

REPORT

External Environmental Audit Report for the Vaal Waste Dump Site at the ArcelorMittal Vereeniging Works in Gauteng Province

Client: ArcelorMittal

Reference: MD2956TPRP1812100546

Status: 01/Final

Date: 29 October 2018

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Document short title:

Reference: MD2956TPRP1812100546

Status: 01/Final

Date: 29 October 2018

Project name: ArcelorMittal Vereeniging Works External Compliance Audits

Project number: MD2956 - 106 -100

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Date / initials: M.R 10.12.2018

Classification

Project related



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Acronyms

Acronym	Acronym description
<i>AMSA</i>	ArcelorMittal South Africa
<i>DEA</i>	Department of Environmental Affairs
<i>DEAT</i>	Department of Environmental Affairs and Tourism
<i>DWA</i>	Department of Water Affairs
<i>DWS</i>	Department of Water and Sanitation
<i>EAF</i>	Electric Arc Furnace
<i>EEA</i>	External Environmental Auditor
<i>EC</i>	Electrical Conductivity
<i>ECA</i>	Environment Conservation Act
<i>EIA</i>	Environmental Impact Assessment
<i>EMS</i>	Environmental Management System
<i>EMPr</i>	Environmental Management Programme
<i>ESR</i>	Environmental Site Representative
<i>GDACE</i>	Gauteng Department of Agriculture, Conservation and Environment
<i>GDARD</i>	Gauteng Department of Agriculture and Rural Development
<i>ISO</i>	International Organization for Standardization
<i>NEMA</i>	National Environmental Management Act (No 107 of 1998)
<i>NEMWA</i>	National Environmental Management Waste Act (No 59 of 2008)
<i>NWA</i>	National Water Act (No 36 of 1998)
<i>OHS</i>	Occupational Health and Safety
<i>PPE</i>	Personal Protective Equipment
<i>SANS</i>	South African National Standard
<i>SHE</i>	Safety, Health and Environment
<i>TDS</i>	Total Dissolved Solids

1 INTRODUCTION AND BACKGROUND INFORMATION

ArcelorMittal South Africa Limited (hereafter referred to as AMSA) is South Africa's biggest iron and steel supplier. AMSA operates a number of integrated production facilities in South Africa, especially within the Gauteng Province.

AMSA – Vereeniging Works undertook an EIA process in 2004 to obtain environmental approval for the operation of the Vaal disposal site towards closure and to rehabilitate the site accordingly. An exemption was granted by the Gauteng Department of Agriculture, Conservation and Environment (GDACE, now the Gauteng Department of Agriculture and Rural Development) in September 2004.

Royal HaskoningDHV was appointed by AMSA – Vereeniging Works to undertake a compliance audit of exemption issued for the rehabilitation of the Vaal Disposal site. The main objective of the compliance report is to verify if all relevant environmental conditions, as prescribed in the issued exemption (GAUT 002/04-05/0455 12/9/11/L393/4), have been appropriately and adequately considered by AMSA.

The scope of compliance monitoring and the evaluation criteria covers all the main rehabilitation activities being undertaken at the Vaal Waste Dump Site. The compliance monitoring report seeks to:

- Document observations and findings;
- State compliance with regards to each of the main conditions of the exemption;
- Provide recommendations for any non-compliances recorded; and
- Illustrate monitoring results, where possible, graphically.

The Vereeniging works historically disposed general rubble, mill scale, spent refractories, Electric Arc Furnace (EAF) Dust, EAF Black slag, EAF white slag and magnetite on the site. The environmental authority (GDACE) were of the opinion that the waste disposed at the site was a combination of general and hazardous waste resulting in AMSA being issued with a Compliance Notice in terms of Section 31L and Directive in terms of Section 28 of NEMA in October 2007. The Directive amongst others instructed the company to cease disposal on the site and submit an amended Rehabilitation Plan for approval to the then Gauteng Department of Agriculture, Conservation and Environment (GDACE), now the Gauteng Department of Agriculture and Rural Development (GDARD) as well as the Department of Environmental Affairs and Tourism (DEAT), now the Department of Environmental Affairs (DEA). AMSA thereafter ceased further formal dumping activities on site; instead disposing of their waste at a licensed off-site facility.

An amended Rehabilitation Plan was submitted to GDARD as well as DEA in 2008 and was approved in 2011 by GDARD.

An extension was granted to AMSA by GDARD for the period by which the magnetite needed to be removed by. Services were provided by a third party who undertook the removal and recycling of the magnetite found on site and by March 2010 all magnetite had been removed from site.

In February 2018 AMSA received a Variation of the Compliance Notice from GDARD that related to the previous Compliance Notice that was issued in terms of Section 31L and Directive in terms of Section 28 of

NEMA in October 2007. This Variation of the Compliance Notice provided for the following variations in terms of Section 31L (3) of NEMA:

- a. Rehabilitation of the Vaal Dump Site may commence as authorised in the Environmental Authorisation dated 23rd September 2004 with reference number Gaut 002/04-05/0455.
- b. Monthly monitoring of the ground water must be conducted to assess the levels of pollution throughout the duration of the rehabilitation process. The elements monitored must include water quality parameters such as heavy metals [Silver (Ag), Lead (Pb), Iron (Fe) and Chromium (Cr)], pH, Total Suspended Solids (TDS) and Dissolved Oxygen (DO).
- c. The water quality monitoring results must be reported quarterly to this Department.
- d. The monitoring report submitted must reflect the monthly data collected in each monitoring borehole; and
- e. The annual external audit report as per the requirements of the EA must continue to be submitted as directed.

AMSA re-commenced with rehabilitation activities (referred to as Phase 2) in May 2018.

Royal HaskoningDHV have been appointed by AMSA to act as an External Environmental Auditor (EEA) as per the requirements of the issued exemption and reiterated in the Variation of the Compliance Notice. The purpose of the auditor appointment is to conduct an annual external environmental audit, according to the exemption granted for the Vereeniging Works: Vaal Waste Dump Site situated in the Gauteng Province.

1.1 Location of the Study Area

The Vaal Waste Dump Site is situated adjacent to the Vereeniging Vaal Works (on a portion of farm Leeuwkuil 596-IQ) north of the Vaal River. The majority of the site is surrounded by industrial areas. A recreation area can be found to the east of the site, namely the Riviera Aquatic Club, which is located between the site and the Vaal River.



Figure 1: Locality Map indicating the Vaal Waste Dump Site

1.2 Details of the External Environmental Auditor

Table 1: Details of the External Environmental Auditor (EEA)

Environmental Auditor	Royal HaskoningDHV	
Professional Membership	SACNASP (Cert.Sci.Nat. Registration Number 119100)	
Contact Person	Mr Bjorn Hoffmann	
Postal Address	The Boulevard Umhlanga 19 Park Lane Umhlanga Rocks 4319	
Telephone Number	+27 (0) 87 350 6762	Cell: 083 468 5156
Fax Number	+27 (0) 11 798 6005	Email: Bjorn.Hoffmann@rhdhv.com
Expertise of the Auditor	Bjorn Hoffman is a Senior Environmental Consultant within the Environmental Management and Compliance Service Line at Royal HaskoningDHV. He has 9 years' experience in construction and operational phase Environmental Management. His areas of expertise include the development of construction method statements and procedures, as well as effective implementation of project Environmental Management Systems and monitoring of environmental compliance. His responsibilities include: preparing and monitoring the implementation of environmental management plans and/or programmes on projects either as a Project Environmental Manager, Environmental Auditor or as an Environmental Control Officer (ECO). Bjorn is focussing on developing his career to become a certified Lead Environmental Auditor in both compliance and systems auditing.	

Declaration of Independence	<p>In accordance with Appendix 7 (Section 3) of the Government Notice No 982 of 04 December 2014, (as amended on 07 April 2017) this section serves as a declaration of Independence by the Environmental Auditor.</p> <p>I Bjorn Hoffmann, declare that –</p> <ul style="list-style-type: none"> ▪ I act as the EEA for this project; ▪ I declare that there are no circumstances that may compromise my objectivity in performing such work; ▪ I have expertise in conducting environmental compliance monitoring, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity; ▪ I will comply with the Act, Regulations and all other applicable legislation; ▪ I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant, RHDHV or not; ▪ All the particulars furnished by me in this form are true and correct; and ▪ I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the Act. <div style="text-align: center; margin-top: 10px;">  </div> <p style="text-align: center; margin-top: 5px;">Signature of the Environmental Control Officer</p>
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1.3 Audit Attendees

Table 2: Audit Attendees

NAME	ORGANISATION	CONTACT DETAILS
Bjorn Hoffmann (Auditor)	Royal HaskoningDHV	087 350 6762; Bjorn.Hoffmann@rhdhv.com
Sham Jagathlal (Auditee)	Arcelor Mittal	016 889 9111; sham.jagathlal@arcelormittal.com
Jeremiah Mnisi (Auditee)	Arcelor Mittal	016 440 3218; Jeremiah.Mnisi@arcelormittal.com

2 COMPLIANCE METHODOLOGY AND PROCEDURE

The compliance monitoring has been conducted utilising a checklist-based approach that categorises the imposed exemption conditions. These conditions and commitments are then assessed against the management measures and actions implemented on site, the monitoring and reporting protocols, as well as the management review processes in place in order to identify and implement any required corrective actions and to ensure compliance and continually improved environmental performance.

Crucial to this verification process is the availability of the required supporting documentation, and documentation control processes, which have to be comprehensive in order to demonstrate compliance to the exemption conditions. The general compliance monitoring methodology and procedure can be summarised in the steps below:

- Document Permit review and checklist development;
- Pre-compliance monitoring consultation and checklist dissemination;
- Compliance Monitoring:
 - Opening meeting;
 - Questioning, documentation review, consolidation of findings;
 - Site compliance and in-field verification;
 - Close-out meeting;
- Draft Compliance Report;
- Final Compliance Report; and
- Compliance findings and recommendations.

3 EVALUATION CRITERIA

As per the ISO 14001 EMS Standard requirements, the emphasis on the criteria that generally determine compliance, appropriate and comprehensive supporting documentation as well as documentation control processes have been incorporated into the checklist in order to ascertain whether the required monitoring and reporting processes are being adhered to. Where available, these documents have been inspected and their findings verified.

In order to quantify a degree of compliance (or lack thereof) it has been necessary to develop a set of evaluation criteria that allow for the allocation of an overall percentage complete/compliant for a given aspect or management commitment and/or condition of authorisation. Accordingly, the following categories of compliance and their associated rating apply (refer to **Table 3**):

Table 3: Compliance Rate Criteria

Categories of Compliance	Compliance Definition
Full Compliance (FC)	When an activity or condition has been implemented, completed, is on schedule or is maintained on an on-going basis.
Partial Compliance (PC)	When an activity or condition has been started, changed or is in the process of being implemented, but might not necessarily be on schedule or executed exactly as per the EMPr and Environmental Authorisation conditions.
Non-Compliance (NC)	When an activity or commitment has not been completed/implemented according to plan/requirement or when any illegal actions have been identified.
Not Yet Applicable, No Longer Applicable (NA)	When an activity or commitment has either been changed or replaced with other better alternatives, the required activities that require implementation for a given commitment have not yet been initiated, or the associated activity has ceased (or has been completed) and is no longer applicable.
Issue Requiring Further Investigation (RFI)	When an activity or commitment requires further investigation in order to determine the status of compliance. This may relate to incomplete information or inclusive evidence based on the current audit.

Each condition is scored according to the following criteria:

- 4 points: When the Contractor fully complies with the requirements of the Authorisation/Permit/License;
 2 points: When the Contractor partially complies with the requirements of the Authorisation/Permit/License and the non-compliance is becoming more serious; and
 0: When the Contractor is not complying with the requirements of the Authorisation/Permit/License at all.

Should there be an incident of non-compliance, the probability and significance of the environmental impact is evaluated according to its nature, extent, duration and intensity, whereby:

- **Nature:** A brief written statement of the environmental aspect being impacted upon by a particular action or activity.
- **Extent:** The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale.
- **Duration:** Indicates what the lifetime of the impact will be.
- **Intensity:** Describes whether an impact is destructive or benign.

Table 4: Criteria Used for the Rating of Impacts

Criteria	Description			
EXTENT	National (4) The whole of South Africa	Regional (3) Provincial and parts of neighbouring provinces	Local (2) Within a radius of 2 km of the construction site	Site (1) Within the construction site
DURATION	Permanent (4) Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	Long-term (3) The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	Medium-term (2) The impact will last for the period of the construction phase, where after it will be entirely negated	Short-term (1) The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
INTENSITY	Very High (4) Natural, cultural and social functions and processes are altered to extent that they permanently cease	High (3) Natural, cultural and social functions and processes are altered to extent that they temporarily cease	Moderate (2) Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	Low (1) Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected

Significance is determined through a synthesis of impact characteristics. Significance is also an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Table 5: Criteria Used for the Rating of Impacts

Rating	Description
Low impact (0 – 3 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact (4 – 6 points)	Mitigation is possible with additional design and construction inputs.
High impact (7 – 9 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact (10 – 12 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a “very high impact” is likely to be a fatal flaw.

4 SUMMARY OF COMPLIANCE FINDINGS

To ensure compliance with environmental best practice, certain documents should be kept on site and be readily available on request from the EEA or any authorised official from a Competent Authority.

It is important to note that these documents are recommended to be kept on site as an attempt to achieve environmental best practice and should be updated on an on-going basis by the Environmental Site Representative (ESR). To strive beyond standard compliance, it is recommended that the following documents also be kept on site.

4.1 Document Findings

4.1.1 Record of Decision

A copy of the issued exemption is available on site and the required records are kept on site.

*Evaluation Criteria – **Fully Compliant***

4.1.2 Waste Permit

DEA in May 2010 required proof that a Section 20 ECA permit was submitted to DWA at the time. AMSA is however of the opinion that a Section 20 ECA permit was never applicable for the operation of the site and the relevant authorisation process was followed for the rehabilitation of the site. As a result, no further authorisations are required in AMSA’s opinion.

*Evaluation Criteria – **Issue Requiring Further Investigation***

4.1.3 Incidents and Complaints Reporting

Although it was acknowledged during the audit interview process that a complaint had been received from the Riviera Aquatic Club, related to dust during the rehabilitation works; this was not captured formally within the Complaints Register.

*Evaluation Criteria – **Non-compliant***

4.1.4 Monitoring reports

The following monitoring is undertaken in line with the GDACE exemption:

- Groundwater monitoring for boreholes.
- Surface water monitoring upstream and downstream of the site.
- Records of all monitoring are kept on file.

The site was constructed without a leachate capturing and management system. It is therefore not possible to monitor and manage leachate from the facility.

On the day of the audit some leachate was visible; however, no monitoring results are available for the current reporting period. AMSA claim that there is not enough leachate available on any given day to sample.

*Evaluation Criteria – **Fully Compliant***

4.1.5 External Audits

External audits are being undertaken annually as per the requirements of the exemption.

*Evaluation Criteria – **Fully Compliant***

4.1.6 Closure and Rehabilitation Plan

A Site Closure and Rehabilitation Plan is being kept on file.

*Evaluation Criteria – **Fully Compliant***

Table 6 below provides a summary of compliance of the documentation section of the audit.

Table 6: Summary of Documentation Audit

No.	Documentation	Compliance Criteria
1	Record of Decision	√
2	Waste Permit	RFI
3	Incidents and Complaints Reporting	X
4	Monitoring Reports	√
5	External Audits	√
6	Closure and Rehabilitation Plan	√

4.2 Vaal Waste Dump Site Findings

4.2.1 Groundwater Monitoring

It was indicated to the auditor that groundwater monitoring is being undertaken on a monthly basis. It is important to note that the exemption does not make mention of any specific recommendation to which the samples are to be measured; however, the Variation of the Compliance Notice does.

The auditor was provided with the latest water monitoring results and these were compared to the South African Water Quality Guidelines and other water quality guidelines relevant to parameters contained in the monitoring results.

Groundwater monitoring points for the Vaal Dump Site are included in the broader ground water monitoring schedule. Groundwater is being monitored at the following boreholes:

- VBH 1 – Downstream of the Vaal Disposal Site
- VBH 2 – Upstream of the Vaal Disposal Site
- VBH 4 – Adjacent to the Vaal Disposal Site
- VBH 5 – Adjacent to the Vaal Disposal Site
- VBH 6 – Upstream of the Vaal Disposal Site
- VBH 7 – Adjacent to the Vaal Disposal Site

Data dating from October 2017 to September 2018 was made available; with some parameters only being sampled and tested after the Variation of the Compliance Notice was received (e.g. silver).

The Auditor thought it practical to monitor and analyse water quality trends of each borehole against itself, to indicate the trend of any variances of each water quality constituent, over time. This will enable any fluctuations of concern to be identified and could then be followed by an investigation.

It is also recommended that a standard for groundwater based on the receiving body be established and that the geology of the area be taken into consideration.

Furthermore, it is recommended that the monitoring data produced by AMSA be interpreted by a geohydrologist.

The locations of the boreholes are shown in Figure 2 below.



Figure 2: Locality of Boreholes at the Vaal Waste Site

4.2.1.1 Electrical Conductivity

Electrical Conductivity (EC) was selected for representation as it would be affected by several of the elements tested for. Using the latest borehole monitoring data that was provided, a trend analysis was undertaken specifically for the EC measured at boreholes VBH1, VBH2 and VBH7.

The results show an overall downward trend at borehole VBH1 in comparison to the high measurements that were taken in October 2017 – November 2017, and to some extent again in March 2018. The results also indicate towards a minor increase of EC from the upstream (VBH7) to the downstream (VBH1) results. The trend indicates the necessity to complete remediation of the site as a matter of urgency. Full remediation of the site will likely ensure the prevention of further contamination of the groundwater.

The results from VBH2 were mostly stable, with an unexplained spike in April 2018. When cross-referencing to the Quarterly Report, the Auditor noted that no explanation was given and the values in Figure 1 in the report were in fact incorrect (based on the range depicted on vertical axis).

Total Dissolved Solids (TDS) displayed the same trend as EC.

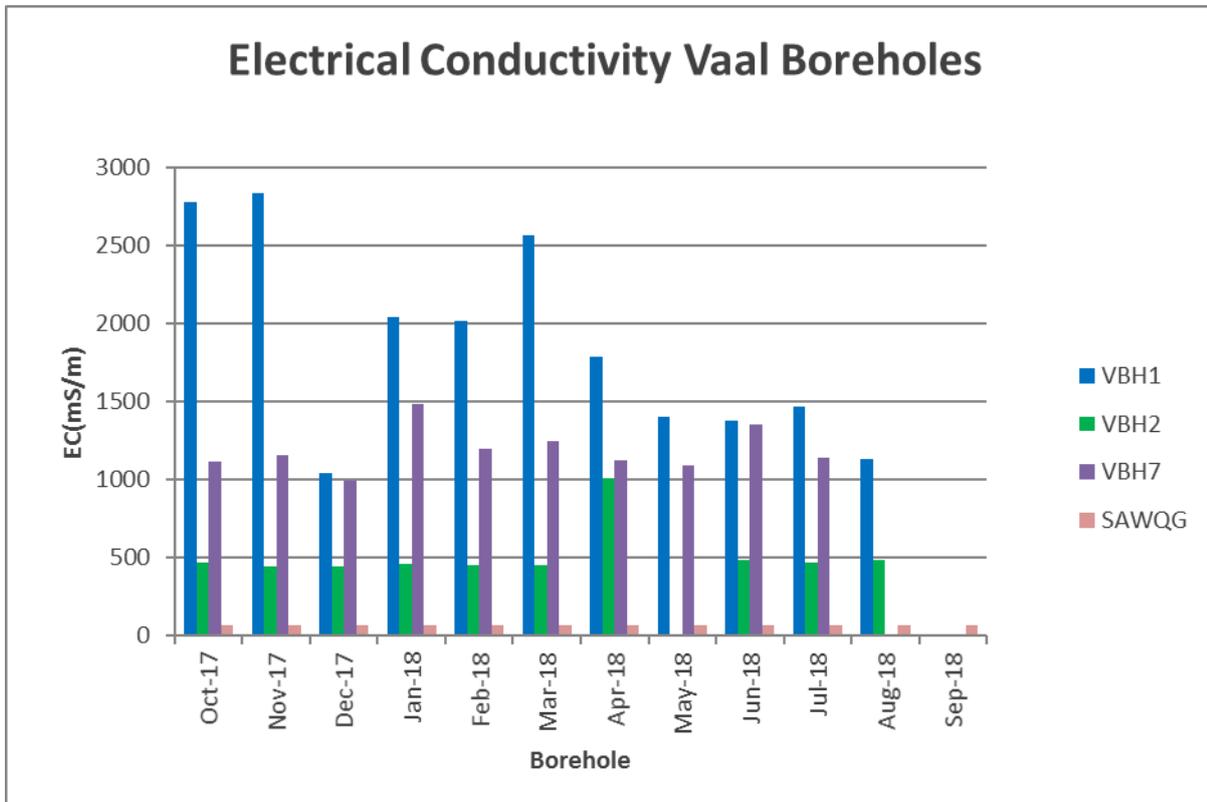


Figure 3: Electrical Conductivity measurements recorded at boreholes

4.2.1.2 Sulphate (SO₄)

The Auditor sampled used data from VBH1, VBH6 and VBH7; which are the three boreholes with elevated sulphate levels (in comparison to the other boreholes).

The period from October 2017 to March 2018 reflected a stable trend in sulphates; however, from April 2018 until September 2018 VBH1 (which is a downstream sample) sulphate levels decreased significantly.

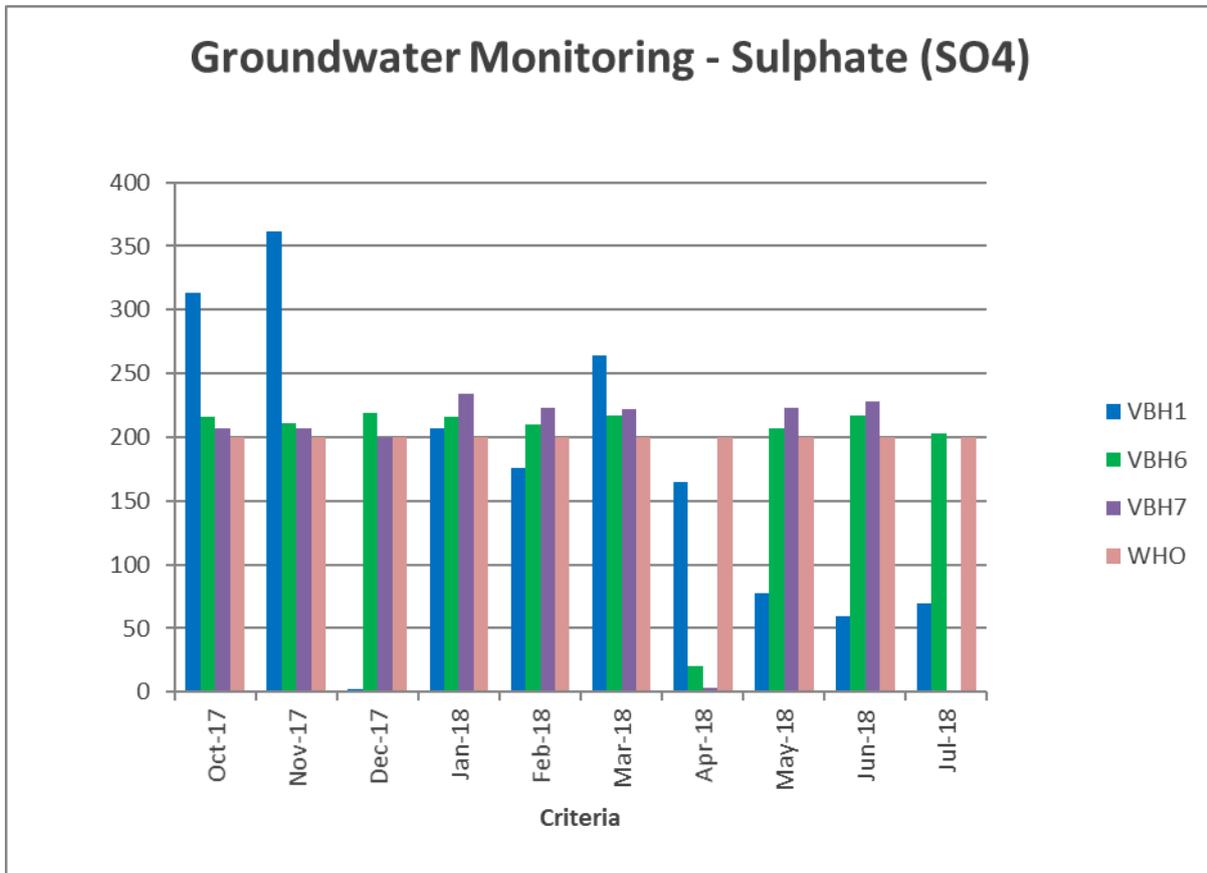


Figure 4: Sulphate measurements recorded at boreholes

4.2.1.3 pH

The Auditor sampled data from VBH1, VBH6 and VBH7. Based on the available data it is evident that pH levels fall within the compliance range as per Figure 5 (below).

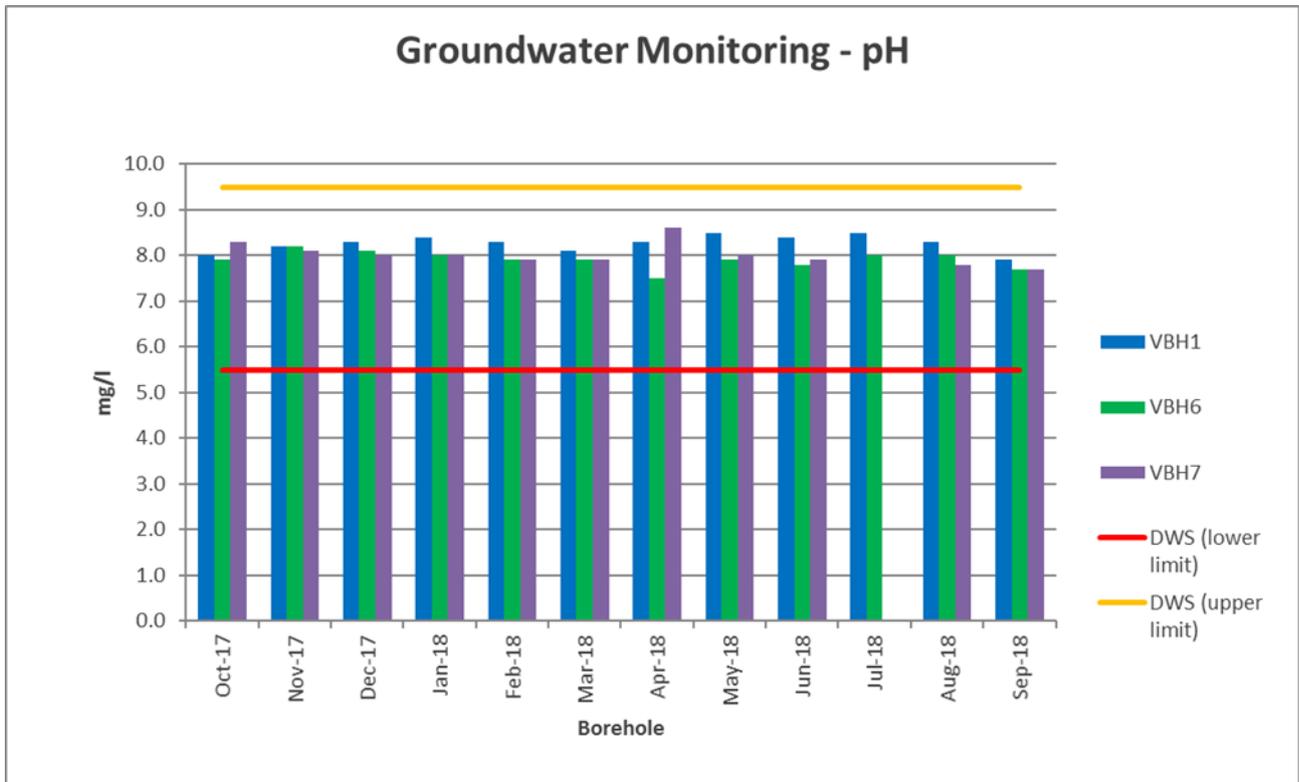


Figure 5: pH measurements recorded at boreholes

4.2.1.4 Dissolved Oxygen (DO)

Due to procurement processes AMSA only managed to acquire the instrumentation and laboratory services for analysing DO in April 2018.

Data is therefore only available for the months May 2018 through to September 2018.

The Auditor sampled data from VBH1, VBH6 and VBH7, as per Figure 6 (below).

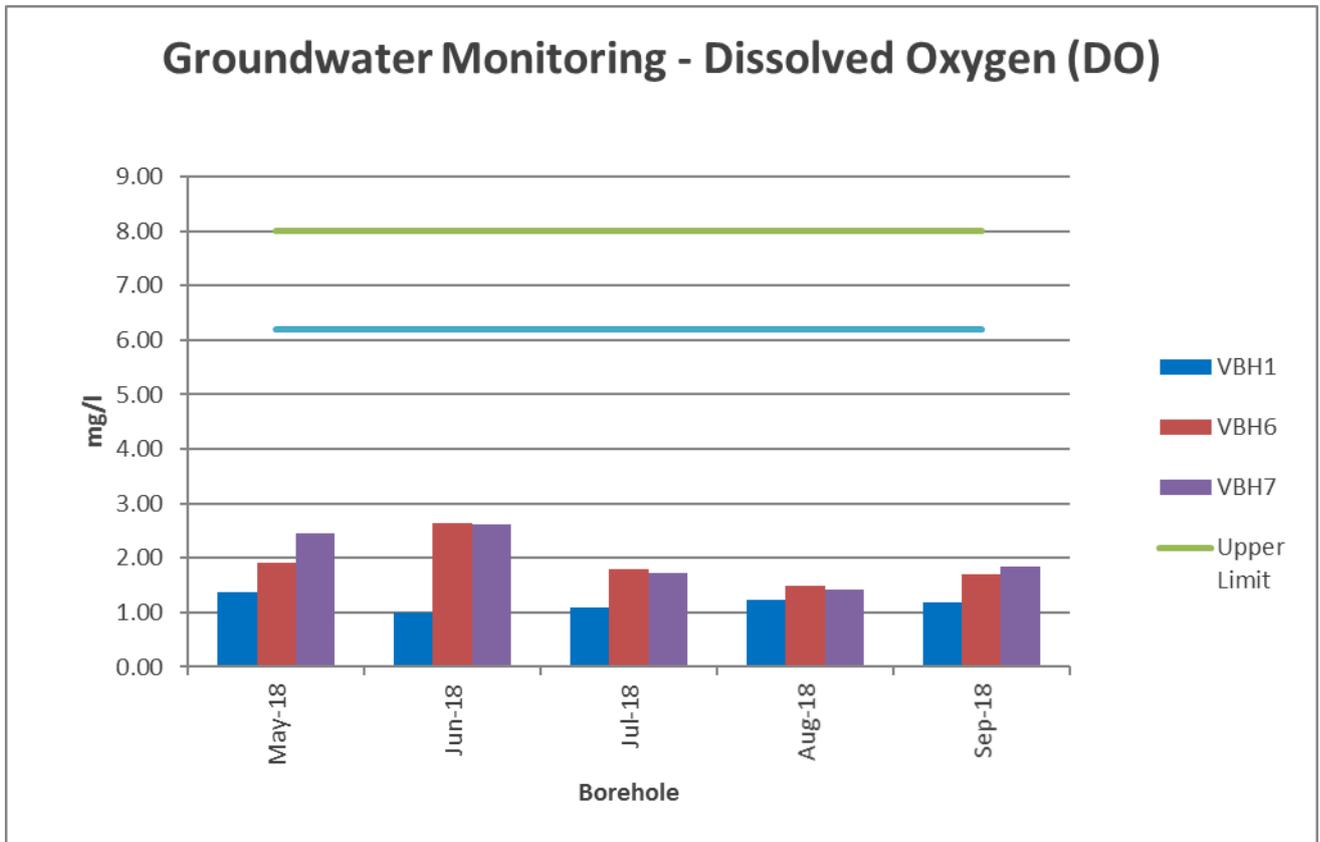


Figure 6: Dissolved Oxygen measurements recorded at boreholes

4.2.1.5 Heavy Metals

All heavy metals sampled, including Silver (Ag), Lead (Pb), Iron (Fe) and Chromium (Cr), were shown to be below detection limits.

4.2.2 Surface Water Monitoring

Surface water monitoring is being undertaken on a monthly basis along the Vaal rivers upstream (S12 A) and downstream (S12 B) of the site.

No pollutants associated with the site have been detected thus far and neither have any water quality constituents such as Total Suspended Solids indicated any negative impacts on the river. The analysis of the sample data that were provided indicated no significant increase in EC up and downstream in the river adjacent to the site (see Figure 7 below). It is therefore confirmed that the impact of the site on surface resources are insignificant.

It must be noted that a number of data sets are missing. These include for the months of: November 2017, December 2017, February 2018 and August 2018.

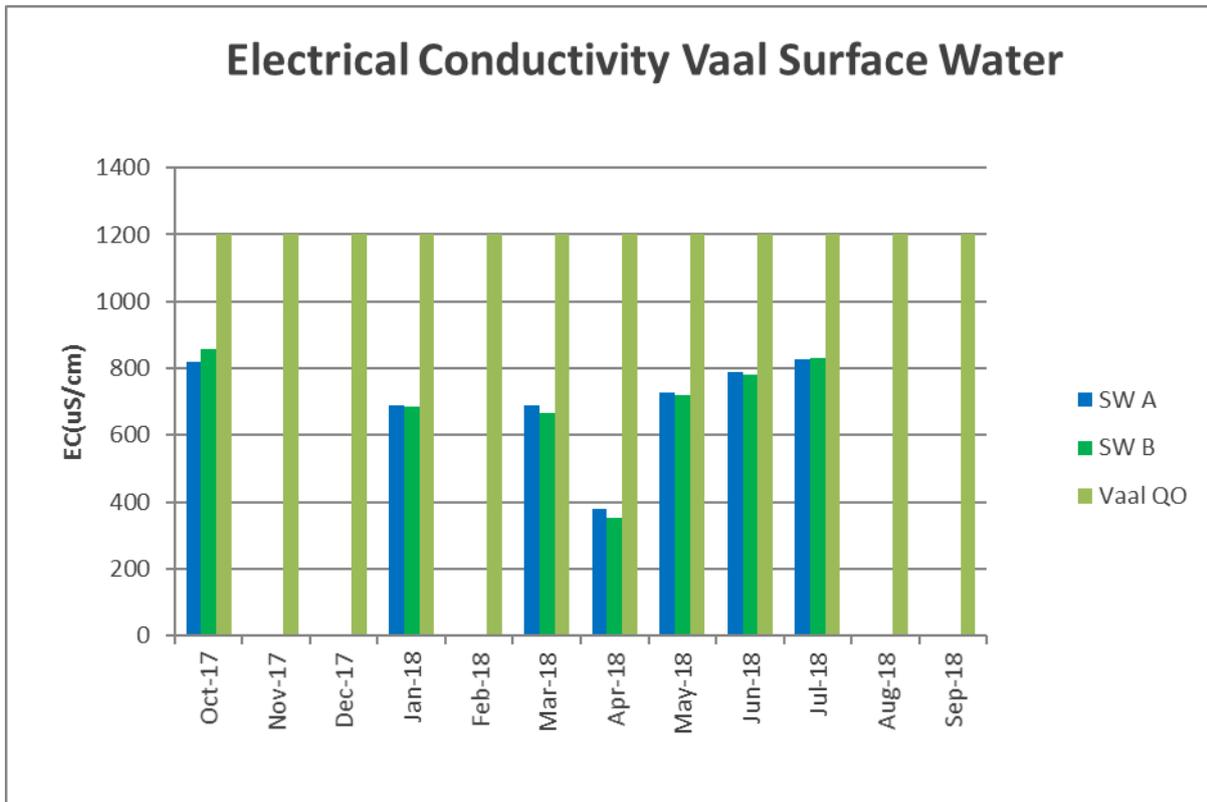


Figure 7: Electrical Conductivity measurements recorded at the Vaal River

4.2.3 Leachate Monitoring

It was indicated to the auditor that the site was constructed without a leachate capturing and management system in place. The reason for this being that the relevant Environmental legislation and best practice guidelines for waste disposal was not in place during the construction of the Vaal Waste Dump Site which occurred in the 1950s.

On the day of the audit some leachate was visible; however, no monitoring results are available for the current reporting period. AMSA claim that there is not enough leachate available on any given day to sample.

The representative from AMSA indicated to the Auditor that this matter has been raised with the Department (GDARD) and is in the process of being discussed to find a viable solution. It is recommended that a viable solution is agreed upon by both parties (i.e. AMSA and GDARD). The Auditor is however of the opinion that remediation of the site will assist with the reduction of contamination.

4.2.4 Remediation Progress

The rehabilitation and remediation process commenced in May 2018 as Phase 2 of the works. This includes shaping of the waste body to manage surface water, prior to capping.

It is recommended that AMSA submit an updated project schedule GDARD that relates to the Phase 2 of the rehabilitation works.

4.2.5 Success and Stability of Capping Layers

During the site audit it was noted that the side slopes of the disposal site have been successfully capped and vegetated with proper storm water controls being implemented. No erosion was noted and it was evident that the side slopes are in a stable condition. It was also noted that the vegetation had established itself effectively resulting in successful management of runoff by the storm water drainage system.

4.2.6 Compliance with EMPr and Operational Plan

The EMPr and Operational Plan are being kept on site; however only the EMPr is considered applicable to the current works.

A number of the findings from the audit relate to conditions found within the planning and construction phases related to the rehabilitation works. These include:

- Solid Waste Management;
- Fire Control & Emergency Procedures;
- Accidental Leaks & Spillages (more particularly spill response material and equipment); and
- Dust Management.

For further details refer to Sections 4.3 and 5 of this report.

4.2.7 Compliance with Amended Rehabilitation Plan (as approved)

The Amended Rehabilitation Plan is being kept on site.

One finding relates to the requirements contained within this document, namely:

- Restriction of Access to Site.

For further details refer to Sections 4.3 and 5 of this report.

4.2.8 Compliance with Variation of the Compliance Notice

The Variation of the Compliance Notice is being kept on site.

Although AMSA undertake all the monitoring of ground water as required by the Variation of the Compliance Notice, only two (2) parameters are analysed at a laboratory using a SANAS accredited methodology; these are Iron (Fe) and Chromium (Cr). The balance of the parameters tested are specifically excluded in the SANAS Schedule of Accreditation for the respective laboratories.

Quarterly monitoring audit reports also do not accurately reflect the monthly monitoring that was undertaken (noted as an error rather than an omission).

For further details refer to Sections 4.2.1.1, 4.3 and 5 of this report.

4.2.9 Legislative Status Quo

The Vaal Dump Site has been in existence and operational since the 1950's. The history and documentation relating to the site was reviewed during the audit. It is important to note that the following can be summarised:

Table 7: Summary of Legal Processes

Legislation	Comments
Pre - Environmental Conservation Act (1989)	No environmental legislation was in force when the dump site was constructed prior to 1989
Environment Conservation Act (Act 73 of 1989) promulgation	As per Section 20(1) of the ECA, no person shall establish, provide <i>or operate</i> any disposal site without a permit issued by the Minister of Water Affairs. AMSA, based on a legal opinion obtained from <i>Wim Trengove SC and Nadine Fourie for N Kirby of Werksmans</i> , is of the view that a Section 20 ECA permit was never required even though the previous audit reports indicated that such application was made in 2005. Historical evidence also indicates that the application was never made to the Department and therefore, no application is before the Department to make a decision. The dump site has been in <i>operation</i> prior to 1989, and the retrospective application of ECA is contested by AMSA based on the opinion.
National Environmental Management Act (Act 107 of 1998)	The ECA was repealed by NEMA coming into effect in 1998 except for Section 20. AMSA applied and was issued with an exemption in 2004 in terms of the Environment Conservation Act (Act 73 of 1989) – EIA Regulations (as amended in 2002). The exemption approved the upgrading of an existing stream diversion and the progressive rehabilitation of the Vaal Dump Site which fell within the ambit of sub-regulations 1 (j) and 8 of the GN R.1182 (as amended) promulgated under Section 21 of the ECA.
Compliance Notice issued by GDACE in October 2007	AMSA commenced with rehabilitation and remediation (as per the exemption) on site but was issued with a Compliance Notice in October 2007. All activities on site were halted by AMSA as per the Compliance Notice. A variation to the Compliance Notice was received on 1 February 2018 which inter alia indicated that rehabilitation on site can commence again.

	<p>An amended Rehabilitation Plan was requested by the Department and submitted to GDACE as well as the then “DEAT” in 2008. The plan was approved by GDACE in 2011. All magnetite was removed from site as required by the Directive. No approval of the Plan has however been received to date by DEA.</p>
<p>National Environmental Management Waste Act (Act No 59 of 2008)</p>	<p>The NEM:WA came into force on 10 March 2009. In the application of this Act, there are two scenarios:</p> <p><u>Applicant is not in possession of an ECA Waste Permit</u></p> <p><i>According to Section 80(4) of the Act “A person operating a waste disposal facility that was established before the coming into effect of the Environment Conservation Act and that is operational on the date of the coming into effect of this Act may continue to operate the facility until such time as the Minister, by notice in the Gazette, calls upon that person to apply for a waste management licence.”</i></p> <p><u>Applicant is in possession of an ECA Waste Permit, or has applied for such</u></p> <p><i>According to Section 81(1), despite the repeal of Section 20 of the ECA by NEM:WA, a permit issued in terms of that section remains valid subject to subsections (2) and (3).</i></p> <p><i>Subsection 81(2) specify that the holder of a permit issued in terms of Section 20 of the ECA must apply for a waste management license in terms of the NEM:WA when required to do so by the licensing authority</i></p> <p><i>Subsection 81(3) specify conditions under which a permit issued in terms of Section 20 of ECA lapses</i></p> <p><i>Subsection 81(4) provides that should a permit issued in terms of Section 20 of the ECA lapses [for example in the case when a holder of a permit did not apply, within the stipulated period as per Section 81(2) for a waste management license], the permit holder remains liable for taking all measures that are necessary to ensure that the cessation of the activity is done in a manner that does not result in harm to health or the environment.</i></p>

81(5) During the period for which a permit issued in terms of section 20 of the ECA continues to be valid, the provisions of NEM:WA apply in respect of the holder of such a permit, as if that person were the holder of a waste management licence issued in terms of the NEM:WA.

81(6) Despite the repeal of section 20 of the ECA by this NEM:WA, an application for a permit made in terms of section 20 of the ECA that was not decided when section 81 of the NEM:WA took effect, must be proceeded with in terms of NEM:WA as if that application were an application for a waste management licence in terms of NEM:WA

AMSA, based on the legal opinion obtained from *Wim Trengove SC and Nadine Fourie for N Kirby of Werksmans*, is of the opinion that a Section 20 permit was not required at the time the ECA was promulgated. The provisions of Sections 80 and 81 above therefore do not apply based on the opinion received.

4.2.9.1) EIA Regulations 1998 (as amended in 2002)

It is evident that AMSA applied for the applicable activities in force at the time given the scope of works and obtained exemption approval from GDACE. A Directive was however issued by GDACE to AMSA in October 2007 and since then all steps provided in Section 2 of the Directive have been taken by AMSA. This included submission of an amended rehabilitation plan to GDACE and the DEA on 7 January 2008, which was subsequently approved by the GDARD (a successor in title of GDACE) on 3 July 2011.

On 9 June 2011 the DEA refused in writing to approve the amended rehabilitation plan on the basis that AMSA needs to apply for a waste management license to rehabilitate and close the site, a view which is contested by AMSA as explained in 8.2.8.2 below.

4.2.9.2) Waste Management

Previous audit reports alluded to the submission of a Section 20 ECA permit application by AMSA in 2005, however historical evidence indicates that the application was never made to the Department and therefore, no application is before the Department to make a decision.

It is AMSA's view, based on the legal opinion obtained from Wim Trengove, that a Section 20 ECA permit did not have to be applied for / and obtained from DWAF for the operation of the Vaal Dump site when ECA was promulgated in 1989. This view is also shared by the National Prosecuting Authority (NPA) after a review of the said legal opinion. The aforementioned opinion therefore renders the provisions of Section 80(4) and 81(6) of the NEM:WA as not being applicable.

A response letter was sent to the National DEA by ENS incorporated (acting on behalf of AMSA) on 14 February 2012 highlighting to the Department the viewpoint that a Waste Management license is not

required and will not be applied for due to the interpretation of statutes in this regard and common law provisions such as retrospective application.

AMSA has consulted / and is at the moment in consultation with the competent environmental authorities (GDARD & DEA) in this regard.

4.2.9.3) Water Management

DWAF has confirmed in January 2008 that a Water Use License is not required for the altering of beds or banks of a watercourse.

As per the findings of this audit report, groundwater pollution was however identified at the site. The current status quo in this regard has to be addressed as a matter of urgency to prevent further pollution. Consultation with Regional DWS is required.

4.3 Photo References

Table 8: Summary of Findings

Photos	Description
	<p>General Observation</p> <p>Photo 1:</p> <p>The audit at AMSA’s Vaal Waste Dump Site was undertaken on Monday 29 October 2018 by Bjorn Hoffmann (as the Independent External Environmental Auditor).</p> <p>Auditees from AMSA included: Mr Sham Jagathlal And Mr Jeremiah Mnisi.</p> <p>AMSA were observed to be undertaken earthworks related to the Phase 2 Rehabilitation Works.</p>
	<p>Non-Compliance: Waste Management</p> <p>Photos 2 – 7:</p> <p>On the day of the audit, the Auditor observed that waste (rubble material including scrap metal) was being imported into the Vaal waste dump site by a tractor and trailer.</p> <p>The waste material was tipped from the trailer (Photo 2), pushed into the hole (where the magnetite was previously located) by the front end loader (Photo 3) and then covered over with material from the <i>in-situ</i> stockpile by the front end loader (Photos 4 & 5).</p> <p>Unauthorised local waste scavengers were on site and attempted to collect scrap metal as it was being tipped and covered over (Photo 7).</p>
	<p>In follow up e-mail correspondence with Mr Sham Jagathlal of AMSA on 30 October 2018, it was confirmed that the finding on the day of the audit was not planned and was in fact strictly prohibited, and therefore was stopped immediately. It was admitted that there was some rubble tipped at the Vaal waste dump site that had been generated in the cleaning process at the meltshop as they prepared to re-open in January 2019. It was suggested that the Project Manager for Meltshop restart may have taken it upon himself to use the waste material as backfill.</p>

Photos	Description
	<p>Mr Sham Jagathlal confirmed in a further follow-up e-mail (on the same day), that besides stopping the activity, AMSA will ensure all waste imported from the Meltshop will be removed and appropriately disposed of at a licenced landfill site.</p> <p>This finding is in non-compliance to the requirements of the EMPr that states: <i>No site burying or dumping of any waste materials shall occur</i> (Section 2.5 p5 of the approved EMPr).</p>
	<p>The Auditor is of the opinion that AMSA acted responsibly by stopping an unplanned, unauthorised and previously unknown activities immediately. As long as proof of safe disposal of the imported material can be provided, in the form of weigh bridge slips, then the finding can be considered closed by the Department.</p>
	<p>Additional environmental awareness training is also recommended for all staff involved with the Meltshop restart and Phase 2 Rehabilitation works at the Vaal Waste Dump Site. This training must include reminders about acceptable waste management practices and the consequences for any non-compliance to the requirements from the authorisations received from the Department.</p>
	

Photos	Description
 <p>8</p>	<p>General Observation: Waste Management</p> <p>Photo 8:</p> <p>Some re-usable and/ or recyclable waste is still being unearthed during the Phase 2 Rehabilitation Works. This includes the uncovering of anodes, as pictured.</p>
 <p>9</p> <p>Before shaping</p>	<p>General Observation: Rehabilitation</p> <p>Photo 9:</p> <p>The rehabilitation and remediation process commenced in May 2018 as Phase 2 of the works. This includes shaping of the waste body to manage surface water, prior to capping.</p>
 <p>10</p> <p>After shaping</p>	
 <p>11</p>	

Photos	Description
<p>12</p> 	<p>Partial Compliance: Access Control</p> <p>Photos 12 & 13:</p> <p>AMSA has attempted to restrict access to the site in some areas by placing berms and excavating trenches along the perimeter of the site; this as gates and fencing is routinely stolen.</p> <p>According to the approved Amended Rehabilitation Plan, AMSA must erect a fence around the perimeter of the site, erect signs along the fence at intervals of no greater than 100m and regularly inspect fencing for any breach or damage.</p> <p>This finding has been noted as a partial compliance.</p>
<p>13</p> 	
<p>14</p> 	<p>Partial Compliance: Borehole Monitoring</p> <p>Borehole monitoring is currently being undertaken on a monthly basis. Significantly high contamination of groundwater was found when comparing upstream and downstream borehole results. Remediation of the site will greatly reduce any impacts and contamination of the groundwater.</p> <p>It is recommended that this groundwater contamination be reported to DWS in terms of Section 19 of the National Water Act.</p> <p>Findings related to:</p> <p>(1) although AMSA undertake all the monitoring of ground water as required by the Variation of the Compliance Notice; only two (2) parameters are analysed at a laboratory using a SANAS accredited methodology; these are Iron (Fe) and Chromium (Cr).</p> <p>The remaining elements, namely: Silver (Ag), Lead (Pb), Total Dissolved Solids (TDS) and Dissolved Oxygen (DO), are specifically excluded in the SANAS Schedule of Accreditation for the respective laboratories; and</p> <p>(2) The EC results from VBH2 were mostly stable, with an unexplained spike in April 2018. When</p>
<p>15</p> 	

Photos	Description
	<p>cross-referencing to the Quarterly Report, the Auditor noted that no explanation was given and the values in Figure 1 in the report were in fact incorrect (based on the range depicted on vertical axis).</p> <p>This seems to be the result of trying to combine EC and SO4 results on the same graph.</p> <p>These findings have been noted as partial compliances.</p>
<div data-bbox="199 824 279 875" style="border: 1px solid black; padding: 2px; width: fit-content;">16</div> 	<p>General Observation: Stormwater Drainage and Water Channel</p> <p>Photos 16 & 17:</p> <p>Sufficient and effective stormwater drainage and water channels were noted to have been installed throughout the site.</p>
<div data-bbox="199 1176 279 1227" style="border: 1px solid black; padding: 2px; width: fit-content;">17</div> 	

Photos	Description
<p>18</p> 	<p>General Observation: Success and Stability of Capping Layers</p> <p>Photo 18:</p> <p>Capping material has been stockpiled on site (as pictured).</p> <p>The capping of sideslopes has been completed and these are stable (refer to Photo 16 above).</p>
<p>19</p> 	<p>General Observation: Seepage/ Leachate</p> <p>Photos 19 & 20:</p> <p>On the day of the audit some leachate was visible; however, no monitoring results are available for the current reporting period.</p> <p>AMSA claim that there is not enough leachate available on any given day to sample.</p> <p>The representative from AMSA indicated to the Auditor that this matter has been raised with the Department (GDARD) and is in the process of being discussed to find a viable solution. It is recommended that a viable solution is agreed upon by both parties (i.e. AMSA and GDARD). The Auditor is however of the opinion that remediation of the site will assist with the reduction of contamination.</p>
<p>20</p> 	

5 CONCLUSIONS

Of the total number of conditions imposed (61 in total), 25 criteria are not auditable and have been excluded, resulting in an auditable number of 36 criteria. The compliance summary of auditable criteria can be summarised as follows.

Table 9: Compliance summary for 2018

AUDIT CRITERIA	TOTAL FINDINGS	% PER CRITERIA	Score
FC	28/36	77.78%	112
PC	3/36	8.33%	6
NC	5/36	13.89%	0
NA	22		
RFI	3		
TOTAL COMMITMENTS AUDITABLE	36		
OVERALL AUDIT SCORE	81.94%		

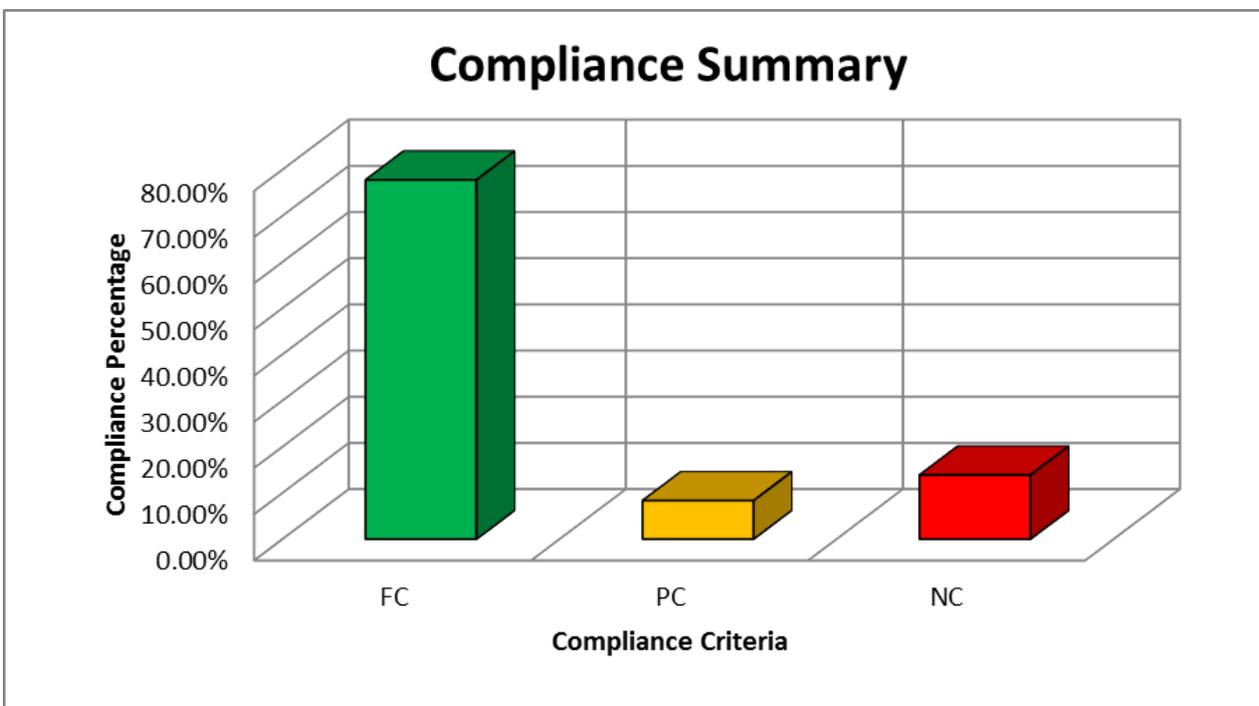


Figure 8: Auditable Compliance for 2018

The overall final audit score is **81.94%**.

Environmental compliance requires some improvement; however, this is considered easily achievable based on the relatively minor findings recorded in the audit.

There were **five (5) non-compliances** recorded during the audit. These related to:

Table 10: Summary of Non-compliances

No.	Reference Document	Condition	Finding	Significance
1.	RoD/ Exemption (Condition 3.2 i)	Detailed and up to date records must be kept of all incidents and complaints pertaining to the stream and diversion upgrade and Vaal waste dump progressive rehabilitation 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 of by the Department.	AMSA is required to capture incidents and complaints. Details that must be captured include the nature of complaints, how they were addressed and details related to preventative actions. Although it was acknowledged during the audit interview process that a complaint had been received from the Riviera Aquatic Club, related to dust during the rehabilitation works; this was not captured formally within the Complaints Register.	High
2.	EMPr (Section 2.5)	No site burying or dumping of any waste materials shall occur. The contractor shall provide a sufficient number of weatherproof bins, with lids, to store the solid waste produced on a daily basis. All the solid waste shall be disposed of at an approved landfill site	On the day of the audit, the Auditor observed that waste (rubble material including scrap metal) was being imported into the Vaal waste dump site by a tractor and trailer. The waste material was tipped from the trailer, pushed into the hole (where the magnetite was previously located) by the front end loader and then covered over with material from the in-situ stockpile by the front end loader. Unauthorised local waste scavengers were on site and attempted to collect scrap metal as it was being tipped and covered over. In follow up e-mail correspondence with Mr Sham Jagathlal of AMSA on 30 October 2018, it was confirmed that the finding on the day of the audit was not planned and was in fact strictly prohibited, and therefore was stopped immediately. It was admitted that there was some	High

			<p>rubble tipped at the Vaal waste dump site that had been generated in the cleaning process at the meltshop as they prepared to re-open in January 2019. It was suggested that the Project Manager for Meltshop restart may have taken it upon himself to use the waste material as backfill. Mr Sham Jagathlal confirmed in a further follow-up e-mail (on the same day), that besides stopping the activity, AMSA will ensure all waste imported from the Meltshop will be removed and appropriately disposed of at a licenced landfill site.</p> <p>The Auditor is of the opinion that AMSA acted responsibly by stopping an unplanned, unauthorised and previously unknown activities immediately. As long as proof of safe disposal of the imported material can be provided, in the form of weigh bridge slips, then the finding can be considered closed by the Department.</p>	
3.	EMPr (Section 3.1)	The contractor shall ensure that there is basic fire fighting equipment available on site at all times. The fire fighting equipment will include rubber beaters and at least one fire extinguisher.	On the day of the audit no basic fire fighting equipment was available on site.	Low
4.	EMPr (Section 3.2)	The contractor shall ensure that his employees are aware of the procedure for dealing with spills and leaks. The contractor shall ensure that the necessary materials (i.e. absorbent materials) and equipment for dealing with spills and	On the day of the audit no materials (i.e. absorbent materials) and equipment for dealing with spills and leaks was available on site.	Low

		leaks is available on site at all times. The quantities of such materials shall be able to handle a minimum of 200 litres of hydrocarbon liquid spill.		
5.	EMPr (Section 3.3)	To minimise the nuisance impact on surrounding communities of dust generation during reshaping and capping of the dump-site, the contractor shall conduct routine spraying of the dump-site and stock piles of cover material.	No routine spraying of the dump-site and stock piles of cover material is undertaken on site to prevent dust nuisance. This is noted as concerning as during the interview process it was established that a complaint was received from the nearest sensitive receptor (the Riviera Aquatic Club, which is located between the site and the Vaal River). Fortunately, activities have since move further away from the Riviera Aquatic Club, and on the day of the audit dust levels did not seem to be significant. It was also established that no dust monitoring is undertaken on site; however, a dust bucket belonging to a nearby mine has been placed at the Riviera Aquatic Club. Data may therefore be available that relates to the activities at the Vaal Waste Dump Site.	¹ Low

There were **three (3) partial compliances** recorded during the audit. These related to:

Table 11: Summary of Partial Compliances

No.	Reference Document	Condition	Finding	Significance
1.	Variation of Compliance (Item b) of Notice	Monthly monitoring of the ground water must be conducted to assess the levels of pollution throughout the duration of the rehabilitation process. The elements monitored must include water quality	Although AMSA undertake all the monitoring of ground water as required by the Variation of the Compliance Notice, only two (2) parameters are analysed at a laboratory using a SANAS accredited methodology; these are Iron (Fe) and Chromium (Cr).	High

¹ Presently considered low primarily based on the proximity of the works to the nearest sensitive receptor.

		parameters such as heavy metals [Silver (Ag), Lead (Pb), Iron (Fe) and Chromium (Cr)], pH, Total Suspended Solids (TDS) and Dissolved Oxygen (DO).	The remaining elements are specifically excluded in the SANAS Schedule of Accreditation for the respective laboratories.	
2.	Variation of Compliance Notice (Item d)	The monitoring report submitted must reflect the monthly data collected in each monitoring borehole.	The EC results from VBH2 were mostly stable, with an unexplained spike in April 2018. When cross-referencing to the Quarterly Report, the Auditor noted that no explanation was given and the values in Figure 1 in the report were in fact incorrect (based on the range depicted on vertical axis). This seems to be the result of trying to combine EC and SO4 results on the same graph.	Low
3.	Amended Rehabilitation Plan (Section 5.1.1)	AMSA must erect a fence around the perimeter of the site, erect signs along the fence at intervals of no greater than 100m and regularly inspect fencing for any breach or damage.	AMSA has attempted to restrict access to the site in some areas by placing berms and excavating trenches along the perimeter of the site; this as gates and fencing is routinely stolen.	Medium

Recommendations related to the closing out of findings include:

- (1) AMSA must formally capture all complaints received. Details pertaining to the nature of the complaint/s, how they were addressed and details related to preventative actions must also be captured. The external auditor must be provided with all these details upon request.
- (2) Proof of safe disposal of the imported material from the Meltshop restart must be provided to the Department (this in the form of weigh bridge slips from a licenced landfill site). Additional environmental awareness training is also recommended for all staff involved with the Meltshop restart and Phase 2 Rehabilitation works at the Vaal Waste Dump Site. This training must include reminders about acceptable waste management practices and the consequences for any non-compliance to the requirements from the authorisations received from the Department.
- (3) AMSA must ensure that there is basic fire fighting equipment available on site at all times. The fire fighting equipment must include rubber beaters and at least one fire extinguisher.
- (4) AMSA must ensure that the necessary materials (i.e. absorbent materials) and equipment for dealing with spills and leaks is available on site at all times. The quantities of such materials must be able to handle a minimum of 200 litres of hydrocarbon liquid spill.
- (5) AMSA must conduct routine spraying of the site and stock piles of cover material. It is also recommended that dust monitoring be undertaken to ensure that dust is being managed and any mitigation measures implemented are effective. Furthermore, should any trucks be utilised in the future, AMSA is reminded that these must be covered to limit the amount of dust generated when transporting material on or to site.

- (6) AMSA must utilise SANAS accredited laboratories for each water quality parameter that is required to be tested.
- (7) It is recommended that quarterly monitoring reports submitted to the Department accurately reflect the monthly data collected in each monitoring borehole. It is also recommended that the monitoring data be interpreted by a geohydrologist.
- (8) AMSA must erect a fence around the perimeter of the site, erect signs along the fence at intervals of no greater than 100m and regularly inspect fencing for any breach or damage.

Royal HaskoningDHV trust that value was added *via* the audit report at hand and during the audit itself in identifying areas for improvement and in recommending a number of corrective actions that will serve to improve the overall environmental compliance standards within the site.

Recommendations made in this report should be considered and implemented to support continual environmental improvement.

