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ENVIRONMENTAL MANAGEMENT







Vanderbijlpark Works

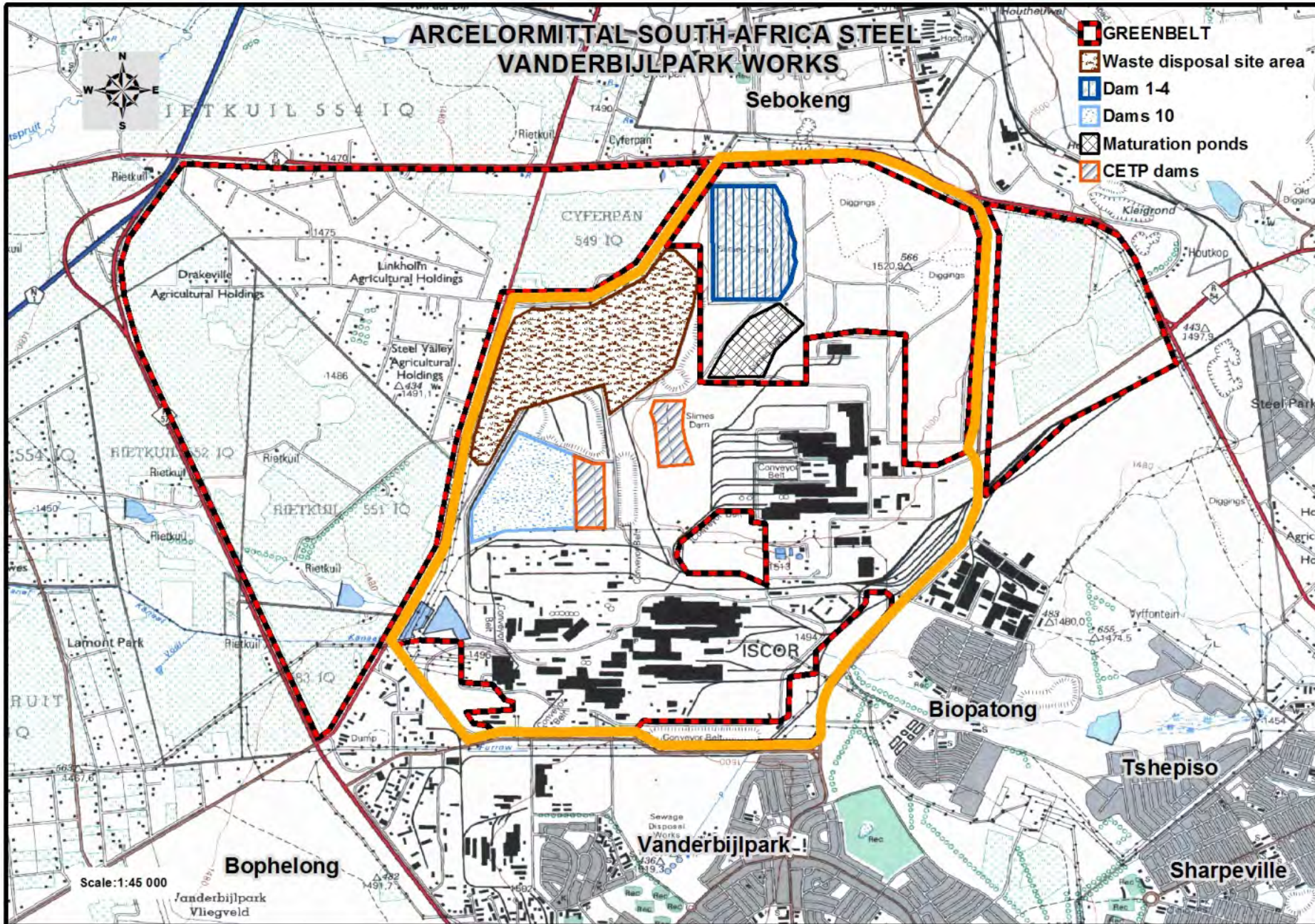
**Rehabilitation of historical source areas
and future mitigation projects**

December 2014

ARCELORMITTAL-SOUTH AFRICA STEEL VANDERBIJLPARK WORKS

Sebokeng

-  GREENBELT
-  Waste disposal site area
-  Dam 1-4
-  Dams 10
-  Maturation ponds
-  CETP dams



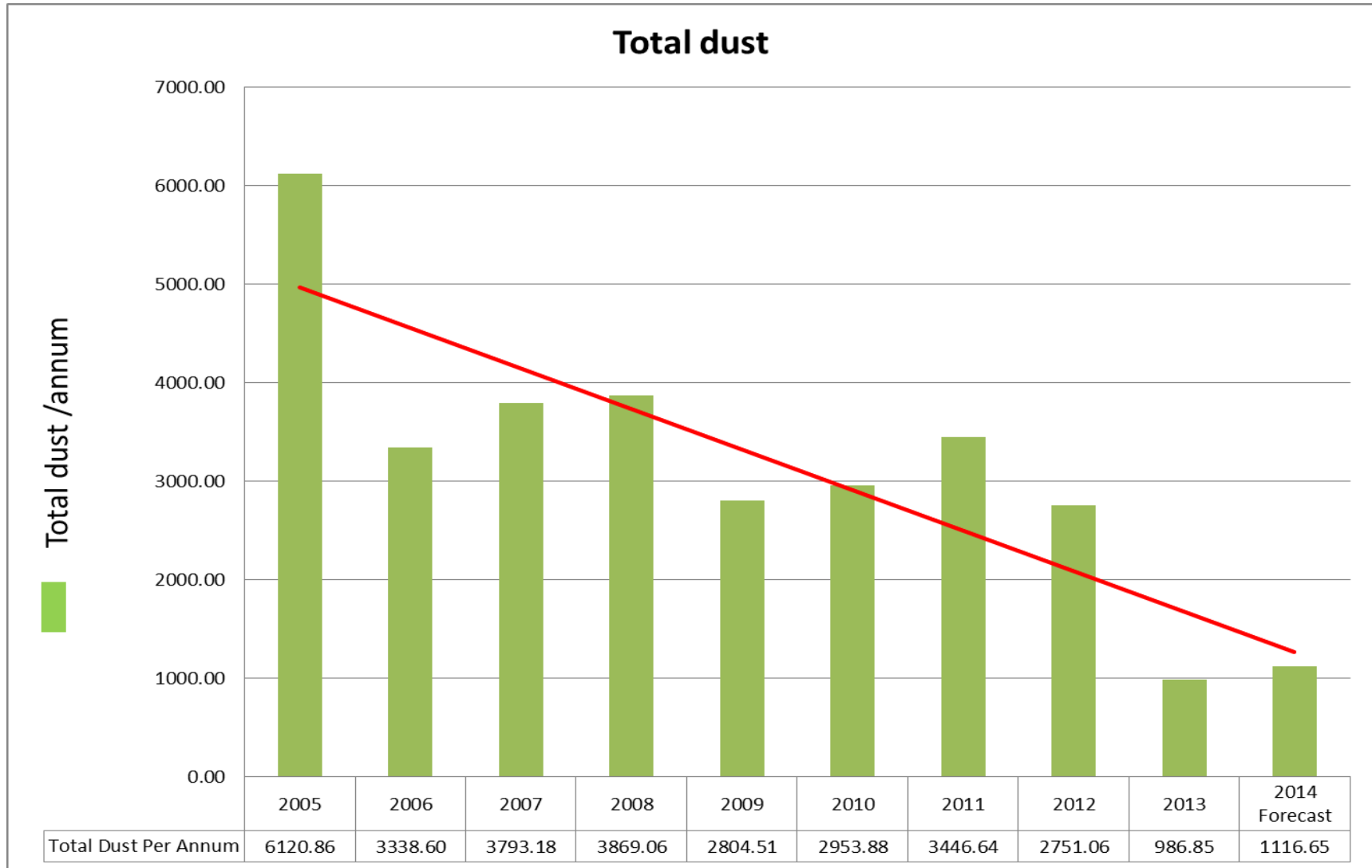
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Vanderbijlpark
Vliegvel

Air Quality Emission reductions from point sources



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Air Quality Emission reductions



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Projects implemented regarding emission reduction of 82%

- 2005 to 2006: The reduction from 2005 was as a result of the stoppage of dosing with Spent Pickling Liquor (SPL) at the Sinter Plant in 2006.
- 2006 to 2007: Increase in total emissions due to introduction of Direct Reduction, Kilns 5 and 6.
- 2007 to 2008: The slight variation between 2007 and 2008 is attributed to plant operations and improved quantification of emissions. The coke oven stack emissions were, for example, monitored in opacity percentages which were converted to mg/Nm³ readings in the inventory. The conversion factor influences the calculation significantly and was refined from 2008 onwards.
- 2008 to 2009: This reduction was mainly due to the reduction of Sinter plant dust emissions (operational changes), taking out of operation Coke Battery #1, general improvement in performance of abatement equipment, and lower production levels due to the global economic recession.
- 2009 to 2011: Increased production from 2009 – 2011 constituted the slight increase of total dust emissions.
- 2010: The Coke Oven Clean Gas and Water project was implemented
- 2011 to 2012: The Sinter bag house is one of various projects that were commissioned in 2012 as part of our planned improvements. The particulate emissions from the Sinter main stack were the single biggest point source on site. The installation of abatement equipment to capture emissions from the stack was finalized and commissioned in October 2012. This project reduced the dust load for the Sinter plant by 93%.
- 2012: Installation of bag house at the Foundry to supplement removal of particulates from emissions
- 2012 to 2013: Lower emissions due to: Shut-down of Coke Battery #3; reduced production due to the OSM fire; BF D off due to OSM fire, EAF only operational for 45 days in 2013

Air Quality Focus areas



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Fugitive Emissions

- Raw material handling
 - Tippler stations – investigate enclosure of areas and improve extraction system
 - Sinter mixing bed – investigating to spray cover layer onto bed
 - Conveyer systems – minimise upset condition to prevent spillages
 - Waste handling – enclosed tanker has been delivered. Subsequent to investigation the conversion of railway wagons into tanker principle. Upgrade pugmills and install socks at discharge points
 - Unpaved roads (160 000m²) – Investigate two possibilities to improve dust suppression:
 - Dust suppression onto roads – project completed
 - BOF/Kiln dust as a concrete for unpaved roads
 - Paved roads – ongoing sweeping with vacuum machine
 - Install curbing alongside paved roads
 - Open areas
 - Have vegetated approx. 470 hectares of open areas
 - Plant fugitive dust – improve dust extraction points and efficiency

General focus points continue



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Waste Management

- Reduction of disposal cost to Holfontein
 - 2012 – 12465 tons
 - 2013 – 6632 tons (R 7 582 900 saving)
 - 2014 – 5451 tons (R 1 653 400 saving)
- Other waste minimisation projects
 - BOF/DR waste streams to be converted into concrete for road application
 - BOF E & F reclamation
 - Investigate briquetting for recycling of waste as a input material

Ground water management

- Remediation of groundwater impact sources (Maturation ponds, CETP, old Disposal site)
- Continue to pump and treat through seepage drains – Seepage drains at the old disposal site and south eastern corner. Cost effective remediation

Storm water management

- Busy with Water Use License Review
- Finalising cleaning and sloping of areas to improve storm water flow management

Process water management

- Addressing non Zero Effluent discharge status

4. Environmental impact areas – associated timeframes with Risk Assessment Report 2003



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Management area	Time schedule	Current status quo	Target date (depending on funds approval)	
Perimeter & surrounding areas	2005	Some cleanups	Ongoing	✓
Existing disposal site	2018	80% completed	Final phase 2017 and completion 2018	✓
Dam 10	2010	Completed in 2012. Deviated from MP original suggestion.	Completed 2012	✓
S/E slag and open veld areas	2013	Completed 80%. Cleared southern site area and removed historical ramp 2013.	2014 – delay due to reusable material still lying in area	✗
Overall CRMF	2013	Completed 2014.	Completed	✓
Rietkuilspruit & Rietspruit canal	2012	Completed 2011	Ongoing erosion management	✓
Maturation ponds	2017	Total dam area - 80% completed. Dam 2 & 3 completed.	Dam 1 - 2015	✓
TETP & MTP area	2007	Completed 2005. Ongoing challenges to maintain Zero Effluent Discharge	2015 upgrade of MTP	✓
Dams 1-4	2020	Dam dried out. Groundwater assessment completed. Revised remediation plan to be implemented 2015	2015 – awaiting MTP upgrade	✓
CPA	2020	Closure of plant		✓
Blast furnace dams	2020	Completed 2012 as part of phase 2 old disposal site.	Completed	✓

4. Environmental impact areas – associated timeframes with Risk Assessment Report 2003 cont.



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Management area	Time schedule	Current status quo	Target date (depending on funds approval)	
Sludge dams	2018	CETP dam 2 – completed 2013 CETP dam 1 – 20% completed	Scheduled for 2015	✓
S/W slag area	2016	Busy with clearing of material (skulls)	Re-lined area during 2015/2016	✓
Dam 11	2023	10% completed re storm water management. Bust with slag removal to be sold.	Scheduled for 2016	✓
Processed material stockpiles	2015	Busy with construction of lined area	1 st Quarter 2015	✓
Raw materials stockpiles	2014	Completed		✓
Kiewiet area	2020	Stopped activity.	Sloping scheduled for 2015. Exclude possible remediation. Strategy needs to be confirmed after proper assessment.	✓