

## OPERATIONAL PROFILE VAAL RIVER, SOUTH AFRICA



### DESCRIPTION

AngloGold Ashanti's operations in the South Africa region are located to the west of the Witwatersrand Basin, which hosts numerous gold-bearing reefs. The South Africa operations are divided into two areas, the West Wits and Vaal River. The Vaal River operations principally exploit the Vaal Reef, the Ventersdorp Contact Reef (VCR) and the Crystalkop Reef.

The Vaal River underground mining operations in the South Africa region are: Great Noligwa, Kopanang and Moab Khotsong. These mines are located roughly 180km from Johannesburg in the vicinity of Orkney and Klerksdorp, near the Vaal River on the Free State-North West Province border. The three mines share a milling and treatment circuit.

**Great Noligwa** is a mature operation which adjoins Kopanang (in the Free State) and Moab Khotsong. The Vaal Reef, the operation's primary reef, and the Crystalkop Reef, a secondary reef, are mined from a twin-shaft system over eight main levels at an average depth of 2,400m. Given the geological complexity of the orebody at Great Noligwa, the pillar mining method is employed.

### Highlights

Together the Vaal River operations produced 581,000oz (2011: 831,000oz) – 15% of total attributable group gold production – at an average cash cost of \$1,007/oz (2011: \$737/oz). The rise in costs was a result of increases in wages and inputs such as, reagents and power, as well as safety stoppages in the first half of the year and the strike in the second half of the year.

The Vaal River operations had an average of 17,596 (2011: 16,185) employees for the year, with a productivity rate of 3.45oz/total employee costed (TEC) (2011: 5.18oz/TEC).

Capital expenditure at the Vaal River operations in 2012 amounted to \$295m, an increase of 8% on the \$273m spent in 2011. This brings total capital expenditure in the area for the five years 2008 – 2012 to \$1,181m. Expenditure in 2012 was mainly on Project Zaaiplaats and ore reserve development across all three deep-level mining operations.

At 31 December 2012, the total Mineral Resource for the Vaal River area was 31.19Moz (2011: 34.08Moz) and the total Ore Reserve, 8.3Moz (2011: 10.9Moz), equivalent to 13% and 34% respectively of group resources and reserves.

**Kopanang** is located to the west of neighbour Great Noligwa and bound to the south by the Jersey Fault. Gold is the primary output with uranium oxide as a by-product from a single shaft system to a depth of 2,600m. It almost exclusively exploits the Vaal Reef, although minor amounts of gold are also extracted from the secondary Crystalkop Reef. Given the geologically complex orebody, scattered mining is used.

**Moab Khotsong** is the newest gold mine in South Africa. Stopping operations began in November 2003, with the mine expected to reach full production in 2013. Given the geological complexity of the Vaal Reef, scattered mining is employed. The Zaaiplaats orebody in the Moab Khotsong lease area presents a significant growth opportunity and capital has been allocated to support its phased development.

## Contribution to group production

(%)



The Vaal River operations also include **Surface Operations** which comprise the metallurgical surface operations located in both the Vaal River and West Wits areas of the South Africa region, and Mine Waste Solutions (MWS), a subsidiary of First Uranium (Pty) Limited which AngloGold Ashanti acquired in July 2012. MWS is a retreatment facility located in the vicinity of the Vaal River operations.

Surface Operations extract gold from marginal ore dumps, clean-up operations and tailings facilities. Uranium is produced as a by-product, as is backfill which is used as support in underground mined out areas.

Surface Operations are wholly owned by AngloGold Ashanti and are located within the vicinity of its South African mining operations. In addition to the treatment of ore, the metallurgical surface operations' activities include: rail transport, the Vaal River and West Wits laboratories and tailings management.

## Operating performance

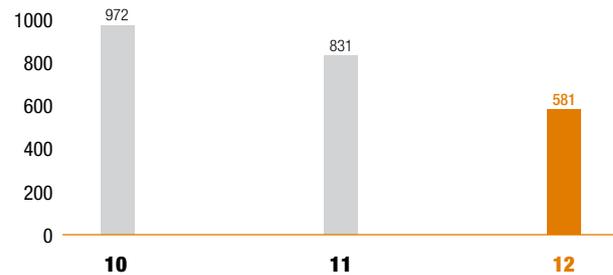
The almost month-long strike in the fourth quarter of the year was a major contributory factor to the decrease in production and increase in costs in 2012. Also contributing to the rise in costs were increases in wages and the prices of inputs such as reagents and power as well as safety stoppages in the first half of the year.

The strike, which ran from 20 September to 26 October 2012 at most of AngloGold Ashanti's South African operations, followed an intensely fractious period of labour unrest in the country's platinum industry. Pay disputes at the country's large platinum producers, aggravated by a growing rivalry between the more established National Union of Mineworkers (NUM) and the relatively new Associated Mining and Construction Union (Amcu), created fertile ground for a series of work stoppages and violent confrontations that caused the bulk of platinum production to grind to a halt and culminated in the tragic shootings at Lonmin's Marikana mine on 26 August 2012. This raised the temperature of engagement between employees, organised labour unions and mining companies. Perhaps inevitably, the unprocedural strike action spread to the gold sector bringing production to a complete standstill.

A deliberate decision was taken to maintain constant and constructive dialogue during the unprotected work stoppage with all stakeholders, including directly with our employees, with all unions, several government departments, local and national authorities, communities, shareholders and our peers in the industry.

## Vaal River – Annual gold production

(000oz)



Our priorities were to maintain calm and provide a safe environment for all staff; to maintain what had to that stage been a good, constructive relationship with our workforce; to preserve the integrity of the gold industry's collective bargaining structure and to find a pathway for a speedy resolution to the impasse.

Resolution was reached in late October and an entry level task team, established under the collective bargaining structure of the Chamber of Mines during the 2011 wage talks, was mandated to evaluate job categories and entry-level wages.

The increased wages negotiated as a result of the strike as well as the production lost during the work stoppage, will affect the profitability of the South Africa operations. The South Africa region, which includes the Vaal River operations, is currently reviewing its cost structures in order to ensure on-going stability.

The current two-year wage agreement expires in June 2013. New wage negotiations are expected to begin in May 2013. A new union, Amcu, is in place and is expected to participate in collective bargaining for the first time. AngloGold Ashanti has committed to working with all representatives and employee associations to ensure a swift and mutually beneficial agreement.

## Growth and improvement

Project Zaaiploats is the major growth project in the Vaal River area. See Moab Khotsong below for further details.

In line with the rollout of the Project ONE business improvement initiative across the South Africa operations in 2012, the focus was on productivity improvements through the implementation of this initiative's work management programme.

## Exploration

Brownfields exploration in the South Africa region continued with a total of 22 surface holes having been drilled during the year, including 18 at the Vaal River operations – six at Moab Khotsong and 12 shallower (500m – 1,400m) surface holes to the west of Kopanang. Six of the holes drilled at Kopanang targeted the VCR and six the Vaal Reef. Drilling of an additional thirteenth hole at Kopanang continues.

## Sustainability performance

### Safety

There were regrettably three fatalities at the Vaal River operations during 2012: one at Great Nologwa and two at Moab Khotsong. The board and management of AngloGold

## Vaal River – key statistics

	Units	2012	2011	2010
<b>Operational performance</b>				
Volumes mined	Mt	19.98	13.58	14.08
Pay limit	oz/t	0.04	0.06	0.08
	g/t	8.59	8.03	8.11
Recovered grade	oz/t	0.026	0.055	0.063
	g/t	0.91	1.90	2.15
Gold production	000oz	581	831	972
Total cash costs	\$/oz	1,007	737	639
Total production costs	\$/oz	1,217	983	878
Capital expenditure	\$m	295	273	219
Productivity	oz/TEC	3.45	5.18	5.30
<b>Safety and health</b>				
No. of fatalities		3	6	6
AIFR	per million hours worked	16.13	17.68	15.90
No. of employees on ART <sup>(1)</sup>		1,493	1,019	1,257
<b>People</b>				
Average total no. of employees		17,596	16,185	18,816
– permanent employees		14,593	13,715	16,314
– contractors		3,003	2,470	2,502
Employee turnover	%	8	8	12
Training and development expenditure	\$m	41	32	25
<b>Environment</b>				
Total water consumption	ML	19,332	13,572	15,587
Total water usage intensity	ML/oz	33.27	16.33	16.04
Total energy usage	million GJ	6.08	6.09	6.76
Total energy intensity	GJ/oz	10.47	7.33	7.32
Total greenhouse gas (GHG) emissions (CO <sub>2</sub> e)	000t	1,559	1,574	1,812
Total GHG emissions/oz	tCO <sub>2</sub> e/oz	2.73	1.90	1.84
Cyanide used <sup>(2)</sup>	t	<sup>(3) (4)</sup> 6,129	<sup>(4)</sup> 3,913	<sup>(4)</sup> 4,575
No. of reportable environmental incidents		<sup>(5)</sup> 10	10	1
Total rehabilitation liabilities:	\$m	85	79	87
– restoration	\$m	7	27	
– decommissioning	\$m	78	52	

<sup>(1)</sup> Figure excludes MWS

<sup>(2)</sup> Cyanide is used by the gold extraction plants

<sup>(3)</sup> Includes cyanide consumption of 2,152t by MWS

<sup>(4)</sup> Includes cyanide consumption at the West Wits gold plants, which are included in the Vaal River Surface Operations, of: 2012 – 913t; 2011 – 886t; 2010 – 963t

<sup>(5)</sup> Includes seven environmental incidents reported at MWS

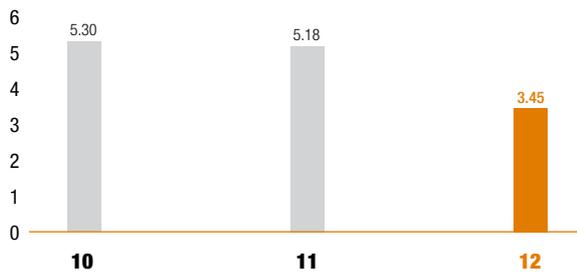
Ashanti extend their sincere condolences to the family, friends and colleagues of the deceased.

The all injury frequency rate (AIFR) for the Vaal River operations for the year was 16.13 per million employee hours worked as compared to 17.68 in 2011. The Vaal River operations have unfortunately had the worst safety record in the group for some years. This has manifested in an increase in the number of section 54 safety stoppages imposed on these operations to 31 in 2012 from 27 in 2011. AngloGold Ashanti is aware of this and has made progress in identifying and remedying fundamental shortcomings in its safety performance and by engaging with the safety regulator. Several managerial changes were made and a dedicated liaison person was appointed to engage with the Department of Mineral Resources (DMR).

The Vaal River operations have implemented AngloGold Ashanti's three-pillars safety strategy, which is:

- Behaviour interventions to influence and improve at-risk behaviour by engaging directly with all employees. In addition to this the stop, look, assess and manage campaign was also launched;
- Work systems to ensure and oversee safety performance and standards. These systems include OHSAS 18001, risk assessments and the business processes framework; and
- Technological interventions that remove people from areas of risk. This involves effective risk management such as the installation of in-stope netting and bolting, adoption of Mine Industry Occupational Health and Safety (MOSH) standards.

### Vaal River – Productivity (oz/TEC)



The Simunye safety and productivity training programme, a three-week course focussing on team building, engagement, safety training and personal finance coaching, among other activities, is being implemented at all Vaal River operations. This programme, part of the roll-out of Project ONE to production crews, focuses on safety and the reduction of injury rates, the elimination of disruptive stoppages, improved compliance with mining cycles and blast frequency.

The programme began around two years ago, and to date almost two-thirds of AngloGold Ashanti’s work crews in South Africa have undergone Simunye training, which also includes a component of personal finance training to help shield employees from predatory lending practices in the private sector and to assist them in creating a sound, personal finance platform.

Much of the technology introduced at the underground operations in the South Africa region is specifically aimed at improving safety and health. Lacing and meshing have been installed across all gullies and each employee working underground wears custom-made hearing protection. Sprayers, foggers and automatic coupling devices, have all been introduced to protect people from hazardous coupling conveyances.

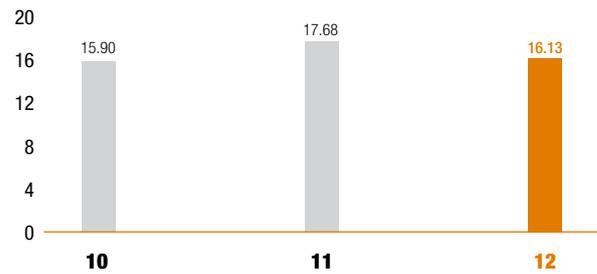
There was a substantial increase in the number of DMR inspections during 2012 and it is anticipated that this trend will continue into the future. Consistent engagements with the DMR are being carried out to ensure that all internal and external standards are adequate.

### Health

Operations in the area have each identified their headline risks in terms of occupational health – these are silica dust, noise, thermal stress and at Great Noligwa, the gas radon which decays and gives off fine solid radioactive particles called radon daughters. The mines have a well maintained system of measuring and monitoring these risks in order to ensure compliance with the Mine Health and Safety Act’s standards, procedures and guidelines.

Good progress was made on the health front in the South Africa region in 2012. The tuberculosis (TB) control programme, including early lung disease protection and dust exposure interventions, is beginning to yield positive results. The rate of TB infection for the year was less than 2%. Employees are being exposed to less dust as a result of the interventions such as foot wall and side wall treatments, foggers and centralised blasting among others. In 2011, 541 cases of TB were diagnosed and in 2012 this declined to 446.

### Vaal River – AIFR (per million hours worked)



Similarly, HIV programmes including anti-retroviral therapy also produced encouraging results. Around 4,700 employees are on the wellness clinic programme in the South Africa region and of those about 2,700 are on anti-retroviral therapy. The incidence of new cases of HIV has declined by about 33% over six years.

These programmes have been aided by the company’s housing and accommodation strategy over the last five years, which will eliminate communal housing by 2013 and place all workers residing on site in private accommodation.

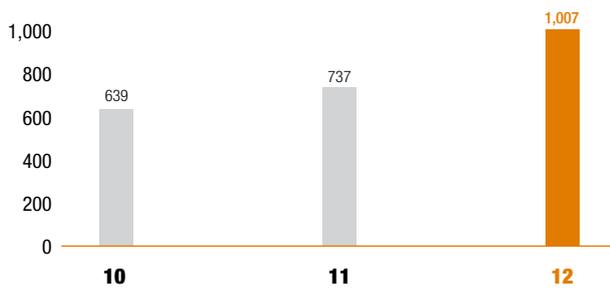
A comprehensive footwall treatment programme is in place to effectively minimise silica dust and allow for the proper and effective allaying of dust in all main intake airways where people travel. All major tip installations have been equipped with high-pressure misting systems, in accordance with MOSH processes and practices. Awareness of silica dust and occupational lung diseases is promoted by engagement with employees through information sharing at meetings, posters and waiting place meetings. All incidents of dust over exposures were thoroughly investigated and documented.

Although there has been significant investment by the company in the silencing of equipment over a number of years, the incidence of noise-induced hearing loss (NIHL) has remained static and there were 13 cases of NIHL in excess of 10% of the 2008/9 baseline. Each mine has a comprehensive silencing programme in place and all major noise sources have been identified and silenced as per AngloGold Ashanti’s strategy. Awareness of NIHL is actively promoted and a programme to issue personalised hearing protection to all underground and surface employees working in noisy areas is in place. This programme will be completed in the first quarter of 2013.

The Vaal River mines have formal heat stress management programmes in place and all working places are measured and monitored for compliance. Best practices, guidelines and industry norms are taken in to account when designing the working environment. The mines performed constantly within the set design parameters and targets throughout the year and remedial actions were immediately initiated in instances where set benchmarks were not met.

Regular audit programmes at the Vaal River operations ensure quality improvement. These include audits from DMR, the National Nuclear Regulator and DQS for OHSAS 18001, ISO 14001, and various private consultants. All the Vaal River operations have been awarded their OHSAS 18001 certification.

**Vaal River – Total cash costs**  
(\$/oz)



**Stakeholder engagement**

Following extensive stakeholder engagement, the region has designed a framework to integrate community development into core business activities, while providing support for national and international development policies and objectives, particularly those addressing youth unemployment.

Once approved, the Socio-economic Development Framework (SEDF) and AngloGold Ashanti’s Social and Labour Plans (SLPs) were communicated to all key stakeholders, such as local economic formations, non-governmental organisations (NGOs) and the North West provincial government, as well as to those in the host communities of Merafong and Matlosana and the OR Tambo District Municipality in the Eastern Cape, a region from which many employees at the Vaal River operations originate. Development of a stakeholder management strategy to support the SEDF has also begun. In addition, a communication strategy in support of the SEDF is also being developed and a draft is in place for further engagement with stakeholders.

**Community**

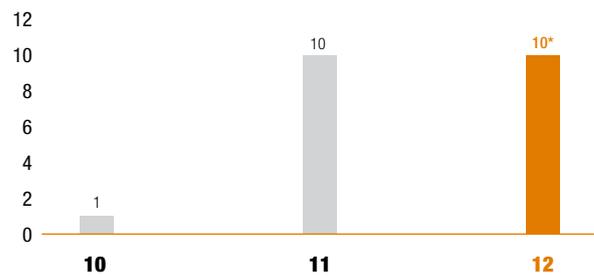
The Vaal River mines remained active in the neighbouring Matlosana area, donating funds to various charity organisations. Socio-economic development is an essential aspect of the South Africa region’s business strategy, both from the perspective of compliance – to ensure the retention of mining licences – and also because of a downward trend in the region’s gold production profile. Several significant community projects were launched in the Vaal River region.

A Future Forum has been established to promote good relations with the labour unions as part of SLP compliance requirements.

The Social and Institutional (SI) Fund Committee was established to approve projects against the R15 million annual budget that has been set aside for SI projects in the South Africa region within host and labour-sending areas. Sponsorship guidelines were approved by the committee and those for existing local area committees (LACs) were reviewed and revised in line with the new socio-economic framework, which was also approved by the SI Committee. The SI Fund Committee will approve projects from R75,000 upwards.

Hearts of Gold is an employee-giving initiative that encourages and supports AngloGold Ashanti employees to donate money or volunteer their time for the benefit of non-profit, charitable organisations or to undertake philanthropic initiatives. All Hearts of Gold donations are matched by the company by way

**Vaal River – Number of reportable environmental incidents**



\* Includes 7 incidents at MWS

of contributions paid on a “rand-for-rand” basis towards the Hearts of Gold initiative undertaken.

**Infrastructure development in labour-sending area:** Projects involving the construction and provision of five classrooms, an administration block and toilets to replace the dilapidated school in Libode and a laboratory in Lusikisiki, both in the OR Tambo district, were completed by year-end. This is in addition to the four classrooms at Mbhzana Ludeke Junior Secondary School and presentation of R200,000 to the Transkei Hospice, also in the OR Tambo District.

**Community Human Resources Development Programme:**

This initiative is aimed at supporting the State Intervention in Mining Sector (SIMS) and is backed by municipalities, the NGOs and the DMR for inclusion in the SLPs. The focus of the SIMS initiative is youth development in host and labour-sending areas. Progress achieved to date includes:

- 145 young people were trained in portable skills (plumbing, house wiring and forklift driving);
- 280 community members have received basic mining training making them eligible for employment in the sector;
- 24 young people selected for internships, a limited number have been permanently employed while the rest will become employable;
- 67 community members are being trained in apprenticeships, which will make them employable in the industry as the company’s training is held in high regard;
- 32 young community people are on full-time bursaries, many of the study fields are designed to assist in future municipal management (town planning);
- 31 learners were enrolled for practical on the job training after their technical college education. This will enable them to be employed in the future;
- 39 people have enrolled for level two mining learnerships. The trainees may potentially progress to level three which is a learner miner programme, should opportunities arise within the company;
- 20 community members were enrolled for training as nursing auxiliaries within our hospitals which will allow them to benefit the community health care system; and
- 90 students benefit from our mathematics and science training through the Star Schools system.

In all, 500 jobs are to be created under the SIMS project in the South Africa region as a whole.

Other community-oriented initiatives include those aimed at enterprise development and social and institutional development. Enterprise development initiatives include the establishment of an enterprise development park in the OR Tambo district municipality, the strategy and implementation plan for which will provide a benchmark for the development of similar projects in the South Africa region where stakeholder consultation indicates strong support, and a waste recycling project. Enterprise development initiatives are being aligned with procurement so as to ensure a coherent approach to the long-term economic development and sustainability of local communities.

**Housing:** In line with its SLP commitments, AngloGold Ashanti has a housing strategy for the South Africa region. This applies to both the Vaal River and West Wits areas. This strategy encompasses three aspects, namely, privacy room conversions, family unit redevelopment and the home ownership scheme.

The conversion of communal accommodation to create 6,487 single rooms has been undertaken at a cost of R193m. Redundant residences have been converted into 430 family units at an estimated cost of R76m and a new plan has been approved for an additional 42 family units.

A home ownership scheme, in conjunction with recognised unions is being established to create affordable home ownership for all employees. The aim is build 200 houses and the board has approved R70m for an approved pilot project.

## Environment

The South Africa region recorded 10 reportable incidents during 2012, seven of which occurred during the last quarter at the newly acquired MWS. The West Wits and Vaal River operations together had three reportable incidents during the whole of 2012, a major improvement on the 11 reported the previous year.

In 2012, the South Africa region's environmental management focus remained on integrated water management, closure planning, waste management, knowledge management, legal compliance and tailings storage facility (TSF) dust mitigation programme. Potential inter-mine flooding remains a primary concern, with the focus on the ability of neighbouring mines to continue pumping underground water and prevent flooding of AngloGold Ashanti operations.

**Water:** This excellent environmental performance was overshadowed by that of MWS several process water spillages that occurred after AngloGold Ashanti assumed control of the operations in the second half of the year. In addition, MWS was

issued with a regulatory stoppage notice by the National Nuclear Regulator which stemmed from non-compliance to directives dating back to before AngloGold Ashanti assumed control of the operations in July 2012. All incidents were reported to the relevant regulators in accordance with the conditions of the respective environmental authorisations.

The team at MWS is working hard to address these challenges. Key focus areas are:

- Assessing, designing and constructing adequate storm water containment capacity;
- Construction of stormwater containment capacity;
- Acquisition of farmland to create a buffer zone adjacent to the MWS infrastructure; and
- On-going engagement with the regulators.

Work on the regional water management plan in the Vaal River area continued. Early in January 2013 a feasibility study will begin to evaluate the further offset of raw water abstraction from the Vaal River with water being abstracted from Margaret Shaft. This project remains closely aligned with the integration of the Vaal River operations and MWS regarding the movement of water for tailings reclamation. Maintaining appropriate water levels at both Vaal River and West Wits mines remains a headline risk and major focus area for the South Africa region.

**Dust:** The roll-out of the South Africa region's TSF dust mitigation plan continued in 2012, the objective remains an 80% reduction in the fallout of dust from TSFs over the five years to 2016.

This plan, being implemented all tailings storage facilities in AngloGold Ashanti's South Africa region, will improve air quality by curtailing dust emanating from tailings storage areas, particularly those in the Vaal River area. A project combining both the environmental and metallurgy departments, supplemented by on-going engagement with relevant communities adjacent to the operations, was initiated to address the problem and implementation at the Vaal River West Extension storage facility was successfully implemented. During the process, extensive interactions were held between AngloGold Ashanti personnel and all interested and affected parties, including meetings and site visits. This initiative helped establish good relationships and regular interactions with all parties involved.

No reportable community incidents occurred in 2012. Continued community engagement, particularly with regard to dust, continued in the Vaal River area. Positive feedback was received from key stakeholders.

**Climate change:** The corporate office continued to support the South Africa region's input into the national climate change debate through both the Industry Task Team on Climate Change and Business Unity South Africa. The details of a carbon tax are to be set out in the February 2013 budget papers and the tax is expected to take effect in October 2014. AngloGold Ashanti has engaged intensively with National Treasury to persuade it to adopt a tax that will minimise the impact on business while promoting efforts to reduce greenhouse gas emissions.

**Cyanide:** Cyanide is used in the gold extraction process at the six gold plants falling within the Surface Operations. These plants have all been awarded their certification for compliance with the International Cyanide Code and are due for recertification during the course of 2013. MWS is to be certified according to ICMM code of Practice for Cyanide Handling.

**Planning for mine closure:** On-going planning for closure, from the start of exploration, is an integral aspect of operational planning as is the estimation of the associated liability costs and the assurance of adequate financial provisions to cover these costs. AngloGold Ashanti's total rehabilitation liability for the Vaal River operations in 2012 was \$85m (2011: \$79m) of which \$7.36m was for restoration and \$77.64m for decommissioning.

## Other matters of concern

**Employees and skills shortages:** AngloGold Ashanti and the broader mining industry face a severe skills shortage, particularly in the fields of mining engineering, geology and metallurgy as well as post-graduate mining-related specialisations. Implicit in achieving AngloGold Ashanti's mission is the attraction, retention and development of people. Various initiatives have been developed to address the skills shortage including talent identification and talent pool management, mentoring, a skills retention programme, performance management and a bursary scheme, all aimed at promoting identified scarce skills.

## GREAT NOLIGWA

### Operational performance

The continued decrease in production at Great Noligwa was largely a result of this operation nearing the end of its productive life, although this was compounded by the unprotected strike action in the second half of the year.

Intersections with unexpected geological features and difficulties encountered in quickly re-establishing and equipping pillars limited mining flexibility. Ore-pass blockages caused by poor ground conditions further constrained output. This was countered by the establishment of additional face length. Following the application of the business improvement initiative,

mineable face length increased by 19% over the historical average, a significant result for Great Noligwa.

As the operation is essentially depleted, only isolated blocks of ore remain and pillar extraction will continue until the end of its life. A dedicated pillar investigation team has been appointed and additional resources committed to opening up, equipping and vamping activities to ensure sustainability and credibility of the pillar extraction plan. The focus at Great Noligwa currently is on reducing the mining footprint with the orderly closure of areas as they are mined out.

Restructuring conducted during the year was aimed at effectively maintaining operations and restoring profitability. Until the strike in the last quarter of the year, operations at Great Noligwa had been stable.

## Growth

Given that the orebody is coming to an end, the working infrastructure at Great Noligwa – the quantity of rails, piping, the electricity required to mine small, isolated areas, among others – will need to be re-assessed. This exercise may be followed by further restructuring. Great Noligwa will however remain a strategic part of the Moab Khotsoeng orebody, especially regarding the supply of services such as water, air and electricity and as a second outlet. Drilling to underpin geological confidence continues.

## Safety

There was a single fatality at Great Noligwa during the year. The AIFR improved to 17.72 per million hours worked from 23.92 in 2011.

Simunye safety training continued and by year-end 20 stoping crews had received training. This is due to be completed by March 2013, following which development crews will begin training. Initial trends indicate that crew performance improves greatly following training.

Welded mesh was installed in gullies in early 2012 to help prevent falls of ground and centralised blasting was implemented in the last quarter of the year.

Great Noligwa recorded four instances where measured dust exposure exceeded the AngloGold Ashanti benchmark of 0.08mg/m<sup>3</sup>, compared to ten incidents in 2011. The mine has achieved the DMR target of 95% for exposure measurements below the occupational exposure limit for respirable crystalline silica of 0.1mg/m<sup>3</sup> (these results were individual readings and not average results).

## Great Noligwa – key statistics

	Units	2012	2011	2010
<b>Operational performance</b>				
Volumes treated/milled	Mt	0.5	0.5	0.7
Pay limit	oz/t	0.38	0.58	0.36
	g/t	14.79	13.14	11.69
Recovered grade	oz/t	0.167	0.163	0.175
	g/t	5.72	5.58	5.99
Gold production	000oz	84	94	132
Total cash costs	\$/oz	1,226	1,194	884
Total production costs	\$/oz	1,475	1,443	1,129
Capital expenditure	\$m	27	29	24
Productivity	oz/TEC	2.34	2.72	3.35
<b>Safety</b>				
No. of fatalities		1	1	0
AIFR	per million hours worked	17.72	23.92	21.63
<b>People</b>				
Average total no. of employees:		3,063	2,967	3,315
– permanent employees		2,985	2,884	3,225
– contractors		78	83	90
Employee turnover	%	8	10	21
Training and development expenditure	\$m	4.79	4.26	7.84
<b>Environment</b>				
Total water consumption	ML	1,933	1,653	1,932
Total water usage	ML/oz	23.012	17.585	14.636
Total energy usage	million GJ	0.86	0.91	0.96
Total energy intensity	GJ/oz	10.3	9.7	7.2
Total greenhouse gas emissions (CO <sub>2</sub> e)	000t	247	262	274
Total GHG emissions/oz	tCO <sub>2</sub> e/oz	2.938	2.779	2.078
No. of reportable environmental incidents		0	0	0
Total rehabilitation liabilities:	\$m	10.5	15.7	19.8
– restoration	\$m	0.6	3.7	
– decommissioning	\$m	9.9	12	

## KOPANANG

### Operating performance

The mine began 2012 with an injunction from the DMR to halt mining after two fatalities occurred at the end of 2011. As a result, there was almost no production in January 2012 while standards, physical conditions, training and mining methods were reviewed.

A new work management plan was devised and implemented to enable the mine to reopen and to ensure it was as safe as possible. This unfortunately necessitated the abandonment of some face length, a process that took four months and contributed to a slow start to the year.

This, together with the strike in the last quarter of the year, resulted in a slump in production of 47% while costs soared by 49%. This was compounded by an earlier-than-anticipated decline in grade mined, which contributed to lower recoveries,

as well as a lack of flexibility in face length, particularly as mining approached the very low-grade portion in the north western part of the mine.

During the second half of the year, there were strong indications that the grade at Kopanang had deteriorated rapidly by up to a third. Surface and underground drilling were undertaken to confirm this and the mine plan is currently in the process of being reviewed. This implies cutting Kopanang's cost structure to suit the latest orebody information.

### Growth

In terms of the new plan aimed at ensuring the mine's profitability, volumes mined will be significantly reduced, along with the extent of the orebody and capital expenditure. Every effort will be made to ensure Kopanang's viability as it remains the most efficient mine in the region despite the deterioration in grade.

## Kopanang – key statistics

	Units	2012	2011	2010
<b>Operational performance</b>				
Volumes treated/milled	Mt	0.9	1.5	1.6
Pay limit	oz/t	0.35	0.48	0.41
	g/t	12.91	10.93	13.08
Recovered grade	oz/t	0.157	0.189	0.179
	g/t	5.40	6.47	6.13
Gold production	000oz	164	307	305
Total cash costs	\$/oz	1,015	681	613
Total production costs	\$/oz	1267	939	867
Capital expenditure	\$m	93	92	61
Productivity	oz/TEC	2.61	4.79	4.67
<b>Safety</b>				
No. of fatalities		0	4	2
AIFR	per million hours worked	19.92	23.18	21.86
<b>People</b>				
Average total no. of employees:		6,014	5,892	5,938
– employees		5,589	5,468	5,484
– contractors		425	424	454
Employee turnover	%	9	8	10
Training and development expenditure	\$m	11.36	8.50	9.05
<b>Environment</b>				
Total water consumption	ML	2,802	2,268	2,612
Total water usage intensity	ML/oz	17.085	7.388	8.564
Total energy usage	million GJ	1.00	1.06	1.09
Total energy intensity	GJ/oz	6.1	3.4	3.6
Total greenhouse gas (GHG) emissions (CO <sub>2</sub> e)	000t	286	302	312
Total GHG emissions/oz	tCO <sub>2</sub> e/oz	1.742	0.984	1.024
No. of reportable environmental incidents		0	0	0
Total rehabilitation liabilities:	\$m	19.37	22.9	28.6
– restoration	\$m	1.05	6.2	
– decommissioning	\$m	18.32	16.7	

Kopanang's overall efficiency is a function of its former economies of scale and simpler, single shaft infrastructure. It does not have to cope with the complications of double and triple shafts, while the nature of its orebody requires simpler support regimes without the need for backfill.

Various proposals have been made regarding Kopanang's future. While the mine could potentially be used for the testing and piloting of new technology, it is also being considered as a potential access to Zaaiplaats for which a feasibility study is to be done in due course.

### Safety

There were no fatalities at Kopanang in 2012 (2011: 4). The overall safety record improved with an AIFR of 19.92 per million hours worked recorded for the year as opposed to 23.18 in 2011.

The Simunye safety programme is under way with 24 crews having attended training by year-end.

## MOAB KHOTSONG

### Operating performance

Sharply lower production was a result of both industrial strike action and safety stoppages. The impact of lower volumes on costs was compounded by inflationary pressures on the cost of labour, power and other inputs, resulting in a 51% increase in unit cash costs.

Mining at Moab Khotsong is progressing towards the Zaaiplaats block in order to continue the exploration drilling of that block of ground. It is estimated that this area has an initial accessible resource of 500,000oz. Extensive drilling is in progress to improve decision making regarding access of the Zaaiplaats block. Significant success has been achieved since drilling began in 2011, with a 1.4km long incline bore hole from

deep underground completed at the end of 2012. Additional development and drilling is being done, but this process was hindered during the year by the strike and a delay in the start of work by the contractor.

The amount of exploration drilling has significantly increased, improving confidence in the orebody. Six surface drilling machines and 19 underground drilling machines were in operation during 2012. Exploratory drilling has upgraded target areas to orebody-status below the 76 level of the existing Top Mine orebody and below 101 level of the existing Middle Mine orebody. This has necessitated a review of the greater Zaaiplaats project. A decision on the future of the project and the required capital commitment is expected when that review is complete.

### Growth

Initial development of Moab Khotsong was undertaken to ensure that the mine would be well positioned to exploit surrounding ore blocks with Zaaiplaats, to the southwest of the current Moab Khotsong infrastructure and 400m deeper than the existing mine, the most notable of these. The Moab Khotsong business plan, without growth projects, is expected

to produce some 3Moz of gold until 2023. Zaaiplaats will provide an additional approximately 4.8Moz, extending the mine's life to approximately 2040 and serving as a gateway for opportunities beyond the initial target block.

Phase 1 of the Zaaiplaats project, approved in July 2010 and currently in implementation, is dedicated to establishing the infrastructure for phase 2, which will create a drilling platform to increase geological confidence within the greater Zaaiplaats orebody while providing some initial gold production. Phase 2 "early start" capital, approved during July 2011, with an authorised value of \$19 million in real terms, was to ensure that the overall project schedule remained on track pending board approval for the full phase 2 project. This was obtained in February 2012, with combined capital of \$412m for all of phase 2, which will realise 558,000oz. This approach retains the option to fundamentally change the orebody extraction through innovative technology.

Phase 3 is currently in pre-feasibility study phase. A full feasibility study would look at various options of accessing the orebody through either Moab Khotsong or Kopanang, while accessing other mining blocks adjacent and contiguous to Project Zaaiplaats.

## Moab Khotsong – key statistics

	Units	2012	2011	2010
<b>Operational performance</b>				
Volumes treated/milled	Mt	0.6	0.9	1.0
Pay limit	oz/t	0.49	0.57	0.49
	g/t	19.00	12.84	15.87
Recovered grade	oz/t	0.238	0.274	0.263
	g/t	8.16	9.39	9.03
Gold production	000oz	162	266	292
Total cash costs	\$/oz	1,040	689	588
Total production costs	\$/oz	1,522	1,058	982
Capital expenditure	\$m	159	147	120
Productivity	oz/TEC	3.05	5.03	5.61
<b>Safety</b>				
No. of fatalities		2	1	2
AIFR	per million hours worked	17.14	20.48	19.72
<b>People</b>				
Average total no. of employees:		6,645	6,581	6,452
– employees		4,665	4,618	4,651
– contractors		1,980	1,963	1,801
Employee turnover	%	7	8	12
Training and development expenditure	\$m	12.14	10.09	7.63
<b>Environment</b>				
Total water consumption	ML	3306	2764	3149
Total water usage intensity	ML/oz	20.407	10.391	10.784
Total energy usage	million GJ	1.70	1.90	1.80
Total energy intensity	GJ/oz	11.8	7.1	6.1
Total greenhouse gas (GHG) emissions (CO <sub>2</sub> e)	000t	543	526	548
Total GHG emissions/oz	tCO <sub>2</sub> e/oz	3.351	1.979	1.877
No. of reportable environmental incidents		0	0	0
Total rehabilitation liabilities:	\$m	38.1	31.2	39.2
– restoration		1.7	16.8	
– decommissioning		36.4	14.4	

## Safety

There were two fatalities during the year (2011: 1). The AIFR improved to 17.14 per million hours worked as opposed to 20.48 in 2011. Focus was placed on improving safety at Moab Khotsong which had the worst safety record in the group and this has produced positive results. The focused placed on implementing the three strategic safety pillars at the mine during 2012 proved to be extremely successful. The mine maintained the OHSAS 18001 certification and in addition showed continual improvement on the frequency indices from 2010 and 2011.

The Simunye safety programme is under way with 34 production crews at Moab Khotsong having attended training by year-end. In total, there are 47 stopping production crews at the mine.

## SURFACE OPERATIONS

### Operating and financial performance

A reduction in grade of the marginal ore dump material processed during the year impacted both profitability and margins. In an attempt to mitigate this decline, the mining flexibility associated with the marginal ore dumps has been improved to enable more effective blending. Throughput capacities of the surface sources processing plants have also been targeted to maximise volumes treated. These measures have offset some of the reduction in grade and increased profitability.

The unprotected strike action during September/October 2012 had a significant effect on gold production.

### Growth and improvement

Several growth and improvement projects were carried out at Surface Operations during 2012, including:

- Solvent Extraction Project: The aim of this project is to replace infrastructure which is well beyond its designed life. In addition, the safety standards associated with the old solvent extraction plant are less than acceptable and consequently the infrastructure requires upgrading. This upgrade will also enable the plant to continue producing uranium over the projected life of the operation. The project has progressed to

implementation phase and is scheduled to be completed in 2014;

- The uranium expansion project, which will increase the uranium production capacity within the Vaal River area to a level that will enable the processing of all uranium-bearing material mined, was completed on budget and commissioned. All units achieved design capacity and met performance criteria; and
- There are operational synergies between the facilities of MWS and AngloGold Ashanti's TSFs at the Vaal River operations. Both gold and uranium will be extracted through MWS with the first recovery of uranium expected in late 2013.

Following a breakdown at the Mispah mill in 2011, filtration in the mill lubrication system was redesigned resulting in improved efficiency. This improvement was carried out on all similar systems within the region. The application of the Business Process Framework (BPF) principles at the metallurgical surface operations has also improved mill processing capacity to well above original design.

To mitigate the risks associated with the reliance of the metallurgical surface operations on the continuous supply of oxygen, a contract was entered into with Air Liquid to construct and operate an oxygen production plant on site, with sufficient capacity to supply the Great Nologwa and Mispah processing plants. This plant was commissioned during the fourth quarter 2012. Risk assessments regarding other critical reagents – lime, coal and sodium cyanide – have been undertaken and strategies are being implemented to mitigate associated supply risks.

All Surface Operation plants have reached compliance with the company's work management measures.

### Safety

The AIFR at Surface Operations increased to 6.65 per million employee hours worked in 2012 from 6.44 in 2011. During the year considerable attention was given to safety, including: the alignment of management systems with the 22 AngloGold Ashanti safety standards; the re-introduction of planned task observations; the development and operation of a safety

The Vaal River Surface Operations <sup>(1)</sup> comprise:

Plant	Treatment facility and function
Nologwa Gold	Processes reef from Great Nologwa, Moab Khotsong and Kopanang as well as marginal ore dump material
Kopanang Gold	Processes the overflow of Kopanang reef and marginal ore dump material
West Gold and Mispah	Dedicated to processing marginal ore dump material
East Gold	Processes the Sulphur Pay Dam and environmental clean-up material
Mponeng Gold	Treats reef from the Mponeng mine as well as marginal ore dump and clean-up material
Savuka Gold	Feed for this plant consists of TauTona and Savuka ore as well as marginal ore dump material
South Uranium	Operates in reverse leach mode with Nologwa Gold plant.
Nufcor <sup>(2)</sup>	Calcines the South Uranium plant's final product

<sup>(1)</sup> While Surface Operations is treated as a single entity it comprises several surface operations.

<sup>(2)</sup> Nufcor is a wholly owned subsidiary of AngloGold Ashanti.

## Surface Operation – key statistics

	Units	2012	2011	2010
<b>Operational performance – Gold</b>				
Pay limit	oz/t	0.01	0.010	0.010
	g/t	0.188	0.209	0.290
Recovered grade	oz/t	0.012	0.014	0.016
	g/t	0.42	0.48	0.54
Gold production	000oz	144	164	179
Total cash costs	\$/oz	832	660	485
Total production costs	\$/oz	859	683	516
Capital expenditure	\$m	8	5	3
<b>Operational performance – Uranium</b>				
Pay limit	lb/t	0.37	0.368	0.316
	kg/t	0.17	0.167	0.143
Recovered grade	lb/t	0.525	0.635	0.622
	kg/t	0.238	0.288	0.282
Uranium production	000lb	1,214	1,380	1,462
Total cash costs	\$/oz	30.17	27.50	27
Total production costs	\$/oz	29.92	30.4	31.70
Capital expenditure	\$m	28.1	29	12
Productivity (gold and uranium)	oz/TEC	10.459	21.32	39.80
<b>Safety</b>				
No. of fatalities		0	0	0
AIFR	per million hours worked	6.65	6.44	5.99
<b>People</b>				
Average total no. of employees:		1,147	745	374
– permanent employees		1,147	745	374
– contractors		–	–	–
Employee turnover	%	9	7	7
Training and development expenditure	\$m	12.54	9.61	0.395
<b>Environment</b>				
Total water consumption	ML	6,707	6,888	7,198
Water usage intensity	ML/oz	47.160	42	40.212
Total energy usage	million GJ (megajoules)	2.31	2.22	2.56
Total energy intensity	GJ/oz	16.0	13.5	14.3
Total greenhouse gas (GHG) emissions (CO <sub>2</sub> e)	000t	479	484	582
Total GHG emissions/oz	tCO <sub>2</sub> e/oz	3.324	2.957	3.251
Cyanide used	t	3,065	3,913	4,575
Reportable environmental incidents		3	10	1

dashboard displaying daily leading and lagging indicators; the introduction of a series of safety DVDs focussing on key issues; the successful roll out the “Golden Rules”; significant improvements to the incident investigation process with external investigators being used for all high potential incidents; and good progress was made regarding work management.

## **MINE WASTE SOLUTIONS**

AngloGold Ashanti acquired First Uranium (Pty) Ltd, a wholly owned subsidiary of First Uranium Corporation and the owner of Mine Waste Solutions for a cash consideration of \$335m in July 2012.

The acquisition of MWS provides significant synergies, facilitates rehabilitation of the Vaal River area and secures further and long-term opportunities in an area where the company already has a prominent presence. The addition of MWS to its portfolio, enhances AngloGold Ashanti’s position as a material long-term producer of uranium as a by-product of gold production.

With over 35 years of experience in processing of tailings for the recovery of gold and uranium, AngloGold Ashanti can use its substantial skills, technology and familiarity with the processing of tailings dams to maximise gold and uranium recovery at MWS and to deliver improvements in throughput and operating costs.

Together with MWS’s tailing facilities, the Vaal River metallurgical surface operations are estimated to have a life in excess of 30 years. As a long-life surface tailings retreatment operation, the MWS operation will complement AngloGold Ashanti’s long-life South African underground operations.

The transaction will:

- Enhance AngloGold Ashanti’s gold and uranium mineral resources and ore reserves. MWS’s tailings facilities contain a mineral resource of approximately 352Mt, containing 2.8Moz of gold and 62.1Mlbs of uranium. Following the transaction, AngloGold Ashanti has tailings facilities in the Vaal River containing a combined mineral resource of 7.7Moz of gold and 154.4Mlbs of uranium;
- Contribute net annual gold production of 75,000oz to 80,000oz;
- Enhance AngloGold Ashanti’s position as a long-term producer of uranium as a by-product of its gold production. Once the MWS processing plant’s uranium circuit is installed and commissioned by AngloGold Ashanti in 2014, it will allow AngloGold Ashanti to increase its long-term uranium production; and
- Eliminate the need for a substantial capital investment that would have been required by AngloGold Ashanti to construct a plant to process its Vaal River tailings. The processing of these tailings dams significantly reduces associated long-term potential environmental liabilities, closure and rehabilitation costs at AngloGold Ashanti’s Vaal River operations.

Prior to its acquisition by AngloGold Ashanti, First Uranium had an agreement with Franco Nevada Corp in which 25% of all gold produced by the MWS plant from the MWS tailings, would be sold to Franco Nevada at a price of \$400/oz, escalating by 1% per annum from December 2012. When AngloGold Ashanti acquired First Uranium and ultimately MWS, an agreement was signed, amending the previous financing arrangements, which include: AngloGold Ashanti’s ability to commingle its tailings with that those of MWS, if required, and process the tailings through the MWS plant; to provide 25% of gold production to Franco Nevada, capped at 312,500oz; and the replacement with an unsecured parent guarantee from AngloGold Ashanti of the security package held by Franco Nevada.

## **Operational performance**

MWS was also affected by the unprotected strike from 28 September to 12 October 2012. This interruption to normal mining and processing operations came amid unprocedural disruptions elsewhere in South Africa’s gold and platinum mining sectors.

## **Growth and improvement**

Initial steps taken to improve performance at MWS include:

- Change in strategy and BPF optimisation so as to improve plant throughput;
- Changes to mining mix to improve the overall grade; and
- Optimisation of reagent addition to improve recovery and hence reduce the residue grade.

## **Environment**

Of the 10 reportable incidents that occurred in the South Africa region during 2012, seven occurred during the last quarter at MWS. Environmental risks at MWS include potential seepage from its TSFs, pollution control dams and associated trenches, and from waste rock dumps; water release from pollution control dams; polluted land off-site; deep groundwater flooding and dust emission from TSFs. For each of these, a risk response task and timeline has been formulated to mitigate the risk involved with on-going monitoring of performance. The integration of MWS into the Vaal River operations, along with improvements to infrastructure and operating systems, is a major focus area.

A start has been made with the incorporation of the 11 MWS tailings dams into one of the Vaal River mining rights and final approval is awaited before we embark on preparing the necessary submission which will entail identifying SLP projects and a public participation process. Final approval from the DMR is expected in the second half of 2013, following which we will be required to submit a guarantee to cover rehabilitation of the 11 tailings dams for an estimated R123m.

## Mine Waste Solutions – key statistics

	Units	2012
<b>Operational performance</b>		
Pay limit	oz/t	0.00388
	g/t	0.12075
Recovered grade	oz/t	0.004
	g/t	0.12
Gold production	000oz	28
Total cash costs	\$/oz	1,040
Total production costs	\$/oz	247
Capital expenditure	\$m	7
Productivity	oz/TEC	7.65
<b>Safety</b>		
No. of fatalities		Nil
AIFR	per million hours worked	7.27
<b>People</b>		
Average total no. of employees:		727
– permanent employees		421
– contractors		306
Employee turnover	%	3.4
Training and development expenditure	\$000	261
<b>Environment</b>		
Total water consumption	ML	4 584
Total water usage intensity	ML/oz	164
Total energy usage	million GJ	0.21
Total energy intensity	GJ/oz	7.5
Total greenhouse gas (GHG) emissions (CO <sub>2</sub> e)	000t	56
Total GHG emissions/oz	tCO <sub>2</sub> e/oz	2.00
Cyanide used	t	2,152
Reportable environmental incidents		7
Total rehabilitation liabilities:	\$m	17
– restoration	\$m	4
– decommissioning	\$m	13

## Forward-looking statements

Certain statements contained in this document, other than statements of historical fact, including, without limitation, those concerning the economic outlook for the gold mining industry, expectations regarding gold prices, production, cash costs and other operating results, return on equity, productivity improvements, growth prospects and outlook of AngloGold Ashanti's operations, individually or in the aggregate, including the achievement of project milestones, commencement and completion of commercial operations of certain of AngloGold Ashanti's exploration and production projects and the completion of acquisitions and dispositions, AngloGold Ashanti's liquidity and capital resources and capital expenditures and the outcome and consequence of any potential or pending litigation or regulatory proceedings or environmental issues, are forward-looking statements regarding AngloGold Ashanti's operations, economic performance and financial condition. These forward-looking statements or forecasts involve known and unknown risks, uncertainties and other factors that may cause AngloGold Ashanti's actual results, performance or achievements to differ materially from the anticipated results, performance or achievements expressed or implied in these forward-looking statements. Although AngloGold Ashanti believes that the expectations reflected in such forward-looking statements and forecasts are reasonable, no assurance can be given that such expectations will prove to have been correct. Accordingly, results could differ materially from those set out in the forward-looking statements as a result of, among other factors, changes in economic, social and political and market conditions, the success of business and operating initiatives, changes in the regulatory environment and other government actions, including environmental approvals, fluctuations in gold prices and exchange rates, the outcome of pending or future litigation proceedings, and business and operational risk management. For a discussion of such risk factors, refer to the document entitled "Risk Factors related to AngloGold Ashanti's suite of 2012 reports" on the AngloGold Ashanti online corporate report website at [www.aga-reports.com](http://www.aga-reports.com). These factors are not necessarily all of the important factors that could cause AngloGold Ashanti's actual results to differ materially from those expressed in any forward-looking statements. Other unknown or unpredictable factors could also have material adverse effects on future results. Consequently, readers are cautioned not to place undue reliance on forward-looking statements. AngloGold Ashanti undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this operational profile or to reflect the occurrence of unanticipated events, except to the extent required by applicable law. All subsequent written or oral forward-looking statements attributable to AngloGold Ashanti or any person acting on its behalf are qualified by the cautionary statements herein. This communication may contain certain "Non-GAAP" financial measures. AngloGold Ashanti utilises certain Non-GAAP performance measures and ratios in managing its business. Non-GAAP financial measures should be viewed in addition to, and not as an alternative for, the reported operating results or cash flow from operations or any other measures of performance prepared in accordance with IFRS. In addition, the presentation of these measures may not be comparable to similarly titled measures other companies may use. AngloGold Ashanti posts information that is important to investors on the main page of its website at [www.anglogoldashanti.com](http://www.anglogoldashanti.com) and under the "Investors" tab on the main page. This information is updated regularly. Investors should visit this website to obtain important information about AngloGold Ashanti.

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