Gold Fields

Water Disclosure

CDP 2011

July 2011

Report compiled by:

PROMETHIUM CARBON

CDP Water Disclosure 2011

Introduction

Question Pathway for the Introduction

0.1 Introduction

Please give a general description and introduction to your organization.

Gold Fields is one of the world's largest unhedged producers of gold with attributable, annualised production of 3.6 million gold equivalent ounces from eight operating mines in Australia, Ghana, Peru and South Africa. Gold Fields also has an extensive and diverse global growth pipeline with four major projects in resource development and feasibility. Gold Fields has total attributable gold equivalent Mineral Reserves of 76.7 million ounces and Mineral Resources of 225.4 million ounces.

Gold Fields is listed on the JSE Limited (primary listing), the New York Stock Exchange (NYSE), NASDAQ Dubai Limited, Euronext in Brussels (NYX) and the Swiss Exchange (SWX).

Gold Fields is responsible for mining and concentrating the gold and copper at the operations, from where it is sent to be refined further at various refineries. These refineries are not under the sole ownership of Gold Fields.

The location and nature of Gold Fields operations is as follows:

The South African operations are all underground mines:

1. KDC West & KDC East (26° 24'S and 27° 36'E)
2. Beatrix (28° 15'S and 26° 47'E)
3. South Deep (26º 25' S and 27º 40' E)

The Ghanaian operations are all open pit mines:

1. Tarkwa (5° 15' N and 2° 00' W)
2. Damang (5° 11'N and 1° 57'W)

The Australian mines combine underground and open pit operations:

1. St Ives (31° 12'S and 121° 40'E)
2. Agnew (27° 55'S and 120° 42'E)

Cerro Corona is an open pit copper and gold mine located in Peru (6° 45'S and 78° 37'W)

Annual Report:
http://overendstudio.co.za/online_reports/gold_fields_ar2011/index.php

Sustainability Report:
http://www.goldfields.co.za/pdf/sus_dev_2009.pdf

Company Revenue for the period of 01 Jan 2010 – 31 Dec 2010:
R 34,391 million

ISIN number:
ZAE000018123

CUSIP number:
38059T106

SEDOL number:
6280215

0.2 Reporting Year
Please state the start and end date of the year for which you are reporting data.

Enter Periods that will be disclosed
01/01/2010 To 31/12/2010

0.3: Reporting boundary

Question 0.3: Please indicate the category that describes the reporting boundary for companies, entities, or groups for which water-related impacts are reported.

Companies over which financial control is exercised- per consolidated audited financial statements

Question 0.4: Are there any geographies, facilities or types of water inputs/outputs within this boundary which are not included in your disclosure?

No

Water Management and Governance

1.1: Does your company have a water policy, strategy or management plan?
Yes

1.1a: Please describe your policy, strategy or plan, including the highest level of responsibility for it within your company and its geographical reach.

Different Sustainable Development policies per region as regulatory compliance is different per region.

Geographical reach	Description of policy, strategy or plan (2,400 characters)	Position of responsible person
South African Region	Within the South African Region, a **water protocol** has been developed with the purpose of providing a framework to be applied when designing / implementing new, individual projects. This water protocol combines the ***water strategy*** with implementation principles, implementation processes and background information on the water issues and water regulatory framework. Gold Fields' water strategy for the South African region is incorporated in the long term Sustainable Development vision for the area. This vision is: *'to maintain our license to operate within a low carbon economy and to close all our operations with self-sustained and integrated land end uses, without residual liability.'* The following **mechanisms** for achieving this vision have been identified: 1. *Identifying and implementing a long-term sustainable solution for legacy issues in the region.* 2. *Ensuring clean water and a healthy river system.* 3. *Developing a regionally integrated land management plan.* Water management plays a central role in the implementation of the vision. The implementation process should firstly continue to legally comply and safeguard Gold Fields social license to operate. The following additional implementation principles have been identified for identification and implementation of water related projects; • Safeguarding Gold Fields' reputation • Following a regional approach (within the South African region) • Active engagement of all relevant stakeholders. • Focus on community involvement.	**Other**: Regional Sustainable Development manager

	• Building capacity through strategic partnerships, alliances and coalitions. • Continual improvement. • Economies of scale. • Sustainable closure of operations. Long term environmental objectives, focussing on water management have been defined and will be implemented on the long term: 1. Zero discharge of process water. 2. Potable water quality discharge of fissure water. 3. Uranium (and other heavy metals) elimination. 4. Minimisation of secondary impacts. Appropriate technical solutions and effective stakeholder engagement are seen as key success factors to the implementation of the water strategy. All South African operations are certified to comply with the International Cyanide Management code (description of code can be found below)	
West African region	In addition to complying with national regulations, both Tarkwa and Damang have been certified to comply with the International Cyanide Management Code. *The International Cyanide Management Code is a code of best practice. This code is a voluntary industry program for gold mining companies which focus on the safe management of cyanide and cyanidation mill tailings and leach solutions. Certification is done by an independent third party, which audits compliance with the specific requirements of the code.* Through compliance with this code, cyanide spillage and pollution of water with cyanide risks are reduced.	Regional Environmental manager
Australian region	A Water Strategy has been developed to make sure that Gold Fields complies with all relevant water related regulations and maintains its licenses. Furthermore it specifies that raw water consumption should be reduce, through increased recycling of water, regular checking for water leaks, identification of new opportunities to increase water use efficiency and sharing of any additional unwanted water with other users of water, where practicable. Both Australian operations are certified to comply with the International Cyanide Management Code.	Environmental Manager at the mines (Agnew and St. Ives)
South American region	Water management is of high importance at Cerro Corona due to a history of poor environmental management by other mining companies in the	Environmental Manager

	Hualgayoc region, which has led to ongoing complaints by communities with regard to water pollution. In addition to ensuring compliance with national standards Cerro Corona's water strategy adopted and implemented the following management standards; - Employment of a closed circuit water system. - Use of groundwater, rain and domestic and industrial waste water only; no water is withdrawn from local rivers. Rain and wastewater is stored in a controlled way in the tailings dams. - Discharge of water from the dewatering pit into surrounding streams to supplement water needs of local communities. - Water that meets national quality standards for irrigation and animal drinking is discharged in the dry season to supply base flow for the streams 'Las Aguilas Creek' and 'Las Gordas Creek'. A small volume of cyanide is currently being used at Cerro Corona at a testing facility for gold extraction. If it is decided to use cyanide on a commercial scale in the future at Cerro Corona, this will be done according to the standards of the International Cyanide Management Code. Gold Fields appointed an independent tailing dam review board, which consists of tailing dam experts, to monitor the tailing dam at Cerro Corona.	

1.1b: Does the policy, strategy or plan specify water reduction, quality or efficiency targets or other water-related goals?
Yes

1.1c: Please describe these water-related targets or goals.

Geographical reach	Type of target/goal	Target/goal description	Additional information
South African region	Quality of discharges	Ensuring clean water and a healthy river system. In the short term this target is described by complying with current legislation. In the long term the following objectives / targets have been set: 1. Zero discharge of process water.	

		2. Potable water quality discharge. 3. Uranium (and other heavy metals) elimination from discharged water. 4. Minimisation of secondary impacts.	
South African region	Efficiency	South African operations have set targets to reduce water use per tonne rock broken (excluding water usage for cooling and fissure water pumping): • Short term target: 3 tonne water / tonne rock broken. • Long term target: 1 tonne water / tonne rock broken	These targets have been incorporated into Gold Fields' internal design guidelines.
West African region	Quality of discharges	Reduce the amount of (non-toxic) discharges into the environment. The mineral deposit that is mined is inert and therefore there is no risk of Acid Mine Drainage. However, the nature of the mining operation can result in silting of surrounding areas.	At Tarkwa, limited, non-toxic discharges (e.g. silt) are still released into the environment. Though short term solutions have addressed the problem, discharge quality is planned to be further improved through the installation of a clarification plant.
Australian region	Absolute reduction	Reduced water consumption through increased water recycling.	Water should be recycled to reduce raw water consumption. Potential sources of recyclable water are presented in the water strategy.
South American region	Absolute reduction	Cerro Corona describes minimization of fresh water consumption as a main objective.	This objective should be achieved through maintained wastewater and rainwater storage in tailing dams and continued recirculation to the concentrator plant.

1.2: What specific actions has your company taken to manage water resources or engage stakeholders in water-related issues?

Geographical reach	Type of action	Action	Outcomes
South African Region	Direct operations	Setting targets and investigating new water management related projects.	New projects have been identified. Liquid gold is the key initiative which purpose it is to clean water to the standard of potable water.
South African Region	Other: Research and Development	Researching and developing technologies that offer a treatment for Acid Mine Drainage.	Two technologies have been identified that might be further developed in house for the treatment of Acid Mine Drainage.
South African Region	Transparency	Disclose information on Gold Fields' operations and impacts in annual reports, sustainability reports, the Carbon Disclosure Project and Water Disclosure Project.	Increased trust in Gold Fields' as a company and therefore continuation of its social license to operate.
South African Region	Collective action	Gold Fields was an active participant in the formation of the Mining Interest Group (MIG), which represents the industry in the steering committees set up by government to deal with legacy issues, including water related issues, in the region. The MIG engages with stakeholders and carriers out monitoring of water in the Wonderfonteinspruit region.	Based on the successful interaction of the MIG with local government, external consultants have been appointed to develop an action plan to help remediate the Wonderfonteinspruit. Gold Fields is actively involved in this process through the MIG.
West African Region	Community engagement	Through community engagement, amongst others on water related issues, Gold Fields' aims to maintain a standing relationship with its surrounding communities and thereby maintain its 'social license to operate'. Gold Fields has established a water and sanitation committee (WATSAN) in Ghana with the mandate to increase local community access to potable water, educate local people on	Community engagement has triggered changes and actions within the company. Through this engagement and interaction, relationships with local communities are maintained and Gold Fields secures its 'social license to operate'.

		hygiene and sanitation and to train local people to maintain the established water infrastructure.	
West African Region	Direct operations	Concerns raised by local communities about non-toxic discharges into the environment by Gold Fields' heap leaching process, triggered Gold Fields to address the issue through increased retention times in containment areas. Furthermore it has been decided that a clarification plant will be fitted in 2011. At Tarkwa, an onsite laboratory has been established with the purpose of improving the speed and quality of ground and water monitoring and analysis.	By addressing community concerns and managing water quality within the operations, Gold Fields hopes to maintain its good relationships with surrounding communities and safeguard its social license to operate.
Australian Region	Direct operations	Process water for Australian operations is normally obtained from boreholes. In order to have a more secure supply, both mines have started to diversify their supply sources. For example, Agnew is sourcing groundwater from a nearby decommissioned open pit, while St Ives is using a freshwater dam.	Improved security of water supply.
South American Region	Community engagement	Cerro Corona faces challenges due to a history of poor environmental management by other companies in the Hualgayoc region. Gold Fields highly values its social license to operate and therefore community engagement and addressing community concerns are of high priority. Based on community raised concerns, Gold Fields took additional water management initiatives (outside regulatory requirements) and provides external and independent water quality assurance.	Additional water management initiatives were taken to improve water quality and water availability for downstream communities. Through these actions and external quality control, it is envisaged that the concerns of local communities surrounding water quality are addressed adequately.
South American Region	Transparency	Based on community concerns relating water quality, Gold Fields' Cerro Corona operations implemented a comprehensive water monitoring process. This programme is managed by the	Through external, independent verification of water samples, Gold Fields' provides transparency on its impacts on

		National Water Authority and provides assurance to local communities. The quality of these samples is tested externally every six months. As community concerns still existed after this programme was implemented, Gold Fields requested an external and independent study by the government in downstream areas, as well as precautionary monitoring at two springs close to Cerro Corona.	surroundings to local communities. The intended outcome of these actions is to maintain a good reputation and a continued social license to operate.
South American Region	Collective action	A comprehensive water monitoring process has been put in place by Gold Fields in cooperation with water consumers, the regional director for agriculture and the local water authority. Through collective action and the involvement of independent parties, such as the National Water Authority (which leads the programme), the quality and trustworthiness of the programme is increased.	The outcome of collective action on a water monitoring programme is increased quality and trustworthiness of the results and therefore effectiveness of the programme.

Risk indicators - operations

2.1: Are you able to identify which of your operations are located in water-stressed regions?
Yes

2.1a: Please specify the method(s) you use to characterize water-stressed regions.

Method used to define water stress	Please add any comments here:
World Business Council on Sustainable Development (WBCSD) Water Tool	**Mean annual relative water stress index** has been used. This index compares the total water availability to total water use (domestic, industrial and agricultural use).

2.1b: Please list the water-stressed regions where you have operations and the percentage of your total operations in that area.

Country	Region within country	Proportion of operations located in this region (%)
South Africa	Both the Freestate, as well as the Gauteng based operations are in areas that experience physical water stress.	54% (C2010)
Australia	Western Australia	17% (C2010)

2.2: Do you use other indicators (besides water stress) to identify operations which are located in regions subject to water-related risk?

Yes

2.2a: Please list the regions at risk where you have operations, the relevant risk indicator and percentage of your total operations in that area.

Country	Region within country	Proportion of operations located in this region (%)	Indicator
Peru	Hualgayoc Region	9%	**Economic water scarcity.** Economic water scarcity occurs when low water supply is caused by inadequate water management practices due to lack of financial resources or capacity.
Ghana	South Ghana	Tarkwa & Damang =20%	**Economic water scarcity.** Economic water scarcity occurs when low water supply is caused by inadequate water management practices due to lack of financial resources or capacity.

2.3: Please specify the total percentage of your operations that are located in the regions at risk which you identified in questions 2.1 and/or 2.2.
100%

2.4: Please specify the basis you used to calculate the percentages used for questions 2.1 and/or 2.2.

Basis used to measure percentage	Please add any comments here
Production volumes	Production contribution is a percentage of overall ounces produced.

Supply chain

2.5: Are you able to identify which of your key water-intensive inputs (excluding water) come from regions subject to water related risk?

Yes

2.5a: Please state or estimate the percentage of your key water-intensive inputs (excluding water) that come from these regions.

Inputs	Proportion of material that comes from region at risk (%)	Unit for calculating percentage	Regional information or further comments
Timber	0%	Volume or weight of material purchased	Timber is used in South African operations and obtained from KZN and Mpumalanga which are not water stressed.
Cyanide	85%	Volume of weight of material purchased	Ghana is cyanide intensive due to the heap leaching processes. Both Ghanaian and South African operations obtain their cyanide from Sasol in Sasolburg, which is in (according to the Mean Annual Relative Water Stress Index) a water stressed area.
Electricity	97%	Volume of weight of material purchased	South African and Australian electricity utilities have power plants in water stressed areas. Ghanaian electricity is

			mainly obtained from hydro stations. These stations are very vulnerable to water stress, as was the case in 2009, when there was a drought in the Volta Delta and the usual amount of electricity was not generated.
Diesel	2.5%	Volume of weight of material purchased	South Deep (South African region) buys diesel from Sasol in Sasolburg, which is located in a water stressed area.

Risk assessment - operations

3.1: Is your company exposed to water-related risks (current or future) that have the potential to generate a substantive change in your business operation, revenue or expenditure?
Yes

3.1a: Please describe the current and/or future risks to your operations, the ways in which these risks affect or could affect your operations, and your current or proposed strategies for managing them.

Country	Risk Type	Risk description	Timescale	Potential business impact	Risk management strategies
South Africa	Physical: flooding	Flooding of mines could result in: o Contamination of shallow ground water sources o Flooding of urban areas o Increased seismic activity	1-5	Payment of liabilities and disruption of production.	Water pumping, to separate mine water from fissure water. Cleaning to required levels and measurement before discharge.
South Africa	Physical: pollution	Decanting of Acid Mine Drainage water could cause: o Serious negative ecological impacts o Regional impacts	Current	Payment of liabilities	Mine water pumping, cleaning and discharge

		on major river systems			
South Africa	Physical: tailing dam stability	In the case of extreme weather events (cyclonic rainfall), tailing dams are at risk of collapse.	1-5 years	A collapsed tailing dam will have environmental impact and might, depending on its location, damage infrastructure and cause casualties.	A pre-feasibility study on a Centralised Tailings Storage Facility has been conducted. This facility would replace 13 current tailing facilities and will be designed to withstand 1 in 200 years' weather events.
South Africa	Physical: Increased water stress	South African operations are situated in areas which experience medium water stress. Increased water stress might disrupt water supply.	1-5 years	Water shortages might disrupt operations.	Increased water efficiency and water storage.
Peru	Physical: Tailing dam stability	In the case of extreme weather events (cyclonic rainfall), tailing dams have a risk of acid rock drainage and in the worst case collapse.	Unknown	Acid Rock Drainage (ARD) will cause pollution of local rivers and streams. A collapsed tailing dam will have environmental impact and might, depending on its location, damage infrastructure and cause casualties.	Gold Fields appointed an independent review board, consisting of international tailings dam experts, to monitor the tailings dam at Cerro Corona. This board meets four times per year and reviews construction of the dam wall, filling procedures, stability, water management and conducts site visits to investigate whether the tailings dam is hydrological contained.

Peru	Physical: Increased water stress or scarcity	A lack of water during the dry season	Current	Water shortages might disrupt operations	Conduct pre-feasibility study of dry stacking or other disposal options. Continue flocculation of extra fine tailing to release additional trapped water.
Australia	Physical: Increased water stress or scarcity	Australian operations are situated in water stressed areas. Water supply might be impacted through changing weather patterns related to climate change.	1-5 years	Water shortages might disrupt production capacity.	**Agnew:** Pipeline from SongVang open pit to deliver water to the plant. Increased water harvesting.
Australia	Physical: flooding	Cyclonic events might interrupt mining operations and process.	Current	Employee health risk when this happens while working underground. Furthermore it is likely that operations will be disrupted	Further improvement of flood abatement structures to protect key infrastructure. Ongoing review of drainage and control.
Ghana	Physical: tailing dam management	The old tailings dam at Damang runs the risk of releasing seepage that is not meeting standards. This risk increases in the case of high rainfall events.	Current	Release of seepage into the environment could lead to potential liabilities and have a reputational impact.	A new tailing dam is being built at Damang to replace the old tailing dam which ran a risk of seepage not meeting standards.

3.2: What methodology and what geographical scale (e.g. country, region, watershed, facility) do you use to analyze water-related risk across your operations?

Risk Methodology	Geographical scale
Integrated multi disciplinary risk management process	**Facility**

Supply chain

3.3: Do you require your key suppliers to report on their water use, risks and management?

No

Evaluation of the means to undertake screening of suppliers is currently taking place. This screening will focus on human rights components, but is expected to also include water indicators.

3.4: Is your supply chain exposed to water-related risks (current or future) that have the potential to generate a substantive change in your business operation, revenue or expenditure?

Yes

3.4a: Please describe the current and/or future risks to your supply chain, the ways in which these risks affect or could affect your operations and your current or proposed strategies for managing them.

Country	Risk Type (to supplier)	Risk description	Timescale	Potential business impact	Risk management strategies
Ghana	Physical: increased water stress or scarcity	Electricity in Ghana is mainly derived from hydropower. In 2009 it happened that due to a drought in the Volta Delta not the usual amount electricity could be generated.	Current	Disruption of business	Additional back up diesel generators were installed.
South Africa	Physical: increased water stress or scarcity	Rand Water supplied 14,295ML of water, mainly through the municipalities, to Gold Fields operations in 2010. Locally not enough water is available to fulfil demand from industry, domestic users and the agricultural sector. Due to this local shortage, Rand Water sources majority of its water from the Orange river, Tugela River and the Lesotho Highlands. Though these supply schemes have been	1-5 years	Disruption of business	Increase water efficiency, water recycling and water storage capacity

		functioning well, and are protected through (international) agreements, it is perceived as a risk when water is not available locally but needs to be sourced externally and reliance is on third parties fulfilling agreements and managing its water sources professionally.			

Impacts to business

Question 4.1: Please describe any detrimental impacts to business related to water your company has faced in the past five years, their financial impacts and whether they have resulted in any changes to company practices.

Flooding of deeper mine pits in Ghana in 2010 disrupted production. The cost of disruption is calculated based on the revenue that would normally have been made if production would not have been disrupted; in this case approximately R1.5 million. In response to the floods, additional water pumping capacity was installed. Gold Fields Tarkwa purchased an additional 6 high lift pumps and accessories at a total cost of R16 million. This was to facilitate the deeper pits and the introduction of 2 stages pumping due to increase in pumping head. This adaptation will enable the mine to withstand increased rainfall variability and thereby flooding.

Low rainfall in Volta River catchment area in Ghana reduced hydro power availability in 2009. To compensate for reduced power availability, on-site diesel generators were installed, which caused diesel consumption to be increased by 250%. The financial implications of this event are mainly related to the capital cost required to buy diesel generators and the cost of operating the diesel generators, which was more expensive than electricity normally costs in Ghana.

Increased rainfall in the Gauteng region in South Africa caused increased water decanting, which required additional pumping (therefore increased energy costs) at #10 shaft at KDC East mine. For this specific shaft, pumping requirements increased with approximately 8 ML/day with associated costs of R27,200/day. Except for additional pumping, there is nothing else the company can do to manage this water related risk.

Opportunities

5.1: Do water-related issues present opportunities (current or future) that have the potential to generate a substantive change in your business operation, revenue or expenditure?

Yes

5.1a: Please describe the current and/or future opportunities, the ways in which these opportunities affect or could affect your operations and your current or proposed strategies for exploiting them.

Country / geographical area	Opportunity description	Timescale (years)	Potential business impact	Strategy to exploit opportunity
South Africa	The Liquid Gold Project was initiated in 2008, and focuses primarily on achieving a technical solution for the treatment of good quality fissure water and contaminated process water to produce water of potable quality. By-products generated during the water treatment process would be utilized in secondary processes, such as being sold-off as fertilizer feedstock. In the long term the water treatment process should provide a sustainable, institutional solution in the form of a water utility that can focus on zero discharge from the mines with managed closure liabilities with respect to water.	1-5 years	Additional source of income (potable water), reputational advantage, reduce liabilities.	A pre-feasibility study has been finalized and the Liquid Gold Project has been included in the company Water Strategy as a strategic water management project. A full feasibility study will be commenced mid 2011.

Managing trade-offs between water and carbon emissions

6.1: Has your company identified any linkages or trade-offs between water and carbon emissions in its operations or supply chain?

Yes

6.1a: Please describe the linkages or trade-offs and the related management policy or action.

Linkage or trade-off	Policy or action
Linkage: through the implementation of this project not only energy (and therefore carbon emissions) but also water usage is reduced.	Energy recovery from water going down shafts. Mine cooling is applied through chilled water down the shaft. An increase in energy efficiency of this system results in a reduction of chilled

	water requirements. Systems like Pelton wheel turbines and 3 chamber pipe feeder systems recover energy and reduce water consumption. A number of these projects have successfully been implemented and more are planned.
Linkage: through the implementation of this project not only energy (and therefore carbon emissions) but also water usage is reduced.	Traditionally, chilled water is being put down the KDC East shaft #3 to supply cooling to underground workings. All water pumped down the shaft to supply chilling in this way must be pumped out of the mine again at a huge energy expense. This project entails the replacement of chilled water with ice. As the amount of energy carried down the shaft with ice is significantly more on a mass basis than water, the use of ice significantly reduces the amount of water that needs to be pumped out of the shaft again and thereby reduces the energy consumption of the mine.
Linkage: through the implementation of this project not only renewable energy will be generated (and therefore carbon emissions reduced) but also water cleaning facilitated.	The Driefontein renewable energy project is currently in feasibility stage and proposes the establishment of energy crops (either fast growing grasses or trees) at the Driefontein property. This biomass will be used in energy technologies for the generation of electricity, while cleaning the soil from heavy metals, providing work to local communities and reduce emissions associated with conventional electricity generating technologies. Part of the pumped mine water will be used at the energy plantation to increase growth of the energy crops, while at the same time cleaning the water. For this reason, phyto remediating crops, with the potential to incorporate heavy metals and other pollutants into its structure, will be used. These pollutants can be extracted from the fly ash after combustion has taken place.

Withdrawals and recycling

Question 7.1: Are you able to provide data, whether measured or estimated, on water withdrawals within your operations?
Yes

Question 7.1a: Please report the water withdrawals within your operations for the reporting year.

Country or geographical reach	Withdrawal type	Quantity (ML/y)	Proportion of data that has been verified (%)	Comments
South Africa: Gauteng	Groundwater	30,371.7	76-100%	

	Municipal	10,104.4	76 – 100%	
South Africa: Free State	Groundwater	6,643.4	76 – 100%	
	Municipal	4,190.7	76 – 100%	
Ghana	Surface	3,596.9	76 – 100%	
	Groundwater	3,894.3	76 – 100%	
	Municipal	120.6	76 – 100%	
Australia	Surface	191	76 – 100%	
	Groundwater	16,956.9	76 – 100%	
	Municipal	374.4	76 – 100%	
Peru	Groundwater	573.5	76 – 100%	

Question 7.2: Are you able to provide data, whether measured or estimated, on water recycling/reuse within your operations?

Yes

Question 7.2a: Please report the water recycling/reuse within your operations for the reporting year.

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Country or geographical reach	Quantity (ML/y)	Proportion of data that has been verified (%)	Comments
South Africa: Gauteng	36,482	0%	90% of water withdrawn at the South African operations is recycled and reused. Losses are due to discharge to prevent the build up of total dissolved solids (TDS) due to evaporation.
South Africa: Free State	9,750.7	0%	90% of water withdrawn at the South African operations is recycled and reused. Losses are due to discharge to prevent the build up of total dissolved solids (TDS) due to evaporation.
Ghana	4,675.2	0%	
Australia	1,378.5	0%	

Question 7.3: Please use this space to describe the methodologies used for questions 7.1 and 7.2 or to report withdrawals or recycling/reuse in a different format to that set out above.

Water balances

Question 7.4: Are any water sources significantly affected by your company's withdrawal of water? This question specifically asks for impacts due to withdrawal of water: therefore excluded impacts due to other mining activities, such as tailing dam facility placement in a stream (Ghana).

Unknown

Question 7.4c: Please explain why you do not know if any water sources are significantly affected by your company's withdrawal of water.

None of the water bodies Gold Fields withdraws water from is a Ramsar listed wetland. Furthermore, it is not expected that any of these water bodies are particularly sensitive, as all required permits for withdrawal were obtained. It is however not known how the withdrawal rates relate to the annual average volume of the relevant water bodies. All (potential) impacts are listed below, but significance will be further investigated:

In Ghana, groundwater is extracted from wells which could potentially cause reduced groundwater table levels. To prevent groundwater table level reduction, operations in Ghana aim at minimizing groundwater usage by recycling as much water as possible.

Water supply for the Cerro Corona (Peru) operation is obtained through ground water extraction from wells (from open pit dewatering) and from storage of rain water in the tailings storage facility. The impact due to the extraction of ground water is reduced water flow in the streams in the Hualgayoc valley. To reduce this impact water is compensated for to the Coymolache area (5l/s) and Tingo River (10 l/s) during the dry season. Furthermore, water stored in the tailings storage facility (TSF) is recycled to be used in the process plant, thereby reducing water consumption.

At Australian operations, water is extracted from fractured rock aquifers. Due to the even spread of dewatering and abstraction on local aquifers, groundwater levels seem to be maintained.

Dolomitic compartments in the West Rand (South Africa), historically filled with water, have been drained due to continued mining activities (fissure water pumping) in the area. This is a result of all joined mining activities in the areas and cannot be linked to a single company. As water from compartments might leak into underground mines and cause Acid Mine Drainage it is undesirable to fill compartments with water. The current plans are to keep the compartments drained.

Gold Fields South Africa obtains about a quarter of its water supply from Rand Water. Rand Water sources majority of its water from the Vaal River, Tugela River and the Lesotho Highlands. This water is transferred into the Vaal dam from which it is extracted. Due to the large amounts of water extracted by Rand Water, water sources are expected to be **significantly** affected by these actions. Less water will be available downstream of these rivers and water sources then would be the case without water diversion and extraction. Gold Fields is not responsible for reducing the impacts created through water extraction by Rand Water.

Discharges

8.1: Are you able to identify discharges of water from your operations by destination, by treatment method and by quality using standard effluent parameters?
Yes

8.2: Did your company pay any penalties or fines for significant breaches of discharge agreements or regulations in the reporting period?
No

8.3: Are any water bodies and related habitats significantly affected by discharge of water or runoff from your operations? Only impacts due to water discharge or runoff are discussed; other impacts due to operations (Nduandua (Ghana) has been diverted as a result of TSF3 construction) are excluded.

Unknown

8.3c: Please explain why you do not know if any water bodies and associated habitats are significantly affected by discharge of water or runoff from your operations.

None of the water bodies Gold Fields discharges water in is a Ramsar listed wetland. Furthermore, it is not expected that any of these water bodies are particularly sensitive, as all required permits for discharge were obtained. It is however not known how the discharge rates relate to the annual average volume of the relevant water bodies. All (potential) impacts are listed below, but significance will be further investigated:

In **South Africa** (Gauteng operations only, as Beatrix operates a closed water circuit), Gold Fields discharges permitted levels of treated water into Loopspruit, Wonderfonteinspruit and Leeuspruit. This water is partly relied on by downstream communities and for downstream agricultural practices. The 'liquid gold' project, currently in pre-feasibility phase, plans the production of potable water from the dolomitic aquifers in the West Wits Area. This company action will reduce water discharge into surrounding water bodies, though Gold Fields will at all time comply with the minimum amount of water that should be discharged to fulfil downstream water demand (as determined by the Department of Water Affairs).

In **Ghana**, the rivers Suman and Awunaben run the risk of pollution in the case of low quality water discharge. To prevent this from happening, water purification procedures are monitored and final water quality is tested on a regular basis. Pit dewatering at Damang mine could increase the volume and concentration of polluted water being discharged into the Beni River. This risk is managed through monitoring of water that is to be discharged from the pit.

The potential impact of Cerro Corona (**Peru**) on the Mesa de Plata and Corona creeks is mainly due to 'total suspended solids' seepage into the creeks by runoff water. The following actions have been undertaken to minimize the potential impact of 'total suspended solids' seepage into the creeks:

- Design, implementation and maintenance of diversion channels and erosion control practices.
- Design and implementation of a sediment pond and an automatic flocculation system to control sediments.

Due to these actions, sediment concentrations comply with the Peruvian Maximum Limits for discharge.

Cerro Corona's most important potential impact is from water discharge from the Tailing Storage Facility into the Tingo River. Water is stored in the Tailings Storage Facility (TSF) for usage in the process plant. The TSF has ponds to capture seepage from the dam and new ponds are going to be implemented to improve hydraulic contention of the TSF. Water levels and quality in the TSF are continuously monitored and discharge of water from the TSF has never before been necessary. It is expected that in the future, TSF water discharge might become necessary. For that reason, implementation of a water treatment plant is investigated (estimated for 2015 according to the model of TSF storage water).

Water intensity

9.1: Please provide any available financial intensity values for your company's water use across its operations.

Country or region	Financial metric	Water use type	Financial intensity (US$/ML)	Please provide any contextual details that you consider relevant to the understand the units or figures you have provided
South Africa: Gauteng	Revenue	Withdrawn	44,853	
South Africa: Free State	Revenue	Withdrawn	42,327	
Ghana	Revenue	Withdrawn	154,577	
Australia	Revenue	Withdrawn	43,097	
Peru	Revenue	Withdrawn	839,840	

9.2: Please provide any available water intensity values for your company's products across its operations.

Country or Geographical Region	Product	Product Unit	Water Unit	Water Intensity	Water Use Type	Please provide any contextual details that you consider relevant to the understand the units or figures you have provided
South Africa: Gauteng	Gold	Ounce	kL	27	Withdrawn	
South Africa: Free State	Gold	Ounce	kL	29	Withdrawn	
Ghana	Gold	Ounce	kL	11	Withdrawn	
Australia	Gold	Ounce	kL	28	Withdrawn	
Peru	Gold	Ounce	kL	2	Withdrawn	