



NATURAL CAPITAL  
APPENDIX 2 2015



## APPENDIX 2: NATURAL CAPITAL

The information contained in this appendix is supplementary to that contained in the DRDGOLD Integrated Report 2015 which can be found on the DRDGOLD annual report suite webpage.

Twenty-first century mining is a far cry from that of the 19th and even much of the 20th century. Today, mining companies are required by law to rehabilitate the land on which they work. Furthermore, any rehabilitation must comply with pre-determined standards – ensuring the land is ready for development or an alternative use.

In DRDGOLD's case, the nature of our business is a form of rehabilitation as we retreat previously discarded material in the form of mine dumps. The vast majority of the dump material for which we have mining rights was, in fact, deposited by other companies over a period of more than 100 years. Most of these businesses have since closed their doors. This means we are sometimes called upon to address legacy issues that are not of our own making. We apply considerable effort to minimise the impact of our activities on the environment.

As the mine dumps disappear, valuable – and often centrally-located – land is released back into the economy. Meanwhile, the residue from our retreatment operations is deposited to stringent, modern standards on a consolidated footprint.

In addition to the 'rehabilitation' that takes place as part of our business activities, we also actively pursue a rehabilitation agenda on our decommissioned tailings storage facilities.

DRDGOLD is committed to the responsible use of natural resources as well as to managing its materials usage and emissions. We do this because controlling these aspects of our business ultimately reduces our costs in most instances and also reduces our environmental footprint.

Dust and water are DRDGOLD's key environmental issues and have been dealt with in the DRDGOLD Integrated Report 2015 which can be found on the DRDGOLD annual report suite webpage.

### REPORTABLE ENVIRONMENTAL INCIDENTS

Ergo had two<sup>1A</sup> reportable pipeline spillages during FY2015. The first incident was reported to the National Nuclear Regulator (NNR) and the Department of Water and Sanitation (DWS) and involved a burst pipe near Knights plant which affected a water course. The close out report has been accepted by the NNR and has been sent to DWS. The second incident was reported to the NNR and occurred near the Benoni dump. It impacted the terrestrial environment. The spill has been cleaned and is to be closed out by the NNR.

<sup>1A</sup> Limited assurance

### REHABILITATION UPDATE

We have initiated a process for closure at various sites associated with former Crown Gold Recoveries and Ergo operations. The rehabilitation of a number of sites has been completed and the necessary radiation land clearances received. Extensive closure documentation for each site has been drafted and is in the process of being submitted.

On the Crown tailings complex, long-term sustainable vegetation cover has been established. During FY2015, 10ha of the top surface of Homestead was completed and 24ha of the Crown complex side slopes.

Alien vegetation is addressed as we progress, and either actively controlled or removed.

## WORKING WITH OUR STAKEHOLDERS

DRDGOLD not only has a vast footprint, it is a shared footprint. Our operation covers hundreds of hectares and includes communities of various types. We strive to be a good neighbour and, to this end, we engage with the communities that surround our sites. We do this through ward councillors and recognised community leadership structures and often through individual and extended consultations on specific issues.

The numerous meetings, forums and consultations that took place during FY2015 included the following stakeholders:

- Communities
- Authorities and regulators
- Water catchment bodies
- Youth
- Business
- Land owners
- Development companies

### COMMUNITY INVOLVEMENT

The most obvious concern for our neighbouring communities is the dust off the tailings dams or dust caused by reclamation activities. Our aim is to be open and transparent and we hold regular formal and informal meetings to keep residents of these communities, and any other parties, informed of our rehabilitation progress.

Ergo facilitates an open forum quarterly meeting with invited stakeholders including regulators, municipalities, NGOs, community leaders and councillors to discuss the dust issue. These meetings are also open to community residents and any other I&APs. At these meetings, the dust monitoring results from the past quarter are shared and attendees may raise issues or concerns related to dust fallout. Meetings are minuted and any issues raised are followed up.

We want our communities and stakeholders to understand that we are committed to managing our environmental impact.

In addition to our plans to reduce the dust fallout within our operational footprint, these multi-stakeholder meetings also address security issues such as theft of equipment as this directly affects the effectiveness of our dust control systems.

We also arrange site visits to demonstrate our work so that stakeholders and authorities can see for themselves the vegetation that has been established and the dust control systems that are in place on the reclamation sites.

The management of natural capital entails a number of projects requiring unskilled and semi-skilled labour. As a result, the environmental department is able to recruit local community members for jobs which, although sometimes seasonal or part-time, nevertheless provide earning opportunities for some of the impoverished families living in the area.

DRDGOLD has two nurseries – one in the Crown and the other in the Brakpan area – where indigenous plants are cultivated. Indigenous plants are preferred as they are generally better adapted to the conditions on the mine dumps and require less water. Because they are local plants, they also tend to have root systems that bind the soil, preventing water run-off.

Community members are employed at these nurseries and also for the removal of alien plant species. Indigenous varieties are used to replace plants that are removed.

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To achieve our strategic objectives we deploy resources and infrastructure to:

- aligning vegetation with available water supply and ensuring an adequate and consistent water supply to irrigate vegetated areas on tailings dams, as well as sufficient watering for active dust suppression in operational areas;
- desilting return water dams and maintaining pollution control dams, including measures to protect against storm water damage;
- protecting assets against theft and vandalism;
- repairing fire damage on vegetated and rehabilitated areas;
- maintaining and repairing ramp access to tailings dams;
- containing dust from reclamation sites through watering down during windy periods; and
- containing the effect of occasional pipe column failures through immediate remediation and containment.

“We want our communities and stakeholders to understand that we are committed to managing our environmental impact ”

### MATERIALS USAGE

Electricity consumption has increased year-on-year, due to the flotation/fine-grind (FFG) circuit. Energy efficiency is a priority and new power factor correction equipment was installed this year to improve the power factor more than 98%.

Other company initiatives to minimise energy requirements include sizing pumps for maximum efficiency and the use of variable speed drives, soft starts and energy efficient motors. Electricity consumption is not expected to decrease in the foreseeable future due to the above-mentioned circuit and the new sites coming on line. These are located at some distance from the plant and require more pumping pressure.

The table below indicates energy and fuel utilisation.

Item	Unit	Year	Ergo
Electricity	MWh	FY2015	370 767 <sup>LA</sup>
		FY2014	353 159 <sup>LA</sup>
		FY2013	325 509 <sup>LA</sup>
Diesel	litre	FY2015	1 285 198 <sup>LA</sup>
		FY2014	1 542 467 <sup>LA</sup>
		FY2013	1 526 098 <sup>LA</sup>

<sup>LA</sup> Limited assurance

### EMISSIONS: SCOPE 1, SCOPE 2 AND SCOPE 3

Scope 1 (direct emissions) includes the use of fossil fuels and is measured as carbon dioxide or CO<sub>2</sub>. DRDGOLD uses fuel at its operations and is directly responsible for these as the company owns the means of combustion.

The total scope 1 emissions in FY2015 measured 3 444t<sup>LA</sup> of CO<sub>2</sub> and equivalents (FY2014: 4 134t<sup>LA</sup>).

Indirect CO<sub>2</sub> (scope 2) emissions are those generated in the production of the electricity used by DRDGOLD.

In FY2015, DRDGOLD's scope 2 emissions measured 396 882t<sup>LA</sup> (FY2014: 353 158t<sup>LA</sup>).

DRDGOLD employees are entitled to claim kilometres travelled on official business and these form the basis of our travel (scope 3) emissions.

In FY2015, DRDGOLD measured 137t of scope 3 emissions (FY2014: 121t). Air miles are unreported and are excluded from these calculations.

DRDGOLD showed an overall increase in emissions year-on-year and this is attributed to the increased electricity consumption for the additional FFG circuit. As with materials usage, we expect these figures to increase in the next few years and for the same reasons.

Electricity in South Africa is supplied by power utility Eskom, which generates most of its power at coal-fired power stations. This translates into significant indirect emissions for customers. The emission factors related to the use of Eskom power change subtly year-on-year, but reflect the actual emissions expected for that year.

#### SUMMARY TABLE OF TOTAL OF EMISSIONS (TONNES)

Measure	FY2015	FY2014	FY2013
Direct CO <sub>2</sub> (scope 1)	3 444 <sup>LA</sup>	4 134 <sup>LA</sup>	4 090 <sup>LA</sup>
Indirect CO <sub>2</sub> (scope 2)	396 882 <sup>LA</sup>	353 158 <sup>LA</sup>	325 509 <sup>LA</sup>
Travel emissions (scope 3)	137	121	146
Total CO <sub>2</sub> emissions	400 463 <sup>LA</sup>	357 413 <sup>LA</sup>	329 745 <sup>LA</sup>
NOx	1 713	1 642	1 521
SOx	3 366	2 913	2 686
VOC	7	9	9
Carbon monoxide	19	23	23
Methane	–	–	–
Particulate emissions	140	120	112

<sup>LA</sup> Limited assurance

#### PRIMARY MATERIALS USED (TONNES)

	FY2015	FY2014	FY2013
Cyanide	7 195 <sup>LA</sup>	7 527 <sup>LA</sup>	5 712 <sup>LA</sup>
Steel (grinding)	6 133	4 350	5 757
Hydrochloric acid	3 712	1 845	1 312
Caustic soda	3 878	3 407	2 721
Lime	46 316	45 145	38 463
Carbon	787	1 228	859

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### **Cyanide use**

Cyanide use and handling is strictly regulated, and the code is outlined in section 9 of the Mine Health and Safety Act.

Compliance is regularly audited both internally and externally by the regulator.

### **Spills and leakages**

Ergo has an extensive pipeline infrastructure delivering thousands of tonnes of material to the plants, and pumping the discarded residue – from which as much of the gold as is currently possible has been removed – to the tailings storage facility. Significant resources are required to adequately monitor and maintain this network.

To mitigate the risks of leakage, new pipes were installed along the route from Crown to Brakpan via City Deep, including the 27km Knights residue pipeline which was prone to failure.

A programme is in place to systematically replace pipes nearing the end of their operational lifespan.

Leaks are detected using an advanced telemetric pressure, flow-monitoring system that functions around the clock. The spill management programme involves daily security patrols along the major pipeline routes. The telemetric system measures pressure and flow variations to indicate possible leaks.

A proactive maintenance team is continually on standby to attend to any leaks. In this way, minor problems are prevented from escalating.

## **COMPLIANCE**

### **AUDITS**

The following audits took place during FY2015:

- Department of Mineral Resources (DMR) Environmental Compliance Audit for ERPM – July 2014: substantive compliance achieved.
- DMR Environmental Compliance Audit for Crown – September 2014: our practices substantively complied with the required standards.
- DMR Environmental Compliance Audit for Ergo – January 2015: our practices substantively complied with the required standards.
- External Water Use Licence Audit – April 2015: 97% score achieved.
- NNR Compliance Audit of COR57 – November 2014: 95% score achieved.

### **WATER USE LICENCES**

The status of the Ergo's integrated water use licences (IWUL) is as follows:

- the Ergo WUL has been approved;
- WUL applications for Crown, City Deep and Knights were submitted in August 2008 and are still awaiting approval. In the interim, we are legally using water under former permits;
- an internal audit of the Ergo IWUL was conducted during FY2015 as required;
- the DWS performed an audit during June 2014; an action plan was compiled and implemented based on the findings; and
- an external audit of the IWUL was conducted during FY2015 which resulted in a 97% compliance score.

## ENVIRONMENTAL MANAGEMENT EXPENDITURE

### FINANCIAL EXPENDITURE FOR FY2015

Aspect	Amount (R)
<b>Tailings complex: (vegetation, dust suppression, cladding etc.)</b>	
Crown Complex	20 309 812
Rooikraal	469 109
Brakpan	2 496 900
Daggafontein	1 717 874
<b>Reclamation sites (vegetation, dust suppression etc.)</b>	
Crown sites	1 470 177
Rehabilitation insurance expense	9 105 781
Historic spillage cleanups	5 192 509
<b>Total</b>	<b>40 762 162</b>



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