

The Destruction of the Highveld

Part 1: Digging Coal



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The groundWork Report 2016

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Contents

1 Coal's assault on people and environments	13
Smoke, dust and dynamite	15
Making impunity	20
2 Land, minerals and labour	28
Hierarchy of work	33
Cheap coal barons	37
Coal export boom	41
In a free land.....	50
3 Corporate coal on the Highveld	72
Coal majors	74
Coal juniors	92
4 The catchments – poisoned at source	96
Komati.....	103
Olifants.....	138
Trashing the Vaal.....	168
5 Of the future	184
Messing with Strategic Water Sources	186
Rebellions against coal	195



Acronyms

AMD	Acid Mine Drainage
CER	Centre for Environmental Rights
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
EEPOG	Escarpment Environmental Protection Group
EMP	Environmental Management Plan
EMPR	Environmental Management Programme
FEPA	Freshwater Ecosystem Priority Areas
FSE	Federation for a Sustainable Environment
IDC	Industrial Development Corporation
DARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
MEC	Minerals-energy complex
MPRDA	Mineral and Petroleum Resources Development Act
MTPA	Mpumalanga Tourism and Parks Agency
NEMA	National Environmental Management Act
PAIA	Promotion of Access to Information Act, 2000
SLP	Social and labour plan

Unfamiliar words

Catchment	The land area that gives rise to a river and its tributaries.
Dragline	Very large mining machine that look like a crane. It drags a huge 'bucket' to scoop up and move earth.
Randlord	Gold mine bosses in the early years of the Johannesburg mining boom.
Run-of-mine	Production before coal washing. Saleable product after washing may be a third or more less.
Uitlanders	Afrikaans word for 'foreigners' or 'outsiders', used to describe the mainly British mining community in boom town Johannesburg.
Zama-Zama	Informal mineworkers.



Foreword

"We could never have loved the earth so well if we had had no childhood in it – if it were not the earth where the same flowers come up again every spring that we used to gather with our tiny fingers as we sat lipping to ourselves on the grass ..."
(George Eliot, *The Mill on the Floss*, 1860)

How could we know the earth, if we have no earth to know? If all we have of our childhood memories are disused mines, grey and matted overburden, smouldering discard coal dumps, lakes of acid mine drainage and the foul, acrid stench of coal fires? This poisoned earth is not the earth that the people of Africa knew in the past. It is not the earth people still know in places such as Xolobeni where people are defending their land from mining.

The groundWork Reports explore the state of environmental justice in South Africa. This year, and in 2017, we view the state of environmental justice through the lens of the Mpumalanga Highveld and its destruction through the extraction and burning of coal. Sadly, what we see is environmental injustice, not environmental justice. On the Highveld, people are not empowered through democratic participation. They do not enjoy the fruits of freedom, equality or solidarity. The post-apartheid government together with the 1% keep the majority extremely impoverished. They create poverty to make people desperate for any work that might be thrown their way, even to sacrifice their health at the altar of the coal mines and to live in places where the soil is dead, the water is acid and the air is pungent with sulphur, benzene and other pollutants. As people here do not see equality and solidarity, they live with the degraded environments created by mining and corporate profit.

Much of the Highveld resembles the post-apocalyptic nightmare of an already dead and dying land. While people work to save what's left, the powers that be are hell-bent on pulling it apart and violating it, all in the name of the poor



Foreword

but actually for the enrichment of a few. Well, the poor need jobs – regardless of what those jobs are – so that the elite can make their ever-growing fortunes.

The same flowers will not come up every spring for, besides the earth being wasted by mining, it is also being wasted by climate change. What we knew as children, we will not experience as adults. So why should the youth of Mpumalanga consider the earth differently? With love? There is no joy in the wasteland that they experience, so maintaining a world that for them does not really exist is impossible. Activities such as mining, which will entrench the death of their earth, might be considered their only hope of getting away from this doom. It is only through the work of imagination that they can find the seeds of another world.

What is alarming in this year's groundWork Report, is the evidence that in the era of democracy things have got worse rather than better. Sadly, our democratic leadership lacks the creative imagination to think beyond the apartheid-created minerals-energy complex that depended on cheap black labour in polluting coal mines to produce cheap energy for the extractive industries to accumulate profits for a white local and global corporate elite. Now there is a tinge of colour to those elites!

In the 1990s, when environmental justice emerged as a narrative in South Africa, it was in hotspots such as Mpumalanga where people stood up and raised their concern about the destruction of their lives as they lived above old burning coal mines. I heard these stories when I worked for the then eminent environmental movement, the Environmental Justice Networking Forum. But during my three years there I never had the opportunity to visit these burning mines and so never understood the reality from a personal perspective. Then, in August 2015, for the first time I visited the area to bear witness – along with a group of parliamentarians. The fires were still burning. I saw it, smelt it and felt the heat of it for myself. This is not unusual in the global South. India is also known for its hell fires – as Nigerian anti-oil activist Nnimmo Bassey, of the Health of Mother Earth Foundation, refers to burning coal mines. I also went underground where local people dig for coal to have some form of subsistence after mine owners absconded and left the people with abandoned, burning and collapsing coal mines. Underground, I crouched and crawled to the working



coalface in this murky underground world lit by old headlamps and, believe it or not, candles. People are desperate.

The story concludes with the reality that mining seeks to extract and then offload the costs of its profits onto the environment and people and the promise of jobs and riches for the locals is nothing more than a mirage or blurred hope in the smog filled, polluted Highveld morning. People are left not with wealth but with no good air to breathe, no land to till and no water for crops.

The brutality of mining is shared with all in this groundWork Report. It pulls no punches. It recognises that mining is a doomed venture and that it has a history that does not allow us to have faith in its promise of delivery of jobs and development for the people.

There has always been a debate about sustainable mining, but the pipedream fades in the light of reality. Around the world people are saying no to mining and this resistance is becoming more organised. “Yes to Life and No to Mining” is the name and slogan of a movement of communities that recognises “that when we say no to mining, we stand in solidarity with the planet, with precious ecosystems and with the future generations of all species.” There is no blurred area about a hope for sustainable mining. It is clear: No to mining.

Marikana and the Niger Delta are the evidence that mining and fossil fuels kill. It is widely recognised that mining is “taking an enormous toll on people, undermining democracy, democratic institutions and political life; it is just not helping to solve Africa’s developmental needs,” as Bishop Jo Seoka put it at the Bench Marks’ annual general meeting in October. This legacy is well documented, but also long documented. In the “Open Veins of Latin America”, Eduardo Galeano grippingly pulls together how mining and the extraction of minerals have made Latin America undemocratic and have wasted its lands and ruined its people. So the evidence of 500 years of destruction is documented and the groundwork Report is not the first to do it. But the conclusions of analysis are not always the same.

Some conclude that sustainable mining is to be hoped for and must be strived for. They speak of the rehabilitation of lands so that crops can grow again and of new economies to be created with the wealth from mining so that, when the



Foreword

ores are mined out, people will have a new tomorrow. They pin their hopes on social and labour plans (SLPs) which outsource development of roads, jobs, education, housing and services for the people to transnational corporations or even ‘smallanyana’ fly by night local companies to whom the transnationals sell depleted assets and growing liabilities. At the end, they extract what very little blood of the earth – as the Uwa People of Columbia understand crude oil and fossil fuel – is left in the veins of coal seams and dump the liabilities on society and environment. Big or small, the corporations take the profits, move onto their next venture, plead poverty, declare insolvency, and dash whatever hopes were created through SLPs.

Various organisations have done critical work on understanding the impacts on mining in 2016. The Centre for Environmental Rights has exposed the brutal reality of poor governance and its entrenched nature. The Centre for Applied Legal Studies has clearly shown that the SLPs, promising a new life for those whose lands are destroyed, has failed to deliver. The writing is on the wall. Mining does not work for people. So let those of us in NGOs and in fortunate and privileged positions be very careful about how we reflect and pronounce on the subject. The debate to mine or not to mine is a brutal one at the level of the community where jobs are promised and where desperate people, because of a failed system, now live in hope that ‘any job’ will do. Let us be careful about pushing the false promise of sustainable mining when our own research, our own experience, our own photos, our own documentaries show the brutal reality. We should never be the organisations to start people on a one way, dead-end road when our own work shows that someone will be sacrificed at the altar of ‘sustainable mining’.

As the ink dries on the paper of this report, we read in the newspapers that the earnings of Wescoal will jump by more than 350% this year. This is indeed great news for the investors, be it elite black capital in South Africa or global capital. But ask the people of Arbor, where Wescoal’s mines blast dust and pollution on them, did the “development” in their neighbourhood improve 350%? Have they had a surge in wealth from being next to mines that are clearly profitable to someone? They did have a surge in something but that



most certainly was not their earnings. They have had a surge in pollution, a surge in sickness, a surge in unemployment and a surge in poverty.

All of this happens in the context of a government in crisis. A weak and divided ruling party has made the real issues of governance secondary to its internal squabbles. It cannot hold onto any semblance of the governance that is promised in the Constitution, as political factions within the ANC fight to make the country's wealth their own. And while this happens, the business-as-usual of extraction continues whether by a transnational corporation or a 'family business' such as the Guptas. When the profits are all done they abandon their liabilities and will, if they can, make off with rehabilitation trust funds meant to pay for the 'restoration' of such mines as Optimum.

Nevertheless, even in the bleak landscape made by the minerals-energy complex, our thinking concludes with the reality that people are winning. The end of coal is nigh. People's movements, environmental and social justice organisations, and conservation organisations are all challenging coal. We can be successful but only by building and working with democratic processes. Because, no matter what the future, it is only democratic practice that is going to ensure we survive in a world where there is less of everything; and we should surely all agree that we need to have enough for all forever.

Let us collectively save the little we have left so that the children of the Highveld can grow up loving the earth.





Introduction

The eastern Highveld is fertile and well watered. It is the source of several major rivers – including the Olifants, the Komati, the Usutu and the Vaal – and a critical food producing region. Over a century of mining and burning coal has damaged large parts of the Highveld. The hydrological functions are interrupted by underground and open cast coal mining and open cast mining simply destroys the land. The land is also coated in coal dust from blasting and acid deposition from combustion emissions. Groundwater and rivers are contaminated by acid mine drainage to the point that whole catchments are turning into wastelands. This is compounded by heavily polluted industrial effluent and municipal sewage leaks.

Environmental ruin has been accompanied by the impoverishment of the people. Over half of the people living in South Africa are poor according to official statistics and the poverty rate is amplified on the Highveld. More than half the people are also without work and it is a constant refrain that people born in the area do not pass the medical tests for work in neighbouring mines and factories. For the most part then, workers and work seekers come into the area from elsewhere following the routes of a defunct migrant system. This adds a further twist to already harsh gender and social relations and to local unemployment.

This is the first of a two-part series on the destruction of the Highveld and focuses on mining coal – digging it. The second part, The groundWork Report 2017, will be about the impacts of burning it for power generation and industry. Both reports will draw on the theoretical frameworks developed for the groundWork Report series as a whole. They will look at the making of environmental injustice through what have come to be called ‘the three Es’. These are the ways in which injustice is imposed on people:



Introduction

- By polluting them, degrading their environments and coercing labour to work for less than it costs to live. This is called **externalisation** because corporations get a free ride by off-loading costs onto communities, workers, the public purse and the environment.
- By dispossessing them and by privatising common or public goods. This is called **enclosure** because it eliminates or subordinates non-capitalist systems of production, so ensuring that all escape routes are closed and people cannot survive without capitalism.
- By **excluding** them from the political and economic decisions that lead to their being polluted or dispossessed.

It also follows Poisoned Spaces, the groundWork Report 2006, on the production of the space of the Vaal Triangle. That report observed that the history of development has created many fronts of environmental injustice with the costs imposed mainly on poor people – on fenceline communities, workers and their dependents. Fronts of struggle include the struggle for health and health care, for clean air and water, for well-built housing and settlements and attendant energy, water, waste services and transport. Fronts of struggle are also for jobs, including jobs that destroy health and environment, for health and safety in notoriously dangerous industries, and democracy in an increasingly corporate state. And fronts of struggle are at the fenceline of every mine. More immediately, it follows the 2015 groundWork Report, which centred on the dismal elite politics of climate change but also initiated one of the themes in this report – the collapse of the present energy model.

This two-part series takes an historical perspective in two ways. First, this report looks at the history of the development of mining and industry on the Highveld over the last 120-odd years. Second, we approach the past, present and future through the landscape as it is now.

To do this, we have put together a ‘portfolio of mines’. They make up a set of places where mines are proposed, where they are active and where they are closed or abandoned. This history writes itself backwards: the future of an active mine can be seen in a mine that is closed or abandoned and the future of a proposed mine can be seen in both the active and the abandoned mine.



For Part Two, an analogous approach will be taken with power stations and industry – given the closure and return-to-service of three power plants and the recent closure of several minerals smelters.

The groundWork Report 2016 opens with an overview of environmental justice in relation to coal mining and the Highveld in particular. This chapter introduces the issues and themes. The second chapter gives a broad history of the development of South Africa's coal industry in the context created by a minerals-energy complex (MEC) that combines state and private interests and produced government agencies that see themselves in the service of corporate capital. It looks at the violence that has attended the appropriation of land and labour and at the often uncomfortable collusion of the political and corporate elites that have led this process. It explores the harsh ways in which this process has shaped labour on the one hand and forms of settlement on the other. The third chapter then gives a round-up of corporate coal on the Highveld now. It finds large cracks in the edifice of the MEC and sees present scandals as symptoms of decline.

Mining is immensely destructive of land and water as well as people. Chapter four is organised according to the catchments that are the basis of the ecology of the Highveld. It starts with the Nkomati in the east, then moves to the Olifants at the heart of the ruin and then to the increasingly stressed Vaal. The chapter takes a close-up look at a number of proposed, active and abandoned mines, at the damage they do and the conflict they bring. And it looks at how people are responding to protect themselves and their environments, or to get the means of survival, on the socially uneven terrain of the Highveld. In between the catchments we have inserted two big boxes: one on the devastating impact of gold mining on the Rand; and the second on soils and food. The final chapter opens the question of the future from the perspective of present struggles and the movement for environmental justice.

The Highveld Environmental Justice Network (HEJN) is now two years old and we hope this report will support their struggles. HEJN activists participated in the research process. At the local level, they acted as our guides and identified people to interview. At the level of the Highveld region, Nomcebo Makhubelo and Dumisani Masina accompanied us, shared their insights, participated in interviewing people and translated when necessary. We were also accompanied



Introduction

by Robby Mokgalaka and Thomas Mnguni of groundWork who did a lot of the necessary organising and shared their extensive local knowledge and sharp insights.

We've had conversations with a wide range of people, with people in communities and with farmers who find themselves in the way of the mines and with workers on the mines and on the farms. We also spoke to a range of experts on water, soil, mining and law. The people we spoke to were: Matthews Hlabane, Samson Sibande, Koos Pretorius, Kleinboo Mahlangu, Philip Morake, Elizabeth Malibe, Jacqueline Mgwenya, Maurice Mabuza, Busi and Melody Maseko, Abraham Kgwete, Raphael Mlangeni, Popi Ntlatseng, Jerry Ntlatseng, Stanley Lebelo, Lucas Mohlale, Julie Smith, Christie Truter, Nelly Nkosi, Rasta Philani, Vincent Mashinini, Bongani Nkambule, Elias, Katrina, Lina, Johanna and Anna Mtsweni, Gogo Mahlangu, Emily Mahlangu, Lettie Skhosana, Rika Phoko and her parents, Chief Mashilwane, Christina Mashilwane, Chief Skhosana, Hennie Broxham, Johan Vos, Oubaas Malan, Mauritz du Bruyn, Aaron Ngwenya, Vusi Ndlovu, Isaac Mahlala, Menzi Mbata, Timothy Matsimane, Bigboy Khumalo, Nomphila Dube, Rose-Lynn Ngobese, Elizabeth and Hlengiwe Ngwenya, May Hermanus, Henk Coetzee, Dave Collins, Terence McCarthy, Marthán Theart, Catherine Horsfield, Tracy Humby, Jane Harley and Mike Maxted.

We are most grateful to everyone for giving us the time. This report is greatly enriched by their contributions but they are in no way responsible for any mistakes we have made. These conversations were also informed by a wide range of literature, including the work of civil society organisations, academics and corporate and government reports. Of particular note was the report of groundWork's sister organisation, the Centre for Environmental Rights (CER), titled Zero Hour and published in May 2016.

Our thanks to Karl Jensen of the Bateleurs who flew us over the coal fields, to Terence McCarthy for permission to use his diagrams and to Niven Reddy of groundWork for the maps. Finally, thanks to the groundWork team for their support through the field trips and an unconscionably long process of writing.

Our condolences to the family of Chief Skhosana, a leading activist in Arbor, who recently passed away. We shall miss him.



1 Coal's assault on people and environments

August 2016 was the hottest month ever, tied for that record with an equally hot global average temperature in July. Before that, June was the hottest June, May was the hottest May and April 2016 was the hottest April. And so it was for 16 months in a row starting with April 2015. That was then the hottest April ever but that record was, of course, smashed in 2016. At Phalodi in north-west India, the temperature went over 51°C on the 19th of May with no let up expected before the June monsoon rains. Over 1 000 people have died.¹ Across much of the country the accompanying drought has left dams empty, crops withered and people hungry. Many have left their homes to seek the means to live elsewhere. In neo-liberal India, says Harsh Mander, they are forgotten by a government with little interest in “saving lives of dispensable, invisible rural poor populations”.²

South East Asia is also feeling the heat with temperatures well over 40°C accompanied by tropical humidity but no rain. Pests threatening crops have proliferated and millions of people face hunger. In Indonesia, burning tropical forests covered much of the region in smoke during 2015, prompting protests from Singapore and Malaysia. As well as burning the trees, the fires burn deep into the peat soils and produce carbon emissions on the scale of the US economy. They are started by palm oil corporations intent on clearing forests, and the people who live in them, out of the way of expanding plantations. The

1 Sarah Perkins-Kirkpatrick, Andrew King, and Geert Jan van Oldenborgh, *Why is it so insanely hot in India right now?* At Quartz India, 30 May 2016.

2 Harsh Mander, *The invisible drought*, The Indian Express, 8 February 2016.



Coal's assault on people and environments

Palm Oil Association has opposed a proposed ban on further expansion on the grounds that the industry contributes substantially to economic growth.³

Southern Africa experienced successive heatwaves in the summer of 2015-16, with temperatures going over 40°C in the South African interior and in all neighbouring countries. Drought has devastated the region. Only Zambia has had a reasonable maize harvest. Crops have failed in all other countries, millions of people need food aid and rates of malnutrition have spiralled. In South Africa, maize production is down by 40%, turning what is normally a surplus into a shortfall.⁴ The Mpumalanga Highveld is the country's premier maize growing area. In March, the mealies were standing dead in the ground across thousands of hectares.

The country no longer stores surplus grain but exports it onto the world market and so must import to make good the shortfall. In February, it was estimated that South Africa would need to import 3.8 million tonnes at a cost of R14 billion. Food prices are rising across the region but a big hit is expected in August when reserves run out.⁵

According to the South African Food Sovereignty Campaign, big food corporations are profiteering on the crisis, primarily at the cost of poor people.⁶ Food price inflation associated with the drought is already deepening poverty. The Pietermaritzburg Agency for Community Social Action (PACSA) publishes a monthly food price barometer based on what poor people – who make up 60% of the population – are actually buying. Food prices have risen steeply since November 2015, at double the official inflation rate, and this is on top of the longer term escalation of “non-negotiable expenses”, notably electricity and transport.

3 Matt Smith, *Indonesia's Fires Are Emitting More Carbon Pollution Than the Entire US Economy*, VICE News, 26 October 2015; Kiki Siregar, *Indonesia takes aim at palm oil after forest fires*, Phys Org news, 1 May 2016.

4 John Vidal, *How southern Africa is coping with worst global food crisis for 25 years*, The Guardian, 22 May 2016.

5 Marianne Merten, *Fighting the Great South African Drought*, Daily Maverick, 23 February 2016.

6 South African Food Sovereignty Campaign, *Unite Against Hunger: National people's drought speak out and bread march memorandum*, 13 May 2016.



Consequently, people are buying cheaper and less nutritious food, spending only 56% of what they would need to spend for adequate nutrition. Put differently, a majority of people are malnourished. Even for this reduced diet, however, households are going into debt. PACSA concludes:

The food price crisis provides the space to start thinking differently, not only about food prices or how our agricultural system is structured; but it also forces us to look more critically at our economy, and what it means if our economy cannot provide food for its people.⁷

Smoke, dust and dynamite

Coal is mined to be burnt in power stations and industrial furnaces. That is its measured contribution to climate change. However, fires constantly break out on active mines, on abandoned mines, on coal stockpiles and on discard dumps. Many of them burn for years and some burn for decades. Emissions from 'spontaneous combustion' are not measured and not included in the national greenhouse gas inventory. It has been suggested that they might rival Eskom's emissions [Scorgie 2004: 3-64], that is, 224 million tonnes of carbon dioxide (Mt CO₂), although this may be an overestimation.

The fires burn at ground level and without any pollution controls. As well as contributing to climate change, they have serious local impacts on the environment and on people's health. Pone et al [2007] investigated emissions from spontaneous combustion on the Witbank and Sasolburg coal fields. They found an exotic range of sulphur compounds laced with heavy metals, including mercury, lead and arsenic, and an extraordinary cocktail of toxic hydrocarbons. Benzene, toluene and xylene – volatile organic compounds (VOCs) which are known to cause cancer – were present in high concentrations. There were also high levels of dichloromethane and chloromethane. And methane, carbon dioxide and carbon monoxide, all greenhouse gases, were present in "toxic concentrations". The health impacts of many other compounds that they found are unknown and "merit investigation" [2007: 134-135].

⁷ PACSA Monthly Food Price Barometer: March 2016.



Coal's assault on people and environments

The air is also filled with dust. Much of it is kicked up by the succession of coal trucks on dirt roads within the mines or accessing the mines. Close to the mines, these roads are black with coal dust formed from spillage off the trucks. Blasting at open cast pits is a second source. Mines blast two or three times a day and each blast lifts many tonnes of earth. Immense dust clouds roll across the countryside and are often accompanied by a hailstorm of shattered rock. More dust is kicked up by operations in the mine – the drag-lines digging at earth or coal, the loading and unloading of dumper trucks, the screening of product and the loading of haulage trucks. And dust from coal stockpiles, discard dumps and heaped 'overburden' blows on the wind. Dust is a major source of particulate (PM_{10}) pollution which gets into people's lungs.

Ruin of land

The ruin of the land itself is on an immense scale. Globally, mining now shifts earth and rock on a geologically significant scale – that is, on a scale to rival natural processes such as volcanic eruptions, earthquakes, landslides, and erosion and deposition by wind or water. In Mpumalanga, a large part of the land is mined and over 60% of it is subject to applications for mining and/or prospecting rights [CER 2015: x].

The ruin begins with prospecting. Holes are drilled into the earth to take core samples – a cylinder of earth which shows the layers of rock and coal from which it was removed. If an underground mine is subsequently developed, the drill hole pipes water down to the workings where it will turn acid. Core sampling may be followed by 'bulk sampling' used to provide prospective buyers with enough coal to test how it will burn in their boilers. Bulk sampling in reality makes a mini pit mine.

In Mpumalanga, thousands of hectares of land have been dug under or dug out. Coal seams are part of the geology and affect the movement and distribution of groundwater. Underground mining interrupts these hydrological functions. In time, the pillars of coal left to hold up the mine roof burn out due to spontaneous combustion or fail due to the stresses created by the weight of earth. The collapse of ground into the mine void results in subsidence at



the surface and the fracturing of strata in between. Water then pools on top and finds new paths to the mined out coal seam where it will turn acid. More dramatically, sinkholes can open deep vents and so increase the flow of air that gives life to the fires.

Open cast mining simply destroys the land. For miners, the good earth atop the coal seam is the 'overburden'. On the Witbank coal field, it is typically 30 metres deep and it is blasted, dug out and piled into heaps. These heaps are known as mine spoil – as indeed it is. The coal seam is then revealed and removed in similar fashion. The machinery is massive. The larger draglines and mechanical shovels can lift 75 tonnes of material and land it in dump trucks with a capacity of over 300 tonnes. Smaller mines use smaller equipment but the operating imperative is for speed: to move as much material as possible in the shortest time. Thus, the pace of coal mining has increased considerably over the last decades.

Rehabilitation of a well-managed mine is supposed to be continuous. Successive strips are mined and the spoil from each strip is used to backfill the previous strip. If it is done 'properly', top soil is piled separately from the rest and returned to its place as top soil. By the time that happens, however, the soil is dead and the water table destroyed. The fertile soils and rich species diversity of the grasslands of Mpumalanga are reduced to a poor pasture for grazing animals with two or three species, selected for toughness, planted to hold onto the degraded earth. As the disturbed earth compacts with time, the ground subsides and gives rise to pooling of water. On some rehabilitated land, the pools lie in strips across the land as if to mimic the earlier progress of strip mining. This water then filters down to the depleted coal seam where it forms acid mine drainage. In short, rehabilitation is largely cosmetic and provides a thin disguise for mining's wastelands.

When the last cut is done, there is no soil left to fill it in. The void is equal to the volume of coal removed. This is then left to fill with water and form a pit lake. Thirty metres deep and rectangular in shape, it contrasts with the shallow circular pans which are natural to the area. If the land happens to fall right, the water cuts off oxygen to what was the coal seam. In this case, acid mine



Coal's assault on people and environments

drainage will cease after some years. Otherwise, and it is usually otherwise, the pit lakes become sumps of acid mine drainage from the depleted coal seam.

As well as receiving the acid fall out from mine fires and industrial furnaces, the land beyond the mine is coated in coal dust from blasting and trucking. The acidification of soils can only be reversed over thousands of years.

Ruin of water

The ruin of water follows from the ruin of land and carries the impact downstream. The flow of groundwater is disrupted. On the Highveld, the soil has formed on top of a semi-permeable layer of sandstone rock. This creates a 'perched' water table which provides moisture to the grasslands above and is intrinsic to the life of the soil and to the creation of species diversity in the grasslands. The innumerable pans, wetlands and streams of the Highveld are created by and connected through this high water table.

The sandstone layer is penetrated even by the drilling of core sampling holes. Open cast mining, of course, simply removes it. This layer cannot be restored even if the mines had any intention of doing so and its removal cuts away the water table. The impact on surface water can be brutal. The mines, illegally but not infrequently, simply mine through pans, wetlands and streams. But even where they follow the letter of the law and leave a buffer area next to the water body, they cut off the flow from the water table so that the springs and wetlands dry out. With underground mining, the sandstone layer starts cracking when the ground slumps and the water table drains down into the mined out void below.

Active mines pollute water in two ways according to a textbook on coalmining. First, water used for mining processes "is often seriously polluted and cannot be returned directly to the hydrological cycle without prior treatment" [Down and Stocks 1977: 91]. The coal on the Highveld is of mixed quality but the greater part is low quality and is getting worse as reserves are depleted. The mines use large quantities of water to wash coal – separating out ash and shale – for export. Eskom uses low quality coal but, as coal quality declines, more of it will need washing. The water used for washing turns to slurry and



is heavily contaminated with toxic metals. The slurry may be cleaned, leaving a waste sludge with concentrated toxins, and the water re-used. Slurry ponds are supposed to be lined to prevent contamination of groundwater. On South Africa's cowboy coalfields, however, many are not and, even where they are lined, they are still prone to leak. The sludge is a toxic waste but is nevertheless sold to brickyards as an 'alternative fuel' for use, together with coal, to fire up their kilns. In other words, the sludge is incinerated and the toxins are emitted to air.

Second, "a large volume of water ... is casually affected" by surface run-off, acid mine drainage, pumped mine water and groundwater flows. "It is not possible to apportion the damage among the 'process' and 'casual' categories, but the latter is probably the more important" [91]. Acid mine drainage results when mineral sulphides in rock are exposed to oxygen. The chemical reaction produces sulphuric acid which contaminates water. This acidic water then dissolves and mobilises heavy metal toxins. Iron sulphides, otherwise known as pyrites, are abundant on the coal fields of the Highveld and turn the water red or yellow. But acid water may also appear preternaturally clean as all living organisms have been killed.

All mining exposes buried rock to oxygen and acid mine drainage is thus produced from underground and open cast mines, from active and abandoned mines. It is also produced from coal washeries, stock piles and discard dumps, and from overburden heaps. It forms as water finds new pathways through fragmented or pulverised layers of earth. On some mines, it starts within two to five years. On others it is detected decades later and long after the mine is closed. Or multiple seepages are not detected at all. And it may continue for decades if not centuries. It contaminates groundwater and rivers to the point that whole catchments are turning into wastelands. This is compounded by heavily polluted industrial effluent and municipal sewage leaks. Hallowes comments:

The large-scale destruction and contamination of aquifers, wetlands and rivers now presents the immanent prospect of an environmental



Coal's assault on people and environments

catastrophe which will, for South Africa, be of the same order as catastrophic climate change. [2011: 14]

McCarthy and Pretorius present a graphic picture of the prospect for the Highveld once all the coal is mined out:

At this time, perhaps a century from now, all of the mines will be flooded and leaking acid water. The rivers will run red and both river and ground water will be undrinkable. Aquatic animal life will be minimal, and only very hardy aquatic vegetation will survive. Extensive areas of the region will have become devoid of vegetation due to acidification of the soil, setting in motion severe erosion which will strip the soil cover and eat into the backfill of the old opencast workings. The eroded sediment will choke the rivers and all dams will be filled with sediment. In short, the region could become a total wasteland. [nd: 14]

Making impunity

People are needed by mining as labour but are otherwise inconvenient to it: they may be in the way and must be removed, more or less violently; they may be neighbours and must be placated or silenced; their demands may threaten profits or even the viability of the mine so they must be excluded from decision making; they periodically gain access to the media which may embarrass mine managements; they may even take corporations to court and, under the post-apartheid Constitution, they could just win.

For the most part, however, the mine corporations are indifferent to their impacts on the environment and on people. They have enjoyed impunity for a century with the active collaboration of government. In particular, the Departments of Mineral Resources (DMR) and Energy (DoE), formerly the single Department of Minerals and Energy, see the interests of the state as tied to the interests of mining capital. The perceptions, practices and policies of these departments are shaped by South Africa's history as a mining colony.



They are integral to the 'minerals-energy complex' (MEC) which took shape in the early years of the 20th Century and has subsequently shaped South Africa's development.

The DMR has a double and conflicting mandate: to promote mining and to regulate it. Its bias for the first of these tasks is reflected in its view that mining must happen wherever there are minerals to be mined. This was stridently confirmed by the latest minister, Mosebenzi Zwane, ahead of his first budget speech in April 2016. According to journalist Marianne Merten⁸:

... it was the minister's comments on communities opposed to mining in their area that provided interesting and perhaps perturbing insights. The resources of South Africa belonged to everyone, he said, and "not only to the communities that have an advantage of living close to mining". Talking about "happy communities", Zwane said mining was "in the interest of all" and must be allowed to go ahead once the majority agreed. And if the majority did not want mining, government would have to persuade them to see their point of view ... "Mining is going to create jobs, mining is going to open other avenues ... People's lives get better. Our people should be able to see that," Zwane said.

It was particularly disturbing that these comments were made in response to the assassination of SokhosiPhi Rhadebe, a key activist in the resistance to a project to mine mineral sands at Xolobeni on the as yet untouched Pondoland coast. Merten continues: "The minister said he and senior officials had been to Xolobeni, and noted that T-shirts were laid out for anti-mining activists. But government wanted to hear from its people, not from those paying for certain views." This misrepresents the activists but may reflect the minister's own assumptions about how things are done. Nevertheless, in September 2016, the minister declared an 18 month moratorium on the Xolobeni mining right application. This is a striking victory but it cannot be assumed that this is the end of it.

8 Marianne Merten, *MPs in budget vote conveyer belt*, Daily Maverick, 19 April 2016.



Workers on the frontline

On the regulation side, following a string of mining disasters in the mid 2000s, government has taken a relatively strong line on worker safety and, according to mine managers and National Union of Mineworkers (NUM) officials, the DMR shuts down mines which fail to comply with safety regulations. Hence, the number of mineworkers killed was reduced from 615 in 1993 to 270 in 2003, and to 93 in 2013, according to David Msiza, the chief inspector of mines. The number killed on coal mines was reduced from 90 in 1993 to seven in 2013.⁹

On all mines, 77 workers were killed in 2015. Joseph Mathunjwa, president of the Association of Mineworkers and Construction Union (AMCU), found little to celebrate because “we are talking about lives of people, not numbers”. Each worker’s death is devastating to his or her family. The Compensation for Occupational Injuries and Diseases Act protects the mining corporations, which have no obligations towards the families of those killed on the mines.¹⁰

Workers are also on the frontline for the health impacts of mining. The history of neglect by mining corporations is legion. For much of the 20th Century, miners worked without safety face masks or protective clothing and thousands of miners succumbed to black lung. Reluctant improvements followed disasters and sustained pressure from workers and their unions. Masks are now required but, even if they wear them and even if they work in the mine offices rather than at the coal face, workers say their mouths are black with coal dust after a shift.

NUM officials argue that the post-apartheid regime is much improved. Workers now go for medical check-ups every year, they must be treated for lung problems and, if there is no cure, the mine insurance must pay out. On the mines, health and safety teams have representation of management and workers. However, they say that if NUM is not there, workers do not know the rules or the company tricks. Such tricks include reverting to the old practice of

9 *Fatalities at South Africa's mines drop*, SouthAfrica.info, 27 January 2015.

10 *Mine fatalities decrease not welcomed by all*, eNCA, 28 January 2016.



sending workers only to a company doctor whose job depends on minimising corporate liabilities.

On this account, the union is the central actor in improving worker health but, while they report a good working relationship with the DMR, the latter's capacity seems thinly spread with only two health and safety officials for the Highveld region. That the reach of the DMR falls short is indicated by workers who have left their jobs because of disputes over safety. They say that their contributions to the health and safety teams are not appreciated when they have the effect of slowing down production.

Historically, tuberculosis (Tb) came into South Africa through the mines and the compounds created the conditions for contagion. Mineworkers then carried the infection to their homes across Southern Africa. Exposure to mine pollution increases the chances of getting Tb. The mines are now also a prime site for the spread of HIV. The effects of pollution, Tb and HIV are mutually reinforcing.

Disdain for environments and people

In contrast to worker safety, the DMR disdains its environmental responsibilities. In the late 2000s, the Department of Environmental Affairs (DEA) tried to take authority for environmental regulation of mining as of all other industries. The DMR fought to retain this authority and clearly did so to protect mining from environmental enforcement and not to protect the environment.

The evidence for this conclusion is presented in detail in a report by the Centre for Environmental Rights (CER) on poor governance of mining in Mpumalanga. Amongst other things, they show that the DMR issues mining rights without regard to environmental impacts. Nothing is off-limits – not critical water sources, not protected conservation areas, not the best agricultural land. It “unlawfully grants rights to companies already in violation of mining legislation” and operates a regime of secrecy that has no justification in law but enables companies to conceal environmental crimes [CER 2016: viii]. At the same time, it actively excludes organisations that might contest mining



Coal's assault on people and environments

plans from decision making. That includes the Mpumalanga Tourism and Parks Agency (MTPA), a governmental body.

Whereas the DMR issues mining rights and environmental authorisations, the Department of Water and Sanitation (DWS) issues water use rights. Either because it is cowed by the DMR or because it has neglected to develop the necessary capacity, the DWS imposes “weak and inappropriate” conditions which it barely enforces [viii]. It is illegal to operate without a water use licence but, at any one time, there are around 100 mines that do so without consequence. In effect, once the DMR has issued a mining right, companies start digging and let the devil take the environment.

False promises

As the minister’s comments indicate, disdain for the environment is embedded in disdain for the people. The “happy communities” living next to mines have “an advantage” of being moved out of the way, mostly with inadequate compensation, and of living with cracked houses, fouled water, bad air and ill health. The assault on people’s health comes from all phases of the coal economy. It starts with mining but comes also from burning coal in the power stations and factories as well as in people’s homes.

Across the Highveld, people avoid drinking tap water where possible. But most households must use it even though it upsets their digestion as bottled water is expensive – quite apart from being destructive.

Everyone coughs. People say it seems almost normal. But those with family elsewhere see that the health of their children improves when they leave the Highveld. Bad air affects all body systems. It chokes the lungs, poisons the blood, interrupts the heart’s beat and disables the mind and nervous system. Conditions include asthma, emphysema and lung cancer, heart palpitations and heart attacks, and strokes. Children are particularly vulnerable to stunted physical development: stunted lung development makes them more vulnerable to asthma, delayed brain development leads to the loss of mental capacity. Air pollution is also a leading cause of infant deaths [Lockwood et al, 2009: x]. For



many children in South Africa, the damage from pollution is overlaid on the damage from poor nutrition.

Mining companies always promise jobs when they apply for a mining right but local people say that they do not get them because they do not pass the medical tests. And, while the mines must ensure that their workers get an annual medical check, there is no such provision for people in neighbouring communities. The public health system is overburdened and under-resourced. People must queue at the local clinic and then at the hospital. Many queue all day and are then turned away. Those who are seen by a nurse or a doctor get a cursory examination and are treated for the immediate symptoms. They do not get the thorough medical check required on the mines. We were told, "It's easy for you to die if you do not have money."¹¹

People's houses are repeatedly shaken by mine blasting and they are periodically showered with shattered rock. Walls and windows are cracked and roofs start leaking. The mines invariably dismiss the damage, claiming it is because people's houses are poorly built. This implies that, because people are poor, their losses are not worth counting. Besides, most of these houses are perfectly good till the ground is shaken. Beyond this obvious damage, people are traumatised, first by the blasts and then by the contemptuous attitude of mine managers.

Trauma is neither recognised nor addressed. Rather, it is compounded by the assault on people's lives and rights. Rhadebe's assassination is not an isolated incident but part of a larger pattern of repressive violence associated with mining. In KwaZulu-Natal, activist Bongani Pearce had his car burnt out after leading a march of local people against the expansion of the Somkhele coal mine. On the Highveld, local activists have been attacked on the way home from meetings where they have asked difficult questions. They say women are most vulnerable. Statements such as those made by Zwane are taken to endorse aggression against opponents of mining.

In the January 2016 heatwave, 21 people died from heat stroke in the North West Province. Their deaths were counted because they had been taken

11 Jacqueline Mgwanya, interviewed 3 March 2016.



Coal's assault on people and environments

to clinics or hospital.¹² It is most likely that many more people did not get to a hospital. It is also likely that people died in other provinces, including Mpumalanga, but that their deaths were not reported. People living in shacks and RDP houses would be particularly vulnerable as their homes turned oven hot. On the other side of the climate coin, the North West, Limpopo, Gauteng and Mpumalanga experienced widespread flooding in March 2014. It was reported that over 3 500 people were displaced and 32 people died.¹³ Again, it is likely that those who are most vulnerable were least likely to be counted.

Apart from the direct impacts of extreme weather events on people's health, the report of the Lancet Commission on Health and Climate Change [Watts et al 2015] notes that there will be a number of indirect impacts. These include an intensification of air pollution as drought and heatwaves result in more wildfires, growing food insecurity and malnutrition, and the spread of diseases like malaria and zika which thrive in hot and humid conditions. Cholera also thrives in such conditions and becomes most likely in communities where there is no sanitation system and, more widely, if sewage plants are leaking.

Climate change will also put millions of people on the move as they lose their homes to flooding, recurrent drought or sea level rise and as they lose family and friends. This will be accompanied by high anxiety and a terrible sense of loss leading to "severe mental health problems" [17]. Already millions are on the move across Africa. Some travel in hope and curiosity but more are refugees from war or tyranny or the impoverishment of their homes.

Many of the migrants travel in the footsteps of their fathers and grandfathers. They follow the migrant routes established in the early 20th Century by the mining houses which coerced labour from across southern Africa so that the maize farmers could keep their hold on local labour [Fine & Rustonjee 1996: 127]. With the dependency of the sending communities firmly established, those forced into migrant labour in the early 20th Century are succeeded by men (mostly) who are desperate for work. Hence, the Highveld is already the

12 21 die of heatstroke in North West, New Age, 13 January 2016.

13 Red Cross, *Emergency Plan of Action*, 21 March 2014; Ed Hill, *Hundreds Displaced in South Africa Floods*, FloodList, 11 March 2014; Terence Creamer, *Eskom in talks with miners in bid to replenish dry, coarse coal stocks*, Engineering News, 11 March 2014.



destination of thousands of men whose families have been engulfed in the slow catastrophe of capitalism over three or four generations. Some find work but others do not. Some move on, others stay in the hope of finding work. Many communities are composed of people who “are from everywhere”.¹⁴ Yet, with so many men passing through, settlements are constantly unsettled, gender relations are harsh and the rates of HIV infection are high.¹⁵

14 Matthews Hlabane, interviewed 2 March 2016.

15 *Mpumalanga's Gert Sibande district has highest HIV rate*, City Press, 22 November 2013.



2 Land, minerals and labour

Land and labour have been at the centre of conflict on the Highveld for close on two centuries. Politically well-established peoples were overthrown during the period of the *mfecane* – the disturbances, forced migrations and wars, the scattering of people – that accompanied the rise of the Zulu and Swazi kingdoms and the growing colonial presence in the first half of the 19th Century. By the 1840s, when Boer trekkers entered the area, several groups were recovering their strength. For the most part, they saw Boer settlers as one more element in a complex and shifting set of alliances and hostilities. The Boers also entered the game of alliances. In 1846, they signed an agreement with the Swazi, promising them support against the Zulu in return for a large part of the Highveld. This land, however, was not the Swazi's to give.

The Pedi to the north of the Highveld retained autonomy in the face of the Zuid Afrikaansche Republiek's (ZAR) fictional claims to dominion for another 30 years. For the most part, the economy of the ZAR relied on land speculation rather than production. Moreover, the speculation that made the Boer elite rich was often in land that did not belong to them and frequent raids against African territories were as much to make good on speculation as to exert sovereignty.

The discovery of diamonds in a remote and borderless part of southern Africa dramatically changed the dynamics in the region. An imperial backwater suddenly acquired value. Britain's Cape Colony quickly claimed the new boom town of Kimberley, drawing a defined border with the Boer republic of the Orange Free State just to the east. Kimberley demanded labour and the people of the Highveld were amongst those who supplied it. This marked the beginnings of the migrant labour system but under very different conditions



to those imposed later. The still autonomous Highveld chiefdoms sent groups of young men under the authority of a senior, primarily to earn the money to buy guns both for hunting and for defence.

By the 1870s, the ZAR was failing and, in 1877, Britain annexed it as part of a wider strategy to impose stability on this newly important region. It also set out to subjugate independent African authorities and deny them modern weaponry. Imperial troops invaded the Zulu kingdom and destroyed its power while the Cape government provoked the 'gun war' to disarm the Basotho. In 1879, a British army brutally broke the Pedi power. The British then gave force to spurious Boer property claims and instituted administrative systems and controls. On this rather more solid foundation, the Transvaal Boers reclaimed independence after defeating a British force at Majuba 1881, an event which coincided with a change of policy in London.

If regional stability was one aim of the British strategy, securing a labour supply, particularly to the Kimberly diamond mines but also for agriculture, was the other. Taxes were imposed on subjugated people with increasing rigour both to pay the costs of government administrations – while excluding them from any decision making power – and to coerce them into labour by imposing a need for money. The purchase of guns by black people was forbidden.

Gold was discovered on the Witwatersrand in 1884 but it was the discovery of the main reef two years later that made Johannesburg. Mostly British 'uitlanders' poured into the new boom town where money ruled and the 'Randlords' called the shots. To retain political power, the Boers excluded the 'uitlanders' from the vote for fear that they would vote the republic back into the British empire. At the same time, the ZAR quickly became dependent on the revenues from gold and so was caught within the imperial economy.

The mines needed energy, transport to get heavy machinery in and gold out to the ports and labour. Coal had been discovered a few years earlier at Vereeniging and the gold mines created a market which was supplied by ox wagon. More coal was brought in from the first collieries established at Witbank. Here, people had long known about outcrops of coal at the surface and, in pre-colonial times, it was used for domestic fires and for iron making.



Land, minerals and labour

Witbank, however, was a long haul from Johannesburg and the new mines closed when coal was discovered at Boksburg and Brakpan close to the gold mines.

The Cape to Kimberley railway was completed in 1884 and the Randlords demanded its extension to Johannesburg. By 1890, the ZAR needed to maintain production and reluctantly agreed. President Paul Kruger negotiated a deal with Cecil Rhodes, Prime Minister of the Cape Colony and a leading mining magnate, for the Cape government to fund the line. It reached Johannesburg in 1892. The line was built through Vereeniging as rail also ran on coal and took a large part of the supply.

Two more lines were under construction. Durban was already connected with the coal fields of northern Natal and this line was extended to reach Johannesburg in 1895. The line from Pretoria to Lourenco Marques was completed in the same year and was favoured by the Boer leaders as it gave them access to a port outside of British control. This line passed through Witbank and revived the local collieries, creating a new market in coal for steam ship as well as connecting them to the gold mines. Meanwhile, a third market opened up with the construction of power plants. The first were built to provide electric light in the place of candles in the mines and the first generators to supply Johannesburg town followed shortly in 1891.

The rapid expansion of gold and coal mining created a massive new demand for labour. The majority of African people were not yet wholly dependent on wage labour, however, and the scarcity of labour meant that wages were relatively high especially on the gold mines. Many of those who came to the mines stayed long enough to earn a nest-egg. Responding to an Industrial Commission of Inquiry set up by the ZAR government in 1897, George Albu spoke for the Randlords' demands for cheap transport, cheap inputs (coal and dynamite), and cheap labour:

The native receives ... a wage which is far in excess of the exigencies of his existence. ... If the native can save £20 a year, it is almost sufficient for him to go home and live on the fat of his land. In five or



six years' time the native population will have saved enough money to make it unnecessary to them to work any more. The consequences of this will be most disastrous for the industry and the State. [Quoted in Jones 1995: 15]

Albu thought it enough if 'the native' could save £5 a year and called for a tax designed to coerce people to work. Already, however, two-thirds of the African workers on the mines were from outside the ZAR and so could not be taxed.

Gold effectively sealed the fate of the Boer republics. The ZAR's attempts to industrialise in pursuit of economic independence failed and the complaints of local manufacturers have echoed through to the present:

- The local market was too small for large-scale production that could compete with imports.
- Investors were therefore not interested.
- Capital goods (manufacturing plant) had to be imported at huge expense.
- The local skills base was inadequate.

In reality, the ZAR merely issued 'concessions' to cronies of the Boer elite, giving them monopolies on dynamite and coal transport, amongst other things, and greatly inflating the cost of mining inputs. It also neglected to establish a reliable water supply for the mines and the uitlanders. The complaints of the Randlords fed into Britain's decision to create a unified South Africa under the imperial flag. War was declared in 1899 and the mines closed down. The British took Johannesburg and Pretoria in 1900 but the Boers carried on a guerrilla campaign for two years more.

Immediately after the war, the British administration gave priority to the water issue. It established the Rand Water Board to take an erratic supply out of the hands of three private companies and create a reliable and clean supply. More broadly, however, the extractive economy of the Transvaal was slow to recover, largely because cheap labour was not available. The war had temporarily restored autonomy to black people in the two republics. With Boer



Land, minerals and labour

landowners off on commando, black tenant farmers were simply relieved of a burden on their production. Many Boers returned to nothing – their stock was lost and their houses stripped. Impoverished and indebted, they sold out to land speculators and migrated to the cities to find work. Sammy Marks, the founder of Vereeniging and a pioneer coal miner, steel maker and power generator, echoed Albu's earlier comments:

As to the Natives, they are in many cases affluent, they have plenty of cattle and are therefore able to plough at will. They have become quite unmanageable and absolutely free and appear to have come to the conclusion that, as they live under the British flag, the whole country and everything in it is at their disposal. I have determined to do my utmost to remedy this state of affairs and have already approached the Attorney General ... [quoted in Mendelsohn 1991: 158].

The Randlords established the Witwatersrand Native Labour Association which recruited throughout southern Africa as far north as present day Tanzania, and regulated labour conditions in order to restore the labour supply. Workers allocated for the collieries had to be tricked into it. Many deserted – or rioted – as soon as they understood that they were heading for Witbank or the Vaal. More deserted when they were confronted with the wretched conditions both in the compounds and down the mines. If caught, they were jailed for breach of contract.

The British administration under Lord Alfred Milner meanwhile worked to restore control of farms to white owners. The Highveld was still densely settled by black people but, as Mulaudzi and Schirmer [2007] show, under various different regimes: as 'squatters', labour tenants or sharecroppers on white farms; as commercial tenants renting land from absentee owners including mining companies; as freehold owners of land, as residents on 'crown' land (owned by the state); as congregants on missionary church lands; and under the remnants of the precolonial polities in the 'reserves' and 'locations'. Irrespective of the status, most people regarded the land as theirs and fiercely resisted removals.



Hierarchy of work

The Union of South Africa, constituted in 1910, was the final political outcome of the Anglo Boer War and signalled a reconciliation of sorts between the English and Afrikaner elites but to the exclusion of black people. This profoundly reshaped the urban labour regime producing, as Nancy Clark [1994] observes, a three-tiered regime that persisted through to the 1960s: the lowest tier was composed of cheap black labour, next up were unskilled white workers while skilled white artisans occupied the top tier.

The brutal coercion of black labour to submit to low wage employment was increasingly effective. In 1905, the Bambatha rebellion against escalating taxes in the Natal Colony was ruthlessly suppressed and, following Union, the 1913 Land Act limited black people to 13% of the land set aside as 'reserves'. On the Highveld, the high-potential agricultural land was kept for white farmers while the 'gold and maize alliance', an informal but short-lived agreement between the mining houses and farmers, was intended to avoid competition for labour. While the mines recruited abroad, the farmers could pay lower wages locally. On most farms, however, black peasants retained considerable autonomy through to the 1950s because they controlled the family labour on which the farms relied. Mechanisation changed power relations on the farms in favour of owners who could then take direct control of labour. At the same time, the newly installed apartheid bureaucracy worked to eliminate all sources of peasant autonomy, limit the number of people on white farms and give farmers absolute control of those who remained. Those deemed surplus were crowded into "the tiny reserve areas in and around Mpumalanga" where it became increasingly difficult to make a living on the land [Mulaudzi and Schirmer 2007: 225].

The reserves were nevertheless intended to preserve non-capitalist property relations because privatising the land would create a landless class and lead to unrest. As Harold Wolpe [1972] shows, they were also intended to maintain subsistence agricultural production at a level high enough to feed the families of migrant workers but not high enough to allow the worker to escape the necessity of labour on the mines and farms. The reserves were thus forced



Land, minerals and labour

to subsidise the cost of labour to employers. Women were left to supplement men's wages, to care for those disabled on the mines and factories or too ill or old to work and to receive the bodies of those killed. The economies and environments in the reserves were severely stressed even before the apartheid regime took power.

At the other end of the migrants' journey, the compounds were managed as virtual labour prisons, maintaining strict segregation between black migrant and other workers including black urbanised workers who were themselves restricted in terms of where they could live. The compounds also acted as vectors of disease, spreading Tb in particular throughout southern Africa.

After the Anglo-Boer War, impoverished white Afrikaans people who had lost their land streamed into the cities. More followed after the First World War. Most were unskilled and many found no work. But they did have the vote and white unemployment and poverty was made a central political issue. Women were drafted into the growing textile industry while men relied on the 'colour bar' – job reservation – to distinguish them and their wages from black workers on the mines and in infant industries such as metals. The colour bar, however, pushed up production costs and was constantly being eroded by capitalist managers even as it was defended by politicians. Segregation effectively shut down class based solidarities, which had shown some signs of emerging in the early years, in favour of racial solidarities.

At the top of the labour pile were skilled workers imported mostly from Britain. Their skills were in high demand and they brought with them the traditions and capacities of British unionism. However, many of them were placed in supervisory positions and they quickly adapted themselves to their privileged position and negotiated benefits with little sense of a broader class solidarity.

Racism and resistance

Worker resistance was mobilised in a series of strikes following Union and again following the First World War. The state readily resorted to sending in troops against both black and white strikers. In 1920, the army brutally suppressed what the Chamber of Mines saw as the first black strike "organised



on the European model” [quoted in Clark 1994: 47]. The Chamber nevertheless raised black wages and called for an end to the colour bar. It also prepared for a showdown with white workers and deliberately provoked what came to be known as the Rand Revolt of 1922. The strikers specifically excluded black workers with the result that production was disrupted but not halted. Prime Minister Jan Smuts declared martial law and again sent in the army. Alexander sums up the consequences thus: “More than 200 lives were lost, the workers and their unions were crushed, and an era of working-class militancy was brought, abruptly, to a close” [1999: 31]. Smuts was then punished at the polls in 1924 and the racist Pact party was elected as a substitute for white labour militancy and to reinforce the colour bar.

In 1948, Smuts was again beaten in an election, this time by the National Party. He apparently assumed that whites were naturally superior and needed no further support. He accepted a liberal agenda that left business to determine the labour market and proposed lifting restrictions on black urbanisation so as to create a settled, stable and skilled workforce for industry and a bigger market for consumer goods. In response, Afrikaans politicians mobilised two major constituencies: white workers who were already smarting from the virtual removal of the colour bar during the Second World War; and farmers intent on retaining cheap labour and worried at the prospect of competition from industry.

The National Party at once introduced a battery of discriminatory laws to reinstate the 1922 Stallard principle “that Africans should only be in the white areas on a temporary basis, and for a limited purpose, that they should retain their links with the reserves to which they must eventually return, and that the means of enforcing this was by stricter influx control and the extension of migrant labour” [quoted in Lipton 1986: 22]. Apartheid rewarded white workers with jobs, welfare and the opium of white superiority, requiring in return that they enforce racial domination as overseers in the workplace and as administrators, soldiers and policemen in society at large. White domination was thus made to serve capitalist production, as labour analyst Karl von Holdt argues: “The coercive and despotic regime secured the compliance of black workers to hard, dangerous work and low pay. It also secured an apartheid



Land, minerals and labour

form of flexible labour, where workers could be hired and fired at will, or shifted from department to department as the need arose" [2003: 39]. This was nevertheless at the cost of productivity as informal resistance became routine for black workers on the shop floor.

In the 1970s, that resistance exploded onto the streets. The reserves – or homelands as they were now called – were now utterly depleted while black miners' wages had remained roughly the same in real terms between 1911 and 1972. The pressure on the black working class intensified as the price of essential commodities rose sharply. In 1973, a wave of strikes swept through the country, starting in Durban's docks but spreading rapidly to municipal and other workers. The strikes succeeded in raising wages, renewing trade union activity and forcing the state to open up legal space for trade unions. This culminated in the formation of the Congress of South African Trade Unions (Cosatu), the most powerful worker's organisation in South African history, in 1985. Worker militancy fed into the broader political resistance sparked by the Soweto uprising in 1976 and given national organisational form with the launch of the United Democratic Front (UDF) in 1983.

In response, government declared a state of emergency. It was really a war on the people. More than 10 000 people were detained while the security forces were given leave to act with unrestrained brutality. It failed to subdue resistance and produced only the stalemate of escalating violence. On the mines, the National Union of Mineworkers (NUM), formed in 1982, "captured the compound system ... and subverted the logic of the employers by using these places of ... control as sites of mobilisation" [Bezuidenhout & Buhlungu 2011: 239].

The NUM was Cosatu's largest affiliate and in 1987 it brought 340 000 miners out on strike. It declared this "the year mineworkers take control", deliberately echoing the slogan of the banned African National Congress (ANC) "1987: Year of Advance to People's Power".

This was the most serious challenge to the power of corporate capital since the Rand rebellion and the industry used the state of emergency to crush it. Anglo American led the bosses' response and called in the state security forces. The



latter raided union offices, detained workers, invaded hostels and coordinated assassinations and vigilante violence. At the end of it, 11 workers were killed, 600 injured, over 500 arrested, over 50 000 dismissed and they did not get the wage increase they went on strike for.

The strike was broken but the NUM was not. It retained near universal support of black mineworkers and it remained in control of the compounds even as it campaigned for an end to the migrant labour system. Apartheid finally collapsed at the end of the 1980s and the ANC came to power at the head of a Government of National Unity following the first democratic elections in 1994. Nevertheless, the bosses' victory opened the path to a new labour regime dictated by capital. And, having lost control of the compounds, they were already looking for an alternative labour regime and ready to accede to the demand for an end to migrancy. Most of the mineworkers, however, have preferred to retain their rural homes rather than bring their families to the mine settlements.

Cheap coal barons

South Africa's economic development has been shaped by the minerals-energy complex (MEC) [Fine & Rustonjee 1996]. This has made for a highly concentrated economy – one in which wealth and the power to direct development is held by a very few large corporations. This pattern is repeated at local level where towns are dominated by major corporations and a number of them started as company towns. Vereeniging, the first coal town, was established in 1892 on the property of Lewis & Marks.

The settlement of Witbank followed, being founded in 1903 by the Witbank Colliery controlled by the Randlord Sigmund Neumann. But Neumann could not monopolise the resource as Lewis & Marks did in Vereeniging, and several other mines were operating around the new settlement including the Douglas, Transvaal & Delagoa Bay, Landau and Coronation. Coal mining, however, remained subordinate both to the interests of gold mining and of the railways. The colliers relied on cheap labour to produce cheap coal and they competed on price and quality and paid a premium for rail haulage. Profits were thin



and, while the gold miners consolidated, the coal miners proliferated. In 1907, they formed the Transvaal Coal Owners Association (TCOA) to coordinate production and marketing so as to increase profits. A decade later the Chamber of Mines appointed a Colliery Committee to give the industry political clout and coordinate its response to labour.

Despite the subordinate position of the industry, coal demand grew rapidly and the colliers themselves took an interest in boosting demand by generating electricity. Lewis & Marks took a leading interest in the Victoria Falls Power Company (VFP) and, in 1912, built what was then a massive 40 MW plant at Vereeniging to supply the Rand gold mines. The Witbank Colliery followed with a small generator to supply the local area. In 1922, the Smuts government passed the Electricity Act which created the Electricity Supply Commission (Escom, now Eskom¹⁶). It built its first power station at Witbank in 1926, a monster 128 MW, but had to do a deal with the VFP which controlled access to the Rand market.

Eskom's mandate was "to stimulate the provision...of a cheap and abundant supply of electricity" [quoted in Clark 1994: 57]. It was exempt from tax, would not make a profit or a loss, but would be run on 'business lines' independent of direct state control. Electricity historian Renfrew Christie [1984] observes that profits were still made, not within the electricity chain but by those who got energy cheap – industry and, above all, the gold mines.

The power industry thus shared in the subordination of coal to the interests of gold. Electricity nevertheless signified modernity. Coal historian Michal Singer remarks that "electrified Witbank would be marketed as a model town ... to draw the attention of industrialists" but the model town contrasted with the colliery hostels where the mineworkers were crowded in: "The cramped conditions in compounds were made worse by poor sanitation and diet; the proximity of compounds to mining activity further exacerbated public health conditions" [2011: 23]. Cheap electricity thus depended on cheap coal and

16 Escom adopted the Afrikaans version of its acronym in the 1980s. For convenience, it is referred to as Eskom throughout.



ultimately on the wretched working conditions and wages afforded to coal miners and indifference to already evident environmental damage.

Cheap coal was also dangerous. Underground ‘pillar and bord’ mines left pillars of coal in place to hold up the mine roof. Cost cutting resulted to ‘top coaling’ – taking coal from the roof – and ‘pillar robbing’ – taking coal from the pillars and so leaving a weaker support. The pressure on coal prices increased during the Second World War. Hendrik van der Bijl, the boss of Eskom and Iscor, was made Director-General of War Supplies and led a major expansion of industry and hence of demand for coal. As coal production increased, so too did the discard coal dumps and the fires of spontaneous combustion glowed from both mines and dumps.

In 1942, the government imposed price controls – coal was to remain cheap by order. The cheapest available coal was from the pillars of old mine workings. In Witbank, by the war’s end, several mines were exhausted including Middelburg Steam, Station, Uitspan, Apex, Transvaal & Delagoa Bay and Coronation. The ground was collapsing in on the workings and the mines were burning and draining acid mine water. Working mines nevertheless continued with the same cost cutting methods. The Coalbrook disaster in January 1960 was the most terrible result. This Sasolburg mine collapsed when the thinned pillars gave way, killing 431 black and six white miners.

During the 1920s and 30s, Earnest Oppenheimer’s Anglo American group rose from being a junior mining house to become southern Africa’s most powerful corporation. By the late 1930s it had acquired a monopoly of diamond production through De Beers and had also established a major position on the East Rand gold fields. In 1945, it consolidated its position in gold by taking over the two firms which had secured the richest of the newly discovered Free State gold deposits: SA Townships and Lewis & Marks. Lewis & Marks was the largest coal producer, with mines in Witbank as well as the Vaal. Along with the gold fields, Anglo acquired these assets together with the Vereeniging Estate. Three years later, when Van der Bijl showed that VFP had made war time profits at the expense of the mining houses, Anglo supported a takeover by Eskom, so creating a state-owned monopoly power producer. In 1952, Eskom



returned the favour by drastically lowering the price of electricity to the mines and embarked on a major expansion with the power supply to the Free State gold fields being the first priority. Anglo was now the major supplier of coal to Eskom as well as the largest consumer of Eskom's electricity.

Industrial expansion with Highveld power

Two other state owned corporations, Iscor and newcomer Sasol, led a huge post-war expansion of industry centred on the MEC, constructing South Africa's original mega-projects – the massive plants and the towns to serve them – in the Vaal Triangle. This process of industrialisation was supported by funding through the state owned Industrial Development Corporation (IDC), also initially chaired by Van der Bijl. It created the giant corporations, private and state owned, and concentrated economic power in their hands. By the 1980s, Anglo American and the state each controlled 25% by value of South Africa's top 50 corporations. "The picture is essentially one of a relatively small economy with three main pillars: the state, the three insurance-based groups¹⁷, and Anglo" [Pallister et al 1987: 38].

In the 1960s, Eskom launched a new round of expansion focused on the Highveld. Over the next 20 years it built Komati, Camden, Grootvlei, Hendrina, Arnot and Kriel, each one bigger than the last. Each was also opened with a tied mine next to it and so expanded coal's physical footprint across the Highveld. Eskom also created a joined up national grid, which enabled it to start closing down local municipal power stations across the country and concentrate production on the coal fields.

By this time, coal production was concentrated in the hands of Anglo and the General Mining and Finance Corporation, acquired by Federale Mynbou in 1965. Federale was controlled by Afrikaans finance house Sanlam, with Rembrandt as the next most important shareholder. Its interests were actively promoted by the apartheid state by giving it mining concessions and ensuring that it would become a major supplier of coal to Eskom. It also got the support of Anglo which wanted Afrikaner capital to expand its interest in mining so

17 Old Mutual followed by Sanlam and Liberty Life.



Table 1: Eskom Highveld power stations and tied mines: Round One

Station	Built	District	Installed Capacity (MW)	Tied Mines	Original Coal Corp	2016 Coal Corp
Komati	1958-65	Middelburg	1000	Koornfontein & Blinkpan	Gencor* (Federale)	
Camden	1962-69	Ermelo	1600	Usutu	Gencor (Trans-Natal)	Ichor
Grootvlei	1964-77	Balfour	1200	Springfield	Anglo	Mined out
Hendrina	1965-76	Middleburg	2000	Optimum	Gencor (Gen Mining)	Glencore, Tegeta
Arnot	1968-75	Middleburg	2100	Mafube Arnot	Anglo Anglo	Anglo/Exxaro Exxaro
Kriel	1969-79	Bethal	3000	Kriel	Anglo	Anglo

* We have anachronistically given the name Gencor to what became Gencor in 1980.

as to disarm National Party hostility to English capital. Anglo “effectively gave General Mining to Federale Mynbou” [Hattingh 2007] and retained a minority interest to guarantee the deal.

Smaller coal miners included Rand Mines (later Randcoal), Gold Fields, JCI and a smattering of independent colliers. Both Sasol and Iscor also became major coal miners but primarily to supply their own needs.

Coal export boom

Anglo meanwhile led the coal industry to look to the export market to escape the low profit regime imposed by South African price controls. It developed new techniques to upgrade low quality coal for international markets and led negotiations to supply coking coal to Japanese steelmakers while also exploring European steam coal markets. The scheme got an unexpected boost from



the global 'oil shocks', starting in 1973 when the Organisation of Petroleum Exporting Countries (OPEC) hiked prices in defiance of the USA and the big oil corporations. The oil shocks stimulated both the economy and government paranoia. Other countries shared the anxiety over energy security but the increasingly militarised apartheid state saw it in the context of what it came to call the 'total onslaught'. It gave priority to reducing South Africa's dependency on foreign suppliers of strategic goods. At the same time, it needed exports to pay for the rising import bills, particularly for oil and arms.

Coal boomed. Between 1970 and 1983, the price escalated, total production tripled, from 55 million tonnes (Mt) to 175 Mt, and exports rose more than 30 times "from only 1.3 Mt to 45 Mt in 1986" [Leger 1991: 129]. Coal mine owners made substantial investments to mechanise mining, shift to open cast methods and improve the quality with coal washing facilities. Government provided the substantial subsidy of developing the infrastructure for exports. A small fishing village was bulldozed aside to make the deep water port of Richards Bay and the coal terminal, built and owned by the coal corporations, with loading facilities to fill huge bulk coaling ships. Railways dedicated to coal were constructed between mines and the port and new power lines erected to supply the energy. The success of this mega-project both testified to and consolidated the cosy institutional relationship between state and private corporations. Government also insisted on cutting big oil – BP, Shell and Total – in on the export deal to keep them sweet as anti-apartheid sanctions threatened. Having no mines of their own, they partnered with local colliers, funded mechanisation and marketed export coal.

The coal industry was transformed. Coal from the same mine could be separated according to quality. Low quality coal for Eskom covered costs while high quality export coal yielded high profits which enabled investment in capital intensive open cast mining. In the early 1970s, coal miners' wages were lower in real terms than in 1911. Added to this, southern African countries either cut off or reduced the supply of labour to apartheid South Africa. The modernisation of production was partly driven by the consequent difficulty of finding labour but in turn dramatically changed the labour regime. In 1970, "43% of coal was hand-loaded, in 1978 as little as 10% ..." [Leger 1991: 134].



By 1987, 17 mines had moved to the open cast method which needs only a third of the workforce of underground mines but recovers 90% of the coal in the seam. Many more followed.

In this context, corporate capital once more looked to create a settled, stable and skilled workforce. For the most part, this meant giving more senior migrant workers permanent contracts in place of annual contracts. At Rietspruit, a giant open cast mine dedicated to export, Randcoal and Shell proclaimed an 'equal opportunity' mine. Alongside the traditional single sex hostels, they built family houses for married workers and secured government permission for permanent residence. Other mine housing schemes followed in the 1980s as apartheid job reservation and 'influx control' – the bar on black urbanisation – collapsed, but they reproduced segregation and inequality. John Filitz, who documents the case of Rietspruit, observes:

White miners occupied the “upper” village, atop a hill, away from the colliery operations, whilst African miners occupied the “lower” village, situated alongside the slurry dump and in close proximity to colliery operations. Furthermore, houses for African workers were substantially smaller than those of their White counterparts, in addition to comprising of rudimentary finishing [2011: 42].

While workers were thus settled, mining was not and is not settled. Rietspruit's large coal reserve was mined out in just 26 years and the mine closed in 2002. White workers left the upper village. Black workers and their families were abandoned in the lower.

More power and synfuels

As coal boomed, electricity demand soared. Before it had finished the last round of power station building, Eskom embarked on a second round from the mid-1970s. It included the Koeberg nuclear plant in Cape Town. Two coal plants were built outside the Highveld: Lethabo in the Vaal and Mathimba in the Waterberg. Five more were built on the Highveld: Matla, Duvha, Tutuka, Kendal and Majuba.



Table 2: Eskom Highveld power stations and tied mines: Round Two

Station	Built	District	Installed Capacity (MW)	Tied Mines	Original Coal Corp	2016 Coal Corp
Matla	1974-83	Bethal	3600	Matla	Gencor	Exxaro
Duhva	1975-84	Witbank	3600	Middelburg	Rand Mines	BHP / South32
Tutuka	1980-91	Standerton	3600	New Denmark	Anglo	Anglo
Kendal	1982-93	Witbank	4100	Khutala	Rand Mines	BHP / South32
Majuba	1983-94	Volksrust	4100	#Failed mine	-	-

Whereas the first round was constrained by high costs of capital, with South Africa paying as much as “twice the going market rates of interest” [Gentle 2009: 64], borrowing costs dropped dramatically in the 1970s as international capital sought to lay off surplus petrodollars. Eskom borrowed massively and was then caught in the debt trap created when the US and UK pushed up interest rates in the early 1980s. The gold price collapsed from its record high as did commodities. The economy went into recession and Eskom’s projection of rapidly growing electricity demand proved wrong. By the end of the decade it was mothballing plants while desperately trying to boost demand. Government was stuck with the debt and defaulted in 1985. At the same time, it initiated the neo-liberal policies that would mature over the period of the political transition. The privatisation of Eskom was mooted, although not implemented, and the founding requirement that it operate without profit was revoked. Price controls on coal were removed.

The oil shocks made Sasol look profitable. In 1975, the corporation agreed with government to build a second synfuels plant and in 1976 agreed to the third, the aim being to produce half South Africa’s fuel. Iran was South Africa’s largest supplier of crude and construction on the third plant was ‘fast-tracked’ in 1979 when the Shah was overthrown. The site chosen for the new plants



was a town called Driefontein atop a massive coal resource on the Highveld. The corporation renamed it Secunda after its second plant and, like Sasolburg, it was designed as a garden city complete with its own nature reserve. The black people of Driefontein were removed to eMbalenhle, downwind of the new plants.

Both plants were operational by 1982 and producing ten times more than the Sasolburg plant which subsequently phased out synfuels to focus on chemicals. Sasol simultaneously constructed the world's largest underground coal mining complex to produce the 39 Mt that the new plants would devour each year. The plants cost R7 billion. This was a staggeringly large sum so government privatised Sasol in 1979 to raise the capital while retaining a substantial stake through the IDC. With oil prices rocketing and a government guarantee of profits to Sasol, the offer was oversubscribed. As boom turned to bust, the guarantee was called in. Sasol was subsidised out of the 'fuel equalisation fund' – effectively a levy on consumers – for another two decades.

The South African recession was compounded as sanctions intensified. In 1985, Chase Manhattan Bank, which had provided the government with capital after the Sharpeville massacre, called for the immediate return of all loan funds falling due for repayment and so triggered a major financial crisis just as the apartheid government called a state of emergency in the face of rising resistance. In 1990, government capitulated, unbanned the resistance movements and released Nelson Mandela.

Gencor – made and unmade

Meanwhile, the concentration of corporate power intensified. In 1976, General Mining launched a hostile bid to acquire the Union Corporation, a sprawling conglomerate with gold mines and controlling interests in Impala Platinum and Richards Bay Minerals. It also controlled Sappi, the industrial timber corporation, and several engineering and manufacturing companies. The two companies were finally merged in 1980 to create Gencor, the largest South African conglomerate after Anglo but also one of the most fractured. In 1986,



Land, minerals and labour

Derek Keys, formerly of the IDC, was appointed executive chairman and set about restructuring the company to separate manufacturing from mining.¹⁸

The company also expanded. In 1989, Mobil was finally persuaded to disinvest from apartheid South Africa and Gencor bought its assets, including the refinery in south Durban and its chain of petrol stations across the country, to create Engen. In the same year, it acquired Alusaf which operated the Bayside aluminium smelter in Richards Bay. Gencor expanded Bayside and, in 1991, undertook feasibility studies for the much bigger Hillside smelter. Construction started in 1994, just as the first democratically elected government took office, and it was completed in 1995. It then started planning the Mozal smelter in Mozambique. The biggest input in aluminium smelting is electricity and this expansion was made possible by a secret deal negotiated with Eskom.

Gencor also expanded its coal interests, taking over Randcoal – including Rietspruit – both for its Eskom contracts and its export rights at the Richards Bay Coal Terminal. The coal company was then called Ingwe.

Throughout the 1980s, Gencor expanded overseas through investment companies set up in tax havens with the intention of evading anti-apartheid sanctions. In common with most of the major South African corporations, it used these offshore entities to salt capital out of the country by such means as transfer pricing – selling goods to them at less than the market price – and/or tax shifting – claiming profits in the tax havens rather than at home. It could then acquire mines and other assets without being identified as South African, so bypassing sanctions.

In 1992, Derek Keys was appointed Finance Minister by the apartheid government with the agreement of the ANC. Keys had to join the National Party to take the job but was in effect corporate South Africa's nominee. His appointment was intended to restore business confidence and signal the continuity of economic policy in the transition from apartheid. Following the 1994 elections, Mandela presided over the Government of National Unity with

18 Reference for Business, nd, *Gencor Ltd. – Company Profile, Information, Business Description, History, Background Information on Gencor Ltd.*, at: <http://www.referenceforbusiness.com/history2/22/Gencor-Ltd.html#ixzz40KllzFnV>, visited 16 February 2016.



cabinet portfolios shared out between the ANC and the NP. Keys was retained in the Finance portfolio but resigned after two months and was replaced by another businessman, Chris Liebenberg.

Gencor, meanwhile, was negotiating to buy Billiton International, a mining company with assets in Indonesia owned by oil giant Shell. The deal required a major export of South African capital and Gencor sought and received an exemption from the capital controls then in place from the Minister of Finance, Derek Keys. It soon became evident that Gencor, the supposed parent, was in fact of subordinate interest. In an internal deal, Billiton bought Gencor's base metals assets, including the Richards Bay aluminium smelters and Ingwe Coal. With the support of Treasury and the South African Reserve Bank, it listed on the London Stock Exchange in 1997 with Keys as chairman. Much of Gencor's top management then transferred to Billiton. They included Mick Davis who had previously worked at Eskom and was their lead negotiator on the special pricing agreement for Gencor's smelters. This listing thus preceded, and set a precedent for, the listings of other major South African corporations on the world's central stock exchanges in the late 1990s and early 2000s. In 2001, Billiton merged with BHP, an Australian mining house. BHP Billiton listed in London and Sydney and subsequently became the world's largest miner.

Gencor itself retained its own precious metals division but quickly unbundled, morphing into a capital holding company and selling off its last assets, a 46% holding in Impala Platinum, before closing its doors in 2003. The vanishing of Gencor seems to have been connected with a legal claim against it by people suffering from asbestosis. The corporation bought Cape Plc's asbestos mines when the latter disinvested from South Africa in the early 1980s. Without admitting liability, it made a 'full and final' settlement of R380 million to the Asbestos Relief Trust. It was then quickly liquidated, returning very substantial 'shareholder value' while terminating corporate responsibility for the ongoing ruin of the environment and of thousands of people's health.



Anglo astride the transition

For its part, Anglo followed in Rhodes' footsteps across British southern Africa and, in 1924, invested in the copper fields of Northern Rhodesia through a subsidiary based in London. The very large profits from the mines were returned to London. Following Zambian independence, the mines were nationalised but Anglo was handsomely compensated and set up two offshore companies with the proceeds. In 1965 it created Charter Consolidated as a "holding company for operations in the USA, Britain, Canada, France, Australia, Malaysia and Mauritania" [Pallister et al: 121]. But the bulk of the Zambian money went into Minorco based in Bermuda. Some £95 million was "bled from a former British colony in Africa and deposited, nicely sanitised, in a British colonial tax haven in the Caribbean" [123].

Minorco invested heavily in north and south America, in Wall Street finance and commodity trading as much as in mining and related industries. By the early 1980s, it was the largest source of foreign direct investment in the US. And it controlled a Byzantine network of companies designed to avoid tax, evade anti-apartheid sanctions and conceal links with South Africa while sanitising money syphoned money from it.

Nevertheless, the bulk of Anglo's capital remained trapped in South Africa where it bought up the assets of departing transnational corporations at bargain prices. Most notably, anti-apartheid activists forced Barclays Bank to disinvest in 1986, following a campaign that ran over two decades and persuaded increasing numbers of institutions and individuals to boycott the bank in its lucrative UK and US markets. Barclays National was then the biggest bank in South Africa and already had close ties with Anglo, having six Anglo directors on its board – more even than the UK parent Barclays Bank. Anglo was then "the natural choice" to take over the bank which became First National Bank [Pallister et al: 335]. This purchase greatly extended Anglo's already large presence in finance as well as its influence across the economy. By this time it owned or controlled companies in every sector of the economy including: mining and metals, engineering, construction, brewing, car making,



timber plantations and pulp and paper, publishing and freight. Ashman et al outline its dominance:

At the time of the transition to democracy, AAC was South Africa's largest natural resource company, with an annual turnover of nearly [US]\$25 billion in 1993. At points in its history, AAC has been the world's biggest gold, platinum and diamond producer [and it] ran the world's most successful global cartel, the Central Selling Organization (CSO). ... it was a dominant player in South African finance through its control of First National Bank ... [it] had 100 subsidiaries in South Africa and manufacturing accounted for about 30 per cent of its revenues. By the time of the first democratic elections in 1994, AAC's activities collectively accounted for 43.3 per cent of the JSE's market capitalization. [32]

In 1996, Anglo tried a repeat of the deal that gave General Mining to Federale Mynbou, when it sold gold miner JCI to Capital Alliance, a black investor group, at a discount price. Its website still calls it "the biggest black empowerment deal in South African corporate history".¹⁹ Within a year, however, the gold price collapsed, JCI's value fell below what Capital Alliance paid for it and Anglo bought back two of JCI's more productive mines. The remains of JCI were subsequently ensnared in the elaborate frauds of Brett Kebble.

Perhaps more successfully, Anglo says it "has embraced the spirit of economic transformation" and "been instrumental in the creation of some of the country's the most significant empowerment companies, including Exxaro Resources, African Rainbow Minerals, Royal Bafokeng Platinum, Shanduka, Mvelaphanda, Atlatsa, Ponahalo and Anglo American Inyosi Coal."²⁰ Thus it has had a hand in the making of South Africa's new generation of billionaires including Patrice Motsepe, Cyril Ramaphosa and Tokyo Sexwale.

Anglo meanwhile merged with Minorco and listed on the London Stock Exchange in 1999, two years after Billiton, effectively taking very large resources

19 <http://www.angloamerican.com/about-us/history> at 11 July 2016.

20 Anglo American Transformation Report 2014, p.81.



created in South Africa to finance its global ambitions. Thereafter, it shrank as international investors demanded big and quick returns and obliged it to dispose of 'non-core' businesses including AngloGold Ashanti, South African Breweries, paper company Mondi, chemicals company AECL, and Highveld Steel. It also slipped down the ranks of global mining houses – falling behind rivals BHP Billiton, Glencore, Rio Tinto and Vale. It expanded internationally – buying up base metal (copper, nickel, iron) and coal mines around the world – while shrinking in South Africa. By 2011, "South African assets were 35% of turnover and 31% of total operating profits" [Ashman et al: 34]. In South Africa, however, it remained a colossus with dominant positions in platinum, diamonds and iron ore and a leading position in manganese, chrome and coal.

Ashman et al comment that "the restructuring and relisting of Anglo American has been one of the most important changes in the South African economy ... the shedding of almost all manufacturing businesses implies an important withdrawal of the most important and influential conglomerate from downstream value added production in South Africa" [35]. Further, in selling such businesses, Anglo moved high value production to the First World and left low value production in Third World South Africa. Mondi's high end paper production was mostly relocated to Europe while lumber and wood chips were left in South Africa. The latter now produces only 9% of group revenue.²¹ Similarly, the engineering and design divisions of Boart Longyear, a maker of mining equipment, were moved to Europe ahead of its sale. "Thus, the one important area of capital and transport equipment where South Africa had built a technological lead due to innovation in mining and minerals processing has been shifted offshore" [33].

In a free land

Gencor vanishing and Anglo shrinking reflected the economic dynamics that attended the political transition from apartheid. The Soviet Union collapsed in 1991, marking the end of the Cold War, and the US victors proclaimed the global triumph of capitalism and aggressively redefined 'development' in

21 <http://www.mondigroup.com/desktopdefault.aspx/tabid-294/> at 12 July 2016.



line with the neo-liberal ideology of the ‘Washington consensus’ created by the US Treasury, International Monetary Fund (IMF) and World Bank. The triumphalism served to conceal that the system was in deep crisis.

From around 1980, finance capital unmoored from production because the latter no longer provided the return on capital necessary for growth. This was a crisis of over-accumulation: investors had more money than they could safely invest but nevertheless also demanded higher returns and hence strong economic growth. Consequently central bankers, led by the US Fed, blew up one bubble after another to absorb surplus capital, pump up Northern (and Southern elite) consumption, and sustain the bullish sentiment on stock markets. Thus, the financiers turned global capital into a giant Ponzi (or pyramid) scheme so as to accumulate wealth taken from everyone else. This ‘financialisation’ of the economy was one way to keep growth going.

The second way was through intensified dispossession and a more aggressive transfer of wealth from poor to rich on a global scale. The Northern powers presided over a global restructuring of industry, relocating energy-intensive manufacturing to the global South through foreign direct investments controlled by Northern transnational corporations. This gave rise to a broadly triangular order. Raw materials were extracted from Africa and Latin America at the dirty and bloody end of the global economic order. Up the production chain, China’s cheap and dirty production developed on the back of the dispossession of the peasantry and pitifully low wages. On the other side of the world, in North America and Europe, cheap goods shipped over the seas were essential to keeping inflation low. The ‘Walmart economy’ was sold on cheap goods and cheap credit even as Northern workers’ wages declined in real terms. In almost all countries, North and South, labour’s share of national product was cut to the benefit of capital. Trade boomed and the better part of it was internal to the major transnational corporations, so increasing the opportunities for transfer pricing and other tricks of trade to syphon money offshore.

In South Africa, government adopted its own variation on the Washington consensus, the misnamed Growth, Employment and Redistribution (GEAR)



policy – which did none of those things. The world of inequality was not turned upside down. The struggle was. Veteran anti-apartheid activist Neville Alexander noted that, during the struggle years “everyone ... was seen to be and treated as an equal, whereas after 1994, there was this sudden and very visible divide between those who were deemed to have been ‘successful’... and the veritable underclass, victims of apartheid before 1996 and of neo-liberalism thereafter” [2009]. South Africa thus joined the world market defined by Ponzi capital’s globalisation strategy. This produced growing inequality while trumpeting the promise of individual fulfilment through consumerism. For those on the wrong side of the wealth gap, this is a promise broken as it is made.

The ANC in power no longer saw the working class leading what it still called the National Democratic Revolution. Instead, the state would lead change to ‘deracialise the economy’ through the creation of a black bourgeoisie. Its agenda for transformation thus came to centre on Black Economic Empowerment (BEE) aimed at creating a black capitalist class and, in Moeletsi Mbeki’s view, represented the deal done between the new black political elite and the old white business elite.²² This strategy relied heavily on the latter’s patronage as the concentration of economic power created high barriers to entry. Such dealing also provided a transmission belt for the predatory values forged by imperial capitalism.

Financialisation gave a new twist of self-righteous greed to those values, articulated by the exorbitant pay demanded by corporate CEOs and by the quick and big returns to investors demanded by the ‘shareholder value’ movement. In some ways, South Africa’s big corporates anticipated financialisation in the web of companies set up in tax havens to evade sanctions and ship money out ahead of the transition. But when they moved to the centres of global capital in the 1990s, they were plunged into a world where commodity markets were ever more entangled with derivatives. In a 2012 Policy Brief, Unctad noted that “volumes of exchange traded derivatives on commodity markets [are] 20 to 30 times larger than physical production” and prices are determined more

22 Moeletsi Mbeki, *Who is the dominant class in South Africa?* Mail and Guardian, 28 July – 3 August 2006.



by financial market dealing than by supply and demand [quoted in Ashman et al 2013: 9].

Hence, commodity prices have been made increasingly volatile along with the value of currencies, particularly the Rand. In brief, prices boomed from 2002 to 2008, crashed with the global financial meltdown, re-inflated from 2011 to 2014 as the imperial powers pumped money into the banks while China furiously built unnecessary infrastructure, and crashed once more as these policies failed. This roller-coaster exposed the vulnerability that follows from South Africa's balance of payments deficit – the country spends more on imports than it gets from exports, and it pays out more in profits to foreign investors than it gets from South African investments abroad. To cover the difference, economic policy is framed to attract more foreign capital. But this is mostly speculative capital, 'hot money' investments in shares and bonds which suck any surplus from the economy when the going is good and are instantly withdrawn when the mood turns sour.²³

Corporate rules

The apartheid state was notoriously secretive and it extended the cover of security legislation to private and state owned corporations through the Key Points Act. That put corporations beyond scrutiny – by the media, by local communities and even by local government regulators – and complemented their own inclination to secrecy. Other legislation combined with custom to extend the cover well beyond designated key points to industry in general. Thus, Eskom sat inside the Department of Minerals and Energy office and information on electric power demand and coal supply was kept within the tight circle of the minerals-energy complex (MEC). Secrecy also served as cover when they got it wrong as with the exaggerated demand projections that justified over-building in the 1980s. They got it wrong again thirty years later when a secret technical task team composed of the MEC A list – the DoE, Eskom, Sasol, Anglo, BHP Billiton, Xstrata, the Chamber of Mines – greatly

23 The groundWork Report 2014 gives a detailed account particularly of the period since the 2008 bust. The 2007 report gives an account of the boom period leading up to the bust. See also Hallowes 2011.



exaggerated future demand projections for the 2010 Integrated Resource Plan for Electricity (IRP 2010).

Secrecy was the product of a highly concentrated economy – where economic power is in very few hands – as much as of paranoid government. So while the MEC shaped the economy to their interests, Anglo and Gencor took their money offshore by legal and illegal means. Thus also, air emission permits under the Air Pollution Prevention Act were negotiated in secret between the Chief Air Pollution Control Officer (Capco) and the industry concerned. In effect, industries wrote their own licences and the Capco signed off on them after a good lunch. No-one else knew what they did emit or what they were allowed to emit.

With the political transition, the anti-apartheid movement made the language of state security disreputable. At the same time, big business repositioned itself and called for self-regulation in the place of apartheid's 'command and control' approach. Neither command nor control were much in evidence but the phrase was intended to associate apartheid with authoritarian socialism and contrast both with free market capitalism. But corporations anxious to distance themselves from the regime could not avoid more intense scrutiny in places where people were organised. Much information did come out but industry increasingly used the language of 'commercial confidentiality' to avoid disclosure. The Key Point Act nevertheless remained in place almost as if it had been forgotten.

'Commercial confidentiality' is twinned with intellectual property rights. Transnational corporations are the main source of FDI and dominate world output and trade with the better part of trade being internal to firms and much of it generated by the globalisation of production. They have concentrated the capacity for innovation at the top end of the value chain but they then need to control production at the lower end on the other side of the world. Apple and Samsung need to make sure that Foxconn, the Chinese company that puts the phones together, does not slip the leash and start producing for its own account. The information economy thus runs counter to the enlightenment ideal that knowledge should circulate freely. Instead, it requires the selective



enclosure of information and knowledge generation achieved through the mechanisms of intellectual property rights.

A large part of trade in mineral resources is also internal to transnational corporations such as Anglo, BHP Billiton, Glencore and Lonmin. A recent UNCTAD report repeats what we all know: they are using illegal mis-invoicing to suck capital from countries such as South Africa [Ndikumana 2016]. Illegal transfers are in addition to the legal returns on capital to global investors at the extortionate rates required to compete in the world of Ponzi capitalism. The lines between legal and illegal practices, and between legitimate and criminal capital, are intentionally blurred and corporate confidentiality is necessary whether to conceal or merely obscure.

In 2015, in the lead up to the Paris climate negotiations, Japanese delegates called for civil society observers to be thrown out as ‘real negotiations’ only happen behind closed doors. In modern trade negotiations the existence even of those doors is secret. While the World Trade Organisation is paralysed, the corporate agenda has been driven forward by the US on two fronts: the Trans-Pacific Partnership (TPP) between the US and 11 other Pacific rim countries, and the Trans-Atlantic Trade and Investment Partnership (TTIP) between the US and the European Union. Investor rights are central to both and, while public knowledge of these negotiations has depended on leaks, the corporates have been on the inside shaping the text. The aim is to prevent states introducing policies or laws – notably relating to labour, community or environmental rights – that crimp corporate profits, and to enable corporates to sue them if they do.

Closing down on open democracy

The political transition was thus marked by South Africa’s own heritage of secrecy and by the agenda of global capital and its imperial sponsor. Against this, a civil society campaign for open democracy drew on the anti-apartheid tradition to work for legislation that would include:



Land, minerals and labour

- freedom of information, giving everyone access to all government records on request subject to specific limitations including personal privacy, commercial information, law enforcement and security;
- open meetings – meaning that meetings and minutes of decision making bodies from cabinet down would be open to the public, subject to similar limitations;
- privacy for people – meaning freedom from surveillance and the abuse of private information held by state or corporations; and
- whistleblower protection.

In 1998, a draft bill including these points went to cabinet which, as Justine White argued, promptly cut everything that “would have inculcated and entrenched ... transparency and accountability” to give “the Open Democracy Act real teeth” [1998: 69]. The ‘open meetings’ chapter was deleted and information held by cabinet was excluded. Cabinet also deleted a clause which said officials could only use the limitations to refuse a record if there was a reasonable chance of harm (for example, to a criminal investigation or national security). Finally, cabinet cut the establishment of an independent Open Democracy Commission to oversee implementation and ensure that officials would not delay access to information. White concluded that cabinet displayed “the grudging and unwilling manner in which government is approaching Open Democracy” [72] with “a watered-down, apologetic and limping version” of the bill [76].

The grudging version of the freedom of information chapter was passed two years later as the Promotion of Access to Information Act (PAIA 2000) and what remained of the right was left to wither without a budget for implementation. In contrast, notes Jane Duncan [2007], then of the Freedom of Expression Institute (FXI), the subsequent Regulation of Interception of Communications Act (RICA) of 2003 was developed with unusual urgency and generously funded. It reflected the growing influence of the security agenda given greater impetus by the US ‘war on terror’ following the 9/11 attacks of 2001. In parliament, all parties adopted the Orwellian “Protection of Constitutional Democracy Against Terrorist and Related Activities Bill”. Opposition outside



parliament was intense. Human rights lawyers argued that the Bill was unconstitutional because the deliberately wide definition of ‘terrorism’ could cover ordinary political actions like protest marches, defiance campaigns and even workers’ strikes. An amended Bill, with a much tighter definition of terrorism, was enacted in 2005 but the security agenda was carried forward with the Secrecy Bill – aka the Protection of Information Bill – which, in the early drafts, covered corporate as well as state information.

In the environmental sector, the National Environmental Management Act (NEMA) of 1998 had taken its cue from the Open Democracy proposals and guaranteed expansive rights of access to environmental information. In 2003, these clauses were removed and access made subject to PAIA. Government barely deigned to register the objections of environmental organisations. Noting that information was critical to environmental struggles against polluting industry, groundWork observed that “industry and government [are] working hand in hand to ensure that environmental information is kept away from the very people that are living on the fence-line of polluting industrial development”.²⁴

Under cover of the ‘war on terror’, the Ministry of Defence revived the Key Points Act in an attempt to block community access to a risk assessment at the Engen refinery. In a letter circulated to south Durban industries it warned that environmental information should be treated as ‘extremely sensitive’. The Mondi paper mill saw the point. It sought to restrain the South Durban Community Environmental Alliance (SDCEA) from publicising information on worker injury and death at the plant and threatened to use its influence with the media to block stories highlighting its pollution. Steel giant Iscor similarly sought a gagging order against community members who had taken legal action in an attempt to hold it to account for the pollution that destroyed small holder farming in Steel Valley. And, while the DEA²⁵ was simply not producing credible information, both government and industry worked to discredit those who claimed that their health was affected by pollution.

24 Bobby Peek, *From the smoke stack*, groundWork Newsletter, March 2003.

25 Or DEAT as it then was: the Department of Environmental Affairs and Tourism.



Environmental regulation was meanwhile collapsing. Government was not so much as acknowledging formal requests for information from civil society organisations. Industry, left to monitor its own emissions, represented itself as the only reliable source of knowledge. Corporate self-regulation was exposed, however, when the Sapref refinery – owned by Shell and BP – was shown to have lied about its sulphur emissions over a period of five years. But, while neither state nor corporates produced credible information on pollution, both used the lack of information to dismiss the concerns of neighbour communities as uninformed. They colluded in what we have called ‘purposeful ignorance’.

groundWork then introduced the ‘bucket brigade’ to the refinery fenceline organisations. Using a low tech air sampling method, community activists showed a cocktail of toxic chemicals known to harm people’s health at all sites: 16 toxic compounds in Sasolburg; 14 at Chevron in Cape Town; and nine at Engen in south Durban. As these results came in, the media responded with banner headlines such as ‘Don’t breathe: SA air toxic’. Sasol immediately contested both the findings and the bucket method. But to refute it, it had to commission an independent academic study and this study confirmed the bucket findings. The campaign thus discredited industry claims to superior scientific information and the assurance that it could be trusted to monitor its own emissions. It also discredited government’s reliance on industry figures and exposed the paucity of official information.

In some cases, public information has been privatised through ‘public private partnerships’. Thus, Johannesburg Water partnered with Suez, the French transnational corporation, and refused a request for documents relevant to public water provision to protect the latter’s ‘confidential methodology’. In 2005, a court ordered the water authority to review its documents, decide which must be released in terms of the PAIA, list those that it would not release and give reasons for holding them secret. More than half the documents were then disclosed. The reason for refusing the rest remained the same: commercial confidentiality.



More commonly, public bodies use administrative decisions and/or procedures to block information access and this is what PAIA empowers them to do. CER observes:

The culture of secrecy plaguing the mining industry is facilitated and perpetuated by the DMR in particular. Mining companies, their consultants, and the DMR refuse to provide I&APs [interested and affected parties] with even the most basic information. I&APs are then expected to comment on applications without the very information on which they must comment. ... PAIA is even used as a tool by some public and private bodies to avoid disclosure. In both the public and the private sector, there are repeated instances of entities using PAIA to resist and slow down access to information. [2016: 76]

As a condition of their mining right, corporations are required to produce Social and Labour Plans (SLPs) which are supposed to benefit workers and neighbouring communities. It is very rare, however, for these supposed beneficiaries to see one. The Centre for Applied Legal Studies (CALS) is undertaking a systematic study of SLPs and had to devote considerable resources simply to get the documents. With the DMR “access was ultimately granted” after “considerable engagement” but some regional offices, which hold the actual documents, obstructed access even after it was granted by the national office [CALS 2016: 20]. Private corporations are also obliged to release information needed for people to realise their Constitutional rights. CALS therefore sent PAIA requests to mining companies asking for their SLPs. Some corporations took the view that SLPs are public documents and sent them but nearly half either ignored the request or refused. The grounds for refusal were that the documents contained confidential commercial, financial or environmental information.



Outsourced development

The SLP system was introduced with the Minerals Petroleum and Resources Development Act (MPRDA) in 2004. According to CALS, it results from a decision “that the mining sector should assume positive, developmental responsibilities that are ordinarily those of the government sector” [23]. It seems that the mere existence of the system is meant to persuade us that the mineral wealth of the country is being shared by all. In our view, however, it is a bizarre but symptomatic outcome of neo-liberal governance.

In compliance with the developmental strategies of global capital, governments around the world have competed to offer lower taxes and less onerous regulation. Since this has compromised the capacity of the state to deliver on its ‘developmental responsibilities’, companies found themselves operating in an increasingly ragged social context. This nevertheless presented them with the opportunity for patronage which was sanctified as ‘corporate social responsibility’ (CSR). CSR was conceived as voluntary and hence entirely within the gift of the corporation. As the 2003 groundWork Report noted, a large portion of it is dispensed locally and has the effect of deterring public criticism. The King Report on corporate governance made CSR a central feature of ‘integrated sustainability reporting’ and justified it as creating “a more productive and supportive local community”. Nevertheless, corporate capital was already concerned that government was attempting “to shift some of the responsibility and financial burden for social development to the business sector” [quoted in gWR 2003: 62].

The SLP system effectively makes CSR mandatory and so formalises the transfer of responsibility. This could be seen as the just deserts of corporate over-reach. However, it institutionalises relations of patronage as the means of accessing benefits which should be the right of citizens. And it remains up to the corporation to decide what it will do.

As one example, in early 2016, Msobo Coal agreed to support a community centre in the KwaChibikhulu township of Chrissiesmeer. This was apparently in response to a request from an organisation for disabled people and so appeared as an exemplary part of their SLP. However, in 2013, Msobo Coal had



tried to establish an opencast mine – Harwar Colliery – in the Chrissiesmeer Protected Environment, to produce one million tonnes of coal per year for 15 to 20 years. Their tactics to get Hawar approved included playing on racial divisions in the town. That application failed. This SLP is for mines outside the Chrissiesmeer catchment. The project gives rise to a suspicion that Msobo is buying support for its next application in the catchment.

Although communities, workers and traditional authorities are the supposed beneficiaries, CALS observes that the law recognises the DMR, local government and mining companies as the primary role players in the SLP system. In effect, consultation on the SLP can, and usually does, stop behind closed doors at the municipal office. Alternatively, the corporation can decide that community consultation will help create a ‘supportive local community’.

At best, this is a half baked substitute for effective government and a sign that government has deserted its responsibilities. CALS shows that a large proportion of SLPs are barely serious and monitoring implementation is not taken seriously by the DMR – although it can suddenly be raised to exert political leverage on a company. But a less optimistic reading seems more likely, particularly since government and industry show such an acute aversion to scrutiny: the SLP system requires that the corporation put the municipality in its pocket and it offers local politicians the opportunity for more personalised corruption in return for defending the coal mines.

Smallanyana government

On the 16th of August 2012, police killed 34 striking mineworkers at Lonmin’s Marikana mine. In the days leading up to the massacre, another 10 people had been killed. They included mineworkers and police. The strike was one of a series of wildcat strikes across the platinum belt. It was followed two months later by the Western Cape farmworkers’ strike which also met with armed repression. These events stood out against ongoing local “municipal rebellions” fuelled by the angry memory of apartheid dispossessions and the sense of being again dispossessed [Hart 2013]. They exposed the brittleness and brutality of the post-apartheid economic order and demonstrated the



alienation of workers from the labour regime and from the unions meant to represent them. They signalled – both as symptom and cause – the breakup of the post-apartheid order which, as Peter Bruce of Business Day put it, allowed the African National Congress (ANC) to be “pro-business even though [its] core constituency [is] poor”.²⁶

In 2007, President Thabo Mbeki was ousted in favour of Jacob Zuma as ANC president. The coalition that brought Zuma to power combined the South African Communist Party (SACP), Cosatu, the ANC Youth League and a less visible but equally significant business lobby. It has since fallen out. More importantly, the ANC-SACP-Cosatu ‘tripartite alliance’ barely survived President Jacob Zuma’s first term. The SACP has drained credibility while Cosatu has torn itself apart. Marikana showed the NUM, a key ANC ally, to be so out of touch with its members that its officials fired on a workers’ march to the union office. To the alarm of alliance leaders, it has shed members to the benefit of an ‘upstart’ rival, the Association of Mineworkers and Construction Union (AMCU). Several other unions are wracked by corruption and are alliance loyalists because the leaders need protection from their members.

On the other side, Cosatu’s largest affiliate, the National Union of Metalworkers (Numsa), refused to support the re-election of the ANC in 2014 and was expelled from the federation. Several smaller unions have followed it out. Numsa then joined with social justice movements to form a United Front reminiscent of the United Democratic Front (UDF) that brought down apartheid.

Numsa’s immediate reason for breaking away was that the ANC made the National Development Plan (NDP) its election manifesto. Zuma pitched the plan to the global ruling class at the Davos World Economic Forum in 2014 and again in 2015. It was welcomed by local corporate bosses who worry only that it may not be implemented. Cosatu, however, vehemently criticised the NDP as a plan to deliver cheap labour to capital. This looked like a rerun of the GEAR policy imposed by Mandela’s government in 1996. In all subsequent elections, Cosatu mobilised workers behind the ANC despite its neo-liberal

26 Peter Bruce, *The Thick End of the Wedge: The Editor’s Notebook*, Business Day, 20 August 2012.



(pro-business) agenda. Numsa's rebellion in 2014 gives voice to much wider worker dissidence.

The 2014 election also saw the Economic Freedom Fighters (EFF) emerge as a significant presence in parliament. Formed by ANC Youth League leaders expelled from the party, it came out of a rebellion within the ANC and it won substantial support from those who remain dispossessed. The integrity of the EFF leadership is widely doubted but they have thus far refused to bow to bullying or inducements to return to the ANC – including offers to make charges of tax evasion and corruption disappear.

Zuma's first administration took office in May 2009 with a cabinet bloated to balance political interests and reward those who supported him through successive court appearances on corruption charges. Policy hung in suspension between conflicting interests: a raft of business opportunists from whose ranks a kleptocrat vanguard has emerged, the left alliance partners intent on creating a 'developmental state' through mega projects which have fed kleptocrat opportunity, and the technocrats clustered around Treasury, whose neo-liberal faith serves the national interest as it is determined by global capital. Ironically, it is this last group – honest servants of a crooked and rapacious system – who now stand in the way of barely concealed looting. In defence of her chief, Social Development Minister Bathabile Dlamini warned that all members of the ANC's National Executive Committee had 'smallanyana skeletons' in the closet and "hell will break loose" if they get out.²⁷ Beyond the National Executive Committee, the smallanyana are distributed through every level of the party and of government.

Corruption now appears to be a leading motive for secrecy. Amongst so many other things, Zuma's Nkandla home was made a Key Point in a vain attempt to put an exorbitant public subsidy beyond scrutiny. Corruption has been a notable feature of the neo-liberal period even if it is not unique to it. In South Africa, the arms deal marked a water-shed but was anticipated in the deal making between an established corporate class looking for political connection and a rising business class looking for instant wealth. Corruption was the

27 Mcebisi Ndletyana, *ANC has to deal with smolanyana skeletons*, Sunday World, 30 March 2016.



condition for deracialising business in a context where the concentration of wealth barred new entrants. And it was already part of a corporate culture in which profiteering, price fixing, collusive tendering and transfer pricing are routine.

Corruption is accompanied by growing state hostility to people's rights to information, free speech and assembly. On taking the presidency, Zuma was quick to assert control over the state security apparatus which is deployed, and hence also caught up, in the factional struggles of the ruling party. Like Mbeki before him, he has overridden the independence of the National Prosecuting Authority (NPA). Unlike Mbeki, the primary motive seems to be protection from prosecution for himself and key supporters. The securocrats have pushed a secrecy agenda aimed more at protecting personal and business dealings from scrutiny than protecting core interests of the state as such. But internal rivalries make it a leaky vessel. Secrecy must be complimented by obfuscation and all levels of government are increasingly infected by the refusal of responsibility.

Work

Costs were passed on to workers and the people. From the late 1980s, and particularly following the defeat of the mineworkers' strike, the bosses had already set about the neo-liberal restructuring of the labour regime. After 1994, the union movement secured a relatively progressive legal framework but it applies only to full time formal sector workers. Labour scholars Edward Webster and Karl von Holdt [2005] observe that the world of work is increasingly unequal and divided into three major 'zones': the core, non-core and peripheral zones.

At the centre is the core zone of permanent full time workers, numbering 6.6 million nationally. Changes in the workplace regime have been highly uneven and authoritarianism and racism, as well as migrant labour, remain entrenched in many plants. In general, however, core workers' skills and wages have been upgraded and they have a degree of security both in their jobs and in benefits such as medical aid and pensions. They have access to legal rights under the



post-apartheid labour laws and most are organised in trade unions. At the same time, they work under intense pressure to increase productivity and often in a dangerous environment.

Outside the inner core are the outsourced workers employed by contractors or employed as fixed term contract labour, numbering about 3.1 million. They may be part-time or temporary workers, many are 'permanently temporary' and most are poorly paid. They, and the small contracting firms, are at the beck and call of the corporations – available when work picks up, dispensable when it falls off and vulnerable to arbitrary reductions in pay. Mostly, they are not organised, partly because unions have not come to terms with organising them and partly because they are threatened with losing their jobs, or their opportunities for work, if they join one. Their insecurity is heightened by the knowledge there is a 'reserve army' of unemployed workers desperate to take their place. Outside this non-core zone is the 'peripheral zone' made up of about 2.2 million informal workers and 8.4 million unemployed people.

The boundaries between these zones are porous but "workers always move from the [core] towards the outer rims where employment is precarious or non-existent" [Webster et al 2008: 19]. By 2003, there were 438 000 core workers on the mines and 90 231 outsourced workers. Two years later, the core had shrunk to 322 063 while the non-core swelled to 122 589 and, overall, 83 579 jobs were lost. On the coal mines in 2005, there were 35 843 core workers and 21,016 outsourced. So 37% of coal mining jobs were outsourced, the highest proportion in the mining industry. This, it should be noted, was in the context of what the mining bosses proclaimed as the 'commodity super-cycle'.



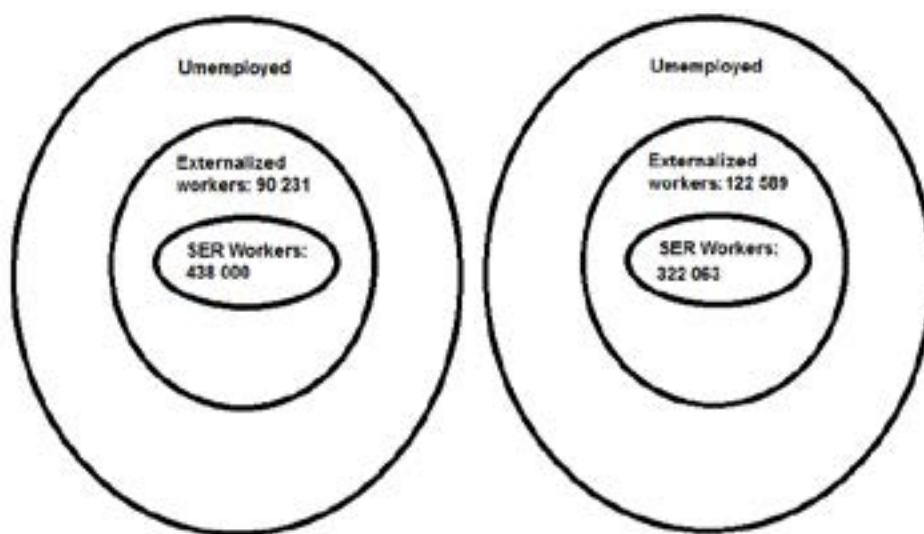


Figure 1: Mining labour market in 2003 and 2005 [Webster et al 2008]

This restructuring of labour marked a new phase of the coal mining regime to follow the phase created by the opening of the export market and the introduction of capital intensive open cast mining in the 1970s. Highveld NUM officials observe that outsourcing and mechanisation are two ways to drive down labour costs. The pattern, they say, is that the big mining houses work the capital intensive mechanised open cast mines themselves but outsource the less profitable underground mines to contract miners. Hence, there are fewer jobs with the majors. Underground is where the jobs are and underground mining is typically outsourced to contract miners.²⁸

Underground is also more dangerous, particularly as the point of outsourcing is to cut costs. Contract miners are smaller firms with less resources which work under severe cost pressures imposed by the majors. Safety is then an impediment. Further, worker training is short-circuited and the skills base is eroded. Ultimately, outsourcing is designed to make workers disposable. According to Bezuidenhout, “Mineworkers have told researchers about instances where subcontracted workers are fired when they get injured. Some went so far as to say that there were some cases where underground

28 NUM regional secretary Stanley Lebelo and regional chair Lucas Mohlale, interviewed 3rd March 2016.



fatalities are not reported, and bodies are thrown down shafts” [2008: 196]. This reintroduces a key aspect of colonial and apartheid mining because it “externalises the cost of social reproduction on to households and communities” [200].

As it disempowers workers, outsourcing provides an entry for a wide array of mining ventures. In some cases big established mining contractors such as Trollope do the mining for new entrants, many but not all of which are BEE companies. Trollope operates five mines on the Highveld. Genet Mining is more recently established but substantial enough to operate four mines, one for Xstrata (Glencore) and three for Shanduka. In other cases, the contract miners are BEE companies. Liviero appears to be a leading example and operates two mines for BEE mine owners. Below this tier of mining contractors, there is a proliferation of start-ups. Some seem to have been put together by mine managers whose day jobs are with one or other corporation while others have little experience of mining. Other outsourced functions include construction, security, catering, gardening and cleaning. At the bottom end, security for workers either relies on personal relations or it fades to zero. In one case, a cleaner lost his job for demanding his pay. Hlabane notes that many union shop stewards have been taken on entrepreneurial training courses by the big mining houses and have then become sub-contractors. This has contributed to the hollowing out of workplace democracy.

(Un)Settlement

As the mining regime changed, so too did the forms of settlement. The mining villages with permanent housing for married men and their families, such as at Rietspruit, were something like an industry ideal developed in the 1970s along with the export market and responding to greater exposure to external criticism as well as the loss of labour from neighbouring countries. However, the compounds remained the norm for migrant worker accommodation. As the big corporations lost control of the compounds to the NUM, they came to agree that the migrant labour system should be ended and the compounds vacated. Apartheid ‘group areas’, which created the wider spatial context within which



the compounds were located, was also crumbling. In this context, the mines faced the prospect of internalising costs for the social reproduction of labour.

Their response was to cast workers onto the market. Neither migrancy nor compounds disappeared but their character was transformed as the mines abandoned responsibility for migrant transport and worker housing. In the place of the regimented and unitary system of the earlier period, a chaotic, shifting and variegated market order arose. On the migrant routes, the corporate buses and trains were replaced by taxis. At the mines, most corporations offered living out allowances. As Bezuidenhout and Buhlungu observe:

Apart from the compounds of old, townships, and limited married quarters, workers now live in various configurations of compounds at various stages of conversion, RDP houses, their own houses in new suburbs, township houses, informal settlements, villages near mines, flats rented from companies, backrooms in old white suburbs, houses or backrooms in old white working class suburbs, and backrooms in managerial estates. [2011: 252]

Some compounds, particularly for contract workers, “remained locked” in the old authoritarian logic. Others have been converted to replace large dormitories with single rooms and/or shared flats and/or small dormitories for junior workers. And many have been opened out. On the one hand, workers are no longer cut off from neighbouring communities. On the other, the market has come into the compounds in the place of the old company store.

There is a privatised market in food and drink and the compounds “are now hubs of economic activity, ranging from various kiosks, dry cleaning services, driving schools, banks, cigarette vendors to transport and travel companies” [254]. Bezuidenhout and Buhlungu note that this new market regime has allowed workers the dignity of making their own choices in some significant ways but this has been accompanied by “a fragmentation of labour” with new divisions undermining “old solidarities” [256].



On the Highveld, the contradictions are marked. Although some women are now employed on the mines, it remains an overwhelmingly masculine workforce and it is mostly a migrant workforce. This reflects the remnant of a commitment to the 'sending areas'. Union officials say the mines have agreed that they will give preference to employing the sons of mineworkers. Nevertheless, there are now fewer men from Mozambique and more from KwaZulu-Natal, the Eastern Cape, Free State and Lesotho. Local people observe, however, that Mozambicans are more likely to end up as contract workers as South Africans avoid, if possible, the lower paid, dirtier and more dangerous work. Moreover, locals assert their rights and the contract mines prefer workers whose rights can be snuffed out.

To accommodate the mineworkers, there are still some hostels at the bigger and older mines such as Anglo's Landau and Greenside mines in eMalahleni. Otherwise, mineworkers live in the townships, mining villages and shack settlements. This reflects a contradictory commitment as many mines state that they will give preference to employing local people. One outcome is that migrant men need a local address and they need to be there when the mines are recruiting.

Some find accommodation with fathers, uncles or brothers. Local people say that many others want a woman to look after them and many local women see a relationship with an employed person as a means to fend off poverty. But this is a mobile workforce. It may be one year or it may be a decade, but sooner or later the men move on. By then the woman is pregnant or has children but this family is abandoned. Indeed the family is often already disowned. People observe that the men tend to behave like boyfriends rather than husbands and are never fathers to their children on the Highveld.

The children at the other end, back home in the Eastern Cape or Mozambique, also grow up without fathers. And since the workers are generally poorly paid, they do not have the money to support either family properly and many of the 'sending communities' remain deeply impoverished. In one observation, the complication becomes most acute when a miner is killed. "Both wives will be



there to claim from the mine and meeting each other for the first time. It is then that fights erupt.”²⁹

Rietspruit

Meanwhile, the corporate ideal of a mining village with family homes to house a stable workforce reached its logical conclusion at Rietspruit. By the time of its closure in 2001, the mine was in the hands of BHP Billiton, following the acquisition of Randcoal by Gencor in 1994, and Gencor’s subsequent rebranding as Billiton. Shell, Randcoal’s partner in the original venture, had meanwhile sold its interest to JCI which in turn sold to Duiker Coal, a subsidiary of Lonmin, in 1998. Lonmin sold its coal assets, including Duiker, to Glencore in 2000. Glencore in turn folded Duiker into Xstrata in 2003. In the years before closure, the Rietspruit Colliery was turning over about R300 million a year. BHP and Billiton merged in the year that Rietspruit was closed to create the world’s biggest mining group with US\$608 million profits in 2001.

On Filitz’s [2011] account, BHP’s post-mining strategy, later redefined as a social and labour plan (SLP), was framed within the rationality of the market. It intended selling the houses to the retrenched mineworkers using money taken out of their retrenchment packages – effectively, forced sales. It also wanted to sell amenities including a golf course, community hall, clinic and training centre.

BHP established a property company to manage the proceeds which were to be used for “sustainable village development” [58]. This really meant that the village would take over maintenance of water, electricity and sewage. In short, BHP wanted the workers to pay for their own redundancy and designed the scheme without their participation. The plan immediately ran into trouble. The NUM successfully sued the company for full payment of retrenchment packages. And the mineworkers refused to pay for the houses. They said they had already paid for them out of wage deductions and the houses were in any case cracking up because of the mine blasting.

29 Jacqueline Mgwanya, interviewed 3 March 2016.



The SLP also promised 700 jobs in the “sustainable post-mining village” [63]. Several “quick-win” small enterprise projects quickly failed. The only real jobs were in closing the mine or being transferred to work on neighbouring mines but those who had resisted the terms of the closure were blacklisted. As the SLP collapsed, BHP abandoned the village saying it was now the responsibility of eMalahleni, the local municipality, which in turn refused to accept responsibility. The NUM also abandoned it as redundant mineworkers lost their union membership. The village was thus left in limbo and with unemployment running at 65%. Nevertheless, BHP’s property company was still trying to get money out of the “defaulting purchasers” of the houses and began evicting people in 2008.

Meanwhile, Rietspruit’s population was growing as people with no connection to the old colliery were moved in. One group is composed of men working on neighbouring mines. A second group was brought in by Xstrata who identified Rietspruit for low cost housing for 110 families driven off farms as its mines advanced across the land. The company implemented this scheme without consulting the residents. The corporations have thus turned Rietspruit into a dumping ground for those they have dispossessed.

This desolate ‘post-mining’ village is located in a ruined land. Following mining, some 1 760 hectares of ‘rehabilitated’ land may support two or three tough species of grass and provide nothing more than thin rations for stock animals. The rich land and diversity of grassland species is lost and, just as surely, the land from which Xstrata removed the next generation of farmworker families will also be lost. They have been removed to make way for mining at the Southstock complex (Tavistock and South Witbank) adjacent to Rietspruit and the Goedgevonden Colliery south of Ogies. Tavistock and South Witbank are old mines where Xstrata removed the pillars in two short years, starting 2010 and ending 2012, and allowed the ground above to slump. Goedgevonden, a joint venture between Xstrata and African Rainbow Minerals (ARM), was a new mine opened in December 2009 with a 16-year life to 2026. In the year to June 2015, it produced 3 mt/y for Eskom’s Majuba plant and another 5 mt/y for export.³⁰

30 ARM Annual Report 2015, p.104.



3 Corporate coal on the Highveld

South Africa produced 260 Mt coal in 2014, up from 242 Mt produced in 2004. Of that, 119 Mt was burnt by Eskom, 40 Mt was produced and consumed by Sasol, some 26 Mt was either stockpiled or consumed by other industries, and 71 Mt was exported. Sasol does not really participate in the coal market since it sells to itself and buys little. Eskom takes about 85% of the rest. It both dominates the local market and makes coal mining viable. It has traditionally taken low grade coal on long term “cost plus” contracts and so created the economic base for mining. With costs covered, the coal miners could make fat profits from the export of more lucrative high grade coal, mainly to Europe.

In the 2000s, this started to change. China and India started importing coal and used lower grades than the Europeans to fire power stations. So they started competing for the coal previously reserved for Eskom. One of the reasons why the lights went out in 2008, according to Eskom, was that the tied mines supplied to the lower limit of their contracts – that is, as little as possible – as the big corporations diverted as much coal as possible to the more lucrative exports.³¹ Eskom also complained that the quality of coal from the central basin is deteriorating. After a century of mining, the coalfields are in decline and the better coal is mined out.

The international coal market boomed from 2002 to 2008 and collapsed when the Wall Street banks plunged the world into recession. They recovered fairly quickly from about 2010 as China tried to spend its way out of the recession through a huge programme of building new infrastructure. As documented in The groundWork Report 2014, much of the infrastructure is unused and brand

31 Eskom's response, carried in an annex to Nersa's report on the 2008 electricity supply crisis, p. 44 ff.



new cities built for two million people stand empty. Hence, the programme has not been sustained and China's demand for coal, iron ore and other commodities slumped in 2014. In addition, the terrible pollution from coal-burning plants in China finally provoked the government to restrict imports of low grade coal such as South Africa was providing.

Table 3: Coal production and sales, million tonnes.

	2007 /08	2008 /09	2009 /10	2010 /11	2011 /12	2012 /13	2013 /14	2014 /15	2015 /16
Total	247	252	248	255	253	259	256	261	
Export	68	61	61	67	69	76	75	70	
Local Total	183	197	185	186	177	186	184	183	
Eskom burn	125	121	123	125	125	123	122	119	115
Sasol	40	40	40	40	40	40	40	40	40

Sources: Creamer media's Coal Report 2015; Chamber of Mines Facts & Figures 2013/14; Eskom Annual Reports. Figures are for the calendar year, except Eskom which is to March the following year.

Just as the colliers are dependent on Eskom, so too is Eskom dependent on the colliers.

Five big mining houses – Anglo, Glencore, Sasol, Exxaro and BHP Billiton – produced over 80% of coal nationally. Excluding Sasol, the other four majors supplied a similar proportion of Eskom's requirement. Including Sasol, these companies were and are leading members of the Energy Intensive Users Group (EIUG) and are among the biggest customers for Eskom's electric power. They also dominate exports. They are joint owners of the Richards Bay Coal Terminal and entitled to an export quota proportional to their share. In 2014, Glencore had the largest entitlement with over 20 Mt/y followed by Anglo with 19 Mt/y and BHP Billiton (now South32) with 18 Mt/y.



Corporate coal on the Highveld

These corporations, along with the DMR and the DoE, all participated in the South African Coal Roadmap process initiated in 2008. Published in 2013,³² the Roadmap was a confident demand for expansion spurred by high prices and, the coal corporations thought, limitless demand from China and India. It said 40 new mines are needed for export and to supply four billion tonnes of coal to Eskom through to 2050 as well as to supply privatised independent power producers (IPPs) – most of them in partnership with the colliers. The accompanying press demanded ‘policy certainty’ so that the corporations could invest in constructing big new mines and it warned of a ‘coal supply cliff’ with Eskom being left short of 40 million tonnes a year from 2018.³³

Coal majors

Tables 4 to 9 below reflect the situation as it was around 2013-2014 – before the confidence of the Roadmap tumbled over the coal price cliff. They show the coal majors with their subsidiaries, acquisitions or partners and their Highveld mines. The top lines show national production figures for the mining house, including from the two biggest mines in the country – Anglo’s 17 Mt/y New Vaal mine in the Vaal Triangle and Exxaro’s 18 Mt/y Grootgeluk mine in the Waterberg, both of which supply Eskom. These two mines are not shown in the tables as they are outside the Highveld. The tables also show the location of the mines – the nearest town and the catchment. Some mines straddle the watershed that separates two catchments and both are listed. Finally, the table shows where each mine’s coal is sold and how much it produces annually.

In this period, Anglo remains by far the biggest coal corporation in South Africa. It includes its own in-house BEE company, Anglo Inyosi. Anglo holds 73% and the BEE component Inyosi holds 27%. This division reflects the requirement of the Mining Charter. In 2012, however, the Department of Public Enterprises (DPE) instructed Eskom that future coal contracts should be with companies with over 50% black ownership. This stalled negotiations for the coal supply

32 The South African Coal Roadmap available at www.fossilfuel.co.za. The groundWork Report 2015 gives a short critique of the Roadmap at p.100 ff.

33 Terence Creamer, *Eskom sees transformation potential as it works on coal-cliff solutions*, Engineering News, 8 August 2013.



Table 4: Anglo American

Corporation	Colliery	Location	Catchment	Market	Mt/y
Anglo American					55.79
	Greenside	Witbank	Olifants	Export	3.6
	Kleinkopje				3.9
	Landau				4.2
	Goedehoop	Sth Witbank			4.8
	Isibonelo	Kriel		Sasol Synfuels	5.3
Anglo Inyosi	Kriel	Kriel		Eskom Kriel	6.9
	Zibulo	Ogies		Export & Eskom	5.1
	Mafube 50%	Middelburg	Klein Olifants	Eskom Arnot Export	3.8
	New Denmark	Standerton	Vaal	Eskom Tutuka	3.8

to Kusile from Anglo Inyosi's New Largo mine. Development of the mine was supposed to start in 2012 but has not yet begun. Kusile itself is well behind schedule but it seems doubtful that the mine will be ready to supply it when it does start.



Corporate coal on the Highveld

Table 5: Exxaro

Corporation	Colliery	Location	Catchment	Market	Mt/y
Exxaro					39.15
	Arnot	Middelburg	Klein Olifants	Eskom Arnot	1.7
	Mafube 50%	Middelburg		Eskom Arnot & Export	3.8
	North Block Complex: Glisa, Belfast Block, Grootpan, Strathrae	Belfast	Steelpoort / Komati	Eskom Arnot & Export	2.6
	Matla	Kriel Matla	Olifants	Eskom Matla	10.1
	New Clydesdale	Kriel		Export	0.5
	Leeuwpans/Lakeside	Delmas	Wilge (Olifants)	Export & Local	3.8
(ex-Total)	Forzando	Komati	Olifants	Export	
	Dorstfontein	Kriel		Export	

Exxaro is majority black owned. It was put together after 1994 through “a merger of Eyesizwe and certain Iscor/Kumba interests” [Eberhard 2011: 5]. Eyesizwe was created in 2001 from a portfolio of coal mines made available by Anglo and Billiton. Iscor was the state owned iron and steel company that was dismembered and privatised at about the same time. The big steel plants were practically given away to global steel tycoon Lakshmi Mittal while the coal mines, notably Grootgeluk, went to Exxaro and the Kumba iron ore mines went to Anglo. Exxaro, however, retained a 20% interest in Kumba as Anglo’s key BEE partner while Anglo retained a 10% interest in Exxaro. The close relationship is cemented through cross board representation. The majority of Exxaro (52%) is owned by a holding company composed of four BEE groups plus a substantial state investment through the IDC (15%). Dreamvision Investments holds the majority (54%) in this company and thus owns 28% of



Exxaro but retains complete control. This is a structure taken from the 1980s Anglo American play book on how to control a company with a minority holding.

Table 6: Glencore

Corporation	Colliery	Location	Catchment	Market	Mt/y
Glencore					46.10
Ex-OCH	Optimum (2012 figures)	Middelburg	Klein Olifants	Eskom Hendrina	10.8
	Koornfontein	Komati	Olifants/ Klein Olifants	Eskom Komati	2.9
	Kangra Savmore	Piet Retief	Usuthu	Export & Local	3.1
Shanduka	Graspan, Townsland	Middelburg	Klein Olifants	Eskom & Local	
	Bankfontein Lakeside Leeuwfontein	Kendal	Wilge	Eskom & Export	
Umcebo	Klippan Umsimbithi Wonderfontein	Belfast	Komati	Eskom Arnot & Export	6.3
Xstrata	Goedgevonden	Ogies	Olifants	Eskom Majuba & Export	8.0
	iMpunzi, Southstock & Tweefontein	Ogies		Export	12?

Glencore is best known as a commodity trader with a seamy history which includes sanctions busting to trade with the South African apartheid regime. In the 1990s, it acquired various mining interests but, in 2003, created Xstrata as a separate mining house in which it retained a 30% share. Under Mick Davies, previously of Billiton, Gencor and Eskom, Xstrata rapidly established itself as a global coal major. By 2008, according to Eberhard [2011], its South African coal mines were producing 20 Mt/y including 12 Mt exports. It had also forged



Corporate coal on the Highveld

an alliance with ARM, which took an effective 20% interest in Xstrata South Africa, as its BEE partner.

Around 2010, as Chinese spending pumped up commodity prices, Glencore decided to get back into mining. In South Africa, it re-entered through leading BEE coal corporations. It is likely that this path opened up as BEE company debts exceeded the value of their assets following the 2008 bust. In a deal veiled in secrecy it took a 70% share of Shanduka Coal, leaving Ramaphosa's Shanduka Holding with 30%. In late 2011, Shanduka Holdings bought 20% of Shanduka Coal from Glencore, giving it a 50.1% majority holding against Glencore's 49.9%.³⁴

Meanwhile, the Glencore-Shanduka partnership was busy buying out collieries and companies, particularly where there was an export entitlement through RBCT. First up was BEE company Optimum Coal Holdings (OCH) with two key assets: Optimum which produced 13 Mt/y and came with a substantial 6.5 Mt/y export entitlement at RBCT; and Koornfontein which produced 4 Mt/y and brought a further export entitlement of 1.5 Mt/y. The Optimum mine complex was originally developed by Gencor in 1970 to supply Hendrina Power Station and, from 1980, the export market. With the political transition, it was inherited by BHP Billiton who sold it to OCH in 2008. BHP retained the right to market the export coal from both mines – that is, OCH had to sell to BHP. In a separate deal, Glencore subsequently bought the marketing rights from BHP.

Next in line was Umcebo Coal, already involved in joint ventures with Shanduka, with 7 Mt/y production and 1.5 Mt export entitlement at RBCT.³⁵ The Umcebo mines are next door to Arnot Power Station. Glencore is developing the new Umsimbithi-Wonderfontein mines, a move that is vigorously resisted by local people. As with Shanduka, Glencore has a minority stake in Umcebo but “has the ability to exercise control” over both companies through shareholder agreements.³⁶

34 See, amongst others, Reuters, *Shanduka buys Glencore stake in coal unit*, News 24, 14 December 2011. This second deal was widely reported but nothing is said of how Glencore acquired 70% of Shanduka.

35 Glencore press release, 7 December 2011.

36 Glencore Annual Report 2015, p.177.



In 2011, Glencore listed on the London Stock Exchange, provoking the Economist to comment that the “hitherto secretive trading and mining house may be uncomfortable under the spotlight”.³⁷ The listing made all the senior partners, who owned the firm, instant billionaires and rocketed CEO Ivan Glasenberg to the top of the global wealth rankings. This was the precursor to Glencore’s biggest deal, taking back Xstrata. This deal was finally concluded in 2013, making Glencore both the world’s biggest commodity trader and the biggest mine house. It also put together two unsavoury reputations for corporate bullying, trampling over worker and community rights, despoiling the environment and syphoning money from Southern countries through transfer pricing and similar dodges.

Table 7: Sasol

Corporation	Colliery	Location	Catchment	Market	Mt/y
Sasol					41.50
	Bosjesspruit	Secunda	Vaal	Sasol Synfuels	
	Impumelelo				8.5
	Shondoni				10.5
	Syferfontein		Olifants		7.2
	Thubelisha			Sasol Synfuels & Export	8.0

Sasol’s Secunda synfuels plant has been going for over 30 years and mined out three monster mines: Twistdraai, Brandspruit and Middelbult. The planning and construction of equally large replacement mines has been going on for nearly a decade. Its new Thubelisha mine is in production and Impumelelo and Shondoni were due to start in 2015 and 2016. For the long term, it is considering the feasibility of opening mines in the Waterberg to replace its present capacity.³⁸ The Secunda mines are said to make up the largest underground coal mining complex in the world with coal seams generally at a

37 *Glencore comes to market*, The Economist, 14 April 2011.

38 Sasol Annual Report 2015, p.85.



Corporate coal on the Highveld

depth of around 150 to 200 metres and 5 metres thick. They undermine much of the land in the Secunda area.

Sasol was more effectively trapped within apartheid South Africa than companies like Anglo and Gencor. Although privatised in 1979, it remained intimately linked with the state both before and after the political transition and the state remains a major investor through the IDC and the Public Investment Commission (PIC). Sasol repositioned itself as a transnational corporation from the late 1990s, starting with gas extraction from Mozambique – a project which was heavily backed by both country governments and by the World Bank. It expanded rapidly as the commodity boom took off in the early 2000s, listing on the New York Stock Exchange in 2003 and undertaking major investments in Europe, the US, China, the Middle East and Africa. From 2011, it located its flagship expansion project in the USA. At its Lake Charles site in Louisiana it plans a massive gas-to-liquids plant to be supplied from fracked shale gas. The project got major subsidies from the Louisiana state government but stalled in 2015 as the price of oil crashed.

Table 8: BHP Billiton

Corporation	Colliery	Location	Catchment	Market	Mt/y
BHP Billiton					34.3
	Khutala	Ogies	Olifants	Eskom Kendal	10.5
	Klipspruit	Ogies		Export	8.0
	Middelburg Wolvekrans	Witbank		Eskom Duvha Export	15.3

BHP Billiton Energy Coal South Africa (BECSA) sold its Koornfontein and Optimum mines to OCH in 2007 and 2008. Following this, its production dropped from 45 Mt in 2008 to 32 Mt in 2009. Its remaining mines were highly mechanised and supported by the big Phola coal washing plant which BHP shares 50:50 with Anglo. It retained rights to export about 18 Mt but, in the depressed 2009 market, managed only 8.5 Mt. It sold the other 23.5 Mt to



Eskom. On the rising market in 2012, its exports increased to 14 Mt and sales to Eskom decreased to 19 Mt.³⁹

BHP said the Optimum deal was “to meet government affirmative action requirements” while Eskom claimed the right to veto the sale if it did not approve the buyer.⁴⁰ The BEE group was led by former BECSA executive Eliphus Monkoe and evidently passed the test. The selling price was kept secret but was rumoured to be around R1 billion. Two years later, OCH listed on the Johannesburg Stock Exchange for a value of R8 billion, greatly enriching six members of the BEE group, two of whom were white men.⁴¹ Another year on, in 2011, Glencore offered them premium prices for their shares, taking the value of the company over R9 billion, and took control of Optimum.

Cut and run

The sale of Optimum was good timing for OCH. Following the lows of 2009, commodity prices rose through 2010 to peak in 2011 when South African export coal reached highs of around US\$130 a tonne. As in the period leading up to 2007, mining bosses proclaimed the continuation of a ‘super-cycle’ just ahead of the slump. In 2012, prices slipped but the odd bounce gave false hope to the colliers. From 2013 it was downhill all the way to 2016 when prices at Richards Bay hit US\$50. By mid-year, there was a modest recovery to just over US\$60. It is caused by administrative actions as China tries to manage a glut of mining capacity and will not last.⁴²

In 2014, rumours began to circulate that BHP was going to dump less profitable mines and focus on ‘tier one’ assets – very large, capital intensive, high yield units that could be automated to “run like manufacturing operations rather

39 BHP Billiton Annual Reports 2009 & 2012.

40 James Macharia, *BHP to sell Optimum coal mine to black empowerment group*, Mineweb, 4 September 2007. Further reporting on this and subsequent deals: Barry Sergeant, *Optimum coal listing shows up the strange, and stranger, world of SA's BEE*, Mineweb, 29 March 2010; Barry Sergeant, *Special report podcast: Mike Teke CEO – Optimum Coal Holdings, How do six individuals have a net worth of R2.7bn in two years?* Mineweb, 29 March 2010. Marcia Klein, *One company. Three deals. So many questions*. Fin24, 29 April 2016.

41 One of them, Peter Gain, is involved in the iButho Coal project to mine at Fuleni in KZN.

42 Lauri Myllyvirta and Marina Lou, *No, a global coal comeback isn't happening*, Greenpeace Energy Desk, 24 August 2016.



Corporate coal on the Highveld

than mines”.⁴³ In August it announced that it would split off a portfolio of assets into a separate corporation that was later given the name of South32. The demerger was finalised in May 2015. All BHP’s aluminium and manganese operations and its South African coal business went into South32 and, with that, BHP Billiton was gone from South Africa. South32 is a substantial transnational corporation in its own right, although not close to the top rank of miners, with operations in Australia, Brazil and Columbia as well as South Africa. Its primary listing is in Australia with a ‘standard’ listing in London and a secondary listing in South Africa.

BHP itself remains the world’s largest mining house. It lost US\$4.6 billion in the year to August 2016, down from a profit of \$1.9 billion in 2015. It was caught by falling commodity prices and failed bets on the US shale fracking patch. In November 2015, the tailings dam at the Samarcor iron ore mine in Brazil burst. Nineteen people were killed and a suburb of the city of Mariana was flattened in a muddy flood of toxic waste. The ecology of the Rio Doce was destroyed all the way to the sea over 800 km away. Samarcor is a joint venture between BHP and Vale, the Brazilian mining giant. It cost BHP \$2.2 billion in the 2016 financial year for compensation and remediation but, in August, the two corporations refused to cover Samarcor’s mounting debts. The extent of Samarcor’s liability is still under negotiation with Brazilian authorities.⁴⁴

Anglo, meanwhile, was again shrinking as commodity prices dropped. In 2015, its shares lost 75%, reducing its market capitalisation to \$5.6 billion compared with about \$50 billion in 2011 and \$80 billion in 2007 before the market crash. It was making huge losses and saddled with \$12 billion of debt, largely because what was to be its flagship project – to develop the Minas Rio iron ore mine in Brazil – has gone way over time and over budget. In December 2015 it said it was preparing radical surgery that would include selling or closing over half its mines and smelters to reduce debt. CEO Mark Cutifani said anything

43 Martin Creamer, *BHP Billiton’s Newco good South Africa story – CEO*, Mining Weekly,

22 August 2014. See also: Martin Creamer, *Major South African assets fail to make cut in BHP Billiton portfolio remake*, 15 August 2014; Business Day editorial, *Another big miner may be lost to SA*, 3 April 2014; Allan Secombe, *South32 gets more than it expected*, 18 March 2015.

44 Bloomberg, *Stalled BHP-Vale mine said seeking waiver on bank repayments*, Mining Weekly, 13 August 2016; Natasha Odendaal, *BHP plunges into the red with \$6.4bn loss*, Mining Weekly, 16 August 2016.



that could not make money in the depressed market would go. Anglo would focus on the 'tier one' mines. Some 85 000 jobs would also go through asset sales and job cuts. Employee numbers, already down from 165 000 in 2013, would be reduced from 135 000 to 50 000.

In February 2016, Anglo gave the details. It would keep the best diamond (De Beers), platinum and copper mines and sell everything else, including the more labour intensive Rustenberg platinum mines. At the end of it, Anglo would have just 16 mines globally and, in South Africa, five platinum mines and two diamond mines. It would sell the Kumba iron ore operation and the Anglo Coal mines – although neither division was making a loss. Credit rating agencies were unimpressed even before this announcement. Moody's cut Anglo's rating to junk on the argument that it would get little for the mines it wants to sell and so would not get out of its debt trap.⁴⁵ In response, Anglo said it will not rush into fire-sale deals.

By August 2016, its Australian coking coal mines were on the market but the South African mines appeared to be caught in the fractious relationships created by the decline of the MEC. It is said that the Pembani Group, Sibanye Gold and Royal Bafokeng Holdings are interested but it is not clear exactly what Anglo is selling. Eskom put up the capital to develop the tied cost plus mines and says it "owns part of, if not the majority of, operating assets and the mining infrastructure, while Anglo owns the mining rights and some of the surface rights". Eskom is thus asserting its right to be part of the negotiation and clearly intends to influence, if not dictate, the outcome in line with its mandates "to transform the industry" and "ensure optimal usage of national assets (coal)".⁴⁶

45 Thomas Biesheuvel, *Why Anglo is forced to cut 85 000 jobs*, Fin24, 9 December 2015; Clara Denina, *Anglo in danger of getting the boot from UK's blue-chip index*, Business Day, 3 February 2016; Bloomberg, *Moody's cuts Anglo debt to junk*, Business Day, 15 February 2016; Allan Seccombe, *Anglo to shed SA coal, iron ore assets*, Business Day, 17 February 2016.

46 Matshela Koko (Eskom spokesperson), *Eskom set to shape coal industry for consumers' benefit*, Business Report, 21 April 2016; see also Bloomberg, *Eskom uncertainty likely to draw out Anglo coal mines sale*, Business Day, 26 April, 2016.



Sub-Optimum

Eskom's intervention was as much about Optimum as about Anglo. Glencore, once the darling of global investors, also lost around 80% of its share value between mid-2014 and the beginning of 2016. It has since recovered to about 50% of the 2014 value. Since listing in 2011, it has showed modest profits interrupted by massive losses in 2013 and 2015. It borrowed heavily to expand its mining interests on the rising market, notably to buy out Xstrata. As commodity prices crashed, its revenue from trading also dried up and investors looked at the debt load and fled.⁴⁷

The Optimum mine has a long term 'fixed price' contract to supply Eskom's Hendrina at R150/t, a price which Glencore says is well below the cost of production. While international prices were high, it seems that Optimum served up the dregs of production to Hendrina in order to maximise exports. In early 2015, with export prices sliding but still at around R800/t, Glencore said it was considering closing the mine. NUM said more than 1 000 permanent workers and 500 contractors stood to lose their jobs. Glencore tried to negotiate a higher price for Hendrina's coal but Eskom insisted that Optimum honour the R150/t supply contract through to its expiry in 2018. In August 2015, it added that it would seek to impose retrospective penalties of R2 billion for the poor quality of earlier supplies. The DMR simultaneously suspended Optimum's mining right, claiming that it had carried out retrenchments in an inhumane manner and had not adhered to the SLP. Given DMR's slack enforcement of SLPs, this looked like a stitch up.

Glencore responded by putting the mine in business rescue, effectively declaring it bust, to escape mounting liabilities. The mine shut down and then re-opened on the promise of further negotiations and the reversal of the mining licence suspension by then minerals minister Ngoako Ramatlhodi.⁴⁸ Shortly

47 Scott Patterson and John W Miller, *Mining industry's alpha male Ivan Glasenberg tries to save his realm*, Wall Street Journal, 2 October 2015; Agency Staff, *Was Glencore panic a blip or warning sign of more pain to come?* Bloomberg, 2 October, 2015.

48 Martin Creamer, *Top coal analyst backs Optimum coal for Eskom*, Engineering News, 9 March 2015; Martin Creamer, *Optimum mine right suspended, penalties may force R1/t coal supply*, Mining Weekly, 4 August 2015; Terence Creamer, *Optimum offers Eskom coal at cost as it suspends 'onerous' supply agreement*, Mining Weekly, 20 August 2015.



thereafter, President Zuma replaced Ramatlhodi with Mosebenzi Zwane, specially flown in from the Free State government and without the political weight appropriate to a senior cabinet post. Zwane's real qualification for the job appeared to be his association with the Gupta family whose patronage of President Zuma and his family was now notorious.⁴⁹

On the 14th of December, it was suddenly announced that Optimum would be sold to Tegeta, a subsidiary of the Guptas' Oakbay company, for R2.2 billion. Glencore would settle Optimum's outstanding debt of R2.5 billion. Eskom welcomed the deal but said it would still claim the R2 billion penalty and hold Optimum to the R150/t price. This begged the question: how could the Guptas pay for it and make it pay?

Tegeta had started as a coal miner only three years previously and was already controversial. It had two mines and illegally started operations without water use licences at both. At one mine, it destroyed a wetland and diverted a river. As related in last year's groundWork Report, Eskom Board members pushed through coal contracts for the mines in questionable circumstances and in transgression of Eskom's policy that suppliers must be compliant with environmental laws. They also signed over the whole of Eskom's R40 million sponsorship budget to the Gupta's The New Age media house.⁵⁰ We also noted the wholesale replacement of Eskom's board with each new minister of Public Enterprises. The present board, appointed by Lynne Brown in 2014, includes Mark Pamensky who is also on the board of Oakbay – a point that Eskom avoids noting on its website.⁵¹

In January 2016, it emerged that Zwane had flown to Switzerland in December to support the Guptas at the meeting where they negotiated the purchase of Optimum with Glencore's Glasenberg. Next, it emerged that Duduzane Zuma,

49 Sarah Evans, *Mosebenzi Zwane sworn in as mineral resources minister*, Mail & Guardian, 23 September 2015.

50 Sapa, *Eskom in R43 million deal to sponsor one New Age breakfast a month*, Times Live, 24 October 2014; Loni Prinsloo, Stephan Hofstatter, Mzilikazi wa Afrika and Piet Rampedi, *Eskom's Tsotsi 'bent the rules' to favour Gupta mines*, Times Live, 22 April 2015..

51 Alec Hogg, *Bizarre case of Mark Pamensky the Gupta appointee to Eskom's board*, BizNews.com, 29 March 2016; Eskom website at 2 September 2016.



the President's son, had acquired a considerable interest in Tegeta shortly before that meeting.⁵²

Parallel with these events, on the 9th of December 2015, Zuma sacked finance minister Nhlanhla Nene and appointed another political unknown, David van Rooyen. This was widely seen as the prelude to unbridled plundering of the Treasury itself. In particular, Nene was standing in the way of a R1 trillion nuclear power deal with Russia, which the country patently could not – and cannot – afford, and he refused to sign off on the looting of the national airline.⁵³ Zuma's action was met with outrage. The currency fell, the stock market lost value and the captains of finance capital demanded to meet him. By the end of the week, Zuma backed down and reappointed Pravin Gordhan, Nene's predecessor, to the post but immediately attempted to undermine him through allegations and threats of arrest issued by the Hawks priority crime unit.

The suspicion that Van Rooyen's appointment was at the behest of the Guptas was subsequently given credence when the deputy finance minister, Mcebisi Jonas, said that they had offered him the job but he had refused. He located the offer in the context of "the narrative of state capture".⁵⁴ Following this, banks and auditors cut ties with Oakbay, Tegeta's parent company, citing moral hazard. This puts its listing on the Johannesburg Stock Exchange under threat. The company was nevertheless able to come up with the R2 billion needed to pay Glencore. One possible source was through liquidating the Optimum rehabilitation trust fund. That would be possible if the DMR, as regulator, permitted the Guptas to provide for closure and rehabilitation through bank guarantees in place of the trust fund. It has since been confirmed that DMR did indeed approve the transfer of R1.3 billion from the Optimum rehabilitation fund.⁵⁵ And it seems clear that the Guptas had long since taken their capital offshore.⁵⁶

52 Franz Wild and Paul Burkhardt, *Zuma Son Got Stake in Tegeta Weeks Before It Bought Optimum*, Bloomberg Business, 7 March 2016.

53 See amongst many others: Daily Maverick Editorial: *An Act of Wilful Sabotage*, 9 December 2015.

54 Stephen Grootes & Gaye Davis, *Mcebisi Jonas confirms the Guptas offered him a job*, Eyewitness News, 16 March 2016.

55 Craig Dodds, *Gordhan's bombshell*, Sunday Tribune, 16 October 2016.

56 Susan Comrie, *On the trail of Tegeta's offshore shareholder*, City Press, 17 May 2016.



The fortunes of the Optimum mine, meanwhile, were being turned around. In April, according to City Press, Eskom “quietly awarded” Tegeta a R586 million contract to supply the neighbouring Arnot power station “with 1.2 million tons of coal over six months” and paid the money upfront. The contract price did not include transport. The story was headlined: “How Eskom bailed out the Guptas.”⁵⁷ Eskom responded aggressively ahead of City Press publication. It said the supply to Arnot was needed because the 40-year cost-plus contract with the Arnot mine operated by Exxaro expired at the end of 2015. It was then paying R1,132/t whereas “Tegeta supplies Arnot at an average price of R500/t”. Tegeta was one of four coal companies with short term contracts to supply Arnot while Eskom worked on a long term plan. The others are Exxaro (from Mafube and North Block), Hlagisa and Umsimbithi. Eskom did not say why a long term plan was not in place before the Arnot mine contract expired.

Exxaro had already disputed Eskom’s story. It said it had presented a plan which would cut costs at Arnot mine by half. Premature closure would result in “abandonment” of 70 Mt of mineable coal and would be at the cost of over 1 800 jobs. Eskom responded with the absurd suggestion that Exxaro could find other customers to keep the mine open and so save jobs. The Arnot mine has no other market and is not viable without Eskom. The invocation of jobs is cynical on both sides. Just as Eskom and the corporations use jobs as a selling point for every new mine and project, they want to pass the parcel of responsibility for job losses at the end. Similarly, they want to escape the costs of closure and environmental liabilities that outlive the mine. In this case, Exxaro argues that it owns the mining rights but, in terms of the cost plus contract, Eskom owns the mine and is responsible for the costs of closure, environmental liabilities and worker redundancies.⁵⁸ This is precisely the argument that Eskom is now using to assert its interest in the sale of Anglo’s mines. Eskom’s Annual Report says it is making R1.9 billion provision for the early closure of Arnot mine – “nine years ahead of schedule” [p.46].

57 Susan Comrie, *How Eskom bailed out the Guptas*; and *Eskom prepaid Guptas R586m for coal*, City Press, 12 June 2016. Eskom put out a pre-emptive response before City Press publication: Statement by Eskom chairperson, Dr Ben Ngubane, *Eskom’s tactical sourcing of coal saves billions of rands and avoids load shedding*, 11 June 2016. Eskom media desk issued a second statement after City Press publication: *Eskom refutes allegations of “blindsiding” Exxaro in the Arnot coal contract*, 12 June 2016.

58 Matthew le Cordeur, *Exxaro’s coal fight with Eskom heats up*, Fin24, 3 March 2016.



Corporate coal on the Highveld

Both parties are avoiding the core problem, however. As energy analyst Dirk de Vos puts it, “this looks like a utility death spiral ...”⁵⁹ Part of the cost plus deal is that Eskom provides the capital for mine development but Eskom is already drowning in debt incurred at Medupi and Kusile and can no longer afford capital for mines. The Arnot coal is high cost because the mine is played out. Exxaro’s plan to extend its life and reduce costs requires a big injection of capital which Eskom can’t or won’t provide. In any case, the remaining 70 Mt would be gone in less than ten years. The same story is playing out at other tied mines. At Matla, Exxaro complains that Eskom is not funding capital projects with the result that the mine is “under-producing at 8.5 Mt against contractual volumes of 10.1 Mt”.⁶⁰

Optimum itself is ageing. De Vos argues that it is not viable “even with the Arnot supply agreement and the pre-payment” and without the R2 billion penalty. Taking its Hendrina and Arnot contracts together, it is getting an average price of R300/t, well below the R400/t that Glencore said was needed to make the mine viable. If Tegeta can take the losses to 2018 when the Hendrina contract expires, however, it will then hold the whip hand in negotiations as Eskom “won’t have that many other options to secure the amount of coal it needs to run these two power stations”. It seems unlikely that Tegeta bought a mine guaranteed to lose around R4 billion (including the penalty) over the next two years. It is more likely that the full story of this deal is still under covers and/or still in process. It now seems that Oakbay has a deal to sell Optimum’s RBCT export rights for R3.6 billion to Vitol, a Swiss commodities trader and rival to Glencore. This deal, however, has to be approved by the existing RBCT shareholders.⁶¹

On the 23rd of August 2016, the Hawks once more threatened Gordhan with criminal charges while Zuma established a presidential co-ordinating

59 Dirk de Vos, *The Future of Eskom and South Africa's coal sector will be nothing like its past*, Daily Maverick, 4 July 2016.

60 Martin Creamer, *Waterberg rail supply disappoints Exxaro*, Mining Weekly, 28 June 2016.

61 Thalia Holmes, *The rumoured sale of just part of the Gupta's Optimum Coal beggars belief*, Mail & Guardian, 9 September 2016.



committee to take direct control of state owned enterprises.⁶² At the same time, Treasury was involved in an acrimonious exchange with Eskom. Treasury had ordered Eskom to submit all documentation relating to the Optimum coal contracts for review. Eskom pretended cooperation but Treasury said it had met with resistance. The Minister of Public Enterprises finally ordered Eskom to comply. Tegeta, meanwhile, threatened Treasury with court action to stop it releasing any report on its investigations “until it has been subjected to the scrutiny of all parties concerned”.⁶³ Meanwhile, Zwane said cabinet had taken a decision to investigate the banks ‘abuse’ of the Guptas. This was not true but, at the time of writing, Zwane had neither resigned nor been sacked.⁶⁴

However this unfolds, it remains the case that Eskom’s coal supply options are closing down. In 2013, Eskom noted that the depletion of the coal resource resulted in reduced quality and quantity of supply while the mining industry was not developing new mines and had a preference for exports.⁶⁵ Costs were rising because:

- the big old mines were depleted;
- long term contracts were replaced by short or medium term contracts;
- coal delivered by conveyor belt from tied mines was replaced with coal delivered by rail and road from more distant mines – there are 1 500 coal trucks on the road to Eskom every day; and
- more coal had to be washed as the quality declined.

At the time, Eskom wanted coal declared a strategic resource in order to guarantee that its requirement would be met ahead of exports. However, the present slump in exports has not provided much relief. Eskom also sees Waterberg coal being railed to the Highveld to supplement the local supply. That implies major transport and coal washing costs. Ironically, it also

62 Marianne Thamm, *SARS Wars Endgame – Hawks order Pravin Gordhan and others to “present” themselves*, Daily Maverick, 23 Aug 2016; Linda Ensor and Carol Paton, *Zuma to oversee parastatal strategy*, Business Day, 23 August 2016.

63 Ra’eesa Pather, *Crib notes: This is why Eskom’s got beef with treasury*, Mail & Guardian, 31 August 2016.

64 Liesl Peyper, *Zwane: I won’t resign*, Fin24, 7 September 2016.

65 Eskom presentation to the Portfolio Committee on Public Enterprises: *Securing coal resources for power generation*, 23 April 2013.



Corporate coal on the Highveld

requires access to a lucrative export market for Waterberg coal – coal qualities are highly variable and miners need to separate the high and low quality coal for different markets. Otherwise, the mines are hardly worth it. Exxaro's Grootgeluk mine was originally developed by Iscor in 1980 to supply coking coal to Vanderbijlpark but was made viable because Eskom's Matimba power station was built at the same time to take the bulk of low quality production. It has a massive coal washery and only half of what it mines ends up as saleable product.

Last year's groundWork Report argued that the minerals-energy complex (MEC) is cracking under the strain of trying to reproduce itself. Medupi and Kusile are exactly the plants it needs but cannot afford. The increased price of electricity has resulted in substantially reduced consumption by big MEC corporations whereas Eskom needs increased consumption to pay for these plants. On the coal fields, the Optimum-Arnot story suggests that the MEC is now cannibalising itself. The coal majors are absconding before their liabilities catch up with them and the juniors are feeding on the carcasses of mines thrown to them by a predatory state.

Local people say that Optimum – or at least some of the mines that make up the complex⁶⁶ – closed around the end of November 2015. Mine neighbours say the closure of the open cast mine was a relief. Blasting covered the land in dust and sometimes rained stones on them. At Woestalleen shack settlement, however, people complain that there is a strong smell of sour gas most afternoons whether or not there is active mining. A likely source is a massive discard heap across the road which is burning well below the surface. Emissions from spontaneous combustion are unmitigated and at ground level. A study of emissions on the Witbank and Sasolburg coalfields concluded:

This study has identified that during spontaneous combustion
... burning coal released high concentrations of toxic gases
including benzene, toluene, xylene, ethylbenzene, methane, and

66 Business rescue status reports suggest that the Optimum mines operated 'normally' throughout this period, including the usual December slow down. This does not accord with the observation of local people.



carbon oxides. Thirty two aliphatic compounds were detected. Halogenated compounds included bromomethane, iodomethane and trichloromethane in low concentrations, and dichloromethane and chloromethane in high concentrations. Different [coal-fire gas minerals] such as salammoniac and mascagnite were detected. Heavy metals such as mercury, arsenic, lead, zinc, and copper were also found. [Pone et al, 2007: 137]

Most of these compounds are toxic and take a heavy toll on people's health. The coal fires also result in water pollution and make a significant contribution to climate change. The authors recommend that an environmental and health impact assessment should be made. However, no such study has been carried out and the issue is largely ignored.

While partial closure of Optimum provided some relief for neighbours, mineworkers went home early at the end of 2015. In March 2016, word had gone out that the mine would be reopened following the conclusion of Glencore's deal with the Guptas. Contract workers would have no assurance of getting their jobs back, so they returned so as to be there when the recruitment doors opened. The costs of waiting are high so they look for the cheapest place to stay. Woestalleen grew up around an abandoned and half-ruined prison now used for accommodation. The old cells are dark and narrow but, for single men, they have the virtue of being lockable while they queue for work at the mines.

At Arnot, the first redundancies were due at the end of July 2016 with 600 workers laid off. Another 1 200 workers are still there but their jobs will be phased out between now and 2020.⁶⁷ Some may find work on other mines but many will return to the 'sending' communities. There is little left of the rural production that subsidised the wages of migrant mineworkers in the early 20th Century. The rural home still relies on women's unpaid work but, according to Scully and Webster, "For migrants, the rural area is less a place of agrarian economic activity than it is a site of secure housing, and social networks that

67 Michelle Gumede and Paul Burkhardt, NUM wants a buyer to save coal jobs at Exxaro Resources' Arnot mine, Business Day, 12 May 2016.



can provide protection from destitution” [2016: 12]. In the town, or even the mining village as the people of Rietspruit discovered, one is expected to pay for housing.

Coal juniors

Eskom presents itself as promoting the cause of black-led coal juniors – which CEO Brian Molefe likes to call ‘the little guys’ – in the place previously occupied by the departing coal majors. It is trying to wrap this with the credentials of the liberation struggle and even the workers’ struggle against global capital. Defending Eskom’s contract with Tegeta, chairperson Ben Ngubane told parliament that ‘state capture’ was what happened when the apartheid government took power in 1948 and had Eskom sign long term supply contracts with the coal majors. “Those shareholders sitting in London have benefitted on the sweat of our miners because of state capture,” he said. Eskom wanted to replace those contracts with new contracts “with black industrialists, small businesses and rural businesses to transform the mining industry”.⁶⁸ He did not elaborate on who will now be enriched by ‘the sweat of our miners’. However, some prominent and empowered juniors are incorporated outside South Africa while coal major Exxaro remains empowered and locally incorporated.

Table 9 gives a selection of coal juniors. According to Ichor, which is empowered but listed in Germany, there are 120 in all.⁶⁹ They produce only 7% of national production, mostly from small mines with a short life of mine. In a number of cases, they are re-mining old underground mines by taking the pillars. In other cases, they are not at all interested in mining but acquire prospecting or mining rights in order to sell them on to international speculators who buy up rights in bulk. Such rights may then be activated arbitrarily.

To benefit from Eskom contracts, mining companies must be majority black owned. Local people believe that many companies have black fronts but are in fact controlled by white men. They also observe that companies that fall foul of

68 Matthew le Cordeur, *Joke is on Eskom boss Brian Molefe after funder dumps the utility*, BizNews, 31 August 2015.

69 Ichor corporate presentation, May 2015.



the law tend to disappear, but the manager will return with another company name. The DMR does not appear to have any mechanism, or inclination, for excluding such fly-by-night operators.

The export markets are largely the preserve of the majors. Even where a junior miner has a share in RBCT, as was the case with OCH, they still sell to the majors who have the capacity for international marketing. In this way, local people say that the majors can sell off mines before they become liabilities but still take a large slice of the profit.

Ichor is on the look out for acquisitions. It argues that the coal juniors are ripe for consolidation, future demand is assured as Eskom adds Medupi and Kusile to its fleet, and Eskom's 'supply gap' widens to 60 Mt/y from 2016. The 'supply gap' refers to the amount of coal not covered by contracts, short or long term, which will have to be bought at spot market prices. Commenting on the brazen looting of the state by the president's cronies, energy academic Anton Eberhard notes that:

Eskom is the largest of South Africa's state-owned enterprises, with annual revenues of R160-billion. Its largest expenditure item is coal. Contrary to recent Eskom press statements, its long-term cost-plus contracts with tied coal mines were cheap. But these contracts are not being renewed and are instead being given to smaller, new mining entrants. That, in itself, is positive for empowerment, but little investment is being made in new mines and Eskom has openly defied treasury's scrutiny of these contracts. Government has not acted on the recommendations of the Coal Road Map published in 2013 and the risks of coal shortages and steep increases in coal and electricity prices are real.⁷⁰

70 Anton Eberhard, *SA's economy can be fixed – but it requires a renewal of political leadership*, Mail & Guardian, 13 September 2016



Corporate coal on the Highveld

Table 9: Coal juniors

Corporation	Colliery	Location	Catchment	Market	Mt/y
Ichor (Continental)					1.94
Mbuyelo (45%)	Vlakovarkfontein	Kendal	Wilge	Eskom Majuba	1.3
	Munungu	Delmas		Eskom	New (1.6)
Universal (30%)	Kangala	Delmas		Export	1.7
	Brakfontein				New
	New Clydesdale	Kriel	Olifants	Eskom	Restart
Vunene (70%)	Usutu	Ermelo	Vaal	Eskom Camden	1.0
	Penumbra	Ermelo			New
Eyethu	Mooifontein	Witbank	Olifants	Eskom Local	
	Leeuwpoort				
	TNDB Welgelegen				
	Kromdraai	Delmas	Wilge		
Wescoal	Intibane	Kendal	Wilge	Eskom	1.0
	Khanyisa	Kendal	Wilge	C&M	0
	Elandspruit	Middelburg	Klein Olifants	Eskom	2.0

This looks more like fragmentation than consolidation. The literal break up of the roads is one more sign of it. We are told that the coal supply is ever more incoherent. Coal is taken from anywhere to anywhere and loaded coal trucks pass each other in opposite directions on the same road. Even if Ichor snaps up a few more juniors, Eskom is presiding over a chaotic decline on the coal fields. The logic of the situation is that Eskom will grind the coal juniors into bankruptcy or the juniors will be allowed to bleed Eskom dry. Either way, this is an embrace of death.



Corporate coal on the Highveld

Corporation	Colliery	Location	Catchment	Market	Mt/y
Tegeta	Brakfontein	Delmas	Wilge	Eskom Majuba	1.5
	Idwala	Witbank	Wilge		
	Optimum	Middelburg	Little Olifants	Eskom Arnot Hendrina	Restart
Anker	Elandslaagte	Witbank	Olifants	Export	
	GolfView/ Lilliefontein	Ermelo	Vaal	Abandoned	
Msobo	Spitzkop Tselentis, Verkeerderpan	Breyton	Vaal/Komati		1.2
Northern	Jagtlust, Mimosa	Carolina	Komati	Export (BHP)	
Kuyasa	Delmas	Delmas	Wilge	Domestic	2
CoAL	Mooiplaats	Ermelo	Vaal	Shut	0
AEMFC (SoE)	Vlakfontein	Ogies	Olifants		(1.6)
Keaton	Vanggatfontein	Delmas	Wilge	Local	
Cousin	Vogelstruisfontein	Belfast	Komati	Abandoned	

Sources: Creamer media's Coal Report 2015, Chamber of Mines, company reports and websites.

Most of the juniors report 'run of mine' (RoM) production rather than saleable product which may be 30% less. Blank spaces indicate that we do not have the information.



4

The catchments – poisoned at source

Coal companies, the investors who profit from them, politicians who make decisions to aid, abet or block them and reporters who watch them, many times act and speak as if these activities take place on a blank slate. But they don't. They depend on, and radically affect, a landscape which is alive with ecosystems and provides homes to people, animals and plants. These ecosystems, plants, animals and people are also vulnerable.

The Mpumalanga Highveld is important for a range of reasons. The grasslands of the Mpumalanga Highveld form part of the most biodiverse biome in our country. Only one out of six plants is actually a grass. The rest are bulbs, herbs, small flowering plants and small shrubs. It is rich in species to the point of being more diverse than the famous fynbos of the Western Cape and is home to many endangered and endemic species of plants, birds and reptiles. Only 2% of the area is protected – as opposed to the 10% recommended by the International Union for the Conservation of Nature (IUCN). Grassland, in South Africa as elsewhere in the world, is also the most transformed biome of all because it is highly productive for agriculture and, in South Africa, the timber plantations have moved in to exploit the combination of rich soils and high rainfall on the eastern escarpment.

Intact grasslands play a crucial role in filtering water. The Highveld gives rise to the inland rivers that water most of the country. The first is the Vaal River which supplies water to the economic and urban heartland of Gauteng. It is so overworked and polluted that water is transferred from Lesotho and the Drakensberg via elaborate transfer schemes. The second is the Olifants River, whose upper catchment, the Upper Olifants is densely populated with coal mines and the industries they attracted in over 120 years of coal mining. Eskom



has 11 power stations on the Highveld. Six are in the Olifants catchment and a seventh is on the way. They burn coal day and night and pump out greenhouse gases and pollutants like sulphur and mercury. They make the Highveld one of the most dangerous places in the world for people's health.

The third is the Komati River. In 2012, an acid mine drainage incident in the upper catchment interrupted the water supply to a town for seven months. The Komati River collects the waters of the Elands, Crocodile and Sand rivers flowing eastwards through to Maputo, over the spectacular escarpment, past fruit and nut farms and the Lowveld game reserves and through a corner of Swaziland. It is a beautiful and economically important area and its water is in the care of only the second Catchment Management Agency (CMA) in the country – the Inkomati Usuthu (IUCMA). The Usutu River drains into Swaziland and, further south, the Pongola River flows into KwaZulu-Natal.

In between these catchments lies the remnant catchment of the Lakes District centred on Lake Chrissie. It is a hotspot of biodiversity with rich frog, insect and birdlife and beautiful scenery with a thriving tourism sector. It provides evidence of an exceptional geological inheritance in the South African landscape. According to geologist Terence McCarthy, the Mpumalanga Lakes District is a fragment of one of oldest land surfaces in Southern Africa as little erosion has taken place in 65 million years. In ages past, the lakes were part of the Mpuluzi catchment flowing eastward to join the Usutu. However, the Vaal captured their headwaters and isolated them from the Mpuluzi. They were further cut off from the rivers by sand dunes blown into the area during an arid phase. Hence, the Lakes District is left as a remnant catchment surrounded by bigger catchments. As a result, there is no outflow from the lakes, except during floods, and whatever contamination flows into them will remain. The lakes are not only beautiful, but also vulnerable. As yet, they are essentially pristine except that large herds of game have been replaced by cattle.

On the Highveld, the thin upstream rivers cut their way through the grassland and the water is cleaned by many wetlands dotting the landscape. It is a water rich area with a relatively high rainfall for South Africa – on average 750 mm per year. In addition, a layer of sandstone rock, about 2 metres below the



The catchments - poisoned at source

surface of the soil, creates a 'perched' water table. The sandstone keeps the water in these two metres of well developed grassland soil and the landscape is dotted with pans. The sandstone is thus integral to the ecology of the soil and the grasslands.

The coal miners have no regard for this. For open cast mining, the sand stone layer is part of the 'overburden' and is blasted to smithereens and removed. In underground mining, the sandstone is undermined and it eventually sinks and cracks. With old fashioned bord and pillar mines, surface subsidence happens slowly but the process is speeded up with long wall mechanised mining. There is no current or foreseeable restoration practice that can restore this layer as it is not technically feasible and trying it would cost more than the coal is worth.⁷¹

Coal mining on the Mpumalanga Highveld creates a second, very destructive water problem: acid mine drainage. AMD is produced from pyrites, or fool's gold, composed of iron sulphates present in the rocks surrounding the coal seam and sometimes in the coal itself. As iron sulphate comes into contact with oxygen and water, it turns the water acid. This acid water, in turn, mobilises the iron and heavy metals present in the host rocks and the coal. AMD is thus saturated with toxic heavy metals. Treating AMD with alkaline materials such as calcium and magnesium – which may also be naturally present in the rocks over which the water flows – creates another problem: together, the acid and alkaline materials form salts, creating a long term and arguably even more serious problem of salinity in the water. These salts poison the soil and can only be removed by expensive and energy-intensive means: reverse osmosis – straining the water by forcing it through holes of molecular size – or distillation – boiling the water to leave the salts behind.

Box 1: How the sandstone and coal got there

Both the sandstone water perch and the coal seams are the results of geological processes that took place between 500 and 200 million years ago, in what was then the vast Karoo Inland Sea. Sandstone and coal were

⁷¹ Soil scientist and rehabilitation specialist Johan van der Waals, personal communication, 2016.



originally laid down in horizontal bands, which is common for sedimented rocks formed in a sea. They occur in the Ecca formation, part of the Karoo formation that resulted from sedimentation in the Karoo sea. The Ecca formation was built on the Dwyka formation, whose top layer consists of materials scraped together in an ice age. It is a mixture of sand, rocks and pebbles of different sizes deposited by glaciers moving across the landscape. The coal is mainly the remains of a *Glossopteris* flora, named after an ancient gymnosperm tree species – a tree that carries naked seeds not covered by fruit, since at that time there were no birds or animals to eat the fruit and spread the seed. Fossils of these trees can still be seen in South African coal. Because of the climate then, the trees grew luxuriously in the deltas draining into the Karoo Sea and plant material accumulated faster than it could decay. Over time, this material compacted and fossilised to form coal. In a dry, desert phase that followed, the plant material was covered by sand blown in from surrounding deserts (in geological times, things change dramatically) which eventually changed into sandstone and shale. This process happened at least five times, resulting in the five coal seams of the Mpumalanga coal fields.

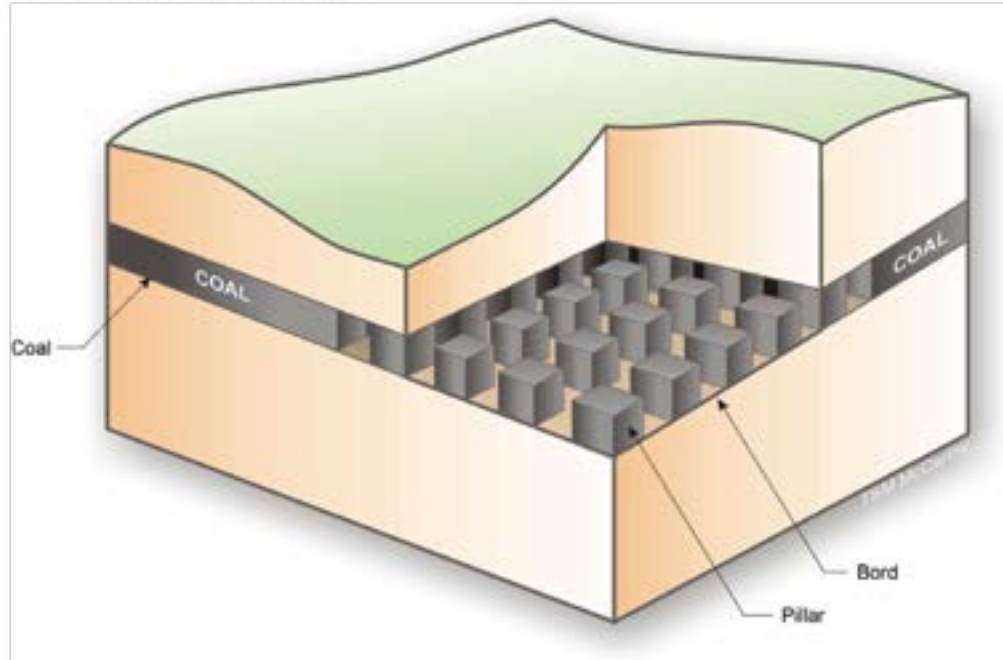
A number of other layers were added later, including the Beaufort and Stormberg formations. At the last, volcanic eruptions created the hard basalt layers that form the toppings of the Drakensberg. On the Mpumalanga Highveld, these top layers were eroded down again to the Ecca layer. In some places, like the valley made by the Steenkoolspruit near eMalahleni, the coal seams were exposed on the surface and attracted people's attention in precolonial times.

In the Anthropocene – a new geological era in which human actions have become the dominant force shaping the earth – this part of the planet is again changing fast. The following sections follow the processes of change that result from coal mining in three catchments that cover most of the Mpumalanga Highveld. The impacts of climate change and air pollution will be discussed more fully in the coming groundWork Report 2017, which focuses on burning coal. Here the focus is on the consequences of mining it.

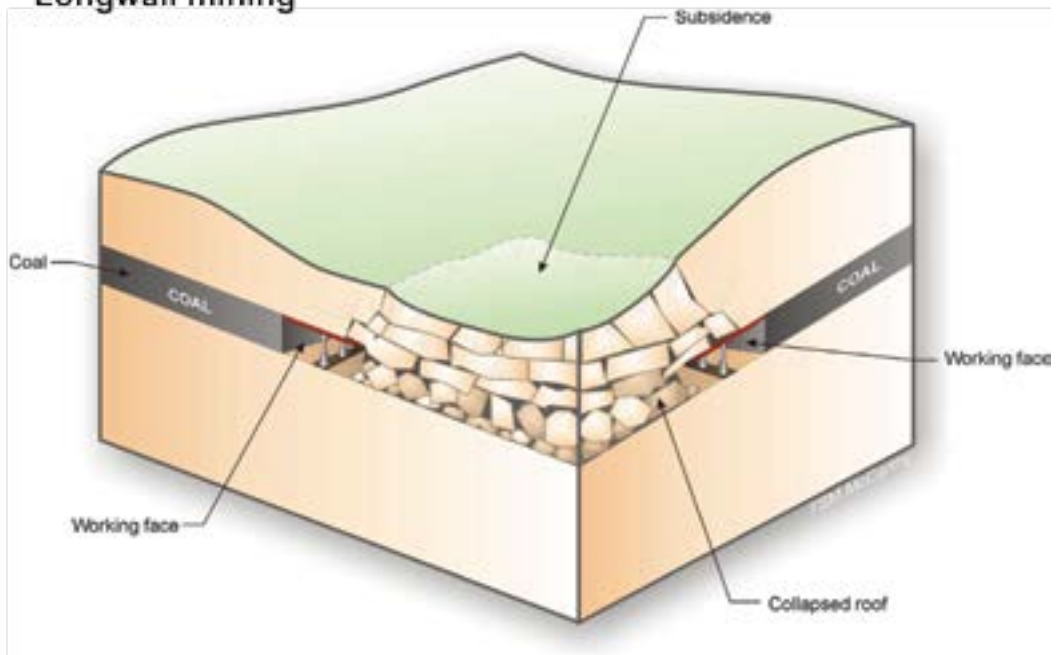


The catchments - poisoned at source

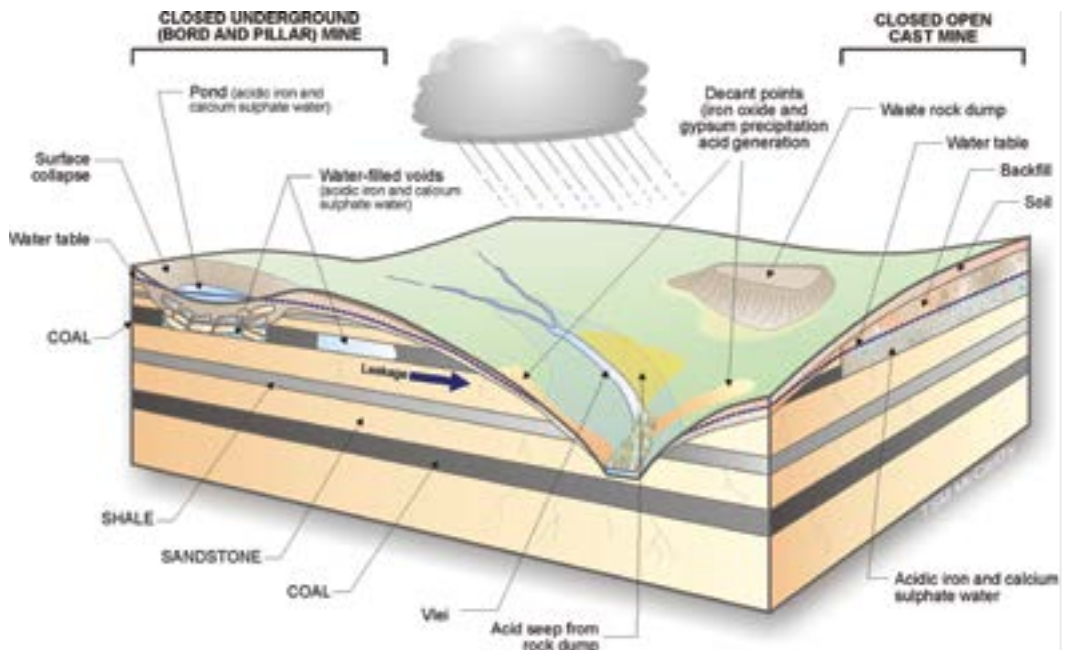
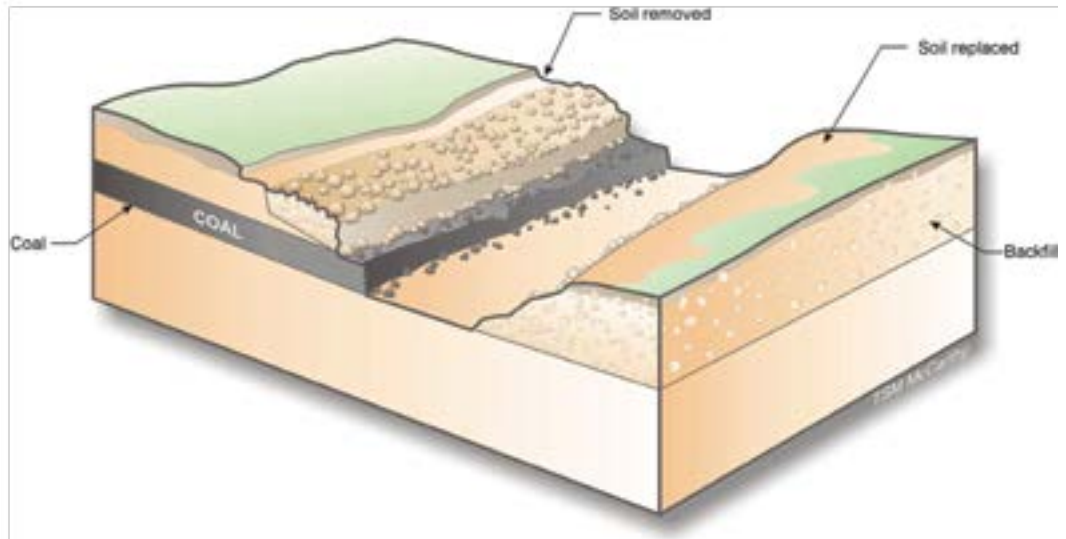
Bord and pillar mining



Longwall mining



Open cast mining



Courtesy T. S. McCarthy



Figure 2: Mining methods

The first three diagrams on the previous pages show three main methods of mining coal. In the original approach of underground bord and pillar mining, the pillars are left behind to support the “roof” of the mine. They may be removed later, or may collapse, leaving behind a typical grid subsistence pattern that is clearly visible from the air in areas of Emlahleni.

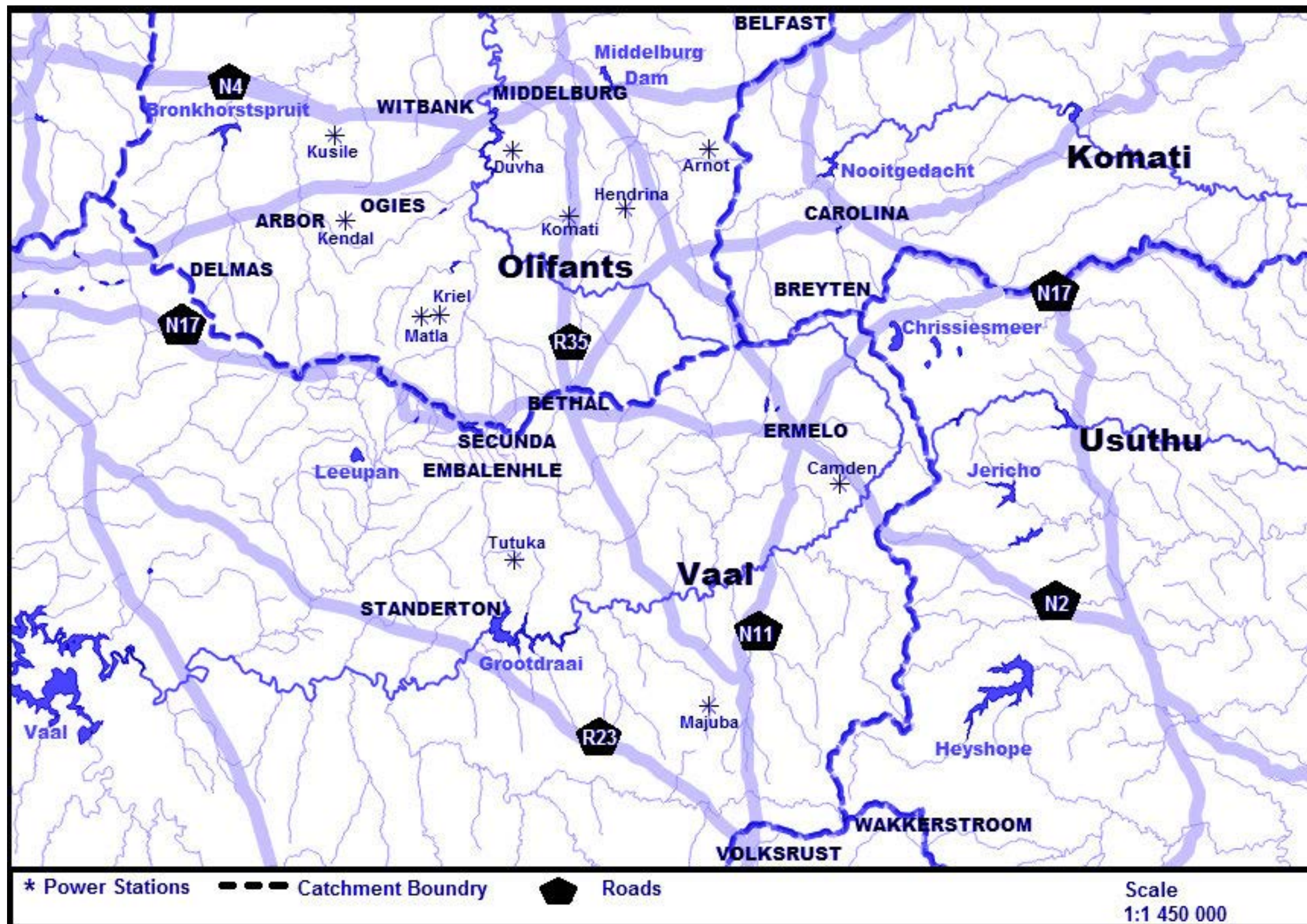
In longwall mining, a combination of mechanical drill and shield is used to mine the coal. The mined out areas are allowed to collapse as the mining moves to the next area. In open pit mining, all the soil and geological layers above the coal are removed and stacked in heaps for later refilling of the open pits created.

The final picture shows some of the environmental problems that result from coal mining. On the left is a pond created by subsidence. Water collects, infiltrates into the soil and reacts with pyrite in the broken rock to form acid mine drainage. On the right, acid mine drainage formation is shown in water leaching through coal and rock dumps (above ground) as well as underground, as the fractured and mixed material from open cast mining allows for extensive exposure of pyrite to water and air.

Graphics used with permission from Terence McCarthy, University of the Witwatersrand.



Map 1: The Highveld Catchments



Komati

The Komati River drains a relatively small part on the eastern edge of the Mpumalanga coalfields. Its catchment on the coalfields neighbours on Breyten and Chrissiesmeer in the south, Hendrina town in the west and Belfast and Arnot in the north.

The Komati is an international river. It crosses into Swaziland where it is impounded by the Maguga Dam, built to irrigate sugar, and crosses back to flow through the former Kangwane Bantustan. Just before it crosses into Mozambique, it is joined by the Crocodile River that runs from the tourist town of Dullstroom into the Lowveld and passed Mbombela, the capital of Mpumalanga.

The Crocodile and its tributary, the Elands River, carved the valleys through which the railway line and roads from Pretoria and the Reef to Maputo were built. The Crocodile is surrounded by irrigation boards which have a near monopoly on the river's water. It is heavily polluted by Sappi's Ngodwana pulp mill, built under Gencor's watch in the 1970s. Its flow is also weakened by the thirst of the industrial timber plantations that supply the mill. Further on downstream, it supplies a Coca Cola plant and a number of manganese factories and irrigation for extensive sugar plantations. It is also under daily assault from excess nutrients and bacterial pollution from the effluent of 17 municipal wastewater works, three quarters of which are not run properly.

The Inkomati Usuthu Catchment Management Agency was created following treaties with Swaziland and Mozambique specifying both the quantity and quality of water that needs to be shared with them. Along with the Komati, Crocodile and Usutu rivers, it manages the Sabie and the Sand rivers which flow through the densely populated and poorly serviced areas of Bushbuckridge, Thulamahashe and Acornhoek and then through the Kruger National Park and on to Mozambique.



Carolina

In 2012, the small town of Carolina in the upper reaches of the Komati made history when its water supply was knocked out for seven months by an acid mine drainage event caused by coal mining.

Historically, Carolina was supplied by “a profusion of fountains” in the town [Tempelhoff, 2012], one of the prime reasons why it was built there in the 1880s as a stop-over point between Middelburg, Ermelo, Swaziland and Mozambique. Now, Carolina lies between two dams. To its north is the big Nooitgedacht Dam which stores water transferred from the Jericho Dam in the next-door Usutu catchment. From Nooitgedacht, it is transferred to the Upper Olifants catchment for use in Eskom’s coal fired power stations. The power plants require very high quality water – less than 40 parts per million (ppm) of sulphates – but, as a result of the coal mining required by the plants, the water in the Upper Olifants is too polluted to be used by Eskom – with sulphate levels as high as 8 000 ppm.

The Nooitgedacht Dam’s water is not meant for Carolina and, during the AMD crisis, it was not made available to the townspeople. Carolina’s drinking water comes from the much smaller Boesmanspruit Dam just south of the town. Upstream, the Boesmanspruit and Witrand rivers flow from a hard bedrock in the upper reaches into a plain and settle in a wetland on a bed of mud. This is the Boesmanspruit wetland just above the dam.

These names point to the original inhabitants of this water rich area, the San, whose artworks adorn the rocks at Lake Chrissie and form part of the tourist attractions. The San were hunter gatherers who were edged out by pastoralists and then eliminated by the colonists. The colonial economy started with hunting followed by sheep and cattle farming which was later supplemented by maize and soybean farming. Coal mining was introduced in the early 20th Century.

Carolina is on the north-eastern tip of the Ermelo coalfield which is not as heavily developed as the 120-year-old Witbank coalfield. A number of medium to small mines are active in the catchment above the town. Some are abandoned. The AMD leached from the abandoned mines, the active mines



immediately above the wetland and the railway sidings where coal is heaped, stored and loaded onto trains. Over years, it seeped into the wetland and collected in pockets in the mud there. Because of the low alkalinity natural to the rocks of the area, there was very little buffering capacity against acid mine water.

The acid drainage went unnoticed for decades, however, as it was diluted by clean water from the Jericho Dam flowing down the Boesmanspruit and through the wetland and the town dam to Eskom's Nooitgedacht Dam. Eskom pumps the water from Jericho if the levels in Nooitgedacht are low. In 2011, the levels were high and it did not pump. This had nothing to do with either the coal mining or the water quality in the Boesmanspruit. For the Eskom operators, the wetland and the town's dam functioned merely as another pipeline in their extensive water transfer system across the catchments.

However, the interruption in the Eskom water transfer removed a crucial part of a precarious water quality balance. Without the regular stream of clean Jericho water, there was a build-up of acidity and heavy metals from the coal mines. When a heavy rainstorm soaked the upper reaches of the Boesmanspruit catchment, contributing to an usually high total of 155 mm over the month of January, the accumulated AMD – plus contaminated water in holding ponds at various coal handling facilities which overtopped – washed overnight into the town dam [Humphries and McCarthy 2013]. The AMD influx produced high levels of sulphates, aluminium, chrome, cobalt, copper, iron, lead and manganese in the dam and killed off the fish. The town's drinking water purification works were not designed to treat AMD and heavy metals and it failed.

On the morning of the 11th of January 2012, residents of Carolina woke up to sour water in their taps. The water tasted bad and had a funny colour. Porridge prepared with it turned blue. Residents could not brush their teeth because “it felt as if your mouth was on fire”.⁷² The municipality put up posters warning that the water was not safe and the news was reported by the local

72 We are indebted to Tempelhoff et al, 2012, for details of the following account.



The catchments - poisoned at source

radio station and local newspaper. For the next seven months, Carolina had no municipal drinking water. People fetched water from wherever they could find it. This included the boreholes at the three local mosques, which abided by the Koran's injunction that you cannot refuse people water, old fountains in town that were now rediscovered, and water tankers that arrived irregularly to long queues of people waiting in frustration. Ordinary life in this Highveld town of around 20 000 people was disrupted by the first public crisis caused by AMD from coal. At the dam, the iron precipitate associated with AMD, called 'Yellowboy' by miners, painted the dam wall a rusty orange.

Seven months without drinking water

What followed was the fumbling and frustrating response of a system that was not remotely prepared to deal with this catastrophe, despite having lived with coal mining and the known risk of AMD for close on a century. It underlines the cost of blindness to the realities of living in between coal mines.

Two weeks after the acid water hit the town dam, on the 26th of January 2012, the municipality and community leaders started meeting regularly and officials reported on the difficulties of bringing the town's dam water to drinking water standards. The AMD hit a system that was already weak. In previous years, the town fared badly in the DWS's Blue Drop scheme. It scored 17.5% in 2010, 9.8% in 2011 and 18.4% in 2012. A score of 90% is required to certify that municipal water is safe to drink. The municipality was also strained by a rapid increase in population as people moved in from the former KaNgwane Bantustan and from commercial farms that shed labour as they mechanised. In 2007, the town experienced a cholera outbreak and the municipality then installed a new chlorinator. As Tempelhoff observes, this illustrated how poorly the town – like other towns and municipalities in South Africa – was prepared for extreme events, whether a local water quality crisis or the extreme flooding or drought that should be expected with climate change.

The town meetings, under control of a local politician, did not satisfy "the emerging citizens leadership for long: local environmental activists,



including a church organised environmental study group, township activists, unemployed and frustrated young people, as well as members of the local Ratepayers Association” [Tempelhoff 2012: 5]. There were also farmers, like Koos Pretorius (see below), who had warned of the risk of AMD since 2006. After a frustrating month without water or a satisfactory response, on the 10th of February residents protested and handed over a memorandum to the municipality. The story got attention in the national media, despite local politicians’ appeals to keep it off the national radar.

The attention helped. By the 21st of February, six weeks into the crisis, the DWA rapid response unit had started working on the Water Treatment Works and installed water tanks. But people still stood in long queues for water and, partly because the trucks kept breaking down, the supply was irregular and limited, leading to resentment and anger. Better off townspeople sank their own boreholes and could drive their washing to friends in nearby towns. Poor people did not have such options.

Attention then turned to the mines as the cause of the disaster. In March 2012, two months into the crisis, the minister for water and environment signed pre-directives requiring compliance with water use standards to “Northern Coal; Union Colliery operated by BHP Billiton; Siphete at Witrand; and Tselentis operated by Xstrata (Msobo) Coal”, the coal mines which were “...the prime suspects responsible for what now was evidently acid mine drainage in the catchment of the town’s water supply in the Boesmanspruit Dam” [Tempelhoff 2012: 53]. The mines were instructed to prepare a common strategy for mine closure and future management of mine water in the Carolina catchment.

Four months into the crisis, living without clean water had become very difficult. School children complained that they could not wash or go to the toilet and that they smelled bad to each other. The crisis took a toll in extra time, extra expenses, and diseases like diarrhoea. The wheels were turning far too slowly. As Tempelhoff reports:

On 16 May angry protesters marched in the streets of Silobela. At local schools people described as “comrades” (reminiscent of liberation



The catchments - poisoned at source

struggle days) told learners to clear out of the classrooms and to join the protest about the lack of water. One learner later explained:

The teachers were upset, but many just left the classrooms when we joined the people. Some even had sympathy with the protests. In the havoc that followed protesters set alight municipal buildings and vehicles. Shops owned by local Pakistani dealers were also burnt and ransacked. Police reinforcements from Middelburg and Secunda were employed to quell the violence that had erupted over the state of the town's water. Police shot and injured three protesters and made a number of arrests. Later 25 people briefly appeared in court. Six police officers had been injured. The leaders of the protest, who immediately went into hiding, indicated that they were tired of waiting for a proper water supply to be restored. One said that it was clear that the municipality was unable to do the work. Another was upset by the fact that police used live ammunition on the protesters. [2012:33]

By July, six months into the crisis, residents together with the environmental NGO Federation for a Sustainable Environment (FSE) initiated legal action with the support of two legal NGOs, Lawyers for Human Rights and the Legal Resources Centre. In court on the 10th of July 2012, Judge Moses Mavundla instructed the Gert Sibande District Municipality to secure, within 72 hours, a satisfactory daily supply of drinking water for residents and a plan to prevent a similar occurrence. The district municipality quibbled that it was not their responsibility to supply water, but that of the local municipality. The Minister of Water Affairs' response to the judgement was that "dissidents" were "waging war against the state".

In early July, Eskom pumped water from Jericho to Nooitgedacht. "Water quality in the [Boesmanspruit] dam improved rapidly and by the end of July the pH had risen to 7 and the concentration of TDS had fallen to about 100 mg/L, values typical of unpolluted streams in the area" [Humphries and McCarthy, 2013:3]. Almost miraculously, after seven months, the crisis was



over. In August, a provincial ANC delegation made a public performance of drinking Carolina's now safe again water. The crisis was over. Or was it?

Map 2: Carolina and the upper Komati



- | | |
|--|---|
| 1. Strathae | 9. Northern Coal (Witransiding 1) |
| 2. Siphethe Coal (Siding) | 10. Msobo Coal (Witransiding 2) |
| 3. Pembani Colliery | 11. Siphethe Coal (Witransiding Colliery) |
| 4. Droogvallei Siding | 12. BHP Billiton (Black Diamond Colliery) |
| 5. Msobo Coal (Verkeerdepan Colliery) | 13. Northern Coal (Mimosa Colliery) |
| 6. Unknown (Old Witransiding Colliery) | 14. Siphethe Coal (Coastal Fuel Colliery) |
| 7. Northern Coal (Jaglust Colliery) | 15. BHP Billiton (Union Colliery) |
| 8. Eastside Coal Company (Black Gold Colliery) | 16. Msobo Coal (Msobo Colliery) |



The catchments - poisoned at source

Finding and treating the cause of the crisis

At least four reports looked into the causes of the Carolina crisis. First on the scene was the Mpumalanga Tourism and Parks Agency in April 2012 [Marais et al 2012]. The team found that acid water was decanting from old mine workings above the wetland, from a breach in Northern Coal's coal washing plant, and from the railway siding that Northern Coal shared with Msobo Coal. A second report [Tempelhoff et al 2012] looked at both causes and social impacts.

A third report was done by Humphries and McCarthy [2013] who conducted tests in the area and reconstructed the train of events that led to the pollution of the dam. They concluded that:

...the catastrophic pollution of the Boesmanspruit Dam was the result of a complex chain of events. Extensive coal mining has and is taking place in the catchment. Some mines have closed and are decanting severely polluted water. Active mines and coal handling facilities are also contributing to the pollution load. The lower Witrandspruit subcatchment is the most severely affected and it appears that polluted surface, and especially groundwater, is entering the stream. The Witrandspruit is primarily a bedrock river, except for a section on the lower reach where the river widens into a wetland. Significantly, the storage capacity of this wetland is substantial in relation to the volume of the Boesmanspruit Dam. The major pollution sources appear to be located along this lower reach of the river.

One contributing factor was that "... the buffering capacity of the dam, possibly already compromised by slow leakage from the Witrandspruit wetland, was overwhelmed and the dam became acidic." [2013: 9]. Another was that, when Eskom's transfers from Jericho stopped, enough acid water accumulated in the wetland to knock out the Boesmanspruit dam.

The fourth report, by the consultant company Golder [2014], resulted from the DMR issuing, in March 2012, identical directives to five companies: Msobo Coal, formerly Xstrata (Tselentis Colliery); Northern Coal (Jagtlust and Mimosa



Collieries); Siphethe Coal (Witrاند and Coastal Fuel's Collieries); Eastside Coal Company (Black Gold Coal mine) and Pembani Colliery. The directive was:

... to consult with your neighbouring mines and jointly develop a mine closure and water management strategy. The strategy must focus on negative environmental impacts as a result of your mining operations/or your neighbouring mines which can affect your planned closure objectives and the implementation of your environmental management options as described in the existing approved Environmental Management Programmes pertaining to your operation. [Golder 2014: 1]

Who were these companies?

Msobo Coal is a BEE company with two collieries bought from Xstrata: Tselentis and Verkeerdepan. Tselentis is 30 km south of Carolina near Breyten and the mining right covers a substantial portion of the Boesmanspruit catchment.⁷³ It has about five years life of mine remaining. Verkeerdepan, with an expected life span of 12 years, is much closer to Carolina and neighbour to Northern's Jagtlust Colliery. It attracted opposition from local farmers but has been given a mining right and a water use license. Msobo also operates a coal siding, Witrاند siding 1, adjacent to Northern's Witrاند siding 2. Msobo's attempt to mine in the Chrissiesmeer catchment is documented above.

Northern Coal is closely linked to Portaclone, a company that constructs coal washing plants. Its Jagtlust Colliery is 10 km south of Carolina. Its second colliery, Mimosa, is roughly 5 km away. Mimosa ceased mining in 2008 but a washing plant on the site processes the Jagtlust coal. Northern operates the Witrاند siding 2 adjacent to Mimosa. The company is conducting rehabilitation experiments into topsoil thickness at Jagtlust.

Pembani Coal's operation, 5 km east of Carolina, started in 2004. At the current mining rate of 1.5 million tonnes a year, they expect a life of mine of twelve years. The Swartspruit flows north, passed the mine to the Komati below Nooitgedacht Dam. Pembani Coal hit the news in 2015, when neighbours

⁷³ Officially identified as quaternary catchment X11B.



The catchments - poisoned at source

were reported to complain about losing land and pasture to its expansions.⁷⁴ Pembani Coal, together with Eastside Coal, operates the Droogvallei coal siding, located 2 km south-east of Carolina above the Boesmanspruit Dam.

Eastside Coal Company's main operation does not lie within the Boesmanspruit catchment. However, it is responsible for historic bulk sampling activity within this catchment at Black Gold Colliery to the west of Northern's Mimosa and 10 km south west of Carolina.

As the investigation progressed, the parties responsible for Siphethe Coal disappeared. Siphethe operated the Witrand and Coastal Fuels Collieries 10 km south of Carolina. The Golder consultants said they could not find them even with the help of the other coal companies. This might be because they had gone into 'business rescue' in early April 2013.⁷⁵ The Witrand Colliery was mined as an open pit mine from 2000 to 2006. Mining at Coastal Fuels Colliery ceased at some point before 2012. Some rehabilitation was done but both mines are now abandoned. Siphethe also operated a rail siding just east of Carolina. It too is abandoned and its runoff flows north, away from the Boesmanspruit.

It seems that another 'Old Witrand Colliery' is located on Msobo's Verkeerdepan Colliery land and was abandoned prior to the granting of mining rights to Msobo. Its ownership is unclear. It has been rehabilitated but there is a decant point on site.

BHP Billiton's Union Colliery is located 5 to 10 km west of Msobo. The surface infrastructure is located outside the Boesmanspruit catchment but the historical underground workings, as well as rehabilitated historical coal discard dumps, fall partially within the catchment with underground water flowing in the direction of Msobo Coal. BHP's Black Diamond Colliery is located 5 to 10 km north west of Msobo. There is limited public data available for this colliery but there is evidence that rehabilitated and abandoned coal discard dumps fall within the catchment. There is an abandoned rail siding north of these dumps.

74 Loyiso Sidimba, *Family fears losing farm: Coal mine denies any eviction plan*. Sowetan, 12 Sept 2015

75 <http://www.sturns.co.za/index.php/our-clients/previous-rescues>, accessed 23 Sept 2016.



Official findings

In June 2014, two years and five months after the AMD event, the Golder report appeared. Its explanation was similar to the earlier reports but it also pinpointed “the identified sources of contamination and/or those with the potential to affect in-stream water quality and contribute to the catchment-wide degradation of alkalinity and/or salt leach” [2014: 58]. These were:

1. Excess mine water decant from underground workings of Coastal Fuels (Siphethe);
2. Decant from rehabilitated Witrand open pit via Problem Pan (Siphethe);
3. Excess mine water decant from underground workings of Union Colliery (BECSA);
4. Dump seepage from Black Diamond Colliery (BECSA);
5. Decant (two points) from rehabilitated Smutsoog open pit (Msobo);
6. Shallow contaminated seepage from historical plant and discard dump areas of Tselentis Colliery (Msobo);
7. Potential decant from open pits of Tselentis open pits could be imminent (Msobo);
8. Contaminated surface runoff from Droogvallei Siding used by Pembani;
9. In addition to the above, although not sampled, remnant coal observed along the defunct railway could also be a contributing factor to in-stream water quality deterioration; and
10. Diffuse contamination sources (that is coal lying around, other AMD seepage points) also needed to be addressed.

The report found that the crisis could recur if steps were not taken urgently and proposed that the companies should write an Integrated Water and Waste Management Plan for each mine and should include mine closure plans. In fact, such documentation should have been part of the mine’s environmental management plans from the start. These plans, however, are often rudimentary (see the example of Umsimbithi below). It also proposed that passive treatment



The catchments - poisoned at source

systems, like artificial wetlands, would be “enough to deal with the relatively small amounts of acid decant water, and will also be cheaper and require less maintenance as well as avoid the need for salts disposal, and noticeably reduce the need for ongoing care and maintenance”. It proposed that “in-stream water quality performance objectives” should be developed for each of the listed mines, based on a catchment-wide water quality model, and that these arrangements be included in updated water use license conditions for the mines [2014: 60, 62].

As usual, the devil is in the details. As a ‘mine closure and water management strategy’, the report gently lets the mines off their responsibilities. There are no consequences for the mines whose negligence led to the distressing events of 2012. The report proposes ‘passive treatment’ because it is cheap and requires minimal management. Without constant supervision and management, however, the artificial wetlands may become another set of acid mine drainage stores. This does not bode well for the future when similar problems will occur on a much larger scale.

These plans and their implementation remained opaque to the participants in the Upper Komati Forum, a catchment management forum which was established in the aftermath of the AMD event. Two years after the Golder Report, and four years and five months after the AMD event, in June 2016, forum participants asked about the status and implementation of the Golder report. Mining companies reported that they were working with the Inkomati Usuthu Catchment Management Agency (IUCMA) to implement the detail.

To the mines’ unfortunate neighbours, what was visible was business as usual. Derek Combrink, a fourth generation farmer just outside of Carolina, fears that the polluted mine water from three coal mines upstream from him will ruin his cattle farming operation. These fears are coming true. In June 2016, Vaalbult, a mine to the west and just outside the Boesmanspruit catchment, blocked all water coming into Combrink’s farm with the explanation that “the law does not allow us to release contaminated water onto your land”. He has approached the IUCMA to help. Meanwhile, Msobo’s Verkeerdepán colliery, also upstream from his farm, is coming into operation. Combrink rents the land



from Msobo and the Boesmanspruit wetland is on this land. He says that he can't allow his cattle to graze there in winter, when stream flow is low, because the acidity kills the cattle's stomach bacteria which are essential to digestion. Cattle starve if they graze there. The third mine is Northern's Jagtlust. The company has started backfilling and rehabilitating but a decanting of acid mine water from the backfilled operations within a few years is highly likely.

Despite its large ramifications for the people involved, the AMD poisoning of the Carolina town dam was a relatively small event. Only a handful of operational and abandoned coal mines were at issue and, because it was a single dramatic event, it was possible to pinpoint its causes. However, very little has actually changed in spite of national attention, interventions from the DWA's Rapid Response Unit (the name seems ironic in this case) and the IUCMA, successful litigation by two legal NGOs, and four investigations into the events with a fifth on the way. Coal mining continues to expand in Carolina and other parts of the Highveld at ever increasing risk to the water and soils of the area. It begs the question of what will happen when AMD on the coalfields really hits, as it did on the Gauteng gold belt in 2001 (see Box 2).

We turn now to the area north of the Nooitgedacht Dam where coal mining plans are being pushed through. The proposed mines have the potential of repeating the 2012 Carolina disaster on a bigger scale and directly affecting Eskom's own water supply.

Setting a time bomb north of Nooitgedacht

North of Carolina and Eskom's exclusive and clean Nooitgedacht Dam, still in the Upper Komati catchment, grinding battles are waged between coal mines entering the area, starting new mega-mines and re-opening old ones, and resistance from farm owners and farm dwellers. These battles take place on a very uneven terrain created by past dispossession and uncertainty for farm workers who may have inherited tenancy rights to land or who have claims under the land reform process. The livelihoods and assets they have built up are constantly under threat. Even white farmers, previously endowed with political power and still in charge of big commercial farming enterprises,



The catchments - poisoned at source

seem to be disadvantaged when it comes to resisting coal mines. These battles are fought on the ground, in protests, in courts, in public meetings, in intricate formal processes that exclude while they pretend to include, and in pages and pages of consultants' reports. In the ambiguous context of new policies and legislation, the reality is often one of impunity for coal mine owners, who get their way whether they obey the rules or not. Farm workers and dwellers are engaged in daily battles to preserve their human rights and aspirations, their claims for land, their livelihoods, histories and attachments to the area symbolised by family graves. The living and the dead find themselves in the way of the coal mining ambitions of Exxaro and other mines.

The area is already littered by mines, including the Klippan, Grootpan and Steelecoal Collieries, the Wonderfontein Umsimbithi mine, Lefa mine, and the so-called Belfast Block, also known as Blyvooruitzicht mine.

This contested area is drained by the Blesbokspruit and Witkloofspruit, which flow into the Nooitgedag dam, and the Klein Komati which joins the Komati River downstream of the dam. Mining in this area will result in AMD and pollute the dam to the point where Eskom cannot use it. If the sulphate load doubles, Eskom will have to turn to other sources of clean water supply, stressing the national system even more. AMD, as it eventually decants from mines that are planned with only the vaguest of provisions for "passive treatment" once the mine is closed, will also affect a large number of inward-draining pans in the area. The pollution will never escape from these pans. It will also affect the surrounding farms, poisoning the high value agricultural soils in the area, mostly under maize and potatoes, which are important for national food security.

Battles for the Belfast Block

Koos Pretorius farms cherries in this area between Carolina and Belfast. He has become a spokesperson for farmers on the Highveld whose farms are being invaded by coal mines.⁷⁶ He is a founder member of FSE which deals with a range of environmental and social justice issues in coal, gold and uranium

76 Koos Pretorius, interview 8 March 2016, with later comments from Marthan Theart, CER.



mining areas, and the protection of water resources and the environment. He is now solidly networked with the environmental justice movement.

Pretorius came to Belfast to practise as a veterinarian in 1991 and to this farm in 1996. In 2002/3, he went into farming cherries as Highland Organics. He exports the cherries to the UK. They ripen about six weeks after the end of the English season and a month before cherries from Chile. But UK supermarkets will not take them if a mine opens next door and there is a risk that they will be coated with mine dust.

Pretorius first learnt about coal mining when, around 2001, he got wind that Eyesizwe and Exxaro were eyeing his farm, Zoekop, together with portions of the farms Blyvooruitzicht and Leeuwpan near Belfast, for a prospecting right application. The mining company called this the 'Belfast Block'.⁷⁷ He joined with other farmers to form the Escarpment Environmental Protection Group (EEPOG) and, during 2002 and 2003, EEPOG met with Exarro.⁷⁸

In 2004, Eyesizwe applied for a prospecting right over a number of farms, including Zoekop, without informing the farmers or EEPOG. It seems that they deliberately avoided them while consulting other farmers and farm dwellers in the area to the point of requiring them to sign 'consent' to the mining. The mining company also revealed in these consultations their intention to undertake drilling operations within 16 to 30 metres from open water, and erect their camp sites no closer than 50 m from open water, both of which are illegal under regulations promulgated in terms of the National Water Act, which lays down a limit of no closer than 100 m.

Only in August 2005 did EEPOG hear of the application. It wrote an objection letter to the DME. The Mpumalanga Tourism and Parks Agency (MTPA) also objected, declaring that "farming is a more sustainable option in this extremely fertile area and coal mining is not an option". The MTPA's biodiversity plan described the area as "highly significant" which meant that surface mining was excluded and underground mining, "if unavoidable", should be subject to strict

77 Based on notes in Pretorius Archive.

78 Thanks to CER for factual documentation and legal analysis of the case on which this narrative is based – see <http://cer.org.za/wp-content/uploads/2011/12/Eyesizwe-Coal-Zoekop-Blyvooruitzicht.pdf>



The catchments - poisoned at source

controls. This included the need for relocation plans for endemic species, Red Data listed plants, medicinal plants and protected plants, plus a further ten conditions to protect this important area.

But of course coal mining, open cast or underground, in this area is not “unavoidable”. Pretorius argues that coal mining is likely to continue at most for another 20 years before renewable energy displaces coal fired power stations, both in South Africa and in coal’s export markets. Coal should therefore be mined only in the least sensitive areas. In our view, this argument also works the other way round. To minimise the destruction from coal mining in all areas, renewables should be actively promoted ahead of any presumed market dynamic. As the Highveld Environmental Justice Network (HEJN) argues, there should be no new coal mines anywhere.

The objections, and an apparent confusion over which properties (portions of farms) the right would apply, did not stop DME from granting a prospecting right in October 2006. EEPOG launched legal review proceedings in January 2008, on the basis that the granting of the right was procedurally unfair, unreasonable and based on an error in law. In a surprise move, Eyesizwe withdrew its opposition to the review proceedings and agreed to pay the costs of the case. The Minister of Minerals and Energy, the deputy DG in charge of minerals regulation and the regional manager for the Mpumalanga region also withdrew.

However, subsequent events show that Exxaro was already preparing to submit a mining right application over the same properties. Before the withdrawal from the prospecting right court case, consultants had been appointed and started working on this mining right. Exxaro’s application was submitted in June 2009 and accepted by DME on the 10th of July 2009, before the withdrawal of Eyesizwe from the EEPOG case on the 22nd of July. In fact, the Background Information Document for the scoping phase of the mining project was dated the 21st of July.

Since Eyesizwe was merged into Exxaro in 2006, this switch was clearly orchestrated with the full cooperation of the department. A public meeting to consult on the scoping report for Exxaro’s Environmental Management



Plan was held on the 4th of August 2009. Two days later the scoping report was submitted. The consultants must have worked like demons because, in the public meeting, they claimed that a draft of the scoping report was not available. EEPOG and the MTPA both submitted objections. The MTPA pointed out that it had not been invited to the meeting. Highlands Organics commissioned an independent review of the Environmental Management Programme (EMPR) which found that, while the report did identify impacts from the mining operation, it did not explain how these would be managed in order to protect the environment and people living in the area, as required by law.

It seems that Exxaro has given up on the mining right specifically on Pretorius' farm. But this has not meant peace. The plans for the rest of the Belfast Block continue. In 2002, Exxaro said they would mine the farm next door to Zoekop for which they had an old order mining right. They are planning to mine 270 000 tonne per month with 80% for export and 20% for Eskom. They now have all permissions for the Blyvooruitzicht/Zoekop mine, including a mining right, Environmental Assessment and Water Use Licence. However, they do not have a municipal land use rezoning, an issue that surfaced in 2015 when Exxaro applied to the Nkangala District Municipality Land Use Committee for this agricultural land to be rezoned for coal mining.

Highlands Organics and others have objected to the rezoning application. According to Pretorius:

... we are going to the High Court and are confident we will win. We are contesting the rezoning on the grounds that this area has high potential agricultural soils. This relates to national food security. The Department of Agriculture says there should be no mining on high potential soils. They have excluded Glencore's Umsimbithi mine as well as Exxaro's mine next door on these grounds. But they have no authority to prevent mining and DMR, DWS and DEA are not taking this into consideration.⁷⁹ The municipality (Nkangala) land use plan

79 The Department of Agriculture, Fisheries and Forestry, DAFF, has recently published a bill which will theoretically give them that power, the Preservation of Agricultural Land Bill.



The catchments - poisoned at source

also excludes high potential soils. So does the Provincial Spatial Development Framework. They all say land must be preserved for agriculture and tourism. Mpumalanga's high quality soils are essential to South Africa's food security, so to disregard their destruction is irrational.

Exxaro responded to this in a way which reveals how they ignore the real issue – rational land use planning – and feel secure that provincial and national government departments will protect them. According to Pretorius: “Exxaro argue that this cannot apply to them because the Municipality cannot contradict national and provincial decisions – that is, the authorisations already given by DMR and DWS. This approach is not aligned with the Constitutional Court's judgment in the matter of *Maccsand (Pty) Ltd v City of Cape Town* and others.” In this case it was unanimously held by the Constitutional Court that:

... [t]he fact that ... mining cannot take place until the land in question is appropriately rezoned is ... permissible in our constitutional order. It is proper for one sphere of government to take a decision whose implementation may not take place until consent is granted by another sphere, within whose area of jurisdiction the decision is to be executed. If consent is, however, refused it does not mean that the first decision is vetoed. The authority from whom consent was sought would have exercised its power, which does not extend to the power of the other functionary. This is so in spite of the fact that the effect of the refusal in those circumstances would be that the first decision cannot be put into operation. This difficulty may be resolved through cooperation between the two organs of state, failing which, the refusal may be challenged on review.⁸⁰

During the application process, Exxaro also argued that land use planning does not entail environmental decision-making. Despite that argument also being contradicted in case law, the Nkangala Land Use Committee agreed with Exxaro and decided that it would not consider the environmental arguments

80 [2012] ZACC 7: Paragraph 48



raised by Highlands Organics and the other objectors. In the matter of *Le Sueur and another v eThekweni Municipality and others*⁸¹ the KwaZulu-Natal High Court held that ‘environment’ is a function over which all three spheres of government enjoy overlapping authority and that municipalities are often in the best position to know, understand and deal with issues involving the environment at a local level. It also held that municipalities have always exercised responsibility over environmental affairs as part of municipal planning. Highlands Organics and the other objectors have launched an appeal against the decision of the Nkangala Land Use Committee to ignore environmental issues for the purposes of the re-zoning application.

In terms of the Land Use Scheme for the relevant local municipality, the eMakhazeni Local Municipality, when an application is made for the re-zoning of agricultural land, such application shall not be granted without the written consent of the national department responsible for agriculture. Neither Exxaro nor the municipality has requested the Department of Agriculture, Forestry and Fisheries’ (DAFF) consent, but DAFF has objected to Exxaro’s re-zoning application. The Nkangala Planning Committee is of the opinion that the written consent of DAFF is not necessary for the purposes of the re-zoning application and has indicated that it will ignore the provision in the eMakhazeni Local Municipality’s Land Use Scheme requiring DAFF’s written consent for the re-zoning of agricultural land.

eMakhazeni Local Municipality has also published an environmental management framework (EMF) for the area over which it has jurisdiction. An EMF should work like a Strategic Environmental Assessment (SEA). eMakhazeni’s says that high potential agricultural land should ideally be used only for agricultural purposes and where development rights, such as mining rights, are applied for, a number of conditions must be met before they are granted. But the DMR simply ignores other organs of state, planning tools and other land uses.

Pretorius notes that they have been refused access to the Social and Labour Plan (SLP), by which a mine is supposed to ‘share the benefits’ with local people.

81 [2013] ZAKZPHC 6 (30 January 2013)



The catchments - poisoned at source

These plans are supposed to be developed in consultation with the community but are often negotiated in secret with the local municipality – which is interpreted to be the community. Those that he has seen are unimpressive. They deliver very little to the people and all commitments are qualified: they will do what they promise if circumstances permit. In this case, the benefit to the people is claimed on the basis of an SLP which remains secret.

Another aggravating factor in the process of mining right applications is that environmental consultants, who depend on coal companies for their jobs, often do not write real science. They pander to those who pay them. And when they get things wrong, with serious consequences for the environment and people living in it, they escape the consequences. This creates a very difficult terrain on which to resist mines. There is no “equality in arms”, Pretorius says, and the process definitely does not lead to “sustainable development” as required in law.

Another issue is that most mines do not plan properly for closure. An example is the way in which the nearby Wonderfontein mine, run by Umsimbithi, is planning to deal with the threat of acid mine drainage after its closure, in around 24 years. Says Pretorius: “When the Umsimbithi mine is closed, according to its environmental management plan, 147 ha of evaporation dams will be left open after closure. That water cannot be used and will contaminate the catchment. This cannot be sustainable development as required by the Constitution.” The EMPR⁸² talks about mining in nine pits, some of which will decant and others which are expected not to. It contains a vague reference to a desalination plant that will produce water for irrigation. In mining plans, ‘irrigation’ is a code word indicating that it will contain too high a level of salts to be used as drinking water or to be released into rivers.

In the meantime, the meaningless prospecting rights on Pretorius’ farm are recycled by speculators like a soggy chewed pip. “As we win one case and the right is set aside, another application is made – usually by a BEE company. Ntombo & Zezti Stocks are particularly active. The timing suggests they have

82 2009 document accessed online 22 Sept 2016, at http://www.sahra.org.za/sahris/sites/default/files/additionaldocs/2009_06_01_Wonderfontein_EMP%20FINAL.pdf



inside information from the DMR. Their intention is not to mine – and this farm does not have mineable coal – but to sell the rights on to speculators in London who are buying up prospecting rights across large parts of the country.”

Since fighting off the prospectors, Pretorius, EEPOG and FSE have become involved in many full scale battles against coal mining. In the process, he has built an extensive archive of letters, maps, explanations and arguments from which this account also benefits, and an extensive knowledge of coal battles around him. One such is his nearby neighbour Samson Sibande.

Treated like a second class citizen

For many farmers in Mpumalanga, the experience of coal mining on their farms is filled with frustration and abuse. On his newly acquired farm between Carolina and Belfast, in the Komati catchment, Sibande says he has been treated like a second class citizen by a mining outfit called Cousins Coal⁸³ – apparently a ‘money on the side’ activity for a number of mining managers who banded together to scrape the last profits out of old mines. On his farm Vogelstruisfontein, there are many open, unrehabilitated coal pits, some filled with water, some filled with rubbish. There are coal heaps at various locations on the farm. Some have been burning since 2008 and there are places where coal is not visible but the earth under foot is hot. Salts from acid mine drainage are evident where water has leached from coal dumps. An old pipe shows that Cousins pumped water from the pits into a natural pan, knowingly polluting it with AMD. On the other side of the pan, there is a drainage canal and sump used to pump out water. Cousins Coal clearly followed in the footsteps of a series of other mines, an increasingly common experience in this area.

Sibande says he bought the farm for a good price knowing there had been mining on it. It is 235 ha and the mined area is about 30 ha. But he did not know how extensive the impact was. He grows mealies on land that was never mined. He also has 65 cattle and 75 sheep but he can’t let them onto land affected by the mines or into the contaminated pans. So he has fenced off a large area which includes the pans.

83 Samson Sibande, interview 8 March 2016.



The catchments - poisoned at source

When Sibande was a child, his father farmed at Doornkop north of Middleburg. That land was taken by the South African Defence Force and they were removed to KwaShongwe in the KaNgwane homeland. He went to school in the KwaNdebele homeland. He worked for 33 years at Samancor ferrochrome where he was a production supervisor. But he wanted to get back on the land and this farm seemed like a good opportunity. He arrived in 2008 and learnt about AMD when a dog and three goats died after drinking it. At that time he was pumping water from a mining pit. It was very sour and the pump rusted very fast and collapsed into the pit.

Cousins Coal claimed the mine was rehabilitated but, in fact, it was abandoned. Gary de Bruin, who sold the farm to Sibande, said they just left. The farm was also abandoned – there was no-one there when Sibande took occupancy. De Bruin told him there was a letter from DMR compelling proper rehabilitation. He went to DMR who showed him a paper which cancelled the mining right, on the basis of business viability and water issues.

Subsequently, a Cousins Coal manager returned and tried to bully him into letting them on the property to take away stockpiled coal. “He went to my neighbour and said, ‘a black guy bought that farm. I’m taking the coal because he’s just a kaffir’”. The neighbouring farmers, however, have given him good support. Sibande then told Cousins workers to stop and confiscated the screens they were using to sort coal. Says Sibande: “This guy came to me in Middelburg and said ‘you are obstructing my business’. When he came to the farm with mining machinery, we asked for his mining right which he could not produce.”

Cousins’ lawyer then claimed that, having won a court case against Ntombo Coal, a BEE company that seems to have preceded Cousins Coal, they were entitled to return to the mine. This was not true. Cousins have also claimed to consult him and have put words in his mouth, falsely quoting him in an environmental report for re-mining on the farm. They came again in 2015 but Sibande will not talk to them without his lawyers present. He now has a case concerning proper rehabilitation of the mine before the High Court with CER representing him. The DMR, meanwhile, has done nothing. Koos Pretorius



has brought officials there three times and they said they would make a presentation to their seniors. But there is no feedback.

The supposedly rehabilitated land has clearly just had overburden dumped back with no effort at layering to restore top soil to the top. In 2015, the CER commissioned a closure and rehabilitation cost estimate for the mess on Sibande's farm, excluding the rehabilitation of the damaged wetland and the underground water. It came to R13 271 548. Cousins Coal's EMPR specified a financial provision of R290 000, but submitted a bank guarantee of only R47 000 to the DMR [CER, 2016]. The chances of this farm being rehabilitated are near zero.

Dealing with dirty tactics on the ground

In the Wonderfontein area, Kleinbooie Mahlangu also has direct experience of coal mining tactics on the ground, in battles that ensue when communities try to protect themselves against incoming coal mines.⁸⁴ He himself lives 500 metres from a coal transport route which generates unbearable dust. When it rains, coal trucks get stuck, nobody can use the road and the kids can't get to school. Mine blasting is now done just 1 km away from Mahlangu's house. He sees this as one of the mine's tactics to get people to relocate when they resist removal. "They put you in danger and then use it as an argument to move you." The argument of imminent danger was indeed persuasive to a judge who ordered the eviction of two farm dwellers next to the Umcebo Klippan mine, Ngidi Sibanyoni and Brananza Suahati, who were unhappy with the relocation terms and refused to move.⁸⁵

Umsimbithi mine, owned by Shanduka and Glencore – with Glencore as operator – started mining before negotiations with families living on the farm had been completed, according to Ermelo reporter Frans Fuls. The colliery claims a life of mine of 16 to 20 years, producing 3.6 Mt a year, of which 45% is for export. "They employ 511 people and claim that 45% of their staff comes

84 Kleinbooie Mahlangu, interview 21 April 2016

85 <http://www.saflii.org/za/cases/ZALCC/2012/4.pdf>



The catchments - poisoned at source

from ‘neighbouring communities within a 45 kilometre radius of the mine, which just includes the large coal mining town of Middelburg,’ Fuls observes.⁸⁶

Mahlangu grew up on a farm in the Belfast area, spending his childhood herding cattle and sheep. In 1994 he was elected as a rural councillor. After the first term, he agreed to step down and took a job at the local service station. He was ready to hand over to others, he says, and wanted to support the community which he could not do as an ANC councillor: “Then my hands are tied. Because mining is controlled by the ruling party, the ANC, people do not want to speak out against it.” In 2009, Mahlangu was elected as a leader in the Wonderfontein Community Association. It represents families living on several farms in the vicinity. Their children attend the Morelig School and the parents also hold meetings there.

Mahlangu has much experience of mines telling lies when they arrive. “They say they will build homes and take care of the land reform claims. I tell them: if you are going to mine, you can assist the community. The law says they must not mine agricultural and grazing land. They must take young people and give them farming skills with white guys to assist them. They can give each family 10 cows, 10 goats, 10 sheep. After three to five years, they can be independent. Then there will be jobs for young guys. And people over 40 can continue farming. But they say no, they can’t do that. They can’t develop these people, these 35 families. Instead they put them down, like they did to Sprinkaan.”

Sprinkaan Masango had lived on Wonderfontein, where the Umsimbithi mine is now in operation, since 1980. Masango, says Mahlangu, had made a labour tenant’s claim against eviction from the land, but “the mine chased him away with a court order”. The order⁸⁷ does indeed limit Masango to 14 cattle although it does so without denying his claim to stay on the land. Clearly, both Masango and Mahlangu interpret this as a type of constructive eviction. Argues Mahlangu: “That meant he had to sell 36 of his 50 cattle. How will he develop himself and his family now?” Destroying the small wealth people have

86 Franz Fuls, *Involuntary Relocations: Glencore’s Umsimbithi mine*. 5 February 2014, Pambazuka News.

87 See <http://www.justice.gov.za/lcc/jdgm/2016/2016-lcc-175-2014.pdf>



developed is also part of the tactics of the mine to remove people from the land to be mined, says Mahlangu.

Mahlangu remembers a time when there were no mines in the area, except Strathrae, “an underground mine that did not give us any problem”. Umcebo Mine, around 1998 or early 2000s, was the first to come in. “They extended the portions of where they were working. This is what they do. They first declare that they are mining in two portions. And then they expanded to five portions. They have changed their name from Klippan to Shanduka to Glencore, so that you can’t track what they are doing. Shanduka came in 2012 to Wonderfontein. They found people there, removed them and promised them nice houses. But as it turns out, these houses were small. People got no title deeds for them and the properties still belonged to the mine.”

Umsimbithi, explains Mahlangu, is a joint venture between Xstrata, Exarro, Umcebo, Umsimbithi and Lithemba, which is the ANC’s Women’s League. Umsimbithi is now called Glencore. It is also called Wonderfontein mine. The local mining geography is indeed confusing. Wonderfontein mine is moving in right next to the existing Klippan, Steelecoal and Grootpan Collieries. In its EMPR (2009) it states that it will access some of its mining pits via Klippan, creating the impression that it controls Klippan, which is an Umcebo mine. And in the EMPR, Umsimbithi gives its address as “Umcebo House”, an office at the newly developed Wilge Power Station settlement next to New Largo.

The school is in the way

The Wonderfontein mine is now operating next to the school. “It is a good school, with a good pass rate and no funny business like kids smoking dagga, as they do in other schools. We told the school governing body the mine must support the school. But the agenda they push for Morelig School is that the school must close and the kids must move to Machadodorp, which is 45 km away. That is a joint proposal between the ANC and the municipality,” says Mahlangu.

“The school governing body must consult with parents and answer this. I am one of the parents there. We don’t know when this will be decided or will



The catchments - poisoned at source

happen. But people are afraid to raise their voice. We have a problem with the Machadadorp boarding school. How can grade 1 children be out of the hands of their parents? What culture will they learn? Who will inspire these children to develop and learn respect? What I quote back to the ruling party is that they changed the hostels to family units, because in the hostels husbands could not give love to their wives or children. But now, with the school move, they are returning to this apartheid system of destroying family life. Now we must be like snakes. The small snakes, when they are born, immediately have to find their own way. They are not taught anything by their parents. This way there will be no future generation.”

Mahlangu also accuses Glencore of treating people’s graves badly. “Glencore tells people to show them where our graves are, they take photos and they promise consultation. But the graves are just moved without consultation, so people lost their graves. They exhume without you and it is difficult to believe whose bones these are – that these bones belong to your relatives.”

Relocated farm dwellers feel cheated

One of the families involved in the forced relocations to make place for the Wonderfontein mine is Bongani Nkambule. He is a member of HEJN. He says: “I was born in Blesbokspruit 26 years ago. I came to Wonderfontein farm in 1994 with my parents. They were farm workers. We had 10 cows, and six sheep. We had three gardens (fields): mielies, green beans and potatoes. This was for family consumption. I went to Morelig School and matriculated there in 2010. In 2011, I did a computer literacy course at Pretoria University.” He has had various jobs and now works as acting administrator at Sizimele Youth Centre which runs programmes for youth including computer literacy and career guidance.

“My parents were relocated in December 2015. They are not happy with the relocation. The mine showed us one house but we got another house which was not as nice, with a crack inside. The Memorandum of Understanding with the mine said they should give us R10 000 but we are still fighting. Who decided on R10 000 and why? Most people took the R10 000 but my parents refused.



According to the mining charter, people must be compensated with R50 000 and white people got R1.5 million.” Mahlangu adds that the municipality intervened in these negotiations. “They told the community not to listen to people like us. The municipality is working with the mine.”

One mine after another

The Mtsweni family have lived on the farm Kaalplaas for close on 60 years and have entered a land claim on it. The Mtsweni family consists of 30 members – two wives, 10 children and a number of grandchildren. Six of the children work, two of them for the mines driving dump trucks.

They have watched different mining companies come and go at a mine about 1 km from them: “The first mining company was Xstrata in 2007. They stayed for two or three years. They did not fix the mine, they just left. They did not talk to us. They just came and mined.” The second mine was Genet. Their one daughter, Lindiwe, worked at the mine laundry for a few months. “But then the laundry service moved to the Shanduka mine and some employees were left behind and not fully paid. They said they would come back but they did not. Genet worked from 2009, in the same place as Xstrata had worked, and left in 2015. We are not sure whether they rehabilitated the mine, but there is a hole full of water now.”

“The Ukufisa mine started in April 2015. It uses three names: Ukufisa, Lefa and Analisa. Before Ukufisa started, there was no consultation. We just saw them move in. We sent Kleinbooi (Mahlangu) to find out who they are and what is happening.” When he insisted on public participation, says Mahlangu, “the eMakhazeni Municipality sent people from unemployed structures in Satutuka (Belfast township) instead”. So when Mahlangu went with the Mtsweni’s to the mine offices, “they said, ‘No, who are you?’ We said, ‘We are the affected community because we live next to the mines. We eat dust every day and night and the blasting affects our houses’”.

Mahlangu continues: “Then we called for assistance from local EFF members. We engage them and we organise protests. The police (municipality) said we didn’t follow the proper channels. But we did apply to protest. We told



The catchments - poisoned at source

the mine owners, if they don't bring the Water Use License, we will close the gate. Then after that, after we had applied, the police removed us. The police said the municipality does not know about this. We asked the mine and the municipality for a meeting together. In November, we talked together, we got an MoU, we agreed on further meetings, but they keep on saying that they are not available. They keep on postponing. And they change people for each and every meeting. Then its Calvin, then its Koos, then its Johannes. They never know or remember what they had promised."

"In a memo, the nine families surrounding the mine asked for the mine to put in electricity, and to provide borehole water. Five out of the 9 families now expect a shortage of water, because of the mine. One family now has a dry borehole. And water in the river is now dry because of the mining. Who is responsible here? The mine can close at any time, and leave us with a mess."

"What bothers me," says Mahlangu, "is that the station commander said our protest was against the law. But is pollution of water not illegal? And making people sick? I have spent more than R1 000 for my wife because of flu and complications from dust. I have spent at least R3 000 on my children's health problems ... They say we must go through the right channel. But where is the right channel?"

According to the Mtsweni family, Ukufisa will blast at any time, even after the sun has set. Dust is stirred up by the coal trucks and the number of trucks has increased. "When Xstrata and Genet were here, there was some communication, they would explain themselves if you complained."

In April 2016, the Mtsweni family and their neighbours staged a second blockade. "The blockade was made by just our family. Because we are suffering, we have flu all the time. Our kids are coughing and they have chest problems because of the dust and the blasting. Police advised us to engage the local municipality. We had two to three meetings but now they are nowhere to be found. A promised meeting at Wonderfontein Centre failed as well. Our last blockade was last week. Police came here to open the road. The station commander phoned and said he would set up the meeting for yesterday – the one that the municipality then cancelled."



The Mtswenis are tired of empty promises. “We wanted electricity. The mine said they can’t. Alternatively, we asked for solar energy. We asked for borehole water and they said yes. We were promised shares in the mine. But these two things did not happen. When we complained, the mine said we must keep quiet because the mine has employed some locals and their kids. Before the mine started, when our kids were growing up, we never had water problems. But now water problems are starting and our livestock won’t have water. We expect that in two or three months the Ukufisa staff will go away. The pollution control dam is not fenced. The cows and kids walk there and could fall in.”

The Mtswenis are not far off the mark. According to their website, Ukufisa’s business plan is to “re-open old derelict underground mining operations for the extraction of the remaining coal pillars through opencast truck and shovel mining methods” at BEE owned mines.⁸⁸ For the Lefa mine, its plan is to extract 40 000 tonnes per month for 12 months. And then, no doubt, to move on to the next one.

88 www.ukufisa.co.za, accessed 25 April 2016



Box 2: Learning from the Gold AMD crisis

The AMD event in Carolina was relatively small, affecting around 20 000 people, with only five to twelve smallish mines in a small catchment. Nevertheless, authorities fumbled around for seven months before the interruption to the town's drinking water was resolved. And more than four years later there is no coherent regional exit strategy from coal. Mines, regulators and consultants have settled for passive – and cheap – treatment strategies, and new mines are being opened in the area. At this pace, a massive coal-based acid mine drainage crisis awaits the Mpumalanga Highveld within the next 10 to 20 years. It has already hit the eMalahleni, Middelburg and Hendrina areas. A comparison with the acid mine drainage crisis from gold and uranium can provide some sense of what the future holds.

The gold and uranium AMD disaster on the Witwatersrand was created by the same mining industry, and in many cases the same mine owners now active in coal, such as Anglo American. The uranium, which occurs with the gold, was simply dumped as part of the mining waste until the late 1940s when the newly founded nuclear industry in the US and Britain created a market for it. Under apartheid, a South African nuclear industry was created in secrecy [Fig, 2005].

One could argue that the gold and uranium crisis – presenting as an AMD crisis – is at a more advanced stage than the coal AMD crisis for two reasons. First, it has officially been declared a crisis [Coetzee et al 2010]. Second, the gold itself has all but run out, 130 years after it was first worked. Companies have left or 'sold down' and problems have been inherited by 'the last men standing' (the last producing gold companies), the government, and the long-suffering public. The coal industry, by contrast, despite facing the carbon twilight of climate change and having passed its peak in the central basin, is still spreading onto coalfields south of eMalahleni.

A striking fact about the gold and uranium disaster is the extent of the mess. At least 1.6 million shack dwellers on the Witwatersrand are living on or next to uranium containing mine wastes and poisoned earth. This is an



unacknowledged public health crisis, ignored because the people here are of no account to the political or economic elite. The many communities include Makause, near the Germiston Simmer and Jack mine on the East Rand, and Tudor Shaft on the West Rand. The people are constantly exposed to radioactive dust blown around them. They breathe it in and they ingest uranium and heavy metals in contaminated water and in the vegetables they grow on contaminated land. They also risk falling into sink holes and open shafts.

Zama-zama, or informal miners, work what is left of the gold in the mines and go underground without safety gear. Many are killed by collapsing earth and their bodies often remain underground. They breathe toxic mercury fumes as they purify gold and they get robbed at gunpoint, abused by mine security and police and cheated by illegal gold buyers.

Formal settlements are also exposed to contamination by the wastes of gold and uranium mining. Kagiso is regularly covered by a cloud of radio-active dust while children from Riverlea play on the abandoned mine dumps. Gold has created not only Johannesburg, but also a bleak and toxic landscape. A vivid sense of this landscape can be gained from Ilan Godfrey's recent photographs.⁸⁹

It is important to remember that a large part of the uranium ore remains behind. After having escorted between 30 000 and 50 000 visitors on 'toxic tours' of the gold AMD landscape, long standing activist Mariette Liefferink has developed this summary of the situation:

The Witwatersrand has been mined for more than a century. It is the world's largest gold and uranium mining basin with the extraction, from more than 120 mines, of 43 500 tons of gold in one century and 73 000 tons of uranium between 1953 and 1995. The basin covers an area of 1 600 km², and led to a legacy of some 400 km² of mine tailings dams (270 tailings dams, 380 radioactive mine residue deposits) containing 6 billion tons of pyrite tailings and 600 000 tons low-

89 http://www.osisa.org/sites/default/files/snapshot_05_ilangodfrey.pdf



The catchments - poisoned at source

grade uranium. It is estimated that 6 000 km² of soils are significantly impacted by gold mining on the Witwatersrand Basin alone.⁹⁰

In three of the eight gold fields, Coetzee et al estimate that 208 million litres of mine water should be pumped and treated every day [2010]. This refers only to water flooding through mines and decanting. It does not include the other dimensions of the crisis: the many open pits, the wind-blown uranium in particles small enough to inhale, and the dead and toxic bodies of water like Lancaster and Robertson lakes.

These other threats only become visible from the grassroots perspective, for example when the Bench Marks monitors write about them, when the Mining Affected Communities United in Action (MACUA) protest, or FSE and other civil society bodies raise the alarm in the media and policy circles. Bench Marks monitors⁹¹ have identified problems that arise from these unacknowledged and unmanaged dangers: people who eat uranium laced mud cake, apply it to their skin, or give it to pregnant women in the belief that it contains healing properties. It shows that danger increases exponentially in the absence of proper knowledge which is widely shared and of state authorities that take responsibility.

In this landscape, threats become invisible in plain sight through neglect by the officials and the powerful. Lancaster Dam, a water body which is a radioactive hotspot, is not fenced off and is directly accessible from the highway. Its banks have been breached to allow toxic water to flow into a downstream wetland and ultimately to the Wonderfonteinspruit, a tributary of the Vaal River.

For a long time, mines and mining authorities in government ignored the issue of acid mine drainage. AMD was first noted in South Africa in 1903, the first year of 'peace' after the Anglo-Boer war. In the 1960s, the National Party government made an explicit decision to sacrifice the dolomitic aquifers of the Far West Rand to gold mining. Dolomitic aquifers provide

90 Study material presented by M. Liefferink for Studietrust Winter School June 2016, Achterberg, Krugersdorp.

91 See the website www.communitymonitors.net



high quality natural water storage and are the sources of the many springs and fountains in the area. They foresaw the consequences of sinkholes and other dangers to mining. It is not clear that they foresaw the immense and intractable mess that would result from mine waste dumps being placed on top of the aquifers and leaching toxic water into them. This water has now spread to both the Vaal and the Limpopo rivers while vast tracts of land have become uninhabitable.

Gold mines were given government subsidies to pump out underground water that threatened their ability to get to the gold ore. This water was treated only for acidity, by adding lime and precipitating out some of the heavy metals, and carried a heavy load of salts. The precipitated heavy metals and sulphate laden water was deposited into huge unlined mining pits which basically recycled these contaminants back into the groundwater and thence into mine water. It would then be pumped out again for repeated treatment later, in an insane cycle poisoning the land and water on the Witwatersrand. The mine water has caused a slow build-up of salinity in the Vaal River and the clean water transferred from the Lesotho Highlands is required to dilute this bad water as much as it is to augment the water supply.

It turns out that the crisis had been quite well understood, for decades, especially in mining circles, but that they had kept this information secret [see Van Eeden et al 2009]. The mining of uranium was surrounded by strict censorship after it changed in status from an unwanted by-product to a strategic mineral in the 1940s. Jan Smuts, who was then Prime Minister, struck a deal with the US exchanging uranium for nuclear technology, first for experimentation. Nuclear power generation followed and the increasingly paranoid apartheid state finally developed nuclear bombs [Fig, 2005]. Today, the National Nuclear Regulator (NNR) is incapable of regulating the many sources of radio-activity.

In 2002, the mining voids in the Far West Basin had filled up with acid mine water and started to spill out above ground. It appeared in the Tweelopiespruit, which runs through the Ingwenyama Nature Reserve in



The catchments - poisoned at source

Krugersdorp. It hit the small reserve's dam which was home to a pair of hippos who fled the water as it was burning their sensitive skin. The hippo cow aborted. Thus the alarm was raised and a decade of civil society activism followed in which existing open and secret knowledge was ferreted out and synthesised by activists and academics.

Activists pointed out the threat that the acid water posed to the dolomitic caves of the Cradle of Humankind as well as to the foundations of central Johannesburg office blocks. In 2009, in its 'Water for Growth and Development Framework', the Department of Water Affairs called AMD on the Rand "catastrophic". In 2010, a report to the Interministerial Committee on Acid Mine Drainage called it a crisis [Coetzee et al 2010]. In 2011, however, government started backpedalling. Minister in the Presidency Trevor Manuel asked for "rational discussion" and argued in Parliament that "the idea that there will be acid mine drainage running through the streets of Johannesburg next week, and that we should all walk around in gum boots, is completely ridiculous."⁹² By 2016, Water Minister Nomvula Mokonyane upgraded the non-crisis to an amazing opportunity when she announced government plans, costing up to R12 billion, to deal with AMD: "A polluted resource once considered with contempt now becomes a commodity contributing to securitisation of the availability of water resources in the Vaal River System."⁹³

What lessons can activists draw from the AMD crisis on the goldfields? The first seems to be that such a crisis can be denied for decades, in spite of the damage it does to people and the environment and in spite of extensive technical knowledge about it which, as this experience shows, can be confined to official and mining circles while dismissing public alarm.

The second is that the official focus will fall on issues that relate directly to the economy. When the gold AMD crisis was eventually acknowledged, most attention focused on the management of the mine water for two objectives crucial to the economy: keeping the acidic water below the level that would

92 SA Press Association, *Johannesburg Acid Mine Water 'Ridiculous'*, 28 February 2011.

93 Kevin Crowley and Roxanne Henderson, *Treating acid mine drainage will cost up to R12bn, says Mokonyane* 18 May 2016, *Business Day Live*.



flood remaining gold ore and thus make it impossible to mine; and keeping the acid water from spilling into the major river systems. The bigger picture of a human catastrophe for the population living in this toxic landscape received much less attention. No health impact study has been done. The water supply to Potchefstroom is contaminated with uranium, but that is not seen as a problem. The Mogale City municipality did propose to move the Tudor Shaft informal settlement but did not do it.

Third, the costs will be picked up by taxpayers, not the mining industry. Current policy for financing the costs of gold AMD are that 33% of the costs will be directly paid by government. The other 67% will also be paid by Treasury, but in the hope that a proposed levy on mines will eventually repay it. If the levy is not implemented, as seems likely, the cost to the public will be 100%. So far, the cost to those who made their money from gold is zero. Fourth, mines are interested in turning the crisis to their advantage by producing and selling water to municipalities. This option – not the polluter pays principle, but the polluter profits twice principle – is also being turned into reality on the coalfields. Fifth, there are interim costs to any miner who is found to be “the last man standing”, for example in pumping costs. Prudence would dictate that it is the early leavers whose money will be safe. And sixth, the longer environmental activists are ignored, the longer it takes to move into crisis mode and the more time mining companies have to divest themselves of liabilities.



Olifants

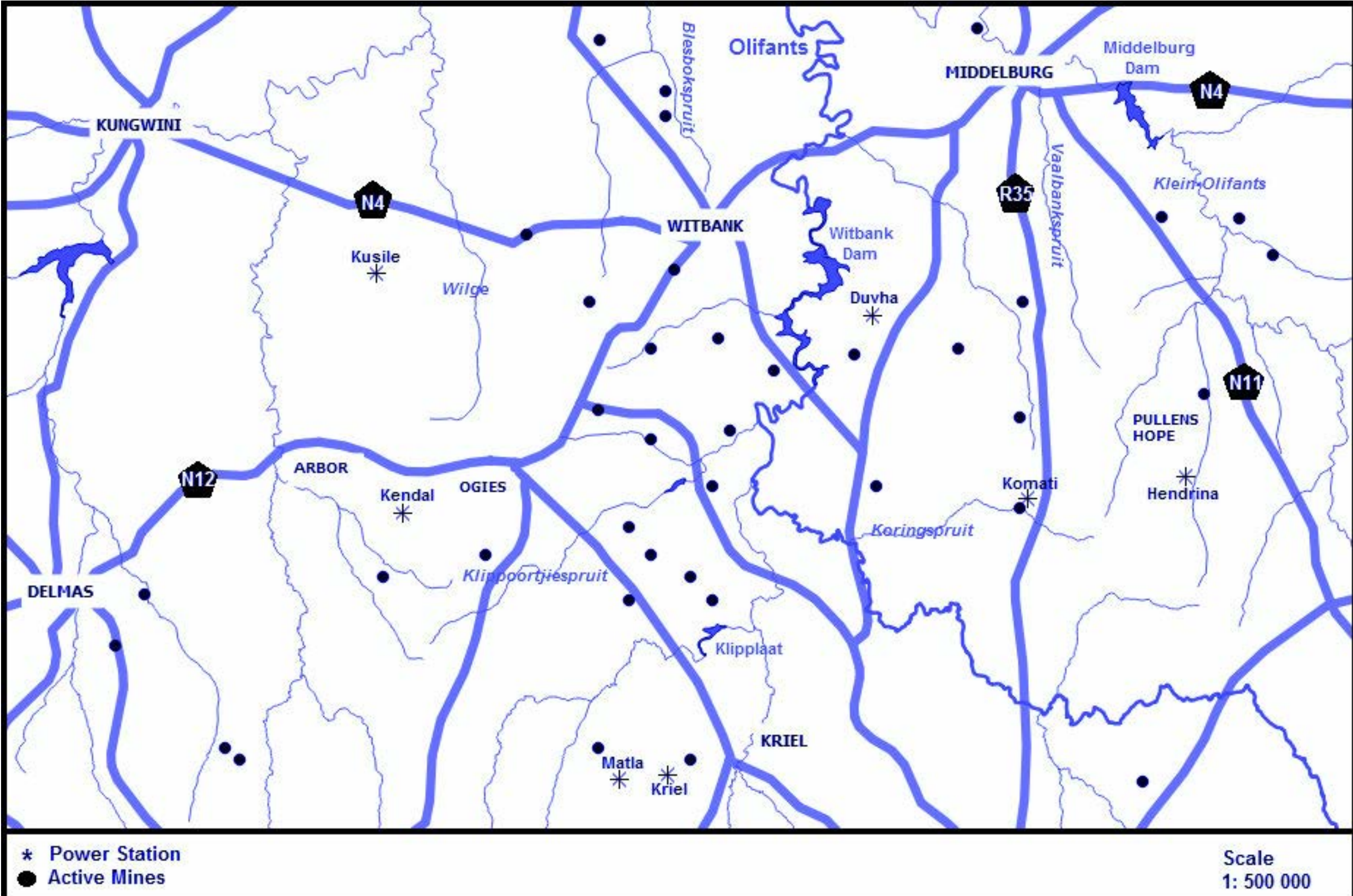
The Upper Olifants has been all but destroyed by 120 years of coal mining. The epicentre of destruction is eMalahleni (Witbank), the central part of the Upper Olifants. The first (1889) collieries in the area – Brugspruit, Steenkoolspruit, Maggies Mine and Douglas – were started in response to the demand for energy following the discovery of gold on the Witwatersrand in 1886. In 1894 the Pretoria railway line was extended to Delagoa Bay (Lourenzo Marques, Maputo). The Transvaal and Delagoa Bay (T&DB), Witbank and Landau Collieries followed in 1900 and the town of Witbank was established by Sigmund Neumann's Witbank Colliery in 1903. Before the end of that decade, 11 collieries were operating in the area including Coronation. By 1931, Kendal, Tweefontein and Waterpan, Minnaar, Clydesdale, Navigation, Schoongezicht and Middelburg Steam had been added, and by 1946, the Witbank-Middelburg coalfield 'hosted' 23 large collieries.

Spontaneous combustion in the underground workings and discard heaps was experienced from the beginning. In 1926, a fire started burning in the Witbank Colliery main shaft and, despite what the press reported as the "superhuman efforts" of mine staff, it was never extinguished. Finally, the area on fire was isolated and mining continued elsewhere in the mine [Singer 2011: 36]. By the end of World War II, several mines were worked out and burning underground. The fires at the T&DB, Coronation and Middelburg Steam mines are still burning today. These and other abandoned mines are also still draining acid mine water into the catchment.

The Olifants River and its tributaries – the Klein Olifants, Steenkoolspruit, Klipspruit, Blesbokspruit, Brugspruit, Wilge and Bronkhorstspruit among others in this filigree of waterways – come together in the Loskop Dam. The dam was completed in 1938 to provide irrigation for wheat, groundnuts, lucerne and tobacco. When it was built, the Moutse community was pushed out of the area and, said community leader Jerry Madiba, "our people became cheap migrant labour for whites who occupied the farms next to the Loskop dam". Successful black farmers were dispossessed to make way for the dam and white farmers [Turton et al, 2004].



Map 3: The Upper Olifants



By the 1980s, the mass deaths of crocodiles in the Loskop Dam were attracting attention. Crocodiles are top predators and pollution that bio-accumulates up the aquatic food chain concentrates in their bodies. Scientists ascribed the die-offs to pollution and spread the blame between coal mining and agricultural chemicals [Botha et al 2011]. The Olifants River continues through the irrigation areas and the old Lebowa Bantustan. The Steelpoort River, which rises just west of Belfast, joins it north of Burgersfort and its polluted waters are then diluted with clean water from the spectacularly beautiful Blyde River. Further downstream, it flows through platinum and other mining areas, and passed Phalaborwa where a phosphate mine recently leaked poisonous water in the river just upstream of the Kruger National Park. Beyond Kruger, the Olifants joins the Limpopo river in Mozambique.

The Upper Olifants catchment is drained by three main rivers: the Klein Olifants (leading into the Middelburg Dam) in the east, the main stem of the Olifants – which contains the Witbank Dam as well as the heavily polluted Klipspruit and its tributary the Brugspruit – and the Wilge and Bronkhorstspruit to the west of the catchment. The upper catchment receives additional water via three inter-basin transfer schemes from the Vaal, Usutu and Komati systems, and the Vaal in turn receives water from the Lesotho Highlands and the Tugela system, to supply the clean water needed for Eskom power stations. Relatively large discharges of treated domestic and industrial effluent from Witbank and Middelburg supplement flows in the Olifants and Little Olifants rivers.

The Upper Olifants has a dense network of tributaries draining the area. This makes the water system uniquely vulnerable to pollution. It also has many wetlands which are inter-connected and critical to the health of the catchment. In Ashton et al's description,

... an enormous number of small wetlands (are) located in every stream and river. These are formed at the uphill side of protruding dolerite formations (typically dykes and sills) that dip gently to the south. These dolerite formations act as impermeable barriers and water collects on their uphill sides, saturating the soils. The downstream end of each wetland is usually marked by a dolerite



The catchments - poisoned at source

exposure where the water reaches the ground surface and flows over the dolerite barrier. This system of inter-connected wetlands provides an extremely important attenuation mechanism that ensures water is released throughout the year, thereby maintaining perennial stream and river flows in this sub-catchment. However, mining activities (blasting, ground clearing, overburden stripping, acid mine drainage) have damaged or broken several of these dolerite formations in recent years. This has resulted in increased summer flows, reduced attenuation and therefore lower winter flows, and a steady decline in water quality in its downstream reaches [2001: ccxcvii].

That is not the only mining impact on the Upper Olifant's water. In research which was done for the Mining, Minerals and Sustainable Development Project (MMSD), that is, for the mining industry, Ashton et al continue:

The available evidence suggests that the extensive areas of coal mining in this sub-catchment have had, and will continue to have, very high impacts on the sub-catchment's water resources and particularly the water quality of all streams and rivers. The primary cause of these impacts is the extensive acid mine drainage where water of low pH, with high concentrations of total dissolved salts and metals, enters local water courses and results in a complete change in the water chemistry. The large volumes of acid mine drainage and the long period of time over which these discharges and seepages have taken place has resulted in the impacts still being discernible (as altered water chemistry characteristics) over two hundred kilometres downstream from the Witbank and Highveld Coalfields. ... These effects are also accentuated by seepages from power station ash dumps, as well as effluent discarded by different industries, including the Highveld Steel Plant and various foundry operations... [2001: ccci]

The top contributors among the mines, with sulphate counts higher than 2 000mg/l, were Arnot, Woestalleen, Goedehoop, Greenside, Kleinkopje and Landau, Middelburg North and South, Rietpsruit, Khutala, and South Witbank.



The water collected by the Brugspruit government acid mine drainage plant was in a class of its own, as the failing plant attempted in vain to deal with water from abandoned mines, including the T&DB colliery which has been leaking acid mine drainage at around 8 000 mg/l, according to Maree et al [2000].

Sulphates are liberated from rocks containing pyrite and are the active agents in AMD. Maree et al observe that coal mines use only 4.6 % of water but contribute 78.4% to the sulphate load and are thus by far the main sources of the pollution. But there are other important sources of pollution, particularly the contamination from dysfunctional municipal wastewater treatment works (sewage works). Poorly treated sewage water leads to excessive nutrients (eutrophication) in the surface waters of the Upper Olifants, leading to oxygen depletion, fish deaths and degradation of aquatic ecosystems. The river water is also dangerous for direct users, like communities and farmers, as a result of untreated bacteria and germs discharged by municipal waste water works. According to a recent study “poorly functioning [sewage treatment works] are a major source of nutrients in the catchment with 75% of all facilities scoring less than 50% on the Green Drop scoring system.” [Oberholster et al, 2013: 3]. In the Upper Olifants, normally seasonal rivers have been transformed into permanent streams by municipal sewage discharges and seepage from mining operations.

Acid mine drainage on the coalfields

The scale of the AMD crisis on the coalfields is of the same order as that of the gold belt. According to an estimate from 10 years ago, “post-closure decant from defunct coal mines is estimated at 62 megalitres per day (DWAf 2004), and in the order of 50 megalitres per day of acid mine water discharges into the Olifants River Catchment” [quoted in Oelofse, 2008]. This presumably means that some 12 million litres per day remains in the soils and wetlands. The numbers grow into the future: Grobbelaar et al [2004] indicated that 360 megalitres per day may be generated after closure of the entire Mpumalanga



The catchments - poisoned at source

coalfields. For the Olifants Catchment, a volume of 170 megalitres per day is suggested.

That the Upper Olifants has been thoroughly destroyed by coal mining, can be clearly seen from the air.⁹⁴ It looks as if the earth has been torn by giant bulls and bears in rut. Bulls rule the capital markets when investors are optimistic and bellowing for quick returns. Then there is no time for environmental restraint and mines must pull out as much coal as possible while the good times last. Bears rule when times are bad at the bourse. Then there is no money to take care of environmental damage. Both ways, the environments and the people living in them lose.

The environmental and water quality crisis in the Upper Olifants is common knowledge among aquatic scientists and has been the subject of an ambitious research project for Coaltech, an alliance of coal mining companies, government and research institutions. The project's declared purpose is to extend coal mining on the Witbank coalfield until 2020, and find 'cost-effective' – in other words, profitable – solutions to the AMD challenges. The reports are mostly confidential and are particularly discrete when it comes to naming offending mines.

Turning a liability into an asset

'Coaltech 2020' was launched in 1999. It involves 15 international and 15 national organisations, including all the major mining houses, the departments responsible for water (DWS), minerals (DMR), energy (DoE) and environment (DEA), the parastatal Council for Scientific and Industrial Research (CSIR) and the Water Research Commission (WRC), as well as the Universities of the Witwatersrand, Johannesburg and Pretoria. An early report [Maree et al, 2000] aimed to lay the ground "to establish a profitable public-private partnership that will collect and treat water arising from mining ...". The water would then be used for irrigation on the basis that research had established that this use would be harmless. This claim was contested. McCarthy and Pretorius warned that sulphate build-up in the irrigated soils could eventually sterilise the soil

94 The authors were flown over the area by the Bateleurs in May 2016.



[2009]. Maree et al proposed two levels of treatment: (1) treatment for selected urban and industrial applications, requiring capital costs of R528.5 million and running costs of R55.7 million a year and (2) treatment for irrigation, costing R68.2 million in capital and R11.9 million per year in running costs.

This proposal was not implemented but, in 2007, Anglo and BHP commissioned the eMalahleni Water Reclamation Plant, developed in a joint initiative with eMalahleni Municipality. The municipality buys 25 megalitres a day – about 20% of its water requirement – from the plant. A fraction, less than 0.01%, is bottled by the White River Beverage Company and sold under the 4Life brand. The water is sourced from Anglo's Landau, Greenside, and Kleinkopje collieries, as well as from BHP's (now South32) South Witbank mine, which contain around 130 million cubic metres of polluted mine water. By treating and marketing the water in this way, Anglo argues, it "prevents polluted mine water from decanting into the environment and the local river system, while also alleviating serious operational and safety challenges" [Fisher and Naidoo, 2014f]. It has embarked on further research, with the support of the National Research Foundation, to investigate the use of waste gypsum in housing building products. It is also considering a phase 2 extension to desalinate a further 50 megalitres per day.

The Optimum mine near Hendrina developed a similar solution which belongs in the realm of corporate fable. It intercepts 25% of the water that would otherwise flow to the Middelburg dam, pollutes it, cleans it, and sells the cleaned water. Optimum is actually a complex of mines comprising "numerous defunct, active, and future mining sections" [Cogho 2012: 119] which include: Eikeboom, Klipbank, Optimus, Pullenshope, Zevenfontein, Kwagga, Arnot U2, Schoonoord and Boschmanspoort. Mining started in 1969 and the expected end of life of mine is 2028. V.E. Cogho, an Optimum manager, reported in 2012 that Optimum "has disturbed roughly 6 870 ha of land and plans to disturb an additional 3 136 ha over the remaining life of the mine. Furthermore, the mine has mined 1 532 ha via underground bord and pillar and plans to mine an additional 2 687 ha via bord and pillar mining" [2012: 119]. In the early 1970s, it strip-mined its way through the Woestalleen East Spruit, which flows into the Klein Olifants, and left a void which became the Lapa Dam. The same



The catchments - poisoned at source

mine also created a final void next to the N11 road. In 1991, new legislation compelled mines to keep clean water separate from dirty water. In response, when Optimum opened the Pullenshope mine area in 1993, it carried out a stream diversion. All in all, the mining complex as a whole developed a mine water decant of 25 674 m³/day, and anticipated that this would rise to 35 099 m³ in the long term. What to do with all this dirty water?

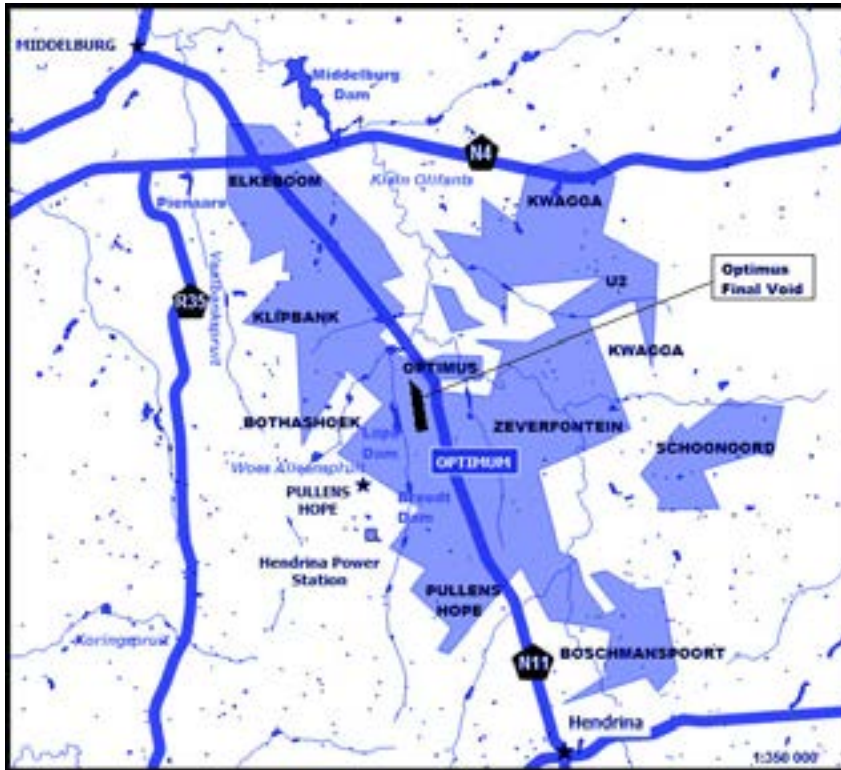
Mine management figured that some of the water could be reduced through reuse, irrigation and dust suppression, and the rest – the ‘excess’ – would be treated in a membrane-based desalination plant, built at a cost of R545 million with similar technology to the eMalahleni Water Reclamation plant and the capacity to treat around 15 megalitres a day. The mine water was near neutral pH and contained mainly calcium magnesium sulphate salts with a relatively low metals content, so it gave rise to a calcium and sulphate rich sludge and a brine which would be kept until product recovery from these lagoons became possible.

Optimum negotiated a supply agreement with Steve Tshwete Municipality for 3 megalitres a day at drinking water tariffs and, in 2012, the desalination plant achieved Blue Drop standard for the quality of its drinking water. The mine then opened discussions to increase the quantity of water to be sold to 10 megalitres a day and started plans to build a new 8 megalitre a day plant at Eikeboom. Some of the clean water is pumped into the Klein Olifants, to assist with ecosystem reserve requirements, and some into the clean water diversion canal. Apparently this arrangement around the Optimum Coal Water Reclamation Plant (OWRP) has now been built into the DWS water resources management strategy for Upper Olifants.

This has worked out well for the mine, which is now not only independent in terms of its own water supply, but has positioned itself as a local and regional water supplier to nearby municipalities as well as new mines. In a presentation to the Water Institute of Southern Africa (WISA), the Optimum representative remarked that it would be necessary to build up a list of clients to buy this water after the mine had ceased operations.



Map 4: The Optimum mine complex



Ground Zero in the Upper Olifants

These corporate solutions have not succeeded in rescuing the Upper Olifants catchment, as was shown in a 2013 study called “Risk assessment of pollution in surface water of the Upper Olifants River system: implications for aquatic ecosystem health and the health of human users of the water” [Oberholster et al, 2013].

The study singled out the Klipspruit, which is in the heartland of historical mining near eMalahleni: “Water quality in the acidic Klipspruit River is toxic, resulting in high mortality in laboratory bioassays⁹⁵” [10]. It noted that aluminium was bio-available in a toxic form. Another 2013 study observed that the Steenkoolspruit, Spookspruit, Klipspruit, Klein-Olifants and Wilge rivers all “contribute comparatively high levels of sulphate and Total Dissolved

⁹⁵ Bioassays are tests to determine whether the water kills indicator species.



The catchments - poisoned at source

Solids to the main stem Olifants River” [Dabrowski & De Klerk 2013: 239]. These studies observe that abandoned mines contribute far more than active mines to the toxic load. This stands to reason as active mines treat their water to some extent – although even the treated mine water is rich in sulphates – while acid water decants without any controls or treatment from abandoned mines. What it means for the future is that, as more mines are abandoned, conditions will worsen.

Oberholster et al also identified acid rain in the Upper Olifants: “59 % of collected samples (in the Upper Olifant) had a pH value lower than that of natural rain water (< 5.6) and could therefore be classified as acid rain”. They also found that the rainwater was contaminated: “Vanadium, manganese, zinc, aluminium, cadmium, iron and fluoride were found in concentrations that exceeded recommended guidelines [2013:8].

Living on treacherous ground

Ground Zero for the impact of coal mining must be the T&DB mine, burning underground and leaking acid mine drainage through a variety of breaches and seeps in the Brugspruit area. The area has an unreal appearance. Sulphate salts lie thick on the surface like snow [Munnik 2009]. An ill-conceived effort to dam (and evaporate) AMD has created a warm, heavy metal and sulphate rich swimming pool which is used by the kids of nearby Vosman area, in the KwaQuqa township. They play soccer on a salt-encrusted field, which parents in KwaGuqa report leads to itchy skin. One of the things children do for fun in this bleak environment is to jump over the sewage filled ‘river’, occasionally falling into it, to get to the abandoned coal mines.⁹⁶

Matthews Hlabane, a veteran environmental justice activist, has been taking opinion makers on ‘toxic tours’ of eMalahleni for the past 20 years, and has made a list of the most lethal mines: T&DB, Middelburg Steam Mine, Station, MNS, Coronation and Witbank. He draws the attention of journalists, researchers, students, parliamentarians, local government politicians to these issues but has seen no improvement. “When these people are here, they are

96 Siphso Masondo and Judy Lelliot, *Deserted mines a flaring death trap*, Times Live, 11 January 2010.



shocked. They can see that we are living in hell. They make promises but things don't change."

A 'highlight' of the tour is T&DB. The earth is literally burning and smoke rises out of countless cracks in the ground. In one spot, the earth has opened up to reveal what looks like an underground oven with the rocks glowing like coals. It has been like this for decades, says Hlabane. "A man fell into this hole, and it was not possible to save him. We don't know how many people have disappeared here. If you wanted to murder somebody, this would be a place where their bodies would never be found."

Subsidence is a big problem on these undermined lands. The shack settlement of Likazi, above the old Coronation mine, is full of stories of sudden sinkholes and people disappearing into them: party revellers falling in a hole at night, a small businessman who lost all his wheelbarrows to a sinkhole, a creche that went underground, fortunately at night. Some Likazi women dig in the discard dumps for burnable coal. They take their children with them, explaining that the young ones are at greater risk when left at home, where they will be at the mercy of strangers. On the north eastern side of eMalahleni, the MNS mine and the MNS informal settlement co-exist in a toxic embrace. The people, their children and their animals live in the coal dust. They fetch their water from a hole which is grey with coal dust. They have no choice as there is no other supply, says Hlabane.

Old Coronation

Anglo's Coronation mine was never formally closed. It was simply abandoned. It is one of the original Witbank mines, located between the town centre and the Ferrobank heavy industry area. It was acquired by Lewis & Marks' Vereeniging Estates in 1928 and came into Anglo's hands when it bought out Lewis & Marks in 1945. The mine was operated by Anglo but it is not clear when Anglo abandoned it. In the 1990s, according to local people, Anglo planned to mine an extension to the old Coronation and had an Indian community removed to make way for it. However, they then found that the area was too dangerous to mine and, it seems, the corporation just walked away for the second time.



The catchments - poisoned at source

It is thought that people started settling at Coronation in the early 1990s. It has grown fast since then and local people say there are now some 4 000 households living there. There is a mix of people in Coronation, says Hlabane. They have come from all across South Africa and from Mozambique, Zimbabwe, Lesotho and Swaziland and have arrived there for a variety of reasons. Some used to be farmworkers who were moved out when farms were sold for mines and there was nothing for farmworkers; some were mineworkers who lived in hostels for 10 or 20 years and were thrown out when they were retrenched; some worked for contractors – for example, providing garden services to the mines – as cheap labour and have nothing when they are made redundant; some came to eMalahleni for training and the hope of a job to follow and are renting rooms in the shacks because it is cheapest there. For many people, according to Ljungberg & Wier, “there is no other place to go” [2012: 25]. They have no money for rent and, unlike at Rietspruit, they can live in Coronation rent free. It is close to town and hence to work opportunities and to urban amenities. The few who have work can walk.

Likazi is on the eastern side of Coronation. It is next door to Samancor’s massive ferrochrome smelter in Ferrobank. To the north is a wasteland of scrubby wattle and red pools of acid mine drainage. Surface subsidence reveals the pattern of pillars in the old mine beneath and the area is dotted with sinkholes. Fire is burning underground but local people say they do not know in which direction the fire is burning or how fast it is moving or if it is one or many fires. Anglo still mines next door at Kromdraai but takes no responsibility.

New sinkholes keep appearing in Likazi, particularly after heavy rain. A small sinkhole is big enough for a person to fall in. A big one could take a shack and its yard. Some are just a metre or so deep and form a depression in the ground. Others are too deep to know where the bottom is. Smoke from the fires periodically rises through sinkholes and fissures in the ground. A black hill of discard coal rises above the settlement. Local people are re-mining it for useable coal either for sale or for their own use. Some do it for a living. According to Bench Marks, “The standard mode of operation is one adult male with several male children, usually relatives. They tunnel their way under the coal pile and then pass trays loaded with coal in relay fashion to the mouth



of the tunnel” [2014: 53]. Men and boys have been killed when the tunnels collapse.

The western half of Coronation is just across the railway track from the town centre. The people here say it is safe and there are no sinkholes. The authorities make contradictory statements. They say the area is undermined but then build heavy infrastructure including a road and electricity pylons. The Sasol gas mains to the Ferrobank industries also runs beneath the settlement. Raphael Mlangeni and Abraham Kgwete are Coronation community activists.

They say the municipality has not shown them credible evidence that the area is unsafe. “They want us out so they can use the land for something else.”⁹⁷

People’s most immediate environmental problem is a fast flowing river of sewage from the municipality’s main treatment plant. The sewage leak pours through a culvert under the railway lines, bringing the town’s sewage to Coronation. It always smells and when it rains people’s houses are flooded with sewage. Passed Coronation, the stream flows to the Olifants River. The municipality tried a temporary fix in December 2015 but it only lasted a couple of weeks. Since then, the municipal officials have said they would have to stop the coal trains for three months to fix it properly. People think this means that the municipality has decided not to fix it.

People agree that Likazi is unsafe and the people there should be relocated. But the land should be rehabilitated and the western side of the settlement should be upgraded to create jobs and housing. Much of the urban infrastructure is already in place because the community that was removed for Anglo in the 1990s had full services: water, electricity, sewage and waste collection. The people have created the Coronation town centre with a community hall in the settlement. To prove the point, they have installed two flush toilets and connected them to the old sewer. They have also tapped into the water mains and installed plumbing to fill a JoJo tank to create a water supply for the community. The tank was donated.

97 Interview, Coronation, 3rd March 2016.



The catchments - poisoned at source

Kgwete believes renewable energy would contribute to positive change. Most people in Coronation have no work and little money so it makes sense to use the sun and wind. Since they do not have electricity, people use coal, paraffin and petrol generators. Coal is scavenged for free but has a lot of sulphur. People use mbaulas (braziers) for heating and some in the community have died from the smoke indoors.

In Coronation, they say, “everything is done by the people”. Government has provided a mobile clinic but there is nothing else. There are no services and no schools. The community has applied for a non-profit organisation (NPO) certificate for a crèche and they also want to start an orphanage. For this, they need funding.

Uncertain future

KwaGuqa, west of Witbank town, is a formal township. Most of the houses are well built and the roads are tarred. Or were tarred. Years of neglect has not left much between the potholes. The township is surrounded by coal mines and dirty industry. The big mines are those of Anglo’s South African Coal Estates complex: Kromdraai to the north, Schoongezicht, Landau and Greenside at Clewer to the south. There are several smaller mines in the west and the abandoned and smoking T&DB mine in the valley to the east.

Highveld Steel recently closed down and residents comment that the air is visibly less polluted. “You could walk outside on your lawn and see how quickly the black dust from that factory covered your shoes,” said a businessman from KwaGuqa. He grew up at the New Largo mine, next to Wilge Power Station (see below), and stayed there until he was 20. His father worked as a diesel mechanic, mostly above ground but occasionally underground. Conditions were harsh and his father’s wage was small. The adults often spoke about how dangerous the mine was. There were many accidents. The roof could suddenly cave in and people would die. Work was hard. There was no protective clothing. People would just get overalls, boots and helmets with lights on. His father died shortly after retirement at 61. He had black lung disease. Coal damages people’s health, he says. “It is because of where we live. When one takes children



to Nelspruit, for example, outside of the coal polluted area, their health soon recovers and they don't have problems with coughing and asthma."

Fellow Kwaguqa resident, Jacqueline Mgwanya, is also worried about the future of the township. The houses may look nice now, she says, but most of them are occupied by people who are unemployed. The coal is running out and so are the jobs. She fears that soon KwaGuqa will not be viable at all. She herself was recently retrenched from her post after working for Anglo American for 18 years as an adult educator. The future, she thinks, will bring more crime and a very damaged environment. It will be difficult for the municipality to cope. Even now, they leave rubbish for three weeks before collecting it. And the water problems will get worse. "We cannot afford it but we do buy water. If we don't, one of us in this family will be sick every week." In KwaGuqa, water shops do business everywhere. No-one drinks municipal water if they can help it.

Their worries are echoed in the small village of Clewer, just south of KwaGuqa. It is surrounded by mines that are coming closer to it all the time. Anglo's Landau is on its doorstep. The mines create huge dust problems which are most acute in June and July. The trucks from the coal mines on the roads make it dangerous for the children on their way to and from school. At the primary school in Clewer, the vice-principal says there may be something wrong with the water. The children complain of running stomachs. She does not trust the water herself and brings her own water to school. She says the Department of Health does not provide information about health threats from mining and there is no special programme at her school to deal with it.

Busi Maseko and her daughter moved into the formerly white village of Clewer in 1994 and immediately noticed that others were moving out. She thought they might be nervous about the political transition. There was no coal mine then and there was communal land for grazing. Maseko is an agriculturalist who used to work for government before striking out on her own as a consultant. The Masekos have some animals, which used to graze on the commons.

The coal mines are very intrusive. Blasting has caused numerous cracks in the walls, roof and floor of her house. Tiles keep falling off the walls. They



The catchments - poisoned at source

rebuild but the blasting continues and more cracks open. A geyser once fell off its fittings onto a bed, fortunately when no-one was in it. The ceiling has been repaired four or five times. They plant crops but the leaves have a funny oily layer and the crops don't grow any more. The coal trucks go all over the village and create potholes. Water services are poor. The taps are dry sometimes for weeks. If there is water it's a good day but it tastes metallic. The Masekos want to leave but that will mean losing most of the money they invested in this house. They had it valued in 2008 at R500 000. In 2015, it was valued at R300 000. They would like to sell out and move before they lose more, but who would want to buy here now?

In both Clewer and Kwaguqa, people live in quiet despair, in constant danger of losing their health, their jobs, the wealth they have built up and their sense of community. They live on treacherous ground.

Living with mines and turning a profit

A farming operation in the Upper Olifants has mastered the art of co-existing with coal mines in the area. Truter Boerderye farms on much of the land surrounding the new power plant of Kusile. Christie Truter's father was a mine worker at Witbank Consolidated which then owned most of the mines in the area. He bought a farm in 1961 and started farming part time. His two sons and three grandsons now operate over 25 000 hectares of which they own about 85% and rent the rest. Their main business is growing maize, but they also run cattle and have seven battery chicken farms.

The Truters hire and buy farms from coal mines. They know the risks. They sign contracts with clauses releasing the mines from all responsibility for any mine related risk, such as sinking earth above old underground mines where the pillars have been robbed. They have also bought up about 60 farms from farmers who have left the area.

It is not that farming next to coal mines is easy. Truter's main concern is water. At smallholder farms near Kendall, the water has started stinking of methane because the gas released by coal mining enters into the water. Boreholes dry up because the mines pump the water table down until it is empty. Open cast



mines generate a lot of dust. It creates a dust layer on the leaves of the maize plants, stopping them from photosynthesising and affecting the growth of the plant. Rain does wash it off but the maize harvest could be down by a third next to a coal haul road. Mine rehabilitation proceeds at a snail's pace. The grass in rehabilitated areas has no strength. "Maybe the grass will grow well in a thousand years' time."

Truter says that mines pay above average prices for farms. In his experience, Anglo is the best mining group to deal with as they are respectful. They buy land 10 years before they want to mine and rent it to farmers for that period. He is worried that they are pulling out. BHP, by contrast, are not good to deal with. For example, they refuse to provide guarantees of payment in some of their contracts, arguing that they are too big for it to be necessary.

The smallest mines often pay the highest prices for land. "But the small mines behave terribly. They cause major pollution. They never buy the whole farm but they mess up the whole farm. They are supposed to put up fences around their mining operations but they sometimes break fences and mine through it. "Small mines get hold of a throw-away piece of land, then they get mining rights, then they become empowered. You can't stop them."

Politicians, however, like mines and, he thinks, other local people are happy when a mine opens. Mines create jobs and give out contracts. Truter complains that coal mines create an influx of people into the area. "When a mine starts up, people flood in. Then they find out that there is no work and they start stealing. There is no control, they just walk over your land. We were a relatively quiet area until the Klipspruit mine opened at Ogies and building started on the Kusile power station. Now, at night, the area looks like an urban settlement with all the lights. And traffic is a nightmare."

The Arbor coal siding is across the road from the Truter Boerderye. It is very busy with large volumes of coal loaded there for rail to power stations or Richards Bay. Next to the siding is Arbor village where many people who have come off the farms now live. Social relations between white and black on the farmlands of Mpumalanga are still filled with tension and suspicion. Many farmworkers live in great insecurity. They can lose their modest farmworker



The catchments - poisoned at source

house at the whim of their employers. One elderly woman saw her son die in a farm accident. Her electricity was cut off because she no longer has sons working for the farmer and she struggles to put food on the table. Farmworkers on very big farms are restricted to very small pieces of land for their small flocks. Nevertheless, against the odds, people have made lives for themselves in these inhospitable and constantly changing conditions, moving into and surviving in the in-between spaces left open, sometimes only temporarily, by the mines. These are not comfortable spaces. Closed mines suddenly open up again, and communities who have settled in next to them are instantly disturbed. One such place is the village of Arbor.

New Largo

The building of Kusile has indeed created a mini-boom. All along the 'ring road' around the site, there are makeshift restaurants serving food for workers, contractors and drifters by. Signs offering accommodation for subcontractors rise incongruously from the dusty maize fields. It is said of one of the new establishments that it was built from materials taken from houses demolished at the nearby New Largo mine. Near miraculous renewal is part of the dynamic. The old Wilge Power station next to New Largo has become an overnight town with a business hub containing the head offices of Umcebo Coal and the Umsimbithi mine amongst others.

To supply Kusile's appetite, New Largo is supposed to be a giant of a mine producing over 12 Mt/y. More coal will be lifted by conveyor belt from the Anglo-South32 Phola coal washing facility to the south. New Largo will not, in fact, be entirely new. Part of it will be a re-mining of the original New Largo, a bord and pillar mine that supplied the Wilge Power Station. Wilge was thrown up in a hurry to meet a rapid increase in demand for power after World War II. At 180 MW, it was a small power station even at the time. It was closed at the end of the 1980s when the Kendall power station was commissioned. The old Wilge workshops are now occupied by Genet, a mining contractor.

The size of the ash heap, now grassed over, nevertheless testifies to 40 years of power generation and the high proportion of ash in the coal. A coal discard



dump is likewise dressed with a covering of thin grass. They rise square topped above the landscape, which falls towards the Wilge River to the north. Apart from a few stock animals, the ground above the old New Largo has been left fallow all these years. It has the diminished look of undermined ground although not as barren as 'rehabilitated' open cast ground. The new New Largo will dig out this 'overburden' and pile it on the side to make an open cast mine. It will first take out the exposed pillars from the old mine before expanding beyond it.

The old mine compound is composed of blockish brick buildings assembled around a square. A local farmer has rented the land from Anglo and demolished and cannibalised some of the buildings for materials. Most of the rest are occupied by people who have moved in from neighbouring farms or elsewhere and pay rent to the farmer. They used to have electricity but the supply was cut and then cables were stolen. The council delivers water by tanker to a JoJo but delivery is not entirely reliable. An old sewage works still functions but is falling into disrepair. This little village of about 20 houses will be swept away when the new mine is developed but the people who live there do not know when that will be. They fear that they will be told on the day they are evicted.

As the New Largo residents observe, the old mine compound contrasts sharply with the rather smarter Wilge village down the road. Built for Eskom's white staff, it has full amenities and suburban houses with clipped and irrigated lawns. It is now being expanded with smart four-storey apartment blocks to house the artisans and technicians who will work at Kusile. It is not clear that any plans for housing the New Largo mineworkers have been made but the sprawling mining village of Phola is a bit further down the road and both Anglo and South32 have invested SLP funds there.

Arbor

In the early 2000s, the Arbor Colliery was identified as one of 27 abandoned mines in the upper Olifants catchment. The last owners could not be identified. The mine included both open pit and underground workings and rehabilitating it was given high priority because, first the Arbor settlement was next door and



The catchments - poisoned at source

second there was a high risk of surface water pollution, according to Waygood et al [2006].

Arbor was then about 100 households with 80% unemployment. The people mined coal for domestic use and needed to retain this source of free fuel but they also wanted the mine made safe. There were five open pits on the mine site with lakes formed in each. The water was very acid with high sulphate concentrations. The local water supply from wells and boreholes was at risk and there was evidence that the acid water spilled into the surface water when it rained. Discard coal heaps were burning but the fires were not visible at the surface. A child had been badly burned.

The mine was reopened in 2010 by Ntshovelo Mining Resources as the open cast Vlakvarkfontein Colliery. People were then excluded from the mine but, in exchange, the colliery dumped coal in the village for people's free use. It is a low quality coal that cracks, explodes and smokes while burning.

Ntshovelo is a joint venture originally owned by Continental (60%) and Mbuyelo (40%). Continental was an Australian company but operated only in South Africa. In 2010, Vlakvarkfontein was one of two operating mines. It claimed to be developing another eight mines and aiming for total production of 16.7 Mt/y for the local and export markets.⁹⁸ So it was aiming for a rapid transfer from coal junior to major status. But that was mostly on paper. By 2014, the company was bust and under investigation by the Australian Securities and Investment Commission. Ichor Coal then picked up Continental's controlling share of Ntshovelo. Ichor was already a 45% shareholder in Mbuyelo, a South African BEE company that made good on the conversion of old order to new order mining rights.⁹⁹

Vlakvarkfontein is operated by Trollope, one of the larger contract mining companies. It produces 1.3 Mt/y which is – or was – trucked 180 kilometres to Eskom's Majuba.

The mine is rapidly closing in on Arbor village and will be mined out before 2020.

98 Continental Coal presentation, 2010: *Coal Production in South Africa*.

99 See Ichor and Mbuyelo web sites.



Wescoal's Intibane mine is next door to Vlakvarkfontein and also encroaching on Arbor. It opened in late 2015 and will produce up to 1 Mt/y but has a life of mine of only two or three years. Wescoal's Khanyisa Colliery is five or six kilometres from Arbor. It is a similarly small operation with a life of mine of little more than a year. The company's big bet is on its Elandspruit mine outside Middelburg. It makes more money trading and trucking coal than mining it.

Black smoke rises from burning coal heaps or exposed seams on the mines. Periodically, a bakkie circulates around Arbor sounding a siren to indicate that there will be a blasting. The blast shakes the ground and raises a dust storm which, as often as not, blows across the village. The choking dust carries the acrid smell of explosives. The roads to the mines are dirt and black with coal dust. They pass close to people's houses. The mines periodically send water bowsers out to damp down the dust but this works only some of the time.

Just down the road to the east, the Kendal power station towers over the landscape. Both stacks were smoking when we visited in March. They were still smoking two months later in April and a breeze was blowing ash off Kendal's ash dump. Like all Eskom power stations, Kendal's air emission control is rudimentary. Kusile is under construction about 20 km to the north and dominates the horizon. Unlike Kendal, it will have sulphur scrubbers on its smoke stacks although this will not eliminate all emissions.

The Arbor rail siding is for coal loading. The big trucks roll in from the big mines around Ogies and Kendal, kicking up dust on a road that they have all but destroyed. By evening, there are twenty 56 tonne trucks lined up in four ranks waiting to tip their loads onto the coal train. Clouds of coal dust rise into the air with each tip.

In 2012, people from across the Highveld conducted indoor air monitoring in their homes using a minivol sampler to test for particulates and metals. The highest level was recorded in Arbor where the particulate concentration measured 458 ug/m³, nine times higher than the World Health Organisation guideline of 50 ug/m³. The greater part of indoor pollution will be from domestic coal fires but, as the 2013 groundWork Report observed, "It is very



The catchments - poisoned at source

likely ... that the Vlakvarkfontein mine contributed to the high reading in Arbor” [41].

Since 2006, Arbor has grown perhaps by two times. As elsewhere on the Highveld, people have come to Arbor from ‘all over’. Many are from surrounding farms, often because those farms are overrun by mining. Some still work on local farms but prefer to live in Arbor. Some are mineworkers brought in by the mining companies. Some came to get a local address and look for work. Others have lost their jobs. For everyone, Arbor is a place they can come to. A place to live. “If there were no mines and people had water, this would be a good place.” This sentiment is repeated even by a mineworker. “It is a good place to live but for the mines and dust.” The mines are good to work for in that the pay is good. “But the mines are killing us.”

Arbor lies at the edge of the Victor Khanye Municipality and people feel abused and neglected. During a visit in 2013, people told us “that the managers of the coal mine next door make promises which they do not keep. When [the people] ask their local council to protect them, ‘they say we are not under government. So we are nowhere. They come when they want our votes but they run when we have trouble’” [The groundWork Report 2013: 44].

People’s issues have not changed much in three years. All but the newest houses are cracked as a result of blasting and the mines invariably refuse compensation on the argument that the houses are not well built – an argument that effectively means poor people will never be compensated. Dust from blasting and from coal trucks is in the air and in their lungs. In 2013, people said the borehole water was foul. Then it dried up altogether. This marks a change since 2006 when Waygood et al noted that the borehole water was clean. One of the old wells in the village is now being used for a car wash. People do not drink it unless they have no other choice. The municipality now delivers water to JoJo tanks in the village but people say deliveries are irregular. In contrast, the mines get regular supplies of drinking water.

In 2009, just ahead of elections, the municipality installed dry composting toilets but then failed to maintain them. By 2013, they had fallen into disrepair and some had literally fallen over. There was no sign of them in 2016 and



people had reverted to using pit latrines. This creates another potential source of groundwater pollution. The latrines are not serviced and overflow in heavy rain. Again, people make the contrast with the mines where pit latrines are regularly serviced by 'honey sucker' trucks.

The mine has divided the community. In 2013, "people said there was no longer a local community forum as community leaders had been bought off with jobs at the mine. Further attempts at local organising would be divisive and bring conflict" [The groundWork Report 2013: 45]. Since then, local people have created an organisation called 'Guide the People' and affiliated to HEJN. The divisions remain acute, however. It is alleged that the official Community Liaison Forum is moribund and used to monopolise available jobs on the mines. The forum committee members got power through representing the community but now they represent their own interests and do not report back to the community.

The committee treats them as a threat, say Guide the People activists. "When we call a meeting, they call a meeting at the same time." They try to block discussion of community issues such as cracked houses. And they don't want any talk of water since they have received money for a water project from the mine.¹⁰⁰

On Saturday the 7th of May, blasting by Trollope at the Ntshovelo mine rained flyrock onto the community. It was an incident that tipped reluctant toleration into angry resistance. The following Monday, a delegation to the mine was accompanied by scores of people who blocked the mine entrance and demanded that all mining activity stop. Their demands concerned blasting, the dust raised by coal trucks, the water supply and compensation for houses damaged by blasting.

Ntshovelo then initiated court action effectively interdicting the entire Arbor community from any action interfering with mining operations. Guide the People has opposed this application. The matter boils down to a conflict between Ntshovelo's claim to a property right based on the mining licence and people's claim to "Constitutionally guaranteed human rights" – that is,

100 Interview, Elizabeth Malibe and Phillip Morake, Arbor, 4 March 2016.



The catchments - poisoned at source

people's right to an environment not harmful to their health and well-being and their right to clean water. People also claimed the right to have their homes protected from damage by blasting.¹⁰¹

Parallel with these events, the DMR sent an inspection team to the mine in response to an earlier complaint laid by Guide the People in March 2016. Somewhat oddly, the team did not engage with the community during its investigation, saying that they already had the community side of the story as laid out in the complaint and involving them further might compromise the investigation. In June, the inspectors gave a report at a meeting held in the Ntshovelo boardroom and chaired by a company manager. They said the boreholes were dry because of the drought, not because of the mine. The community disputed this, saying the boreholes were drying out before the drought. The inspectors have not yet reported back on the complaint relating to blasting.

People's response to the blasting incident created a brief moment of unity in Arbor. It has focused people's attention on their own health and safety next to the mine. Demands – and promises – have been made that community members will be able to see the mining plans, the SLPs and the municipality's Integrated Development Plan. The matter also attracted the attention of the South African Human Rights Commission which invited Arbor to a hearing. Since then, however, the rifts have reopened in response to the patronage on offer from the mine. People accused the HEJN activists of interrupting the free coal supply and some activists have been threatened. This spontaneous protest took activists by surprise but they are having to deal with the fall-out. It is but one of many outbursts from communities all over the Highveld where people have had enough. But these outbursts happen on uncertain terrain. Communities are divided. Municipal officials play into conflicts and their bouncers in the community are ever vigilant to protect their power base.

101 Affidavits presented in the High Court, Gauteng Division, Case 382/2016, by Theunus Botha for Ntshovelo and Elizabeth Malibe for Guide the People.



Box 3: Destroying the soil, creating food insecurity

As the water is contaminated, so the soil is ruined by mining. To miners in Mpumalanga, soil is “overburden” and “spoil”, an obstacle in their quest to get to the coal underneath. Soil is treated as a dead material that can be left in heaps until needed for rehabilitation which to them, is a form of engineering and cosmetic landscaping. They could not be more wrong.

Soil is a living ecosystem. It is the basis of the food security for people and the foodweb for life on the planet in general. Soil scientists describe soil as the skin of the planet.¹⁰² The United Nations Food and Agricultural Organisation (FAO) made 2015 the ‘year of the soil’. It described soil as “one of nature’s most complex ecosystems and one of the most diverse habitats on earth: it contains a myriad of different organisms, which interact and contribute to the global cycles that make all life possible.” Soil contains a quarter of biodiversity on earth. According to FAO:

Nowhere in nature are species so densely packed as in soil communities. Over 1 000 species of invertebrates may be found in a single m² [square metre] of forest soils. Many of the world’s terrestrial insect species are soil dwellers for at least some stage of their life-cycle. A single gram of soil may contain millions of individuals and several thousand species of bacteria. A typical, healthy soil might contain several species of vertebrate animals, several species of earthworms, 20-30 species of mites, 50-100 species of insects, tens of species of nematodes, hundreds of species of fungi and perhaps thousands of species of bacteria and actinomycetes.¹⁰³

That it is possible, after coal mining, to rehabilitate soil to its original condition is a dangerous myth that legitimates the destruction of soils as ecosystems. Soil takes thousands of years to form and, even if all procedures described in the Chamber of Mines (CoM) Guidelines for Rehabilitation [Tanner 2007] are meticulously followed, a loss of soil potential of at least

102 <http://en.gravatar.com/ajordanlopez>

103 According to FAO, 2015 Soils and biodiversity, <http://www.fao.org/3/a-i4551e.pdf>



The catchments - poisoned at source

30% is inevitable. If these procedures are *not* followed, and most often they are not, losses in soil potential of between 70% and 90% are likely [Steenekamp 2011, quoted in BFAP, 2012]. This was confirmed in a 2001 synthesis of research into agricultural potential after rehabilitation for the pro-mining Coaltech initiative. J.L. Schoeman's research into the effects of open cast mining for agriculture on the Highveld produced two core findings:

11. Vegetation of rehabilitated pasture areas will "probably never return to their original state, and continued fertilisation may be needed".
12. When rehabilitated soils were tested for the production of maize and sunflower, crop yields were "low or very low due to either induced low soil water-holding capacity or poor drainage", made worse by machine-induced compaction. Spoil material [lower layers mixed in with topsoil] hindered the maize roots from penetrating the soil. Maize planted on this soil showed high water stress [2001: v].

One of the mechanisms of fertility loss is compaction during the rehabilitation process due to the use of heavy machinery. Compaction reduces the spaces in the soil, taking away oxygen supply for life in the soil, and making it difficult for plant roots to find their way into the soil. Not only do mining companies find it too expensive to rehabilitate properly, but the on-going need for fertilisation of post mined land may also exceed the economic returns that farmers could make from it [BFAP 2012].

The coal industry is well aware of what they are doing to the soil as can be seen from the CoM Guidelines for Rehabilitation in which Tanner argues for careful and well planned stripping of soil so as to keep the seed bank and soil biota alive [2007: 15]. He advocates for keeping topsoil and the subsoil separate but acknowledges that this is mostly not what happens because it is too expensive. Tanner gives an estimate of 10% of mining costs for rehabilitation, an alarmingly low estimate in the light of the rest of the guidelines.



What remains of the soil after mining and rehabilitation? The CoM proposes four categories of soil after rehabilitation. The first three are 'wetland', 'arable', and 'grazing', a drastic reduction of the eight soil capability classes found in agriculture. The fourth option, 'wilderness', is particularly revealing. 'Wilderness' really means 'wasteland'. It is not a category for soil which has been restored to support a healthy eco-system, for biodiversity and conservation purposes. Wilderness is defined by exclusion, a left-over category for land which does not qualify as wetland, arable or grazing land. "This is land which has little or no agricultural capability by virtue of being too arid, too saline, too steep or too stony to support plants of economic value. Its uses lie in the fields of recreation and wildlife conservation, says Tanner [2007: 88]. Surely conservation of biodiversity – or recreation – should not only happen on wasteland! This final category mirrors the agricultural classification of land 'for wildlife', that is land that has no agricultural potential, which reveals the productionist bias in agriculture as well. Still, the agricultural category is land classified before it is worked, not the result of destructive mining and inadequate rehabilitation. On the ground, careless agricultural use often leads consultants to remark that wetlands and other soils are already 'degraded' and can therefore be further degraded by mining.

How widespread is this destruction of soil potential, and how much of a threat does it pose to the soil, and to food security?

Undermining food security

Food insecurity is a huge and chronic problem in South Africa. Undermining the ability to produce food, and in particular maize, puts an already strained system under stress. One in four – or 13 million – people in South Africa go hungry every day and half of all people in South Africa live on the edge of



The catchments - poisoned at source

food insecurity [Oxfam 2014]. Two in every three people in informal areas (urban and rural) are either food insecure or at immediate risk.¹⁰⁴

People depend on bought food, since self-grown food is very limited. Research shows that small farmers battle to feed themselves.¹⁰⁵ This means that security from hunger is determined by two things: how much cash people have available to be spent on food and what the food prices are. Poor households spend more than half their income on food. One of the reasons is that a few large corporations control most of the South African food market, and they have been found guilty of fixing prices of bread, milk and canned fish between them [Oxfam, 2014]. The maize chain is particularly concentrated:

Two companies (Monsanto and Pioneer Hi-Bred) control the domestic seed market; maize handling and storage is dominated by three companies (Senwes, NWK and Afgri, all former co-ops); Louis Dreyfus and Cargill, two ... international grain traders, dominate the maize trade on the JSE. The white maize milling sector is dominated by three firms: Tiger Brands, Premier Foods and Pioneer Foods. This highly concentrated value chain feeds into an equally concentrated food retail sector, with four major retailers: Shoprite/Checkers, Pick n Pay, Spar and Woolworths dominating the market ... Tiger Brands, Pioneer Foods and Premier Foods mill approximately 60% of the nation's white maize crop. Their brands, which include Ace, White Star and Iwisa super maize meal – all Genetically Modified – constitute over 73% of the maize meal market. [African Centre for Biodiversity, not dated].

104 Food security measurements vary but the trends are the same. According to the 2013 Human Sciences Research Council and Medical Research Council collaborative report *South African National Health and Nutrition Examination Survey*: "Overall, 45.6% of the population were food secure ... 28.3% were at risk of hunger ... and 26.0% experienced hunger ... The largest percentage of participants who experienced hunger (food insecurity) were in urban informal (32.4%) and in rural formal (37.0%) localities.

105 The civil society research group Tshintsha Amakhaya found in 2012 that "more people who produced crops went hungry than those who do not produce crops. Rather than indicating that crop production means more hunger, we can assert that food insecure households tended to engage in crop production to alleviate the impact of hunger" [2012: 3].



So, national food security does not automatically translate to food security for households. However, increases in maize prices do translate into more pressure on food security for poor households. For the past ten years, the Pietermaritzburg Agency for Community Social Action (PACSA) has tracked the cost of a basic food basket for low income families in Pietermaritzburg, KwaZulu-Natal. In August 2016, for a family of seven, a nutritionally complete food basket would cost R4 325.24 per month. But few people can afford this, and therefore in reality, most people can only afford a nutritionally incomplete 'PACSA Food Basket' that cost R1 942.42 in August 2016. It means that low-income households are underspending on nutritious, albeit still very basic food, by 55% with serious implications for their health and wellbeing. As PACSA says, "The food basket is not nutritionally complete, it is a reflection of reality – what people are buying."¹⁰⁶

This food basket had increased by R318.67 (19.6%) from R1 623.75 in August 2015 to R1 942.42 in August 2016. PACSA points out: "Maize meal is a core driver of food inflation in the PACSA food basket, contributing around 12%. Along with the overall increase in cost of the PACSA Food Basket, maize meal (25kg) is also experiencing its highest levels year on year, with a 25kg bag costing R233.82; this is 39.6% (R66.35) more than it was a year ago (R167.46)."

The price of maize meal is important because low-income households secure the starches (the bulk foods) before nutritionally rich foods such as protein, calcium and vegetables. Any significant increase in maize meal means less money is available to buy foods essential for dietary diversity and therefore negatively impacts on the health status of families. But such an increase in the price of maize is exactly what agricultural researchers are expecting.

106 See www.pacsa.org.za for detailed information.



The catchments - poisoned at source

The Mpumalanga Highveld is South Africa's most important maize producing area so the scale of the threat to agriculture from mining is a crucial food security question. According to the CER Zero Hour report, "By 2014, 61.3% of the surface area of Mpumalanga fell under prospecting and mining right applications" [2016: vii] and "if mining continues at its current rate, around 12% of the country's total high potential arable land will be transformed" [CER 2016: 8].

In its pilot research project in the fertile Delmas, Ogies and Leandra districts in 2012, the Bureau for Food and Agricultural Policies (BFAP) calculated that, in their pilot area, current coal mining activities lead to a loss of 284 844 tons of maize per year, with a further 162 736 tons from areas being prospected for coal mining. BFAP calculated that the removal of this amount of maize could lead to a 14% rise in maize prices [2012: 5]. "The impact on households would be devastating", says PACSA food security researcher Julie Smith. If the potential loss of maize growing land is extended to the whole of Mpumalanga, it is possible that around 240 000 ha of high potential land will be lost to maize farming in Mpumalanga, implying a loss of 1.2 million tons of maize to the South Africa market. This is enough to permanently change South Africa into a maize importing country.

The maize grown on Mpumalanga's high agricultural potential soils protects the country's food security in years of drought. In a wet year, Mpumalanga produces around 22% of the harvest. In dry years, its contribution rises to 54% because it is more resilient in the face of drought. Therefore, Mpumalanga's maize production plays a stabilising role in South Africa's maize price, explains Belfast farmer Koos Pretorius. And because of climate change, drought years in the interior of the country, where most maize is produced, are set to increase.



Pretorius explains that three factors set the price of maize: the global maize price set at the Chicago Board of Trade, the local supply (the harvest), and the exchange rate. When South Africa produces a surplus harvest, the South African price of maize is the Chicago price minus the cost (transport and the like) of exporting the maize onto the world market. It therefore remains cheaper than the international price.

However, if there is a shortfall in the production of South African maize, as there is in 2016 because of the drought, the price is the Chicago price plus the costs of importing. When the Rand weakens, the cost of imports goes up further. In 2012, this difference was huge – around R1 100/ton between the export parity price of ±R2 200 per ton and the import parity price of ±R3 200 to R3 400 per ton. ‘Farm gate’ prices are responsible for about half the increase in the price of the most popular ‘super maize meal’. The other costs include transport, storing, milling and the volume lost by refining the raw maize. On top of these production costs, there is a steady increase in retail food profits, whether the maize price goes up or down [FPMC, 2002]. A steadily weakening currency steadily inflates the import parity price.

This year’s drought has led to predictions of food crisis with “dire consequences for the poor”, warned agricultural economist Nick Vink in January 2016.¹⁰⁷ He predicted a total maize crop of 4 700 000 tons, “less than half of the industry average of some 11 500 000 tons per year for 2011-2015 and of the average consumption of 9 600 000 tons per year over the same period”, with limited carry-over stocks from the previous year.

Coal, already the main cause of climate insecurity, is now also directly contributing to food insecurity in South Africa.

107 <http://www.timeslive.co.za/local/2016/01/14/South-Africa%E2%80%99s-poor-face-rising-food-prices-as-drought-intensifies>



Trashing the Vaal

The Vaal River drains more than half of the Mpumalanga coalfields. Its starting point is near Breyten and Ermelo in the east, its northern edge takes in Bethal and Secunda with Sasol's large underground mines and chemical complex and, to the south, it stretches beyond Amersfoort to Volksrust. In the Free State, its southern tributaries are the Wilge and Liebenbergsvlei which transport water from the Lesotho Highlands and the Tugela. Transfers into the Vaal from other catchments are massive.

When this medium sized river reaches the Vaal triangle, consisting of Vanderbijlpark, Meyerton, Vereeniging and Sasolburg, it receives a heavy burden of industrial pollution as well as acid mine drainage and heavy metal pollution from the gold mines of the Reef. It provides water to more than 12 million people in Gauteng and adjacent areas in the industrial and economic heartland of South Africa. Its water is so polluted – with total dissolved solids (TDS) at more than 1 000 parts per million at The Barrage just above Parys – that it must be diluted with clean water from Lesotho, as described in The groundWork Report 2006.

The abuse of rivers and wetlands in Mpumalanga will place an extra burden on an already overburdened river. In 2009, McCarthy and Pretorius warned that the Vaal would become as polluted as the Upper Olifants with disastrous consequences. All the signs indicate that it is already happening.

In Mpumalanga the Vaal starts with many small streams cutting narrow channels into the grassland, curling against the shallow sandstone and, where the flow slows down, building wetlands around itself. These wetlands purify the water collected from the upper reaches of the catchment by filtering and then slowly releasing it. Most of them still provide clean water.

This was the case with the Holbankspruit, an upstream tributary of the Vaal just east of Ermelo until Dutch money, an Austrian engineer and South African mining staff hit it hard. Anker Kolen, a Dutch mining company, spent seven years extracting export coal from its mine on the farm Leliefontein. They mined right through the Holbankspruit and its associated wetlands and left



behind a huge hole, heaps of mining spoil and spoilt wetlands that cannot be rehabilitated. Anker Kolen – also known as Golfview – broke most of the relevant sections in the National Water Act, as can be seen from a plea bargain agreed to in the Ermelo Magistrates court in 2012.¹⁰⁸

Anker mine manager Albrecht Frick, now deceased, admitted to a long list of “wrongfully and negligently committed acts or omissions which are likely to affect the environment in a significant manner”. These included mining within a wetland, diverting the Holbankspruit as well as an unnamed tributary to the Holbankspruit, having inadequate pollution control and evaporation dams on site, failing to separate dirty and clean water at the mining site and failing to construct an evaporation dam outside the box-cuts as required by the Environmental Management Plan.

He also “wrongfully and negligently” commenced with various activities without the required environmental authorisation from the Department of Environmental Affairs. These included construction work “in the one in ten year flood line of a river or stream”, dumping overburden in the river and constructing canals or channels. He was also guilty of the “transformation or removal of indigenous vegetation of 3 hectares or more”.

Anker Kolen and Frick were not the first to mine through a river. In the 1970s, Gencor mined right through the Woestalleenspruit at Optimum and reduced it to an acid mine drainage producing lake. It was not then illegal. Anker Kolen did it in the early 2000s when new laws made it illegal and mines were more intensely scrutinised by environmental organisations.

The FSE and the Highveld Headwaters Protection Group took Frick and Anker to court. Working with the prosecutor in the Ermelo Magistrate’s Court, they secured Frick’s plea bargain which resulted in an order of the court in 2012. The order prescribed that a rehabilitation report should be compiled and that Anker should then comply with it. At the time, the costs of rehabilitation were estimated at between R50 million and R100 million. The rehabilitation team

108 This and following information from Golfview Mining plea bargain, accessed 24 Sept 2016 at www.cer.org.za/wp-content/uploads/2013/05/Golfview+Plea+a



The catchments - poisoned at source

was to report on progress to the court, as well as the Grootdraai Catchment Management Forum, every three months. Anker was also to pay:

- R1 million to the Water Research Commission, for research on how coal mines could internalise the external costs they impose on the environment;
- R1 million to the Environmental Empowerment Services of the Mpumalanga Department of Economic Development, Environment and Tourism; and
- R1 million be paid toward the Mpumalanga Tourism and Parks Agency's Aquatic Services office.

The court order was widely hailed as a victory for environmental activism. It saw extraordinary co-operation between civil society and prosecutors and it seemed to show that civil society could step into the vacuum left by indifferent government regulation. Four years later, however, no rehabilitation work has been done. We find two explanations for this. First, the victory was hollow because there was no follow through and hence no legal force. The research money was paid out and is being used but the rehabilitation funds were not paid. The second explanation relates to the technical limits of rehabilitation. Restoring the river and wetland to its previous state is simply not possible because the sandstone layers that created the wetland were destroyed. What remains is a wasteland with automatic AMD production. Leliefontein is living proof that the claims made for rehabilitation are false and, at best, it achieves the cosmetic reconstruction of the surface without a restoration of life and fertility in the soil. [See Box 3 on destroying the soil]



Box 4: Who holds Anker Kolen's ecological debt?

Who is Anker Kolen? Where are they now and who is now responsible for the ecological debt for Leliefontein? The idea of an ecological debt – a debt owed by a company or colonial power which has looted natural resources – was developed by, among others, Joan Martinez Alier. An ecological debt does not expire over time or because of fancy legal footwork. Indeed, the costs tend to accumulate over time.

It is not easy to trace who is responsible for Anker Kolen. It was founded in 1992 and based in Rotterdam, The Netherlands, which is the biggest port for coal imports in Europe. It seems that the company traded coal as well as mining it and it was composed of many subsidiaries

In 2005, Vitol announced an agreement to purchase Anker Coal Company B.V. (Rotterdam), Anker Belgium N.V., and Anker Trading S.A. (Geneva) from owner Anker Holding B.V. This acquisition was to strengthen their recently formed team “to explore the opportunities and potential in the coal market”.

Vitol is known in South Africa because it buys coal from Coal of Africa, owner of the contested Vele and Makhado mines near Mapungubwe, and was also involved in the buying of oil at give-away prices from South Africa's strategic oil reserve in Saldanha.¹⁰⁹ Vitol is the largest Swiss company by turnover, “a commodity trader, largely oil, but also one of the world's top five coal traders, trading over 30 million tonnes of coal,” according to Bench Marks [2015].

It is possible that Vitol bought only the trading assets of Anker Kolen. There was a second deal made in 2005 when the International Coal Group (ICG) acquired the Anker Coal Group. It is not clear how this relates to the Vitol deal. In 2011, Arch Coal in turn acquired ICG. Anker Coal Group's properties included eight non-unionised underground and open pit coal mines in West Virginia and Maryland, USA. One of these mines was the Sago Mine where,

109 Alex Hogg, *Oilgate: How insiders stole R1.5bn in sale of SA's strategic oil stockpile*. Fin24 and Biznews.com, 23 August 2016.



The catchments - poisoned at source

in January 2006, an explosion killed 12 miners with no consequences for the owners.¹¹⁰

This trail leads to the disaster ‘business rescue’ specialist Wilbur Ross who had been involved in the ownership and affairs of Anker’s Sago Mine since 1997. Ross is a disaster capitalist, like Lakshmi Mittal [see groundWork Report 2006], in whose businesses he owns shares. Like Mittal, his business strategy is to identify businesses in trouble and use bankruptcy procedures to shed obligations but hold onto financial value.

It seems that some Anker roots remained behind in South Africa. The Elandslaagte mine next to Clewer still carries an Anker Kolen nameplate.

While the profit from the coal has found its way to Switzerland or New York via Rotterdam, what remains in South Africa is the destroyed landscape on the farm of Ermelo cattle and maize farmer Johan Vos. He is angry. He says, “I have a huge hole on my farm now. Who is going to fix it?”

He has a map of his farm on his office wall with the Anker/Golfview mine blacked out. Even though water still runs through it, the invading grasses are useless as grazing. He has a contract signed with Golfview in 2010. The contract specified rehabilitation measures but is now completely useless. He is still involved in litigation, with the help of a firm of prestigious lawyers in Johannesburg, to get the area rehabilitated. But he has recently received a letter from the ‘business rescue’ lawyer now looking after what remains of Golfview Mining. The letter says there is no money to compensate him. Vos says the company has left behind large debts with many people. Using the law to protect yourself against coal mining companies is a difficult route, he says. They simply string out the case until your legal funds are exhausted. This echoes the experience of other people in Mpumalanga, like the Mtsweni family in the Upper Komati who were told to ‘follow the correct channels’ although the correct channels do not work at all.

¹¹⁰ See www.sourcewatch.org for details of the disaster and Ross’ involvement.



He is worried not only about his farm, but also the broader implications. What about the acid water going down the Vaal into the Vaal Dam? What about the destruction of the country's basis for food production? Are these issues not taken into consideration when decisions about mining are made?

His troubles are not over. Thutsi Mining, owned by Silver Lakes Investments, has been given a mining right on his farm in a wetland and along the tributary that leads into the Holbankspruit. Vos shakes his head: how could a mining right be awarded in such a sensitive area right next to an unrehabilitated disaster? The Thutsi mine now has all the necessary mining and water use licences, although these seem to be a package of licences covering different areas. They told Vos they would start mining in August and promised to take great care as they mine through the wetlands next to the old Golfview mine.

They may not be able to start mining, however. On the other side of Ermelo, 56 Silver Lake/Thutsi miners went on strike when their wages were not paid. According to AMCU organiser Don Sibanyoni, "The last time we received full salaries was in May. In June we were not paid. Instead management informed us that they were busy processing our payments and that was the last time we heard from them."¹¹¹ More than 56 miners conducted a week long sit-in underground in protest, saying "We are sitting underground to get attention from the government and employer. We were never informed that the mine is going under. We want our money. We need DMR to come to our rescue."¹¹²

Anker Kolen also abandoned the original Golfview mine complex on the west side of Ermelo overlooking the town golf course. They have left huge pools of acidic water in four different pits, more stream diversions and debts to local farmers for surface and road use. It looks like they left in a hurry. In one pit, they have left mining machines and a portable office behind. In the office, notices to workers are pinned on the wooden walls and files with employees CVs lie open on a dusty desk. In another pit, a huge coal washing machine has been abandoned in a lake of dark water and discard coal dumps rise like black

¹¹¹ Lerato Mnculwane, *Miners refuse to surface*. Highveld, 1 September 2016

¹¹² Siphephile Kunene, *Miners stage underground sit-in in Mpumalanga*, SABC, 29 August 2016.



The catchments - poisoned at source

hills from the lake side. The company is also accused of prospecting abuses in Steenkoolspruit near Amsterdam.

One of the Golfview pits is on Hennie Broxham's farm. On the hill above is Exxaro's Ingcambu Mine. Below is an old abandoned mine on municipal land, also known as Golf View, that is now worked by zama-zamas and is on fire. The mines lie on either side of a valley with a stream that feeds into a wetland and then leads on to Ermelo's Douglas Dam. The vegetation in the wetland displays the characteristic 'yellowboy' rust colour of AMD. Broxham opens a tap in his garden and the water from a deep borehole smells strongly of sulphur. The water was sweet when he arrived 17 years ago. Now his family has to buy drinking water. He has let DWS know. He even had a visit from them when Anker pumped mine water directly into one of his farm dams causing a massive fish kill. But nothing has been done and it is only a matter of time before the Douglas Dam – one of the dams supplying drinking water to Ermelo – succumbs to an acid mine drainage shock.

Tragedy in Ermelo

The zama-zama miners in Ermelo risk death every day. Elizabeth Ngwenya has lost one son there. She says, "These mines make us sad. We have lost a lot of children there. Others don't die but are seriously injured." The money her son earned from mining made a difference to the household but she always asked him not to go. He told her he worked above ground but this was not true. She now feels deep pain because her second son has gone to dig coal. He previously worked for a local builder doing house renovations but that ended when his employer left town. He has joined the zama-zama because he cannot find other work.

Vincent Mashinini worked as a zama-zama for about 10 years until 2009. He stopped because he had seen too many incidents and his lungs were damaged. In those 10 years, he saw 15 or 20 people killed by ground falls and many others injured. He too broke his leg and it is still painful in cold weather. His lungs were affected by coal dust and smoke from underground fires. The local clinic took sputum samples but, it seems, did not send them to the laboratory. He is



no longer strong enough to do the work even if he wanted to. He is fortunate to have work through a garden services cooperative set up by Khutala, a local community organisation and affiliate of HEJN.

Mashinini says the zama-zama earn well. At present rates, a barrow load sells for R60 direct to households. A bakkie load sells for R700 to coal-yards in Ermelo's townships, of which R200 goes to the bakkie owner and R500 to the miners. At Golf View zama-zama mine, workers say they are taking out about 15 bakkie loads a day. This possibly amounts to R500 a day each, depending on how many are working. The mine is some way out of Ermelo so only those who work there go there. They work in teams and appear to be well organised. They share the camaraderie of men who know they risk their lives and who look out for each other.

The mine is exceptionally dangerous. The surface ground is slumped across a wide area and a part of it is on fire. It is an old mine, possibly constructed in the early 1940s. The workers went in through the abandoned shafts which, they say, extend for kilometres and link to the formal Golfview mine, recently abandoned, across the valley. They mine the most accessible coal and do not leave pillars. This accounts for the ground falls. The men say the earth groans and cracks before a fall, giving them a little time to get out. They work underground within sight of the fire. It is not clear how it started. In one view, it was the spark created by a pick striking rock but it may be the result of spontaneous combustion. The fire is burning fiercely enough to crack open new fissures in the rock above the coal seam and is the likely cause of a large and deep sinkhole. From above ground, the red glow of hot rock can be seen through vents opened by the heat and acrid smoke rises from the cracks in the earth.

Imbabala mine is in the middle of Wesselton, Ermelo's main township. It was operated by Imbabala Coal until 2011 when the DMR issued a stop order. The mine manager said that it produced 20 000 tonnes of coking coal a year and employed 174 people. Imbabala was also listed as an Eskom supplier. The DMR stop order cited environmental violations and unlawful change of ownership. It followed formal complaints laid by local people whose houses were cracked



The catchments - poisoned at source

by underground blasting. Cracks also appeared in the local sewage works, resulting in water pollution and the mine hacked through a stream and directly polluted the water. Residents were also confronted with a constant stream of coal trucks on their streets.¹¹³ Following the stop order, the mine was simply abandoned by the company and DMR has done nothing to secure the site.

The mine is a deep open pit from which horizontal underground shafts were constructed. It undermines parts of Wesselton. Nomphele Dube lives close by in an informal extension of Wesselton. She gathers coal mainly for her own household. All of them are unemployed and they have no other options for domestic fuel. She may also get an extra bucket for her neighbours or for sale. There are no municipal services except for a single water tap for the entire settlement. The family dug their own pit latrine which overflows when it rains. They dump rubbish on open land.

Nomphele does not go underground but as many as 200 men and women do, taking the coal out in barrows. Several have died in rockfalls. The mine pillars provide the easiest pickings so the underground workings are increasingly dangerous. The cliff face of the open pit is also unstable and fissures are appearing in the ground at the top. Periodically, a large slice of land collapses into the pit. The miners say that this is the only way they have to put food on the table.¹¹⁴ Putting food on the table will become more difficult as coal mining in Mpumalanga destroys the best soil and undermines food security throughout the country, as Box 3 shows.

Underground burn at Majuba

South of Secunda, coal miners encounter ever more difficult geology. Not only is the coal buried deeper under layers of the Karoo sequence, but it is intruded by dolerite, a volcanic rock that forms sills (ceilings or floors) and

113 Nickolaus Bauer, *DMR shuts Mpumalanga coal mine*, Business Day, 19 April 2011; Barbara Hogan, written reply to questions posed in the National Assembly, 19 February 2010; Centre for Applied Legal Studies, *Coal mining in Ermelo and impacts on the Wesselton community*, report on flight with the Bateleurs, 11 November 2009, at <http://www.bateleurs.co.za/coal-mining-in-ermelo-and-impacts-on-the-wesselton-community/>

114 See at <https://www.youtube.com/watch?v=HODGGQJfoIM> downloaded 31 August 2016.



dykes (walls). The very large Majuba Power Station (4 110 MW), the last of the Eskom plants built in the final decade of the apartheid regime, is the southernmost of the Highveld plants. It was completed in 1992 but the first of its six units was only commissioned in 1996. There were two problems.

First, at the start of the 1980s, Eskom overestimated future demand. As the political transition got underway, it cut a deal with Gencor, later BHP Billiton, to supply power at cut rates to its aluminium smelters. Majuba's first unit was brought on line just as the first pot line at the Hillside smelter in Richards Bay was commissioned.

Second, like all Eskom's power stations, Majuba is built on top of a coal resource. The coal, however, turned out to be unmineable because the coal seam is fragmented and disrupted by dolerite intrusions. The coal supply therefore has to be trucked in at the rate of some 42 000 tonnes a day.¹¹⁵ A coal railway line from Ermelo to Majuba is now under construction. This line was financed with a World Bank loan and is prioritised in rail corporation Transnet's strategy of moving freight from road to rail.

Meanwhile, Eskom has been looking for ways to use the Majuba coal resource – a seam 300m underground and 3 to 5m thick. In 2001, it identified underground coal gasification (UCG) as the best option and, following various studies, it started construction in 2005 using technology licensed to Ergo Exergy, a Canadian corporation.

UCG operators set fire to the coal seam itself to produce gas. They drill a pair of wells a couple of hundred metres apart, pump oxygen in through the injection well and draw gas out through the production well. The entire coal seam burns from the injection well towards the production well, leaving a cavity and ash behind. The fire burns at very high temperature but with reduced oxygen to maximise the production of a synthesis gas composed mainly of hydrogen, methane, carbon dioxide and carbon monoxide. Hydraulic fracturing (fracking) of the coal seam may be done before the fire is lit to create pathways for the movement of gas towards the production well.

115 Sarah Wild, *The battle of Majuba goes underground*, Mail & Guardian, 17 January 2014.



The catchments - poisoned at source

Eskom's original intention was for the UCG plant to scale up to provide 30% of Majuba's energy (equivalent to 4.5Mt of coal a year) but it also developed an alternative plan to build a separate 2 100MW capacity gas-fired power station at Majuba. It says the Majuba coal seam contains 400-500Mt of coal over an area with a 10km diameter and UCG applied to this area would provide enough syngas to run the gas plant for its lifetime.

The coal was lit in January 2007 and the gas tested in a small generator. In 2014, Eskom said that the 'first pilot' was producing 15 000m³ of gas per hour and consuming 100 tonnes of coal per day. It was intended that this would be ramped up to 75 000m³ an hour to co-power one of Majuba's six units.¹¹⁶ However, the initial test firing in 2014 was very brief – scarcely an hour on one account – and the rest of the gas was flared.

In its 2015 Integrated Report, Eskom reported a R1.05 billion impairment on the UCG project, and "as a result of funding constraints, a capital project reprioritisation was undertaken, leading to approval of the closure and rehabilitation of the project".¹¹⁷ The official version from the project managers is that "shutting down and rehabilitation forms part of the research methodology" and all options for using the gas are being investigated.¹¹⁸ However, the UCG remains closed down, it has not been able to get a water use license, Eskom is not providing capital and the on-site offices are all but deserted. It seems unlikely that it will re-start.

Meanwhile, prospecting for coal bed methane (CBM) from the same coal resource is being undertaken at Amersfoort on adjacent land by Kinetico Energy, an Australian company partnered with Badimo Gas, a South African BEE company. Kinetico suggests several potential uses, including co-firing with coal at Majuba, use in the production of petrochemicals and fertilisers and/or distribution to industry through pipeline.¹¹⁹

116 Eskom has a series of UCG web pages at: <http://www.eskom.co.za/Whatweredoing/ElectricityGeneration/UCG/Pages/> accessed at 14 April 2016. These pages do not appear to have been updated since 2014.

117 Eskom, 'Integrated Report', 31 March 2015, p. 69.

118 Personal communication, Shaun Pershad, UCG Research Manager, 13 May 2016.

119 <http://www.kinetico.com.au/wp-content/uploads/2014/01/Amersfoort-Project-Details.pdf> at 14 April 2016



CBM starts with 'dewatering' a 'gassy' coal seam to produce methane gas. This is frequently followed by fracking as the seam dries. Where water and methane saturate the coal seam, methane is bound – or adsorbed – to coal under pressure. Pumping out the water relieves the pressure and thus permits the flow of methane. This 'produced water' is generally contaminated with salts, metals and hydrocarbons such as benzene, toluene and ethylbenzene. When the flow of methane slows, the well is fracked: a mixture of water, toxic chemicals and sand is blasted down a well under high pressure to open fissures in the coal seam and so stimulate the flow of gas. Like produced water, the return water from this process comes to the surface. CBM wells are conventional vertical wells and pepper the landscape in close array. Since there is groundwater in the coal seam and in the rocks immediately above it, there is a strong probability of groundwater contamination.

Kinetico has several wells flaring gas at Amersfoort and the company claims that there is a high potential for production on a commercial scale. In their public documentation, neither Kinetico nor Eskom mention the other project and so say nothing about whether CBM is compatible with UCG. When questioned, Eskom responded that mining rights are assessed "to ensure minimal impact to the overall system which includes adjacent mining projects".¹²⁰

These are, however, novel technologies and the DMR is unlikely to have the capacity to make that assessment. Besides, it is better known for ignoring the cumulative impacts of even conventional projects [CER 2016: 29ff].

Whether or not these particular projects are brought into production, industry is punting both technologies as conventional coal resources are depleted. Besides Eskom, Exxaro, Anglo and newcomer Africary are developing UCG projects and DMR and DoE have expressed strong support for development of the technology.¹²¹ There are also applications for oil and gas exploration licenses across much of the eastern half of the country from KwaZulu-Natal up to the North West and across the Highveld area. In many cases, this looks like speculative activity intended to create a bulk market in extraction rights.

¹²⁰ Personal correspondence, Shaun Pershad, UCG Research Manager, 13 May 2016.

¹²¹ Natalie Greve, *Development of UCG industry gains momentum as govt reveals policy stance*, Mail & Guardian, 15 April 2014.



The catchments - poisoned at source

In cases where there is a real prospect, it is about getting gas off un-mineable coal.

Clean coal?

Eskom repeats the industry line that UCG is an ‘advanced clean coal technology’ – a claim also made for CBM. Compared with conventional coal-fired generation, Eskom claims significant reductions in particulate and sulphur and nitrous oxide emissions. Carbon emissions may be reduced depending on geology and coal quality. It even claims that “UCG creates a cavity that could potentially sequester its own CO₂”.¹²² Compared with conventional mining, Eskom says UCG eliminates physical extraction of coal and hence reduces the disturbance of land. It also “shortens the coal value chain” from mine to power station, eliminating coal handling and transport.

The key motivation, however, is to expand reserves: “Almost three quarters of the country’s coal resources are presently regarded as conventionally un-minable, but could be extracted using UCG technology.”¹²³ At 1.8 tonnes of CO₂ per tonne of coal, that would mean emissions of anything between 80 and 160 Gt CO₂ from UCG depending on whose estimate of the conventional coal reserve one believes. Hence, UCG – and CBM – will be accompanied by the cumulative expansion of all emissions. When talking clean coal, Eskom’s favoured technology is a combination of UCG with Integrated Gasification Combined Cycle (UCG-IGCC). These technologies are unproven and, when doing an actual project, it may prefer something less demanding and less efficient.

For carbon emissions, the results from UCG-IGCC are not very impressive. Eskom cites an IEA clean coal report showing the following emission factors for various fossil fuel power stations (CO₂ kg/MWh)¹²⁴:

122 <http://www.eskom.co.za/Whatweredoing/ElectricityGeneration/UCG/Pages/TechnologyAdaptation.aspx> at 14 April 2016.

123 <http://www.eskom.co.za/Whatweredoing/ElectricityGeneration/UCG/Pages/StrategicDrivers.aspx> at 14 April 2016.

124 <http://www.eskom.co.za/Whatweredoing/ElectricityGeneration/UCG/Pages/StrategicDrivers.aspx>.



- Conventional coal: 950
- Supercritical coal: 850
- Conventional IGCC: 750
- UGC IGCC: 700
- Nat Gas CC: 450

Eskom's own coal fired emission factor is 1 040 CO₂ kg/MWh.¹²⁵ Total life cycle emissions – including emissions from mining and transport of coal, power plant materials, construction and demolition, and so on – would bump that number up to 1 170 kg or more. That compares with lifecycle emissions from wind at between 14 and 21 CO₂ kg/MWh, but Eskom does not make this comparison. A new Friends of the Earth report draws the obvious conclusion: “Arguing that UGC is cleaner than conventional electricity generation from coal ... is not a reason to back UGC” [FoEI 2016: 6].

Nevertheless, Eskom says it “intends to also explore the potential for application for Clean Development Mechanism (CDM) funding, once the pilot plant research is complete and emissions performance has been confirmed.”¹²⁶ This precedes the risible proposal for carbon capture and storage in the burnt out cavity.

Underground, the coal burns at 1 200°C and heats the rocks “some 40m above the coal seam”. Eskom treats this as negligible because of the depth. It nevertheless expects “gradual” subsidence at the surface, “as per any underground mining operation”, of some centimetres per year.¹²⁷ If the project is implemented with largescale production burning a cavity over a wide area, it will take time for the full impact to show.

Yet even a few centimetres surface slumping indicates more severe slumping underground and the likely collapse of ground into the cavity 300m below. That in turn will create new pathways for the movement of groundwater

125 Eskom 2011, CoP 17 Fact Sheet: Air quality and climate change.

126 <http://www.eskom.co.za/Whatweredoing/ElectricityGeneration/UCG/Pages/TechnologyAdaptation>.

127 http://www.eskom.co.za/Whatweredoing/ElectricityGeneration/UCG/Pages/Frequently_Asked_Questions



The catchments - poisoned at source

above and into the cavity, resulting in acid mine drainage and contamination by metals and salts. At the surface, water will pool in the depressions created by slumping. This will reduce the surface runoff of clean water into rivers as pooled water percolates into the groundwater and is contaminated in the process. The damage is irreversible.

Gasification consumes water “in the coal seam and in the immediate surrounding strata” to produce hydrogen. Eskom says aquifers closer to the surface, as well as surface water, will be monitored “to ensure no impact ...” Should monitoring detect an impact, it would of course be too late already.

A second risk involves “contamination of aquifers and water bodies with UCG products”. This is “mitigated” by reducing pressure in the cavity relative to its surrounds. Water then flows into the cavity and is removed “via steel-lined wells” to the surface where it is treated.

This is the equivalent of produced water from an oil well – or a CBM well. It is saturated with hydrocarbons – dangerous volatile organic compounds (VOCs – basically benzene, ethylbenzene, toluene and xylenes or BTEX), polycyclic aromatic compounds (PAHs) and phenols – along with metals and salts. The wastewater and separated sludge is collected into a series of evaporation ponds and tar pits, contributing to air emissions and potentially to surface water contamination. Well-casings, steel-lined or not, have proved a lot less reliable than advertised by the conventional or non-conventional gas industry. This is one path of pollution of groundwater.

Another path is through the direct contamination from the burning cavity and, following closure, from the cavity as it cools. The volatile organics in the wastewater are produced in the cavity and, being very mobile, are likely to escape management below ground just as they do above ground. The smooth flow of groundwater into the cavity and up the well depends on production without interruption or incident – which is highly unlikely.

On closure, the cavity is to be flushed with water or steam, producing more wastewater at the surface but supposedly leaving a ‘clean’ cavity. There are two problems here. First, it may prove more difficult than assumed to completely cut off oxygen and so put the fire out. Second, even with the fire out, the heat



in the cavity and surrounding rocks will result in pyrolysis – burning without fire – and the continued production of hydrocarbon pollutants from coal.

Box 5: Linc Energy – industry leader

In Australia, Linc Energy failed to control the process and gas from the cavity saturated the ground above as well as leaking out of the wells. Government told farmers not to dig any holes deeper than two metres in an ‘excavation exclusion zone’ covering 314 square kilometres. Linc was the supposed industry leader and, in 2014, Exxaro paid it A\$20 million for access to its technology and also agreed a UCG joint venture for sub-Saharan Africa.¹²⁸ By then, the signs of the Australian disaster were evident for anyone who cared to look passed the bombast of Linc’s management. Linc is now facing criminal charges but it is not clear if the case will be heard as the company has gone into liquidation – the final refuge from corporate liability.¹²⁹ Two other Australian UCG projects have ended in disaster. Having first promoted UCG with minimal regulation, the Queensland state government has now banned it.

Regulations governing UCG and CBM are yet to be developed. The Mineral and Petroleum Resources Development Act (MPRDA) Amendment Bill provides for prospecting and mining rights for UCG. The Bill was passed by parliament in 2015 but the president sent it back without signing it into law. The Bill is once more making its way through parliament. Eskom’s original pilot was developed without regulatory approvals. It developed an environmental management plan in 2014 and received a mining right in 2015. It is yet to obtain a water use licence. Eskom says an application cannot be made until the Department of Water Affairs promulgates regulations for UCG.

128 Esmarie Swanepoel, *Exxaro pays Linc A\$20m under UCG agreement*, Mining Weekly, 16th January 2014

129 Richard Guilliat, *Burning Questions*, The Weekend Australian Magazine, June 2016.



5

Of the future

The MEC has shaped South Africa's development for over a century. It has created an energy model based on cheap coal, cheap labour and heavy duty pollution. It is unsustainable economically and is socially and environmentally catastrophic. Government and the corporations at the heart of the MEC are trying to remake and expand this model. But the model is broken. In particular, the electric power system made by building big base-load to supply 'cheap and abundant' power to energy intensive industries is collapsing. The effort to remake it, interacting with the global economic depression, is liable to bring the whole country down. [gWR 2015: 54]

This was the argument in the 2015 groundWork Report which focused on the elite's reckless pursuit of profit in the face of climate catastrophe. It argued that: "The model of development is broken in three fundamental ways: first, growth is failing and will not be restored; second, the MEC – and not just Eskom – is breaking down; and third, the accumulated environmental impacts of this model are destroying the physical basis for its future – as well as for any other future." [2015: 86].

This report has traced the rise and fall of coal through four phases: the subordinate *handlanger*¹³⁰ to gold; the export boom that reshaped the industry from the 1970s; the neo-liberal period coinciding with the political transition; and now an industry in chaotic, uneven decline coinciding with global economic depression. The industry was nursed in violence. It was destructive

130 Afrikaans word meaning handyman, odd-jobber, assistant.



from the beginning and indifferent to what it destroyed. And its destructive power has grown through each phase up to now.

We have detailed the destruction of the biophysical world – in a simpler word, nature – by coal mining. The MEC has created not one, but two acid mine drainage crises – one in coal and one in gold and uranium – and the corporations are now intent on escaping culpability and liability and, in the name of sustainability, looking to profit from cleaning some part of the water they have made dirty.

Profit has also guided the MEC's view of sustainable settlement. Rietspruit's ideal plan came apart at the first hurdle because people left without money at the end of a working life could not afford the rent on the corporate pipedream. But the real story was always about how to offload the human costs of closure onto the workers themselves and, when that didn't work, the corporation abandoned them just as it might abandon a mine. Across the Highveld and back down the migrant routes to the 'sending communities', the economy of the MEC has produced social dislocation on a massive scale.

Profit has, of course, made great wealth. Much of it has been taken offshore. Whether it is to London or Panama, the global centres of capital or its secret nests, and whether it gets there by licit or illicit means, capital is offshore of everywhere, as John Urry observes [2014], not a location but a process of dislocation, of slipping between countries, playing them off against each other and always evading responsibility. Rules are in suspension in the cities of capital, new and old, New York, Doha and Shanghai. The lavish expenditure on vanity skyscrapers is homage to the power of finance capital but also the token of its crisis. The surplus of capital has created the derivative dance of money chasing money; but capital must also find real locations for investment. The skyscraper cities absorb surplus capital which hopes for a return in the dazzle of celebrity culture and the validation of conspicuous consumption.

The mines also provide capital with real locations for investment at the back end of onshore. Through to 2008, and again to 2012 or so, capital poured in and profits were taken out. Since then, investors have been as quick to abandon a mining house as the mining house is to abandon a mineworker. Capital arrives



Of the future

with the promise of wealth and jobs but at the end the money is gone and the wasted land and acid water is left with the people.

Burning coal has produced a large part of the carbon dioxide emissions that are driving climate change. We will come to that in next year's report. Here, it must be emphasised that the destruction on the ground makes for people and environments that are vulnerable to the impacts of climate change. The division that is made between adaptation and mitigation is false. Ending the rule of coal on the Highveld is as necessary to adaptation as it is to mitigation.

In this final chapter we consider what our future may look like under two crucial questions:

- How much damage will the MEC – and its successors in fact if not in title – be allowed to do our environments, our people and our future as it collapses?
- What is the current extent of resistance to this catastrophic coal dynamic and the potential to free ourselves from it?

We will start in a place where mining has barely begun and the ecological system is intact.

Messing with Strategic Water Sources

The Enkangala grassland area forms part of a chain of 21 strategic water sources areas – 8% of South Africa's surface area that provides 50% of its water. These areas are recognised as “strategic national assets that are vital for water security” in the DWS National Water Resources Strategy [DWS 2013: 42]. It was originally defined as a study area for a project of the World Wide Fund for Nature (WWF) and the Council for Scientific and Industrial Research (CSIR). The project aims to conserve the grasslands, secure water production, encourage sustainable livestock farming practices and influence government to demarcate this and other priority water production regions as ‘No Go’ mining zones. The area runs along the top of the Little Drakensberg escarpment, roughly from Harrismith and Warden in the west to Piet Retief



in the east. The Mpumalanga and northern KwaZulu-Natal coal fields underlie the eastern half of it.

This high grassland area has high rainfall and straddles a key watershed with rivers running north and west to join the Vaal and east to the sea. Volksrust is situated on the watershed and the Sandspruit runs to the Vaal. To the north are Amersfoort and the Majuba power station. The Witbankspruit rises close by Majuba and the upper Skulpspruit flows passed the Majuba UCG site and north to Amersfoort through Kinetico's gas lands.

The Buffalo flows south and east from Volksrust and its major source is in the Wakkerstroom wetlands. It is the biggest of the Thukela's tributaries. The Pongola rises to the east of Wakkerstroom and flows down to Maputaland. The Assegai has its source a little to the north of the Pongola and joins the Usutu which flows through Swaziland and then joins the Pongola at the border of South Africa and Mozambique and becomes the Maputo River which flows north to Maputo Bay. Water is transferred from the Zaaihoek Dam on the upper Buffalo and the Heyshope Dam on the Assegai to the Vaal catchment to supply clean water to the Vaal Dam and the power stations and industries of the Highveld.

Most of these upper tributaries "are in a near pristine condition", according to a WWF report on Coal and Water Futures in South Africa [2011: 11], and are designated as freshwater ecosystem priority areas (FEPAs). There are several distinct grassland biomes with a diversity of grasses and herbs as well as a variety of wetlands which act both to store and filter water. In drought years, the water stores are vital to sustaining stream flow. Patches of natural forest dress the sides of steep ravines. The major activity in the area is livestock farming – mainly cattle – which is "the most sustainable and suitable land use practice for the area" [15]. Nevertheless, these eco-systems are fragile as well as having great value and, in January 2014, an area east of Wakkerstroom was declared the Mabola Protected Environment.

The area is littered with applications for prospecting rights but there are as yet few mines. One of them is the Loskop mine located within Mabola on a



Of the future

farm belonging to 'Oubaas' Malan.¹³¹ He says his father held the mining right but sold it in the 1980s. The mine was opened and worked for a few years but soon closed down. The mining right, however, was sold on and came into the possession of XDSL, a company established in 2005. In "about 2012", Malan found XDSL at his gate and did a deal on the rent for the company's use of surface land and farm roads. He has not been paid. Similarly, he says, people in the nearby village of Dirkiesdorp were promised jobs. They have not been employed.

The mine is a mess. It has an open cast section on a hillside with horizontal shafts taking it underground. Mining spoil has been dumped across several hectares of land and in one area is piled against a ravine forest. Coal fines and dust cover large areas, some areas are eroded down to rock with run-off beginning to cause erosion off site, and land disturbed by the original mine is infested with wattle. The exposed coal seam is rich in sulphur and pyrites. This area is on a small watershed which is the source of two streams. One stream runs east to join the Mabola River and the other runs west to the Mawandlane. Downstream, they all come together in the Assegai. Coal debris and dust washed from the mine are visible on the riverbeds of both streams. Malan tells us that local people complain that they can no longer use the water for drinking or cooking.

Loskop is a small mine with production expected to reach 360 000 t/y for a mere five years. On the other side of the Mawandlane sub-catchment from Loskop is Yzermyn, a much larger mining project of Atha-Africa Ventures, a subsidiary of the Atha Group from Kolkata, India. This too falls within the Mabola Protected Environment area but, in January 2015, Atha announced that the DMR had given it a mining licence for an area covering 12 farms and, in June 2016, the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) granted an environmental authorisation for activities associated with the mine.

The DMR's decision went against a rare recommendation of its own officials to refuse Atha's mining right application. The reasons for refusal included

131 Interview with Oubaas Malan, Wakkerstroom, 26 April 2016.



the threat to “irreplaceable sites” and “highly threatened species” within the Wakkerstroom wetland grassland area, and the impact on wetlands and rivers and hence on the headwaters of critical catchments. The recommendation also noted that the mine would fall within the Mabola Protected Environment area, that the Mpumalanga Tourism and Parks Agency (MTPA) objected to any application being accepted in a protected environment area, and that DWS did not support the application. It concluded that measures to address the environmental impacts, proposed in the Environmental Management Plan, “cannot be considered reliable to contain or remedy the cause of pollution or degradation ...” The application did not therefore meet the conditions of the MPRDA.¹³²

This recommendation was overturned by the DMR’s Director General in a memorandum that pronounced that a mining right should be given but that it must exclude all wetlands and Atha should “formulate proper mitigation measures”.¹³³ This was clearly ridiculous as the original recommendation had already shown that the wetlands could not be avoided and mitigation was not possible. Indeed, as CER records, when Atha received the mining right it immediately requested the removal of these conditions because “it would be impossible to mine and observe those conditions” [CER 2016: 28]. In a show of total disregard for the environment, the Minister agreed.

This is a monumentally stupid decision. Moreover, the sequence of events suggests that it was predetermined and probably ordered from above. The Director General therefore produced a fig leaf only for it to be removed. The Minister in his turn then pretended that decisions on the environmental matters were the responsibility of the DWS and DEA. This is particularly deceitful as the DMR has fought hard to keep control of environmental authorisations for mining. For all other industries, environmental authorisations fall under the DEA. A coalition of civil society organisations is taking the Atha decision on appeal to the courts.

132 Mpumalanga Region, Record of Decision regarding the environmental management programme: Applicant: Atha-Africa Ventures Pty, Ltd. 23 July 2014.

133 Memorandum signed by the Director General: Mineral Resources. 19 September 2014.



Of the future

In our view, there are two possible explanations for the DMR decision. The first is corruption. Either someone was paid off or someone was to profit from the mine. At a public meeting in Wakkerstroom, “Atha-Africa was represented by its senior vice-president, Praveer Tripathi, and Sizwe Zuma,” according to Fiona Mcleod and Franz Fuls. “In the corridors of power in the provincial Mpumalanga government, Zuma is rumoured to be ‘part of the Zuma clan’ in KwaZulu-Natal.” Zuma refused to answer questions on the matter and Tripathi said he represented a trust which was Atha-Africa’s BEE partner but refused to name the trust.¹³⁴ Sizwe Zuma has since been identified as the President’s nephew. It is also reported that the former provincial Member of the Executive Council for environment, Pinky Phosa, had refused to authorise the mine. DARDLEA’s environmental authorisation was forthcoming only after she was ‘redeployed’ to parliament.¹³⁵

The second explanation is that the department refuses to allow that any mineral deposit should be ‘sterilised’ on environmental grounds and therefore set out to bulldoze the Mabola Protected Environment. Mabola was declared in terms of the Protected Areas Act (NEMPAA) and is part of both the National and the Mpumalanga Protected Areas Expansion Strategy. The Act gives the environmental authorities some oversight of projects proposed in sensitive areas but does not give them power to prohibit them.

The power to prohibit mining in sensitive areas – or in areas of high agricultural potential – is reserved for the Minister of Mineral Resources under section 49 of the MPRDA. CER’s Zero Hour report documents how, in response to the concerns raised by other government departments or civil society, the DMR has repeatedly stated that it would use this power, including at Wakkerstroom, and even that it had done so [2016: 19ff]. But this is clearly part of a stonewalling strategy and the Minister has not made a single ‘section 49’ declaration. This approach was maintained even following a formal Cabinet level agreement in 2010 – the so-called ‘Outcome 10 Agreement’ – which put mining on a par with “other policy imperatives such as biodiversity protection, food security [and]

134 Fiona Mcleod and Franz Fuls, *Mine lays claim to Mpumalanga water catchment area*, Mail & Guardian, 30 January 2015.

135 Sizwe Sama Yende, *Molwea to decide on Zuma mine*, City Press, 9 October 2016.



water security” and set targets for declaring no-go areas [20]. The targets have now been whittled down to one which is yet to be acted on. Instead, CER reports,

... the DEA is now considering ways in which prospecting and mining in declared protected areas, and other sensitive and important areas, should be approached. This is also consistent with indications in various cases ... that environment authorities are buckling under the pressure of the DMR and the mining industry to accommodate prospecting and mining, even in areas that environment authorities themselves have given legal protection to because of their sensitivity and importance. [21]

It is widely observed that the DMR’s mandate to protect the environment is in direct conflict with its mandate to promote mining. The history recounted above, however, makes clear that the DMR kept hold of the environmental mandate precisely to subordinate it to the interests of mining at whatever cost. These two explanations are neither mutually dependent nor mutually exclusive and the combination of corruption and irresponsible arrogance would create a considerable negative synergy.

A hundred years ago, the upper Olifants also produced pristine waters. The Wakkerstroom district now is something like the Olifants then. The Olifants now is a ruined catchment. This is the future of Wakkerstroom if the DMR is able to impose its agenda. The Wakkerstroom district coal resource is not of the same scale as the Witbank resource but much of the coal is high quality anthracite and coking coal used in metal smelting and sold at a premium to ‘thermal’ coal. Further, as the central coal fields to the north are depleted and the coal industry fragments, there is an ever growing crowd of small miners looking for a quick buck.

If the DMR succeeds at Yzermyn, a stream of mining right applications can be expected. Indeed, the DMR has already peppered the area with rights. Between Volksrust and the Heyshope Dam, the Oxpeckers Mine Alert site shows over



Of the future

100.¹³⁶ Most are prospecting rights but there are also some mining rights in play as at Loskop. The rights holders are either junior miners or perhaps speculators. They include the likes of Tegeta with a prospecting right a little downstream from XDSL. Tegeta has given a master-class in irresponsible mining and sharp business at its Brakfontein mine near Delmas. It has short changed contractors and workers, blasted through environmental and safety regulations, destroyed wetlands and supplied substandard product.¹³⁷ DMR has not revoked its mining right at Brakfontein nor hesitated to give it new mining rights elsewhere despite evident violations of the MPRDA.

Tegeta is not and will not be alone. 'Responsible mining' is perhaps always a contradiction in terms and this will be accentuated as the coal juniors – more piranha than minnow – jostle for profit from the last crumbs of coal. Most will be short of capital and ready to cut corners to meet production targets dictated by business imperatives such as filling supply contracts, meeting interest payments and maximising profits for investors – particularly when those investors offer protection from regulatory enforcement.

Nevertheless, comments Matthews Hlabane, big coal is often just outside the frame, letting the juniors take the flack for destroying the environment while retaining control of export markets and setting price and production terms that compel corner cutting. He argues that the sale of Anglo, BHP and Glencore mines should be challenged. They should not be allowed to leave without giving guarantees to cover the environmental liabilities. The transnationals run to evade costs and they start preparing their exit five years ahead. They sell mines with their liabilities to BEE companies or to the Guptas but they often retain the rights to market the coal and so keep the most profitable part of the value chain. It must be added, however, that the Guptas' attempt to flip Optimum's RBCT export rights shows a focus on immediate profit without regard to any long term strategy. In a dying industry, there is no long term.

Whoever is left holding the mines, whether coal major or junior, is equally likely to abandon them when the coal runs out or the price collapses. As CER

136 <https://mine-alert.oxpeckers.org/#/map>

137 Sipho Kings, *Workers leak details of potentially lethal conditions at Guptas' Tegeta coal mine*, Mail & Guardian, 15 September 2016.



comments, “Frequently companies declare bankruptcy or deregister once the profitable extraction years come to an end, and, in the absence of secured, adequate financial provision held by the State, environmental liabilities become the burden of the taxpayer” [2016: 33].

The DMR is responsible for ensuring companies make adequate financial provision for mine closure but does not do so. It is equally reluctant to issue closure certificates because, as Henk Coetzee observes, it is then liable for all further impacts.¹³⁸ The effect is that the closure process is left in suspension, the company absconds and DMR refuses responsibility for the ruin left in the wake of its decisions. Countrywide, there are now over 6 000 abandoned mines of which 1 730 are ‘high risk’. That evidently means something different to ‘high priority’ since, according to DMR statistics, “Mpumalanga province has the second highest number of ‘high priority’ D&O [derelict and obsolete] mines nationwide (41), after Limpopo (44)” [CER 2016: 33]. DMR has rehabilitated very few.

That the Wakkerstroom environment remains intact and beautiful says nothing about relations on the land or the history of dispossession. Driefontein near the Heyshope Dam and Daggakraal near Amersfoort were famous sites of struggle against apartheid era ‘black spot’ removals. Both were on farms bought freehold by groups of black farmers in the early 20th Century. As elsewhere in South Africa, they became more crowded as people fled from the harsh conditions on white farms, or were pushed out as farms modernised, and found refuge as tenants in the black freehold areas. These communities resisted the assault of the state at great cost. Saul Mkhize, a Driefontein community leader, was murdered in 1983 by a white policeman who was then acquitted by the courts. Two years later, the government abandoned the effort to remove them.

Some farm workers with a history of farming under tenant rights have benefited from a land redistribution programme. The Bambanani Community Property Association has entered into a Biodiversity Agreement with the Land Reform and Biodiversity Stewardship Programme spearheaded by

¹³⁸ Interview, 11 May 2016.



Of the future

the South African National Biodiversity Institute (SANBI) in partnership with the Department of Land Reform and Rural Development and the DEA. It is a formalised partnership between a landowner or community and the conservation authority to improve the management of specific biodiversity features or elements of the landscape. Bambanani elder Amos Mnisi says they are successfully raising cattle. How these farms will develop is still to be seen. They are short of capital and there is some tension between an ideal of egalitarian inclusivity and a desire to succeed as commercial farmers. They are sure, however, that they do not want mining in the area because it will destroy land and water and hence the very possibility of an independent future.

In many areas of the Highveld, that possibility is already foreclosed. Land and water are ruined and will never be restored to a condition where they can support people's livelihoods. And the places where it is possible are being eaten away as mining advances across the land and the dark shadow of its impacts falls across a much wider and expanding area. As long as mines are working, they need to manage AMD in some way – even if poorly. When they are closed or are abandoned, the acid water collects in pits or seeps out from under cosmetically rehabilitated land.

In the DMR, no-one is allowed to mention the decline of coal, observes a government geologist. The implication is that the department is in denial and unable to deal rationally with a process which is already underway. The coal fields of the Highveld have been in decline for a decade or more now and, apart from the logistical costs of a remote supply for the power stations, the Waterberg is scarcely a substitute. The DMR thinks one mine at a time: a mining right here, a closure certificate there. It avoids thinking about cumulative impacts or about how to close an entire mining region or sector. This will accelerate rather than delay the decline of coal. But it will also multiply the failures of individual mine closures. What will be left at the end will be more than just a collection of abandoned mines. It will be an abandoned mining region. And the whole catastrophe will be greater than the sum of its parts.



Rebellions against coal

Communities are rising against coal. There are many spontaneous outbursts against existing mines with communities locking mine gates and refusing them the right to continue mining. The rebellions against mining in Arbor, in Carolina and in Belfast are not isolated instances. In the words of a song often heard at meetings of HEJN: “*asifune agenda ya macapitalist*” (we don’t want the capitalists’ agenda). In its founding statement, HEJN declared:

It is the communities living next to and in between coal mines and coal fired power stations who bear the burden of the negative impacts of coal. On the Mpumalanga Highveld, for example, people live with more than 120 coal mines and twelve of the biggest coal fired power stations in the world clustered closely together. Many more mines are abandoned. Some of the mines are burning underground, such as Transvaal and Delagoa Bay, in eMalahleni. Similar problems are experienced on a national level: in the Vaal and Sasolburg, in Kwazulu-Natal. In the Waterberg people expect to be in the same position as coal fired power stations have been built without sulphur removing equipment ... The energy system is in crisis in South Africa. Coal is exploited cheaply, to produce big power stations for big energy for big industry, while devastating the community and the environment and making energy unaffordable for the poor. Corporations reap profits while poor people suffer the deadly consequences. We have come to the conclusions that coal kills, and that therefore we need to kill coal.

HEJN includes activists from Highveld towns and villages including eMalahleni, Middelburg, Carolina, Ermelo, Arbor, Delmas, Schoongezicht and Wonderfontein. Mining Affected Communities United in Action (MACUA) is a country-wide network, including other Mpumalanga organisations resisting coal such as the Southern African Green Revolutionary Council led by Hlabane. WoMin brings together women in communities affected by mining. Earthlife Africa works in Gauteng and the Waterberg. The Vaal Environmental Justice Alliance fights renewed coal expansion on the Vaal. These organisations work



Of the future

together. The solidarity shown following the 2012 Marikana massacre and in response to the assassination of Sokhosiphi Rhadebe shows how wide and quickly this network has grown. The movement is supported by a number of NGOs, including groundWork, ActionAid, Greenpeace and the WWF, legal clinics and other formations such as the Right to Know Campaign. It organises across the borders of Southern Africa and is networked into international campaigns confronting coal on the grounds of local pollution, human rights abuses, climate change and corruption.

Community activists can now call on legal backup to protect them against arbitrary arrest by mine security and by the state. The fight is being picked up on many fronts: the mine gates, the courts, environmental management plans and impact assessments, energy planning and bureaucratic stalling, legislation and policy in parliament and in departmental processes. The voices of activists are heard more clearly in public opinion, both in the mainstream press and in blogs written by community monitors. In July 2016 more than a hundred community activists, lawyers, researchers and funders came together to consider future strategies to contain and stop coal mining. This is only one of such meetings that are becoming increasingly widespread and inclusive.

The conference started with a play by the Mpumalanga Youth Against Climate Change. It was an extraordinary fusion of political and ecological consciousness, and a spirited performance in which the pain of the river, of the environment, of people's bodies broken by pollution, poverty and badly paid work was surpassed by the artistic exuberance of youth. The play gave the abused Olifants River the voice of a poet: "I am the stream, the veins of the Highveld", a river "on whose banks arrogant waste is to be discarded". It reflected a sophisticated understanding of the politics of the day, of politicians who say, "I live among you, but my actions are above you", and the misery of a pollution victim: "I am a walking grave carrying dry bones" and "the (polluted) stream is surrounding me with different branded packages of disease ...".

What are the crucial tasks for the environmental justice movement against coal mining? The first is to continue building a broad and inclusive movement, bringing together affected communities and activists for local, national and



international solidarity.¹³⁹ The second is to expand information gathering, research and internal and external communication. At the same time, activists need to pursue a focused understanding of what drives coal mining, namely the capitalist imperative to accumulate and an energy hungry industrial system that makes its money by externalising its costs. Activists also need to pursue a detailed understanding of the dynamics of the coal industry throughout the whole chain from prospecting to mining to trade and 'environmental management', starting with the recognition and strengthening of local knowledge in fenceline communities.

Regulation remains an important, if inherently limited, arena of contestation. The function of regulation is to (often literally) permit mining, while 'balancing its benefits' with its threats to people and their environments. It does not make sense for people to exempt the destructive coal mining sector from effective environmental regulation and scrutiny. The damage it visits on the environment and the people is far too great. To stop the damage, people are defending and developing the tools of democracy: of freedom of speech, of access to information, of administrative justice, of the right to organise. This opens the space for people and closes the space in which reckless mining can thrive. It is important to insist that regulators actually protect the resources they are responsible for, resources that belong to the people and of which the government and especially the regulators are only the custodians – it is their paid jobs to look after them and they were not handed the resources as a reward for being successful politicians.

Forces are building for a decisive shift in public opinion away from supporting coal, or lamely assuming that 'there is no alternative'. Such a shift is based on building a solid understanding of coal mining impacts, its role in climate change and the alternatives of renewables.

It is obvious that the resistance to coal comes from a much broader base than community and environmental activists. Biodiversity conservationists and agricultural planners, including those in the state, are acting on their concerns

139 Coalwire has created an excellent international resource for the movement, connecting grassroots and other initiatives around the world. See <http://endcoal.org/category/coalwire/>



Of the future

of a threat to the resources that they are responsible for. They are weaving a web of knowledge, planning and permission processes with which they hope to tame the beasts that upturn and spoil the earth on a large scale. The Mabola case showed that, even within the DMR, there are officials who recognise that there are circumstances in which mining should not have an absolute priority. Conservation, water and agricultural officials grumble against the yoke of mining and, in some cases, openly rebel against their seniors and against politicians. Health care workers are also being drawn into the work of resistance as they deal with the disease burden from coal burnt in homes and industry.

This broadening of resistance, however, has its limitations. Preventing mining, and coal mining in particular, in critical watersheds, sensitive environments and good arable farm land is self-evidently necessary. But local environmental justice groups insist there should be no new coal mines anywhere. In the context of climate change, the whole earth is a sensitive environment. More locally, the impacts of mining are not contained at the mine but spill out into the wider environment. And finally, people are living there. In 2013, a HEJN delegation participated in the People's Climate Camp in Durban. The camp's declaration said: "The mining corporations ... devour ever more land. They close in on our settlements from all sides. They fill the air with coal dust. They leave a wasteland behind." The camp said no to more coal mines and to unconventional methods of extraction such as fracking or underground coal gasification

Swimming with the tide

Activists are swimming with the tide. We are fighting a winnable war. The future of coal mining is clearly questionable. Burning coal is the single biggest cause of climate change, which is now playing out (warmest years on record, floods, droughts) and, however slow the international response, there is a narrowing of space for coal to thrive. Coal markets are shrinking and will disappear in time. At present, the industry is being propped up by a political elite looking for quick profit or the means to distribute patronage. Removing that support is a political job.



Even industry analysts see coal going into terminal decline. Dave Collins argues that, in South Africa, Eskom guarantees a market for coal over the next two or three decades but it is a diminishing market. The costs of renewables are coming down well below the cost of coal-fired power and, with added impetus from carbon taxes, the market will finally force change. The big mining houses can see the writing on the wall and are looking at their exit strategies.

Renewables, in this view, are disruptive technologies. They combine with other new technologies to change the logic of how the energy system works. Medupi and Kusile, the last big coal plants, reflect the thinking that goes with a centralised economy where you must have base load. But base load is inflexible and the world is moving with renewables to decentralised and flexible sources of energy. In the same vein, Pretorius argues that, with breakthroughs in energy storage technologies on the way, the days of coal are numbered.

It is worth noting that South Africa already has 2 600 MW pumped storage capacity because of the inflexibility of base load. The plants have to run day and night irrespective of demand, so they are used to pump water up hill at night ready for release during peak demand times. Molefe complains that solar energy produces unneeded power during the day. This begs the question of which power is unneeded and which should be used to pump up the storage dams: surplus base load at night or solar in the day? Clearly, the opportunity to start closing down coal fired plants is already here, albeit within a still centralised system.

The limits and possibilities of renewable energy systems remains open for debate – and we will pick it up again next year. The issue, however, is not whether renewables will produce power as and when it is wanted for whatever purpose, but whether emissions will be reduced in time to avert catastrophic – as opposed to merely dangerous – climate change.

Life after coal

Assuming that the battle for Mabola is won, then the struggle for environmental justice in the Wakkerstroom area is about relations between people on the land. For the rest of the Highveld, stopping the advance of coal mines across the land is the first necessity. Thereafter, there must be a work of restoration,



Of the future

of healing the land in so far as that is possible, and preventing or isolating acid mine drainage. In Germany, coal mining is being closed down across a whole mining region. This has given rise to a debate about 'post-mining landscapes' discussing how to close the mines to stop further damage and what to do with the damaged land. And doing the work has extended and transformed employment for the mineworkers.

There is no post-mining vision for the Highveld, as May Hermanus of the CSIR observes. One reason is that no funding is made available for such research. Indeed, as noted above, the DMR will not hear of it. But this is a debate that now needs to take place with full participation of all the people of the Highveld. What does life after coal look like? What world can the people make for themselves where they can live well with the earth and with each other?

The debate needs to be informed by a detailed understanding of what is possible on what land because every old mine site will be different. Thus it needs to call in soil scientists, hydrologists, geologists and other experts.

What to do with the old mining sites is one part of the debate. A hundred years of mining on the Highveld has impoverished the majority of people. The tragedy of young people risking their lives to work the zama-zama mines while also contributing to the destruction of the environment is driven by the want of other means of livelihood. It is a product of the violence of an economic system that puts profits before people. Rehabilitation of mined lands will create jobs, mostly for ex-mineworkers, for a decade or more. But this will not result in full employment any more than mining does.

There needs to be another approach that does not hold up the mirage of economic growth as the condition on which people will be 'drawn' out of poverty. Over the last 15 years, the groundWork Reports have documented how development shaped by economic growth has not merely failed to provide a better life for all but has actively reproduced poverty and environmental destruction. We have also documented how and why growth is failing. The promises of economic growth are no better than the promises made by mining corporations when they want people to support a new project.



Another starting point would be to ask what people need to live well with each other and with the earth. How can people meet their physical needs for food, energy and clean water without leaving waste to contaminate the water downstream? How can they meet their social needs for affection and fun? And how will they develop their understanding so that they can participate fully in the making of the life after coal, in understanding what mining has done to their environment and in creating new possibilities founded on a love of life.

Such a debate requires dialogue, with its twin requirements of mutual respect and open access to knowledge, from the worst of what has been done to this landscape and the people who live in it, to the best of what can be done to heal and renew it. That knowledge can no longer be hidden away or used cynically to seek uninformed consent. This debate also requires social solidarity, as we face the shocks of climate change alternatively scorching the earth and flooding and recontaminating the toxic landscape left to us by a reckless mining industry.

Finally, it must be emphasised that a debate of this sort is a way of opening a path to a society in which people are actively and consciously making the decisions that shape their collective future. It is a path of struggle. It does not promise a smooth process with a certain outcome. The possibilities that emerge will come from the people and what they learn along the way.

Box 6: Building healthy soil

A new way of living with nature and each other starts with healthy soil on which a new, sustainable and just food system can be built. In this report we have pointed out how mining literally undermines and kills the soil along with food security. We have also pointed out how the national food system, dominated by industrial production and capitalist food distribution through the markets, has utterly failed to keep people from going hungry. It has also made a major contribution to climate change: “until the 1950s, more carbon was emitted into the atmosphere from land use change and soil cultivation than from fossil fuel combustion” [Lal, 2004: 4]. Lal quotes estimates that



between 1850 and 1998, land use change emissions were equal to about 50% of the emissions from fossil fuels and cement production.

What happened is that the natural ability of the soil to absorb carbon from the air and hold it in the soil was destroyed by deep tilling, mono cropping and chemicals. In healthy soil, plants, through photosynthesis, take up carbon dioxide from the atmosphere. When they die, the carbon stays in the ground with the plant material, becoming part of “soil organic matter”, a complex mix of living and mineral material responsible for soil structure.

Farming with the health of the soil in mind, variously called agro-ecology, regenerative or restorative agriculture, permaculture and organic agriculture, consists of practices based on returning organic materials to the soil. Such practices include composting, no tillage, crop rotation and ‘integrated pest management’. None of this is new. Neither is the knowledge that plants draw carbon dioxide out of the air new. What is new is the argument that healthy soil practices can contribute to reducing carbon in the air. Scientists warn that the proportion of carbon that can be sequestered in this way, while sizeable, will never be enough to take the place of emissions reduction. Rather, it should be pursued for its other benefits: localised food production and food security, ecosystem health, clean water and reduced chemical use.

To achieve this, it is urgent that as much of the Mpumalanga Highveld’s water, soil and biodiversity is saved as is humanly possible, that mines are held accountable for what they destroy, and that land is distributed so that all who need it can access it. It is also urgent to shift the energy and knowledge currently expended on coal mining to rebuilding the Highveld so that it can become a liveable, productive place.

It will mean challenging and replacing the industrial food system. The battle to draw the promises of agro-ecology into false climate solutions has already begun, as Theresa Anderson of ActionAid warns. Calling it ‘Climate Smart Agriculture’, food corporates are trying to present the soil’s carbon sequestering properties as dependent on genetically modified seeds and chemical inputs, and perfectly suited to carbon credit systems [2013].



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The eastern Highveld is fertile and well watered. It is the source of several major rivers, including the Vaal, and a critical food producing region. Over a century of mining and burning coal has damaged large parts of the Highveld. The flow of water is interrupted and the land is destroyed by underground and open cast coal mining. The land is also coated in coal dust from blasting. Groundwater and rivers are contaminated by acid mine drainage to the point that whole catchments are turning into wastelands. This is made worse by heavily polluted industrial effluent and municipal sewage leaks.

Environmental ruin has been accompanied by the impoverishment of the people. Over half of the people living in South Africa are poor and the poverty rate is amplified on the Highveld. More than half the people are also without work and it is a constant refrain that those born in the area do not pass the medical tests for work in neighbouring mines and factories. For the most part then, workers are brought into the area from elsewhere. This adds a further twist to already harsh gender and social relations and the rate of local unemployment.

The groundWork Report will document the destruction of the Highveld in two parts: gWR 2016 focuses on mining coal and gWR 2017 will focus on burning it for power generation and industry. It looks at the ways in which environmental injustice is imposed on people but also at how people across the Highveld are resisting. This report celebrates that resistance and asks what people need to live well with each other and with the earth. In a context where irresponsible government has buried its head in a discard coal dump, it looks forward to the people leading a debate on life after coal.



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