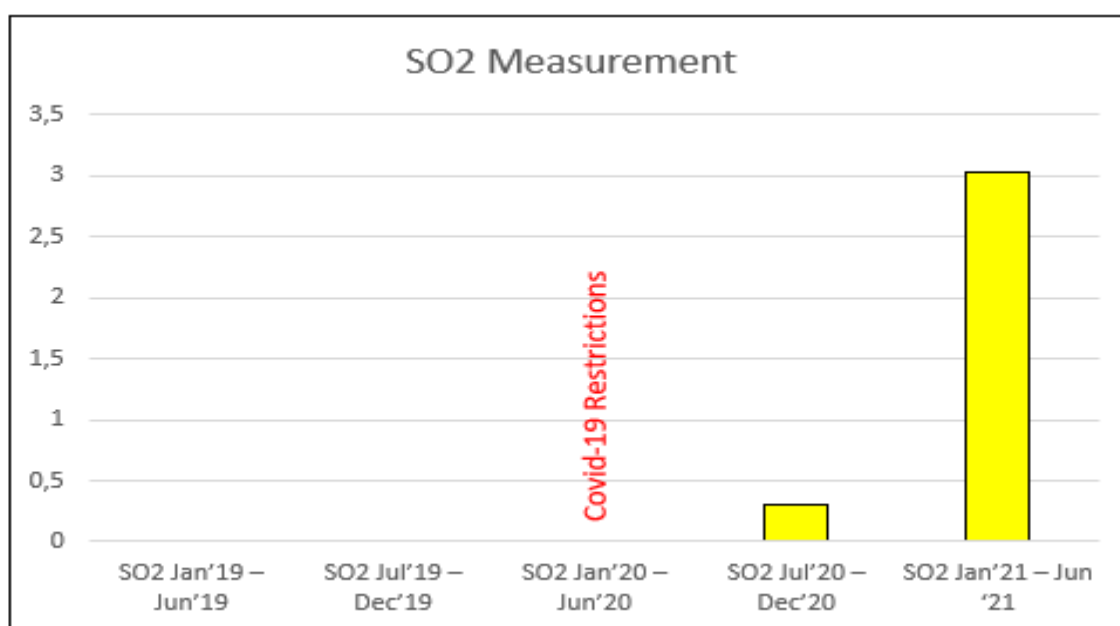
Point source – emission monitoring and reporting requirements is set out on page 60/75 in the AEL as follow:

Point Source Code	Emission Sampling / Monitoring Method	Sampling Frequency	Sampling Duration	Parameters to be Measured	Parameters to be Reported	Reporting Frequency
Galv 5	As per approved method	Bi-annually	Hourly	SO ₂ , NO _x	SO ₂ , NO _x	Bi-annually

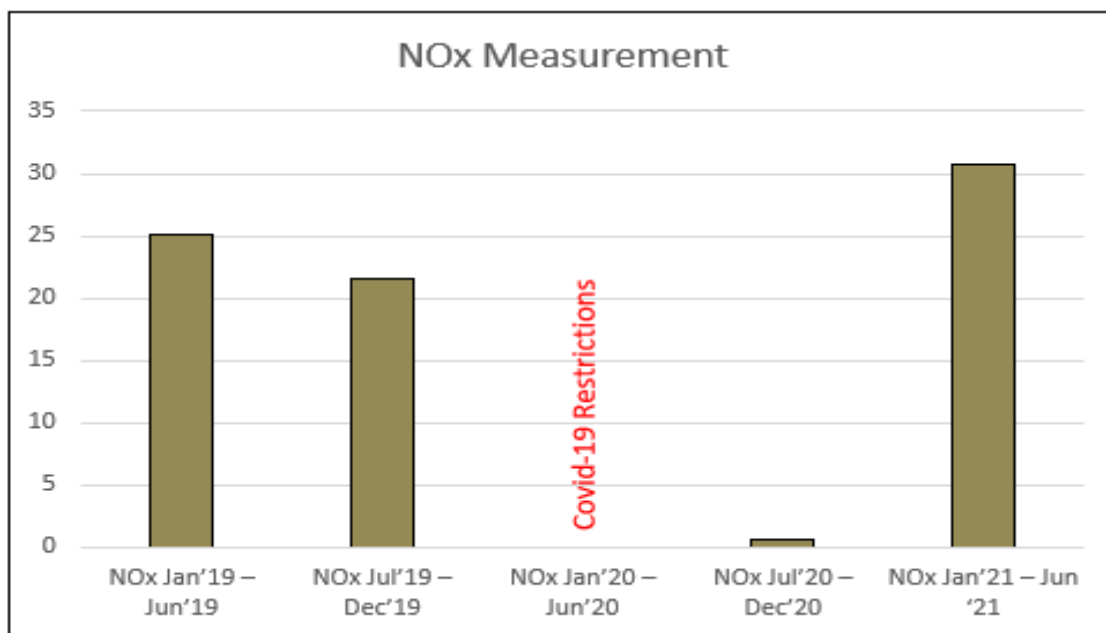
Emission monitoring data:

	Jan'19 – Jun'19	Jul'19 – Dec'19	Jan'20 – Jun'20	Jul'20 – Dec'20	Jan'21 – Jun '21
SO ₂	0	0	Plant off due to Covid	0.31	3.03
NO _x	25.11	21.52		0.66	30.66

The readings are significantly lower than the limit set in the AEL. The fuel source at Galv Line 5 is natural gas and the SO₂ and NO_x readings is thus expected to be low. An efficient flue gas exhaust system as well as a post combustion section is installed to ensure complete combustion of gasses.



SO₂ measurements during audit period (AEL limit = 500 mg/Nm³)



NO_x measurements during audit period (AEL limit = 2,000 and 500 since April 2020)



Stack that captures the off gasses.

6.2 Recommendations from EIR and Specialist Studies

Recommendations	Discussion
Design	
A separate room must be provided between G12- G13 to isolate the source of noise.	The blower for the air knives is in a separate room.
Any process water flow components that may contain contaminants and which has a positive head should be designed with impermeable layers and leak detection systems to ensure that no seepage to ground water can take place. Management measures must be implemented to ensure that process water sumps do not overflow.	Sumps and bund walls were observed during the site inspection.
Air Quality Recommendations	
Scheduled Process No. 55 for Galvanizing Processes states that the stacks must extend above the turbulence area of the building but not less than 7m above the highest point of the building. The Galvanizing building roof trusses were given to range between 16.87m and 33.58m. This does not account for the roof apex and if this is assumed to be an additional 5m, the maximum roof height of the Galvanizing building is 38.6 m. This implied a stack height of at least 45.6 m. The stack heights were given as 27m and therefore did not comply with the specifications in Process 55.	Refer to condition 3.2 (g)(iv) Condition amended in 2011 to align with the AEL.
It was recommended that the occupational hygienic concentrations data be verified by additional monitoring at the Chromic Acid application area (station 5). Unfortunately, no standardized methods exist to measure fugitive emissions at ventilation areas within such large buildings and it is recommended that such a methodology be developed.	Refer to condition 3.4 (a) Occupational Health Survey is conducted every 2 years.
The World Bank Group states the changing from hexavalent chrome to trivalent chrome as the preferred change in process as part of pollution prevention and control (WBG, 1998). This option, even though it is not as effective as chromic acid (Cr(VI)), should be investigated based on international best practice.	Refer to condition 3.2 (p) The recommendation to convert from a Cr6 to a Cr3 system is continually under investigation. The most recent trials with Cr3 solution were done on 2 coils on 14 April 2021. Samples are currently being assessed in Germany. AMVW awaits feedback on results.
Process Review	
Continue Occupational Hygiene monitoring in the working environment until a pattern is established, and then set up an appropriate routine monitoring programme.	Refer to condition 3.4 (a) Occupational Health Survey is conducted every 2 years.
Scheduled preventative maintenance plan on all water systems to ensure segregation of process water, rainwater and indirect cooling water streams.	Refer to condition 3.2 (n) Water management is regulated by a water use license.

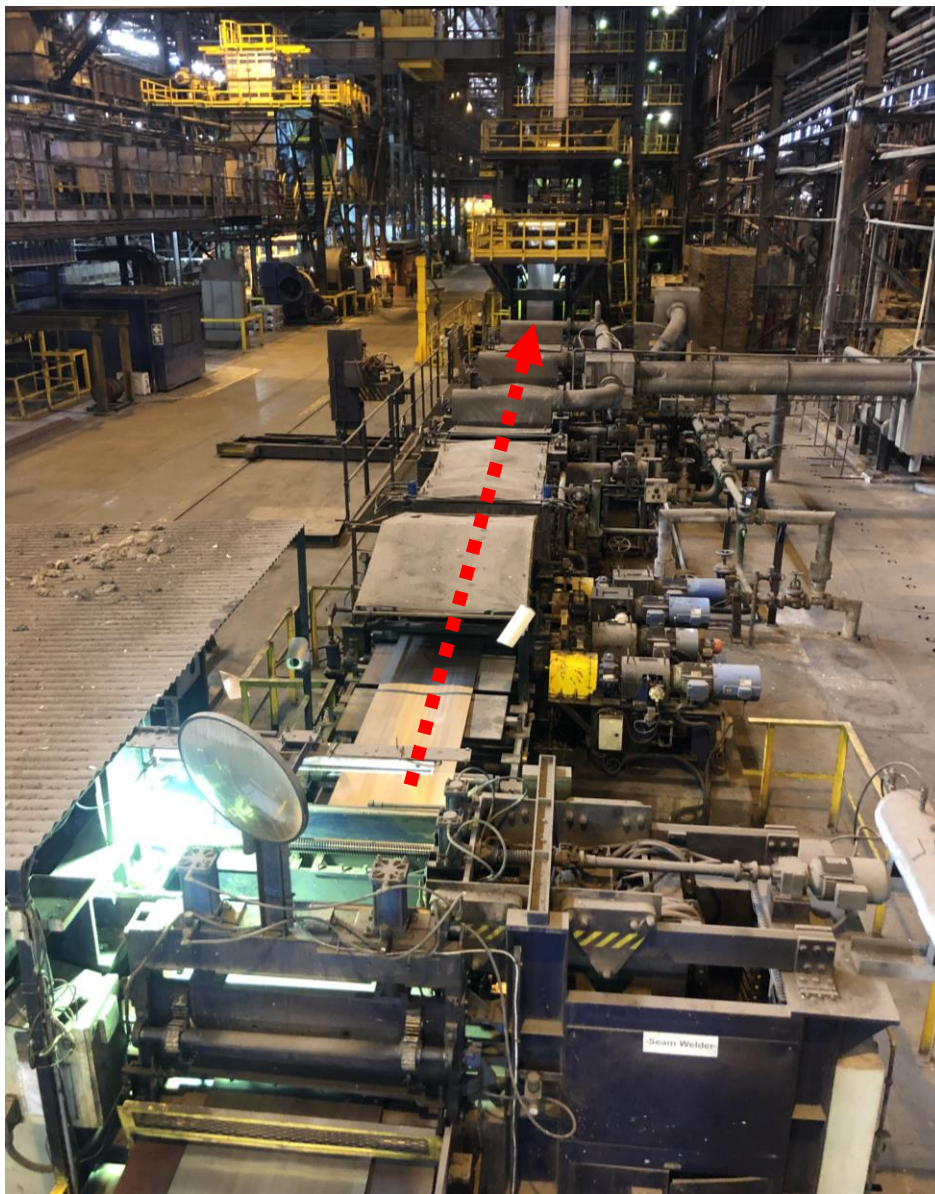
	<p>Refer to condition 3.2 (f)</p> <p>The Preventative Maintenance Plan was observed during the audit. Job cards are generated on the SAP system that list all the actions required. The system also follow-up and tracks the progress.</p> <p>Refer to Addendum F for a sample of a typical Job Card for the Galv Line no.5.</p>
Hazardous chemicals and impacts on the works	
For entry into confined spaces that are connected to either natural gas, HNX or nitrogen ensure that the confined space has been tested for combustibles and oxygen; that it is totally isolated; and connections of natural gas, HNX or nitrogen are disconnected.	Working in confined spaces is a cardinal rule at AMVS and strict safety procedures are complied to.
Arrange that the acidic effluent, alkaline effluent and dilute effluents are segregated for treatment at the CETP and the MTP.	<p>Refer to condition 3.2 (e)</p> <p>It was confirmed during the physical inspection that Cr containing effluent is separated from non-Cr containing effluent.</p> <p>Both effluent streams are diverted to the Central Effluent Treatment Plant (CETP) for treatment.</p> <p>AMVW is not ZED but not because of the galv line no.5 Refer to the WUL with reference number 20035016 (File No: 16/2/7/C222/B11).</p>

6.3 General State of the Plant

From Condition 3.4(c)(i)

Entire plant in the length was inspected on the northern side as well as the southern side. During the site visit a detail discussion with Mr Edwin Gouws the Process Manager was held to obtain detail information wrt the operation and more specific waste- and water management.

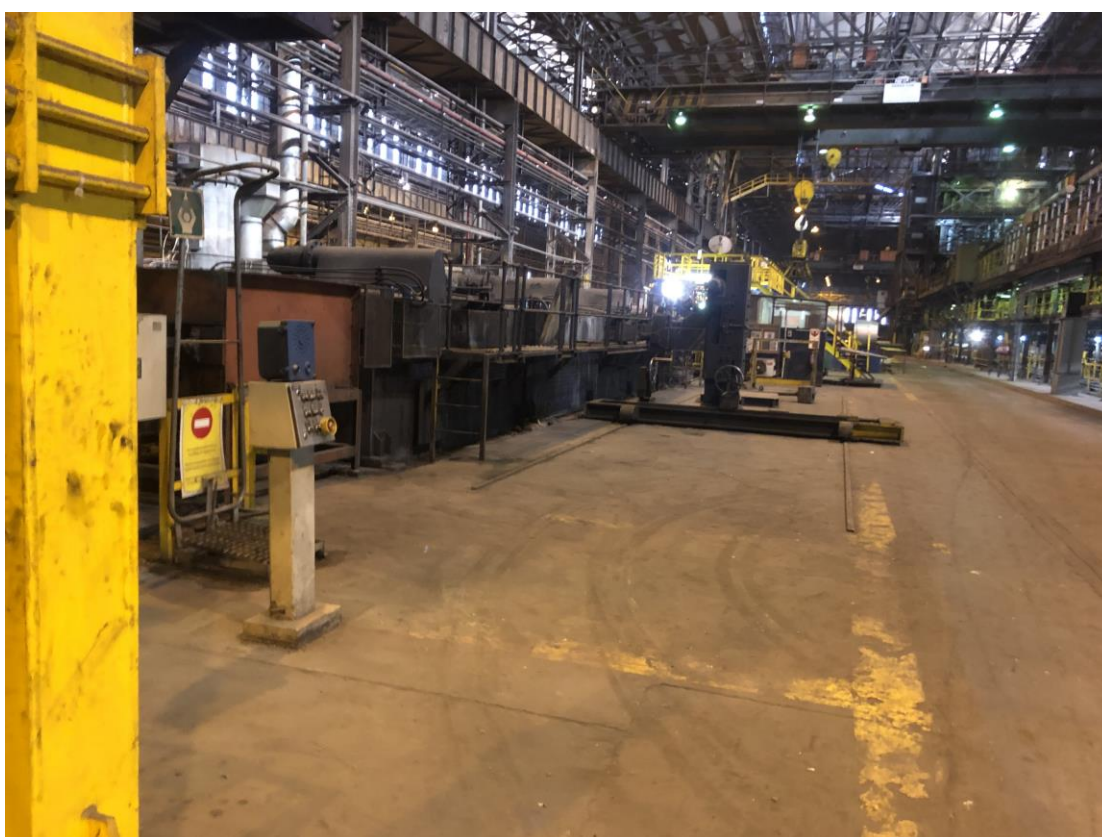
In general, the site was clean for a typical steel operation and the equipment seemed well maintained. The operation is fully automated and very little human interaction is required close to the fast-moving sheets.



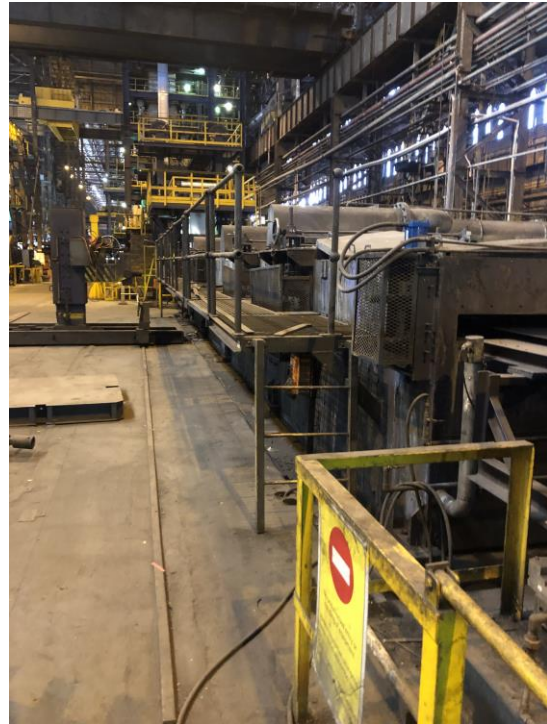
Top view of the length of the Galv Line no 5. Red line indicates the flow direction.



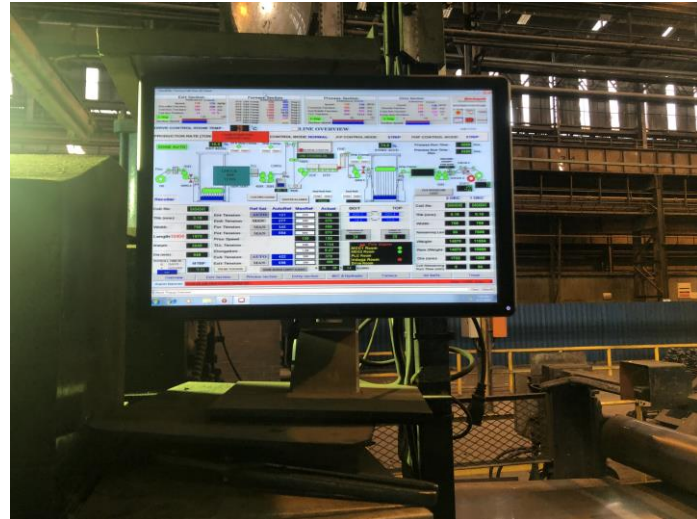
Steel coil before and after it has been galvanized.



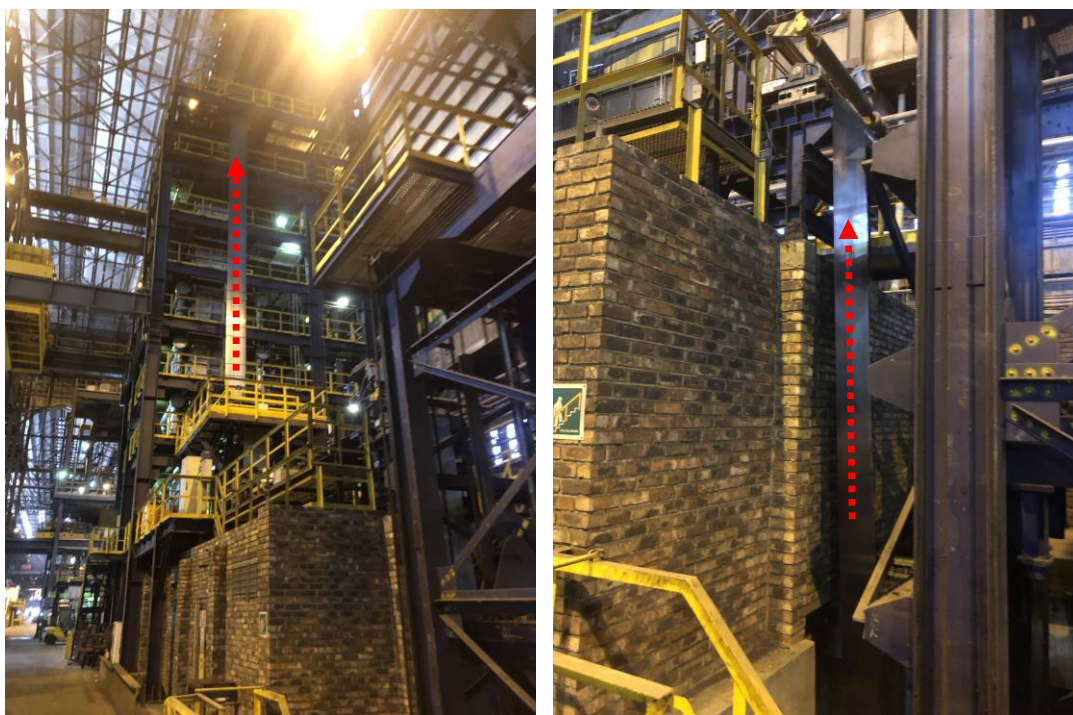
The southern side of Galv Line no 5



Rolling Mills can be observed from behind the safe zone.



Plant is fully automated, and the process can be observed behind safe panels.



Red arrows indicate the fast-moving sheets at the furnace section.

6.4 Occupational Health and Safety

From Condition 3.4(c)(ii)

It became very clear from the moment the plant is entered why full PPE especially ear protection is required. All over the plant safety signs were observed. The floor area was also clearly demarcated to indicate the safe walking zone.

All employees, without exception observed during the site visit wore full PPE.

Hazardous chemical substances exposure survey was conducted in November / December 2020, at AMVS. The purpose of this survey was to measure exposures to chemical stresses for employees described in the Occupational Hygiene Monitoring Strategy and to recommend control measure(s) where applicable. The results of the survey are detailed in the report with reference number GIJ-Report-25564-61 Rev00. Exposure concentrations for inhalable dust, metal fume, zinc dust and zinc oxide at the Galv Line no 5 can be observed on page 20 of the above-mentioned report. The survey indicated that the risk is considered low even without any control measures.

Exposure concentrations for diesel particulate matter and chromium trioxide for the Galv Line no 5 can be observed on page 22 and 23, respectively. The raw risk classification was evaluated as moderate and very low respectively.

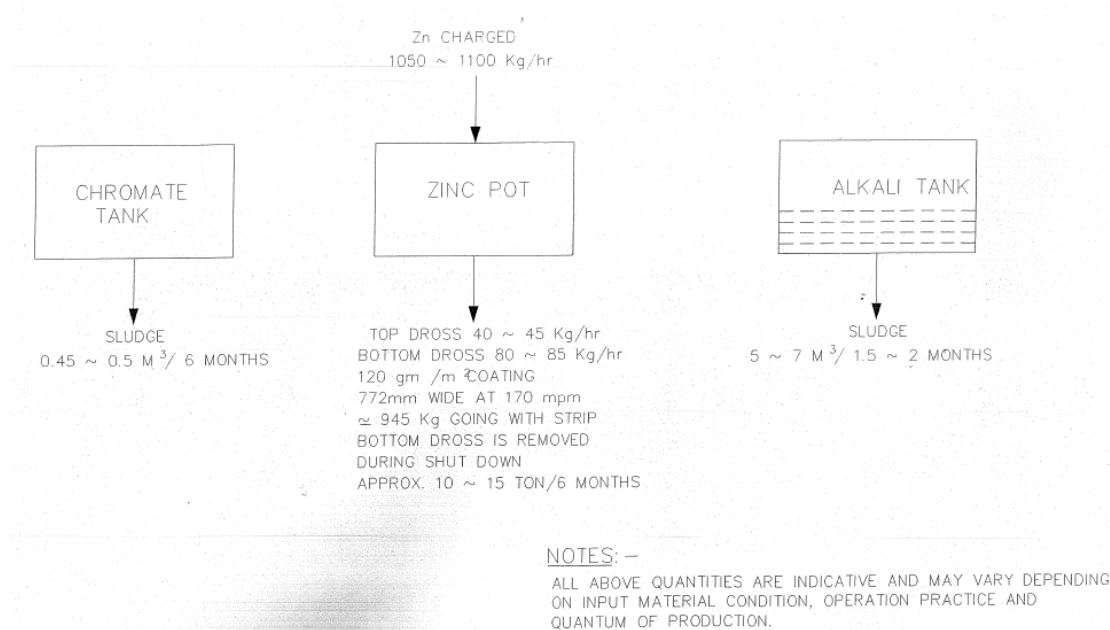
All exposed employees undergo periodic medical surveillance by a registered occupational health practitioner.



Safety signs throughout the plant is clearly visible.

6.5 Waste Management

From Condition 3.4(c)(iii)



Flow diagram for solid waste generated.

AMVS have a written procedure (Refer to document SHERQ-SYS-061 ver15) that spell out how the different waste streams must be handled. The procedure is included in the training matrix for all employees and contractors.

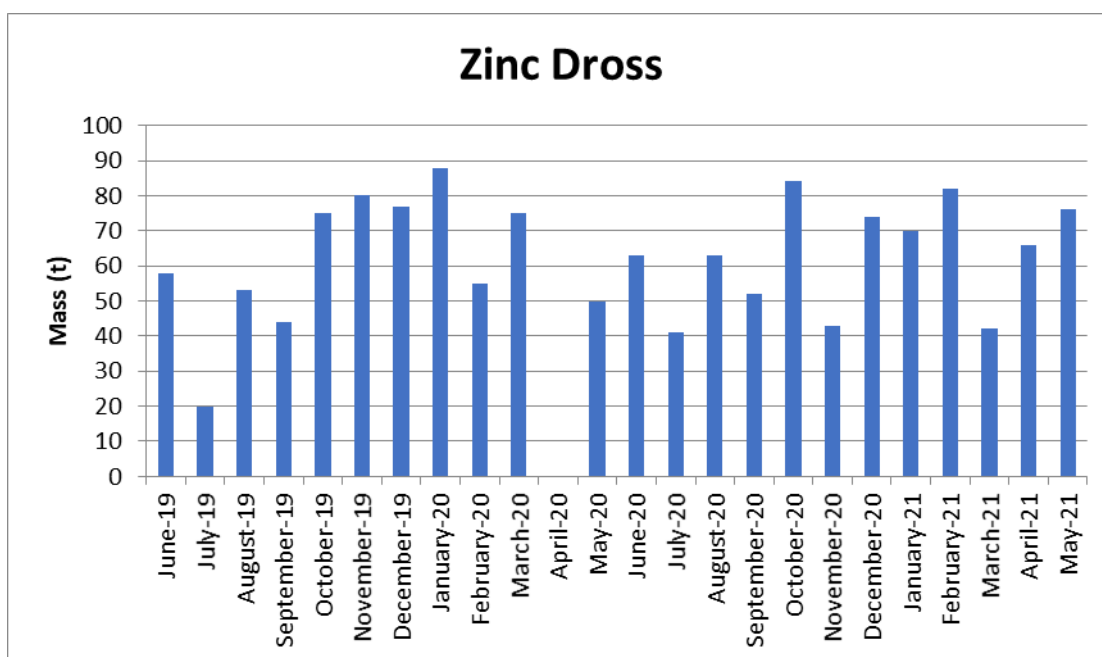
Waste from coil preparation is managed by placing steel off-cuts and wood blocks in dedicated bins that are recycled once the bins are full.

The effluent from the cleaning section is drained to a sump, when the sump is full it is pumped to the effluent treatment plant where it is treated. Surfaces in the cleaning section are concrete lined, therefore minimal risk of soil and groundwater contamination. The area around the alkali storage containers is sloped into the direction of the sump.



Zinc is added to the process and zinc dross is skimmed off manually.

Zinc, aluminum, and antimony is used in a molten form to coat the strip. Impurities (dross) in the zinc bath is scooped from the top of the bath. A contractor is used to collect the solidified dross buckets. They then recycle the dross to recover the zinc in the dross.



Zinc Dross generated and sold.

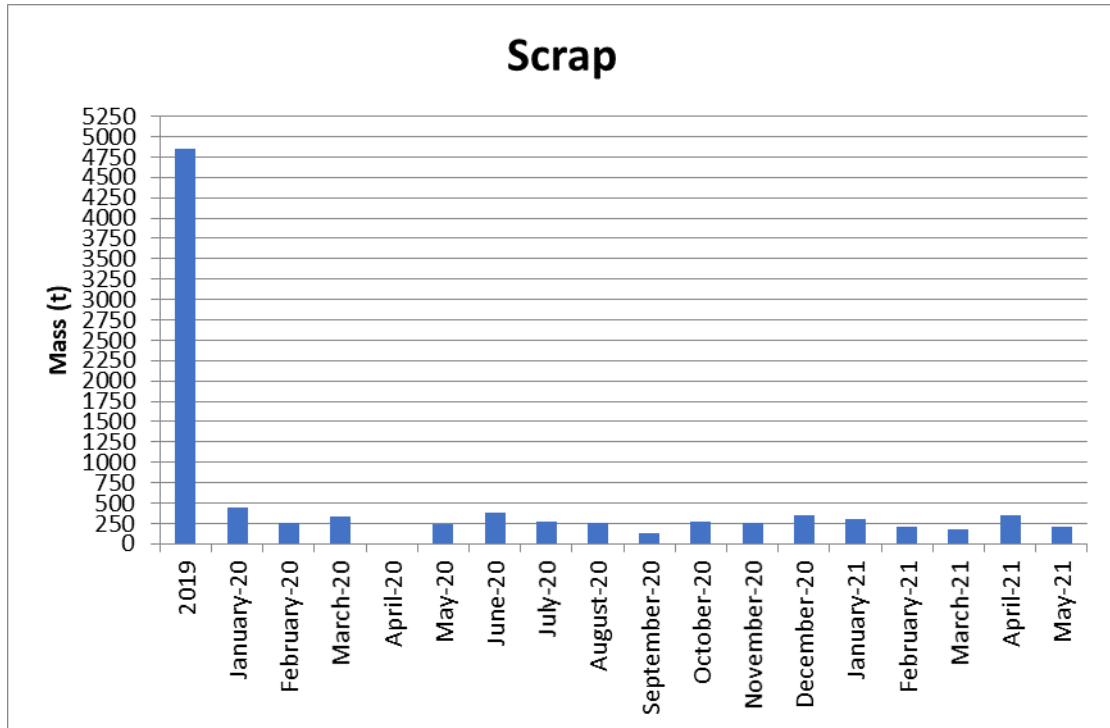
ArcelorMittal is evaluating Cr(III) products from various suppliers in order to change over from Cr(VI) to a more environmentally friendly Cr(III) for passivation.



Zinc dross ready for recycling.



Skips are provided for off-cuts to be recycled again.



Scrap metal generated and recycled.

6.6 Environmental Incidents

From Condition 3.4(c) (iii) and (v)

Incidents are logged on the Work's incident reporting system (PIVOT system), with the associated measures to prevent a similar incident from reoccurring. Corrective measures are assigned to the relevant employees for action via the system.

No incidents were reported for the audit period against the Galv Line no 5.



Galv Line no 5 cabin.

6.7 Preventative Maintenance Plan

From Condition 3.4(c) (iv)

A SAP system is in place to conduct preventative maintenance. Job cards are generated by the system. The job card contains a list of actions to be completed and facilitate the routine maintenance, repairs, and preventive maintenance. Refer to **Addendum F** for a typical example of a job card at the Galv Line no 5.

Regular inspections and maintenance are done on the hydraulic oil systems as per the preventative maintenance plan to minimize the risk of leakage or spills. Spill kits were observed to ensure quick action in the case of a spill.



Process flow diagrams against the wall

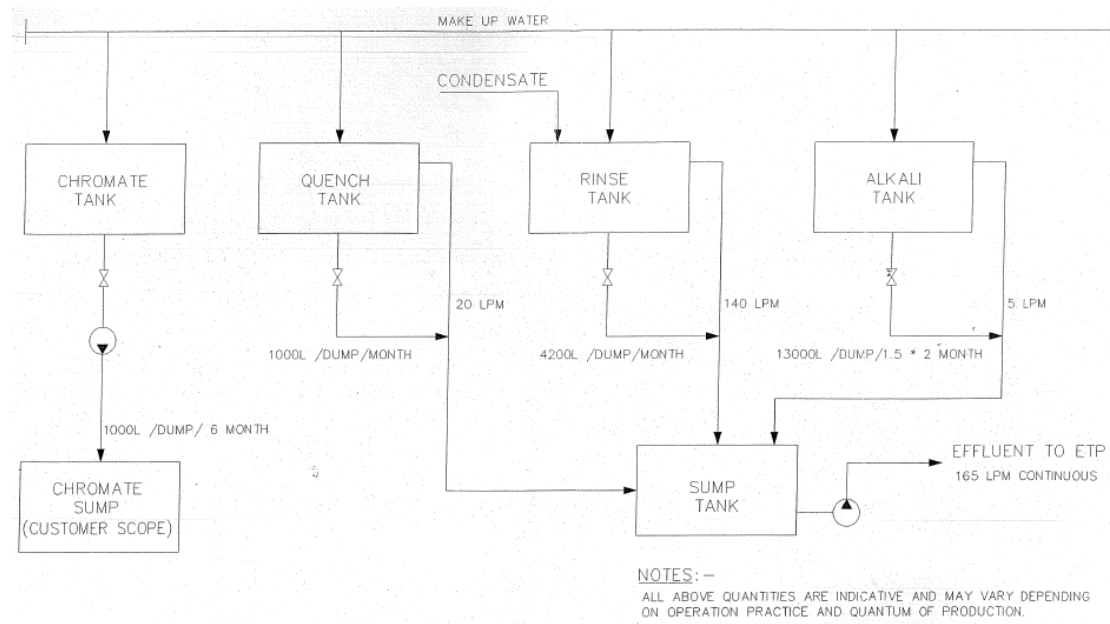


Testing station for quality control

6.8 Quality and Quantity of Discharge

From Condition 3.4(c) (vii)

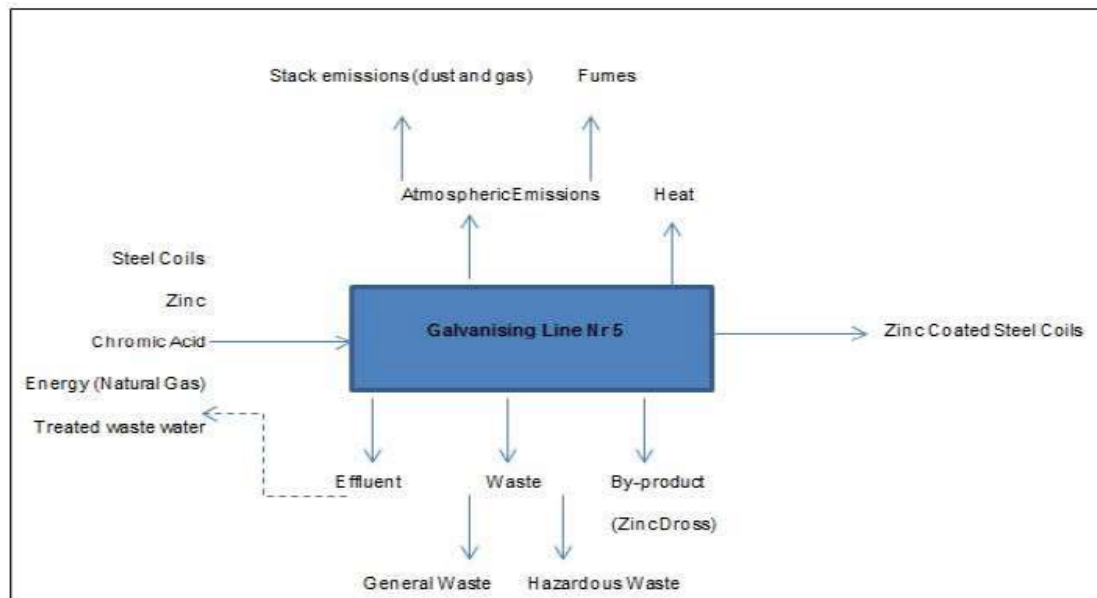
Refer to the sections in this report for dedicated discussion wrt the different streams.



Flow diagram for liquid effluent discharge



Effluent from the Galv Lines entering the main sump.



Input / Output diagram for the Galv Line no 5

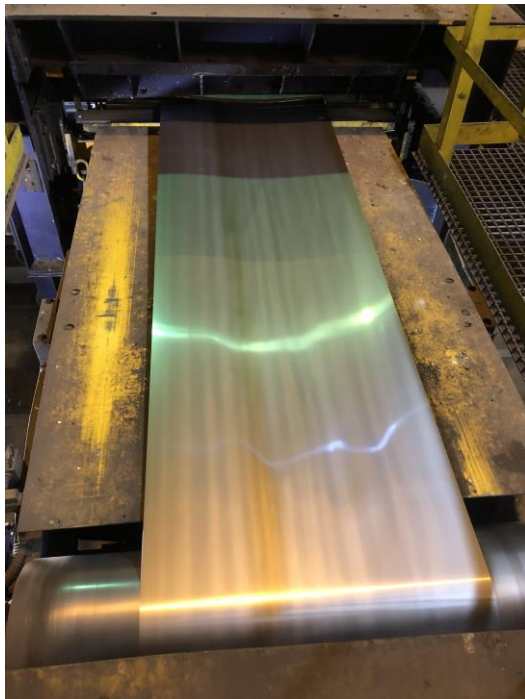
The diagram above holistically indicates the inputs and outputs of the Galv Line no 5.

7. DISCUSSION AND RECOMMENDATIONS

A record of decision (RoD) was issued to ArcelorMittal for the construction and operation of the heat-to-coat galvanising technology for the proposed galvanising line no.5 within the existing galvanising plant (Figure 2). This RoD is issued in terms of sub-regulation 1(c)(ii) and 9 of GN R.1182 (as amended) under section 21 of the Act.

The RoD was issued by the Gauteng Department of Agriculture, Conservation and Environment (GDACE) in 2005, and subsequently two addendums were issued in 2009 and 2011, respectively.

No findings were made during the audit and **100% compliance** was achieved. ArcelorMittal Vanderbijlpark Works is compliant with the conditions of the RoD.



ADDENDUM – A

RoD: GAUT 002/04-05/1633



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**DEPARTMENT OF AGRICULTURE,
CONSERVATION & ENVIRONMENT**

Diamond Corner Building, 68 Eloff & Market Street, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 355-1900
Fax: (011) 355-1000
Email: gdace@gpp.gov.za

Enquiries: Mr. Malusi Buthelezi
Telephone: (011) 355 1597

FAX COVER SHEET

To: Mr. P.A. van den Bon Company: MITTAL STEEL Vanderbijlpark Steel
Fax no. (016) 889 2058 Tel no: (016) 889 4597
From: Dept. of Agriculture, Conservation and Environment
Date: Pages: 12 pages including cover sheet
Re: THE PROPOSED CONSTRUCTION AND OPERATION OF A NEW HEAT-TO-COAT GALVANISING LINE NR 5 TO REPLACE DECOMMISSIONED GALVANISING LINES 1 & 2 AT MITTAL STEEL IN VANDERBIJLPARK.

Please find attached the Record of Decision for the above-mentioned project.

Trusting you will find this in order.

Regards,

Malusi

0113330667



DEPARTMENT OF AGRICULTURE, CONSERVATION & ENVIRONMENT

Office of the Head of Department

Diamond Corner Building, 68 Eloff & Market Street, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 355-1900

Fax: (011) 333-0667

Email: steven.cornelius@gauteng.gov.za

Website: http://www.gdace.gpp.gov.za

Reference: GAUT 002/04-05/1633

Enquirer: Tilly Zondi

Telephone: (011) 355 1933

E-mail: tilly.zondi@gauteng.gov.za

Mr. P.A. VAN DEN BON
Manager : Environmental Management
Mittal Steel South Africa Limited – Vanderbijlpark Steel
P.O. Box 2
Vanderbijlpark
1930

Fax: (016) 889 2058

By: Facsimile & Registered Mail

Dear Sir

GRANTING OF CONDITIONAL AUTHORISATION FOR PROJECT REFERENCE GAUT 002/04-05/1633.

Please find attached the Record of Decision in respect of your application for authorisation in terms of Regulations R.1182 and R.1183 (as amended).

Yours faithfully

A handwritten signature in dark ink, appearing to read "Dr. S.T. Cornelius".

Dr. S.T. Cornelius
Head Of Department
Gauteng Department of Agriculture, Conservation and Environment
Date: 17/05/2005

Cc: STRATEGIC ENVIRONMENTAL FOCUS
(PTY) LTD

Attn: Mr. Hanré Crous
Tel: (012) 349 1307
Fax: (012) 349 1229

DEPARTMENT OF WATER AFFAIRS &
FORESTRY - Gauteng Region

Attn: Mr. Phillimon Khwinana / Mr. Ephraim Matseba
Tel: (012) 392 1356
Fax: (012) 392 1359

GAUT 002/04-05/1633

Galvanising Line No. 5 @ Mittal Steel VDBP Steel

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17/05 2005 08:31 FAX: 0113330667

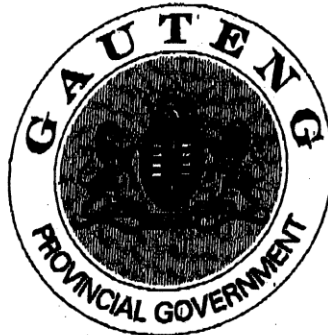
DACE ▲

003/012

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EMFULENI LOCAL MUNICIPALITY

Attn: Mr. Willie Louw
Tel: (016) 988 1064/5
Fax: (016) 988 1531



DEPARTMENT OF AGRICULTURE, CONSERVATION & ENVIRONMENT

Diamond Corner Building, 68 Eloff & Market
Street, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 355-1900

Fax: (011) 355-1000

Website: <http://www.gdace.gpg.gov.za>

RECORD OF DECISION FOR PROJECT REFERENCE GAUT 002/04-05/1633

By virtue of the powers delegated by the Minister, the Gauteng Department of Agriculture, Conservation and Environment ("the Department") hereby:

- Exempts Mittal Steel South Africa Limited in terms of Section 28A of the Environment Conservation Act (Act 73 of 1989) ("the Act"), from complying with certain provisions of GN R.1183 (as amended) promulgated under Sections 26 and 28 of the Act, and
- Authorises Mittal Steel South Africa Limited in terms of Section 22 of the Act to undertake the activity specified below subject to the indicated conditions.

1. DESCRIPTION, EXTENT AND LOCATION OF THE ACTIVITY:

The activity, detailed in section 3.1 below, entails the construction and operation of the heat-to-coat galvanising technology for the proposed galvanising line no. 5 within the existing galvanising plant and/or building at Mittal Steel Vanderbijlpark Steel, as part of the project to coat the steel strip with a thin zinc layer to make it more corrosion resistant and suitable for use in the roofing market etc. The project falls within the ambit of sub-regulations 1(e) (ii) and 9 of GN R.1182 (as amended) promulgated under section 21 of the Act.

The heat-to-coat galvanising process for the proposed galvanising line no. 5 is proposed to take place within an existing Galvanising Plant in the western part of the existing Mittal Steel Vanderbijlpark Steel site. The property is located at Delfos Boulevard, Vanderbijlpark, on the remaining extent of Portion 1 of the farm Vanderbijlpark 550 IQ. The site falls within the jurisdiction of the Emfuleni Local Municipality.

2. KEY FACTORS INFORMING THE DECISION:

2.1 In reaching its decision in respect of the application, the Department has taken, *inter alia*, the following into consideration:

- a) The information contained in the:
 - IIVS Environmental Master Plan Specialist Report – Air Pollution, dated December 2002,
 - IIVS Environmental Master Plan Draft Integration Report, dated January 2003,
 - IIVS Environmental Master Plan Executive Summary Report, dated June 2003,
 - Minutes of a pre-application meeting, dated 20 October 2004,

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- Application for authorisation and supporting Background Information Document, dated 26 October 2004,
- Environmental Impact Report, appended Specialist Reports and supporting documentation, dated 18 January 2005, and
- Additional Information i.e. Stakeholder Engagement Report and Water Management provided by AfroSearch and SEFsa on February and 07 April 2005.

b) Compliance with applicable departmental, provincial and national policies and guidelines, including:

- The Department of Water Affairs and Forestry's Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste,
- The Department of Environmental Affairs and Tourism's Guideline for the Implementation of Sections 21, 22, and 26 of the Act (April 1998),
- The Department of Environmental Affairs and Tourism's White Paper on Integrated Pollution and Waste Management for South Africa (May 2000),
- The Department of Environmental Affairs and Tourism's Emission Guidelines for Scheduled Processes,
- The DEAT's Guidelines for Scheduled Processes,
- The National Waste Management Strategy (October 1999), and
- The National Water Act No. 36 of 1998.

- c) The findings of a site visit undertaken on 18 February 2005, by Mr. M. Buthelezi, an official of this Department, Mr. P. Khwinana and Mr. E. Matseba of the Department of Water Affairs & Forestry, Mr. H. Crous of Strategio Environmental Focus (Pty) Ltd, and Mr. P. van den Bon of Mittal Steel S.A. Limited – Vanderbijlpark Steel.

2.2 In reviewing this information, the Department made the following findings:

- a) Mittal Steel Vanderbijlpark Steel denoted MSVS hereafter, currently operates two galvanising lines i.e. galvanising lines 3 and 4. The proposed construction and operation of galvanising line no. 5 is to be undertaken on an existing MSVS Galvanising building / plant, in an existing industrial site. The site therefore does not contain any sensitive faunal or floral species.
- b) The objective of the proposed galvanising line no. 5 is successively to; 1) substitute thin gauge imports in the sub-Saharan African market with Mittal Steel manufactured product, and 2) create production capacity to enable Mittal Steel Ltd to participate in the down gauging trends that will eventually manifest within the South African Market.
- c) MSVS evaluated options to replace the capacity of the decommissioned galvanising lines 1 and 2 with galvanising line no. 5 that will conform to the best available technology. The proposed Heat-to-Coat galvanising technology has globally become the preferred thin gauge roofing galvanising process and with this technology the environmental impacts are reduced in terms of; 1) Acid use, 2) Flux emissions, 3) Lead associated with heat transfer in flux technology, and 4) Limited use of hazardous chemicals.
- d) Most of the solid wastes can be recycled e.g. scrap steels and zinc dross, and materials such as alkaline sludge, chromium sludge and drums will be disposed of at an H:H waste disposal site. Waste management practices and procedures are well established within MSVS.
- e) Effluent in the form of alkali wash purge/dump, quench water purge/dump generated from the galvanising line no. 5 is of relatively low volumes and will be discharged to the existing Effluent Treatment Plants (ETPs) where they will be treated. All effluent from the galvanising line no. 5 will be segregated into strong and dilute systems to allow for the Zero Effluent Discharge system to function optimally.

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- f) MSVS considered installing a hood around the bath with fume extraction equipment to remove the zinc vapour from the working environment. However, occupational hygiene survey results indicated zinc concentration of 0.002 mg/m^3 for the galvanising line no. 3 which is well below the occupational exposure limit of 5 mg/m^3 . Consequently, MSVS has decided not to install the hood and fume extraction equipment as it would serve no purpose because the zinc bath temperature is not high enough to generate significant zinc oxide fumes.
- g) The extraction system will be applied to both the alkali washing system and the hot water rinse tank to eliminate the risk of washed chemical spray and mist which could generate a chemical hazard and harm personnel in the working area. Emissions from the extraction process will disperse to a ground level concentration of less than the OEL of 2 mg/m^3 within MSVS and a concentration of less than $20 \mu\text{g/m}^3$ (OEL/100) outside the site.
- h) No sulphur dioxide (SO_2) emissions would result from the operation of galvanising line no. 5 due to the use of natural gas. However, a small amount of sulphur present in the natural gas is very low and likely to result in insignificant concentrations (typically 16 ppm of SO_2).
- i) A detailed air quality assessment was undertaken for the proposed galvanising line and the following was concluded: a) emissions of nitrous oxides (NO_x), carbon monoxide (CO) and nitrogen dioxide (NO_2) will not be reduced by the galvanising line, however all the emissions are within applicable guidelines, b) with the proposed method of galvanising, concentrations of lead and antimony in the zinc bath are low which eliminates the risk of lead and antimony poisoning.
- j) The concentration of zinc in the working environment (galvanising plant) is well within the Occupational Health and Safety Act and therefore is no risk to the operator. Moreover, standard procedures and training are well established within MSVS, and the risks regarding the use of caustic soda for the alkali wash and chromic acid for passivation are insignificant.
- k) The stack heights for the existing galvanising operations do not comply with the specifications in Process 55 and therefore it will be required that the stack heights be lengthened to the specified height i.e. 45.6m.
- l) MSVS is an established industry and site emergency plans have been developed for the entire industry including the Galvanising plant.
- m) The Chief Air Pollution Control Officer (DEAT) indicated that the heat-to-coat furnace type continuous galvanising process proposed at MSVS did not give rise to the emission of noxious or offensive gases. Therefore, exemption from registration was granted in terms of Part 2 of the Atmospheric Pollution Prevention Act, 1965 – Sections 9 and 12.
- n) The public participation process was conducted in accordance with the Guidelines in terms of the EIA Regulations for the implementation of Sections 21, 22 and 26 of the Environment Conservation (DEAT, 1998). Limited comments on the proposed project were received and satisfactorily addressed in the Stakeholder Engagement Report.
- o) All specialist studies conducted during the process indicated that the potential impacts on the environment and human health would be insignificant, provided that the recommendations made within the reports are implemented.
- p) On going monitoring and reporting after operations have commenced will be required in order to provide empirical data which will verify the accuracy of the assumptions made in the report and to ensure concentrations of Cr (VI) and other substances are within an acceptable range.

Based on the above, the Department's conclusion is that this activity will not lead to a substantial detrimental impact on the environment, and that potential detrimental impacts resulting from this activity can be mitigated to acceptable levels, and thus that the principles contained in Section 2 of the National Environmental Management Act (Act 107 of 1998) can be upheld.

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The Department has accordingly decided, in terms of Section 28A of the Act, to grant Mittal Steel South Africa Limited – Vanderbijlpark Steel exemption from complying with certain provisions of GN R.1183 (as amended) promulgated under Sections 26 and 28 of the Act, and hereby authorises the activity as described in 3.1 below in terms of Section 22 of the Act, subject to the conditions and provisions listed in 3-5 below.

3. CONDITIONS

3.1 Description and extent of the activity

The authorisation applies in respect of the construction and operation of the heat-to-coat galvanising technology for the proposed galvanising line no. 5 within the existing galvanising plant and/or building at Mittal Steel Vanderbijlpark Steel, as part of the project to coat the steel strip with a thin zinc layer to make it more corrosion resistant and suitable for use in the roofing market etc. The project falls within the ambit of sub-regulations 1(b) (ii) and 9 of GN R.1182 (as amended) promulgated under section 21 of the Act. The extent of the project and process is summarised as follows:

- a) Mittal Steel Vanderbijlpark Steel's (MSVS) proposed galvanising line no. 5 that will be constructed within an existing galvanising plant is based on newer and cleaner technology than that of the existing galvanising lines no. 3 and 4.
- b) The erection of new galvanising line no. 5 at the same location where the previous galvanising lines 1 and 2 were decommissioned will provide the benefit of: 1) brown field site, 2) utilising existing service points and effluent lines, and 3) providing additional work opportunities.
- c) The heat-to-coat furnace type continuous galvanising process (entire process, from input streams to final product) will comprise of the following steps:
 - 1) Flat steel in a coiled form is supplied to the galvanising plant. Coils are loaded onto the two uncoilers and at the cleaning section after the joining unit an alkali cleaner is sprayed onto the strip surface to remove rolling oils.
 - 2) From the joining unit, the strip is fed into an accumulating unit. After exiting the unit, the strip is fed into a direct-fired gas furnace. A mixture of air and gas is burned inside the furnace, and the strip temperature is heated to approximately 425°C. The ratio of air to gas is closely controlled to ensure a reducing atmosphere is maintained in the furnace chamber. The off-gas of this furnace, containing products such as CO and CO₂, is circulated through a pre-heater and is vented into the atmosphere.
 - 3) On exiting the furnace, the steel strip enters the zinc bath where a submerged zinc roll deflects it upwards and out of the bath. The bath consists of high purity zinc in the molten state. The thickness of wet zinc adhering to the strip when exiting the bath is manipulated by blowing excess zinc back into the bath using the so-called air knives.
 - 4) After travelling vertically for a sufficient distance to ensure solidification of the zinc layer, the strip is fed into a cooling structure. Cooling is provided by air or liquid, or a combination thereof. At the end of a process, the strip is fed into an accumulating unit that can accept strip from the process section while the exit section is stopped.

3.2 Specific conditions

- a) Authorisation is only granted for the heat-to-coat galvanising technology for the proposed galvanising line no. 5 within the existing MSVS galvanising plant and/or building.

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- b) An updated project schedule with time-frames must be submitted to the Department 30 (thirty) calendar days prior to the commencement of construction activities. The schedule must clearly indicate the different phases of construction (as applicable) and commissioning.
- c) The Department must be informed of the start of commissioning at least 30 (thirty) calendar days prior to the commencement thereof.
- d) Final design plans for new and upgraded containment areas (collection sumps etc), galvanising line no. 5 site layout must be provided 30 (thirty) calendar days prior to the commencement of construction. The above design plans must include information on specific pollution prevention measures (e.g. impermeable layers, leak detection systems etc.) and compliance with relevant SABS standards.
- e) Effluent from galvanising line no. 5 must be segregated into strong and dilute effluents in order to allow the Zero Effluent Discharge system to function optimally.
- f) An auditable Preventative Maintenance Plan must be developed to ensure that all environmentally critical equipment such as alkali wash scrubber, extraction system, fume extraction equipment (if later installed) are maintained as required. The management of Mittal Steel Vanderbijlpark Steel are to commit to the budget to undertake the required preventative maintenance. A discussion on the implementation of and compliance with the maintenance plan must be included in the bi-annual audit reports.
- g) A detailed Environmental Management Plan (EMP) for the implementation of the project must be submitted to the Department for approval 30 (thirty) calendar days prior to the commencement of construction activities. The EMP must specifically include, *inter alia*:
 - An auditable plan for monitoring all facets of the galvanising line no. 5 project implementation and operation,
 - A proposed surface water monitoring regime, which will be in line with the DWAF Water License. The graphically represented results of this monitoring are to be included in a bi-annual audit, which must be submitted to this Department for review to determine if the remedial measures have been successful or if further remediation is required,
 - Proposed methods of reducing spillages at the process water sumps,
 - The EMP must include an air quality monitoring program based on the requirements of Condition 3.2(h),
 - The EMP must also include a hazardous waste management plan,
 - A diagram indicating all unpaved surface areas, including bunds and storm-water channels, and any areas identified for storm-water and surface water management. Plans must be developed to ensure that all surface areas are protected from spillage and erosion,
 - Procedures for the monitoring of noise to ensure compliance with Gauteng Noise Control Regulations and relevant requirements of the Occupational Health and Safety Act
- h) In order to provide empirical data which will verify the assumptions made in the air quality report, the following air quality management, monitoring and reporting regime must be implemented and reported on in the bi-annual environmental performance audits as applicable:
 - The stack monitoring must be conducted quarterly for the first year and the following parameters be tested for:
 - Hexavalent chrome (Cr (VI)) and total chromium
 - Metal oxides
 - Particulate matter
 - Sulphur dioxide (SO₂)
 - Oxides of nitrogen (NO_x)
 - Carbon dioxide (CO₂)
 - Carbon monoxide (CO)

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- The monitoring results for the above parameters must be graphically represented and included in the bi-annual audit report. Emissions must be presented at the following reference conditions: 11% O₂; 273 Kelvin, 101, 3 KPa.
 - The stack must be so designed that if the monitoring results in the first year indicate that there is a need for further or improved mitigation then a scrubber can be installed in the stack.
 - The air quality study indicated that current stacks for the galvanising building are non-compliant with the registration certificate. Therefore the stack must extend above the turbulence area of the building but in any case not less than 7 m above the highest point of the building. Emissions at stack are not to exceed 20% opacity.
 - Additional monitoring at the Chromic Acid application area (station 5) must be undertaken and methodology developed to measure fugitive emissions at ventilation areas within the galvanising building.
 - A long-term Air Quality Management and Audit Plan should be compiled for the MSVS Galvanising Plant based on the outcome of the above monitoring results. These plans must consider international standards and best practice.
 - By and large, Mittal Steel Vanderbijlpark Steel (MSVS) is located in a hotspot and is increasing its production capacity. Therefore it is essential that MSVS consider lowering general emissions more than the applicable standards required. Furthermore, the Air Quality Act requires the management of ambient air quality and it is thus important that MSVS define emission reduction strategies to make provision for new local and applicable international standards.
- i) Detailed and up to date records must be kept of all incidents and complaints pertaining to the galvanising line no. 5 project, how these were managed, and the recurrence thereof prevented. These records must be made available to the Department within 14 (fourteen) calendar days upon written request by the Department.
 - j) This Department and the Department of Water Affairs and Forestry must be informed of any major environmental and pollution incidents relating to the galvanising line no. 5 project within 24 (twenty four) hours of such incidents occurring.
 - k) Mittal Steel Vanderbijlpark Steel flares about 15% of excess gas from Coke Ovens. MSVS must consider using such waste gases from Coke Ovens and other sources within the industry as a fuel resource to heat the strip surface during cleaning in a direct-fired furnace.
 - l) MSVS must investigate alternatives (e.g. cleaning of chromic acid drums for reuse) other than disposal of the drums to the hazardous waste site. The investigation and its findings to these alternatives must be submitted to this Department for approval within 6 (six) months from date of signature of this letter.
 - m) Chromic acid tank sludge and alkali sludge must be disposed of at an H:H hazardous waste disposal site.
 - n) MSVS must consider reusing treated process water within the galvanising plant to reduce freshwater intake from the Vaal Dam and Vaal River.
 - o) The operation of the galvanising line no. 5 and the galvanising plant as a whole must comply with the Occupational Health and Safety Act (No. 85 of 1993) and sound occupational hygiene procedures implemented and improved upon. Engineering control measures must be considered as first choice for mitigation.
 - p) The recommendations contained in the specialist studies submitted in support of the application for authorisation of the galvanising line no. 5 project are regarded as an extension of the conditions of this authorisation. Implementation of or compliance with these recommendations must be discussed as part of the quarterly progress reports and bi-annual environmental performance audits thereafter.
 - q) All potential emergencies that can be expected from the galvanising line no. 5 must be in conjunction with the existing Galvanising Plant and Mittal Steel emergency response procedures.
 - r) The Department of Water Affairs and Forestry's requirements and/or conditions pertinent to the proposed project must be complied with.

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- a) An independent Environmental Control Officer (ECO) with an understanding of the heat-to-coat galvanising process must be appointed for the duration of construction and commissioning, to monitor and report on compliance with the conditions of this authorisation.

3.3 General conditions

- a) Any changes to, or deviations from, the project description set out in this letter must be approved, in writing, by the Department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations.
- b) This Department may review the conditions contained in this letter from time to time and may, by notice in writing to the applicant, amend, add or remove a condition.
- c) The applicant must notify the Department, in writing, at least 10 (ten) days prior to the change of ownership, project developer or the alienation of any similar rights for the activity described in this letter. The applicant must furnish a copy of this document to the new owner, developer or person to whom the rights accrue and inform the new owner, developer or person to whom the rights accrue that the conditions contained herein are binding on them.
- d) Where any of the applicant's contact details change, including the name of the responsible person, the physical or postal address and/ or telephonic details, the applicant must notify the Department as soon as the new details become known to the applicant.
- e) Authorisation for the activity is granted in terms of the Environment Conservation Act, 1989 (Act 73 of 1989) only and does not exempt the holder from compliance with other relevant legislation.
- f) The applicant shall be responsible for ensuring compliance with the conditions contained in this letter by any person acting on his behalf, including but not limited to, an agent, servant, or employee or any person rendering a service to the applicant in respect the activity, including but not limited to, contractors and consultants.
- g) Departmental officials shall be given access to the property referred to in 1 above for the purpose of assessing and/ or monitoring compliance with the conditions contained in this document at all reasonable times.
- h) The applicant must notify the Department within 24 (twenty four) hours if any condition of this authorisation cannot, or is not, adhered to. The notification must be supplemented with reasons for non-compliance.

3.4 Reporting requirements

- a) The following occupational hygiene surveys and assessments must be performed by an independent Occupational Hygienist (OH) within the operational area after commissioning has been completed and normal galvanising process is underway, and the results submitted to this Department three (3) months after commissioning of the Galvanising line no. 5 project, and every six (6) months thereafter:
 - Initial hazardous chemical substance risk assessment.
 - Baseline personal air sampling surveys.
 - Site noise surveys.
 - Any other factors identified by an approved Inspection Authority.
- b) A summarised quarterly progress report on the implementation of galvanising line no. 5 project must be submitted to the Department, the first report being due 90 (ninety) calendar days after construction commences, and every 90 (ninety) calendar days thereafter. These progress reports must address, *inter alia*, the following:
 - Records of any major incidents (see 3.2(i) above),
 - Decommissioning of infrastructure (if any),

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- Results on the stack monitoring for the following parameters (when it becomes applicable):

- Hexavalent chromium (Cr (VI)) and total chromium
- Metal oxides
- Particulate matter
- Sulphur dioxide (SO₂)
- Oxides of nitrogen (NO_x)
- Carbon dioxide (CO₂)
- Carbon monoxide (CO)

- Outcomes of occupational health audits.
- Monitoring of activities in terms of the environmental management plan,
- Any steps taken to rectify areas of non-compliance with environmental requirements.

- c) A bi-annual Environmental Performance Audit conducted by an independent, accredited auditor must be submitted to the Department for review, the first audit being due 6 (six) months after commissioning of the Galvanising line no. 5 project, and every 6 (six) months thereafter. The bi-annual audit must include, *inter alia*, the following (results in graph format as applicable):

- Air quality monitoring and reporting as required by Condition 3.2(h),
- Discussions on the implementation (or not) of recommendations as contained in the Environmental Impact Report and Specialist Studies,
- Discussion on the following as provided for in the EMP:
 - a. Description of the general state of plant.
 - b. Occupational health and safety surveys.
 - c. Explanations to the spikes that may occur in the air quality monitoring data.
 - d. Log of the wastes that were generated and where disposed of.
 - e. Any environmental incident logs.
- Discussion on the implementation of and compliance with the Preventative Maintenance Plan (see 3.2(f) above),
- Records of any major incidents (see 3.2(i) above),
- Reporting on compliance with the provisions of this authorisation and the environmental management plan, and steps taken to rectify non-compliance,
- Details on the quality and quantity of any discharge (air, water and land), and reasons for discharge, how these were managed, and how the recurrence thereof will be prevented.

3.5 Duration of authorisation

If the activity authorised by this letter does not commence within 6 (six) months from the date of signature of this letter, the authorisation will lapse and the applicant will need to re-apply for authorisation in terms of the above legislation or any amendments thereto.

4. CONSEQUENCES OF NON-COMPLIANCE

The applicant must comply with the conditions set out in this letter. Failure to comply with any of the above conditions may result in, *inter alia*, the Department withdrawing the authorisation, issuing directives to address the non-compliance – including an order to cease the activity – as well as instituting criminal and/or civil proceedings to enforce compliance.

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5. APPEALS:

Appeals in respect of this decision must be directed to the MEC, Mr K. Mosunkutu, Department of Agriculture, Conservation and Environment, Gauteng Provincial Government within thirty (30) days of the date of this decision. Appeals can be submitted utilizing one of the following methods:

By facsimile: (011) 333 0620;
By post: P.O. Box 8769, Johannesburg 2000;
By hand: 11th Floor, Diamond Corner Building, 68 Eloff Street, Johannesburg.

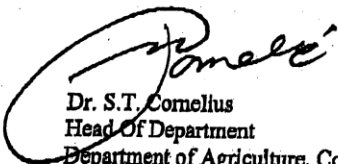
Please note that all appeals must comply with Section 35 of the Environment Conservation Act, Act No 73 of 1989, read together with Regulations R1182 and R1183 of 5 September 1997. In terms of the above section and regulations, an appeal must set out all the facts as well as the grounds of appeal. Furthermore, all the relevant documents or copies thereof must accompany the appeal and a commissioner of oaths must certify them as true.

The applicant is required to inform all registered interested and affected parties of the decision contained in this Record of Decision as well as the process for appeal described above within seven (7) calendar days of the date of signature of this Record of Decision.

Should the applicant wish to appeal any aspect of this decision, the applicant must notify and furnish copies of the appeal, which will be submitted, to the MEC to all registered interested and affected parties. Proof of such notification must be submitted to the MEC with the appeal. Failure to comply with this provision may result in the MEC refusing to consider the appeal.

Please note that no development may commence prior to the expiry of the time period allowed for the submission of an appeal, or in the event of an appeal being lodged, before the MEC has reached a decision on the appeal.

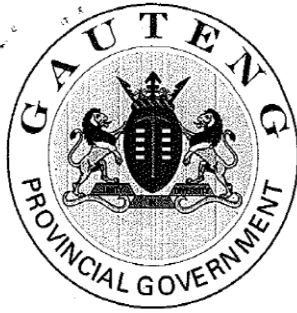
Yours faithfully


Dr. S.T. Cornelius
Head Of Department
Department of Agriculture, Conservation and Environment
Date: 17/05/2005

ADDENDUM – B

Amendment to RoD: GAUT 006/09-10/N0063





**DEPARTMENT OF AGRICULTURE
AND RURAL DEVELOPMENT**

Diamond Corner Building, 68 Eloff & Market Street, Johannesburg
P O Box 8769, Johannesburg, 2000
Telephone: (011) 355-1900
Fax: (011) 337-2292

Reference:	Gaut 006/09-10/N0063
Enquiries:	Ms. Sabinah Nobela
Telephone:	(011) 355 1582
Email:	Sabinah.Nobela@gauteng.gov.za

Attention: Karien De Wet

ArceloMittal South Africa

P.O.BOX 2

VANDEBILPARK

1900

Fax: (016) 889 2058

Tel: (016) 889 2612

PER FACSIMILE & REGISTERED MAIL

Dear Sir/Madam

**AMENDMENT OF ENVIRONMENTAL AUTHORIZATION FOR THE PROPOSED
CONSTRUCTION AND OPERATION OF THE HEAT-TO-COAT GALVANIZING
LINE (LINE NO.5) WITHIN THE EXISTING GALVANIZING PLANT AT
ARCELOMITTAL VANDERBIJLPARK WORKS, Gaut 006/09-10/N0063**

With reference to your application for an amendment of the abovementioned environmental authorisation, the Department has, in terms of the powers vested in it by regulation 43 of the Environmental Impact Assessment Regulations, 2006, decided to amend the record of decision in the authorization.

The amendments to the environmental authorisation entail change of conditions of the Record of Decision (RoD). The following amendments are therefore effected and must be read in

conjunction with the Environmental Authorisation with reference number: Gaut 006/09-10/N0063:

a) Reporting requirements: Condition 3.4 (a) which reads: *“The following occupational hygiene surveys and assessments must be performed by an independent Occupational Hygienist (OH) within the operational area after commissioning has been completed and normal galvanizing process is underway, and the results submitted to this Department three (3) months after commissioning of the Galvanizing Line no.5 project, and every six (6) months thereafter...”*

has been amended to read as follows:

“The following occupational hygiene surveys and assessments must be performed by an independent Occupational Hygienist (OH) within the operational area after commissioning has been completed and normal galvanizing process is underway, and the results submitted to this Department three (3) months after commissioning of the Galvanizing Line no.5 project, and every two (2) years thereafter...”

b) Reporting requirements: Condition 3.4 (c) which reads: *“A Bi-annual Environmental Performance audit conducted by an independent accredited auditor must be submitted to the Department for review, the first audit being due six (6) months after commissioning of the galvanizing line no.5 project, and every six (6) months thereafter...”*

has been changed to read as follows:

“An Environmental Performance audit conducted by an independent accredited auditor must be submitted to the Department for review, the first audit being due six (6) months after commissioning of the galvanizing line no.5 project, and every two (2) years thereafter...”

You are instructed in terms of regulation 10(2) of the Regulations to notify all registered interested and affected parties, in writing and within 30 (Thirty) calendar days of the date of this letter, of the Department's decision to amend the environmental authorisation as well as the provisions regarding the making of appeals that are provided for in the regulations.

Your attention is drawn to Chapter 7 of the Regulations which regulates appeal procedures. Should you wish to appeal any aspect of the decision, you must, *inter alia*, lodge a notice of

intention to appeal with the MEC, within 10 days of the date of this letter, by means of one of the following methods:

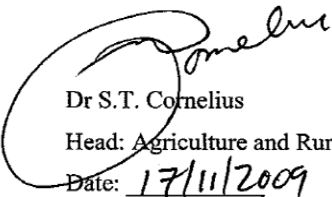
By facsimile: (011) 333 0620;

By post: P.O. Box 8769, Johannesburg 2000;

By hand: 16th Floor, Diamond Corner Building, 68 Eloff Street, Johannesburg.

Should you decide to appeal, you must serve a copy of your notice of intention to appeal on all registered interested and affected parties as well as a notice indicating where and for what period the appeal submission will be available for inspection.

Yours faithfully



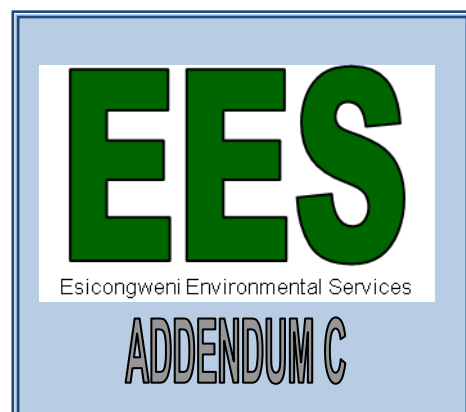
Dr S.T. Cornelius

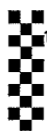
Head: Agriculture and Rural Development

Date: 17/11/2009

ADDENDUM – C

Amendment to RoD: GAUT 006/11-12/E0014





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**agriculture and
rural development**Department: Agriculture and Rural Development
GAUTENG PROVINCEDiamond Corner Building, 68 Eloff & Market Street, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 355-1900

Fax: (011) 355-1000

Email: gdard@gauteng.gov.za

Website: <http://www.gpg.gov.za>

Enquiries: Mulibana Eric

Telephone: 011-355 1705

FAX COVER SHEET

Receiver's Details		Sender's Details	
To:	Karien Zantow	From:	Mulibana Eric
Company:	Arcelormittal South Africa	Section:	Environment
Fax no.	(016) 889 2058	Floor:	8 th Glencairn
Tel no.	(016) 889 2612	Tel:	(011) 355 1705
Date:		Pages:	08 (including this fax cover sheet)
Re:	Amendment of Environmental Authorisation: THE PROPOSED CONSTRUCTION AND OPERATION OF A HEAT-TO-COAT GALVANISING LINE (GALV 5) AT ARCELORMITTAL SOUTH AFRICA VANDERBIJLPARK WORKS: GAUT 002/04-05/1633		

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**GAUTENG PROVINCE**AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Diamond Corner Building, 68 Eloff & Market Street, Johannesburg
P O Box 8769, Johannesburg, 2000
Telephone: (011) 355-1900
Fax: (011) 337-2292

Reference:	GAUT 006/11-12/E0014
Enquiries:	Eric Mulibana
Telephone:	(011) 355 1705
Email:	Eric.Mulibana@gauteng.gov.za

Ms. Karien Zantow
Environmental Manager Vanderbijlpark Works
ArcelorMittal South Africa Limited P O Box 2
VANDERBIJLPARK
1900

Facsimile: (016) 889 2058
Telephone: (016) 889 2612

PER FACSIMILE & REGISTERED MAIL

Dear Sir/Madam

**APPLICATION FOR THE AMENDMENT OF ENVIRONMENTAL
AUTHORISATION GAUT 002/04-05/1633 FOR THE PROPOSED CONSTRUCTION
AND OPERATION OF A HEAT-TO-COAT GALVANISING LINE (GALV 5) AT
ARCELOMITTAL SOUTH AFRICA VANDERBIJLPARK WORKS [GAUT 006/11-
12/ E0014]**

The above matter and more specifically your application for an amendment received on 5 May 2011 have reference.

Please be advised that the Department has, under Regulations 41 and 42 of the Environmental Impact Assessment Regulations, 2010 ("the Regulations"), decided to amend the Environmental Authorisation GAUT 006/11-12/E0014 dated 17 May 2005 in respect of the above-mentioned project.

The Addendum reflecting the amendment and reasons for the decision are attached hereto.

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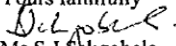
You are to notify all Registered Interested and Affected Parties in terms of Regulation 10(2), in writing and within twelve (12) days of the date of this letter, of the Department's decision to amend the environmental authorisation, the reasons for the Department's decision as well as the provisions regarding the making of an appeal or appeals that are provided for in Chapter 7 of the Regulations.

Should you wish to appeal any aspect of the decision, you must, *inter alia*, lodge a Notice of Intention to Appeal with the Member of the Executive Council (MEC), within 20 (twenty) days of the date of this letter, by means of one of the following methods:

By facsimile: (011) 333 0620;
By post: P O Box 8769 Johannesburg 2000; or
By hand: 16th Floor Diamond Corner Building 68 Eloff Street Johannesburg.

Should you decide to appeal, you must serve a copy of your Notice of Intention to Appeal on all Registered Interested and Affected Parties as well as a Notice indicating where and for what period the appeal submission will be available for inspection. The prescribed appeal form is available on the Department's website i.e. www.gdard.gpg.gov.za.

Yours faithfully



Ms S.J. Sekgobela

Head: Agriculture and Rural Development

Date: 04/10/2011

CC: Cecilia Petlane (Environmental Compliance Monitoring)

Fax: 011 355 1850

GDARD Directorate Air Quality

Fax: 011 355 1000



GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

ADDENDUM TO ENVIRONMENTAL AUTHORISATION

Authorisation Register Number: GAUT 002/04-05/1633

Last Amended: 17 November 2009

Amendment Application Number: GAUT 006/11-12/E0014

Holder of Authorisation: ArcelorMittal South Africa Limited

Decision

The Department has decided to amend the Environmental Authorisation ("Initial EA") issued on 17 June 2005 to ArcelorMittal South Africa Limited.

Amendment

The Initial EA is hereby amended as follows:

1. Condition 3.2(h), Bullet 4:

"The air quality study indicated that current stacks for the galvanizing building are non-compliant with the registration certificate. Therefore the stack must extend above the turbulence area of the building but in any case be not less than 7m above the highest point of the building. Emissions at the stack are not to exceed 20% opacity".

is hereby amended as follows:

"The Galvanizing Line (Galv 5) Stack must comply with the conditions prescribed in the APPA Registration Certificate".

2. Finding 2.2 (k):

"The stack heights for the existing galvanizing operations do not comply with the specifications in Process 55 and therefore it will be required that the stack heights be lengthened to the specified height i.e. 45.6m"

is hereby deleted.

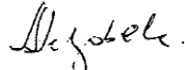
General

- 1.1 A copy of this Addendum and the Initial EA must be kept on site. These documents must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the Environmental Authorisation ("EA") who works or undertakes work on site. If it is not possible to keep copies on site, it must be kept at the offices of the site manager.
- 1.2 The holder of the EA must notify every registered interested and affected party, in writing and within twelve (12) days, of receiving notice of the Department's decision to amend the initial EA.
 - 1.2.1 The notification referred to in 1.2 must:
 - 1.2.1.1 Specify the date on which the Addendum was issued and reasons for the decision;
 - 1.2.1.2 Inform the Registered Interested and Affected Parties of the appeal procedure provided for in Chapter 7 of the Regulations; and
 - 1.2.1.3 Advise the Registered Interested and Affected Parties that a copy of the Addendum will be furnished on request.
- 1.3 The holder of the EA must notify the Department, in writing within 7 (seven) days if a condition of this Addendum is not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance.

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- 1.4 Non-compliance with a condition of this Addendum may result in criminal prosecution or other actions provided for in the National Environmental Management Act 107 of 1998 ("the NEMA") and the Regulations.

Date of Amendment: 04/10/2011



Ms S J Sekgobela

Head: Agriculture and Rural Development

Date: 04/10/2011

REASONS FOR DECISION

1. Background

17 June 2005: The Department issued ArcelorMittal South Africa Limited with Environmental Authorisation GAUT 002/04-05/1633 for the proposed construction and operation of a heat-to-coat galvanizing line (Galv 5) at ArcelorMittal South Africa Limited, Vanderbijlpark Works.

31 May 2011: The Department received an application for the amendment of the EA and the motivation thereof.

2. Information Considered

The Department took, *inter alia*, the following into consideration -

- a) The information contained in the application for amendment of Environmental Authorization received by the Department on 5 May 2011.
- b) The EA dated 17 June 2005 for the proposed construction and operation of the galvanizing line.
- c) The objectives, principles and requirements of relevant legislation, policies and guidelines, including section 2 of the NEMA.

3. Key Factors Considered

All information presented to the Department was taken into account in the Department's consideration of the application. A summary of the issues, which, in the Department's view, were of the most significance, is set out below.

- a) The possible impacts that could result from the proposed amendment; and
- b) Need and desirability of the proposed amendment.

4. Findings

Having considered the information and factors listed above, the Department made the following findings -

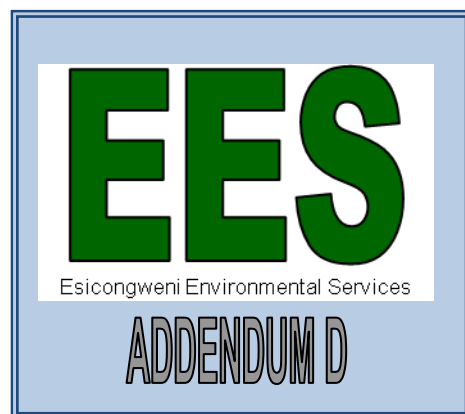
- In reviewing this application, it was established that the proposed amendments will not have significant impacts on the environment since amendments are merely requested to obtain alignment with the APPA Registration Certificate.
- The amendments applied for are non-substantive in nature and are required to align the Environmental Authorisation with the company's APPA Registration Certificate.

In view of the above, the Department is of the opinion that the amendments would not result in a negative environmental impact that would conflict with the general objectives and principles of integrated environmental management laid down in Chapter 5 of the NEMA.

The Environmental Authorisation is accordingly amended.

ADDENDUM – D

EMP For Galv 5 Operations



ARCELORMITTAL SOUTH AFRICA VANDERBIJLPARK WORKS
GALVANISING LINE NO.5
COLD MILLS SOUTH

ENVIRONMENTAL MANAGEMENT PLAN - OPERATIONS

Revision 4

Updated: June 2017

ArcelorMittal South Africa Vanderbijlpark Works seeks to ensure that all activities on site are conducted in a manner that will ensure environmental protection. In cases where past practices resulted in the deterioration of the environment, measures will be taken to prevent further pollution and to rehabilitate, as far as practicably possible, areas that have been contaminated.

Deviations from the EMPr will be noted in writing and reported to the relevant Maintenance and Operation Managers as soon as possible. Any major incidents will be reported to the Environmental Management Department for further intervention and reporting to the authorities where applicable. Contents, as well as roles and responsibilities, of the EMPr are to be communicated to relevant parties on a regular basis.

ENVIRONMENTAL RISK ANALYSIS

The following hazards and risks associated with operational activities have been identified.

1. **Air Quality** (Control of hazardous substances to minimize gasses and odours)
2. **Soil Management** (Storm water drainage; Soil Contamination with fuels, oils, etc.)
3. **Water Management** (Consumption control and Pollution Management in not discharging into storm water / sewer systems).
4. **Hazardous substances** (Prevention of leakage, spillage or inappropriate disposal.)
5. **Waste Management** (Waste minimization; re-use; recover; recycling and treatment)
6. **Noise Management** (Avoid unnecessary disruption of the tranquillity of the area / disturbance to public).
7. **Environmental Awareness** (including applicable legislation compliance, i.e. National Water Act, National Environmental Management Act (NEMA), etc.
8. **Environmental Register** (Incident Reports)

COMPILATION OF EMPr

During the EIA phase of the project which commenced in 2004, an EMPr was developed by Strategic Environmental Focus (Pty) Ltd, the EAP appointed to conduct the EIA process. At the time, Strategic Environmental Focus had conducted numerous EIA processes prior to this project and were thus skilled in the practice of compiling EMPr's.

As certain operation phase elements of the project were lacking in the original EMPr, an operational phase EMPr was compiled in 2011 by ArcelorMittal following the same principles and objectives established in the original EMPr. This document was originally submitted to the authorities in 2011 for consideration and approval. Subsequent to this submission, the

EMPr was scrutinised on a biennial basis as part of the external environmental performance audits conducted in accordance with the RoD. On a number of occasions, the EMPr's impact management actions were amended to improve on the EMPr's performance, as per independent auditors' recommendations. The outcomes and impact management actions are assessed by the appointed external auditor on a biennial basis.

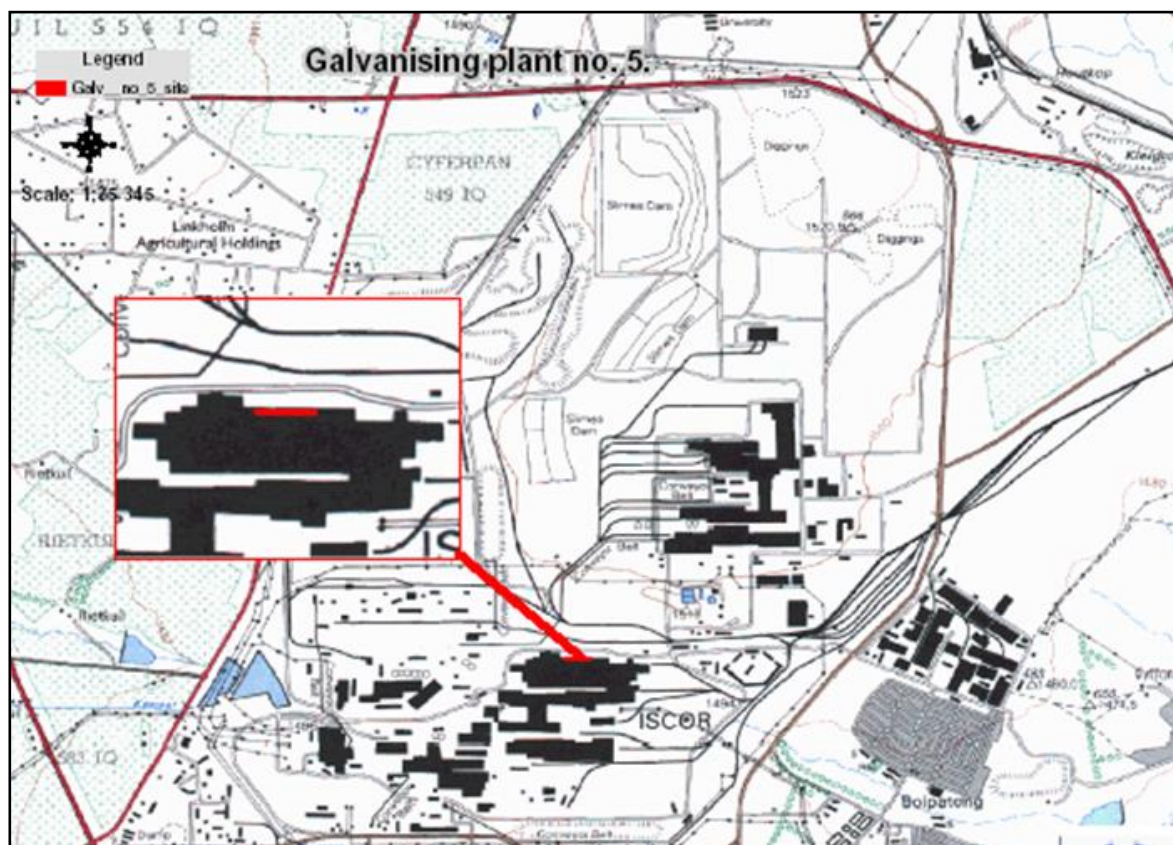
The latest version of the EMPr has been aligned with the EIA Regulations promulgated in December 2014 (as amended April 2017), as per external auditor's recommendation in the June 2017 environmental performance audit.

ENVIRONMENTAL SENSITIVITY OF SITE

The footprint of the entire ArcelorMittal Vanderbijlpark facility is located within an area zoned as "Industrial 2" and is considered a brown field. As such, no sensitive fauna or flora are found on site.

AERIAL PHOTO OF SITE

The photo below is indicative of the fact that the project falls within the confines of the cold rolling facilities at ArcelorMittal Vanderbijlpark Works, characterised by cold rolling and coating facilities.



ACTIVITY	OUTCOME ASPECT / IMPACT	MITIGATION / IMPACT MANAGEMENT ACTIONS	MONITORING TYPE / FREQUENCY	RESPONSIBLE
Coil preparation	While preparing a coil waste is generated and if not properly managed, poses a risk to the environment.	Waste from coil preparation is managed as follows: Steel off cuts – Placed in fida bins for recycling. Wood blocks – Placed in fida bins. When full, they are taken to the allocated area for recycling or disposal.	Inspections / Daily	Operator
Cleaning section	An alkali cleaning solution is used. If the effluent is not properly managed it poses a possible risk of cross contamination.	The effluent from this process is drained to a sump, when the sump is full it is pumped to the effluent treatment plant where it is treated. Surfaces in the cleaning section are concrete lined, therefore minimal risk of soil and groundwater contamination. Nevertheless, potential spills from use should be cleaned up as soon as possible for good housekeeping. The area around the alkali storage containers is sloped to the sump to ensure potential spills are limited in extent.	Job cards for pumps / Quarterly Inspections for spillages / Daily	Millwright Operator
Degreasing and Annealing (Direct fired furnace and radiant tube furnace)	Natural gas is used to fire the burners in the direct fired furnace. Incomplete combustion of these gasses can pose a possible risk of air pollution.	An efficient flue gas exhaust system as well as a post combustion section is installed to ensure complete combustion of gasses.	Emission monitoring / Bi-annually	Environmental Management
Galvanising	Zinc, aluminium and antimony is used in a molten form to coat the strip. Impurities (dross) in the zinc bath is scooped from the top of the bath. A possible environmental risk exists if the dross is not properly managed.	A contractor is used to collect the solidified dross buckets. They then recycle the dross to recover the zinc in the dross. Personnel from Plant overseeing the loading operation must ensure that no spillages occur during loading and that buckets are adequately secured post loading.	Inspections (daily) and task observations (quarterly)	Supt
Chromic treatment	Chromic acid Cr(VI) is used for the passivation of the galvanized strip. If the effluent is	The effluent from this process is drained to a sump, when the sump is full it is pumped to the effluent treatment plant where it is treated.	Job cards for pumps / Quarterly	Millwright

ACTIVITY	OUTCOME ASPECT / IMPACT	MITIGATION / IMPACT MANAGEMENT ACTIONS	MONITORING TYPE / FREQUENCY	RESPONSIBLE
	not properly managed it poses a possible health risk	ArcelorMittal is evaluating Cr(III) products from various suppliers in order to change over to a more environmentally friendly Cr(III) for passivation.	Inspections for spillages / Daily Trials	Operator Specialist
Hydraulic systems	Hydraulic oils are used and if these systems are not properly maintained, leaks or spillage can pose a possible risk of cross contamination.	Regular inspections and maintenance are done on these systems as per the preventative maintenance plan to minimize the risk of leakage or spills. Spill kits are placed at strategic locations to ensure quick action can be taken.	Job cards / Quarterly	Millwright
Waste generation	Any waste, if not properly managed, poses a risk to the environment.	All waste is separated and handled as follows: Employees are to follow the general waste separation procedures of the Works, taking into consideration the 4 main waste categories, i.e. General Waste, Hazardous Waste, Metal Scrap and Dust. Any uncertainties regarding the designation of certain waste are to be discussed with the Environmental Representative. <u>Site Specific Waste Management</u> <ul style="list-style-type: none"> • General waste – discarded into yellow fida bins • Scrap metal – discarded into red fida bins • Hazardous waste: <ul style="list-style-type: none"> - Waste from alkali cleaning section – Collected in alkali sump and pumped to Q-pump house for recycling. (Note: the alkali cleaning system is not in use currently) - Effluent from entry and exit accumulator sumps – Pumped into alkali sump and pumped to Q-pump house for treatment and recycling at 	Inspections / Weekly	Plant personnel

ACTIVITY	OUTCOME ASPECT / IMPACT	MITIGATION / IMPACT MANAGEMENT ACTIONS	MONITORING TYPE / FREQUENCY	RESPONSIBLE
		CETP - Waste from passivation area – Area is bunded with a sump which gravity feeds any waste to Galv 3 passivate sump. This waste is the pumped to the tin line sump and then on to CETP - Waste oils – Collected by recycling company (FFS) - Waste grease – Temporarily stored at Paint Line chemical waste store and removed by EnviroServ - Oily gloves and cloths – Discarded in green hazardous waste fida bins		
Containment infrastructure	Spillages from process water sumps	Sumps (at passivate and quench sections of line) are equipped with bunding to prevent spillages. This bunding should be inspected on a regular basis to ensure that damaged bund walls are noted and repaired as soon as possible.	Inspections / Weekly	Plant personnel
Storm water management	Potential process related spills to storm water system	Spills should be as far as possible prevented. Should a spill occur, the substance should be prevented from entering the storm water system. Where this can not be avoided, the volumes entering the storm water system must be minimized and Water Utilities informed about the incident as soon as possible. The incident must be logged on the Work's incident reporting system, with the associated measures to prevent a similar incident from reoccurring. Surface water monitoring is to be conducted as per the Work's Water Use License conditions. Surface water monitoring occurs at the discharge points to the east and west of the works. As an interim measure the storm water quality is measured in the storm water canal (BF	Handheld EC monitoring / Ad-hoc	Water Utilities / Environmental Management

ACTIVITY	OUTCOME ASPECT / IMPACT	MITIGATION / IMPACT MANAGEMENT ACTIONS	MONITORING TYPE / FREQUENCY	RESPONSIBLE
		Canal) downstream of the Galv Line in terms of flow and electric conductivity (see Figure 1 and Annexure 1). In cases where the storm water quality in the canal peaks, the potential sources are traced back through a handheld instrument.		
Air quality management	Potential air pollution	Based on historic stack monitoring of the components specified in the RoD and the Works Atmospheric Emission License, the following air quality monitoring regime is to be implemented: <u>Bi-Annual</u> SO2 NOx	Emission monitoring / Bi-annual	Environmental Management
Occupational Hygiene	Adverse health impacts	Occupational Hygiene Monitoring is to be conducted on a 2-yearly basis in accordance with the OHS Act. These surveys are to include Hazardous Chemical Substance and noise exposure. The recommendations contained in these reports are to be considered and implemented where feasible. The procedure for Noise Monitoring is as follows; <ul style="list-style-type: none"> • Appoint an Approved Inspection Authority in terms of the Occupational Health and Safety Act, Act 85 of 1993. • The frequency of the noise survey is to be aligned with the OHSA • All work carried out must be in accordance with OHSAS 18001 and complies with the International Standards Organizational Guide 25 and South African National Standards, Code of Practice - 10259 of 1990 and SANS 10103 of 2003. 	Occupational Hygiene Monitoring / Biennial	Occupational Hygiene Department

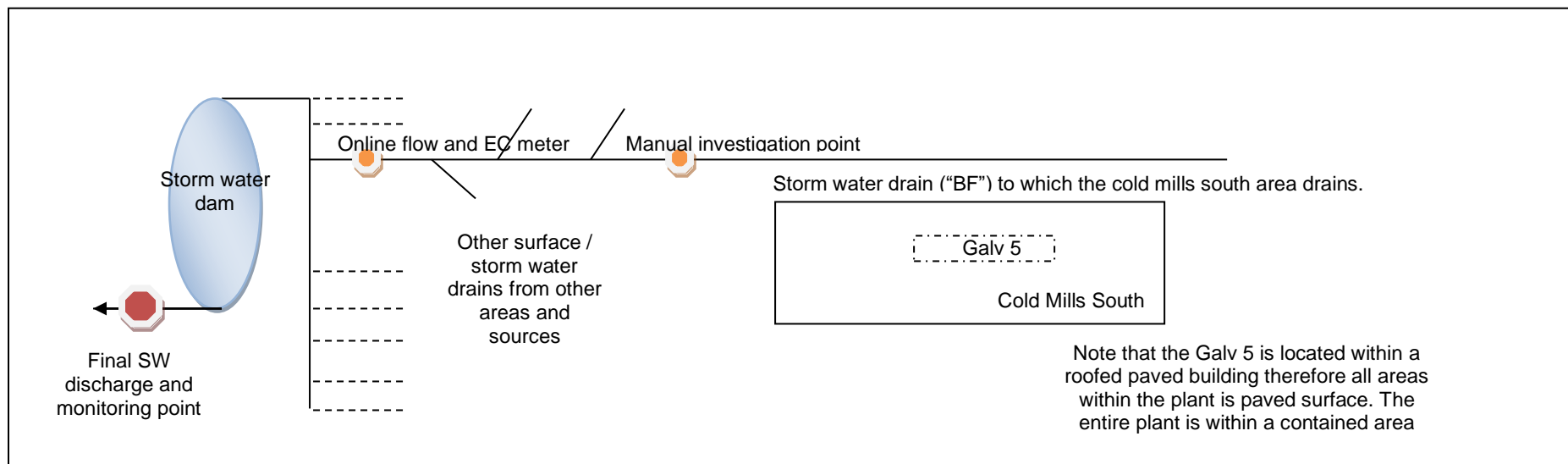
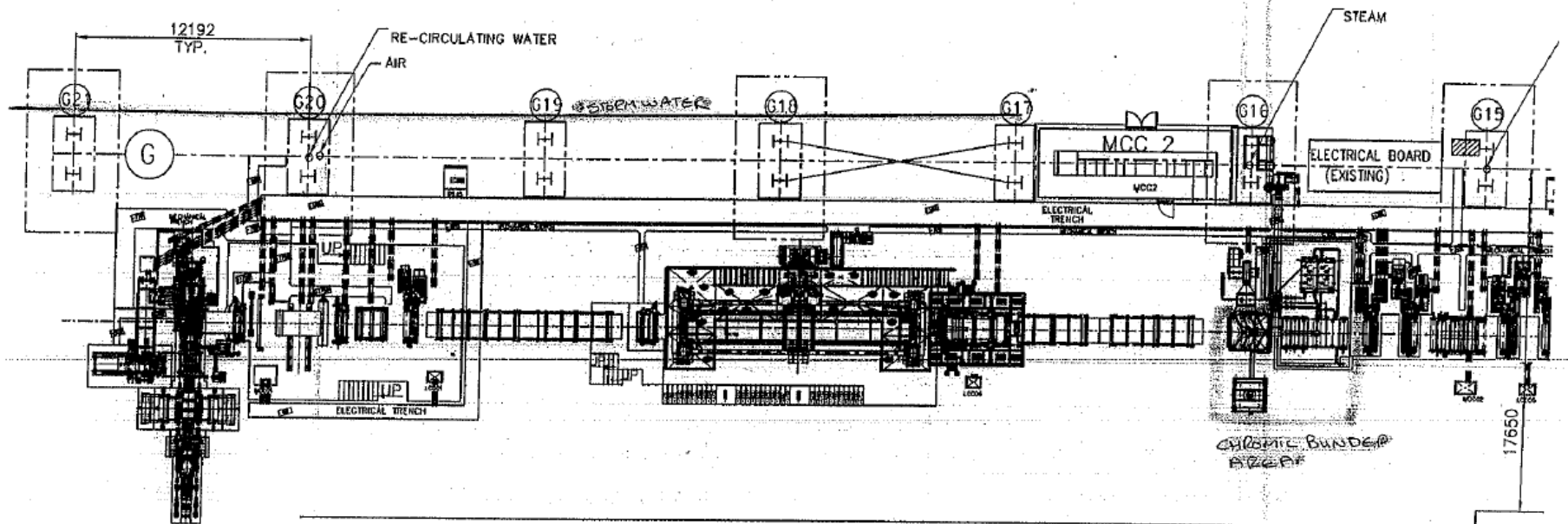


Figure 1. Diagram for storm water management

ADDENDUM – E

Engineering Drawings for Galv 5





RECOILER, EXIT COIL STORAGE, SADDLE
STAGGERED WINDING SYSTEM
PINCH ROLL No.6

STAGGERED WINDING SYSTEM
STRIP WIDTH MEASURING SYSTEM
SCRAP BOX WITH TABLE
SCRAP CAR
EXIT SHEAR
PINCH ROLL No.5
TENSIONMETER
BRIDLE No.7

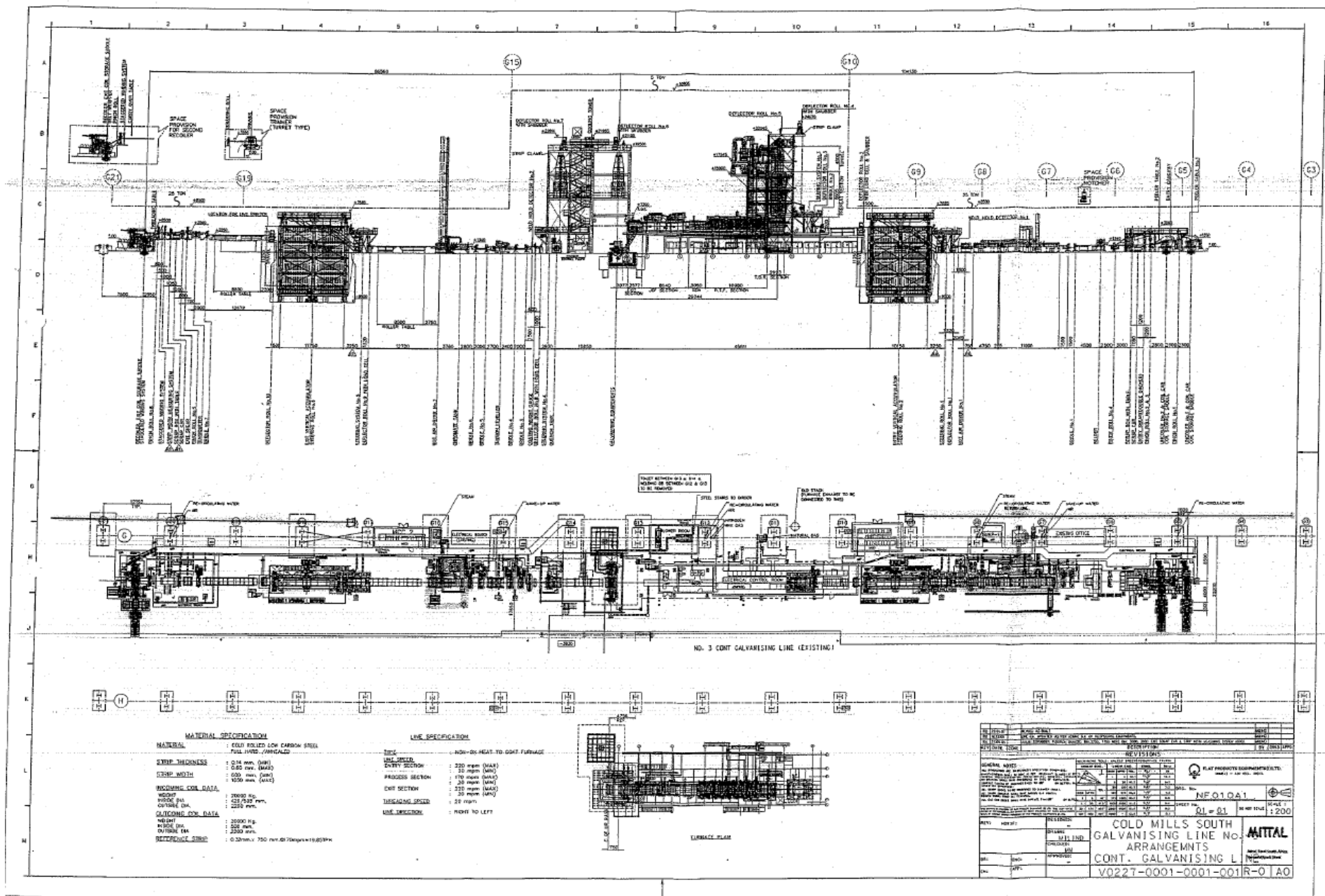
DEFLECTOR ROLL No.10

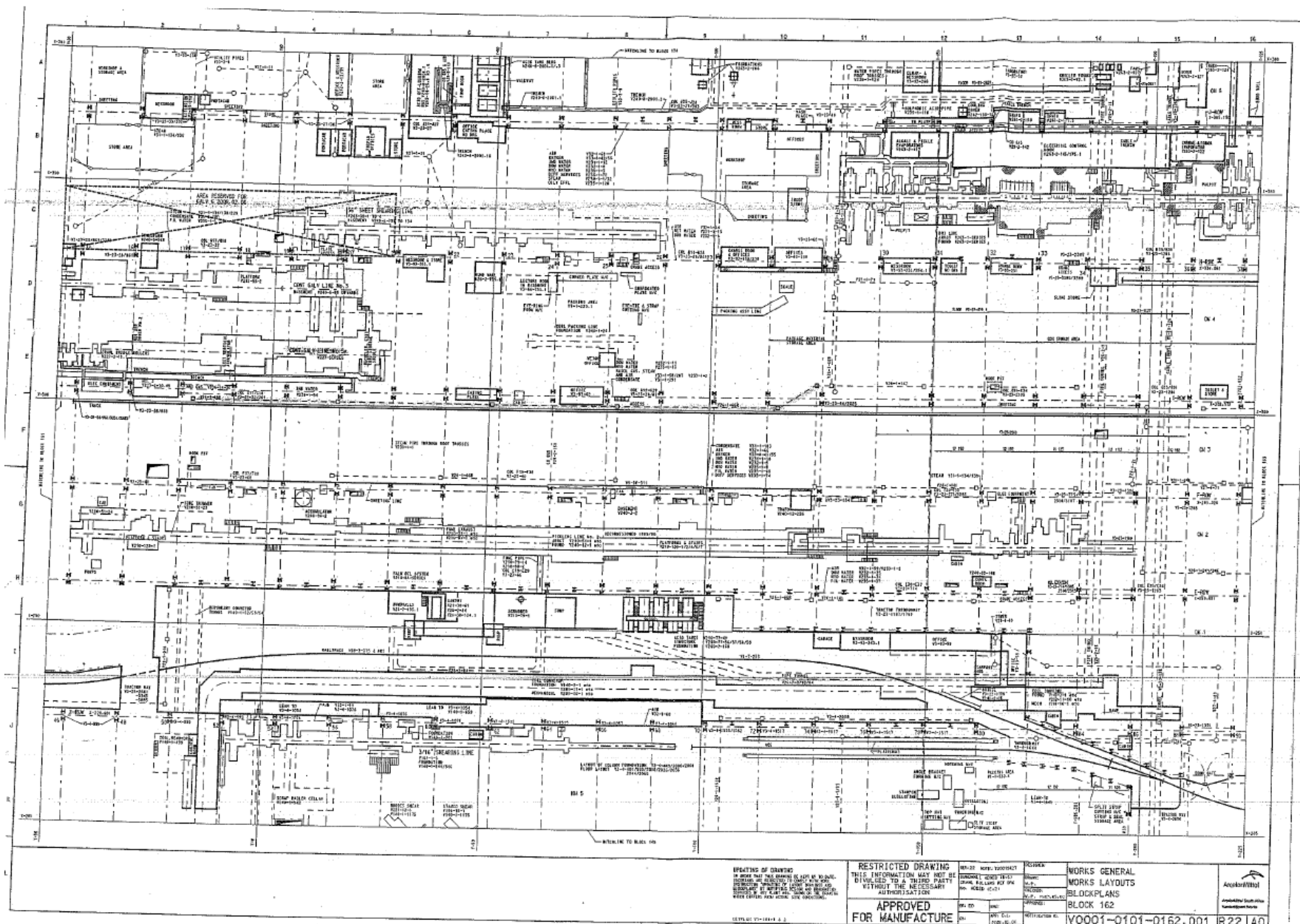
EXIT VERTICAL ACCUMULATOR
STEERING ROLL No.6

STEERING SYSTEM No.5
DEFLECTOR ROLL No.9 WITH LOAD CELL

HOT AIR DRYER No.2

CHROMATE TANK
BRIDLE No.6
BRIDLE No.5
TENSION LEVELLER
BRIDLE No.4
BRIDLE No.3





ADDENDUM – F

Job Card Sample



929392227 0010

Planning Plant: *SF01*
AMSA - Vanderbijlpark Works


 ArcelorMittal
Maint Plant: *SFGF Galv Line 5*

Date Printed: 2021.06.07

Plant Maintenance Work Order Header

Printed By: 10009512

Copy: 1

M/Plan Nr: V102783
 Order Nr: 929392227

Notification Nr:

W/O Type: PM02

Funct Loc:

ABC IND: 03-S
 C

IFS South Works

ABC IND: 03-S-FGV

LOW IMPACT

ABC IND: C
 03-S-FGV-943

GALVANISING SECTION

ABC IND: A

LOW IMPACT

ABC IND: 03-S-FGV-943-18

GALVANISING LINE NO 5

ABC IND: A

HIGH IMPACT

Equip:

ALKALI CLEANING SECTION

HIGH IMPACT

Object List:

Funct Loc:

Equipment:

Description: (Short)

GALV.5 ROUTE INSPECTION TUESDAY M/S W

Planning Related Information

PM Planner grp: M20
 Main work centre: CRLS1 SF01
 System Condition: 0
 Priority: 2
 Status:
 Activity Type: INS
 Basic Start Date: 2021.06.15
 Basic Start Time: 00:00:00

Galv 5
 Jnr. Manager (Execution BP & Coatin
 Running Producing
 Sched - Future Med
 REL NMAT PRC SETC
 Inspection
 Basic End Date: 2021.06.15
 Basic End Time: 02:00:00

Equipment Installed/Dismantled:

Equipment Number Dismantled:

Equipment Number Installed:

Operations Detail

Operation number: 0010
 Status: REL
 Work Centre: CRLS1MLW
 Personnel Nr:

GALV.5 ROUTE INSPECTION TUESDAY M/S W

SF01 Millwright

Number Capacities: 1
 Earliest Start: 2021.06.15

Planned Duration: 2.0 HR
 Latest Finish: 2021.06.15

Control Key: PMIN
 System Condition: 0

PMINPlant Maintenance Internal
 Running Producing

Frequency (Package): 01

1 Weekly

Material # Description	Reservation #	Purchase Order #	Quantity
PRT Number:		Description:	Quantity Required:
Confirmation number: 0061337092			
<u>Operations Long Text</u>			R=Right W=Wrong C=Corrected
GALV.5 ROUTE INSPECTION TUESDAY M/S W			

TASK HIRA			

Step 1: Mark possible Hazards			
Step 2: Evaluate Hazards and decide on mitigating actions			
Step 3: Team members sign			
<u>STEP 1: MARK POSSIBLE HAZARDS</u>			
Mark with X if Hazard is possible in task			
<u>>1. BIO-MECHANICAL & POSTURE (Repetitive)</u>			
Excessive bending/stretching/twisting			
Hands above shoulders during working			
Squatting or unstable position			
Other?			
<u>>2. VEHICLE MOVEMENT</u>			
Authorised access needed to vehicles (cars, trucks etc)			
Unprotected walkways (roadcars, forklift, crane, rail etc)			
Other?			
<u>>3. BIO-MECHANICAL & POSTURE (Short term)</u>			
Lifting, lowering or carrying heavy loads			
Pushing/Pulling objects hard			
Awkward grip on objects			
Other?			
<u>>4. WORKING ON HEIGHTS</u>			
Work on roofs [***FALL PROTECTION PLAN NEEDED***]			
Access to uncovered openings (pits, manholes etc)			
Access to unprotected edges (no barrier to prevent fall)			
Poor condition floor plates/grids			
Other requiring fall protection			
<u>>5. FIRE AND EXPLOSION</u>			
Gas hazardous area (consider ignition & hot work cert.)			
Heat Source (oxygen cutting, grinding, welding etc.)			
Working with flammable product (liquid, gas etc.)			
Other?			
<u>>6. ELECTRICAL</u>			
Contact with "live" components during testing, inspection, operation, maintenance, cleaning or repair			
Contact with power lines/crane gantries/overhead/trenches			
Isolation of electrical energy			
Other?			
<u>>7. ORGANISATIONAL AND PROCEDURAL ARRANGEMENTS</u>			
Insufficient first-aid equipment or trained personnel			
Insufficient job rotation, rest breaks			
Other?			
<u>>8. CHEMICALS AND TOXICITY</u>			

Exposure to toxic concentrations of chemicals (skin etc)	
Exposure to oxygen-depleted atmospheres	
Damage to gas lines, compressed gas cylinders (etc.)	
Other?	
<u>>9. PSYCHO-SOCIAL ENVIRONMENT AND TASK DESIGN</u>	
Insufficient orientation given(probability of human error)	
Lack of clarity in work roles of employee/s	
Other?	
<u>>10. PHYSICAL ENVIRONMENT AND WORKPLACE DESIGN</u>	
Poor lighting	
Body parts coming in contact with hot components of fires	
Fall or collapse of ground, materials, plant, structures, etc.	
Exposure to radiation(radioactive radiation, ionizing etc.)	
Items falling from above or to lower level	
Item stored in a way that it may fall (potential energy)	
Other?	
<u>>11. MECHANICAL</u>	
Clothing, etc. liable to become entangled in moving comp.	
Uncontrolled/unexpected movement of machinery components	
Body parts coming in contact with moving, "live" comp. etc.	
Possibility of traffic accident / incidents	
Body/body parts trapped between moving components etc.	
Persons pushed, pulled or thrown off plant, structures	
Machines, components or materials disintegrating	
Persons being injured by damaged, poorly maintained etc.	
Components, work pieces, fluids etc. being ejected	
Isolation of mechanical, pneumatic, hydraulic energies	
Exposed to cranes, lifting and tackle equipment	
Conducting non-standard lifts with crane (lift plan)	
Other?	
<u>>12. DAMAGE/MODIFICATION/CHANGES TO ENVIRONMENT</u>	
Improper replacement of railings etc. after task	
Other?	

STEP 2: EVALUATE HAZARDS AND DECIDE ON MITIGATING ACTIONS

*Explain Hazards ("what may hurt me") which are marked in list above in detail in "Hazard/Risk" field

*Mark an "X" next to Probability

*Mark an "X" next to Consequence


*Enter mitigating action

Note: Ensure mitigating action lower risk to acceptable levels especially if Probability or Consequence selected has a "**"

Hazard/Risk	Probability	Consequence	Mitigating action
Heating / Heat	Very likely*	Fatal*	7 year ear plug
	Likely X	Lost Time*	
	Possible	Medical aid	
	Unlikely	First aid	
	Very likely*	Fatal*	
	Likely	Lost Time*	
	Possible	Medical aid	
	Unlikely	First aid	
	Very likely*	Fatal*	
	Likely	Lost Time*	
	Possible	Medical aid	
	Unlikely	First aid	
	Very likely*	Fatal*	
	Likely	Lost Time*	
	Possible	Medical aid	
	Unlikely	First aid	
	Very likely*	Fatal*	

	Likely	Lost Time*
	Possible	Medical aid
	Unlikely	First aid
	Very likely*	Fatal*
	Likely	Lost Time*
	Possible	Medical aid
	Unlikely	First aid
	Very likely*	Fatal*
	Likely	Lost Time*
	Possible	Medical aid
	Unlikely	First aid
	Very likely*	Fatal*
	Likely	Lost Time*
	Possible	Medical aid
	Unlikely	First aid

STEP 3: MEMBERS SIGNDATE

<u>Team member</u>	<u>Work number</u>	<u>Signature</u>
Nepheloma ND	8680910	

 GALV 5 ROUTE INSPECTION TUESDAY M/S

=====

INSPECT CONDITION OF FOLLOWING SUMP PUMPS [ALL SHIFTS]

- A) ALKALINE CLEANING SECTION |___|
 B) ENTRY LOOPER |___|
 C) EXIT LOOPER |___|

=====


INSPECT PRESSURE BEFORE AND AFTER 2 OFF MAIN COOLING STRAINERS
 LOCATED AT COLUMN: G15

EAST SIDE STRAINER BEFORE: _____ KPA
 EAST SIDE STRAINER AFTER: _____ KPA
 WEST SIDE STRAINER BEFORE: _____ KPA
 WEST SIDE STRAINER AFTER: _____ KPA
 SCADA VALUE: _____

=====

1.) Alkali cleaning Tank.

=====

A) Inspect condition of rolls. 

- B) Inspect condition of bearings.
 C) Inspect condition of cylinders.
 D) Inspect condition of pipes and for leaks.
 E) INSPECT SAFETY COVERS AND ENSURE IT IS FITTED WITH
 HANDLES IF NECESSARY

✓
 ✓
 ✓
 ✓

2.) Alkali cleaning tank Pump #1, #2

=====

- A) Inspect condition of hydr pump and motor.
 B) Inspect condition of couplings and safety covers.
 C) Inspect for leaks on valves and pipes.
 E) INSPECT SAFETY COVERS AND ENSURE IT IS FITTED WITH
 HANDLES IF NECESSARY
 E) Ensure motor connection box cover is closed and cable
 secured with gland to connection box.
 F) Inspect condition of tank and valves.

✓
 ✓
 ✓
 ✓
 ✓
 ✓

3.) Brush Roll #1 to #4

=====

- A) Inspect condition of rolls and bearings.
 B) Inspect condition of plumber blocks and if secure.
 C) Inspect condition of adjusting gearboxes.
 D) Ensure motors connection box cover is closed and cable
 secured with gland to connection box.
 E) Inspect condition of universals.
 F) INSPECT SAFETY COVERS AND ENSURE IT IS FITTED WITH
 HANDLES IF NECESSARY

✓
 ✓
 ✓
 ✓
 ✓
 ✓

4.) Alkali Fume Scrubber Blower

=====

- A) INSPECT CONDITION OF "V" BELTS AND PULLYS.
 B) INSPECT SAFETY COVERS AND ENSURE IT IS FITTED WITH
 HANDLES IF NECESSARY
 C) ENSURE FAN AND MOTOR BASE BOLTS IS SECURED.
 D) ENSURE MOTOR INSPECTION COVER ARE CLOSED AND CABLE
 PROPERLY CONNECT TO CONNECTION BOX.
 E) REPORT VIBRATION TO SUPT.
 F) INSPECT CONDITION OF STRUCTURE, DUCTING AND PIPES.
 G) INSPECT CONDITION OF FAN SHAFT BEARINGS.

✓
 ✓
 ✓
 ✓
 ✓
 ✓
 ✓

5.) Scrubber Recirculation pump



=====

- A) Inspect condition of hydr pump and motor.
 B) Inspect condition of couplings and safety covers.
 C) Inspect for leaks on valves and pipes.
 F) INSPECT SAFETY COVERS AND ENSURE IT IS FITTED WITH
 HANDLES IF NECESSARY
 E) Ensure motor connection box cover is closed and cable
 secured with gland to connection box.
 F) Inspect condition of tank and valves.

✓
 ✓
 ✓
 ✓
 ✓
 ✓

REPORT ALL DEFECTS FOUND

0010

ARTISAN TO COMPLETE						
StDate/Time	End Date/Time	Act.Dur	Emp.Nr	Sign	Descrip	Rem.Work
2021/06/15	2021/06/15	2.0	808090		VER	
Additional work identified?			Trade responsible:		Estimated duration:	
Reason for operation delay/ not completed						
Delay		Delay Duration		Not Done		
<input type="checkbox"/> Travel & no transport		_____		<input type="checkbox"/> Travel & no transport		
<input type="checkbox"/> Breakdown		_____		<input type="checkbox"/> Breakdown		
<input type="checkbox"/> Personnel Late		_____		<input type="checkbox"/> No Personnel		
<input type="checkbox"/> Support Equipment Late		_____		<input type="checkbox"/> No Support Equipment		
<input type="checkbox"/> PTO / Training		_____		<input type="checkbox"/> PTO / Training		
<input type="checkbox"/> Planning not practical		_____		<input type="checkbox"/> Planning not practical		
<input type="checkbox"/> Unplanned Leave		_____		<input type="checkbox"/> Unplanned Leave		
<input type="checkbox"/> Addnl/Unforeseen work		_____		<input type="checkbox"/> Material Unavailable		
<input type="checkbox"/> Material Late		_____		<input type="checkbox"/> Material Quality		
<input type="checkbox"/> Material Quality		_____		<input type="checkbox"/> Material Incorrect		
<input type="checkbox"/> Material Incorrect		_____		<input type="checkbox"/> Equipment Unavailabl		
<input type="checkbox"/> Equipment Late		_____		<input type="checkbox"/> Prep Incomplete		
<input type="checkbox"/> Prep Incomplete		_____		<input type="checkbox"/> Unsafe Condition		
<input type="checkbox"/> Unsafe Condition		_____		<input type="checkbox"/> Assistance Unavailab		
<input type="checkbox"/> Assistance Late		_____		<input type="checkbox"/>		
<u>Sign-Off</u> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="text-align: left;">Supt Sign: </div> <div style="text-align: center;">Emp.Nr: _____</div> <div style="text-align: right;">Date: _____</div> </div>						
<u>Artisan Additional Feedback</u> <div style="text-align: center; margin-top: 10px;"> Reliability Pays For Everything </div>						

ADDENDUM – G

Air Quality Management and Audit Plan



Air Quality Management and Audit Plan

Galvanizing Line # 5
ArcelorMittal South Africa Vanderbijlpark Works



1. Introduction

Esicongweni Environmental Services

In terms of Condition 3.2(h) of the Environmental Authorisation issued for the Galvanizing Line # 5 (Galv 5) in Cold Mills South, ArcelorMittal is to develop a long-term air quality management and audit plan for Galv 5 based on the outcome of monitoring conducted at the Plant.

The following criteria, specified in the Environmental Authorisation, were to be monitored from the stack on a quarterly basis for the first year subsequent to commissioning of the Plant:

- Hexavalent chrome and total chrome
- Metal oxides
- Particulate matter
- Sulphur dioxide
- Oxides of nitrogen
- Carbon dioxide
- Carbon monoxide

Monitoring is also to be conducted at the chromic acid application area to measure fugitive emissions within the galvanizing building.

It is specified that results from this monitoring are to guide future air quality monitoring on a long-term basis.

2. Monitoring Methods

Stack emission monitoring for metal oxides is performed in accordance with EPA Method 0060, an internationally recognized and accepted method. This method is used to determine the concentration of metals in stack emissions from hazardous waste incinerators and similar combustion processes. This method is also able to account for total chrome emissions and particulate emissions. Should concentrations of total chrome exceed 0.5 mg/m³ (minimum emission standard for Category 8: Disposal of hazardous and general waste), EPA Method 0061: "Determination of Hexavalent Chromium Emissions from Stationary Sources" is used to monitor for Cr(VI).

Gas monitoring is performed with the aid of a portable gas analyzer, which is calibrated on a regular basis.

Occupational hazardous chemical substance exposure (fugitive emissions) is monitored in the Galvanizing building at various pre-determined locations in line with Occupational Health and Safety Act.

3. Monitoring Results

3.1 Metal Emissions

Results obtained from the stack metal emission sampling runs are graphically represented below. Where there appears to be no value for a particular sampling occasion, the results obtained were below detection limit (BDL). All samples are analysed by an accredited laboratory.

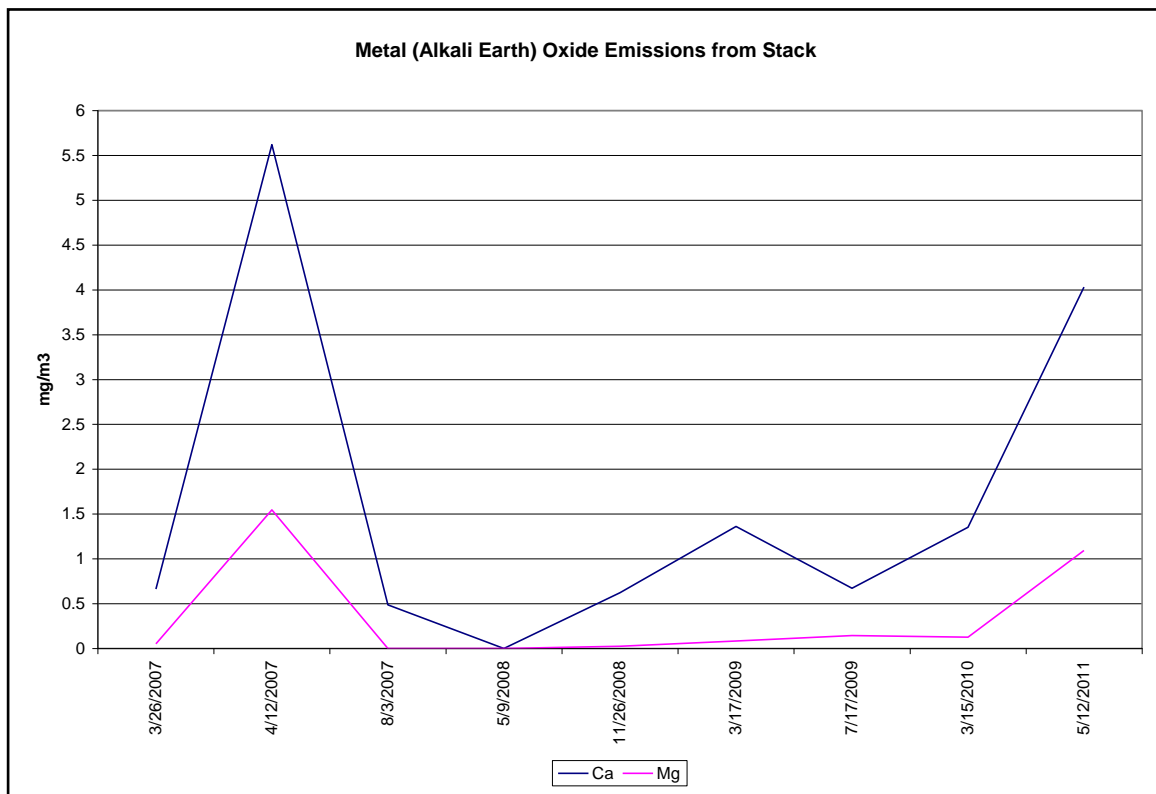


Figure 1. Alkali Earth Metal emission results

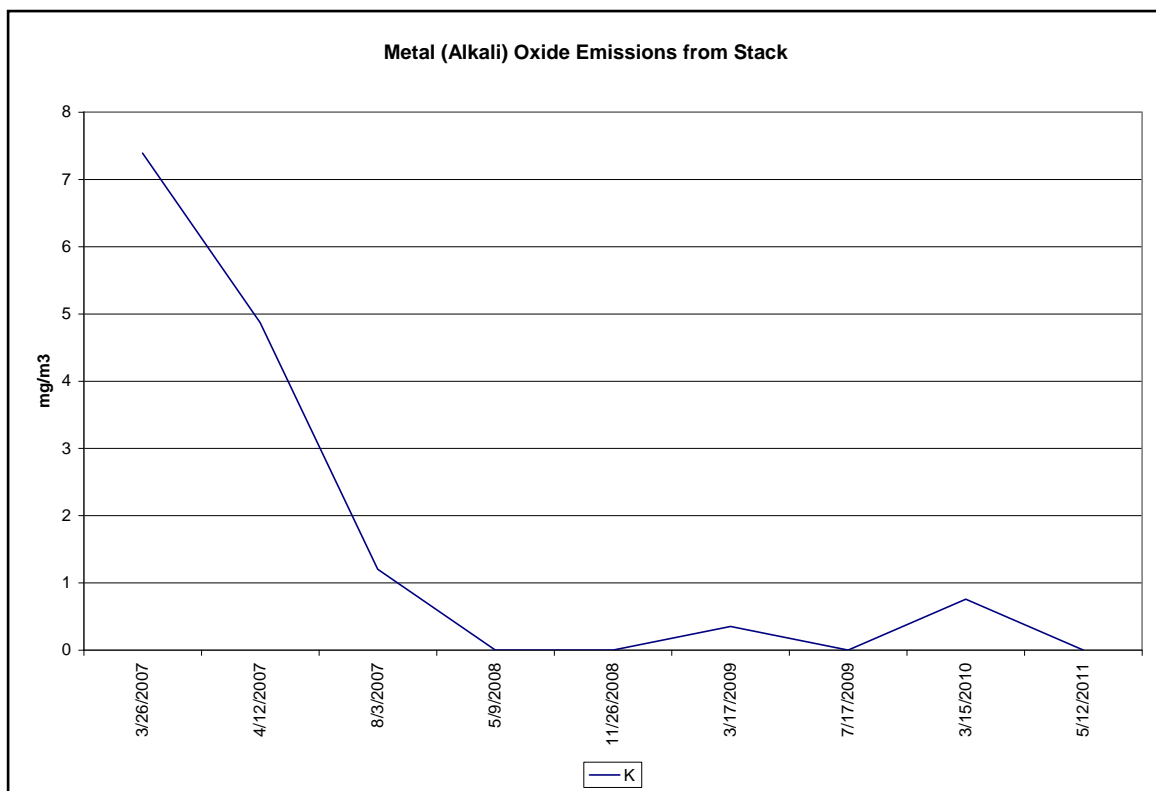


Figure 2. Alkali Metal emission results

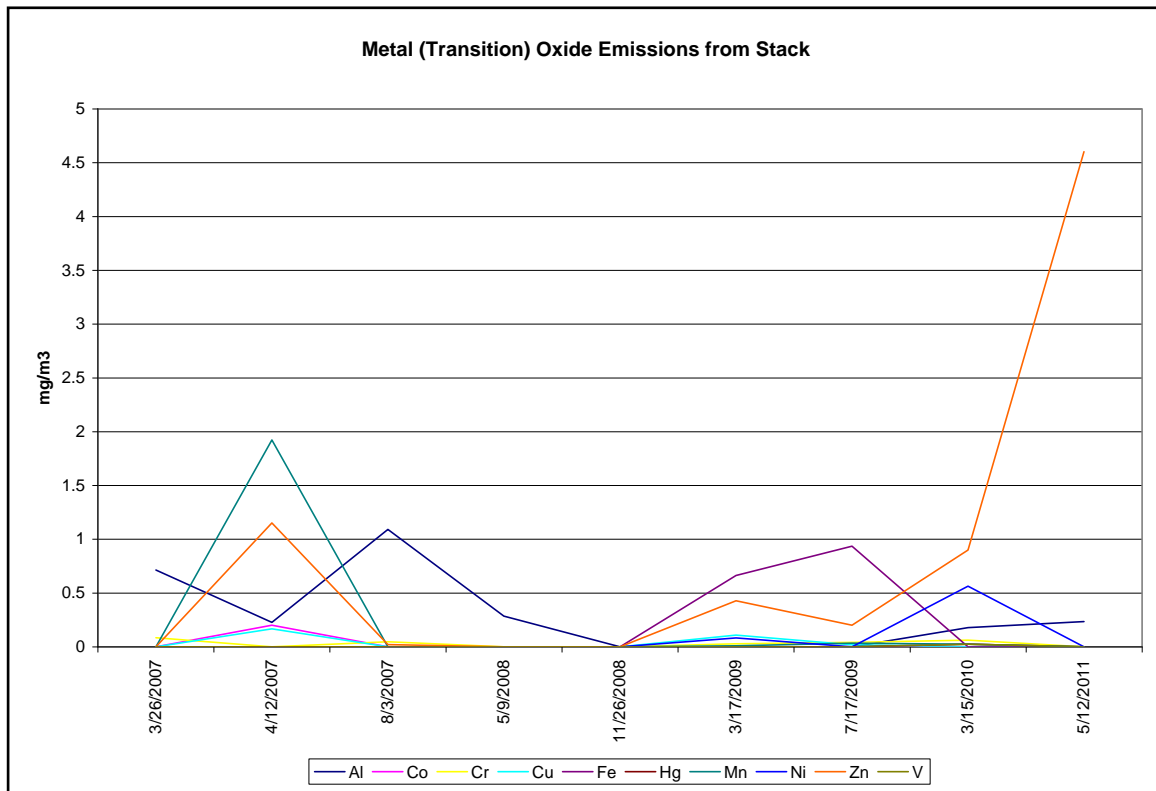


Figure 3. Transition Metal emission results

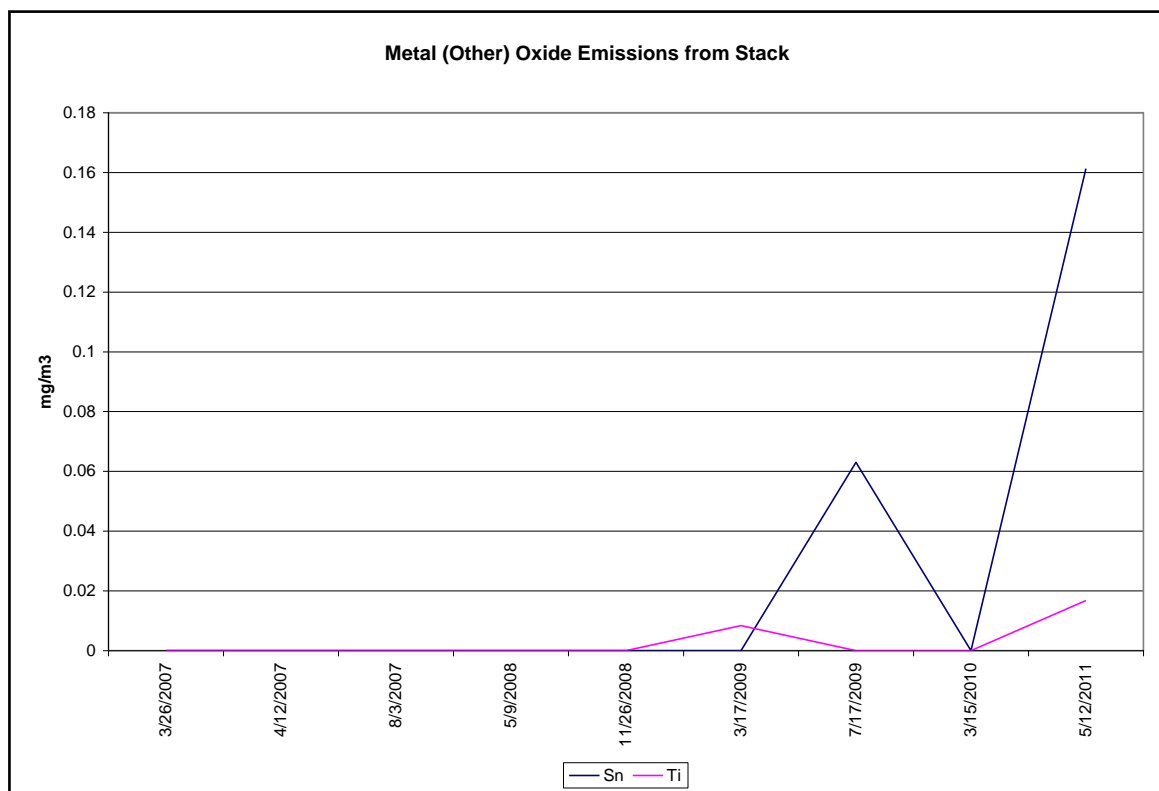


Figure 4. Other Metal emission results

3.2 Gaseous Emissions

Gaseous emission results from previous sampling runs at different sampling locations are tabulated below:

Furnace (hoizontal)	Date	O2 (%)	CO ppm	NO ppm	NO2 ppm	NOx ppm	SO2 ppm	CxHy (%)	CO2 (%)
	24-Apr-07	16.90	0.50	14.50	0.00	15.00	0.00	0.05	2.30
	20-May-07	18.00	2.00	16.00	0.00	16.00	0.00	0.00	
	1-Aug-07	17.83	3.25	10.76	0.00	10.16	0.00	0.08	13.75
	9-May-08	17.60	27.00	7.50	0.00	7.50	0.00	0.00	3.00
	8-Jul-09	17.11	64.44	11.02	0.00	11.02	0.00	0.00	3.40
	11-Mar 10	19.40	15.00	15.00	1.00	16.00	0.00	0.00	1.40
	8-Aug-10	15.91	0.09	3.28	0.00	3.28	0.03	0.00	0.29
Average		17.54	16.04	11.15	0.14	11.28	0.00	0.02	4.02
Average (mg/m3)			20.05	13.94	0.29	14.23	0.01		

Passivate section (vertical)	Date	O2 (%)	CO ppm	NO ppm	NO2 ppm	NOx ppm	SO2 ppm	CxHy (%)	CO2 (%)
	20-May-07	18.00	2.00	16.00	0.00	16.00	0.00		
	20-May-07	20.80	0.00	0.00	0.00	0.00	0.00		
	1-Aug-07	20.80	1.30	0.00	0.00	0.00	0.00	0.07	
	9-May-08	20.80	1.00	0.00	0.00	0.00	1.00	0.00	
	8-Jul-09	20.90	11.00	0.00	1.00	1.00	0.00	0.00	0.00
	11-Mar-10	15.69	21.03	23.17	0.98	24.16	0.00	0.00	4.71
	8-Aug-10	18.09	0.58	4.70	0.00	4.70	0.00	0.00	2.60
Average		19.30	5.27	6.27	0.28	6.55	0.14	0.01	2.44
Average (mg/m3)			6.59	7.83	0.58	8.41	0.41		

GALV 5 Chrome Bath	Date	O2 (%)	CO ppm	NO ppm	NO2 ppm	NOx ppm	SO2 ppm	CxHy (%)	CO2 (%)
	11-Mar-10	21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	11-Mar-10	21.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
	8-Aug-10	20.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average		20.97	0.00	0.33	0.00	0.33	0.00	0.00	0.00
Average (mg/m3)		29.77	0.00	0.42	0.00	0.42	0.00		

3.3 Fugitive Emissions

Fugitive emissions in the Galvanizing building are reported separately as part of the occupational hygiene survey in which hazardous chemical exposure is analysed.

4. Discussion

It should be noted that no South African emission standards exist for metal emissions from Galvanizing Plants. The only standards available for metal emissions are in terms of Sub-Category 5.4: Cement production using alternative fuels/resources and Category 8: Disposal of hazardous and general waste, in the Minimum Emission Standards. Furthermore, a standard of 0.5 mg/m3 is specified for the sum of lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel and vanadium.

Based on the low results obtained from previous metal oxide sampling runs, and guidance from the Air Quality Act's S.21 Minimum Emission Standards, the continued sampling of metal emissions from the Galvanising process is deemed unnecessary.

As with metal emissions for Galvanizing operations, no standard exists for gaseous emissions. The National Minimum Emission Standards document only specifies a limit for Hydrochloric Acid (HCL) [for pickling integrated processes] and Particulate Matter (PM). PM emission monitoring, by means of iso-kinetic sampling, has been conducted at the Galv Line on a number of previous occasions, only to find that no measurable dust was captured on the filters

after the sampling runs. Consequently, PM monitoring at the Galv Line has been discontinued. However, PM emissions (emanating from gas combustion) from the galvanizing process is determined by means of mass balance calculations. The AEL requires SO₂ and NO_x to be measured and reported at Galv 5 on a bi-annual basis for the sampling duration of 1 hour.

Hazardous chemical substance exposure and noise monitoring is conducted by the Occupational Hygiene Department in the Galvanizing building as per regulatory requirements. Recommendations on actions to mitigate exposure are contained in reports compiled by this department, should occupational exposure limits be exceeded.

5. Air Quality Monitoring

Based on the monitoring results presented above and associated regulatory requirements (AEL) in terms of monitoring, the following air emission monitoring protocol should be adopted for Galv 5.

Parameter	Monitoring Frequency	Standard
Sulphur Dioxide	Bi-annual	500 mg/Nm ³
Oxides of Nitrogen	Bi-annual	500 mg/Nm ³

6. Auditing and Management Interventions

Monitoring results should be analysed on an annual basis to determine the need for mitigation measures to control emissions. The monitoring protocol should be reviewed upon changes in regulatory standards and monitoring criteria.

REFERENCES

4. Work's Atmospheric Emissions Licence (AEL0003/SDM/2012)
5. National Environmental Management: Air Quality Act. National Minimum Emission Standards (as amended)
6. US EPA Method 0060 and US EPA Method 0061

REVISIONS

Date	Revision No.	Reason for Revision
March 2012	1	Alignment of monitoring requirements with AEL
November 2018	2	Alignment of monitoring requirements with AEL

--- END OF REPORT ---