



FULL DISCLOSURE

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The Truth about Mpumalanga Coal Mines Failure to Comply with their Water Use Licences



Centre for
Environmental Rights
Advancing Environmental Rights in South Africa

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Foreword

There is a long line of wisdom holding that one can judge a nation by how it treats those who are voiceless, powerless, and apparently disposable. Nelson Mandela, the first President of a democratic South Africa, is famously credited with saying that no one truly knows a nation until one has been inside its jails. Extending this line of thinking, we must ask: What could be said about South Africans, and the governments we have voted into place, when one looks at the state of the rivers that course through our sparsely-watered land? And in a land that is already experiencing the pressures of climate change?

Full Disclosure, a report on water use compliance at Mpumalanga coal mines, patiently assembled by the Centre for Environmental Rights, presents a deeply worrying picture. The regulatory system – centered on the National Government as the public trustee of the nation’s water resources – appears to have disintegrated. Companies and independent auditors, pursuing their own narrower spectrum of interests, are ostensibly complicit in and taking advantage of this regulatory breakdown.

In national and international fora, South African environmental lawyers have often spoken with pride about the environmental and natural resources laws enacted since 1994. The National Water Act 36 of 1998, for example, nobly heralds sustainability and equity as the central guiding principles for the protection, use, development, conservation, management and control of our water resources. It institutes the National Government, acting through the Minister responsible for water, as the public trustee of water resources. With the power to regulate the use, flow and control of all water in the Republic, the Minister responsible for water is vested with great responsibility: He or she is *ultimately* responsible to ensure that water is allocated equitably and used beneficially in the public interest, while promoting environmental values.

What would our past Ministers of water say, as we now seek to tighten the ‘accountability chain’ (National Development Plan, p.50)? Dr Kader Asmal (1994 – 1999), Ronnie Kasrils (1999 – 2004), Buyelwa Sonjica (2004 – 2006 and 2009 – 2010), Lindiwe Henricks (2006 – 2009), Edna Molewa (2010 – 2014), and Nomvula Mokonyane (2014 – 2018)?

The idea of public trusteeship has been repeated in other South African natural resources legislation: The Mineral and Petroleum Resources Development Act, 2002, and the National Environmental Management: Biodiversity Act, 2004. The courts have not yet considered the normative scope of this concept – to whom it applies, and the content of the State’s duties – although it seems clear that trusteeship invokes an ‘ethics of stewardship’ as Elmarie van der Schyff has argued (‘Unpacking the public trust doctrine: A journey into foreign territory’ (2010) *Potchefstroom Electronic Law Journal* 41).

Further, in a South African context, public trusteeship cannot be considered outside of a human rights frame. In South Africa, **section 24** of the Constitution states that everyone has the right to an environment not harmful to health or well-being, and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:

- a) prevent pollution and ecological degradation;
- b) promote conservation; and
- c) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

Giving effect to section 24, through the wise management of raw water sources, will also promote the right of access to ‘sufficient’ water in section 27(1)(b) of the Constitution, and the rights to equality and dignity, protected in sections 9 and 10, respectively. A uniquely South African understanding of public trusteeship should be infused with the obligations associated

with each of these rights. The failings outlined in *Full Disclosure* are therefore not merely a case of non-compliance with a myriad of statutory obligations, but a potential human rights violation.

In interpreting the Bill of Rights, South African courts must consider international law. In this regard, South Africa ratified the International Covenant on Economic, Social and Cultural Rights on 12 January 2015. Although this treaty does not contain a self-standing right to water, General Comment No. 15 (2002) has outlined the freedoms, entitlements and State obligations associated with this right. It is clear that State parties have an obligation to protect the right to water by adopting necessary *and effective* measures to restrain third parties from polluting and inequitably extracting from water resources. States should also adopt comprehensive and integrated strategies and programmes to ensure that there is sufficient and safe water for present *and future* generations. If the measures it has taken to protect water resources fail, for example, a State could be called upon to fulfil the right to water by reducing and eliminating the contamination of watersheds and water-related ecosystems. This has already manifested in South Africa, where the State has had to use public money to deal with acid mine drainage on the Witwatersrand goldfields, and in the town of Carolina where coal mining contributed to the contamination of a drinking water resource.

The detailed findings and recommendations in *Full Disclosure* therefore merit serious attention – from the Ministry itself and the companies and auditors concerned, to Cabinet, Parliament and its oversight committees, the judiciary, the South African Human Rights Commission, and the public at large. Let us heed the clear warning this report sounds.

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Executive Summary

“Cultures in all parts of the world acknowledge the importance of water. Water is life. Without it, nothing organic grows. Human beings need water to drink, to cook, to wash and to grow our food. Without it, we will die.” –

Mazibuko and Others v City of Johannesburg and Others [2009] ZACC 28)

An assessment of the compliance of eight large coal mining operations in Mpumalanga with their water use licences paints a dismal picture: gross violations and water pollution by the operators, as well as massive failures by the Department of Water & Sanitation and supposedly independent auditors. For these operations, it appears that the regulatory system - from issuance of a water use licence to accountability for non-compliance - has effectively disintegrated. Moreover, instead of ensuring the protection of water resources, companies and independent auditors are complicit in taking advantage of the regulatory breakdown.

The pollution of South Africa’s precious water resources occurs on a particularly egregious scale in areas with high levels of mining activity. The mining of coal is particularly harmful, with acid mine drainage from coal mines polluting surface and groundwater with acid, salts and metals. This, in turn, affects human health, livestock, crop production and aquatic ecosystems.

On the Mpumalanga Highveld, coal mining has had a devastating impact on the Olifants River Catchment. Water use in that catchment has increased dramatically in recent years due to extraction of coal for electricity production, mining of a variety of other minerals, large-scale irrigation schemes for agriculture, and urban development. This, in turn, has had considerable negative impacts on human health, stemming from water contamination, water shortages, and pollution of air and land. In particular, the Upper Olifants Catchment is characterised by a high density of active and abandoned coal mines, coal fired power stations and acid mine water discharge sites.

The rivers in the Upper Olifants Catchment drain into the Loskop Dam, which is the receiving body of the accumulated impact of coal mining and coal power generation in the Upper Olifants. This concentration of over 650 active and abandoned mines and associated acid mine drainage and mining effluent, alongside eutrophication from waste water treatment facilities (Ashton & Dabrowski, 2011), has resulted in severe degradation of water quality, including groundwater.

The 2013 National Water Resources Strategy published by the DWS identified the Olifants Catchment as “one of South Africa’s most stressed catchments in terms of both water quantity and water quality.” Despite comprehensive research and damning reports about the impacts of coal mining on the Olifants Catchment and the recognition of the threat coal mining poses to water resources in the catchment, the Department of Water and Sanitation (DWS) takes little or no action to stop the pollution, and to hold polluting mining companies responsible. Moreover, given that the DWS has never published its own report on the results of its compliance monitoring and enforcement activities, and that the DWS does not force companies to publish compliance data themselves, it is usually very difficult for the public and affected communities to assess whether mining companies operating in the catchment are in fact complying with the conditions of their water use licences.

What we do know, however, is that mining companies are required by law to obtain and comply with the conditions of a water use licence, and that non-compliance with those conditions is a criminal offence and may lead to the suspension of that water use licence. Monitoring and enforcement of compliance with water use licence conditions, or the absence thereof, is therefore vital to understanding why pollution prevention and control has gone so horribly wrong in the Olifants River Catchment.

This project evaluated eight coal mining companies in the Olifants and Wilge Catchment Areas, questioning the following:

- How the monitoring and independent auditing of compliance with water use licences are undertaken;
- Whether licence holders in fact comply with the conditions of their water use licences; and
- What enforcement action was taken in circumstances where non-compliance was identified.

First, we selected 13 large coal mining operations in the Olifants and Wilge River Catchment areas for assessment.

Second, we spent several months collecting copies of water use licences and independent audit reports for the various operations by submitting applications to the DWS under the Promotion of Access to Information Act, 2000. We also requested additional information from the licence holders themselves, like water quality data. Water use licences issued by the DWS contain a standard requirement for a compliance audit to be undertaken by an independent auditor, and for the results of that audit to be reported to the DWS. Since there seemed to be no compliance monitoring reports produced by the DWS itself, the independent audit reports should, in theory, give a clear picture of a licence holder's compliance with their water use licences.

Third, we reviewed the licence conditions and the reports produced by independent auditors on compliance with the licence conditions in respect of the eight coal mining operations. The external auditors who prepared the audit reports for the eight companies in our sample, are:

- Kongiwe Environmental (Tweefontein and Goedgevonden)
- Letsolo Water and Environmental Services (Manungu)
- GCS Water and Environmental Consultants (Leeuwpan)
- NTC Group (Khutala)
- Alta van Dyk Environmental Consultants (Vanggatfontein)
- Shangoni Management Services (Isibonelo)
- Headwaters Water and Environmental Consultants (Kangala)

Fourth, we presented the eight companies with the results of our findings and conclusions in relation to the mining operations under their control, and requested comment from them. With the exception of Glencore Operations SA (Pty) Ltd who refused to provide their water quality data, all licence holders in our assessment sample co-operated in a satisfactory manner and granted access to most of the requested information.

The eight coal mining operations for which both water use licences and independent audit reports could be obtained, and which were therefore assessed for this report, are:

- The Tweefontein South (at the time of assessment, owned by Glencore Operations South Africa (Pty) Ltd)
- Manungu Colliery (Tshedza Mining Resources (Pty) Ltd)
- Leeuwpan Coal Mine (Exxaro Resources Limited)
- Khutala Colliery (South32 SA Coal Holdings (Pty) Ltd)
- Vanggatfontein Colliery (Wescoal Mining (Pty) Ltd)
- Isibonelo Colliery (Anglo American plc)
- Goedgevonden Colliery (Glencore Operations South Africa (Pty) Ltd)
- Kangala Colliery (Universal Coal Development 1 (RF) (Pty) Ltd)

We were unable to obtain audit reports for five other operations from the DWS, as the DWS had not received these from the companies in question. These operations were therefore not assessed for this report despite attempts to do so:

- Wolvekrans (WUL issued in the name of BHP Billiton Energy Coal of South Africa (Pty) Ltd)
- Kriel (WUL issued in the name of Anglo Operations (Pty) Ltd)
- Optimum (WUL issued in the name of Optimum Coal Mine (Pty) Ltd)
- Koornfontein (WUL issued in the name of Koornfontein Mines (Pty) Ltd)
- Mooiplaats (WUL issued in the name of Coal of Africa (Pty) Ltd)

The outcome of our assessment of the eight coal mines for which reports could be obtained paints a dismal picture of the state of compliance with water use licences. It also lays bare the massive failure by coal mining companies, the DWS, and supposedly independent environmental auditors, to ensure the protection and sustainability of our water resources.

Examples of these key findings in relation to the eight companies assessed are provided in the full report below.

DWS

The DWS appears to be in a state of complete institutional and regulatory breakdown.

- It appears to be unable to issue licences with appropriate conditions within a reasonable time, resulting in the assessed companies proceeding without authorisation and on their own terms, without any regulatory oversight.
- By the time licences are issued, companies often regard conditions of their licence pertaining to infrastructure that has already been established, as irrelevant or not applicable. This would include requirements such as the lining of dirty water dams, and the implementation of commitments and undertakings that the applicants made in support of their applications. In instances where companies started work without a licence – a criminal offence - the DWS took no action against the companies.
- When licences are issued, these become a moving target, with many generic, inappropriate licence conditions and inadequate monitoring requirements.
- Companies also use ongoing amendment applications – which the DWS is extremely slow to process - to exacerbate the state of flux that makes monitoring and enforcement very difficult.
- Despite the massive impacts and risks coal mining poses to water resources, almost none of the water use licences make water treatment – and financial provision to fund water treatment – an upfront requirement. Financial provision for mining rehabilitation administered by the Department of Mineral Resources is also supposed to include water impacts, but very few companies provide for post closure management of water in the DMR-administered provisions. As a result, the state and the public are bearing the full risk of these impacts.
- The DWS also appears to be unable to monitor compliance, or to respond to flagrant misrepresentations made by external auditors, and unable to respond to violations which are patently apparent from routine submissions made by licence holders themselves. Even repeat violations reported by the licence holders go unnoticed. No evidence of WUL compliance monitoring by DWS could be found in our assessment sample. In fact, all indicators point to a total absence of compliance monitoring and enforcement by DWS.
- DWS never approves or rejects the mandatory Integrated Water and Waste Management Plan (IWWMP) or the Rehabilitation Strategies and Implementation Programmes (RSIP). The licence holders accordingly change these documents at their own discretion to incorporate changes to their original commitments and undertakings.

- DWS also never respond to water quality data or other reports submitted in accordance with the WUL conditions, even if the reports demonstrate detrimental impacts of the licence holder on the receiving water resources.
- Because DWS takes no action in response to violations reported for the companies assessed, licence holders simply regard DWS' silence as condonation of the reported non-compliance.

Coal mining companies

- Companies tend to interpret conditions in a way that limits measures to be taken, and to ignore any requirements not spelled out, even if those are essential for protection of water resources.
- Companies unilaterally deviate from commitments made in their licence applications.
- Not one of the companies in our assessment, sample monitor the quality of water leaving their sites during rainfall conditions. The river monitoring undertaken by some, are done during dry weather conditions, which are not representative of the pollutant load entering the rivers during rainfall events.
- We could not find one "approved IWWMP or RSIP, despite WUL conditions requiring the annual submission of these documents to DWS for approval. The DWS' failure to respond to the annual submissions of these reports is abused by the licence holders, who constantly change their original undertakings. The companies then regard these un-approved versions as the "official" plans and strategies.
- Mandatory submissions made by the licence holders to the DWS during the period under review often reflected significant non-compliance with licence conditions and other statutory requirements.

Independent auditors

The WULs include as a standard condition the requirement to undertake an external WUL compliance audit. The audit reports must be submitted to the DWS, and must also be published on the websites of the licence holders (being an "environmental authorisation" for the purposes of interpreting Chapter 5 of the National Environmental Management Act, 1998). These external audit reports are intended to provide accurate compliance reflections of the licence holders.

In the independent audit reports assessed, we found many unsubstantiated or inaccurate conclusions, and failures to report pollution incidents, deviation from pollution monitoring and violations of licence conditions.

- With the exception of one of the auditing firms, none of the auditors complied with the minimum statutory requirements for such audits.
- Auditors often give a company a status of "compliant" merely based on the fact that monitoring is undertaken. The fact that the monitoring data reveals non-compliance with the water quality requirements imposed by the WUL is not revealed. Deviation from the prescribed monitoring locations and/or variables to be monitored are also often excluded from the audit reports.
- Auditors do a "walk-through" visual assessment on the day of the audit, and reach compliance conclusions based on very limited visual information, and in some instances even without records, and on aspects that require the analysis of technical and scientific data. For example, most auditors confirm that storm water leaving the mining sites is not contaminated, based on visual observations during dry weather conditions and without any reference to water quality monitoring results taken during moderate rainfall events.
- Auditors give a "compliant" status for submitting required plans, without assessing the effective implementation of those plans.

- Auditors do not audit general legal requirements such as taking reasonable measures to prevent pollution.
- They usually mark these requirements as “take note” issues, instead of highlighting negligent and intentional pollution of water resources as violations of section 151(i) and (j) of the National Water Act, 1998.
- Moreover, instead of ensuring the protection and preservation of our most precious and life-giving resource, companies and supposedly independent environmental auditors are complicit in taking advantage of this regulatory breakdown.

It appears that, for the coal mining operations assessed, the regulatory system, from issuance of a water use licence to accountability for non-compliance, has effectively disintegrated. Our full report makes detailed recommendations on the proper interpretation and application of water use licence conditions as well as recommendations aimed at improving overall compliance and monitoring. These include but are not limited to the following

- That the DWS or the Portfolio Committee on Water and Sanitation urgently review the resources and capacity of the DWS to fulfil its regulatory function, so as to enable it to issue appropriate licences within a reasonable time period, ensure compliance monitoring, meaningfully review, external audit reports, and take enforcement action;
- That WULs are issued in draft format to facilitate a once-off review opportunity by the WUL holder prior to issuing the final WUL. The DWS’ response to any amendment requests made during this review process must be clear and unambiguous. If an amendment request is not granted, it must be expressly rejected, with reasons. This will eliminate the current situation where obvious errors are used to submit amendment applications, allowing companies to continue as if no valid licence exists.
- That the DWS introduce a standard condition in the water use licence that enables the DWS to commission its own independent water use licence audit at the cost of the licence holder. In the event that an audit report does not meet legislative and regulatory requirements, this condition could be invoked in order to obtain an external independent report and deter the current conduct of environmental auditors;
- That the chief executive officer of the licence holder certify the external audit reports as a true and accurate reflection of the status quo. Should this transpire to be a false declaration, the DWS should institute legal proceedings against both the CEO and the external auditor in their personal capacities (as provided for by section 154 of the NWA and section 34 of NEMA). One or two such precedents are likely to bring about a rapid and dramatic improvement in water management in the mining sector; and
- That the newly established Environmental Assessment Practitioners’ Association of South Africa consider whether their registration requirements, code of conduct and powers can be used to provide effective quality control over independent audit of water use licences, and oversight over the auditors who conduct these audits.

Based on the findings of this report it is evident that various institutions and actors must be challenged to reform the way water is regulated and used in South Africa. South Africa faces a grave crisis in relation to its water resources, and the pollution of our scant water resources, particularly in light of the radical changes predicted for our climate, poses massive risk for present and future generations. We therefore call on legislators, regulators, industry, financiers and investors to use their spheres of influence to take immediate action for meaningful reform.

1. Introduction

In 2017, during one of the most devastating droughts to face South Africa, the City of Cape Town was predicted to be one of the first cities in the world to run out of water. Day Zero was an estimated countdown towards the day when the City's taps would run dry and with this in mind, residents and business owners responded with massive water saving efforts, making sure that every drop did in fact count. These and other concerted efforts to reduce wastage, ensured that water was used judiciously, greatly extending the use of available water, until finally in June 2018, heavy rains narrowly averted the need for a city wide water outage and rationing.

The entire nation was nervous and fearful about the water crisis which unfolded in the City of Cape Town, and indeed, the entire world looked on with disbelief and concern for us and for their own water security. It therefore seems incredulous that despite overwhelming recognition of the precious and fragile nature of our scarce water resources, domestic approaches to water usage, particularly by corporations, are still largely unchecked by state actors, resulting in large-scale pollution of our water resources.

This report reveals how the disintegration of our regulatory system has enabled wide-spread abuse and pollution of our water resources by companies, a situation which is deeply at odds with the purpose of our National Water Act, 1998 (NWA), which is *"to ensure that the nation's water resources are protected, developed, conserved, managed and controlled in ways which take into account amongst other factors:*

- (a) meeting the basic human needs of present and future generations;*
- (b) promoting equitable access to water;*
- (c) redressing the results of past racial and gender discrimination;*
- (d) promoting the efficient, sustainable and beneficial use of water in the public interest;*
- (e) facilitating social and economic development;*
- (f) providing for growing demand for water use;*
- (g) protecting aquatic and associated ecosystems and their biological diversity;*
- (h) reducing and preventing pollution and degradation of water resources;*
- (i) meeting international obligations;*
- (j) promoting dam safety; and*
- (k) managing floods and droughts."*

In order to facilitate the conservation, control and management of water resources, the concept of private water was abolished 20 years ago and replaced with the appointment of the Minister of Water Affairs as the trustee of this public resource, as embodied in section 3 of the National Water Act of 1998 which deals with public trusteeship of our nation's water resources and states in section 3(1) that:

"As the public trustee of the nation's water resources the National Government, acting through the Minister, must ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, for the benefit of all persons and in accordance with its constitutional mandate."

This "new" regime was at the time hailed by many as one of the most progressive and visionary pieces of water legislation worldwide, so much so that it won Kader Asmal the prestigious Stockholm Water Prize in 2000. However, the ecological deterioration of the country's water resources over the past 20 years,¹ has revealed that the celebrated vision that underpins

¹ See, for example, WWF Report, Water: Facts and Futures, 2016

the NWA has not been realised. This is in spite of the fact that South Africa is a water stressed country that requires all water in the water cycle to be managed responsibly.²

In this regard, it must be noted that:

- 60% of our river ecosystems are threatened and 23% are critically endangered;
- 65% of our wetlands are threatened and 48% are critically endangered;
- 98% of our available reliable water has already been allocated;
- 18% of South Africans rely on communal taps, whilst another 9% rely directly on springs, rivers and wetlands; and that
- There will be a 17% deficit between water supply and demand by 2030.

Whereas the determination and implementation of the ecological Reserve³ envisaged by the NWA, as well as the establishment of the catchment management agencies, proved more challenging than perhaps anticipated by the drafters, monumental failures on the part of the Department of Water & Sanitation's (DWS) compliance monitoring and enforcement functions have also been highlighted by several stakeholders during recent years.

In 2015 DWS committed to publishing an "annual report on compliance monitoring and enforcement in October 2015". However, to date, no such report has been published. The failure of DWS to make compliance monitoring and enforcement data publicly available has made it easy for companies with enormous detrimental impacts on the environment to hide the status of their often dismal environmental compliance. The DWS only has 35 compliance and enforcement officials for the whole country, and has never published a specific water compliance and enforcement report. The 2016/17 National Environmental Compliance and Enforcement report highlights that DWS has completely failed to undertake meaningful enforcement action against offenders. In 2017/2017, of 321 facilities inspected, 76 of which were found to require enforcement action, DWS has had zero (0) convictions for criminal offences. Despite widespread non-compliance, DWS has only suspended one water use licence since 1 January 2008.

To test the effectiveness of the compliance monitoring and enforcement activities of the national trustee of our water resources, with specific reference to the water use licensing mechanisms provided for by the NWA, the Centre for Environmental Rights (CER) embarked on a project to understand how the auditing of licencing conditions is undertaken, whether companies comply with the conditions of their water use licences, and whether enforcement action is taken by the DWS in circumstances where non-compliances are identified.

The CER undertook this study in relation to one of the most affected water catchment areas in the country, being the Olifants River Catchment, which has been identified as one of South Africa's most stressed catchments in relation to both water quantity and quality (DWS, 2017).

² South Africa receives an annual rainfall of 492 millimetres whereas the rest of the earth receives 985 millimetres. This is nearly half the earth's average. Thus South Africa is classified as a water-stressed country. (Rand Water, 2018)

³ The setting aside before any other use of sufficient water for basic human needs and the functioning of life-sustaining aquatic ecosystems.

2. About the Olifants River Catchment

The Olifants River Catchment is a highly productive system. The basin area is around 54,000 km² with an annual natural flow of approximately 1063 million cubic meters⁴. The climate of the Olifants River Catchment is semi-arid to arid, with season rainfall occurring predominantly in the summer months. Annual precipitation in the basin varies from 400mm/year in the Lowveld to 2200 mm/year in the headwaters of the Steelpoort River⁵. The Olifants River falls within the Olifants Water Management Area.

The Olifants River is a major tributary of the Limpopo River and lies entirely within Gauteng, Mpumalanga, and Limpopo. The major tributaries of the Olifants River include the Wilge, Blyde, Elands, and Steelpoort. The river feeds into more than 30 major dams, 30 minor dams and up to 4000 small private farm dams⁶. The river further services a large number of irrigation schemes, including Loskop. Notably, large coal deposits are present in the upper basin. As such, there is a concentration of large coal-fired power plants and coal mines in the area. Further, up to 200 cubic meters of water is imported from nearby basins to supply cooling water for coal-fired power plants⁷.

The Olifants River Catchment has been identified as one of South Africa's most stressed catchments in relation to both water quantity and quality (DWS, 2017). Approximately 42% of the land in the Olifants Catchment has been formally classified as endangered or vulnerable.

In recent years the area has faced severe drought and occasional flash floods (DWS, 2017). In particular, water resources in the catchment have been severely degraded as a result of mining, power generation, commercial agriculture, and industrial and municipal waste water. Notably, water use in the Olifants River Catchment has increased dramatically in recent years due to extraction of coal for electricity production, mining of a variety of other minerals, large scale irrigation schemes for agriculture, and urban development (DWS, 2016). This in turn has had considerable negative impacts on human health, stemming from water contamination, water shortages, and pollution of air and land. The sources of pollution and water quality degradation are diverse, including industry, mining, waste water treatment facilities, domestic waste, and agricultural chemicals and pesticides; together creating a toxic environment. Further, climate change is recognised as a major concern for the catchment, specifically related to the potential impacts of both floods and droughts. In general, precipitation in the Olifants catchment has decreased over the last 60 years, with predictions of continuing declines in precipitation as a result of climate change⁸.

Coal power generation accounts for 37% of water use in the Upper Olifants, compared to national figures of 5% (coal mining) and 2% (power generation). Notably, there is intense coal mining of the Witbank Coalfield within the Upper Olifants, specifically for the high quality coal seam of the Ecca Shales of the Karoo Supergroup. The Upper Olifants Catchment is therefore characterised by a high density of active and abandoned coal mines, coal fired power stations⁹ and acid mine water discharge sites¹⁰ and contains 119 abandoned coal mines and 33 continuously producing coal mines.

The Upper Olifants contains three tertiary drainage catchments, namely the Olifants River, Klein-Olifants River and Wilge River. The Olifants tertiary catchment contains the most abandoned mines (60) and continuously producing mines (23),

⁴ DWA. 2011. Development of a Reconciliation Strategy for the Olifants River. Pretoria: DWA.

⁵ Middleton, B. and Bailey, A. 2008. Water Resources of South Africa. Pretoria: Water Research Commission.

⁶ McCartney, M., Yawson, D., Magagula, T and Seshoka, J. 2004. Hydrology and Water Resources Development in the Olifants River Catchment.

⁷ DWS. 2017. Integrated Water Quality Management Plan for the Olifants River System: Management Options Report, Study Report No. 6. Pretoria: DWS.

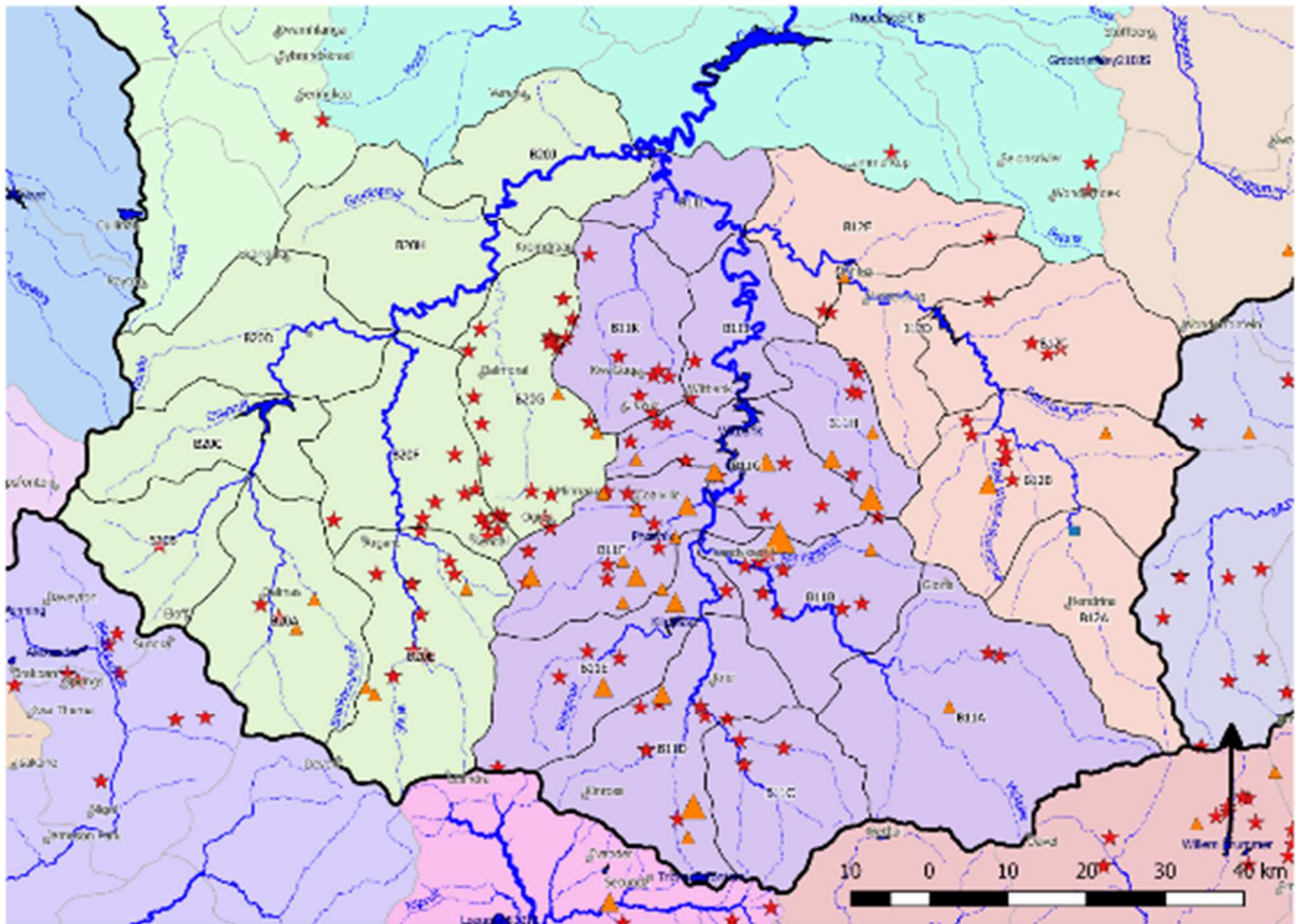
⁸ Udall, B. 2018. 21st Century Climate Change Impacts on Olifants River Flows South Africa

⁹ Coal power generation accounts for 37% of water use in the Upper Olifants, compared to national figures of 5% (coal mining) and 2% (power generation).

¹⁰ Notably, there is intense coal mining of the Witbank Coalfield within the Upper Olifants, specifically for the high quality coal seam of the Ecca Shales of the Karoo Supergroup.

followed by the Wilge catchment (44 abandoned and 7 continuously producing) and the Klein-Olifants catchment (15 abandoned and 3 continuously producing). The Olifants tertiary catchment also has the highest percentage area of mining activities or the largest mining footprint on the surface (8.6%). These rivers drain into the Loskop Dam which is the receiving body of the accumulated impact of coal mining and coal power generation in the Upper Olifants. This concentration, of over 650 active and abandoned mines and associated acid mine drainage and mining effluent, alongside eutrophication from waste water treatment facilities¹¹, has resulted in severe degradation of water quality, highlighted by mass die off of fish in the Loskop Reservoir¹².

Figure: Abandoned coal mines and continuously producing coal mines for the Upper Olifants



Approximately 4.2 million people live in the Olifants River Catchment. Unemployment in the Olifants Catchment is up to 79%, with more than half of the population being under 15 years old and an estimated 900 000 social grant recipients¹³. This points to overwhelming poverty and marginalisation. The combination of intensive mining, agriculture and industrial

¹¹ Ashton, P and Dabrowski, J. 2011. An Overview of Surface Water Quality in the Olifants River Catchment: Report to the Water Research Commission. Pretoria: Water Research Commission

¹² Ashton, P. 2010. The Demise of the Nile Crocodile (*Crocodylus Niloticus*) as a Keystone Species for Aquatic Ecosystem Conservation in South Africa: The Case of the Olifants River." *Aquatic Conservation: Marine and Freshwater Ecosystems* 20 (5): 489–93.

¹³ DWS. 2016. Integrated Water Quality Management Plan for the Olifants River System: Water Quality Status Assessment and International Obligations with Respect to Water Quality Report. Pretoria: DWS.

activities, and resultant water quality degradation, alongside improper compliance monitoring and enforcement and poor service delivery, has had considerable health impacts for communities within the Olifants. A health risk assessment study in the Upper Olifants highlights that poor communities that *“partially depend on river water for potable and domestic use, are exposed to immune-compromising metals that increase their probability of infection from water borne diseases caused by the excess microbial pathogens in the contaminated surface water”*¹⁴.

¹⁴ Genthe, B. et al., 2013. Health risk implications from simultaneous exposure to multiple environmental contaminants. *Ecotoxicology and Environmental Safety*, Volume 93, pp. 171-179.

3. Methodology

The CER selected thirteen coal-mining operations in the Olifants and Wilge River Catchment areas. Factors which were considered in the selection of the thirteen operations in this study include:

1. Location – the chosen sample area being the Olifants and Wilge River Catchments.
2. Coal supply – the majority of the chosen operations supply Eskom (whether as cost plus Eskom mines, or fixed priced, multi-product Eskom/export mines), and are key players in the South African coal supply chain.
3. Documented non-compliance – whether there were existing references (in parliamentary question and answer sessions) to the operation's failure to comply with the conditions of its water use licence, or whether other stakeholders had previously complained about pollution emanating from the operation.

The CER then approached the DWS in terms of section 15(1)(a)(ii) of the Promotion of Access to Information Act 2 of 2000 (PAIA), and the DWS's gazetted PAIA Manual to request automatic access (i.e. immediate access without having to submit a formal request for information using the prescribed PAIA request form) to the water use licences and the water use licence audit reports submitted to the DWS by these licence holders. The audit reports are the reports that all licence holders are required to submit to the DWS in terms of the conditions of their licence. The relevant licence condition requires that the licence holder *"appoint an independent external auditor to conduct an annual audit on compliance with the conditions of this licence...the audit report shall be submitted to the Provisional Head within one month of finalisation of the report"*.

The DWS responded within a few days, and provided copies of all of the water use licences. In relation to the audit reports, it took many months to receive copies of these from the DWS, and after almost a year of back and forth correspondence between the CER and the DWS, the DWS could only provide audit reports for eight of the thirteen operations requested. The DWS indicated that it did not have the audit reports on record for the other operations, and that it had sent letters to the companies requesting that the audit reports be submitted (as per the licencing conditions).

The eleven water uses that are listed in section 21 of the NWA may not be carried out without a water use licence (WUL), issued in terms of section 22(1)(b) of the NWA, unless the water use in question is -

- i. listed in the First Schedule to the act;
- ii. recognised as an "existing lawful use" (as defined¹⁵);
- iii. "generally" authorised by publication in the government gazette; or if the licensing requirement has been waived by the responsible authority.¹⁶

The procedure for the WUL application is outlined in section 41 of the NWA and has recently been supplemented by a more detailed and structured procedure, including timelines and guidance on the minimum technical requirements to accompany the licence application.¹⁷ WULs are issued subject to compliance with the conditions imposed by the licence. Violations of the licence conditions are criminalised by section 151 of the act and could attract harsh personal and corporate penalties, as provided for by sections 151, 152 and 153 of the NWA.

¹⁵ In section 32 of the act.

¹⁶ Catchment management agency (CMA) or Department of Water & Sanitation if no CMA has been established.

¹⁷ Government Notice R267, dated 24 March 2017.

The eight operations which ultimately formed the sample set for this project are:

1. Tweefontein South (Glencore Operations South Africa (Pty) Ltd).
2. Manungu Colliery (Tshedza Mining Resources (Pty) Ltd).
3. Leeuwpan Coal Mine (Exxaro Resources Limited).
4. Khutala Colliery (South32 SA Coal Holdings (Pty) Ltd).
5. Vanggatfontein Colliery (Wescoal Mining (Pty) Ltd).
6. Isibonelo Colliery (Anglo American plc).
7. Goedgedvonden Colliery (Glencore Operations South Africa (Pty) Ltd).
8. Kangala Colliery (Universal Coal Development 1 (RF) (Pty) Ltd).

The other five operations for which audit reports could not be obtained are:

1. Wolvekrans (WUL issued in the name of BHP Billiton Energy Coal of South Africa (Pty) Ltd).
2. Kriel (WUL issued in the name of Anglo Operations (Pty) Ltd).
3. Optimum (WUL issued in the name of Optimum Coal Mine (Pty) Ltd).
4. Koornfontein (WUL issued in the name of Koornfontein Mines (Pty) Ltd).
5. Mooiplaats (WUL issued in the name of Coal of Africa (Pty) Ltd).

In relation to the eight operations for which we received audit reports, we interrogated the reports, and then wrote to the operating companies for comment in relation to various audit findings. We received responses from all of the operations.

The outcome of our assessment paints a dismal picture of licence holders not taking their water use licence conditions seriously and multiple regulatory failures that start with the delay in the issuance of the WULs, which often results in the illegal commencement of water use. Add to that the failure of the DWS to respond to violations revealed by routine submissions made by the licence holders, misrepresentations by external auditors, and the absence of repercussions for non-compliance, the reasons for the dire situation of our water resources become clear.

In the discussion below, areas of concern are highlighted, with reference to specific examples extracted from the information obtained from the licence holders included in our assessment sample.

4. Findings

Our assessment findings are categorised under the following three main headings:

1. Regulatory failures
2. Role of the independent environmental auditors
3. Role of water use licence holders

Each of the categories illustrates non-exhaustive examples. In order not to burden the report unnecessarily, examples are limited to the minimum that are required to adequately illustrate the concern in question. The omission of an example from a particular operation should not be interpreted to mean that a similar (or worse) situation does not occur at the omitted operation. For example, Glencore Operation (SA)(Pty) Ltd did not co-operate with our request for access to their water monitoring records. The absence of examples for the Glencore operations should thus not be viewed as an absence of concerns at their operations.

4.1 REGULATORY FAILURES

4.1.1 Delay in the issuance of water use licences

It is not in dispute that receiving a water use licence can take anything from 2 to 8 years, and even longer for small and medium size enterprises.¹⁸ The delay in the issuance of the water use licences (WUL) had the following consequences:

- Applicants started project construction without the necessary authorisation. By the time the WULs were issued, conditions pertaining to design, location and construction could no longer be fulfilled, as the projects had been completed on the applicants' own initiatives and terms, without any regulatory oversight. Upon receipt of the WULs, these conditions could not be observed retrospectively and were deemed to be irrelevant/not applicable by the licence holders, as evident from their external audit reports.
- Based on the available information, the DWS did not penalise the water users for unauthorised commencement of section 21 water use in instances where applications were pending.
- This means that the basis on which the WULs were (eventually) issued, being the impact management strategies described in the WUL applications, were not enforced and non-implementation of important undertakings and commitments made in the WUL applications pertaining to location, design, and capacity were not detected or punished.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Anglo American Coal South Africa: Isibonelo Colliery: (licence number 240 84884)		

¹⁸ During 2017, new regulations were promulgated with a view to streamlining the licensing process and shortening the process to 300 calendar days.

<p><u>WUL Appendix III, condition 1.2</u></p> <p><i>“The licensee shall carry out and complete all the activities according to the following:</i></p> <p><i>1.2.1 Reports submitted to the Department or the Responsible Authority, specifically the Kriel South Strip Mine Water Use Licence Application Report (Report NO JW 35/02/8122) dated July 2002;</i></p> <p><i>1.2.2 Conditions of this licence; and</i></p> <p><i>1.2.3 Any other written direction issued by the Regional Director in relation to this licence.”</i></p>	<p>The external auditor indicated that the compliance status is undetermined due to Isibonelo not monitoring compliance with the reports referenced in condition 1.2</p>	<p>Anglo American Coal SA responded as follows to our request for additional compliance information relating to the said reports:</p> <p><i>“As mentioned in the 2017 WUL Audit Report, the diversion and alteration activities associated with the flow of water were completed prior to the issuance of the IWUL and in accordance with the DWS’ directive as referred to in paragraph 7 above.”</i></p> <p>Paragraph 7 reads as follows:</p> <p><i>“...due to the extensive delays occasioned by the DWS’ failure to timeously process the IWULA, the DWS in correspondence dated 2005, apologised for the delay and indicated that the department was satisfied with the technical information submitted in support of the IWULA. The DWS indicated that Isibonelo Colliery could proceed with the project development until such time as the DWS issued an IWUL...”</i></p> <p>DWS accordingly provided consent based on the technical information contained in the integrated water use licence application (IWULA). They did not condone deviations from the information contained in the application, and compliance should have been ensured and monitored.</p> <p>As highlighted by the external auditor, this was not done.</p>
<p>Glencore Operations SA (Pty) Ltd: Goedgevonden Colliery (licence number: 24084063)</p>		
<p><u>WUL Appendix 5 condition 2.2</u></p> <p><i>“The water from the open pits shall be collected in in-pit collection sumps and shall be pumped to the 6000 m³ silt collection dam for settling before discharge to the 32 000m³ surge control dam (Ramp Dam) for consumptive reuse at Goedgevonden Mine.”</i></p>	<p>The external auditor confirmed this condition to be not applicable, as no dams for pit dewatering have been build. He indicated that water is pumped to the western storm water dam.</p> <p><i>This is not in line with the WUL condition (which is based on the information contained in</i></p>	<p>Glencore responded as follows to our request for the WUL application (which we wanted to scrutinise for undertakings regarding the management of in-pit water):</p> <p><i>“It must be noted that an independent third party (external) auditor deemed this WUL condition as non-applicable and thus not relevant as confirmed by their visual site inspection.”</i></p>

	the application) and should accordingly be rated as non-compliant , as opposed to not applicable .	
South 32: Khutala Colliery (licence number 04/B11A/ABCGJ/135)		
<p><u>Appendix III, condition 1.2</u></p> <p><i>“The Licensee shall carry out and complete all activities listed under condition 1.1 according to the report submitted to the Department.”</i></p>	<p>The external auditor confirmed partial compliance based on the fact that “certain activities are occurring in accordance with this condition.”</p>	<p>South 32 responded as follows to our request for the identification of activities that were <i>not</i> conducted in accordance with the report underpinning their WUL application:</p> <p><i>“Khutala understands that the reference to “the report” in Appendix III, Condition 1.2 is a reference to the Integrated Water and Waste Management Plan (“IWWMP”) that was submitted by Khutala in support of its application, dated April 2006, compiled by M2 Environmental Connections (“the M2 Report”). A copy of the M2 Report is attached as Annexure C1.”</i></p> <p>However, the definition of "report" in section 6 of the WUL refers to the IWWMP as well as the African EPA report Ref A0744. No compliance commentary is provided for the African EPA report, and we still do not know which of the original IWWMP aspects have not been observed.</p> <p>Findings of partial compliance without a description of which aspects have been complied with, and which have not been complied with, is meaningless from a compliance monitoring, and enforcement perspective.</p>
Wescoal: Vanggatfontein Colliery (licence number: 04/B20F/ABCGJ/2788)		
<p><u>WUL Appendix IV, condition 1.2</u></p> <p><i>“The licensee must carry out and complete all the activities listed under condition 1.1 according to the following reports submitted to the Department or Responsible Authority...”</i></p>	<p>The external auditor rated this aspect as fully compliant even though the auditor noted that “this condition is difficult to tract (sic) as all construction is completed...”</p>	<p>Wescoal attached a response from its external auditor in reply to the CER. Wescoal’s auditor responded as follows:</p> <p><i>“The Reports mentioned in this condition were submitted to DWS as part of the Water Use Licence Application and most of the reports date back to 2008. These reports investigated pre-mining conditions and discuss possible layouts, which is not applicable anymore as the mine is already</i></p>

		<p><i>operational in accordance to the approved infrastructure layout plan (as mentioned in the observations). The monitoring network constantly changes as the mining progresses and these monitoring networks and monitoring reports are submitted to DWS.</i></p> <p><i>The Mine is subject to the requirements set out by the Department of Mineral Resources (DMR) in Mineral and Petroleum Resources Development Act (Act 28 of 2002) which dictates that the Mine updates their Financial Provision annually and Environmental Management Programme when there are changes undergone by the Mine. The Water Use Licence dictates that the IWWMP be updated annually. Since the issuance of the WUL the Mine has updated their Financial Provision, IWWMP and EMP which make the mentioned reports irrelevant to the current operations. It was therefore recommended that the Mine provide DWS with the latest EMP to ensure that the current status of the Mine is assessed. The Mine is compliant with the current approved Environmental Management Programme and was therefore rated as “Fully Compliant”.</i></p> <p>No evidence is provided to indicate that the more recent reports referred to by the external auditor have been approved by the DWS. The licence holder is essentially changing the conditions of its operation on a continual basis through annual updates, without the DWS’s approval of the changed conditions.</p>
Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)		
<p><u>Appendix IV, Conditions 1.2 and 1.3.</u></p> <p><i>1.2 The construction of the dams listed in Table 1 must be carried out under the supervision of a professional Civil Engineer, registered under the Profession of South Africa Act, 1990 (Act 114 of</i></p>	<p>The external auditor rated both of these conditions “not applicable” (without motivation), presumably due to the fact that the construction had been finalised by the time the WUL had been issued.</p>	<p>The CER did not request additional information on this point. The example is included to illustrate the important aspects that are not complied with (e.g. supervision of a civil engineer) due to the delayed issuance of the WULs.</p>

<p>1990), as approved by the designer.</p> <p>1.3 Within 30 days after the completion of the activities referred here in accordance with the relevant provisions of this license, the Licensee shall in writing, under reference 16/2/7/B100/C251, inform the Regional Head thereof. This shall be accompanied by a signature of approval from the designer referred to above that the construction was done according to the design plans referred to in the Report.</p>		<p>All of the licences reviewed contain similar conditions which were only received after completion of construction.</p>
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Recommendations:

- DWS should extract the relevant commitments and undertakings made in the WUL applications and insert them as separate, auditable licence conditions in the context of the relevant authorised water use. A condition requiring compliance with “the Report” in the WUL is too broad. These reports comprise several specialist studies. External auditors do not extract the relevant commitments and undertakings from these reports when they conduct the external WUL audits. As a result, important deviations from the initial undertakings that underpin the issuance of the WUL are overlooked.
- Apart from prioritising the effective implementation of the *Water Use Licence Application and Appeals Regulations, 2017* (GN R267 of 24 March 2017), DWS should consider embarking on an awareness campaign to educate mining and industry on the reasons why water use should be planned well in advance. The level of awareness regarding the impacts of water use on the Reserve and water quality is generally marginal.

4.1.2 Issuance of outdated WULs

Given the inevitable changes that occur between the planning and implementation phases of a mining project, a WUL that is issued 2 – 8 years after the submission of the application is bound to be outdated when issued.

Water users recorded the ever changing *status quo* of their water management programmes in the annual revisions of their integrated water and waste management plans (IWWMPs), a mandatory document that must be submitted to the DWS for approval on an annual basis. Based on our assessment sample, the revised IWWMPs were generally submitted by the licence holders, but not one of the submissions were responded to by the DWS. The IWWMP has accordingly become a self-regulatory tool which is used by the water users to unilaterally change their water management regime.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
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Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)		
<p><u>WUL Appendix V, conditions 13.1 & 13.2</u></p> <p><i>“The Licensee must update an Integrated Water and Waste Management Plan IWWMP, which must together with the updated Rehabilitation Strategy and Implementation Programme (RSIP), be submitted to the Regional Head for approval within one (1) year from the date of issuance of this license. The IWWMP and RSIP shall thereafter be updated and submitted to the Regional Head for approval, annually.” (Emphasis added.)</i></p>	<p>The external auditor confirmed compliance with both conditions 13.1 and 13.2 without highlighting the fact that documents have not been approved by the DWS.</p>	<p>Universal Coal Development I (RF) responded as follows to our request for proof of approval of the plans:</p> <p><i>“UCD I continue to follow-up with the DWS regarding the approval of the updated IWWMP and the Rehabilitation, Decommissioning and Mine Closure Plan (which incorporated the updated RSIP). UCD I is unable to confirm whether the DWS has taken a decision to approve these documents. Unfortunately, there is no time limit stipulated in the National Water Act 36 of 1998 for when approval should be obtained. We will provide the requested approval as and when UCD I receives same.”</i></p> <p>The external auditor should have interrogated whether the plans had been approved, and should have confirmed partial compliance on the basis that the plans had not yet been approved, with an explanation for the lack of approval, as provided by the licence holder in response to the CER’s query.</p>
Tshedza Mining Resources (Pty) Ltd: Manungu Colliery water use licence (licence number 04/B20A/ACGIJ/2621)		
<p>Appendix III, condition 11.2</p> <p><i>“The IWWMP and RSIP must thereafter be updated and submitted to the Provincial Head for approval, annually.” (Emphasis added.)</i></p>	<p>The external auditor confirmed partial compliance due to the fact that an updated RSIP had not been submitted for the period under review.</p> <p>The auditor failed to disclose the fact that the documents have not been approved by the DWS.</p>	<p>Tshedza Mining Resources responded as follows to our request for clarification:</p> <p><i>“No feedback was received from the Department in terms of whether or not the documents are approved.”</i></p> <p>Details regarding the submission of the documents, and the DWS’ failure to approve should have been provided by the external auditor in the audit report.</p>
South 32: Khutala Colliery (licence number 04/B11A/ABCGJ/135)		

<p>Appendix IV, condition 1.2</p> <p><i>“The Licensee shall ensure that the disposal of the waste water and the operation and maintenance of the system are done according to the provisions in the Report.”</i></p>	<p>The auditor confirmed that this condition is not applicable, based on the fact that an IWWMP has been developed. The fact that the IWWMP has not been approved by the DWS is not mentioned. The auditor notes that:</p> <p><i>“An Integrated Waste Water Management Plan (IWWMP) has been developed for the KSA, Portion 16 and Khutala Main areas and is undergoing amendment/update (Khutala Colliery Updating and Revision of Integrated Water and Waste Management Plan for Khutala Colliery, Ref: LEM-A123 dated 1 November 2016).”</i></p>	<p>In response to our request for proof of compliance with the requirements of “the Report” (as defined in section 6 of the WUL), South 32 merely provided copies of their IWWMP as well as some water quality trends.</p> <p><i>They too seem to be disinterested in the reports that are incorporated into the WUL as legally binding commitments and undertakings.</i></p>
<p>Exxaro: Leeuwpan coal mine (licence number 04/B21A/ABCGIJ/429)</p>		
<p><u>Appendix V, condition 11.2</u></p> <p><i>“The IWWMP and RSIP shall thereafter be updated and annually submitted to the Regional Head for approval.”</i></p>	<p>The auditor confirmed compliance with this condition due to the fact that the IWWMP and RSIP had been updated in 2016, and proof of submission of these documents to the DWS has been provided.</p>	<p>In response to our request for proof of approval of the plans, Exxaro indicated that:</p> <p><i>“No feedback received from DWS with respect to reports sent”.</i></p> <p><i>The fact that the DWS has not provided feedback should have been set out in the audit report.</i></p>

Recommendations:

- DWS can clearly not issue WULs containing conditions pertaining to location, design and siting of infrastructure that has already been built. This creates a culture of non-compliance, as it erodes the credibility of the WUL from the outset and encourages the “not applicable” outcome for important conditions.
- Where permission is granted by DWS to proceed with developments pending the issuance of water use licences, it follows that a case officer should be assigned to the matter with a view to at least monitoring the applicant’s compliance with the commitments and undertakings made in the water use licence application.

- Unfortunately, the IWWMPs are voluminous documents that are in most instances nothing more than an incoherent duplication of existing studies combined with textbook philosophies and principles on pollution management, without application to the operation in question. Not one of the IWWMP reviewed contains a measureable plan, or a clear description of the actual practices prevailing at the mine.
- We submit that the concept of an annual revision and submission of the IWWMP and RSIP should be reconsidered and replaced with auditable and clearly worded WUL conditions. In our opinion, due to the poor quality of the submissions, and the DWS' inability to process and respond to the documents, they serve no purpose other than benefiting the consultants who are commissioned to develop them. As highlighted above, the submissions are also abused to slip in changes and deviations from WUL conditions. The absence of a response from DWS is regarded by the licence holders as the DWS' acceptance / condonation of their self-awarded relaxations of and/or modifications to the licence conditions in the form of contradictory objectives or plans.

4.1.3 Inappropriate conditions necessitating amendment applications

Apart from the location, design, and construction-related conditions for infrastructure that have already been established, the WULs often contained numerous errors, duplications and/or omissions which result in the licence holders submitting an amendment application soon after having received the long awaited WUL.

For example, groundwater quality requirements imposed by the WUL are often stricter than the natural groundwater quality in the area in question. The water user then submits an amendment application, and continues with business as usual without reporting water quality deterioration revealed by their groundwater monitoring activities as violations of the WUL conditions.

The licensees also use amendment applications to challenge legitimate conditions, such as the water quality requirements for dirty water systems. Licence holders often argue that the dirty process water is contained in a closed loop system and need not be subjected to strict water quality requirements. However, experience has shown that most dirty water systems leak, spill and/or overflow, which necessitates water quality control of process waters during all phases of the mining operation. Whether these amendment processes follow due impact investigation processes could not be verified on the available information, as only one of the licence holders was prepared to provide access to their amendment application.

As with the initial WUL applications, amendment applications are not processed expediently by the DWS, creating an opportunity for licence holders to continue operating in a legislative vacuum, arguing legal uncertainty – the long awaited original WUL is flawed, and the amendment application is pending. Grounds for prosecution of a polluter under these circumstances will be difficult to establish.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER'S RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)		
<u>WUL Appendix V, condition 5.5</u> <i>"Water quality testing to be performed on the pollution control dams and Discard dumps on a</i>	The external auditor confirmed compliance with this condition in	In response to follow up correspondence from the CER, UCDI argued that:

<p><i>quarterly basis in order to determine the risks to the receiving environment. The data gathered in the investigation must be reported annually to the Regional Head. If any concentration levels as specified above are exceeded, the Licensee must institute an investigation to determine the cause of poor water quality. Furthermore, the Licensee must undertake geochemical assessment on the discard dump."</i></p>	<p>the 2017 WUL audit report and did not mention the issue of inappropriate standards.</p> <p>The auditor also provided no interpretation of the monitoring results.</p> <p>We submit that the compliance rating should be non-compliant, pending the clarification of the water quality standards by the DWS.</p>	<p><i>"When UCDI was issued with its initial WUL [Licence No. 04/B20A/ ABCGIJ/1506, File No. 16/2/7 /B100/251] on 25 May 2012 (which has subsequently been replaced by the current 2016 WUL), various errors with the initial WUL were discovered. Of particular relevance are the following in relation to water quality limits:</i></p> <ul style="list-style-type: none"> <i>no surface water quality limits were included for purposes of assessing the water samples taken from the surface water monitoring points set out in Table 4, Appendix V (Table 5, Appendix V of the 2016 WUL) {INJI -INJ10}; and</i> <i>the water quality limits which appear to govern the waste water reporting to the Pollution Control Dam (Table 3, Appendix V and Table 7, Appendix VI) are unachievable and were inserted by the DWS erroneously. The waste water limits prescribed in terms of the 2013 WUL Amendment are more stringent than many of the limits that are prescribed in terms of the groundwater (i.e. clean water) quality limits.</i> <p><i>UCDI applied for an amendment of the initial WUL in order to address its concerns including those regarding the water quality limit specifications. Unfortunately, the 2013 WUL Amendment was also issued with the incorrect water quality limits. Similar issues were also carried through to the 2016 WUL. UCDI has been corresponding with the DWS and is in the process of preparing a further amendment application in order to address, among other things, the issues relating to the water quality limits. As a result of the abovementioned issues in relation to the wastewater limitations, the Table 5, Appendix V Groundwater Quality Limits are being used to assess water quality in and reporting to the Pollution Control Dam, the surface water monitoring points and groundwater at Kangala Colliery. The assessment of waste water in and reporting to the Pollution Control Dam against groundwater quality limits (i.e. clean water) is particularly problematic given how stringent the prescribed parameters are compared to those typically used to assess wastewater (i.e. dirty water).]"</i></p> <p>UCDI's response illustrates the legislative vacuum in which licence holders operate pending the grant of their</p>
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		amendment applications, and the amendment of their amendment applications.
Anglo American Coal South Africa: Isibonelo Colliery: (licence number 240 84884)		
<p><u>Appendix IV, condition 3.1</u></p> <p><i>“The quality of water containing waste disposed of into the dirty water dam, out-of pit evaporation dam and dirty water settling dam shall not exceed the following limits as specified in Table 1 below...”</i></p>	<p>The external auditor correctly identified the deviations from the water quality requirements as non-compliant with the WUL conditions. The auditor also referred to a letter submitted to the DWS dated 24 August 2011, containing a motivated request for the relaxation of the water quality standards imposed by this condition.</p>	<p>Anglo American Coal South Africa responded as follows to our request for an indication of the duration of non-compliance with the prescribed water quality standards:</p> <p><i>“Following submission of the amendment application in 2011, the 2017 IWUL was subsequently granted. As mentioned above, the aforesaid IWUL supersedes and replaces the 2008 IWUL with licence number 24084884 being the subject of this request for records. It should be noted that the DWS amended the water quality compliance parameters as per the 2011 amendment application submissions, thereby acknowledging the objective impossibility of complying with those conditions in the first instance.”</i></p> <p><i>We then requested a copy of the 2011 amendment application in order to verify whether the motivation was scientifically sound. We were, however, not granted this request, as evident from the following reponse:</i></p> <p><i>“Isibonelo Colliery submits that the CER failed to indicate how a copy of the Amendment Application is reasonably required and what substantial advantage could be derived from providing access to the Amendment Application. The CER also failed to motivate or identify the need that arises to having access to Amendment Application.”</i></p> <p><i>and</i></p> <p><i>“... in addition, it is to be noted that the 2017 IWUL is subject to a further amendment application.”</i></p> <p>We can only speculate as to the reasons for the licensee’s refusal to share the application, as it should actually be a document that they wish to share to expose the irrationality of the first set of quality requirements.</p>

		<p>It took the licensee 3 years to submit the first amendment application. It then took the DWS 5 years to respond to the amendment application, and having finally received the amended licence in 2017, ANOTHER amendment application has been submitted. This response from the licensee illustrates the neverending cycle of uncertainty entered into between the licensee and the DWS.</p>
South 32: Khutala Colliery (licence number 04/B11A/ABCGJ/135)		
<p>Appendix III, condition 1.25</p> <p><i>“The impact of underground mining activity on the wetland shall not exceed the following water quality limits with respect to the receiving water body...”</i></p>	<p>The external auditor rated the condition as partial compliance, despite confirming that the quality of the water exceeds the stipulated water quality limits.</p>	<p>South 32 responded as follows to our request for an indication of the measures taken to achieve compliance:</p> <p><i>“Khutala notified the DWS accordingly, and the guidance received from the DWS at that time was that Khutala should review and amend its WUL.”</i></p>
Wescoal: Vanggatfontein Colliery (licence number: 04/B20F/ABCGJ/2788)		
<p>Appendix V, conditions 3.1 and 5.1</p> <p><i>“The quality of waste water disposed of into the dams specified below shall not exceed the following limits as specified in table 9...”</i></p> <p><i>“The impact of the activities of the wastewater containment facilities on groundwater shall not exceed the interim resource quality objective (RWQO) for the management unit as detailed in the Water Quality Reserve for the area as set out in Table 11...”</i></p>	<p>The auditor identified that the licensee is in non-compliance with these conditions, and recommended that the compliance objectives and water quality objectives be revisited during an amendment process “to be more representative of the area”. Management responded in the audit indicating that an amendment application would be submitted.</p>	<p>When asked what measures the company had taken to comply with the water quality requirements, Wescoal responded, indicating that:</p> <p><i>“We do not have a report or record but we have been following our IWWMP as a guideline on how water management must be practiced. We have also appointed an ECO to come on site once a month to assess our compliance on all our Environmental Authorisations. This will assist with ensuring compliance.”</i></p> <p>This response illustrates the “self-regulation” techniques employed by licence holders – the IWWMP is used as a “guideline”, as opposed to the licence holder complying with the legally enforceable conditions of its WUL.</p>

Recommendations

- The drafting of appropriate, site-specific water use licence conditions requires appropriate qualifications and extensive experience. Outsourcing of this function is not ideal, as the DWS officials should be in a position to conduct follow-up discussions and/or responding to queries. An analysis of the availability of suitably qualified professionals within the DWS is advisable to ensure that this task can be fulfilled with the required accuracy and meticulousness.
- WUL amendments must be dealt with expediently in order to avoid a prolonged period of legal uncertainty. If an amendment application, or a part of the application, is not granted, the DWS should provide reasons for the rejection. The mere issuance of licences that do not incorporate all of the requested amendments are generally construed by the licence holders as “errors”, followed by a continuation of non-compliant conditions for another five years, pending the adjudication of a second (or third) amendment application. DWS should communicate the outcome of each of the requested amendments in writing, dealing with each condition to be amended separately. If a particular request is not granted, it must be expressly rejected, with reasons.
- In particular, the outcome of licence holders requests for the relaxation of water quality requirements must be expressly communicated. If water treatment is required to achieve the prescribed water quality standards, this should be expressly required by the DWS, failing which the licence holders will continue to submit one amendment application after the other, stating that the water quality requirements are “not achievable”. If water treatment becomes a reality, licence holders are likely to be far more proactive to clean up their dirty water circuits by more innovative control of sources of pollution. Currently, the “end of pipe” philosophy is not discouraged by enforcement of stricter water quality standards.
- Water quality standards should not be relaxed without conducting an assessment of the impact on the water resource.
- Most licence holders seem to be under the impression that water contained in dirty water systems need not be subject to water quality restrictions. This is not correct, as water from these facilities overflow and seep into the environment. This is also clearly illustrated by the examples provided in paragraphs 4.3.7.1 and 4.3.7.2.
- If water treatment is required to achieve the appropriate water quality requirements for wastewater, then DWS should expressly require water treatments, instead of granting water use relaxation applications (especially in cases where seepage is revealed by the licence holder’s monitoring programmes). DWS should also educate the licence holders on the importance of water quality control of dirty water.

4.1.4 Inadequate monitoring requirements

4.1.4.1 All variables not covered

Apart from unrealistic groundwater requirements imposed by some of the WULs, and the relaxation of process water requirements without additional impact assessment, the omission of hydrocarbons from the parameters to be monitored in **both** groundwater and surface water is of concern.

Vast amounts of fuels and lubricants are used above ground and in underground mining operations. The mobility of hydrocarbons in water, and the effect on humans and aquatic ecosystems are common knowledge. The omission of “total petroleum products” from the monitoring requirements of some of the licence holders needs to be explained by the DWS.

Recommendations:

- We submit that the monitoring of total petroleum products should be a standard condition in all WULs.
- The development of a hydrocarbon balance should also be considered as a standard licence condition. Significant quantities of hydrocarbons are released into the environment via hydraulic pipe bursts, fuel decanting points and poor

maintenance of machinery and equipment. As most of these activities occur underground, these practices are out of sight and are overlooked by most auditors.

4.1.4.2 Storm water monitoring not expressly required

Not one of the mines in our assessment sample monitors the quality of runoff water leaving their sites during or immediately after rainfall events. Their surface water monitoring programmes are restricted to the sampling of water contained in on-site storage facilities and river sampling at fixed locations and at specified frequencies, unrelated to weather conditions.

Contaminated rainwater entering water resources flows downstream. The effect of such contributions to the waste loads in the receiving water bodies cannot be detected with a river sample taken days or weeks after the rainfall event. This fact is also illustrated by biomonitoring reports that in most instances blame deterioration of water resources on upstream pollution sources that cannot be pin-pointed. We submit that river sampling achieves nothing other than monitoring the condition of the water resource. It does not facilitate the effective isolation and elimination of the source of contaminants.

Typically on mining premises, the trenches diverting dirty storm water to the pollution control dams are overgrown with vegetation, or silted up with contaminated sediment, resulting in over-topping and spillage of contaminated dirty storm water and/or process water into the environment. (See paragraph 4.3.7.) **The mere existence of a dirty storm water system alone is not enough to conclude that contaminated storm water does not enter the environment.** The effectiveness of the dirty water system must be verified through monitoring of rain water leaving the site during moderate to heavy rainfall events.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)		
<u>WUL Appendix V, condition 8.1</u> <i>"Stormwater leaving the Licensee's premises shall in no way be contaminated by any substance, whether such a substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped, or spilled on the premises".</i>	<p>The external auditor's unsubstantiated "not assessable" conclusion is incorrect.</p> <p>It is our view that the monitoring of the quality of storm water leaving the site during rain events is not only possible, but is essential to establish the effectiveness of the clean and dirty water separation systems.</p>	<p>Universal Coal Development I responded as follows to our request for copies of their storm water monitoring procedures and monitoring data for rainwater leaving the site:</p> <p><i>"The majority of storm water runoff at the Kangala Colliery is dirty and is accordingly diverted to storm water trenches that lead to the Pollution Control Dam. Please refer to Annex B for a copy of the "Surface Water Monitoring Reports which includes details regarding monitoring of the water that is contained within the Pollution Control Dam (where the dirty storm water reports)."</i></p> <p>and</p>

		<p><i>"...monitoring of clean storm water is not expressly required in terms of the 2016 WUL."</i></p>
Tshedza Mining Resources (Pty) Ltd: Manungu Colliery water use licence (licence number 04/B20A/ACGIJ/2621)		
<p><u>Appendix III, condition 6.3</u></p> <p><i>"Storm water leaving the Licensee's site must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination therefore which is produced, used, stored, dumped or spilled on the premises."</i></p>	<p>The auditor confirmed compliance based on visual observations made during the site visit (dry weather conditions). No reference is made to a storm water management plan or layout used as the basis for the visual observation.</p> <p><i>We submit that the effectiveness of clean and dirty water separation cannot be verified visually during dry weather conditions, without reference to water quality data collected during rainfall events.</i></p>	<p>Tshedza Mining Resources responded as follows to our request for copies of their storm water monitoring procedures and monitoring data for rainwater leaving the site:</p> <p><i>"The mine does not have a procedure to monitor stormwater... besides stormwater monitoring is not a requirement in the approved IWUL."</i></p>
Glencore Operations SA (Pty) Ltd: Goedgevonden Colliery (licence number: 24084063)		
<p><u>Appendix IV, Condition 4.7</u></p> <p><i>"Uncontaminated runoff water (storm water) arising as a result of precipitation must be prevented from coming into contact with any waste and must be diverted and drained around the mine residue facility including any dirty areas by means of works constructed by the licensee."</i></p>	<p>The external auditor confirmed compliance based on visual observations of clean and dirty water separation systems on the day of the audit.</p> <p>The auditor did not refer to any diagrams / layouts of the water management infrastructure that were visually inspected, or any water quality data that indicated the effectiveness of the separation systems.</p>	<p>Glencore responded as follows to our request for copies of their storm water monitoring procedures and monitoring data for rainwater leaving the site:</p> <p><i>"This condition does not require storm water monitoring procedures and sampling of events to be presented as part of this condition. The condition is limited to the undertaking of clean and dirty water separation which the external auditor has verified as being undertaken as per their visual site inspection."</i></p> <p><i>As set out above, effective water separation cannot be verified visually during dry weather conditions.</i></p>
Anglo American Coal South Africa: Isibonelo Colliery: (licence number 240 84884)		

<p><u>Appendix III, condition 3.1.4</u></p> <p><i>“Storm water leaving the licensee’s premises must in no way be contaminated by any substance, whether such substances is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises.”</i></p>	<p>The external auditor confirmed compliance with this condition, but mentioned that some concerns were identified at Vaskop Dam. No reference is made to water quality data in support of the compliance conclusion.</p>	<p>Anglo American Coal SA responded as follows to our request for storm water monitoring procedures and data:</p> <p><i>“It is uncertain to which storm water monitoring the CER refers to in the Request. As stated above, surface water is monitored on a monthly basis as part of the monthly surface water monitoring campaign. Surface water monitoring results are submitted on a quarterly basis to the DWS in accordance with the procedure and the IWUL conditions.”</i></p> <p>Monitoring surface water achieves nothing other than monitoring the condition of the water resource. It does not isolate the source of contaminants. ‘</p> <p>The effectiveness of the dirty water system must be verified through monitoring of rain water leaving the site during moderate to heavy rainfall events.</p>
<p>Glencore Operations SA (Pty) Ltd: Tweefontein Complex (licence number 04/B11F/ABCFGII/805)</p>		
<p><u>Appendix IV, Condition 2.4</u></p> <p><i>“Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse.”</i></p>	<p>The external auditor highlighted non-compliance with this condition, specifically referring to the inadequacy of the measures to prevent runoff and silt from entering the wetland opposite the 5 Seam dump.</p>	<p>In response to our request for an indication of measures taken in response to the finding, Glencore responded that</p> <p><i>“There is no obligation on Tweefontein Colliery to at this stage record what action/measures have been taken...”</i></p> <p>It is clear that compliance with this condition cannot be monitored without recording what action and measures have been taken to ensure compliance.</p>
<p>Wescoal: Vanggatfontein Colliery (licence number: 04/B20F/ABCGII/2788)</p>		
<p><u>Appendix V, Condition 7.1:</u></p> <p><i>“Stormwater leaving the licensee’s premises shall in no way be contaminated by any substance, whether such</i></p>	<p>The external auditor confirmed compliance based on the</p>	<p>Wescoal responded as follows to our request for copies of their storm water monitoring</p>

<p><i>substance is a solid, liquid, vapour, or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises."</i></p>	<p>existence of an effective Storm Water Management Plan.</p>	<p>procedures and monitoring data for rainwater leaving the site:</p> <p><i>"We do not monitor storm water as this is not a requirement of the water use licence. We do however ensure that all storm water outside the demarcated dirty area as defined by GN 704 is channelled away from the operation into the natural environment. This is done through the construction of berms and trenches. We also have a surface water monitoring programme where samples are taken monthly by Aquatico. This also allows us to see if our operation is having any adverse impact on the receiving environment."</i></p> <p>As set out above, monitoring surface water does not test the effectiveness of a storm water monitoring plan.</p>
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Recommendations:

- We submit that the WUL conditions relating to storm water management should be supplemented with a monitoring and reporting section, similar to the conditions pertaining to surface water and groundwater monitoring.
- The location of the storm water sampling points must be specified, as well as the frequency (e.g. 6 x during the rainy season), and timing of the sampling events (e.g. within the first 20 minutes of a moderate rainfall event). The correct wording of such conditions should be determined by an appropriately qualified and experienced hydrologist.

4.1.5 Abdicating responsibility for resource protection

As mentioned, the Minister of Water & Sanitation is the public trustee of water on behalf of each and every South African citizen.

The DWS is abdicating its responsibility for equal allocation of the available resource by making the licence holders responsible for providing alternative supply to water users that are negatively impacted by the authorised water use. This is an artificial way of dealing with a very complex and important issue, being the protection of the resource and equitable allocation among all water users.

Obvious dilemmas arising from this situation include the fact that there will often be no way in which the licence holder can comply with this requirement:

- Imagine, for example, the over allocation of the limited water resources in the Northern Cape. Where and how will a mining company source water from if the groundwater resources and the irrigation schemes have dried up?
- Who will be responsible for compliance with this condition if the licence holder is liquidated, or abandons the mine?

- Who must monitor the impact on other users? Farmers and rural community members usually only become aware of an impact on their water supply when it is too late, e.g. dry boreholes.
- How many local communities and/or farmers will be in a position to litigate against a mining company in the event of the licence holder not supplying an alternative source, as required in terms of their WUL? Who will supply the impacted users with water during the protracted legal proceedings that can be expected to take several years to finalise?

The DWS is responsible for ensuring the fair allocation of water resources in terms of the National Water Act, 1998. The DWS is furthermore responsible for ensuring that pollution of our water resources does not occur beyond acceptable levels for all water users, including aquatic ecosystems. These responsibilities cannot be delegated to licence holders.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDERS RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)		
<u>Appendix IV, condition 5</u> <i>"The Licensee shall provide any water user whose water supply is impacted by the water use with potable water."</i>	The external auditor rated this condition as "not applicable" without any explanation.	The CER did not request additional information. This example is nevertheless included to illustrate the concerns raised above.
Tshedza Mining Resources (Pty) Ltd: Manungu Colliery water use licence (licence number 04/B20A/ACGIJ/2621)		
<u>Appendix III, condition 12.5</u> <i>"The Licensee must ensure in advance that alternative water supply for external water users is provided to these users should groundwater resources be impacted."</i>	The external auditor merely noted this condition, without providing any indication on whether or not groundwater users are impacted by Manungu Colliery.	Tshedza Mining Resources confirmed that meetings are held with farmers. While Tshedza undertook to provide meeting minutes, these were never supplied.
Glencore Operations SA (Pty) Ltd: Tweefontein Complex (licence number 04/B11F/ABCFGJ/805)		
<u>Appendix IV, condition 3.3</u> <i>"The Licensee shall ensure that the quantity of the water to downstream users does not decrease because of the existence of river diversions, river crossings, and culverts and associated maintenance of road crossings."</i>	The external auditor confirmed compliance based on the fact that the complaints register contains no entries from downstream users. Mindful of the fact that the annual assessments of the sustainability of the diversions, that are	Glencore responded as follows to our request for a more scientific evaluation of the impact on downstream users: <i>"This is a compliant finding. The condition is not prescriptive as to the method to be adopted in measuring</i>

	required in terms of Appendix IV, condition 6.4.2, are presumably not done, no scientific data appears to be available to monitor the impact of Tweefontein's water use on the quantity of water available to downstream users (including aquatic ecosystems.)	<i>changes to the quantity of water to downstream users...."</i> While the condition is not prescriptive as to the method to be adopted to monitor compliance, it is clear that the absence of complaints alone cannot in itself conclusively be evidence of compliance.
South 32: Khutala Colliery (licence number 04/B11A/ABCGJ/135)		
<u>Appendix V, condition 9</u> <i>"The Licensee shall provide any water user whose water supply is impeded by the water use with potable water."</i>	<p>The external auditor confirmed compliance based on the fact that "Khutala sources potable water from Eskom and should a need arise to provide alternative water for external water users, this water will be made available."</p> <p>Whether Eskom has an adequate <u>authorised allocation</u> to provide both Khutala and affected users' needs, and if so, for how long such a solution can be sustained, is not addressed by the auditor.</p> <p>The auditor did not provide any comment on the impact on the groundwater quality of other beneficial users.</p>	<p>South 32 provided a specialist groundwater report by <i>Golder and Associates</i>¹⁹ in response to our request for more information on the impact on other users.</p> <p>The groundwater model developed by Golder suggests that the dewatering of the mine does not impact on groundwater levels of other users (yet).</p> <p>The quality impacts on downslope users have not yet been determined. We accordingly disagree with the compliant rating assigned by the auditor.</p>

Similarly, the DWS shifts the responsibility for determining the cumulative load of pollutants released in a catchment to the licence holders. The complexity of this task is beyond their knowledge and expertise and they simply ignore the requirement. This type of condition affects the credibility of the WUL in its entirety.

The following example is representative of most of the licence holders' responses to the condition requiring the determination of the mass balance for the water resource reserve compliance point.

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Tshedza Mining Resources (Pty) Ltd: Manungu Colliery water use licence (licence number 04/B20A/ACGIJ/2621)		

¹⁹ Report number 1521005-13619-3

<p><u>Appendix III, condition 5.1</u></p> <p><i>“The licensee shall update the water balance annually and calculate the loads of waste emanating from the activities. The licensee must determine the contribution of their activities to the mass balance for the water resource and must furthermore co-operate with other water users in the catchment to determine the mass balance for the water resource reserve compliance point.”</i></p>	<p>The external auditor confirmed compliance with the condition, but it transpires from the auditor’s motivation that a salt balance has not been developed.</p> <p>The auditor also failed to highlight the fact that the mass balance for the water resource reserve compliance point has not been determined in accordance with other water users in the catchment.</p> <p>The compliant conclusion is accordingly incorrect.</p>	<p>In response to our request for a copy of the mass balance for the water resource reserve, determined in consultation with other water users, Tshedza responded that:</p> <p><i>“The current mass balance was determined for the mine, and not in consultation with other water users in the catchment.”</i></p>
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Recommendation:

- We submit that the condition imposed on WUL holders to provide alternative supply to impacted users should be removed when renewing existing WULs. The condition will not be observed and creates a false sense of comfort. In addition, it does not reflect the principles of equitable allocation in the public interest enshrined in the National Water Act, 1998, which is a responsibility of the Minister of Water Affairs.
- Going forward, the DWS should take full responsibility for ensuring that citizens’ water rights are not violated by mining (and other) users to the extent that is not permissible in terms of the NWA.
- As regards the determination of the cumulative load of pollutants released in a catchment, we submit that DWS (or catchment management agencies) must fulfil this role.

4.1.6 Ambiguous wording

4.1.6.1 Financial provision for water treatment

The situation with flooded defunct mines in South Africa presents significant health and environmental risks and is a huge burden on the government (and tax payers). The Department of Mineral Resources is responsible for ensuring that holders of mining authorisations make adequate provision during the operational phases of the mine to ensure that all post-closure environmental mitigation measures can be funded.²⁰ To this day, this function is not fulfilled properly by the Department of Mineral Resources. The impacts of acidic mine water drainage into water resources are experienced at a number of defunct coal mines in Mpumalanga and have been the subject of many research papers.

In South Africa, it is estimated that plant construction costs for treating water pollution from abandoned mines could be around R5 billion, with annual operational costs estimated at several million. Guidelines by the Department of Mineral

²⁰ Section 24P, National Environmental Management Act, 1998.

Resources estimate that the cost to rehabilitate is approximately R50 000 per hectare. Anglo American estimates that waste disposal costs, using the three main mine water treatment technologies, can reach up to 25-30% of the life cycle costs.

Over the last decade, the DWS invested only around R120 million to investigate and deal with historical water pollution caused by abandoned mines. This is only a fraction of the amount required (Schwab, 2002). In the last five years, the Department of Mineral Resources has spent only around R42 million on rehabilitating five of the 5 906 derelict and ownerless mines. According to a study by the Council for Geoscience and the Department of Mineral Resources, closure of derelict and ownerless mines (including long-term treatment of acid-mine drainage) would cost up to R60 billion (WWF-SA, 2011).

The DWS has seemingly been attempting to fill the gap left by the inadequate controls of the Department of Mineral Resources, by including a condition in the WUL that requires of licence holders to make financial provision for water treatment during the operational phase of the mining operation in order to be in a position to fund treatment, should treatment become necessary in future.

Due to poor drafting, with the exception of South 32, this condition is conveniently misinterpreted by the licence holders as meaning that financial provision only needs to be made as and when it is clear that water treatment is required. This interpretation will not yield the required result, as the full extent of the treatment requirements and costs often only become known after closure. At this point, there are no means left to generate the vast amounts of money required to fund the pumping, treatment and distribution of treated water to beneficial users.

The ambiguous wording of the condition, and the failure to provide a more structured statutory regime for financial provisioning for water treatment during and after mine closure, thwarts the DWS's attempt to fill the regulatory gap left by the DMR.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER RESPONSE TO CER REQUIRE FOR ADDITIONAL INFORMATION
Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)		
<u>WUL Appendix V, conditions 13.4</u> <i>"The Licensee shall make full financial provision for all investigations, designs, construction, operation and maintenance for a water treatment plant should it become a requirement as a long-term water management strategy."</i>	<p>The external auditor concluded that this requirement was not applicable during the period under review.</p>	<p>Universal Coal Development I (RF) responded as follows to our request for clarification:</p> <p><i>"None of UDC I's specialist studies have recommended that a water treatment plant is required to be established as part of a long term water management strategy. Condition 13.4, Appendix V only requires financial provisioning to be set aside if a water treatment plant becomes a long-term management strategy. Until such time that this need is identified, no financial provisioning will be set aside for a water treatment plant."</i></p>
Anglo American Coal South Africa: Isibonelo Colliery: (licence number 240 84884)		

<p><u>WUL Appendix III, condition 12.4</u></p> <p><i>“The Licensee shall make full financial provision for all investigations, designs, construction, operation and maintenance for a water treatment plant should it become a requirement as a long-term water management strategy.”</i></p>	<p>The external auditor correctly concluded that the licence holder is non-compliant with this condition. The auditor noted that the Post Closure Water Management Model prepared for the colliery in 2012 underscores the necessity for water treatment. The auditor recommended that adequate financial provision for future water treatment be made.</p>	<p>Anglo American Coal SA responded as follows to our request for clarification:</p> <p><i>“... It must be emphasised that condition 12.4 in Appendix III of the IWUL refers to the consideration of a water treatment plant in circumstances where it is justified as a long term water management strategy of the mine. With reference to the IWULA Reports of 2002, water treatment was not identified at that stage as a measure to manage process water and no need for financial provision to undertake such treatment has to date arisen. Similarly, the recommendations of the Schlumberger report were not presented within a formal process context. The IWWMP of 2017 makes reference to the introduction of water treatment as an option for mine water management going forward. Once treatment scenarios have been explored, financial provision will be made accordingly.”</i></p> <p>We submit that the need for a water treatment plant to treat excess water has already been established in 2013 - see paragraph 5.10 of the 2017 IWWMP. Even in terms of the Licensee’s incorrect interpretation of the condition, financial provision for treatment should accordingly already be in place.</p>
<p>Glencore Operations SA (Pty) Ltd: Tweefontein Complex (licence number 04/B11F/ABCFGU/805)</p>		
<p><u>Appendix V, Condition 12.3</u></p> <p><i>“The Licensee shall make full financial provision for all investigations, designs, construction, operation and maintenance for a water treatment plant should it become a requirement as a long-term water management strategy.”</i></p>	<p>The auditor confirmed that the condition was not applicable during the period under review, based on the verbal confirmation by the Licensee that water treatment is not required at this stage.</p> <p>The auditor did not provide his own, independent view, based on the available monitoring data, regarding the anticipated need for water treatment post closure.</p>	<p>Glencore responded as follows to our request for copies of investigations and/or assessments that support the view that no water treatment will be required post closure:</p> <p><i>“A stand-alone water treatment plant for Tweefontein South is not envisaged at this stage.”</i></p> <p>This response is not verifiable, and does not support the auditor’s conclusion that water treatment is not necessary.</p>

	The auditor also does not highlight the Licensee's incorrect interpretation of the condition.	
Exxaro: Leeuwpan coal mine (licence number 04/B21A/ABCGIJ/429)		
<u>Appendix V, Condition 11.4</u> <i>"The Licensee shall make full financial provision for all investigations, designs, construction, operation and maintenance for a water treatment plant should it become a requirement as a long-term water management strategy."</i>	The auditor simply noted this condition, commenting that "the licensee is aware of this condition should it become a requirement".	In response to the CER's request for Exxaro's strategy for dealing with contaminated water at its Leeuwpan coal mine, Exxaro responded indicating that it is in the process of updating the geohydrological report, which will be used to determine Leeuwpan's long term water management strategy. Acid mine drainage is predicated for this mine (post closure). ²¹ The absence of full financial provision is a major non-compliance. The mere noting of this condition is wholly inadequate.

Recommendations:

- DWS should clarify their intention with this condition. If our interpretation is correct (i.e. financial provision must be made for water treatment, irrespective of whether or not treatment is envisaged at this point in time), the wording should be changed to eliminate the ambiguity.
- It is advisable to link this requirement with the financial provisioning requirements of the National Environmental Management Act, 1998 (GM R 1147), which already requires such provision to be made for all environmental impacts associated with unplanned and planned mine closure.²² Due to lacking enforcement by the DMR, the required provisioning is not made though. We submit that the DMR does not have the required expertise to evaluate the adequacy of the financial provision made for water related management measures.
- It furthermore follows that the DWS should study the water monitoring reports submitted to them on a quarterly and annual basis to determine the need for water treatment to achieve compliance. Currently, the reports are received and no intervention follows to ensure that off-spec water quality is addressed.

4.1.6.2 Not tailoring the WUL to site-specific conditions

Much confusion/exploitation is caused by the DWS' failure to refine its templates to clearly reflect the water user's own infrastructure. This is particularly problematic in the context of section 21(c) and (i) water use, where the licence holders fail to grasp that the conditions refer to their own disclosed section 21(c) and (i) water uses.

Examples:

²¹ Leeuwpan Colliery Hydrogeological Investigation Report (Final), prepared by GCS Water & Environmental Consultants, August 2014 (GCS Project Number: 11-447GW)

²² Section 24P of the National Environmental Management Act, 1998 refers (read with GN R 1147)

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER'S RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Tshedza Mining Resources (Pty) Ltd: Manungu Colliery water use licence (licence number 04/B20A/ACGIJ/2621)		
<p><u>Appendix II, Condition 3.3</u></p> <p><i>"The licensee shall ensure that the quantity of water to downstream water users does not decrease because of the existence of the river diversions, river crossings, culverts and associated maintenance."</i></p>	<p>The external auditor merely noted this condition, without providing any compliance commentary.</p>	<p>In response to our request for additional compliance commentary, Tshedza Mining Resources confirmed that -</p> <p><i>"No river diversions, or river crossing, or construction of culverts was ever conducted since the commencement of mining at Manungu Colliery".</i></p> <p>However, eight section 21 (c) & (i) uses are listed in Table 3 of the WUL (Appendix III).</p> <p>The DWS' incorrect reference to these uses as "river diversions" and "river crossings" in Appendix II, condition 3.3 (instead of using the terminology used in Table 3 of the WUL) likely contributed to the licence holder's belief that the conditions in appendix III are not applicable.</p>
Glencore Operations SA (Pty) Ltd: Tweefontein Complex (licence number 04/B11F/ABCFGII/805)		
<p><u>Appendix IV Condition 6.4.2</u></p> <p><i>"Annually assess the habitat to sustainability of the diversions and compliance with these conditions. Action must be taken to rectify any negative impacts."</i></p>	<p>The external auditor confirmed that the condition was not applicable during the period under review, but indicated that the licensee "acknowledges" the condition and will comply only when the rehabilitation of 5 Seam Tavistock has been completed.</p> <p>The fact that the annual assessment of the habitat disturbed by the Table 3 water uses is not done was not highlighted by the auditor as non-compliance.</p>	<p>In response to our request for additional information regarding the need for annual assessments and the timing of the planned compliance, Glencore contradicted their auditor's comment by denying that there are any diversions on site.</p> <p>The author of Glencore's response fails to grasp that the Appendix IV conditions refer to their section 21(c) uses listed in Table 3 of Appendix IV. Glencore seem to be unfamiliar with the legal definition of a watercourse, and/or with the fact that several of the pipelines, actual mining and storm water dam are located within the Klipoortjiespruit.</p> <p>Although this ignorance is not excusable, it is probably also partly due to the DWS' failure to align the terminology used in the conditions with those of the actual section 21(c) uses listed in Table 3.</p>

		As a result, these important conditions are ignored.
<p><u>Appendix IV Condition 6.6</u></p> <p><i>“The licensee shall ensure that for every 1 ha of the pan that is destroyed, 3 ha must be rehabilitated.”</i></p>	<p>The external auditor again confirmed that the licensee acknowledges the condition and will comply “in due course” when the rehabilitation of 5 Seam Tavistock is completed.</p>	<p>In response to our request for a copy of the rehabilitation plan pertaining to the destroyed pan, Glencore again contradicted their external auditor by merely stating that no pans have been destroyed.</p> <p>The Table 3 uses, however, refers to the undermining of water pans 1 and 2, including co-ordinates.</p> <p>On the limited information provided by the external auditor, it appears if the “diversions” and “pan” referred to relate to the location of 5 Seam Tavistock and related infrastructure in the Klippoortjiespruit.</p> <p>The condition to rehabilitate 3 ha for every hectare destroyed is open to different interpretations. 3 ha of <i>what</i> has to be rehabilitated?</p>

Recommendations

DWS should tailor the conditions for section 21(c) and (i) water use to be aligned with the terminology used in the table containing the list of the authorised section 21 (c) and (i) uses. For example, if the use relates to the impedance of flow by the mining of a wetland, the conditions should not refer to a stream diversion, but should instead refer to the “mining of a wetland”.

4.1.7 Compulsory submissions not tracked or enforced

Most of the WULs included in our review sample require the submission of a number of programmes, plans and/or reports. Some of these are once off submissions (e.g. wetland rehabilitation strategies), whereas others are scheduled reports that must be submitted quarterly (e.g. water quality results) and/or annually (e.g. internal and external audit reports).

Our assessment revealed that these reports are either not submitted for approval, or if submitted, no response is forthcoming from the DWS.

Many of the reports reveal deterioration of water resources and/or non-compliance with prescribed water quality requirements. Several of the monitoring locations are also not aligned with the mandatory locations specified in the WULs. The absence of a response from the DWS is interpreted by many of the licence holders as a condonation of the non-compliance.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Glencore Operations South Africa: Goedgevonden Colliery (licence number: 24084063)		
<p><u>Appendix 1, condition 20</u></p> <p><i>“The Licensee shall commence with the implementation of the wetland rehabilitation plan within four (4) months from approval of the wetland rehabilitation plan.” (Emphasis added.)</i></p>	<p>The external auditor confirmed compliance based on the DWS having consented to Glencore proceeding with the “development” of the Goedgevonden wetlands offset strategy in January 2015. The WUL was issued in 2007.</p> <p>The auditor did not indicate whether the strategy had been approved (as required by the WUL condition), and whether implementation commenced within 4 months from such approval. The compliant conclusion can accordingly not be verified.</p>	<p>Glencore responded as follows to our request for a status report on the implementation of the DWS-approved wetlands offset strategy:</p> <p><i>“The WUL condition does not require GGV to prepare a status report or that a status report be provided to the DWS.”</i></p> <p>Glencore’s refusal to provide a status report means that compliance with this condition cannot be assessed.</p>
<p><u>Appendix IV, condition 8.1.5 and 8.2</u></p> <p><i>“The quantification of inter-mine flow at Goedgevonden Colliery is important to accurately determine the final long-term decant volumes associated with the mining operations. The following actions need to be implemented: monitor underground qualities in underground sections and in barrier pillars on a six-monthly basis.</i></p> <p><i>An appropriate protocol for inter-mine flow monitoring shall be developed and implemented, and shall be reviewed on an annual basis as more information becomes available.” (Emphasis added.)</i></p>	<p>The external auditor confirmed non-compliance with this condition based on the unavailability of information.</p> <p>We accordingly requested results of the 2017 groundwater monitoring programme.</p>	<p>Glencore did not provide the requested results, but merely confirmed that their 2016/2017 strategy had since been completed. The strategy was not made available for review.</p>
Anglo American Coal South Africa: Isibonelo Colliery: (licence number 240 84884)		
<p><u>Appendix III, condition 5.1</u></p>		

<p><i>“An environmental assessment and monitoring programme to determine the impact, change, deterioration and improvement of the aquatic system associated with these activities as well as compliance to these water use licence conditions must be developed and submitted to the Regional Chief Director for written approval before construction commences and must subsequently be implemented as directed.”</i></p>	<p>The external auditor confirmed compliance with the condition based on the fact that biomonitoring is conducted. The written approval of the monitoring programme has not yet been obtained though.</p> <p>The auditor does not indicate whether the monitoring programme reveals an impact, change, deterioration or improvement of the aquatic system.</p>	<p>Anglo American Coal South Africa responded as follows to our request for proof of approval of the monitoring programme:</p> <p><i>“...To date, Isibonelo Colliery has not received any comments from the DWS regarding the environmental assessment and monitoring system implemented. In accordance with the aforesaid system a biomonitoring report has been submitted to the department. A copy of the biomonitoring report is attached hereto.”</i></p> <p>The biomonitoring report supplied for our review is vague and does not provide any clarity regarding Isibonelo’s impact on the aquatic ecosystem.²³</p> <p>No request for clarification or additional information was issued by the DWS, as evident from the following responses:</p> <p><i>“The DWS has not corresponded with Isibonelo Colliery in respect of the submission of the 2017 internal and/or external WUL audit reports.”</i></p> <p>and</p> <p><i>“The DWS has not corresponded with Isibonelo in respect of the water quality data submitted.”</i></p>
South 32: Khutala Colliery (licence number 04/B11A/ABCGJ/135)		
<p><u>Appendix III, condition 1.24</u></p> <p><i>“The Licensee shall submit a complete mitigation and management master plan within four (4) months of issuance of this water use licence regarding the impact of open cast mining operation on the wetlands. The report shall thereafter be submitted to the Regional Head every six (6) months until the land is restored to</i></p>	<p>The external auditor confirmed partial compliance with this condition without having viewed the master plan or the six-monthly annual updates:</p> <p>“Khutala reported that the mine conducts annual wetland assessments yet no evidence of the wetland assessment report for 2015</p>	<p>South 32 submitted copies of the following documents in response to our request for the master plan and proof of the biannual submission.</p> <ul style="list-style-type: none"> • RSIP; • Water Management Plan;

²³ Aquatic Macro Invertebrate Monitoring: Anglo Operations (Pty) Ltd: Isibonelo Colliery, Kriel, Mpumalanga Province, December 2017 / February 2018, prepared by Afrika Enviro and Biology

<p><i>resemble to some natural catchment runoff characteristics.”</i></p>	<p>was provided to the auditing team. The mine conducts biomonitoring every six months with the last study completed in August 2016. Evidence of the report submissions to the DWS was not available for verification.”</p>	<ul style="list-style-type: none"> • Biomonitoring Assessment, Nov 2017; • Wetlands Report, dated 2017. <p>None of the supplied records contained the requested information, and it is assumed that the mitigation and management master plan do not exist.</p>
<p>Wescoal: Vanggatfontein Colliery (licence number: 04/B20F/ABCGIJ/2788)</p>		
<p><u>Appendix IV, condition 3.3.14</u></p> <p><i>“The licensee shall undertake a full encompassing decant and water treatment assessment for its existing operations, and meeting the watercourse standards as mentioned in this licence during operation and after closure, including financial liabilities and provisions as it is currently omitted in the closure funding (condition 1.2.1.4). This assessment must be submitted to the Provision Head within ninety (90) days after the issuance of this licence for written approval.”</i></p>	<p>The auditor confirmed non-compliance with this condition.</p> <p>However, the auditor commented that the “2008 closure costing formed part of the original WUL Application and excluded water management of decant. This documentation must have been submitted to the DWS in the middle of April 2015.” The auditor then recommended that “the 2008 hydrological model be updated and calibrated annually to increase the confidence levels”. Management’s response in the audit process was to note that the groundwater model had been updated in November 2016, and that a copy would be submitted to the DWS in January 2017.</p>	<p>In response to our request for proof of submission of the updated assessment encompassing decant and water treatment assessments, and any correspondence received from the DWS in connection therewith, Wescoal responded to say that the groundwater model had been updated and submitted to the DWS (proof of submission was attached to their response), and that no correspondence had been received from the DWS in connection therewith. The CER also requested a copy of the most recent closure estimates, and financial provision (with specific reference to water management). Wescoal provided this, although the document provided did not include a breakdown of costs for the water management component.</p> <p>The CER accordingly sent a follow up request for a copy of the groundwater model (as only proof of submission had been provided), and for a breakdown of water management costs included in the financial provision. Wescoal did not respond to this follow- up correspondence.</p>
<p>See also paragraph 4.3.7 for additional examples of violations revealed by the licence holders’ mandatory submissions to the DWS.</p>		

Recommendations:

The failure to track the submission of mandatory reports, and to review and respond to the licence holders' submissions are indicative of a massive governance failure at the DWS.

4.1.8 Failure to collect water use charges

The abstraction of water from a public resource attracts a tariff in terms of the DWS' water pricing strategy.

A number of WUL holders in our assessment sample have not been invoiced for the water taken from the water resource.

In addition, tariff structures for the discharge of wastewater have not yet been finalised or implemented and financial disincentives for release of contaminated water do not currently exist.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT
Tshedza Mining Resources (Pty) Ltd: Manungu Colliery water use licence (licence number 04/B20A/ACGIJ/2621)	
<u>Appendix II, condition 6</u> <i>"The Licensee must be responsible for any water use charges or levies which may be imposed from time to time by the Department or Responsible Authority in terms of the Department's Raw Water Pricing Strategy."</i>	<i>"Licensee is aware and prepared to pay any water use charges. Submission to DWS for registration was submitted on 11 August 2015. To date, no invoices were received by the mine."</i>
Glencore Operations South Africa: Goedgevonden Colliery (licence number: 24084063)	
<u>Appendix I, condition 11</u> <i>"The licensee shall be responsible for any water use charges or levies imposed from time to time by a responsible authority of the Department in terms of the Water Resource Management Charge of the Department, or any other water charge or levies that might be imposed in terms of the appropriate legislation."</i>	<i>"GGV did not receive invoices from the DWS during the audit period under review."</i>
Wescoal: Vanggatfontein Colliery (licence number: 04/B20F/ABCGIJ/2788)	
<u>Appendix I, condition 6:</u>	

<p><i>“The Licensee must be responsible for any water use charges or levies imposed by a Responsible Authority.”</i></p>	<p>“Sporadic invoices were received from the DWS in 2016. Enquiries were sent to DWS Revenue Services. Awaiting their responses. Follow-ups will be done in 2017.”</p>
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Recommendations:

- The recovery of existing water use charges should be seamless. The failure to collect water tariffs should be investigated and addressed as matter of urgency.
- The long overdue implementation of tariffs for wastewater discharge should be prioritised. This single step can make a significant difference to water users’ approach towards waste water management in the country.

4.2. ROLE OF INDEPENDENT ENVIRONMENTAL AUDITORS

The extracts from the 2017 external WUL audit reports provided in paragraph 4.1 above exposed various weaknesses in the audit reports that were evaluated. The external auditors who prepared the audit reports for the eight companies in our sample, are:

1. Kongiwe Environmental (Tweefontein and Goedgevonden)
2. Letsolo Water and Environmental Services (Manungu)
3. GCS Water and Environmental Consultants (Leeuwpan)
4. NTC Group (Khutala)
5. Alta van Dyk Environmental Consultants (Vanggatfontein)
6. Shangoni Management Services (Isibonelo)
7. Headwaters Water and Environmental Consultants (Kangala)

4.2.1 Minimum requirements for external audit reports not observed

Water use licence audits are subject to the requirements for environmental audits imposed by GN R 982, promulgated in terms of the National Environmental Management Act (NEMA). In this regard, the NEMA definitions for “environmental authorisation” and “specific environmental management Act” are reproduced below for ease of reference:

“environmental authorisation” - when used in Chapter 5, means the authorisation by a competent authority of a listed activity or specified activity in terms of this Act, and includes a similar authorisation contemplated in a **specific environmental management Act**.

“specific environmental management Act” – means –

(a) the Environment Conservation Act, 1989 (Act No. 73 of 1989);

(b) the National Water Act, 1998 (Act No. 36 of 1998);

(c) the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003);

(d) the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004);

(e) the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004),

(f) the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008);

(g) the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008); or

(h) the World Heritage Convention Act, 1999 (Act No. 49 of 1999),

and includes any regulation or other subordinate legislation made in terms of any of those Acts.

The WUL holders and their independent external auditors are apparently not aware of the minimum statutory requirements for WUL audits. In addition, the WUL audit reports are not published on the licence holders’ publicly accessible website, where the holder has such a website, as required (NEMA, GN R 982, regulation 34 (6)(b)).

Examples:**Glencore Operations South Africa: Goedgevonden Colliery**

“In paragraph 5.3 of the CER correspondence it is alleged that there is a “...lack of information regarding the reasons for such non-compliance, as well as details regarding any sections taken by Goedgevonden to rectify such non-compliances.” The conditions in the WUL are not prescriptive as to how the external audit must be undertaken or the information that must be contained in the external audit report. There is no legal obligation on the external auditor to provide an explanation as to its observations and audit findings.”

Glencore Operations South Africa: Tweefontein

“In paragraph 5.2 of the CER’s letter the CER states, with reference to the external audit report, that where an audit finding indicates that conditions have been complied with, the external auditor does not provide a “justification” for such compliance finding. The WUL is not prescriptive as to how a compliance finding should be expressed and recorded by an external auditor. The CER seeks to dictate and impose its own subjective interpretation of audit methodologies. Glencore and Tweefontein Colliery submits that it does not befall the external auditor to provide such explanations in relation to compliance findings as there is no legal obligation in the WUL which requires of the external auditor to provide explanations beyond its observations and findings.”

4.2.2 Unsubstantiated conclusions

The examples highlighted above in paragraph 4.1 reveal a number of compliance conclusions that are either contradicted by the motivation provided by the auditor, or cannot be substantiated on the available information. Verifiable audit findings and the recording of key information that has been considered (per audit finding) is not only required in terms of the National Environmental Management Act, 1998 but is a basic principle of performance auditing that applies across all sectors.²⁴ A long list of documentation considered at the end of the audit report does not enable the regulator (or any other reader of the audit report) to evaluate and validate a particular audit finding. The DWS cannot be expected to work through thousands of pages to verify a particular compliance conclusion.

Example:

South 32: Khutala Colliery (licence number 04/B11A/ABCGJ/135)	
CER’s concern: A number of audit findings are assessed as “C” (defined as “compliant”) with reference only to the fact that the licensee indicated to the auditor that it was complying with the condition. Auditors are required to independently assess compliance, and cannot simply rely on what the licensee indicates.	South 32’s response: <i>“Clause 3, on page 10 sets out the method adopted by the NTC, in collating the relevant information. Clause 3.1 on page 10, which continues on page 11, clearly demonstrates that the information and documents, that were collated by NTC, prior to the audit, were extensive and comprehensive. Clause 3.1, on page 10 also clearly indicates that the list was not an exhaustive list.”</i>

²⁴ See, for example ISO 14031, Environmental Performance Evaluation: Guidelines

	As mentioned, the DWS official cannot be expected to literally search through thousands of pages to verify a particular conclusion. The auditor should identify the information underpinning each of audit findings properly, including the document title and paragraph number (if the findings is based on documentary evidence).
Exxaro: Leeuwpan coal mine (licence number 04/B21A/ABCGIJ/429)	
CER's concern: A number of conditions are given a score of "2" (defined as "compliant") in the audit, but the only information provided to verify this score is the statement that <i>"activities at the mine were undertaken as per the reports listed"</i> . These findings are not verifiable. More detailed information should be provided to enable an assessment of whether the conclusions reached are a fair reflection of the licensee's compliance status.	Exxaro's response: <i>"...we were informed that the findings are based on the discretion of the auditors, as per the experience of the auditors and the observations made on site. In addition, all the documents on which the audit findings were based were, together with the audit report, submitted to the DWS."</i> As mentioned, the DWS official cannot be expected to literally search through thousands of pages to verify a particular conclusion. The auditor should identify the information underpinning each of audit findings properly, including the document title and paragraph number (if the findings is based on documentary evidence).

4.2.3 Deviations from prescribed monitoring requirements not highlighted

The compulsory monitoring requirements imposed by the WUL should be meticulously audited to ensure that all of the prescribed monitoring locations and variables are covered. The non-exhaustive examples provided below reveal the external auditors confirming compliance with the monitoring requirements, whereas a review of the specialist monitoring reports highlight that the prescribed monitoring points and/or variables are not in all instances covered. The fact that this situation is then concealed by a compliant conclusion constitutes a misrepresentation to the regulator on a critical aspect of WUL compliance.

Examples:

Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)	
<u>Appendix V, condition 7.2</u> <i>"The Licensee shall submit the results of analysis for the monitoring requirements to the Regional Head</i>	The external auditor confirmed compliance with the condition without highlighting the fact that all of the prescribed monitoring locations were not sampled. UCD I provided us with copies of the four quarterly reports for 2017. All of these reports highlighted blocked and inaccessible boreholes that could not be sampled.

<p>on a quarterly basis under reference number 16/2/7/B100/C251.”</p>	<p>The specialist recommendations to clear the boreholes were either not implemented, or the measures taken were not effective. This situation was highlighted by the auditor.</p>
<p>Tshedza Mining Resources (Pty) Ltd: Manungu Colliery water use licence (licence number 04/B20A/ACGIJ/2621)</p>	
<p><u>Appendix III, condition 3.4</u></p> <p><i>“The licensee must monitor on a monthly basis the water resources at surface water monitoring points and on a quarterly basis the groundwater monitoring points to determine the impact of the facility and other activities on the water quality by taking samples at the monitoring points.”</i></p>	<p>The external auditor confirmed compliance without highlighting the fact that only one of the five groundwater monitoring boreholes is at the location prescribed by the WUL, Appendix III, condition 3.3 (stipulating SIX points).</p> <p>The water quality monitoring report reveals that groundwater is not monitored at the stipulated high-risk localities and that Total Petroleum Hydrocarbon is not monitored (as required in terms of Appendix III, condition 12.1). The impact on groundwater quality is accordingly undetermined, meaning that the auditor’s compliance confirmation is incorrect.</p>
<p>South 32: Khutala Colliery (licence number 04/B11A/ABCGJ/135)</p>	
<p><u>Appendix IV, condition 1.10</u></p> <p><i>“The Licensee shall establish monitoring boreholes and undertake quarterly groundwater monitoring in the vicinity of the rehabilitated old Kendal Ash Dump. The results of the groundwater monitoring together with the IWWMP shall be submitted to the Regional Head.”</i></p>	<p>The external auditor rated this finding as partial compliance, based on the following confirmation by Khutala:</p> <p><i>“Khutala Colliery reported that monthly ground water level sampling at upstream and downstream, as well as onsite, boreholes is completed, while quarterly water quality sampling is completed.”</i></p> <p>Whether groundwater monitoring locations are indeed located in the vicinity of the rehabilitated old Kendal Ash Dump is not confirmed by the auditor.</p>
<p>See paragraph 4.3.7 for more examples.</p>	

4.2.4 Monitoring data not interpreted

Several of the WUL conditions impose monitoring obligations with a view to determining an impact on the receiving environment. The monitoring requirement is merely a reactive measure to test the effectiveness of the proactive pollution prevention measures, as described in the WUL application.

The external auditors generally confirmed compliance with these conditions, based on the fact that monitoring is conducted. The results of the monitoring programmes, with specific reference to the impact on other beneficial users (including the aquatic ecosystem), were not disclosed in the audit reports.

This renders the water monitoring programmes nothing more than data collection exercises, to which nobody responds. The external auditors should interpret the monitoring results and indicate whether a detrimental impact is evident from the

available data. The corrective action should also be evaluated, instead of commenting year in and year out that the WUL holder is compliant, whilst in actual fact the monitoring data shows a deteriorating trend in the monitored resource.

Where external monitoring reports are void for vagueness, the external auditor must highlight the unsatisfactory nature of the specialist reports and should make appropriate recommendations to address the knowledge gaps.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Glencore Operations SA (Pty) Ltd: Goedgevonden Colliery (licence number: 24084063)		
<p><u>Appendix III, condition 1.3.1</u></p> <p><i>“The licensee shall ensure that its activities do not negatively affect any wetlands (as defined by the Act) upstream or downstream of the demarcated mining area and shall minimise the impacts of the mining activities as much as possible on the mining property.”</i></p>	<p>The external auditor confirmed compliance based on the fact that quarterly biomonitoring and water quality monitoring is undertaken.</p> <p>The auditor offered no interpretation of the monitoring data to indicate whether the licence condition (e.g. prohibiting a negative effect on the wetlands) is achieved.</p>	<p>Glencore responded as follows to our request for a copy of the Biomonitoring Reports for the period March 2017 and October 2017:</p> <p>“A compliant finding has been raised by the external auditor. GGV is not required to submit bio-monitoring results or reports to the DWS in terms of this WUL condition. Accordingly, we are not providing memorandums as requested and in addition, the documents are of a scientific nature.”</p>
<p><u>Appendix III, condition 2.2.6</u></p> <p><i>“Monitor and investigate if the water quality of the water in the public streams concerned changes by more than 5% from the background water quality of the same stream and the licensee shall take the necessary steps to ensure that the source and/or reason for deterioration are investigated and the necessary corrective actions be implemented.”</i></p>	<p>The external auditor again confirmed compliance based on the fact that water quality monitoring is undertaken.</p> <p>The auditor did not benchmark the monitoring data against the background water quality, as required, and provided no indication as to whether or not the data indicates deterioration.</p> <p>The auditor’s conclusion is accordingly not verifiable.</p>	<p>Glencore responded as follows to our request for copies of the water quality monitor data for the period February 2017 – May 2017:</p> <p>“As indicated by the external auditor, GGV monitors and investigates water quality as required by the WUL condition. A compliant finding has accordingly been raised by the external auditor.</p> <p>This WUL condition does not require the submission of</p>

		Aquatic Test results to the DWS."
South 32: Khutala Colliery (licence number 04/B11A/ABCGJ/135)		
<p><u>Appendix III, condition 7.5</u></p> <p><i>"The Licensee shall do bio-monitoring to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities that of impeding, altering or diverting the water resource."</i></p>	<p>The external auditor confirmed compliance based on the fact that the monitoring is conducted:</p> <p><i>"The auditor verified that biomonitoring is completed annually (Aquatic Biomonitoring Assessment Autumn 2016 Survey (Re. 506490 dated August 2016) and Aquatic Biomonitoring Assessment Spring 2015 Survey (Ref. 506490 dated February 2016))."</i></p>	<p>South 32 provided us with a copy of the said biomonitoring assessment</p> <p>The report confirms that the watercourses associated with the Khutala Colliery (including the once pristine Wilge River), are seriously impaired. The author ascribes the deterioration at sampling site #6 to Khutala, and the rest to Goedgevonden Colliery (upstream) and a reduction in water quantity (resulting in concentration of pollutants and algae growth). No indication is given as to Khutala's impact on available water in the system.</p> <p>The WUL auditor provides no interpretation of the biomonitoring report. The DWS has not responded to the Biomonitoring report either.</p>
<p><u>Appendix IV, condition 1.7</u></p> <p><i>"The Licensee shall conduct Geohydrological studies to continually determine possible pathway down slope of the opencast which could result in a more pronounced groundwater quality affected zone and seepage to the receiving water body."</i></p>	<p>The external auditor confirmed full compliance based on the fact that a Geohydrological study was done.</p> <p><i>"A Geohydrological study was conducted by Golder to develop a groundwater model for the mine (Khutala Preliminary Groundwater Model, 2016)."</i></p>	<p>South 32 supplied a copy of the geohydrological study upon request.</p> <p>We reviewed the study, but could not find a contaminant transport model. This will apparently be done in PHASE 2. Possible down-slope pathways of contaminants are undetermined, meaning that the auditor's "compliant" rating is incorrect.</p>
Exxaro: Leeuwpan coal mine (licence number 04/B21A/ABCGJ/429)		
<p><u>Appendix V, condition 1.2.1.1</u></p> <p><i>"The licensee must carry out and complete all the activities listed under condition 1.1. according to</i></p>	<p>The external auditor confirmed compliance with this condition by noting that activities were undertaken <i>"per the reports listed"</i>.</p>	<p>We requested proof of compliance with the IWWMP, and Exxaro responded by providing a copy of the IWWMP.</p>

<i>the following... Leeuwpán Coal IWWWMP”</i>		The IWWWMP provided was merely a draft report, without proof of approval, and without proof of compliance.
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4.2.5 Conclusions based on visual observations

A number of the conditions imposed by the WULs concern the adequacy of clean and dirty water separation infrastructure, including freeboard requirements. Systems must be in place to monitor the freeboards on the dirty water containment systems with a view to the timely activation of preventative measures to prevent overflow situations.

The effective separation of clean and dirty water systems also requires a detailed understanding of rainwater runoff patterns, volumes of rain water and process water, etc. The capability of this system arises from complex hydrological information and appropriate engineering designs. The DWS’ Best Practice Guideline on Storm Water Management ²⁵ outlines the components of clean and dirty water separation systems and provides a sound basis for auditing of this important aspect. However, based on our assessment sample, it is clear that auditors do a “walk-through” visual assessment of whatever they encounter on the day of the audit and reach compliance conclusions based on very limited visual information, and in some instances even in the absence of structured monitoring programs and/or records.

This concern is clearly illustrated by the examples provided above in the context of storm water conditions (paragraph 4.1.4.2). The following additional examples also reveal the recklessness of the auditors in this regard.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Tshedza Mining Resources (Pty) Ltd: Manungu Colliery water use licence (licence number 04/B20A/ACGIJ/2621)		
<u>Appendix III, condition 6.1</u> <i>“The waste facilities listed in Table 4 must be operated and maintained to have a minimum freeboard of 0.8 meters above full supply level and all other water systems related thereto must be operated in such a manner that it is at all times capable of handling the 1:50 year flood event on top of its mean operating level.”</i>	<p>The external auditor evaluated the freeboard at the PCD visually, and only on the day of the audit.</p> <p><i>“The water level at the PCD was high on the date of audit. The 0.8m freeboard was not honoured.”</i></p> <p>The fact that a reliable freeboard monitoring and management plan is not</p>	<p>Tshedza Mining Resources</p> <p>Responded as follows to our request for confirmation of the number of days for which the required freeboards were not maintained:</p> <p>“The rainfall event which resulted in the PCD overflow was not a stormwater event, the number of days of which</p>

²⁵ Best Practice Guidelines for Water Resource Protection in the SA Mining Industry, Series G: Best Practice Guideline G1: Storm Water Management, August 2006.

	<p>in place was not highlighted by the auditor.</p> <p>In addition, no compliance commentary was provided for the other dirty water management infrastructure (at the time of the audit.)</p>	<p>the PCD freeboard did not comply cannot be confirmed since only visual observation were made and no records were kept..." (Emphasis added.)</p>
Glencore Operations SA (Pty) Ltd: Tweefontein Complex (licence number 04/B11F/ABCFGJ/805)		
<p><u>Appendix IV, Condition 1.13</u></p> <p><i>"The natural migration of aquatic biota and upstream movement of fish must not be disturbed."</i></p>	<p>The external auditor confirmed compliance based on visual observations at the time of the audit.</p> <p>Clearly upstream movement of fish cannot be evaluated visually on the day of the audit.</p>	<p>Glencore responded as follows to our request for a copy of biomonitoring reports:</p> <p><i>"This is a compliant finding. The CER does not question the veracity of the finding by the external auditor. The WUL is not prescriptive as to the methodology to be adopted in the assessment of compliance with this condition."</i></p> <p>Based on the available information, the DWS did not question any aspects of the external audit report.</p>

4.2.6 Effective implementation not evaluated

Many of the WUL conditions expressly require the implementation of certain strategies, plans or protocols, whereas the implementation of other programmes must be reasonably inferred. For example, although the conditions that require the annual submissions of the IWWMP and RSIPs for approval does not expressly state that these programmes must be implemented, it is common sense that a plan without implementation is futile.

The external auditors do not follow this logic, and reach compliance conclusions based on the submission of the reports alone. The effective implementation of the plans is not tested. Only one of the auditors in our audit sample (Shangoni Management Services) highlighted the fact that the licensee does not have a system in place to monitor compliance with the IWMMP and/ or the RSIP. The others merely confirmed compliance based on the submission of the reports alone.

We submit that the plans/programmes form part of the licence conditions, are legally binding (once approved), and should be audited as part of the internal and external WUL compliance audits.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT	WUL HOLDER RESPONSE TO CER REQUEST FOR ADDITIONAL INFORMATION
Glencore Operations SA (Pty) Ltd: Tweefontein Complex (licence number 04/B11F/ABCFGII/805)		
<p>Appendix V, Condition 12.1</p> <p>“The IWWMP and RSIP shall thereafter be updated and submitted to the Regional Head for approval, annually.”</p>	<p>The external auditor confirmed compliance with this condition without highlighting the fact that the documents have not been approved by the DWS.</p>	<p>Glencore responded as follows to our request for an audit/inspection report that captures their compliance status with the IWWMP & RSIP:</p> <p><i>“This condition does not require the IWWMP or the RSIP to be audited. Proof of submission of the 2018 IWWMP is attached. No further correspondence has been received from the DWS following the aforesaid submission.”</i></p>

4.2.7 Optimal use of water not audited

Most of the WULs contain a general condition requiring the licensee to investigate and implement water savings strategies on a continuous basis. The DWS’ Best Practice Guideline for Waste Re-use and Reclamation²⁶ could be used as an auditing tool to benchmark the water efficiencies of the licence holder.

However, compliance commentary included in the external audit reports for this condition is usually limited to one or two (often insignificant) water saving measures that were implemented during the period under review, without quantifying the saving, or commenting on additional opportunities for more optimal use.

Examples:

The two examples below are representative of most of the audit comments in the review sample regarding the issue of optimal use.

WUL CONDITION	EXTERNAL AUDITOR COMMENT
Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)	
<u>Appendix II, Condition 3</u>	

²⁶ Best Practice Guidelines for Water Resource Protection in the SA Mining Industry, Series H: Best Practice Guideline H3: Water Reuse and Reclamation, June 2006

<p><i>“The licensee shall continually investigate new and emerging technologies and put into practice water efficient devices or apply technique for the efficient use of water, in an endeavour to conserve water at all times.” (Own emphasis.)</i></p>	<p>The external auditor rated this condition as complaint, and provided the following motivation:</p> <p><i>“As part of implementing new technologies, the Licensee has installed a water reclamation system augmenting the oil-water separation facility. The Licensee is also investigating measures to minimise evaporation losses at the PCD in order to improve on conserve water, as well as improving recovery and efficiency.”</i></p> <p>CER comment: We submit that motivation does not support a compliant conclusion. A single measure that was implemented (augmenting the oil-water separation facility) cannot be regarded as adequate, unless the auditor can confirm that no other reasonable measures exist to conserve water.</p>
<p><u>Appendix II, Condition 3</u></p> <p><i>“The Licensee shall establish and implement a continual process of raising awareness amongst itself, its workers and stakeholders with respect to Water Conservation /Water Demand Management initiatives.” (Own emphasis)</i></p>	<p>The external auditor confirmed the licence holder to be in compliance with this condition without providing a motivation.</p> <p>The audit outcome cannot be verified without a description of the measures that were implemented to conserve water, and the results of such programmes (in terms of quantified water savings.)</p>
<p><u>Appendix II, condition 6</u></p> <p><i>“The Licensee shall continually investigate new and emerging technologies and put into practice water efficient devices or apply technique for the efficient use of water containing waste, in an endeavor to conserve water at all times.”</i></p>	<p>The external auditor confirmed compliance, stating that:</p> <p><i>“ Khutala Colliery make use of the Scada system which is linked to the electronic flow meters around the mine to detect leakages. Khutala recycles water and utilise dirty water for dust suppression.”</i></p> <p>CER comment: Although the detection of leakage is a key part of water management, the information provided by the auditor is not adequate to justify a conclusion of compliance with the water conservation obligation.</p>

4.2.8 Non-reporting of pollution incidents and licence condition violations not highlighted

A standard condition in all of the WULs requires the reporting of pollution incidents, **as well as** violations of licence conditions.

WUL holders and external auditors generally interpret “incident” as a catastrophic incident that causes impacts off site. This interpretation is not based on the legal definition of an “incident” contained in section 20 of the National Water Act, 1998:

In this section “incident” includes any incident or accident in which a substance –

- (a) pollutes or has the potential to pollute a water resource; or
- (b) has, or is likely to have, a detrimental effect on a water resource.

Any deterioration of the public resource that is caused by the licensee's activities is a pollution incident by legal definition and must be reported as such. We submit that the non-reporting of these incidents constitutes a violation of both section 20 of the NWA and the WUL conditions on incident reporting.

We also noted that all of the external audits revealed licence condition transgressions, but not one of the auditors indicated whether or not these violations were reported, as required.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT
Exxaro: Leeuwpan coal mine (licence number 04/B21A/ABCGIJ/429)	
<p><u>Appendix V, Condition 10.2</u></p> <p><i>"The licensee must, within 24 hours, notify the Regional Head of the occurrence or potential occurrence of any incident which has the potential to cause or has caused water pollution (sic), pollution of the environment, health risk or which is a contravention of the licence condition." (Own emphasis.)</i></p>	<p>The auditor "notes" the condition, confirming that no such incident has occurred since the previous IWUL audit.</p> <p>The fact that the WUL condition violations are not reported within 24 hours is not mentioned. The water quality data also does not support the absence of potential water pollution incidents (as defined in the NWA).</p>
Wescoal: Vanggatfontein Colliery (licence number: 04/B20F/ABCGIJ/2788)	
<p><u>Appendix V, condition 10.2</u></p> <p><i>"The Licensee must, within 24 hours, notify the Provincial Operational Head of the occurrence or potential occurrence of any incident which has the potential to cause, or has caused water pollution, pollution of the environment, health risks or which is a contravention of the licence conditions." (Own emphasis.)</i></p>	<p>The external auditor awarded the maximum compliance points (3) and "noted" the condition.</p> <p>CER Comment: The non-reporting of licence conditions is not highlighted by the external auditor as non-compliance.</p>

4.2.9 Important conditions not audited

All of the WULs in our assessment sample were issued subject to compliance with the requirements of the NWA, as well as other applicable environmental legislation.

In this regard, sections 19 and 151(i) and (j) of the NWA are of particular importance. Section 19 imposes an obligation on landowners and persons in control of land from which water pollution can arise to take reasonable measures to prevent such pollution. Reasonable measures are defined as including control over the sources of pollution, preventing the movement of pollutants, and remedying the effects of pollution. Sections 151(i) and (j) of the NWA criminalise negligent and intentional pollution of a water resource.

It accordingly follows that the failure to take reasonable measures to prevent water pollution and/or indicators of negligent or intentional water pollution should trigger a finding of non-compliance with the condition requiring compliance with the NWA.

Instead, the auditors merely “note” or “acknowledge” the condition. Several of the audit reports reveal negligent (if not intentional) pollution, but none of them highlight the non-compliance with the said general condition.

Compliance with “other applicable environmental legislation” is also not audited. The auditors often conclude compliance with the condition based on the licensee’s “acknowledgement” and undertaking to comply with the other requirements. We submit that the auditor needs to refer to more comprehensive legal compliance audits conducted during the period under review as well as a review of any new projects that commenced, with specific reference to the applicable legal requirements. If no proof of more detailed compliance evaluations can be presented, the auditor is not in a position to confirm compliance.

Examples:

WUL CONDITION	EXTERNAL AUDITOR COMMENT
Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)	
<u>Appendix I, Condition 9</u> <i>“The license shall not be construed as exempting the Licensee from compliance with the provisions any other applicable Act, Ordinance, Regulation or By-Law.”</i>	The external auditor rated this condition as “not applicable” without providing an explanation.
Glencore Operations SA (Pty) Ltd: Goedgevonden Colliery (licence number: 24084063)	
<u>Appendix I, condition 3:</u> <i>“In terms of section 151 of the Act, any contravention or failure to comply with any condition of the licence constitutes an offence.”</i>	The auditor rates the finding as “not applicable”, stating that “no action” is required. CER comment: We submit that the auditor should have pointed out that the numerous violations of the licence conditions identified during the audit, most notably those relating to inter-mine water flows, present a significant liability

	exposure to the licence holder and that immediate corrective action must be taken.
Exxaro: Leeuwpan coal mine (licence number 04/B21A/ABCGIJ/429)	
<u>Appendix I, condition 1</u> <i>"The licence is subject to all applicable provisions of the National Water Act, 1998"</i>	<p>The external auditor "notes" this requirement and states that "the licensee understands that this licence is subject to all applicable provisions of the National Water Act, 1998 (Act 36 of 1998)." The auditor further states that "no recommendations are applicable."</p> <p>CER comment: We submit that the audit conclusion should have been non-compliance with sections 19 and 151(i) and (j), based on the impact on water resources revealed by the available water quality monitoring.</p>
Wescoal: Vanggatfontein Colliery (licence number: 04/B20F/ABCGIJ/2788)	
<u>Appendix I, condition 1</u> <i>"This licence is subject to all applicable provisions of the National Water Act, 1998 (Act 36 of 1998)."</i>	<p>The auditor awarded the maximum compliance rating of 3, "noted" the condition, and included a reference to Section 19, Pollution Prevention and Regulation 704.</p> <p>CER comment: We submit that the conclusion should be one of non-compliance, with references to the examples of violations of section 19, GN 704 and section 151 of the NWA.</p>

4.2.10 Incorrect and/or misleading compliance ratings & statistics

The WUL conditions often impose more than one obligation per condition. The licensee could possibly be compliant with one aspect of the condition, but non-compliant with two others. This should accordingly result in a conclusion per obligation. In our assessment sample, only one of the external auditors (Shangoni Management Services), applied this basic auditing technique. The others assigned an overall rating of "partial compliance" to the condition. The areas of partial *non-compliance* are not accounted for in the final compliance statistics, which are usually presented in the first two pages of the audit reports, creating an upfront false compliance impression to the reader.

In addition, as demonstrated by the numerous examples highlighted above, many of the "compliant" conclusions cannot be justified (implementation not tested, monitoring data not analysed, compliance based on visual observation where engineering and scientific proof is required, etc.) Several of the "noted" or "not applicable" conclusions are incorrect and represent areas of non-compliance.

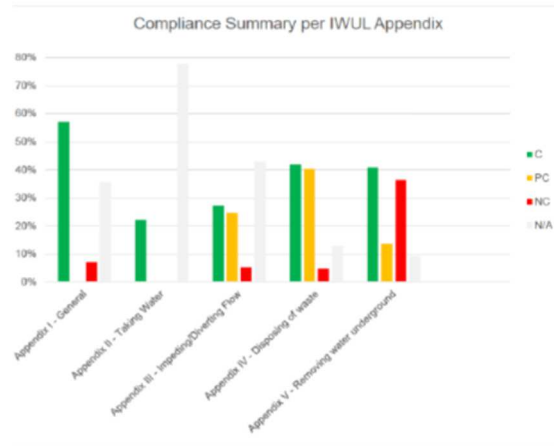
This situation reveals the deeply compromised situation of the "independent" external auditors. The reality remains that the licensees pay the auditors and the latter can accordingly never be said to be fully independent. Apart from the numerous incorrect, unjustified and misleading compliance conclusions highlighted in paragraph 4.1, the examples below support the concern.

Examples:

South 32: Khutala Colliery (licence number 04/B11A/ABCGJ/135)		
<p><u>Appendix III, Condition 1.22</u></p> <p><i>“The opencast mining activity will have a profound impact on the wetlands of concern in the area as well as the quantity and quality of water generated in the area. Therefore, the Licensee shall restore land as soon as possible after disturbance, to resemble to the natural catchment runoff characteristics. The leveling, top soiling and vegetation of spoils will follow not more than three operating cuts behind the active cut. Shaping of the spoils will be such, to ensure free draining surfaces. Avoid and limit interference with undisturbed upslope land.”</i></p>	<p>The external auditor confirmed partial compliance with this condition. The motivation, however, reveals a significant non-compliance, which is not accounted for in the overall compliance ratings or statistics:</p> <p><i>“No rehabilitation has been undertaken in the past year. The opencast mining activities ceased in 2014. Some areas have been rehabilitated while others have not (Appendix B: Figures 7-8). It is anticipated that further rehabilitation will be implemented on the mine in the near future.”</i></p>	<p>In response to our request for a copy of Appendix B, figures 7 – 8, referred to by the auditor, South 32 supplied a copy of their Rehabilitation Strategy and Implementation Programme (RSIP), in which we could not locate the said Appendix B.</p> <p>Based on our interpretation of the RSIP, only 9.24 ha of land are currently “available” for rehabilitation. This is not a very large area, given that it includes roads. However, it appears from both the external WUL audit report and the external GN 704 audit report (paragraph 7(c) - page 23)²⁷, that the open pit has not been rehabilitated and is currently collecting water.</p>
<p><u>Appendix III, condition 1.23</u></p> <p><i>“The Licensee shall divert uncontaminated upslope stormwater around mine workings, pollution control dams and other mine infrastructural areas.”</i></p>	<p>The auditor again assigned a conclusion of partial compliance to this findings, stating that:</p> <p><i>“Clean and dirty water separation is employed by Khutala Colliery although the Government Notice Regulation 704 Audit Report did note non-compliances and areas for improvement (Government Notice Regulation 704 Compliance Assessment Report Ref: 506620 / J35427, date December 2015).”</i></p>	<p>South 32 provided us with a copy of their Storm Water Management Plan in response to our request for an indication of the dirty areas that are not equipped with clean storm water diversion measures.</p> <p>This plan highlights several non-compliances with GN 704 in the Block A area. Unlined dirty water systems, inadequate separation of clean and dirty water system etc.</p> <p>The compliance ratings and statistics do, however, not reflect these non-compliances.</p>

²⁷ Prepared by Baagi Environmental Consultancy, November 2016, report number 01, Ver: 02

Note how the partial non-compliances are not reflected in the compliance statistics – paragraph 5 of the Khutula external audit report.



Universal Coal Development I (RF) Proprietary Limited: Kangala Colliery water use licence (licence number: 04/B20A/A/4683)

A cursory glance at the photographic illustrations included in the Kangala external audit report reveals that the following compliance statistics provided by the auditor cannot possibly be correct:

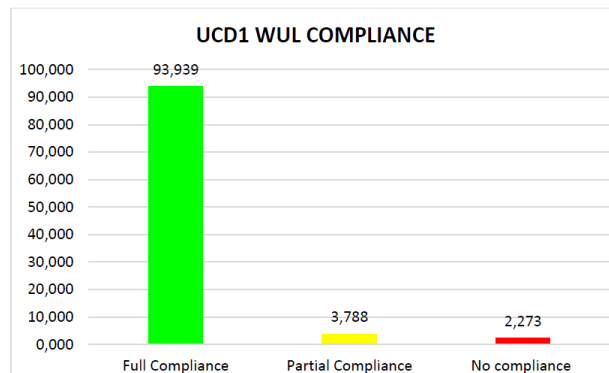


Figure 4-1: UCD1 Kangala Mine Compliance Levels

4.3 ROLE OF THE LICENCE HOLDERS

The incomplete and misleading compliance status reflected by the majority of the external audit findings render an objective analysis of actual compliance of the license holders problematic. An independent re-assessment of all the relevant documentation and site evaluation will in effect be required to determine the actual compliance status of the licence holders.

The examples in paragraphs 4.2 and 4.3, however, reveal at least the following regarding the licence holders approach towards WUL compliance:

4.3.1 Ignoring the obvious

Whereas it is obvious that the effective implementation of all mandatory plans, programmes and protocols required in terms of the WUL must be monitored, this is not done by the license holders, simply because an express condition to monitor compliance with the plan is not included in the WUL.

4.3.2 Restrictive interpretation of conditions

Ambiguous wording / poor drafting is exploited to assume the least onerous outcome for the license holder, without clarifying the meaning with the DWS. The financial provisioning and storm water conditions are the most obvious examples of the abuse of the situation by the licence holders.

4.3.3 Unilateral deviations from the WUL application

The license holders do not acknowledge the importance of the commitments and undertakings made in their WUL applications. When they deviate from the original plans, they simply change the IWWMP and/or RSIP and argue that these (unapproved) documents supersede the original commitments and undertakings made in the WUL applications.

4.3.4 Assumed relaxations

When a particular condition does not suit the licensees, they flag it as “unachievable” and submit an amendment application. (With water treatment, most of the water quality requirements will indeed be achievable and whether the strict standards are in fact required to meet the Reserve requirements is never questioned by the licence holders, or clarified by the DWS). The licence holders are furthermore quite comfortable to continue on terms that they regard as reasonable. The most concerning of these is the amendment request to relax the water quality requirements applicable to dirty water. Every general manager and every environmental manager on a mine should understand why the water quality in the dirty water circuit must also be controlled.

4.3.5 Lacking quality control

Quality control of the external audit reports is clearly absent or inadequate. Many of the water quality reports provided in response to our requests for information also reveal ongoing and repeat non-compliances, confirming non-implementation of the specialist recommendations. (See also paragraph 4.3.7 below.)

4.3.6 Due diligence

Mindful of the fact that the submission of misleading information to the DWS regarding WUL compliance is a statutory offence, the lacking interest shown in the weaknesses highlighted in our letters to the license holders illustrates the low

priority afforded to WUL compliance and accurate reporting by the licence holders. In more than one instance, the response to our concerns was simply a confirmation that their “independent” external auditor reached another conclusion, and that they will abide by the auditor’s view, despite obvious errors/omissions in the audit report.

In the same way that a company is held accountable for tax irregularities (irrespective of the false statements presented by financial auditors), the licence holders must take full responsibility for WUL non-compliance and the submission of false and/or misleading information to the DWS on their behalf.

4.3.7 Actual compliance revealed by documents provided by WUL holders

4.3.7.1 Concerns revealed by the licence holders’ specialist reports submitted to the DWS

The mandatory water quality monitoring programmes that are required in terms of the WULs reflect several areas of significant non-compliance. The extracts from selected submissions below illustrate the extent of non-compliance that is reported to the DWS. The majority of these non-compliances were *not highlighted* by the external auditors in the external WUL audit reports. The CER gained access to this information through our request for information to the licence holders. Glencore Operations SA (Pty) LTD did not grant our request for access to their water quality data. As such none of their submissions could be analysed.

The absence of a response from the DWS naturally results in inaction by the licence holders.

KHUTALA COLLIERY – SOUTH 32	
Khutala Colliery Stormwater Management Plan for Block A-Area, prepared by Headwaters cc , Report number HWM / 0817/27, October 2017	
5.2 Existing storm water infrastructure (page 19)	<p><i>“ Khutala Block-A mining area does not have designed storm water management infrastructure. The dirty water containment facilities in the area are naturally formed due to poor drainage.”</i></p> <p>CER comment: WUL and GN 704 violation.</p>
5.2.1.1. 5 Seam Sump (Collection Sump (Plant))	<p><i>“An informal collection area located adjacent to the Block-A access road opposite the old slurry ponds with an estimated capacity of 5, 000m³. Surface area at full capacity is estimated at 2,500m². Although it is not considered a pollution control dam its functions qualify it to such.”</i></p> <p>CER comment: WUL and GN 704 violation.</p>
5.2.1.2 MCC/ Scharrighuisen PCD (page 21)	<p><i>“A lined earth dam, partially silted, located adjacent to the Block-A Workshop. It has an estimated capacity of 15 000m³ (Golder, 2011). Overflow from the facility makes it way around the adjacent stockpile to the 5 Seam sump. Surface area at full capacity is estimated at 4, 000m² (Ages, 2013). It is the only lined PCD in Block A.”</i></p> <p>CER comment: WUL and GN 704 violation.</p>
5.2.1.3 Crusher plant dam (page 21)	<p><i>“Comments: The facility is another of the “self-forming” dams due to poor earth movement. This facility received most of the water from crusher and ROM stockpile</i></p>

	<p>run-off. It also does not have free-board, inlet, silt traps or spillways. It is unlined. Its minimum waste classification is Type 3."</p>
<p>5.2.1 Dirty water berms (page 23)</p>	<p>"The berms in the area are mainly placed along haul roads. They range from 1.2 to 2 metres in height depending on location. They have relief drains placed at different areas. These are not always the best areas as some allow for mixing of dirty and clean water. The berms around one of the stockpiles is broken through and dirty water is seeping into a rehabilitated area. Although the berms might assist in curbing the mixing of dirty and clean water in the case of product stock pile it is imperative to have these facilities properly lined."</p> <p>CER comment: WUL and GN 704 violation.</p>
<p>Aquatic Biomonitoring Assessment – Spring 2017, prepared by Ecology International</p>	
<p>Executive summary Page iv</p>	<p>"Watercourses assessed exhibited a depauperate aquatic macroinvertebrate assemblage, with trends appearing to show a stable trajectory for most sites. Accordingly, ecological categories obtained at each site indicate a largely to seriously modified system. Similarly a depauperate fish assemblage was encountered within the study area, with a strong likelihood of impacts from alien and invasive species and a loss of longitudinal connectivity within the system. Resulting in seriously to critical ecological states being determined during the October 2017 assessment. Further, a general downward trajectory in the temporal trends of the fish assemblage associated with the Klipportjiespruit and the unnamed tributary of the Wilge River was noted when compared to results obtained during previous biomonitoring activities. Consequently, ecological categories obtained for aquatic macroinvertebrates and fish during the October 2017 assessment did not meet the Resource Quality Objectives of the catchment within which the various sites are located."</p> <p>CER comment: As mentioned, the biomonitoring reports often confirm a deterioration of the monitored resources. The contributors to the situation can often not be identified, calling for improved control over the sources of pollution and the preventing the movement of pollutants by all water users in the catchment area concerned.</p>
<p>Khutala Colliery - Wetland Monitoring Assessment, prepared by Strategic Environmental Focus, March 2016 (SEF reference 506 491)</p>	
<p>Executive Summary, pages i & ii</p>	<p>"A particular area of concern that was included in one of the new fix point photographs was the establishment of a 500m cut-off trench within an unchannelled valley bottom wetland which will reduce connectivity with a large hillslope seepage complex supporting the valley bottom system from the south. It is recommended that the mine investigate the reason for the trench and ensure that a rehabilitation project is initiated to restore the connectivity within the wetland complex."</p> <p>CER comment: WUL and GN 704 violation.</p>
<p>Khutala Colliery - Quarter Three FY 18 (Jan – Mar 2018) surface water monitoring report, prepared by Nabla – H Groundwater Specialists (reference number Nabh. 2017.017 -19. June 2018)</p>	

3. Surface monitoring network (no page numbers)	<p><i>“The mine’s surface water monitoring network comprises of 37 points within and around the authorized mining area (Figure 3.1). However, these points do not include all monitoring sites stipulated in the WULs.”</i></p> <p>CER comment: WUL violation.</p>
3.3.3 Results	<p><i>“A list of parameters together with the water quality limits specified in the WUL is given in Table 3.14. Water for all monitoring sites is generally circum-neutral in nature with a pH range between 7.1 and 7.6. The median Sulphate concentrations vary between 30 and 182 mg/L and therefore do not comply with the specified limit of 0.0 mg/L stated in the WUL. It is unlikely that the monitoring sites will achieve the stipulated limit without the assistance of water treatment such as reverse osmosis. It is noted that Sulphate concentrations during the two quarters of 2016 for monitoring 7201 Dam behind farm and 7206 are significantly higher than median (Figure 3.4). The high Sulphate concentration period are accompanied by low pH values, suggesting that mine impacted water is the cause of the observed water qualities. The observed median concentrations for NO₃, Mg and Na were exceeded by all the sites. Monitoring site 7202 is the only site that exceeded the EC limit. All the sites comply with the limits for Cl, F and Ca.”</i></p> <p>CER comment: WUL violation.</p>
Khutala Colliery - Quarter Three FY 18 (Jan – Mar 2018) groundwater monitoring report, prepared by Nabla – H Groundwater Specialists (reference number Nabh. 2017.017 -19. June 2018)	
3.3.3 Results	<p><i>“Groundwater monitoring sites stipulated in the KSA (2010) WUL currently do not form part of the mine’s monitoring network. The mine is advised to either include these monitoring sites or motivate to the DWS their exclusion in the monitoring network.”</i></p> <p>CER comment: WUL violation.</p>
4. Recommendations	<p><i>“The mine is required to include, with this report, a soil sampling analysis. The parameters to be analysed for are highlighted in the individual WUL. Khutala Colliery should ensure that analyses results are submitted together with this report.”</i></p> <p>CER comment: WUL violation.</p>
Reviewed and updated integrated water and waste management plan (IWWMP) for year in review: 2017 – 2018, compiled by BAAGI Environmental Consultants, February 2018	
8.9 Acid Mine Drainage Management	<p><i>“There are some management measures in place in order to prevent decant of mine water and hence prevent/ minimise the spread of acid mine drainage. A pump station has been installed with a borehole network. The boreholes are equipped with water level measuring devices that automatically send a signal to the pumps to start pumping if the water level becomes too high and will show risk of decant.</i></p> <p><i>With regards to the underground mining areas, management measures in order to minimise acid mine drainage are still being developed and improved upon. Large quantities of water are currently stored underground and it is scheduled that several</i></p>

	<p><i>mined out compartments will be completely flooded. This will not only assist in the storage capacity at the mine, it will also minimise the reactions that cause acid mine drainage as the amount of oxygen to react with will be minimal (to none)."</i></p> <p>CER Comment: Section 8.9 of the IWWMP addresses one of the most important environmental impacts associated with coal mining. As evident from the extract above, the section is void for vagueness: <i>"some measures"</i> and <i>"still to be developed and improved upon."</i></p> <p>Apart from several other weaknesses, this example illustrates that the IWWMP by no means constitutes a measurable plan, as required.</p>
5.1.12 Water supply to local landowners	<p><i>"In the unfortunate case that a shortfall or potential dewatering of groundwater supply is experienced by local landowners, which can be attributed to the mining activities, the mine will ensure that this shortfall or potential dewatering of the aquifers is addressed together with the affected landowner(s) in the most appropriate manner and/or another source of water provided after both parties are in agreement."</i></p> <p>CER comment: The WUL condition does not require both parties to be in agreement. If this version of the IWWMP were to be approved by DWS, which requirement will prevail - the approved IWWMP or the water use licence condition (Appendix V, condition 9)</p>
UNIVERSAL COAL DEVELOPMENT I (RF): KANGALA COLLIERY	
Kangala Colliery, Water quality monitoring report – May 2018, prepared by Aquatico Scientific (Pty) Ltd	
4.2 Waste water quality	<p><i>"DFE</i></p> <p><i>The discard facility effluent could be described as neutral, very saline and very hard in May 2018. Both the Kangala WUL PCD limits and the General Limit were exceeded by the EC value while the WUL PCD limits were further exceeded by the recorded concentrations of sulphate, calcium and magnesium.</i></p> <p><i>PCD</i></p> <p><i>The water from the pollution control dam could be described as neutral, very saline and very hard. Both the Kangala WUL limits and the General Limit were exceeded by the EC value. The WUL PCD limits were further exceeded by the concentrations of sulphate, calcium and magnesium.</i></p> <p><i>STPE</i></p> <p><i>When there is no discharge from the sewage effluent plant, the sample taken consists of water that is pumped from the pit and is not expected to have qualities associated with sewage effluent. In May 2018, there was no discharge and the sampled water is expected to primarily consist of pit water. Furthermore, there are no apparent detrimental effects on the sulphate concentration and electrical conductivity of closest surface water locality (INJ02) or groundwater locality (KAM06).</i></p>

	<p>The water from this locality could be described as neutral, very saline and very hard. Both the Kangala WUL limits and the General Limit were exceeded by the EC value while WUL PCD limits were further exceeded by the concentrations of sulphate, calcium and magnesium.</p> <p>As the General Limit is exceeded by EC and manganese, however, care should be taken to contain this water and prevent seepage/overflow/discharge into the environment. The re-use of this water in the plant may also have detrimental effects on processes/equipment.”</p> <p>CER comment: Universal Coal pointed out that the water quality standards are not achievable (presumably without treatment) and that another WUL amendment application is pending.</p>																			
Kangala Colliery, 2017 Fourth Quarter Groundwater Monitoring Report, Prepared by Digby Wells, January 2018 Project Number UCD 4510																				
Executive summary. Page ii & iii	<p>“Boreholes KAM02, KAM03A, KAM04, KAM05, KGA18 and G37017 where not sampled during the fourth quarter of 2017 as they were not accessible, blocked or the water level was too low to sample (dry).”</p> <p>and</p> <p>“It is recommended to find a replacement for the 5 boreholes not sampled and 9 boreholes with no water level recorded or they are blocked then the boreholes need to be flushed since they fall under the WUL requirements.”</p>																			
TSHEDSA MINING RESOURCES (PTY) LTD: MANUNGU COLLIERY																				
Manungu Colliery Annual Water Quality Monitoring Report, Prepared by Letsolo Water and Environmental Services cc, dated 16 March 2018																				
Report reference LWES 649																				
3.1 Location of points (page 6)	<p>Table 3-2: Groundwater monitoring points</p> <table><tr><th>Sampling Point identity</th><th colspan="2">Coordinates</th></tr><tr><td>MBH 01 - Office Tap 1</td><td>28.69488</td><td>-26.22475</td></tr><tr><td>MBH 01 – OfficeTap 2</td><td>28.69488</td><td>-26.22475</td></tr><tr><td>MBH Trollope – Tap</td><td>28.69743</td><td>-26.2315</td></tr><tr><td>MBH 32</td><td>28.66129</td><td>-26.23690</td></tr><tr><td>MBH 17</td><td>28.69889</td><td>-26.22369</td></tr></table> <p>CER comment:</p>		Sampling Point identity	Coordinates		MBH 01 - Office Tap 1	28.69488	-26.22475	MBH 01 – OfficeTap 2	28.69488	-26.22475	MBH Trollope – Tap	28.69743	-26.2315	MBH 32	28.66129	-26.23690	MBH 17	28.69889	-26.22369
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Groundwater: Only one of the FIVE groundwater monitoring boreholes is at the location prescribed by the WUL, Appendix III, and condition 3.3 (stipulating six points). The other locations are the drinking water abstraction points and not relevant for the purposes of groundwater pollution monitoring

The WUL specifies the following points, which are presumably located close to potential groundwater pollution sources - deviation from the stipulated locations is not permissible without DWS consent.

Table 5: Groundwater monitoring points

Location ID	X-Coordinate	Y-Coordinate
MBH5	E28.70159	S26.23310
MBH17	E28.70062	S26.22440
MBH32	E28.66129	S26.23690
MBH01	E28.69537	S26.22461
MBH19	E28.69684	S26.22860
MBH06	E28.73051	S26.23880

The groundwater monitoring results submitted to DWS are accordingly misleading (unless the alternative [potable] monitoring points have been approved by DWS as pollution monitoring points, which are most unlikely.)

Letsolo did not highlight this non-compliance in the water monitoring report or the external water use licence audit report. In fact, in the IWWMP, *Letsolo* confirms that the groundwater is of a very good quality, without indicating that this refers to the potable water monitoring locations and not the pollution monitoring points specified by the WUL.

CER comment: WUL violation and misrepresentation to the DWS.

3.4 Variables of interest

"Identical variables were analyzed for both Surface and groundwater monitoring points and are summarised as follows:

- *pH – Value at 25°C*
- *Electrical Conductivity in mS/m at 25°C*
- *Total Dissolved Solids at 180°C **
- *Suspended Solids at 105°C **
- *Total Alkalinity as CaCO₃*
- *Total Hardness as CaCO₃ **
- *Chloride as Cl*
- *Sulphate as SO₄*

	<ul style="list-style-type: none"> • Fluoride as F • Nitrate as N • Ortho Phosphate as P • Faecal Coliform Bacteria / 100 ml * • E. coli / 100 ml • Oil & Grease * • Free & Saline Ammonia as N • Sodium as Na • Potassium as K • Calcium as Ca • Magnesium as Mg • Aluminium as Al • Iron as Fe • Manganese as Mn • Zinc as Zn" <p>CER comment: The parameters monitored do not include Total Petroleum Hydrocarbon (see WUL Appendix III, 12.1 for the variables that must be monitored). This is not highlighted in the monitoring reports or the external WUL audit report.</p>
Update – Integrated Water and Wastewater Management Plan for Tshedza Mining Resources (Pty) Ltd: MANUNGU COLLIERY, Prepared By Letsolo Water and Environmental Services cc, dated 31 October 2017	
<p>8.2 Collection of seepage water from the overburden stockpile (page 91)</p>	<p><i>"A water and salt balance study was conducted at Manungu and one of the findings was that there is an increase in salt loads between the point located upstream and downstream of the overburden stockpile.</i></p> <p><i>The potential source identified was diffuse pollution from the overburden stockpile. Therefore, this triggered a need for impact minimization. The proposed corrective measure is to construct a cut off trench at the toe of the overburden stockpile to minimize the flow of water from the overburden to the nearby wetland system."</i></p> <p>CER comment: WUL and GN 704 violation, as well as negligent pollution of a water resource.</p>
<p>8.1 In-Pit water storage as mining progress (page 88)</p>	<p><i>"During the operational phase, the mine experience large volumes of water accumulating at the bottom of the opencast pit. This triggers a need for additional water storage facilities. As the mine progress, the pit is now getting far from the Pollution Control Dam."</i></p> <p>CER comment: This reveals an unauthorised water storage practice. It is not highlighted as such by Letsolo. In fact, it is stated in paragraph 7.2 of the IWWMP that no additional water use authorisations are required.</p>

<p>9. Recommendations (page 97)</p>	<p><i>“The mine rehabilitation plan must be designed and implemented. This plan must aim to turn decommissioned / mined out areas into viable investments for the mining and sale of much needed water, effectively re-using the previously disturbed areas.”</i></p> <p>CER comment: This statement suggests a significant backlog in rehabilitation. The areas available for rehabilitation, and a measurable plan towards eradicating the backlog, is not included in the Rehabilitation Strategy and Implementation Programme (see below).</p>
<p>Manungu Colliery, Rehabilitation Strategy and Implementation Programme, June 2017, prepared by Geo Soil and Water cc</p>	
<p>4.4.3.2. Contamination Migration (Page 58)</p>	<p><i>“As the mining and other pollution source areas are close to two rivers, the aquifer can be expected to contribute poor quality leachate to stream flow volumes through base flow contribution during the rainy season. It is possible that during the dry season, the impact through this aquifer may be minimal. The surface water quality will be impacted by the poor quality of the base flow that will seep into the rivers. The salt load contribution to the rivers over time was not being calculated due to the fact that there are no standout elements that pose a risk to the environment (Future Flow, 2016).”</i></p> <p>CER comment: The report, although purporting to be a Rehabilitation Strategy and Implementation Programme, is in actual fact an IWWMP. The information relating to groundwater monitoring and potential groundwater contamination is not aligned with the information contained in the documents prepared by Letsolo.</p>
<p>EXXARO – LEEUWPAN COLLIERY</p>	
<p>Exxaro Leeuwpan Coal Mine – Biomonitoring & Environmental Toxicity Programme, June 2016 survey, prepared by Cleanstream Biological Services</p> <p>Report reference: LP/B/16</p>	
<p>4. Conclusions and Recommendations (Page 16)</p>	<p><i>“The following recommendations are made:</i></p> <ul style="list-style-type: none"> <i>• Sediments should be trapped at the outlet of the diversion to prevent sedimentation within</i> <i>• wetland areas.</i> <i>• Reference should be made to surface water monitoring data to establish the source of salts</i> <i>• reaching the receiving watercourses, particularly within the Weltevreden/Rietkuil systems.</i> <i>• The upstream Rietkuil site (LP-RK-US) should be moved further downstream so as to be more comparable, in terms of habitats, to the downstream site.</i> <i>• An additional sampling site within the Rietkuil Tributary, downstream of mining activities in the west but upstream of the confluence with the</i>

	<p><i>Weltevreden Tributary, should be included in the biomonitoring programme during the wet season when surface water is available.</i></p> <ul style="list-style-type: none"> <i>Toxicity testing should include all PCDs and return water dams that could potentially discharge (in a controlled or uncontrolled manner) into receiving wetlands. Leeuwpan Colliery should identify the need for inclusion of additional PCDs in the toxicity testing programme. (For example, evaporation ponds and PCDs in the west that could potentially discharge or seep into the adjacent Bronkhorstspuit could be considered for toxicity testing.)"</i> <p>CER comment: Sedimentation of wetland systems, salts entering the Weltevreden/Rietkuil system and lacking understanding of toxicity of the water contained in the dirty water system are highlighted by the Biomonitoring report. A relaxation of water quality standards have nevertheless been granted by DWS.</p>
<p>Exxaro Leeuwpan GN 704 Audit – Processing Plant and Workshop Area, 28 June 2016, Prepared by Greene Consulting Engineers</p> <p>Document No: 0082C-A22-GN704-03</p>	
5 Conclusion	<p>"5.1. PROCESSING PLANT</p> <p><i>In conclusion most of the non-compliances are due to lack of maintenance.</i></p> <ul style="list-style-type: none"> <i>– Canals must be cleaned on a regular basis to ensure optimum design flow to the PDC.</i> <i>– The silt traps must be cleaned regularly to prevent the silting up of the PCD.</i> <i>– A freeboard of 800mm must be maintained on the PCD by opening up the emergency overflow.</i> <i>– Ponding must be prevented by grading to ensure flow to the existing canals. After initial grading this must be maintained to prevent ponding in the future.</i> <i>– The containment canal west of the site must be finished.</i> <i>– Damaged canals within the plant area must be rectified."</i>
	<p>"5.2. WORKSHOP AREA</p> <p><i>In conclusion the Storm water management plan must be developed for the Workshop area. The following points needs to be taken into consideration:</i></p> <ul style="list-style-type: none"> <i>– Workshop area to be levelled to prevent ponding and facilitate overland flow of storm water to cut-off canals.</i> <i>– New canals to be constructed to transport dirty water to proposed new sump or "Blink damme" west of site.</i> <i>– Cut-off berms to be constructed to keep clean water out of dirty area.</i>

	<p>– Conveyance to be through gravity drains whenever possible. Pumping of storm water to be kept to a minimum.</p> <p>– All bunded areas to be contained separately and drained to the existing Oil separator.</p> <p>– Refer to Annexure A - Workshop Area Storm Water Management Plan.”</p> <p>CER comment: Several GN 704 non-compliances are revealed by the report. The photographic illustrations included in the report illustrate the low priority that environmental management receives at Leeuwpan Colliery.</p>
<p>2016 Integrated Water and Waste Management Plan (IWWMP) Update for Leeuwpan Coal Mine Report, Prepared by GCS Water & Environmental Consultants, 24 October 2016</p> <p>Draft for Client Review GCS Project Number: 16-0873</p>	
7.1 Regulatory Status of the activity (page 142)	<p>“There are currently two Water Use Licences for the Leeuwpan mining operation. The IWUL that pertains to this project was issued in 2011 (Licence No. 04/B21A/ABCGIJ/429) for the current and existing mining operations. New water uses requiring authorisation in terms of Section 21 of the NWA have been identified for the Leeuwpan Coal Mine. These water uses will however, form part of a separate Licence Application and will be submitted to the DWS for authorisation.” (Emphasis added.)</p> <p>CER comment: The above statement illustrates the general practice by mines to commence with water use illegally, even prior to submitting a WUL application. DWS does not respond to such illegal use.</p>
<p>EXXARO COAL MPUMALANGA (PTY) LTD, Leeuwpan Coal Mine Quarterly Water Monitoring Report</p> <p>December 2016 Report Number: 1527125-TBC-25</p>	
3 Concluding remarks (page 33)	<p>“3) Fluctuations in levels of EC and major constituents were recorded at all surface water sites during the third quarter. The surface water samples did not meet many of the water quality limits specified in the IWUL at least once with the following exceedances being recorded:</p> <p>e) Bronkhorstspuit upstream of the mine at site WP01: electrical conductivity, calcium, manganese, alkalinity fluoride, ammonia, DO, DOC and chlorophyll;</p> <p>f) Bronkhorstspuit downstream of the mine at site WP02: total dissolved solids and total phosphorous (these parameters increased relative to upstream), as well as manganese, alkalinity, ammonia and DO;</p>

	<p><i>g) Bronkhorstspuit upstream of Delmas Silica at LSW07: ammonia, aluminium, iron, DO and DOC;</i></p> <p><i>h) Adjacent to Delmas Silica at LSW03: ammonia, aluminium, DO and DOC.”</i></p> <p><i>“4) The surface water contamination sources are broader than just the Leeuwpan Coal Mine and could include Delmas Silica and agricultural activities – while TDS increasing in the Bronkhorstspuit going past the mine could include contributions from Leeuwpan Mine, it is unlikely that a similar increase in total phosphorous could be attributable to the mine.”</i></p> <p><i>“8) Effluent from the “septic tank” treatment plant (LWP_SP_P) was characterised by very high counts of E. coli and high concentrations of ammonia and chemical oxygen demand since mid-2015. Given the state of waste water at this point, no effluent from the septic tank should be allowed to enter the environment. The septic tank should continue to be emptied by an accredited waste removal company and disposed of to an authorised wastewater treatment works.”</i></p> <p><i>“10) The following exceedances of drinking water guidelines were recorded in groundwater samples:</i></p> <p><i>d) Sulphate at KENMB2D, WOLMB15-S (adjacent to PCD1), MOAMB10 and LEEMB18D (acute health) and WWN02D (aesthetic);</i></p> <p><i>e) Iron in boreholes LW08, RIE10B, RKL02, WELMB13D, WELMB13S and MOAMB9;</i></p> <p><i>f) Manganese in boreholes RKL01, RKL01 and MOAMB4 (acute health) and WELMB13S, WELMB13D and MOAMB9 (aesthetic).”</i></p> <p><i>“14) The following sampling points have access issues: WTN02D and WITMB14.”</i></p> <p><i>“15) The following boreholes need attention to pumps: LGW01, RIE4, RIE10 and RKL04.”</i></p> <p><i>“16) The following boreholes need drilling out or replacement: EMPRO2, KENMB1, KENMB2S, LGW04, RKL03, WTN01D and WWN01.”</i></p> <p><i>“17) Sampling point OH Pit (backfilled) and (DN Pit (closed) should be removed from the monitoring programme.”</i></p> <p><i>“18) The following monitoring point requires a borehole to be drilled as none exists: LW10”</i></p> <p><i>“19) The four kinetic barrels needs urgent repair so that they may collect water during the remainder of the rainy season.”</i></p> <p>CER comment: Clearly all of these concluding remarks are issues to which one would have expected an intervention from DWS.</p>
<p>Leeuwpan Colliery Hydrogeological Investigation Report (Final), prepared by GCS Water & Environmental Consultants, August 2014</p> <p>GCS Project Number: 11-447GW</p>	

<p><i>Executive Summary (Page x)</i></p>	<p><i>“Once the mining has ceased, ARD is still likely to form given the unsaturated conditions in the facility and contact of water and oxygen through natural process including rainfall. Therefore a groundwater contaminant plumes are likely to migrate from the mining areas once the water level in the rehabilitated pits have reached long term steady state conditions (i.e. each pit water level has reached the decant level). No privately owned boreholes located in the fractured Karoo aquifer is likely to be impacted based on the impact simulations post closure. However shallow contaminated seepage may impact on the Bronkhorstspruit post closure and increase the salt load of the system. Given the significance of the underlying dolomite aquifer, the interaction between the dolomite and the Karoo aquifers should be further investigated. If these aquifers are in hydraulic connection and a flow gradient from the Karoo aquifer exists towards the dolomite aquifer exists the dolomitic aquifer may be impacted on post closure by contaminants.” (Own emphasis)</i></p> <p>CER comment: The external WUL auditor merely “noted” the WUL requirement to provide financial provision for water treatment (WUL Appendix IV, condition 11.4 refers). We submit that the Hydrogeological study indicates a decant risk and that provision should already be available to address this risk.</p>
<p>ANGLO AMERICAN OPERATIONS (PTY) LTD: ISIBONELO COLLIERY</p>	
<p>Aquatic Macro Invertebrate Monitoring: Anglo Operations (Pty) Ltd: Isibonelo Colliery, Kriel, Mpumalanga Province, December 2017 / February 2018, prepared by Afrika Enviro and Biology</p>	
<p><i>Executive summary (page 3)</i></p>	<p><i>“Long-term trends in SASS5 scores and ASPT indicate a negative trend occurring at both sites. A deterioration of water quality is most probably the primary cause of this trend. The fact that the change (deterioration) is notable at both monitoring sites (with lower scores at site A) indicate that impacts in the catchment upstream of the Isibonelo Colliery may contribute to the overall deterioration in biotic integrity of this reach of the Steenkoolspruit.”</i></p> <p>CER comment: Most of the biomonitoring reports reviewed as part of our assessment reveal deteriorating conditions without identifying the contributors of contaminants. This situation confirms our concern regarding the failure to monitor water leaving the mines during rainfall events – the contaminants flow downstream and the impacts become apparent at a location and time when the contributors to the pollution can no longer be identified with certainty.</p>
<p>Anglo Operations (Pty) Limited, Integrated Water and Waste Management Plan and Rehabilitation Strategy Implementation Plan: Isibonelo Colliery, September 2017</p>	
<p><i>5.10 Matters Requiring Attention / Problem Statement</i></p>	<p><i>“The results of the site characterisation, risk assessment and the issues and responses from the public consultation process were utilised to formulate the water and waste related matters which require attention.</i></p> <ul style="list-style-type: none"> <i>• Undertaking of recommendations given in the closure evaluation of post-closure rebound and</i> <i>• surface water discharge to ensure that the has full understanding of their closure condition</i>

	<ul style="list-style-type: none"> • <i>Further investigation of the high sulphate load on the Steenkoolspruit at sampling point S 11</i> • <i>Updating of the storm water management plan to comply with the requirements set out in the</i> • <i>DWS Best Practise Guidelines and the GN 704</i> • <i>Repairing of erosion damage in the Steenkoolspruit River Diversion</i> • <i>Compilation of a closure plan for the mine</i> • <i>Continuation with the annual updating of the mine's water and salt balance</i> • <i>Finalisation of the plans to install the water treatment plant required to treat excess water from the mine as per recommendations from the mine's 2013 water balance</i> • <i>Continuation of the bi-annual bio monitoring of benthic diatoms (SPI) and aquatic invertebrates (SASS5) is recommended in the Steenkoolspruit upstream (Mon A) and downstream (Mon B) of</i> • <i>Isibonelo Colliery</i> • <i>Development and implementation of the storm water management plan for the Banker area</i> • <i>Inclusion of the Banker area in the mine groundwater monitoring plan."</i> <p>CER comment: The aforesaid paragraph reveals significant areas of ongoing non-compliance. A DWS intervention would have been expected. Note, in particular, the reference to the 2013 recommendations for water treatment which were still in the planning phase in September 2017.</p>
3.6 New Water Uses to be Licensed (page 30)	<p><i>All unauthorised water use activities listed in Table 4 must be licensed with the DWS via a separate licensing process. Isibonelo Colliery will therefore submit an application for the authorisation of these water use activities.</i></p> <p>CER comment: Another examples of illegal commencement of water uses, followed by the submission of a licence application much later, without incurring any penalties or consequences.</p>

4.3.7.2 Non-compliance highlighted by the external WUL audit reports

As mentioned, with the exception of the Isibonelo Colliery, the external audit reports that were reviewed as part of our assessment sample do not present an accurate and reliable reflection of the licence holders' WUL compliance status. However, the areas of non-compliance that were indeed highlighted in the external audit reports neither have nor even attracted a response from the DWS.

The extracts below are included to illustrate the more important violations that have been disclosed to the DWS in the form of the external WUL audit reports.

Tweefontein South (Glencore Operations South Africa (Pty) Ltd)

Reg No	Section Heading	Criteria	Score	Comments	Reference
2.4	APPENDIX III: Monitoring Requirements – Section 21(b) of the Act: Storing of water	The quantity of water stored shall be recorded as at the last day of each month	NC	At the time of the audit, the licensee confirmed that rehabilitation was in progress for the 5 Seam plant. No evidence was provided to indicate that monitoring was still occurring on these dams	Visual observation on site
1.8	APPENDIX IV: Construction, Operation and Maintenance- Section 21(c) of the Act: Impeding or diverting of flow of water in a watercourse. Section 21(i) of the Act: Altering the bed, banks, course or characteristic of a watercourse	The necessary erosion prevention mechanisms shall be employed to ensure the sustainability of all structures	NC	At the time of the audit, 5 Seam Tavistock was being rehabilitated while South Witbank Colliery was not operational. It is advised that the licensee reseed the stockpiles at South Witbank Colliery to prevent further erosion on stockpiles.	Visual observation on site
2.3	APPENDIX IV: Storm Water Management- Section 21(c) of the Act: Impeding or diverting of flow of water in a watercourse. Section 21(i) of the Act: Altering the bed, banks, course or characteristic of a watercourse.	Storm water control works must be constructed, operated and maintained in a sustainable manner throughout the project.	NC	At the time of the audit, the surface water channels around the 5 Seam dump currently being rehabilitated were not functional, they were full of reeds and did not connect to the two dams. The licensee communicated that a toe drain was used to collect all dirty water underground which then is treated in the water treatment plant. The South Witbank Colliery was not operational, the PC dam is unlined and was full of reeds though it	Verbal communication and visual observation on site

				was evident that maintenance occurred recently. It is advised that the licensee maintains the surface storm water management at the 5 Seam plant until rehabilitation is completed.	
2.4	APPENDIX IV: Storm Water Management- Section 21(c) of the Act: Impeding or diverting of flow of water in a watercourse. Section 21(i) of the Act: Altering the bed, banks, course or characteristic of a watercourse	Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse.	NC	At the time of the audit, 5 Seam Tavistock plant was under rehabilitation. It is advised that the licensee maintain the surface water channels and put berms to prevent water runoff and silts from entering the wetland opposite the 5 Seam dump until rehabilitation is complete.	Visual observation on site
5.7	APPENDIX IV: Protective Measures – Section 21(c) of the Act: Impeding or diverting of flow of water in a watercourse. Section 21(i) of the Act: Altering the bed, banks, course or characteristic of the watercourse	Increased runoff due to vegetation clearance and/or soil compaction must be managed and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silts entering the stream.		At the time of the audit, 5 Seam Tavistock plant was under rehabilitation. It is advised that the licensee maintain the surface water channels and put berms to prevent water runoff and silts from entering the wetland opposite the 5 Seam dump until rehabilitation is complete.	Visual observation on site
5.1	APPENDIX V: Water resource protection – Section 21(f) of the Act: Discharging waste or water containing waste	The impact of the activities of the mine on the Wastewater shall not exceed the water quality limits as indicated on the Table 7	NC	At the time of the audit, February 2017 results were used to compare with the limits in Table 7 and the monitoring analysis results indicated an exceedance in the limits	TFS_Feb_2017 Monitoring results spreadsheet provide Glencore Tweefontein Colliery

	into a water resource				
2.4	APPENDIX VI: Construction and Operation- Section 21(g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water course	The Licensee must ensure that the disposal of the waste water and the operation and maintenance of the system are done according to the provisions in the Report	NC	At the time of the audit, South Witbank Colliery was not operational. The PC dam is unlined and was full of reeds though it was evident that maintenance occurred recently. It is advised that the licensee continues to maintain the PCDs until a decision is made about the site. 5 Seam Tavistock Plant was currently being rehabilitated and only dam 2, 3, 4 and 5 remained on site. They communicated that they are using an underground toe drain that collects dirty water which is directed to the water treatment plant.	Verbal communication with licensee
4.1	APPENDIX VI: Monitoring – Section 21(g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water course	The Licensee shall be monitoring on a monthly basis the water resources at surface water monitoring point to determine the impact of the facility and other activities on the water quality by taking water samples at the monitoring points described in Table 10 and 11	NC	At the time of the audit, the licensee was conducting monitoring for the surface water monitoring points in Table 10 on a monthly basis as well as the groundwater monitoring points on Table 11. However, there are groundwater points that were not sampled because they were either demolished, blocked or no access to the farm was granted.	TFS_SampReg_2017 Sampling Register spreadsheet provided by Glencore Tweefontein Colliery
5.1	APPENDIX VI: Water Resource Protection – Section 21(g) of the Act: Disposing of waste in a	The impact of the activities of the mine on the groundwater shall not exceed the in-stream water quality objectives	NC	Kongiwe was not provided with a Monitoring programme and results for 2017	

	manner which may detrimentally impact on a water course	detailed in the water quality reserve for the area as indicated on the Table 12			
13.7	APPENDIX VI: General- Section 21(g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water course	Quarterly groundwater sampling must be done to establish a database of plume movement trends, to aid eventual mine closure	NC	At the time of the audit, it was observed that quarterly groundwater sampling has been conducted, however, no plume movement trends had been included to aid eventual mine closure. It is recommended that the groundwater plume movement trends be included into the monitoring report during reporting to the Regional Head	
13,15	APPENDIX VI: General- Section 21(g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water course	The operation shall within six (6) months of issue of this licence be audited regarding compliance with Regulation 704. The results of the audit shall be submitted to the Regional Head together with formulated mitigating measures on items on non-compliance	NC	At the time of the audit, there was no documentary evidence that the licensee was adhering to provisions of Regulation GN704 or that an audit had been performed within six (6) months of issue. It is advised that the licensee conducts a GN704 audit and provide the report as evidence of compliance	
15	APPENDIX VII: Section 21(j) of the Act: Removing of water found underground	The methods of analysis shall not be changed without prior notification to the Licensee and written approval by the Minister or his/her delegated nominee	NC	The licensee acknowledges the condition and will apply in due course	Verbal communication with Licensee

Manungu Colliery (Tshedza Mining Resources (Pty) Ltd)

CONDITIONS		YES	NO	NOTED	COMMENT/EXPLANATION																					
8.7	All diversion trenches and berms as well as soil stockpile must be seeded with an appropriate seed mixture during the first rainy seasons after establishment		X		No seed mixture in use. Trenches and berms have natural vegetation																					
1.6	The waste facilities listed in Table 4 must be operated and maintained to have a minimum freeboard of 0.8 metres above full supply level and all other water systems related thereto must be operated in such a manner that it is at all times capable of handling the 1:50 year flood event on top of its mean operating level.		X		The water level at the Pollution Control Dam(PCD) was high on the date of audit. The 0.8m freeboard was not honoured.																					
1.11	An ash layer beneath the Run of Mine pad shall be installed		X		Installation of an ash layer under the ROM pad was not done																					
3.3	<p>The Licensee must submit the final groundwater monitoring program with the inclusion of the borehole shown in Table 5 within six (6) months of issuance of this licence</p> <p>Table 5: Ground water monitoring points</p> <table><tr><th>Location ID</th><th>X-Coordinate</th><th>Y-Coordinate</th></tr><tr><td>MBH 5</td><td>E28.70159</td><td>S26.23310</td></tr><tr><td>MBH 17</td><td>E28.70062</td><td>S26.2440</td></tr><tr><td>MBH 32</td><td>E28.66129</td><td>S26.23690</td></tr><tr><td>MBH 01</td><td>E28.69537</td><td>S26.22461</td></tr><tr><td>MBH 19</td><td>E28.69684</td><td>S26.22860</td></tr><tr><td>MBH 06</td><td>E28.73051</td><td>S26.23880</td></tr></table>	Location ID	X-Coordinate	Y-Coordinate	MBH 5	E28.70159	S26.23310	MBH 17	E28.70062	S26.2440	MBH 32	E28.66129	S26.23690	MBH 01	E28.69537	S26.22461	MBH 19	E28.69684	S26.22860	MBH 06	E28.73051	S26.23880		X		<p>Groundwater report was done in April 2016.</p> <p>Ref: Future Flow Document MBU 15.0 51/EIA Report 18 April 2016</p> <p>(see index 17)</p> <p>No proof of submission of groundwater monitoring program</p>
Location ID	X-Coordinate	Y-Coordinate																								
MBH 5	E28.70159	S26.23310																								
MBH 17	E28.70062	S26.2440																								
MBH 32	E28.66129	S26.23690																								
MBH 01	E28.69537	S26.22461																								
MBH 19	E28.69684	S26.22860																								
MBH 06	E28.73051	S26.23880																								
4.1	The impact of the activities of the mine on groundwater shall not exceed the in-stream water quality objectives detailed in the groundwater quality reserve for the area as shown in the Table 6:	X			<p>Partial Compliance</p> <p>The impact on groundwater from the December 2016 quality results provided in spreadsheet was assessed against the</p>																					

Table 6: Water resource quality objectives for the Wilge Sub-catchment					<p>objectives provided in Table 6 opposite.</p> <p>The following parameters have been exceeded in December quarterly:</p> <ul style="list-style-type: none"> Chloride (Cl) – MBH-01 and MBH-32 Iron (Fe) – MBH-32 Calcium (Ca) – MBH-32 Phosphate (PO₄) – MBH-32 Nitrate(NO₃)- MBH-01 and MBH Temp Tap (Trollop Tap)
Substance/Parameters	Resource Quality Objective Olifants WMA				
pH	6.9				
Electrical conductivity (Ec) in mS/m	70				
Chloride, Cl in mg/l	20				
Sulphate (SO ₄) in mg/l	200				
Iron (Fe) in mg/l	0.1				
Potassium (K) in mg/l	200				
Sodium (Na) in mg/l	200				
Calcium (Ca) in mg/l	60				
Manganese (Mn) in mg/l	0.1				
Phosphate (PO ₄) in mg/l	0.02				
Nitrate (NO ₃ /l) in mg/l	6				

Leeuwpan Coal Mine (Exxaro Resources Limited)

Leeuwpan External Audit					
DATE	27/03/2017		SITE	Leeuwpan Mining Operations	
No	Conditions	Status	Score	Observations	Recommendations
1.7	The necessary erosion prevention mechanisms shall be employed to ensure the sustainability of all structures	Moderate non-compliance	-1	<p>Moderate non-compliance:</p> <p>Erosion is evident on site, particularly on the soil stockpiles and the river diversion of the mine. While vegetation cover has increased at the river</p>	Erosion prevention measures are recommended to be constructed/implemented as soon as practicably possible in areas where erosion is occurring.

				diversion since the previous IWUL Audit, few erosion prevention measures were observed on site. Refer to Section 4 of this report for site photos	
2.1	Storm water shall be diverted from the construction works and roads and shall be managed in such a manner as to disperse runoff and concentrating the storm water flow.	Moderate non-compliance	-1	<p>Moderate non-compliance</p> <p>Berms have been erected along the haul road. Gaps in the berms along the haul road have been constructed. In some areas, storm water flows through these gaps where it is collected by the trench. In other locations, the storm water flows into the environment, as was noted by the December 2016 biomonitoring report and observed on site. Where the storm water is collected by the trenches, it flows into the pits or the dams. From the pits the water is pumped to the dams and is reused. The storm water management along the road was observed to be inadequate. An audit in terms of GN 704 was undertaken in 2016. Various recommendations and management actions formed part of this report relating to the storm water management on site. These actions are in the process of being implemented. An updated action plan on the progress made in this regard, was provided to the GC5 auditors. Refer</p>	The GN 704 audit recommendations should be implemented as soon as practicably possible. Proof of actions should be provided by the next external IWUL Audit. Storm water runoff must be allowed to enter the wetland area.

				to Section 4 of this report for site photos.	
3.4	The Licensee must ensure that the disposal of dirty water and the operation and maintenance of the system are done according to the provisions in the Report	Major non-compliance	-2	<p>Major non-compliance:</p> <p>A leaking dirty water pipe was observed at the slimes dam during the audit. The slimes dams are currently clay lined. Approval has been granted for the lining of the dams with HDPE liner. The dams are currently in the process of being desilted. The plant PCD was observed to have a damaged lining. This damage was caused due to the desilting process. It is not shown if damage to the lining further down the sides and at the bottom of the PCD occurred. Furthermore, silt and vegetation were still observed in the PCD. Refer to the Section 4 of the report for site photos.</p>	The project with regards to the HDPE lining of these dams should be completed as soon as practicably possible. Proof of progress / completion, should be provided by the next external IWUL Audit. An investigation needs to take place in order to determine the extent of the damage done to the Plant PCD lining. The leaking pipe should be fixed as soon as possible. The lining should be repaired (if possible) or replaced (if required). Proof of investigation should be provided by the next external IWUL Audit
3.1	The quality of dirty water disposed of shall not exceed the following limited (refer to Table 3.1 in amendment licence)	Moderate non-compliance	-1	<p>Moderate non-compliance</p> <p>The quality of process water disposed of at the mine, the concentrations of all measured constituents were within the IWUL amended wastewater limits at all sampled sites with the exception of NO₃ which exceed IWUL limits in OWM pit water for December 2016. The sewage effluent from the septic tank exceeded IWUL limits for ammonia, orthophosphate and Escherichia coli between</p>	Contaminated water from site should not be allowed to enter the environment. Monitoring on site should continue to be conducted as per the IWUL conditions. The treatment process at the sewage works should be investigated in order to determine the reasons for the high concentrations parameters experienced.

				<p>October and December 2016. The water from all process water site was compliant to the IWUL limits in February 2017 with the exception of water from the OJ pit, which had acidic pH which was below the IWUL limit for February 2017. In terms of the sewage effluent quality; the concentrations of all constituents remained low and below IWUL limits in effluent from the sewage treatment plant except for E.coli, which increased and exceeded IWUL limits in February 2017. The presence of E.coli were at levels above the IWUL limit</p>	
5.1	<p>The impact of the activities of the mine on the Bronkhorstspuit and its tributaries shall not exceed the following water quality limits as stipulated in Table 5.1 (refer to table on page 37 of licence).</p>	Moderate non-compliance	-1	<p>Moderate non-compliance:</p> <p>Exceedances, when compared to the IWUL limits, were assessed for both the tributary and the Bronkhorstspuit for the December and February sampling periods. Generally a higher number of IWUL exceedances were recorded at the downstream point compared to upstream sites along both streams. More exceedances were recorded for the February 2017 sampling period. This can be attributed in part to the high rainfall that occurred. It was once again determined, from the monitoring report, that the surface water contamination sources</p>	<p>The recommendations relating to the GN 704 audit, should be implemented as soon as practicably possible. The storm water management along the haul road needs to be corrected in line with GN 704 principles as soon as practicably possible so as to ensure that materials do not enter the wetland and river diversion. Monitoring should continue to take place as per the IWUL conditions.</p>

				are broader than just the Leeuwpan Mine.	
7.5	Storm water control works must be constructed, operated and maintained in a sustainable manner throughout the project	Moderate non-compliance	-1	<p>Moderate non-compliance</p> <p>Storm water channels near and in the plant area are in need of maintenance and repair. These channels were also observed to contain silt and vegetation growth. Some of the drains leading to the channels were completely silted up. Refer to Section 4 of this report for site photos. Storm water channels by the workshop area were observed to be well maintained however did contain some silt. It was indicated that the storm water channels are cleaned once a week.</p>	It is recommended that the management measures and actions from the GN 704 audit for the Plant Area and Workshop Area be undertaken and completed as soon as practicably possible.

Khutala Colliery (South32 SA Coal Holdings (Pty) Ltd)

Ref No.	Condition		Finding	Recommendations
1.1	The licence authorises the section 21(c) and (i) water use activities as set out in Table 1 and in the water use licence application reports submitted to the Department	PC	Khutala Colliery reported that some activities as proposed in the 2011 IWUL did not occur as proposed in the WULA submission. The Southern Diversion was conducted as per the License requirement but the Northern Diversion was never constructed and it is anticipated that it never will. The auditor noted that certain activities are occurring in accordance with this condition.	The WUL should be updated to reflect current and proposed activities occurring on the Licensed property Short Term
1.8	The necessary erosion prevention mechanisms shall be employed to ensure sustainability of all structures	PC	The Khutala Colliery report that there is no official management strategy or mechanisms for erosion at present. This is managed ad hoc on an as/when needed basis. The auditor observed some areas where erosion was occurring on site (Appendix B, Figures 17 and 19)	Erosion inspections should be completed regularly and evidence of such should be well documented. Long Term
1.22	The opencast mining activity will have a profound impact on wetlands of concern in the area as well as the quantity and quality of water generated in the area. Therefore, the Licensee shall restore land as soon as possible after disturbance, to resemble the nature catchment runoff characteristics. The levelling, top soiling and vegetation of spoils will follow not more than three operating cuts behind the active cut. Shaping of the spoils will be such, to ensure free draining surfaces. Avoid and limit interference will undisturbed upslope land	PC	No rehabilitation has been undertaken in the past year. The opencast mining activities ceased in 2014. Some areas have been rehabilitated while others have not (Appendix B: 7 – 8). It is anticipated that further rehabilitation will be implemented on the mine in the near future.	All affected areas must be rehabilitated in accordance with the condition requirements. Long Term
1.23	The Licensee shall divert uncontaminated upslope storm water around mine workings, pollution control dams and other mine infrastructural areas	PC	A sample of the storm water designs verified are listed below: <ul style="list-style-type: none"> North Clean Water – Field Inlet Structures (Ref: 151ktl034-Tech0412-000-A, Dated 8 June 2016); 	Improvement and update to existing storm water infrastructure is required to ensure GNR 704 compliance.

			<ul style="list-style-type: none"> • Eastern Cut off Drain Hard Stockpile (Ref: 151ktl034-Tech0417-000-B, Dated 9 May 2016); • South Clean Water Drain (Ref: 151ktl034-Tech0418-000-C, Dated 8 June 2016); • Dam North (Ref: 151ktl034-Tech0420-000-C, Dated June 2016); • South Clean Water Field Inlet (Ref: 151ktl034-Tech0421-000-A, Dated 8 June 2016); • Dam North End Clean Water Field Inlet (Ref: 151ktl034-Tech0422-000-B, Dated 8 June 2016); <p>Clean and dirty water separation is employed by Khutala Colliery although the Government Notice Regulation 704 Audit Report did note non-compliances and areas for improvement (Government Notice Regulation 704 Compliance Assessment Report Ref: 506620/J35427, date December 2015).</p>	
1.24	The Licensee shall submit a complete mitigation and management master plan within four (4) months of issuance of this water use license regarding the impact of open cast mining operation on the wetlands. The report shall thereafter be submitted to the Regional Head every six (6) months until the land is restored to resemble some natural catchment runoff characteristics	PC	<p>Khutala reported that the mine conducts annual wetland assessments yet no evidence of the wetland assessment report for 2015 was provided to the auditing team. The mine conducts biomonitoring every six (6) months with the last study completed in August 2016. Evidence of report submissions to the DWS was not available for verification.</p>	<p>The wetland assessment and biomonitoring reports must be submitted to the DWS as required in this condition.</p> <p>Long Term</p>
1.25	The impact of undergrounds mining activity on the wetland shall not exceed the following water quality limits with respect to the receiving water body.	PC	<p>Perusal of the "Surface water excel spreadsheet (monthly results for the 2016 period included)" and "Groundwater excel spreadsheet (monthly quantity and quarterly quality results for the 2016 period included)" led to the finding that the</p>	<p>Khutala Colliery should develop water treatment technologies to clean contaminated water in order to meet the required discharge water quality standards. While</p>

			quality of water exceeds the stipulated water quality limits.	in the process of developing such technologies, the department could review the current water quality requirements and amended to achievable water quality limits as the current set limits are deemed to be unattainable. Long Term
2.5	Storm water leaving the Licensee's premises must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises	PC	Clean and dirty water separation is employed by Khutala Colliery although the Government Notice Regulation 704 Audit Report did note non-compliances and areas for improvement (Government Notice Regulation 704 Compliance Assessment Report Ref: 506620 / J35427, dated December 2015). Evidence was observed that during overflow periods of the Block A Workshop Pollution Control Dam, dirty water was draining into a clean area. (Appendix B: Figure 10 – 11)	The areas of non-compliance identified in the GNR 704 Report must be addressed to ensure compliance. Khutala must ensure that contaminated storm water does not drain into uncontaminated areas. Long Term
3.3	The Licensee shall ensure that the quality of the water to downstream water users does not decrease because of the river diversions, river crossings, culverts and associated maintenance of road crossings.	NC	Khutala Colliery does not monitor the quantity of water upstream and downstream. <i>Note: flow within the riverine systems is intermittent due to the wetland nature of the area</i>	The quantity of water upstream and downstream must be measured. Long Term
6.4	The Licensee shall embark on a systematic long-term rehabilitation programme to restore natural watercourses to environmentally acceptable and sustainable conditions after construction, which shall include, but not limited to: 6.4.1 The rehabilitation of disturbed and degraded riparian areas to restore and upgrade the riparian habitat	PC	Khutala Colliery assess wetlands and complete biodiversity assessments and biomonitoring. So although the mine seeks to assess the areas, recommendations and rehabilitation plans are not developed and need to be developed in line with this condition.	All disturbed areas must be rehabilitated as per the WUL requirement. Rehabilitation plans should be developed to inform the rehabilitation of affected areas to environmentally acceptable and sustainable conditions. Long Term

	<p>integrity to sustain a bio-diverse riparian ecosystem; and</p> <p>6.4.2 Annually assess the habitat to monitor the sustainability of the diversions and compliance with these conditions. Actions must be taken to rectify any negative impacts.</p>			
1.15	<p>The impact of mining activity shall not exceed the following water quality limits with respect to the receiving water body. Table 4</p>	NC	<p>Perusal of the “Surface water excel spreadsheet (monthly results for the 2016 period included)” and “Groundwater excel spreadsheet (monthly quantity and quarterly quality results for the 2016 period included)” led to the finding that the quality of water in the dams, groundwater and receiving environments exceeds the stipulated water quality limits.</p> <p>Khutala Colliery reported that the DWS was informed of these exceedances and is awaiting formal response.</p>	<p>Khutala Colliery must research and develop water treatment technologies or similar options in order to meet the required water quality standards. While in the process of developing such technologies, Khutala Colliery could review the current water quality requirements and request a WUL amendment to achievable water quality limits (as the current set limits are deemed to be unattainable).</p> <p>Long Term</p>
4.5	<p>Water quality testing shall be performed on the discard materials dump, pollution control dams and monitoring boreholes on a quarterly basis in order to determine the risks to the receiving environment. The data gathered in the investigation must be reported annually to the Regional Head. If any concentration levels are exceeded, the Licensee must institute an investigation to determine the cause on the poor water quality. Furthermore, the Licensee must undertake geochemical assessment on Coal Slurry and Discard dump.</p>	PC	<p>Khutala Colliery reported that monthly ground water level sampling at upstream and downstream, as well as onsite, boreholes is completed, while quarterly water quality sampling is completed (IWWMP Table 8.7, Ref: LEM-A123 dated 1 November 2016). Exceedances in various specified water quality limits (in terms of WUL and IWWMP table 8.9) were noted, however investigations into the causes were not always completed by the mine. Geochemical Assessment is conducted annually on all the pollution potential material.</p>	<p>Khutala should undertake investigations into the causes of exceedances in various specified water quality limits. The set water quality limits must be reviewed and amended to achievable water quality limits as the current set limits are deemed to be unattainable.</p> <p>Long Term</p>
7.9	<p>The polluted storm water captured in the storm water control dams shall be pumped to the process water</p>	PC	<p>The Khutala Colliery reticulation diagram indicates that pollution storm water captured does not necessarily</p>	<p>The reticulation system must be updated to ensure that captured</p>

	treatment plant for reuse and recycling.		report to the STP, but is re-used for dust suppression or process water.	<p>water is reported to the STP as required.</p> <p>Where this isn't practical, Khutala Colliery should apply for WUL Amendment as appropriate.</p> <p>Long Term</p>
9.2	Notices prohibiting unauthorised persons from entering the controlled access areas as well as internationally acceptable signs indicating the risks involved in case of an unauthorised entry must be displayed along the boundary fence in these areas.	PC	<p>Appendix III, Condition 9.1 refers.</p> <p>While signage noting access restrictions was observed at the main access points, not all areas were inaccessible or had signage noting such e.g some areas were accessible from adjacent farms as boundary fences or signage was not in place. (Appendix B: Figures 1-3)</p>	<p>Notices as specified in the WUL must be placed as required.</p> <p>Medium Term</p>
10	The quantity of water removed from underground must be metered and recorded on a daily basis.	NC	Khutala Colliery removes water to prevent decant or pollution yet there is no evidence that the water removed from underground is metered and recorded daily. Hence, this condition could not be adequately assessed as the current quantity of groundwater removed was not available to the auditor for verification.	<p>Khutala Colliery must record and monitor the flow of water removed and stored in terms of the areas listed in the WUL conditions e.g introduction of flow meters and retention of daily flow records.</p> <p>Long Term</p>

Vanggatfontein Colliery (Wescoal Mining (Pty) Ltd)

	Details of the Licence		Compliance Status	Observations	Recommendations
2	The quantity of water authorised to be taken in terms of this licence may not be exceeded without prior authorisation by the Minister		1	Volumes are being exceeded and should be amended	
3.1.1.4	Stormwater leaving the Licensee's premises must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises		1	The return water pipeline from the Co-disposal site PCD to the Plant is located on the clean water side of the berm / separation trench and any spillage or leaks from this pipeline will impact on the wetland system	It is proposed that the pipeline be moved into the separation trench as an additional mitigation measure to protect the wetland from spillage.
3.3.1	The Licensee must sample the water quality weekly (during construction) and monthly (operation) for the mentioned variables (Table 6) at monitoring points both upstream and downstream of the activities, at all surface water sampling points as referenced in condition 1.2.1.2 (SW 1-15) and report to the Responsible Authority within thirty (3) days after each result of each sampling event is received:		2	Condition 1.2.1.2 refers to a 2008 monitoring report. No weekly sampling was undertaken during the construction period as this licence was issued post construction. Water Quality Monitoring Reports were submitted to DWS.	Request an amendment to this condition to ask for submission to DWS on a quarterly basis.
	pH	6.5 – 8.4	1	The following Water Quality values exceeded this value as on 22 September 2016. SW03 – 8/59 SW08 – 8.52 SW11 – 8.5 SW14 – 8.62 SW15 – 8.59	

Electrical conductivity (EC) (mS/m)	≤40	1	The following Water Quality values exceeded this value as on 22 September 2016. SW03 – 59 mS/m SW08 – 43 mS/m	
Suspended solids (SS) (mg/t)	<25	1	The following Water Quality values exceeded this value as on 22 September 2016. SW02 – 65 mg/l SW04 – 502 mg/l	SW4 is the upstream sampling point already exceeding the compliance limits
Dissolved oxygen (mg/t)	≥6	3		
Turbidity (NTU)	<3	1	The following Water Quality values exceeded this value as on 22 September 2016. SW01 – 16.7 NTU SW02 – 84.4 NTU SW03 – 19.1 NTU SW04 – 452 NTU SW08 – 17.5 NTU SW11 – 3.15 NTU SW14 – 3.04 NTU SW15 – 3.47 NTU	SW04 is the upstream sampling point already exceeding the compliance limits. Will never be able to comply with these limits. The water enters the site with too high numbers.
Secchi disk depth (m)	≥0.15 meter	N/A	Turbidity and Suspended Solids are already sampled. This is currently not sampled.	
Alkalinity (mg CaCO ₃ /f)	<120	1	The following Water Quality values exceeded this value as on 22 September 2016. SW03 – 141 mg CaCO ₃ /f	

				<p>SW08 – 134 mg CaCO₃/f</p> <p>SW11 – 145 mg CaCO₃/f</p> <p>SW14 – 163 CaCO₃/f</p> <p>SW15 – 152 mg CaCO₃/f</p>	
	Calcium (Ca) (mg/t)	<25	1	<p>The following Water Quality values exceeded this value as on 22 September 2016.</p> <p>SW01 – 30.2 mg/t</p> <p>SW02 – 25.5 mg/t</p> <p>SW03 – 47.3 mg/t</p> <p>SW08 – 31.5 mg/t</p> <p>SW011 – 31 mg/t</p> <p>SW14 – 34.3 mg/t</p> <p>SW15 – 31.4 mg/t</p>	
	Magnesium (Mg) (mg/f)	<20	1	<p>The following Water Quality values exceeded this value as on 22 September 2016.</p> <p>SW03 – 32.8 mg/f</p> <p>SW08 – 20.7 mg/f</p> <p>SW11 – 22.5 mg/f</p> <p>SW14 – 23.9 mg/f</p> <p>SW15 – 20.9 mg/f</p>	
	Potassium(K) (mg/l)	<10	1	<p>The following Water Quality values exceeded this value as on 22 September 2016.</p> <p>SW01 – 15.9 mg/l</p> <p>SW04 – 18.1 mg/l</p>	SW04 is the upstream sampling point already exceeding the compliance limits.

	Sulphate (SO ₄) (mg/t)	≤60	1	<p>The following Water Quality values exceeded this value as on 22 September 2016.</p> <p>SW02 – 69.7 mg/l</p> <p>SW03 – 118 mg/l</p> <p>SW04 – 84.6 mg/l</p>	SW04 is the upstream sampling point already exceeding the compliance limits.
	Sodium (Na) (mg/t)	≤20	1	<p>The following Water Quality values exceeded this value as on 22 September 2016.</p> <p>SW03 – 30.3 mg/l</p> <p>SW04 – 20.4 mg/l</p> <p>SW08 – 26.1 mg/l</p> <p>SW15 – 20.7 mg/l</p>	
	Chloride (Cl) (mg/C)	≤20	1	<p>The following Water Quality values exceeded this value as on 22 September 2016.</p> <p>SW04 -22mg/l</p> <p>SW08 – 21.4 mg/l</p>	SW04 is the upstream sampling point already exceeding the compliance limits
	Boron (B) (mg/f)	<0.5	3		
	Fluoride (F) (mg/t)	<0.5	3		
	Aluminium (Al) (mg/t)	≤0.02	1	<p>The following Water Quality values exceeded this value as on 22 September 2016.</p> <p>SW02 – 0.393 mg/l</p> <p>SW04 – 0708 mg/l</p>	SW04 is the upstream sampling point already exceeding the compliance limits
	Iron (Fe) (mg/t)	≤1	3		

	Manganese (Mn) (mg/l)	≤0.18	1	The following Water Quality values exceeded this value as on 22 September 2016. SW01 – 0.185 mg/l		
	Faecal coliforms (counts/100ml)	<130	1	The following Water Quality values exceeded this value as on 22 September 2016. SW02 – 840 CFU/100ml SW04 – 990 CFU/100ml		SW04 is the upstream sampling point already exceeding the compliance limits
3.3.14	The Licensee shall undertake a full encompassing decant and water treatment assessment for its existing operations, and meeting the watercourse standards as mentioned in this licence during operation and after closure, including financial liabilities and provisions as it is currently omitted in the closure funding (condition 1.2.1.4). This assessment must be submitted to the Provincial Head within ninety (90) days after the issuance of this licence for written approval.		1	The 2008 closure costing formed part of the original WUL Application and excluded water management of decant. This documentation must have been submitted to DWS in the middle of April 2015	It is recommended that the 2008 hydrogeological model be updated and calibrated annually as to increase the confidence levels with regards to post closure decant risks and volumes. The updated calibrated model needs to be discussed with DWS and mitigation measured derived in consultation with DWS. It is recommended that the Rehabilitation Strategy Implementation Plan (RSIP) be review as part of this process and the rehabilitation take into	The groundwater model has been updated in Nov 2016. A copy of the report will be submitted to DWS in January 2017. The RSIP is being reviewed and once finalised will be submitted to DWS.

				account the final decant point. Update of the RSIP should take into account the final surface contouring as to shed surface water from the rehabbed areas and reduce overall recharge to groundwater. Updated financial provision should all for current closure decant water treatment should the mine close prematurely.	
4.11	All stockpiles, dams and residue deposits must continuously be cladded (soil and vegetation placed on the side walls) to minimise dust pollution on the wetlands that might alter the wetland’s characteristics and must be monitored and recorded closely as part of condition 5.8.	1	Stockpiles are not cladded. Discard facility is also not being cladded. Continuous cladding is not planned during the operational phase. Dust monitoring is undertaken with dust buckets as part of the monitoring programme. Sampling point K12 is located east of the mine in close proximity of the wetland area. Results are below the residential and heavy commercial limits.		
3	QUALITY OF WATER TO BE DISPOSED				
3.1	The quality of waste water disposed of into the dams specified below shall not exceed the following limits as specified in Table 9.	1	The values of the TDS, Sulphate, Calcium and Magnesium exceeds the limits	It is recommended that the compliance objectives be revisited during a Water Licence Amendment Process or that a separate request for provided to the DWS as to amending	

	<table><tr><th colspan="2">Table 9: Quality of waste water to be disposed into waste water facility</th></tr><tr><th>Substance/Parameter</th><th>Water quality limit</th></tr><tr><td>pH</td><td>8.32</td></tr><tr><td>Total Dissolved Solids in mg/l</td><td>1107</td></tr><tr><td>Aluminium</td><td><0.006</td></tr><tr><td>Chloride in mg/l</td><td>11</td></tr><tr><td>Ammonia</td><td>0.616</td></tr><tr><td>Alkalinity</td><td>126</td></tr><tr><td>Sulphate in mg/l</td><td>673</td></tr><tr><td>Sodium in mg/l</td><td>153</td></tr><tr><td>Calcium in mg/l</td><td>105</td></tr><tr><td>Fluoride in mg/l</td><td>0.77</td></tr><tr><td>Magnesium in mg/l</td><td>47.7</td></tr><tr><td>Iron</td><td><0.006</td></tr><tr><td>Potassium</td><td>10.2</td></tr></table>	Table 9: Quality of waste water to be disposed into waste water facility		Substance/Parameter	Water quality limit	pH	8.32	Total Dissolved Solids in mg/l	1107	Aluminium	<0.006	Chloride in mg/l	11	Ammonia	0.616	Alkalinity	126	Sulphate in mg/l	673	Sodium in mg/l	153	Calcium in mg/l	105	Fluoride in mg/l	0.77	Magnesium in mg/l	47.7	Iron	<0.006	Potassium	10.2			these to be more representative of the area.
Table 9: Quality of waste water to be disposed into waste water facility																																		
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Magnesium in mg/l	47.7																																	
Iron	<0.006																																	
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5.	WATER RESOURCE PROTECTION																																	
5.1	The impact of the activities of the wastewater containment facilities on groundwater shall not exceed the interim resource water quality objective (RWQO) for the management unit as detailed in the Water Quality Reserve for the area as set out in Table 11:	3																																

	Table 11: Groundwater quality Reserve for quaternary catchment 820F		Mg, Na, Ca, SO ₄ and N exceed the groundwater quality Reserve compliance objectives (2016) – Hydrogeological Report	These Water Quality Objective may have to be revisited during an amendment process
	Parameters	Groundwater quality Reserve		
	Sodium (mg/l)	6.81	1	
	Magnesium (mg/l)	3.91	1	
	Calcium (mg/l)	5.39	1	
	Chloride (mg/l)	3.87	1	
	Sulphate (mg/l)	3.37	1	
	Nitrate (mg/l)	0.69	1	
	Fluoride (mg/l)	0.11	3	
6.3.2	Coal slurry dams	1	This facility is not sampled	It is recommended that this dam be included into the monitoring programme
6.3.5	Plant stormwater dam	1	The Plant Storm Water Dam is currently not sampled and it is recommended that this dam be included into the monitoring programme	
14	The Licensee shall use water efficiently to minimise total water intake, avoid usage of water where possible, implement “good” housekeeping and operating practices, and maximise the reuse/recycle of contaminated water	1	<p>There are oil separators at the wash bay area, although the oil spills outside of the wash bay and workshop areas will not end up in the oil separators.</p> <p>The wash bay is silted up and not draining effectively causing the contaminated water to seep into the soil.</p>	Clean the wash bay area. Divert and construct all trenches from the workshop area to feed into the oil separator.

Isibonelo Colliery (Anglo American plc)

Ref	Condition	Compliance review
1.4	No additional water storage facilities can be constructed on the property without prior written consent of the Minister or responsible authority	<p>Non-compliant</p> <p>Additional water storage facilities were noted during the site audit. Montedi Dam collects clean water runoff from the surrounding environment as well as overflow from Vaskop Dam and overflows to the Farmers Dam. Water from the Farmers Dam is released into the diversion canal if water levels are high and only if water is of good quality (refer to further discussion under Condition 3.1.4 of Appendix III). Although not constructed by Isibonelo Colliery, these dams are used as water storage facilities without written consent from the Minister.</p> <p>The aforesaid storage of affected water in the Montedi Dam and Farmers Dam is a legal risk as Isibonelo Colliery is undertaking water uses (section 21(g)) without a licence.</p> <p>Recommended action:</p> <p>Isibonelo Colliery to obtain written consent from the Minister for the use of Montedi Dam and Farmers Dam as water storage facilities in terms of this condition. In addition, Isibonelo Colliery should licence the facilities as section 21(g) water uses.</p>
2.1	Suitable measuring structures must be constructed upstream and downstream of the dams to measure the flow entering and leaving the dams and this information must be available on request.	<p>Non-compliant</p> <p>The quantity of water entering and leaving the Diversion Dam is not monitored. Regular monitoring of the level of water within the Diversion Dam is however undertaken with an estimation of the quantity of water stored recorded. An amendment to this condition was requested.</p>
2.2	No material alterations of the site plan/s forming part of the licence conditions are allowed unless a modification is requested and granted by the Regional Chief Director in writing	<p>Non-compliant</p> <p>The location of the Diversion Dam was moved upstream and was therefore not undertaken according to the site plans submitted to the DWS as part of the IWULA. As discussed under condition 4.5 of Appendix II above, Isibonelo Colliery notified the DWS of the changes prior to construction of the Diversion Dam in a letter dated 4 November 2011. Isibonelo Colliery further requested an amendment to this condition as part of the WUL amendment. No approval from the Regional Chief Director on the changes was received</p> <p>The designs were also submitted to the Dam Safety Office on 30 March 2012 for issuance of the Licence to construct. The licence to construct a dam with a safety risk was subsequently</p>

		issued in June 2012 by the Dam Safety Office of DWS to Isibonelo Colliery.
3.1.4	Storm water leaving the Licensee's premises must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises	<p>Compliant:</p> <p>Isibonelo Colliery has implemented a comprehensive clean / affected water management system (refer to Figure 5). Site observations supported the effective implementation of this control measure, although some concerns were identified at Vaskop Dam.</p> <p>Non-compliant:</p> <p>During the site inspection, it was confirmed that water was being released from Vaskop Dam to the Montedi Dam, with the Montedi Dam above full capacity and spilling into Farmers Dam. Mine personnel indicated that in emergency situations, water is discharged from Vaskop Dam (via a valve at the dust suppression filling point) into a channel to the Montedi Dam that finally discharges into Farmers Dam. The affected mine water within Farmers Dam is then diluted with water from the Diversion Dam until the quality of the water is in line with the limits of the resource quality objects. Once the correct quality of the water is obtained, the water is released from Farmers Dam into the stream diversion.</p> <p>Montedi Dam and Farmers Dam are clean water dams and are not licenced within this licence as affected water dams. This is a legal risk since Isibonelo Colliery is conducting water uses (section 21(g)) without a water use licence. Further, the discharge of the water into the diversion channel (licenced as per the WUL may require further licencing in terms of Section 21(f) water uses.</p>
4.3	The Licensee shall ensure that the overall magnitude and frequency of flow in the watercourses does not decrease, other than for natural evaporative losses and authorised attenuation volumes.	<p>Undetermined:</p> <p>No flow monitoring is conducted by Isibonelo Colliery to assess the impact on water flow in the Steenkoolspruit. It was indicated by Isibonelo Colliery that flow monitoring is undertaken by DWS, however, such information was not available. The decrease (if any) of the overall magnitude and frequency of flow in the watercourse (Steenkoolspruit) relating to the activities of Isibonelo Colliery can therefore not be assessed and confirmation is required from Isibonelo Colliery in this regard.</p>
5. WATER RESOURCE PROTECTION		
	The impact of the activities of the mine on the Steenkoolspruit, Weg-in-die-Spruit/Trichardspruit and De Beerspruit river	Compliant:

shall not exceed the resource water quality objectives detailed in Table 3 as stipulated in the water quality reserve for the area;

Table 3: Water Resource Quality Objectives

VARIABLE	Water Resource Quality Objectives
pH	8.04
Sulphate (SO ₄)	70mg/l
Chloride (Cl)	32mg/l
Sodium (Na)	9mg/l
Nitrate (NO ₃)	6mg/l
Toxics	*99% = TWQO 95% < CEV 100% < AEV

All water quality variables are being analysed for:

From a review of water quality data for the period August 2016 to July 2017, the following compliant observations to water qualities were noted:

- The pH limits for all monitoring points were within the limits specified.
- Monitoring points S4, S17 and S20 recorded SO₄ concentrations within the limits specified
- Monitoring points S12, S14, S15, S17 and S20 recorded Cl concentrations within the limits specified
- The nitrate concentrations for all monitoring points were within the limits specified.

Non-compliant:

The following non-compliances to the limits specified in Table 3 were observed:

Sulphate

- Monitoring points S3, S12, S15 and S14 regularly exceeded the sulphate limit during the period August 2016 – July 2017.

Chloride

- Monitoring points S3 and S12 regularly exceeded the chloride limit during the period August 2016 – July 2017.

Sodium

- All monitoring points exceeded the sodium limits during the period August 2016 – July 2017.

From comparing the water quality results of the upstream and downstream surface water monitoring points, the poor water quality in the surface water resources may not necessarily be as a result of the mining activities at Isibonelo Colliery, with upstream activities contributing to poor water quality. For all monitoring results where exceedances were noted, the upstream sampling points (ie S3 and S4) already exceeded the water quality objectives, with little variation, and sometimes improvement of water quality at downstream water monitoring points.

Recommended action:

		Isibonelo Colliery to continue monitoring water qualities to quantify the potential risk to the receiving environment.
7. STORM WATER MANAGEMENT		
7.1	Storm water leaving the Licensee's premises shall in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises.	<p>Non-compliant</p> <p>Refer to discussion under condition 3.1.4 of Appendix III above for a discussion on the shortcomings that were identified with regards to effective containment of affected water runoff.</p>
12.4	The Licensee shall make full financial provision for all investigations, designs, construction, operation and maintenance for a water treatment plant should it become a requirement as a long-term water management strategy	<p>Non-compliant</p> <p>No provision is currently being made for a water treatment plan at Isibonelo Colliery. According to the Post Closure Water Management Model, dated 7 September 2011, and prepared by Schlumberger Water Services (Project No 52098 TMO2v2). Flooding of all pit areas to their natural decant elevations would occur around 32 years of the cessation of mine dewater, assuming the continued prevalence of recharge rates as witnessed during mine operations (20% of MAP). The aggregate decant rate predicted by Schlumberger Water Services for Isibonelo Colliery following closure averages 7.6 MLD.</p> <p>Water quality will be temporarily degraded during initial flooding of the pits due to the flushing of accumulated sulphide oxidation products. Decant pH levels will remain circum-neutral or weakly alkaline, but sulphate concentrations are likely to be systematically around 1500 mg/l for the 32-year period of pit storage consumption and during the initial decant of water. By year 60 post-closure, TDS may potentially be reduced by a factor of four, with sulphate levels of the order of 400mg/l. This improvement is, however, contingent on the placement of relatively benign spoil above the level of permanent inundation (Schlumberger Water Services, 2012).</p> <p>The Schlumberger Water Services report concludes that the predicted post-closure flow and chemistry regime for long-term water treatment at Isibonelo Colliery supports the assertion that membrane treatment of water will continue to be necessary. Passive treatment by anaerobic sulphate reduction could in principle be applied, but would require (a) continuous post-closure abstraction at rates 1 – 2 MLD and (b) the development of a treatment system with a footprint of at least 100 ha.</p> <p>Isibonelo Colliery indicated that the Schlumberger Water Services report will be updated, with scope of work provided</p>

		<p>during the audit. It is noted that this finding was also raised in the 2016 EWULCA.</p> <p>Recommended action:</p> <p>Isibonelo Colliery should make adequate financial provision for future water treatment as confirmed through the Schlumberger report. If alternative long term water management measures are proposed, these should be included in a detailed long term water management strategy for the operation. Such strategy should include detailed actions and implementation dates and should be provided to DWS for consideration.</p>																				
2. QUALITY OF THE EFFLUENT																						
2.1	<p>The effluent discharged into the Trichardt Spruit shall at all times comply with the quality requirements of Management Unit 1 specified in Report no WQB 1 00/000/01/93, titled “Witbank Dam Catchment: Water Quality Management Plan”, dated September 1993 as shown in the table below:</p> <table><tr><th>Water Quality Variable</th><th>Water Quality Guidelines</th></tr><tr><td>pH</td><td>5.5 – 9.0</td></tr><tr><td>Electrical conductivity</td><td>35 mS/m</td></tr><tr><td>Chemical oxygen demand</td><td>70 mg/l</td></tr><tr><td>Ammonia (as N)</td><td>0.05-0.11 mg/l</td></tr><tr><td>Suspended solids</td><td>25mg/l (General Standard)</td></tr><tr><td>Nitrate (as N)</td><td>0.12 – 0.66mg/l</td></tr><tr><td>Phosphate (as P)</td><td>-</td></tr><tr><td>Chloride (as Cl)</td><td>20 mg/l</td></tr><tr><td>Faecal coliforms</td><td>0 counts per 100 ml (General Standard)</td></tr></table> <p>The following monitoring variables may be relaxed from abovementioned quality requirements. These shall not exceed the values</p>	Water Quality Variable	Water Quality Guidelines	pH	5.5 – 9.0	Electrical conductivity	35 mS/m	Chemical oxygen demand	70 mg/l	Ammonia (as N)	0.05-0.11 mg/l	Suspended solids	25mg/l (General Standard)	Nitrate (as N)	0.12 – 0.66mg/l	Phosphate (as P)	-	Chloride (as Cl)	20 mg/l	Faecal coliforms	0 counts per 100 ml (General Standard)	<p>Compliant:</p> <p>From effluent water quality data provided for the period August 2016 to July 2017, the following variables recorded within the water quality guidelines specified:</p> <ul style="list-style-type: none">pH, suspended solids, chemical oxygen demand and faecal coliform concentrations are within the limits specified for the entire audit period. <p>Non-compliant:</p> <p>From effluent water quality data provided for the period August 2016 to July 2017, the following variables exceeded the water quality guidelines specified:</p> <ul style="list-style-type: none">Electrical conductivity, ammonia, nitrate and chloride <p>Recommended action:</p> <p>Isibonelo Colliery must investigate reasons for non-compliance to the treated sewage effluent discharge quality requirement, and accordingly implement measures to address. Should above standards not be achievable, it is recommended that relaxation to the standards be motivated for and that the effluent discharge from the sewage treatment plant be incorporated through an IWUL amendment process.</p>
Water Quality Variable	Water Quality Guidelines																					
pH	5.5 – 9.0																					
Electrical conductivity	35 mS/m																					
Chemical oxygen demand	70 mg/l																					
Ammonia (as N)	0.05-0.11 mg/l																					
Suspended solids	25mg/l (General Standard)																					
Nitrate (as N)	0.12 – 0.66mg/l																					
Phosphate (as P)	-																					
Chloride (as Cl)	20 mg/l																					
Faecal coliforms	0 counts per 100 ml (General Standard)																					

	<p>indicated below at the monitoring point (Syferfontein Opencast Mine Sewage Permit Application):</p> <p>Electrical conductivity: 73 mS/m</p> <p>Ammonia (as N): 1.0mg/l</p>	
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Goedgevonden Colliery (Glencore Operations South Africa (Pty) Ltd)

Reg No	Section Heading	Criteria	Score	Comments	Reference
4.17	APPENDIX III: SECTION 21 (C): IMPEDING OR DIVERTING THE FLOW OF WATER IN A WATERCOURSE SECTION 21(I): ALTERING THE BED, BANKS, COURSE OR CHARACTERISTIC OF A WATERCOURSE – General Specifications and General Surface Water Design	Disturbed slopes leading down to wetlands should be re-vegetated	NC	There is a section of slope adjacent to the eastern haul road across the Zaiwaterspruit river diversion where erosion has occurred due to a lack of vegetation. It has been indicated that the area will be reseeded.	Visual site inspection
1.11	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Disposal of water	Groundwater pollution prevention measures must be implemented at all coal processing facility dams.	NC	The Raw Water Dam, Eastern and Western Stormwater Dams and Return Water Dams are lined. The exception is the Farm Dam.	Visual site inspection
4.6	APPENDIX IV: Section(g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Waste Minimisation, Storm water and Erosion Control	The Licensee shall provide a detailed storm water management plan for mine residue facility. The storm water management plan shall include (but not limited to) the details of the separation of clean and dirty water runoff and surface water control measures	NC	The stormwater management plan was not available for review	
1.4.1	APPENDIX V: Section 21(j) of the Act: Removing of Water Found Underground – Dewatering of Underground Workings	The Licensee shall implement the following measures to protect groundwater quality and minimise impact on	NC	No documentary evidence was provided during the course of the audit to demonstrate that investigations have been	

		groundwater quantity and level during operation: The potential impacts associated with the dewatering of the Ogies underground workings including subsidence, spontaneous combustion and decrease in water quality. These impacts shall be investigated in detail before development of an abstraction management strategy.		done to assess potential impacts associated with the dewatering of the Ogies underground workings, including subsidence, spontaneous combustion and decrease in water quality	
2.7.2	APPENDIX VI: Investigations, Monitoring, Reporting and Auditing – Groundwater quality monitoring	Other groundwater monitoring points shall be selected to measure the following: inter-mine flow (quality and levels) between Goedgevonden and surrounding mines	NC	No evidence for interflow monitoring was available	
5.8.1	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Mine Water Balance	Key variables to be monitored include: Rainfall and evaporation rates	NC	The mine water balance was not available	
5.8.2	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Mine Water Balance	Key variables to be monitored include: Water levels in the various dams on site	NC	The mine water balance was not available	
8.1.1	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Inter-mine Flow	The quantification of inter-mine flow at Goedgevonden Colliery is important to accurately determine the final long-term decant volumes associated with the mining operations. The following actions need to be implemented: Confirm barrier pillar geometry at the mining fringes with Khutala Colliery and Old	NC	No documentation was available at the time of the audit	

		Ogies underground workings. The investigation must include surveyed thickness of the total barrier pillars, the elevations of the coal seam floors and the structural integrity			
8.1.2	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Inter-Mine Flow	The quantification of inter-mine flow at the Goedgevonden Colliery is important to accurately determine the final long-term decant volumes associated with the mining operations. The following actions need to be implemented: Measure hydraulic properties in barrier pillars at the different points. This will require professional drilling into barriers both from vertical and horizontal angles	NC	No documentation was available at the time of the audit	
8.1.3	APPENDIX IV: Section (g) of the Act : Disposing of waste in a manner which may detrimentally impact on a water resource – Inter-Mine Flow	The quantification of inter-mine flow at Goedgevonden Colliery is important to accurately determine the final long-term decant volumes associated with the mining operations. The following actions need to be implemented: Water Level measurements must be taken in flooding/flooded sections every 3 – 6 months. The monitoring boreholes in the barrier pillars must also be measured	NC	No documentation was available at the time of the audit	
8.1.4	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a	The quantification of inter-mine flow at the Goedgevonden Colliery is important to accurately determine the final long-term decant volumes	NC	No documentation was available at the time of the audit	

	water resource – Inter-Mine Flow	associated with the mining operations. The following actions need to be implemented: Once a trend is established, identify critical water level monitoring stations surrounding the barrier areas. Water level differentials must be measured in mining sections, as well as in the adjacent mining sections, on a six-monthly basis			
8.1.5	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Inter-Mine Flow	The quantification of inter-mine flow at Goedgevonden Colliery is important to accurately determine the final long-term decant volumes associated with the mining operations. The following actions need to be implemented: Monitor groundwater qualities in underground sections and in barrier pillars on a six monthly basis.	NC	No documentation was available at the time of the audit	
8.2	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Inter-Mine Flow	An appropriate protocol for inter-mine flow monitoring shall be developed and implemented, and shall be reviewed on an annual basis as more information becomes available	NC	No documentation was available at the time of the audit	
8.3	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Inter-Mine Flow	The inter-mine modelling shall be revised within the first 5 years of mining	NC	No documentation was available at the time of the audit	
9.1	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a	The results of the preliminary study must be confirmed in the case where the screening levels assessment indicates the	NC	No documentation was available at the time of the audit	

	water resource – Long Term Water Quality (Decant)	potential for acid mine drainage			
9.2	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Long Term Water Quality (Decant)	A detailed geochemical assessment, based on actual data collected from the site and addressing all the shortcomings (potential) identified during the preliminary assessment shall be initiated in line with the process outlined in the DWAF Best Practice Guideline on Impact Prediction (but not limited to this guideline)	NC	No geochemical report was available	
9.3	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Long Term Water Quality (Decant)	A detailed geochemical and water quality monitoring programme shall be implemented during the operational life of a pit	NC	No geochemical report was available. However, ground and surface water are monitored	Aquatico, Test Report, Monthly Water Quality Results, February 2017, March 2017 April 2017, May 2017
9.4	APPENDIX IV: Section (g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource – Long Term Water Quality (Decant)	A detailed geochemical assessment, based on the actual mining plan, shall be initiated within the first year of mining should the screening level geochemical assessment indicate the potential for acid mine drainage. The monitoring programme specified to verify (and calibrate) the geochemical model predictions during the operational phase shall be implemented on completion of the detailed assessment	NC	No geochemical report was available	

Kangala Colliery (Universal Coal Development 1 (RF) (Pty) Ltd)

COND. No.	CONDITION	COMPLIANCE			COMMENT
		YES	NO	N/A	
	<u>Appendix V</u> Section 21(g): Disposing of waste in a manner that may detrimentally impact on a water resource				
4.1	The quality of waste water disposed of into the dams specified below shall not exceed the following limits as specified in table 3		X		The quality of wastewater disposed of into the pollution control dam violates water quality limits specified in the IWUL. However, it is noted that the monitoring report evaluates the data against groundwater quality criteria instead of that for the PCD in the IWUL amendment
6.1	The impact of the activities of the mine on the ground water shall not exceed the in-stream water quality objectives detailed in the water quality reserve for the area as indicated on Table 5 below		X		Nitrate concentrations at borehole KGA21 and G37018 exceed the 10mg/l limit specified in the IWUL amendment.
	<u>Appendix II</u> Section 21(a): Taking water from the water resource				
2.3	Stormwater control works must be constructed, operated and maintained in a sustainable manner throughout the project.	X			Not all dirty stormwater trenches are lined, and silt build-up was evident in the discard cut-off trench.
5.5	Water quality testing to be performed on the pollution control dams and Discard dump on a quarterly basis in order to determine the risks to the receiving environment. The data gathered in the investigation must be reported annually to the Regional Head. If any concentration levels as specified above are exceeded, the Licensee must institute an investigation to determine the cause of poor water quality. Furthermore, the Licensee must undertake geochemical assessment on the discard dump.	X			The Licensee's water monitoring programme includes the discard and PCD, and the results are reported to the DWS. However, the Licensee has not instituted an investigation into the violation of the pertinent water quality criteria.

5. Conclusion & Recommendations

5.1 Conclusion

- No evidence of WUL compliance monitoring by DWS could be found in our assessment sample. In fact, all indicators point to a total absence of compliance monitoring and enforcement by DWS.
- Mandatory submissions made by the licence holders to the DWS during the period under review often reflected significant non-compliance with GN 704 requirements and WUL conditions. The disclosures attracted no response or consequence of any nature from the DWS, despite the fact that several of the submissions reflected the deterioration of the public's water resources. This situation is exploited by the licence holders, who regard DWS' inaction as a condonation of the reported non-compliance.
- With the exception of the report prepared by Shangoni Management Services, significant portions of the external audit reports reviewed as part of our assessment sample are incomplete, inaccurate and misleading to the extent that they constitute flagrant misrepresentations to the DWS.
- The tariffs applicable to water abstraction were in several instances not collected by DWS during the period under review.
- With the exception of Glencore Operations SA (Pty) Ltd, all licence holders in our assessment sample co-operated in a satisfactory manner and granted access to most of the requested information.

5.2 Recommendations

- Recommendations for the improvement the concerns highlighted in paragraphs 4.1.1 – 4.1.9 are included in the respective paragraphs and are not repeated here.
- As regards the improvement of the quality of external WUL audit reports, the CER wishes to make the following recommendations:
- The adequacy of the available resources to review of all the mandatory submissions required in terms of the WUL, including the external WUL audits report, should be assessed as a matter of priority. The absence of any response from DWS to the submissions made by the license holders in our assessment sample suggests that the reports have not been read. Whether this is a result of insufficient capacity, or other reasons, should be established with certainty.
 - It is advisable to specify the minimum requirements for external audits in a stand-alone WUL condition. The NEMA requirements alluded to in paragraph 4.2.1 could be reproduced without modification. An express obligation could be added, requiring the external auditor to (i) interpret the mandatory water monitoring reports, and (ii) to audit the effective implementation of the IWWMP, RSIP and any other mandatory submissions required in terms of the WUL.
 - The inclusion of more than one obligation per WUL condition should be avoided, as this often gives rise to incorrect audit conclusions of "partial compliance", without the external auditors equally recognising and highlighting the partial **non-compliance**. This gives rise to misleading compliance statistics and significant non-compliances not being highlighted in the external audit reports.
 - The relevant officials should receive regular training in the critical evaluation of an external WUL audit report. Guidance could be provided to the reviewer in the form of checklists, notes and thought provoking

questions. It follows that the auditors' failures highlighted in paragraph 4.2 should be covered by such a programme/ guideline.

- We also recommend the inclusion of a standard condition in the WULs enabling the DWS to commission their own independent WUL audits at the expense of the licence holder upon receipt of a report that does not in all respects comply with the minimum requirements of regulation 32 of GN R982, NEMA. This enabling provision should then indeed be used. The cost of a second audit, and scrutiny by an auditor selected by the DWS, is likely to result in an immediate improvement in the quality of external audits submitted by the licence holder.
- DWS could also consider the establishment of a panel of approved external WUL auditors. Randomly selected reports compiled by the approved auditors can then be evaluated annually by a peer reviewer as part of an annual renewal of the approved status of the auditors.
- It is furthermore advisable to request the chief executive officer of the licence holder to certify the external audit reports as a true and accurate reflection of the status quo. Should this transpire to be a false declaration, the DWS should institute legal proceedings against both the CEO and the external auditor in their personal capacities (as provided for by section 154 of the NWA and section 34 of NEMA. One or two such precedents are likely to bring about a rapid and dramatic improvement in water management in the mining sector.
- Lastly, a detailed and accurate external WUL audit report is of no value if not studied and responded to by the Regulator. The maximum allowable administrative fines (and/or prosecution of the responsible individuals) should be a real risk to offenders who impact on water resources and the legitimate water rights of citizens.

References

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