

# BIODIVERSITY MANAGEMENT

Operation	Is the operation in close proximity to area of high biodiversity or protected area?	Biodiversity study completed	Details of red data or protected species	Status of biodiversity action plan (BAP)	Strategies for addressing impact
<b>ARM Platinum Division</b>					
<b>Nkomati Mine</b>					
<p>21 Hectares were disturbed during F2016. A total of 437 hectares have been disturbed and 7 hectares were rehabilitated during F2016.</p> <p>No communities have been rehabilitated.</p>	<p>No. The mine is located among commercial forestry operations.</p>	<p>Yes.</p>	<p>No red data species.</p>	<p>In terms of the BAP, priority actions completed and in progress, include:</p> <ul style="list-style-type: none"> <li>&gt; Installation of four 1.2 metre diameter concrete pipes to ensure free flow of water and to minimise the build-up of silt at the haul road crossing is complete;</li> <li>&gt; A continuous program for removal of alien invasive plants is in place; and</li> <li>&gt; Rehabilitation of a designated waste rock area and tailings storage facilities is in progress.</li> </ul>	<p>Integration into local municipal policy and plans as well as relevant Spatial Development Plans; integration into existing Group policy and management systems, including the Biodiversity and Land Management Plan, Closure Plan and Environmental Management Plan; identification and liaison with stakeholders and neighbouring properties especially with respect to weed/invaser and erosion control action plans; post closure land use; and available budget and manpower for implementation, management and maintenance. In terms of water management, a geo-hydrological model and update of the surface water management plan and water balance were completed and calibrated during the year.</p>

BIODIVERSITY MANAGEMENT continued

Operation	Is the operation in close proximity to area of high biodiversity or protected area?	Biodiversity study completed	Details of red data or protected species	Status of biodiversity action plan (BAP)	Strategies for addressing impact
<b>ARM Platinum Division continued</b>					
<b>Two Rivers Platinum Mine</b>					
<p>No additional land disturbed during F2016, while 7 hectares were rehabilitated. The recently modified tailings storage facility (TSF) design and operational procedure favours concurrent rehabilitation. The completion and subsequent rehabilitation of the first bench will increase the extent of rehabilitated land considerably. The current estimate of land disturbed and not yet rehabilitated is approximately 183 hectares.</p> <p>No communities were resettled in F2016.</p>	<p>Yes, high biodiversity. The mine is located within the Sekhukhune Land Centre for Plant Endemism.</p>	<p>Yes – but, extended again to cover new TSF site on the farm De Grooteboom. Last field survey to be undertaken in December 2016 and final report anticipated in January 2017</p>	<p><b>Priority red data plants:</b> <i>Gladiolus</i> sp.nov, <i>Resnova</i> sp.aff.megaphylla, <i>Zantedeschia pentlandi</i> while protected fauna are cicada (<i>Pycna Sylvania</i>), <i>Dromica honesta</i>.</p> <p><b>Other conservations:</b> Important invertebrates confirmed during field work are scorpion species such as <i>Hadogenes ploytrichobothrius</i> (<i>flat rock scorpion</i>), <i>Opisththalmus gladifrons</i>, <i>Parabuthus transvaalicus</i>, <i>Uroplectes triangulifer</i> and <i>Pseudolychas</i>. A newly described protected mite species called <i>Zambedianiasp.</i> (hetrostigmae) associated with a certain spider species (inhabiting under round shaped stones that are fairly deeply buried up to 1/3 or 1/2 of their depth) called <i>Harpactrella flavipilosa</i> Ant species confirmed and potentially undescribed, collected during the invertebrate survey, include undescribed <i>Tetramonium</i>, undescribed <i>Camponotus</i>, undescribed <i>Anilmyrma</i>, possible undescribed <i>Meranoplus</i>, possibly undescribed <i>Aenictus</i>. The property is dominated by thick leafed plants, most of which occur in the Sekhukhune land centre for Plant Endemism (area of ecological importance within which Two Rivers is located).</p>	<p>The process to update the BAP, as the initial BAP emphasised on the north part of the mining right area, started in August 2014 and ended in June 2015. Two Rivers Mine is in the process of acquiring new property for its proposed new TSF site situated on the farm De Grooteboom – and as a result of this, the BAP is being expanded, again, to include the new TSF area.</p>	<p>The scope for updating the BAP, included associated impact assessment and Action Plans – to be used as environmental management tool which will also be annexed to future applications for environmental authorisations.</p>

BIODIVERSITY MANAGEMENT continued

Operation	Is the operation in close proximity to area of high biodiversity or protected area?	Biodiversity study completed	Details of red data or protected species	Status of biodiversity action plan (BAP)	Strategies for addressing impact
<b>ARM Platinum Division continued</b>					
<b>Two Rivers Platinum Mine continued</b>					
			<p><b>Woodland dominant within the property are:</b></p> <ul style="list-style-type: none"> <li>&gt; Lydenburgtia-Euclea Open Woodland – within which the protected Lydenburgtia assinoides plant specimens are dominant;</li> <li>&gt; <i>Sclerrocarya – Bolusanthus</i> Open Woodland within which <i>Sclerrocarya birrea subsp. caffra</i> (Marula tree) is dominant;</li> <li>&gt; <i>Combretum erythphyllum</i> Riverine Woodland within which Combretum specimens are dominant; and</li> <li>&gt; <i>Phragmites – Imperata</i> Marsh wherein Phragmites species are dominant.</li> </ul>	>	
<b>Modikwa Mine</b>					
<p>1.2 Hectares were disturbed during F2016. A total of 560.2 hectares have been disturbed and not yet rehabilitated.</p> <p>No communities were resettled in F2016.</p>	No	<p>Yes, the initial biodiversity study was completed in 2008. A study to update this, will be commissioned during F2016.</p>	<ul style="list-style-type: none"> <li>&gt; <i>Catha edulis</i> (Bushman's tea);</li> <li>&gt; <i>Lydenburgtia cassinoides</i> = <i>Catha transvaalensis</i> (Sekhukhune Bushman's Tea);</li> <li>&gt; <i>Sclerrocarya birrea subsp. Caffra</i> (Marula);</li> <li>&gt; <i>Searsia batophylla</i> (Red berry); and</li> <li>&gt; <i>Searsia sekhukhuniensis</i> (<i>Sekhukhuni-karee</i>).</li> </ul>	<p>The current draft BAP will be revised to include more site specific detail.</p>	<p>The BAP implementation plan is being included in current work on consolidation of various EMPRs.</p>

BIODIVERSITY MANAGEMENT continued

Operation	Is the operation in close proximity to area of high biodiversity or protected area?	Biodiversity study completed	Details of red data or protected species	Status of biodiversity action plan (BAP)	Strategies for addressing impact
<b>ARM Ferrous Division</b>					
<b>Cato Ridge Works</b>					
<p>No additional land was disturbed during F2016. A total of 150 hectares had been disturbed and not yet rehabilitated.</p> <p>No communities were resettled in F2016.</p>	<p>Protected Ngonigoni grasslands, to the south and south east of the operations.</p>	<p>Yes.</p>	<p>Protected Ngonigoni grassland.</p> <p>A biodiversity study which was undertaken indicated that none of the red data species which could potentially occur in the region actually occur on site.</p>	<p>Completed.</p> <p>A biodiversity impact study confirmed that no significant impact to the Ngonigoni grassland would be caused due to historic and current disturbance by activities such as cattle grazing. A memorandum of agreement was signed between Cato Ridge Works, the Wildlands Trust and the e-Thekwini Municipality whereby Cato Ridge Works will financially sponsor the Wildlands Trust to conserve grasslands in the Inanda Dam area.</p>	<p>Implementation of the BAP continues.</p>
<b>Machadodorp Works</b>					
<p>No additional land disturbed during F2016. A detailed contaminated land assessment was done in F2015 and the total disturbed land is 142 hectares.</p> <p>No communities were resettled in F2016.</p>	<p>Yes. The smelter is within the proposed Lydenburg Centre of Endemism.</p>	<p>Yes.</p>	<p>None.</p>	<p>The biodiversity action plan was completed in 2011. Monitoring was done during the summer of 2012 and the Biodiversity Action Plan was updated accordingly. The updated plan indicated an improvement in the ecological state in one of the four management units. The status remains the same in all four sectors in F2016. Invader species are monitored and sprayed as required to keep it under control.</p>	<p>Implementation of the BAP has been completed and monitoring continues.</p> <p>Vegetation monitoring was done in December 2015.</p>

BIODIVERSITY MANAGEMENT continued

Operation	Is the operation in close proximity to area of high biodiversity or protected area?	Biodiversity study completed	Details of red data or protected species	Status of biodiversity action plan (BAP)	Strategies for addressing impact
<b>ARM Ferrous Division continued</b>					
<b>Black Rock Mine</b>					
5.97 Hectares were disturbed during F2016. A total of 1 464 hectares have been disturbed and rehabilitation has commenced on a piece of land measuring 3 hectares in extent. No communities were resettled in F2016.	No.	Yes.	Camel Thorn ( <i>Acacia erioloba</i> ), Grey camel thorn ( <i>Acacia haeratoxylon</i> ) Shepherd's tree ( <i>Boscia albitrunca</i> ) Karoo lilly ( <i>Ammocaris coranica</i> ) and Devil's claw ( <i>Harpagophytum procumbens</i> ). The only threatened mammal species found are bats.	Completed and being implemented.	Implementation of the BAP is in progress (including the management of Alien and Invasive Vegetation). Monitoring done on a continual basis.
<b>Dwarsrivier Mine</b>					
1 Hectare was disturbed during F2016, and a total of 182 hectares of land has been disturbed and not rehabilitated.  No communities were resettled in F2016.	Yes. The mine is located within the Sekhukhune Land Centre for Plant Endemism.	Yes.	Sekhukhune Bushamn's Tea, Blue Shield Fruit, Marula and Shepherd Trees.	Completed.	The BAP is being implemented in alignment with EMP commitments.
<b>Beeshoek Mine</b>					
No additional land disturbed during F2016. A total of 621 hectares have been disturbed and not yet rehabilitated.  No communities were resettled in F2016.	No.	Partially completed. Plan to do the rest in stages due to economics.	Seven endemic and near-endemic plant species identified. Various aloes, <i>Boscia</i> trees and camel thorn trees.	There is a BAP for the current operation and the process to establish a BAP for the expanded operations, is in progress.	Continuous monitoring of impacted areas. Off set and relocation of plant in terms of the road diversion has been completed. For the Village Pit mining area, the replacement plan for protected species was implemented with limited success.
<b>Khumani Mine</b>					
3 790 Hectares disturbed and not yet rehabilitated.  No communities were resettled in F2016.	No.	Yes.		Completed.	Impact managed in terms of commitments of the EMP. Plants removed before mining. Consultation regarding a biodiversity offset area is still ongoing facilitated by an external environmental expert.