Module: Introduction

Page: W0. Introduction

W0.1

Introduction

Please give a general description and introduction to your organization

Gold Fields Limited is a globally diversified producer of gold with eight operating mines in Australia, Ghana, Peru and South Africa with attributable annual gold-equivalent production of approximately 2.2 million ounces. It has attributable gold Mineral Reserves of around 48 million ounces and gold Mineral Resources of around 101 million ounces. Attributable copper Mineral Reserves total 454 million pounds and Mineral Resources 5,813 million pounds. Gold Fields has a primary listing on the Johannesburg Stock Exchange (JSE) Limited, with secondary listings on the New York Stock Exchange (NYSE) and the Swiss Exchange (SWX).

Foreword by Nick Holland, CEO Gold Fields:
Water is a critical long-term issue for the mining industry as it is becoming an increasingly scarce and an expensive resource globally. It is also a resource that we share with communities living next to our mines.

Managing the risks around current and anticipated water security, including water quality and the escalating cost of water, is essential to ensure sustainable production at our mines and the future viability of projects. It is also a critical aspect of our social license to operate.

Gold Fields' water management guideline requires operations to:
- Measure and report on water management performance;
- Integrate water management into mine planning;
- Comply with regulatory requirements and, where feasible, go beyond compliance requirements; and
- Identify opportunities to enhance water reuse, recycling and conservation practices - in 2016, 16 new water initiatives were implemented in line with these guidelines.

Many of these initiatives deliver multiple benefits, including cost savings, reduced impact in water scarce areas, improved regulatory compliance, identification and mitigation of water-related risks and reduction of mine closure liabilities, thereby enhancing Gold Fields' social licence to operate. These efforts will continue into the future.

In recognition of the fact that responsible water management is a vital component of Gold Fields' licence to operate, Gold Fields has, since 2011, voluntarily submitted information relating to our water usage, goals and water-related risks to CDP Water.

We remain committed to responsible leadership to mitigate the impact that Gold Fields has on the water resources we use at our mines. Underpinning this is a commitment to transparent reporting on these impacts.

W0.2

Reporting year

Please state the start and end date of the year for which you are reporting data

Period for which data is reported
Fri 01 Jan 2016 - Sat 31 Dec 2016

W0.3

Reporting boundary

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

Companies, entities or groups over which financial control is exercised

W0.4

Exclusions

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

No

W0.4a

Exclusions

Please report the exclusions in the following table

Exclusion	Please explain why you have made the exclusion

Further Information

Module: Current State

Page: W1. Context

W1.1

Please rate the importance (current and future) of water quality and water quantity to the success of your organization

Water quality and quantity	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital for operations	Important	DIRECT: For Gold Fields, primary use of fresh water is vital for our mining activities; therefore, access to it is critical during every stage of the mine life cycle. Water is used in both the mining and milling process. It is particularly important for transporting tailings slurries, dust suppression, washing of ores, underground refrigeration and the processing plant. In addition good quality water is critical for maintaining the health of our employees. INDIRECT: Use of freshwater in our supply chain is important. The production processes of electricity, cyanide and diesel require sufficient amounts of good quality freshwater. Insufficient good quality freshwater therefore has the ability to affect our supply chain and in turn mine production. In addition freshwater is also particularly

Water quality and quantity	Direct use importance rating	Indirect use importance rating	Please explain
			important for the downstream refining of gold.
Sufficient amounts of recycled, brackish and/or produced water available for use	Important	Important	DIRECT: For Gold Fields, primary use of non-freshwater is vital in our mining activities. Majority of our operational water needs are met by recycled water. During dry season, Cerro Corona relies completely on recycled water for production activities. In addition, two of our Australian operations, Granny Smith and St Ives, withdraw brackish (hypersaline) water. INDIRECT: Use of non-freshwater in our supply chain is important. In South Africa, we purchase electricity from Eskom (national power utility). Eskom has introduced desalination of polluted mine water for use at its power stations, in order to reduce the amount of freshwater used for electricity production.

W1.2

For your total operations, please detail which of the following water aspects are regularly measured and monitored and provide an explanation as to why or why not

Water aspect	% of sites/facilities/operations	Please explain
Water withdrawals- total volumes	76-100	All of the operations owned by Gold Fields (100%) are required to measure, monitor and report the total volume of water withdrawn on a monthly basis. The total withdrawal volumes are measured for water performance metrics. The metric used by Gold Fields is the volume of water withdrawn per ounce of gold produced. Gold Fields' total water withdrawals are reported as part of the GRI G4 reporting guidelines under indicator EN8. Measuring and monitoring the water withdrawals at frequent intervals also ensures that the withdrawal volumes fall within the water use license boundaries.
Water withdrawals- volume by sources	76-100	Gold Fields measures and monitors all withdrawals (100% of operations) per abstraction source. All operations withdraw renewable groundwater. St Ives and Granny Smith withdraw brackish groundwater. Agnew and Darlot withdraw both fresh and brackish groundwater. South Deep, Tarkwa, Damang and Cerro Corona withdraw fresh groundwater. Municipal water is withdrawn by South Deep, Tarkwa, St Ives and Granny Smith. Fresh surface water is withdrawn by South Deep, Damang, Tarkwa, St Ives and Cerro Corona. Granny Smith withdraws brackish surface water. Certain water sources are vulnerable with respect to the integrity of the surrounding environment. These sources are

Water aspect	% of sites/facilities/operations	Please explain
		actively measured and monitored at each of the operations. Frequent measurements and monitoring of each individual source allows Gold Fields to monitor withdrawal trends and to inform management decisions based on these trends.
Water discharges- total volumes	76-100	Gold Fields measures and monitors the total discharge volumes across all operations (100%). During 2016 only 62.5% (5/8) of Gold Fields' operations discharged water). The total discharge volumes require measurement and monitoring to ensure that each of the operation's discharged water falls within the required qualitative and quantitative parameters stipulated in its water usage license. Additionally, total discharge volumes are tracked to ensure that water balances are accurate and updated regularly.
Water discharges- volume by destination	76-100	Gold Fields requires all of its operations that discharge water (62.5% of operations) to measure and monitor the water volume discharged to each discharge destination. This is done to ensure that sufficient treatment of the discharged water is maintained and that volumes discharged to each source do not exceed the licensing boundaries and regulations. Fresh surface water discharge destinations are utilised by South Deep, Tarkwa, Damang and Cerro Corona. Granny Smith is the only operation that discharges water to a brackish destination. Agnew, St Ives and Darlot all operate within closed water cycles which result in zero water discharges.
Water discharges- volume by treatment method	76-100	As Gold Fields' operations have numerous processes, the volume of water discharged per treatment method needs to be measured and monitored for all operations (100% of operations). This is done to ensure that the quality and volume of the discharged water meets the licensing requirements. In addition the volume per treatment method is measured and monitored to ensure the maintenance of an accurate water balance between all processes.
Water discharge quality data- quality by standard effluent parameters	76-100	The water discharge quality data is measured and monitored at all discharge points of Gold Fields' operations (100% of operations). This is done to ensure that the quality of the water which is discharged is kept within the range permitted by the licensing requirements. Additionally, the measurement of discharge quality is reported in the Global Reporting Initiative questionnaire which requires water discharge quality as a parameter per discharge source.
Water consumption- total volume	76-100	Gold Fields measures and monitors the total amount of water consumed at each of its eight operations (100% of operations). Water consumption per ounce of gold produced is a performance metric that Gold Fields utilises continually to ensure that its operations are running as efficiently as possible.
Facilities providing fully-functioning WASH services for all workers	76-100	At Gold Fields, employee health is considered to be a vital aspect of business. As such, all operations (100% of operations) ensure that employees are provided with sufficient volumes and adequate access to clean and potable wash water for drinking and sanitation services.

W1.2a

Water withdrawals: for the reporting year, please provide total water withdrawal data by source, across your operations

Source	Quantity (megaliters/year)	How does total water withdrawals for this source compare to the last reporting year?	Comment
Fresh surface water	7979	About the same	The total fresh surface water withdrawals decreased in this reporting year by 4.5% when compared to the previous reporting year's figure. The decreases in consumption at St Ives (73%) and Cerro Corona (49%) were offset by the large increase of fresh surface water withdrawal largely at South Deep (3503%), followed by Damang (12%) and Tarkwa (4%). St Ives opened three new pits during 2015 which increased fresh surface water withdrawal. However during 2016 very little fresh surface water was withdrawn at the operation. South Deep increased fresh surface water withdrawal from 31 Ml to 1113 Ml. This was due to the refilling of South Deep's water storage dams and increased production demand. In contrast Cerro Corona's fresh surface water decreased by almost half due to a drought in the region. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Brackish surface water/seawater	1046	Higher	The Granny Smith operation is the only Gold Fields operation that withdraws brackish surface water. Brackish surface water withdrawal increased during 2016 by 13% at Granny Smith. During 2016 a predictive and dynamic water balance was developed at Granny Smith which resulted in more accurate water accounting. It is important to mention that the St Ives operation's renewable groundwater is also of a brackish nature. Due to it not being surface water, it is reported under the renewable groundwater category and fully accounted for in that category. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Rainwater	0	Not applicable	None of Gold Fields' operations can avoid taking in rainwater as it enters directly into its facilities. It is therefore difficult to separate these figures from the overall withdrawal of the operations. Surface water runoff that collects in the mining pits is pumped back into the water system of the operation and accounted for as groundwater/pit water abstraction. Rainwater that accumulates on tailings dams of operations is treated and discharged if the amount of water is material when compared to withdrawals from other sources. Such water withdrawal is included in the overall operational water balance. In some cases the rainwater accumulating on tailings dams may be immaterial due to the large scale surface area or relatively low rainfall compared to water withdrawal. Gold Fields defines "about the same" to be between 0 – 10%. Above 10%

Source	Quantity (megaliters/year)	How does total water withdrawals for this source compare to the last reporting year?	Comment
			change is considered lower/higher. Above 40% change is considered much lower/much higher.
Groundwater - renewable	18594	Lower	The withdrawal of renewable groundwater at Gold Fields' operations decreased by 22% when compared to the withdrawals made in the previous reporting period. This decrease was apparent across all of Gold Fields' operations except Darlot and South Deep, which reported an increase. The decrease was primarily due to the revised internal definition of water withdrawal. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Groundwater - non-renewable	0	Not applicable	None of Gold Fields' operations make use of non-renewable groundwater
Produced/process water	0	Not applicable	None of Gold Fields' operations make use of produced/process water from a third party source.
Municipal supply	2702	Higher	The use of municipal water increased by 30%. This was mainly due to the increased Rand Water purchases at South Deep due to the drought. The drought disrupted the operation of South Deep's RO plants and therefore the mine was unable to make use of recycled process water. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Wastewater from another organization	0	Not applicable	None of the Gold Fields operations make use of wastewater from another organization
Total	30321	Lower	Total water withdrawal decreased by 14% during this reporting year. The main reasons for the change in water withdrawal were: • A change in the internal definition of water withdrawal to align with the Minerals Council of Australia's water accounting framework; • Significantly reduced water withdrawal at Cerro Corona, largely due to drought conditions • During 2015 St Ives had high water withdrawals from opening up three new pits. This was not repeated in 2016 • Increased water withdrawal at South Deep due to the refiling of South Deep's water storage dams and increased production demand Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.

W1.2b

Water discharges: for the reporting year, please provide total water discharge data by destination, across your operations

Destination	Quantity (megaliters/year)	How does total water discharged to this destination compare to the last reporting year?	Comment
Fresh surface water	9506	Lower	Fresh surface water discharge decreased by 14% in the current reporting period. This was primarily due to the revised internal definition of water withdrawal at Damang, resulting in no water discharge in 2016 (100% reduction). Furthermore, there was a 90% reduction in discharge by Cerro Corona. This is related to reduced water withdrawal due to the drought conditions, brought about from low rainfall events. St Ives had three new pits opened during 2015 which increased fresh surface water withdrawal. However during 2016 very little fresh surface water was withdrawn at the operation. Gold Fields defines “about the same” to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Brackish surface water/seawater	5597	Lower	Granny Smith is the only Gold Fields facility that discharges water to a brackish surface water source. In the previous reporting period, 7447 Ml was discharged from the Granny Smith facility. In the current reporting period, 5597 ML was discharged. This resulted in a discharge decrease of 25% when comparing the value of the current period to that of the previous period. During 2016 a predictive and dynamic water balance was developed at Granny Smith which resulted in more accurate water accounting. Gold Fields defines “about the same” to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Groundwater	0	Not applicable	No discharges were made to groundwater discharge destinations by any of Gold Fields’ operations during the current reporting period.
Municipal/industrial wastewater treatment plant	0	Not applicable	None of Gold fields’ operations discharged water to municipal facilities for treatment in the current reporting period.
Wastewater for another organization	0	Not applicable	None of Gold Fields’ operations discharged water to another organisation in the current reporting period.
Total	15103	Lower	The total water discharged decreased by 18% when compared to the previous reporting period. The decrease is due to the following reasons: • The revised internal definition of water withdrawal at Damang, resulting in no water discharge in 2016 (From 5488 Ml in 2016 to 0 Ml in 2016. • Furthermore, there was a 90% reduction in discharge by Cerro Corona. The is

Destination	Quantity (megaliters/year)	How does total water discharged to this destination compare to the last reporting year?	Comment
			related to the drought conditions, brought about from low rainfall events. Granny Smith's discharge into brackish water decreased by 25%. During 2016 a predictive and dynamic water balance was developed at Granny Smith which resulted in more accurate water accounting. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.

W1.2c

Water consumption: for the reporting year, please provide total water consumption data, across your operations

Consumption (megaliters/year)	How does this consumption figure compare to the last reporting year?	Comment
15218	Lower	The net effect of the water withdrawal and discharge resulted in a total net consumption decrease at Gold Fields. This was mostly due to the fact that all the water withdrawal sources, except for Municipal supply, decreased from 2015. Water discharge for fresh surface and brackish surface water also decreased. The net effect of the water withdrawal and discharge resulted in a net consumption decrease of 9% in 2016. Group water withdrawal per ounce of gold produced reduced from 15.77 kl/oz to 13.67 kl/oz. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.

W1.3

Do you request your suppliers to report on their water use, risks and/or management?

No

W1.3a

Please provide the proportion of suppliers you request to report on their water use, risks and/or management and the proportion of your procurement spend this represents

Proportion of suppliers %	Total procurement spend %	Rationale for this coverage

W1.3b

Please choose the option that best explains why you do not request your suppliers to report on their water use, risks and/or management

Primary reason	Please explain
Important but not an immediate business priority	Gold Fields has conducted limited water engagement with its material suppliers. Material supplier engagement on water issues will be reviewed in 2017, when the Group water objectives are revisited. During 2013, Gold Fields' South Deep operation engaged with Bedrock, who was at the time its primary supplier of timber. The engagement included discussions around climate change and the impacts of drought.

W1.4

Has your organization experienced any detrimental impacts related to water in the reporting year?

Yes

W1.4a

Please describe the detrimental impacts experienced by your organization related to water in the reporting year

Country	River basin	Impact driver	Impact	Description of impact	Length of impact	Overall financial impact	Response strategy	Description of response strategy
South Africa	Orange	Phys-Drought	Higher operating costs	In 2016 drought conditions caused a water shortage at South Deep. Initially South Deep had three reverse osmosis plants which were able to treat 2 – 4 Ml of water per day which reduced water purchase costs by an estimated US$9000–12000/month. The drought during 2015 and 2016 resulted in two of South Deep's three reverse osmosis plants being shut down. This increased water purchase costs by approximately US$ 120 000 during 2016.	Approximately 1 year	South Deep's water purchase costs increased by approximately US$ 120 000 during 2016.	Infrastructure investment Other: water agreement with neighbouring mine.	Gold Fields' has two response strategies for this impact: 1. South Deep installed additional pipelines to better balance the water on site. 2. In 2015 South Deep concluded a water supply agreement with Sibanye Gold to supply water from Sibanye's Ezulwini mine, via the Leeuspruit stream. The plan to secure water to support South Deep during production ramp-up could also be negatively impacted by Sibanye's announcement on 31 August 2016 that it will be closing the Ezulwini (Cooke 4 Shaft) mine. South Deep is currently assessing the implications of the closure if such application were granted.

Country	River basin	Impact driver	Impact	Description of impact	Length of impact	Overall financial impact	Response strategy	Description of response strategy
Ghana	Volta	Phys-Increased water stress	Higher operating costs	Tarkwa and Damang source electricity from the Volta River Authority and the Electricity Company of Ghana. The Ghana Volta River Authority generates a significant amount of power from hydro power schemes. During 2016 the Authority was challenged in meeting the high peak demand due to particularly low water levels in the reservoir at Akosombo as well as fuel supply challenges and forced outages at the thermal plants. As a result Tarkwa and Damang had to switch to diesel generators for electricity supply, this was however a more expensive and emissions intensive approach.	Approximately 1 month	The cost of running diesel generators at the Ghanaian mines was in excess of US$D10 million. The capital cost of the two Genser-owned gas turbine power plants is estimated at US$ 82 million.	Supplier diversification Other: running of diesel generators	During 2016, two Genser Power open cycle gas turbine power plants were commissioned at the Tarkwa and Damang mines. The power plants currently supply a total of 40 MW of electricity. By January 2018, Genser should be in a position to provide 100% of the power supply needs at these operations. The power plants will have sufficient on-site gas storage capacity to meet each mine's total load thereby mitigating any gas supply disruptions. Gold Fields invested US$ 1 million in the two Genser Power gas plants.

W1.4b

Please choose the option below that best explains why you do not know if your organization experienced any detrimental impacts related to water in the reporting year and any plans you have to investigate this in the future

Primary reason	Future plans

Further Information

Module: Risk Assessment

Page: W2. Procedures and Requirements

W2.1

Does your organization undertake a water-related risk assessment?

Water risks are assessed

W2.2

Please select the options that best describe your procedures with regard to assessing water risks

Risk assessment procedure	Coverage	Scale	Please explain
Comprehensive company-wide risk assessment	Direct operations and supply chain	All facilities and suppliers	Gold Fields' risk assessment is based on the Enterprise-wide Risk Management (ERM) process, which is aligned with the ISO 31000 international risk management standard, as well as the risk management requirements of South Africa's King IV Code. The Group's top 10 risks and top 5 regional risks are identified though the ERM process which prioritizes risks on the basis of probability and severity. Water risks are identified within the ERM process for both Gold Fields' direct operations and supply chain. In 2016, "water supply, cost and pollution" was ranked at number 6 in the Group's top 10 risks. In addition to the overarching risk assessment, each operation implements an

Risk assessment procedure	Coverage	Scale	Please explain
			Environmental Management System (EMS), through which it assesses, manages monitors and reports on water use and the quality of its discharges (where these occur).

W2.3

Please state how frequently you undertake water risk assessments, at what geographical scale and how far into the future you consider risks for each assessment

Frequency	Geographic scale	How far into the future are risks considered?	Comment
Six-monthly or more frequently	Facility	>6 years	Risk assessments are led by the highest levels of Gold Fields' management structure. The Risk Committee, a subcommittee of the Board, is responsible for the overall risk assessment system. Managers undertake ongoing workplace risk assessments as per international standards (e.g. ISO 31000, ISO 14001 and SAMREC guideline), to ensure that all identified risks have the necessary control measures and mitigating strategies in place.

W2.4

Have you evaluated how water risks could affect the success (viability, constraints) of your organization's growth strategy?

Yes, evaluated over the next 5 years

W2.4a

Please explain how your organization evaluated the effects of water risks on the success (viability, constraints) of your organization's growth strategy?

Water quantity and quality have material effects on our growth strategy. One of the key risks relating to gold production (and therefore the company's growth strategy) relates to the requirement for sufficient amounts of good quality freshwater. Factors relating to water imports or purification therefore need to be considered. Furthermore, our water management actions have a bearing on the company's social licence to operate, which also directly affects the organisation's growth strategy. We, therefore remain committed to responsible water stewardship, which enables security of supply for our operations and shared benefits for its stakeholders.

Our process to evaluate how water risk affects our growth strategy includes a catchment-based water management approach. The social, cultural, economic and environmental value of water at the catchment scale is assessed to identify material water stewardship risks and provide context for operational water management. All our operations implement an Environmental Management System, through which they assess, manage, monitor and report on water use and quality. The aim is to maximise resource sustainability to achieve operational flexibility and cost savings, which positively affect the company's growth strategy.

The assessment of water risk impacts on the growth strategy are driven by the highest management levels. The Risk Committee, a subcommittee of the Board, is responsible for the identification and mitigation of new and existing risks, including climate change and water related risks.

All new and existing water risks are taken into account when developing our growth strategy. In terms of growth, new mining projects are particularly susceptible to the loss (or non-achievement) of a social license to operate. For example, water scarcity risks at the Cerro Corona mine represent significant long-term challenges. The operation, has therefore proactively implemented a range of responsible water management initiatives, including rainwater storage and reuse, supply of potable water to nearby communities and water monitoring. Such approaches have played a key role in protecting Cerro Corona from the kinds of social tensions affecting other nearby mining operations.

W2.4b

What is the main reason for not having evaluated how water risks could affect the success (viability, constraints) of your organization's growth strategy, and are there any plans in place to do so in the future?

Main reason	Current plans	Timeframe until evaluation	Comment

W2.5

Please state the methods used to assess water risks

Method	Please explain how these methods are used in your risk assessment
Internal company knowledge WBCSD Global Water Tool Other: IMIU (International Mining Industry Underwriters) (yearly, as part of insurance risk assessment)	Internal knowledge of water risks from each of Gold Fields' operations is included through mine level water risk assessments. All risks identified have control measures and mitigating strategies in place. Water risks form part of the Group wide company risk register. Gold Fields uses the WBCSD tool because it assists with assessing and communicating company specific water use and risks relative to water availability. The tool compares a company's water use with validated water, sanitation, population and biodiversity information on a country and watershed basis. It also provides input into the CDP-Water response, which is then reviewed by the Group Head of Water Management who is involved with the oversight of key water risks at a group level. The WBCSD tool is chosen to assess water risks as it assists Gold Fields in further understanding its water impacts and risks at a detailed regional and watershed level across all operations. The WBCSD tool is applied to all of Gold Fields' operations. Each year as part of Gold Fields' insurance risk assessment, the International Mining Industry Underwriters assess water risks for each operation. This method is used to identify water risks because it provides insight into possible insurance liabilities, e.g. extreme weather and water impacts that Gold Fields' operations may be exposed to.

W2.6

Which of the following contextual issues are always factored into your organization's water risk assessments?

Issues	Choose option	Please explain
Current water availability and quality parameters at a local level	Relevant, included	Our operations are required to report on both quality and quantity of water availability. All Gold Fields' operations are required to have an operational and predictive water balance in place for understanding current and future water management requirements. In addition, our operations implement an ISO14001 certified Environmental Management System (EMS), through which we assess, manage, monitor and report on water use and the quality of discharges. Water licenses at our operations require water quality be monitored. Internal company knowledge and the WBCSD Global Water Tool are used to assess this issue. This includes identifying key water availability and quality issues and risks, and reporting these on a quarterly basis to the Safety, Health and Sustainable Development (SH&SD) Committee of the Board. Water availability and quality issues

Issues	Choose option	Please explain
		forms part of the input to the company risk register.
Current water regulatory frameworks and tariffs at a local level	Relevant, included	Regulatory changes as well as potential tariff changes are managed through the following group and regional/operational level processes: 1. Operational risk management registers, which feed into the group risk register on a quarterly basis through the Group Enterprise Wide Risk Management Process. 2. Group wide tracking of all key legislative changes through a centralised compliance system. 3. Implementation of the Group Water Management Guideline. Any regulatory changes affecting availability and price of water are reported quarterly to the Safety, Health and Sustainable Development Committee of the Board. Proactive identification, management and reporting of future potential regulatory changes forms part of the quarterly reporting to the Board SHSD Committee. Once risks have been identified, various approaches are put in place to manage these. Production plans specify water requirements so the impact of regulatory and tariff changes can be readily determined. We participate actively in national and state/provincial Chambers of Mines and other industry and professional bodies enabling a thorough understanding of likely regulatory changes.
Current stakeholder conflicts concerning water resources at a local level	Relevant, included	Mining companies face increasing pressures over their social licence to operate. Formal permission to operate is ultimately granted by host governments but the practical reality is that many operations also need the permission of host communities and other influential stakeholders to carry out their operations effectively and profitably. Internal company knowledge is used to assess existing stakeholder conflicts. In 2016, all our operations prepared stakeholder engagement strategies, and three-year plans focused on maintaining their social licence to operate. The Gold Fields Community Relations and Stakeholder Engagement Guidelines informed these. All operations have established mechanisms through which communities can share their grievances against/with Gold Fields, its actions or the behaviour of its employees on social, environmental and human rights issues. All our operations are required to implement culturally appropriate stakeholder engagement plans for all stages of the life-of-mine. It is a Gold Fields requirement that all mines establish mechanisms through which communities can voice their grievances and complaints about the group. Estimates of future potential stakeholder conflicts at a local level is assessed using internal company knowledge. We actively engage with the following groups, both formally and informally: Central, regional and local government and their agencies; Community based organisations; Traditional authorities; Indigenous Peoples, NGOs; Civil society; Organised labour; and Local businesses.
Current implications of water on your key commodities/raw materials	Relevant, included	This issue is assessed as part of our companywide risk register. Key commodities/raw materials include diesel, LPG, blasting agents, cyanide, cement, caustic soda, water and lime. This assessment of water risks associated with key commodities is conducted if there are indications that water supply/quantity might be an issue. Water risks also take into account water scarce areas and areas that have been previously exposed to water impacts. Internal company knowledge is used to assess the issue of current implications of water on key commodities/raw materials.
Current status of ecosystems and habitats at a local level	Relevant, included	All our operations are required to comply with applicable environmental regulations. Part of the environmental compliance consists of assessing water related risks and the potential impacts on ecosystems and habitats as part of Environmental Impact Assessments and the ISO 14001 certified

Issues	Choose option	Please explain
		environmental management systems. Water related impacts on ecosystems and local habitats are assessed as part of the group wide risk management process.
Current river basin management plans	Relevant, included	We have integrated watershed management initiatives at the Cerro Corona mine in Peru and the South Deep mine in South Africa. Cerro Corona together with USAID and Lutheran World Relief is actively involved in developing watershed communities within the Hualgayoc district. Through this initiative, Gold Fields implemented a four-year programme since 2014 to improve water quality and access to communities of Hualgayoc in the Cerro Corona direct area of influence. The programme aimed to promote, in partnership with government, remediation of legacy mining activities (not associated with Gold Fields). It involves building and maintaining potable water systems and remediation of historic environmental liabilities (not caused by Gold Fields) that are contaminating a local stream. During 2016 a number of community-based water systems were completed, benefiting 307 households. South Deep is a member of the Rietspruit Catchment Forum. The mine's environmental department attends the Forum's meetings and shares water monitoring data. In addition, South Deep works together with a neighbouring mine on restoring the Leeuspruit River, which forms part of the Rietspruit catchment.
Current access to fully-functioning WASH services for all employees	Relevant, included	Water is an important vector for the potential spread of pollution, making it a critical compliance issue as well as being a risk to the environment and human health if not responsibly managed. As employee health is vitally important to Gold Fields, all operations ensure that the workforce obtain access to clean potable and wash water for sanitation services.
Estimates of future changes in water availability at a local level	Relevant, included	Estimates of future changes in water availability at a local level are assessed through internal company knowledge and the WBCSD Global Water Tool. This includes regional application of the Group Water Management Guideline as well as the development and implementation of Water Management Action Plans. All operations have Management Action Plans in line with the Group Water Management Guideline in place. All our operations are required to have a dynamic and predictive water balance in place to assess future water availability at a local level. The water balance is a fundamental tool for understanding current and future water management requirements. Water balances enable decision making regarding the current and future security of our water supply.
Estimates of future potential regulatory changes at a local level	Relevant, included	All our regions have representatives that regularly engage with Government, via associations or directly, on water issues and potential regulatory changes. Tracking of key regulatory changes is also undertaken at a Group level. Any risks highlighted form part of the group risk register. The feedback from these engagements is then used to identify risks related to regulatory changes and the associated mitigation measures. Estimates of future potential regulatory changes at a local level are assessed through internal company knowledge.
Estimates of future potential stakeholder conflicts at a local level	Relevant, included	All our operations are required to implement culturally appropriate stakeholder engagement plans for all stages of the life-of-mine. It is our requirement that all mines establish mechanisms through which communities can voice their grievances and complaints about the group. Estimates of future potential stakeholder conflicts at a local level is assessed using internal company knowledge.

Issues	Choose option	Please explain
Estimates of future implications of water on your key commodities/raw materials	Relevant, included	The assessment of water implications on key commodities is conducted if there are indications that this might be an issue; i.e. in water scarce areas and based on past impacts such as flooding of access roads in the Australian region. Key commodities/raw materials include: diesel, LPG, blasting agents, cyanide, cement, caustic soda, water and lime. Estimates of future implications of water on our key commodities/raw materials are assessed through internal company knowledge as part of Gold Fields' company-wide risk register.
Estimates of future potential changes in the status of ecosystems and habitats at a local level	Relevant, included	Biodiversity continues to be covered by the environmental aspect registers. These registers regularly evaluate the potential for issues to impact on all components of an ecosystem, including surface water, ground water, topography, geology, fauna and flora. Any significant issues which are evaluated in accordance with consequence/ probability-based risk matrices are assigned objectives, targets and related environmental management plans. In addition, the 'exclusionary' nature of the mine sites (as well as, for example, hunting bans) often results in the enhancement of biodiversity within Gold Fields' footprint. We also use outcomes of the Climate Change Vulnerability Assessments that we have conducted for our operations using a climate-data reviewer tool. This tool gives insight into physical changes in precipitation, temperature, wind and water stress levels from 2025 to 2045.
Scenario analysis of availability of sufficient quantity and quality of water relevant for your operations at a local level	Relevant, included	Scenario analysis for quantity and quality of water for our operations at a local level is assessed through internal company knowledge. This includes two methods namely; water balances and weather monitoring and data. All our operations are required to have a dynamic and predictive water balance in place. Our operations monitor weather through national meteorological services. We have also conducted Climate Change Vulnerability Assessments using ICMM Mining Climate Assessment tool. This tool gives insight into physical change in precipitation, temperature, wind and water stress levels from 2025-2045 based 15 global climate models. Risks associated with quantity and quality of water form part of the input to the company risk register.
Scenario analysis of regulatory and/or tariff changes at a local level	Relevant, included	Regulatory changes and tariffs, which may affect our business, are considered at a group and regional level. Any risks associated with this issue are identified as part of the group wide risk assessment process as well as business as usual assessments related to the purchase cost of key inputs such as water. Our regions have representatives that regularly engage with Government, via associations or directly, on water issues and potential regulatory changes. Scenario analysis of regulatory and or tariff changes at a local level are also assessed through internal company knowledge.
Scenario analysis of stakeholder conflicts concerning water resources at a local level	Relevant, included	Future risks are identified as part of the group wide risk assessment and stakeholder engagement processes If future risks have the potential to significantly impact on the operations or communities and other water users but are still uncertain, scenario analysis is conducted. Such analysis can provide an estimated range of potential implications of the risk.
Scenario analysis of implications of water on your key commodities/raw materials	Relevant, included	Future risks are identified as part of the group wide risk assessment. If future risks have the potential to significantly impact on the operations but are still uncertain, scenario analysis are conducted. Such analysis can provide an estimated range of potential implications of the risk.

Issues	Choose option	Please explain
Scenario analysis of potential changes in the status of ecosystems and habitats at a local level	Relevant, included	Future risks are identified as part of the group wide risk assessment. If future risks have the potential to significantly impact on the operations but are still uncertain, scenario analysis are conducted. Such analysis can provide an estimated range of potential implications of the risk. We have also conducted Climate Change Vulnerability Assessments using ICMM Mining Climate Assessment tool. This tool gives insight into physical change in precipitation, temperature, wind and water stress levels from 2025-2045 based 15 global climate models.
Other	Not relevant, explanation provided	Not applicable

W2.7

Which of the following stakeholders are always factored into your organization's water risk assessments?

Stakeholder	Choose option	Please explain
Customers	Not relevant, explanation provided	We deliver our product to refineries and do not engage directly with customers beyond a refinery level. Refiners are not major water users. Therefore, customers are not factored into the company's water risk assessments.
Employees	Relevant, included	All relevant employees at a corporate, regional and operational level are engaged with and included as a stakeholder in Gold Fields' water risk assessments. Gold Fields' method of engagement with employees includes comprehensive employee surveys, which provide a holistic view of employee concerns. These are run every second year with shorter surveys taken annually.
Investors	Relevant, included	Investors, specifically Environmental, Social and Governance (ESG) investors, seek proof of sound water management practices. As water management is of interest to these stakeholders, they are factored into the company's water risk assessments. Gold Fields' method of engagement with investors is via the Investor Charter, which aims at regaining and growing investor confidence in Gold Fields.
Local communities	Relevant, included	Gold Fields recognises that local communities are an integral part of water management practices. Even if Gold Fields appropriately plans and manages its own water requirements, the company runs a risk of losing its social license to operate if local communities are exposed to water related impacts. Therefore, local communities are factored in as a stakeholder and form part of water management practices, planning and risk assessments. Gold

Stakeholder	Choose option	Please explain
		Fields' method of engagement with local communities includes formal and informal meetings with community based organisations, traditional authorities and local businesses and government. All of Gold Fields' operations are required to establish mechanisms through which communities can voice their grievances and complaints about the group. Gold Fields then aims to have the issues assessed and resolved.
NGOs	Relevant, included	Gold Fields engages with key NGOs on water risks and water management practices, where appropriate. Gold Fields actively identifies and engages with the representatives of NGOs on a regular bases both formally and informally. For example in South Africa, Gold Fields engages on a formalized basis with the Federation for a Sustainable Environment, which has a strong focus on water issues.
Other water users at a local level	Relevant, included	Where relevant, other water users at a local level are also incorporated in water risk assessments. Examples of other water users with whom Gold Fields engages at a local level are farmers and communities of nearby towns. Gold Fields' method of engagement with other water users at a local level includes formal and informal meetings with community based organisations, traditional authorities and local businesses. In South Africa communities in nearby towns such as Westonaria, Bekkersdal and Simunye are engaged with. In Australia the remote locations of the operations means that there are few nearby water users.
Regulators	Relevant, included	Gold Fields engages with regulators at a local, regional and national level to gain insight into local, regional and national water concerns and possible future regulatory changes. Through this engagement, regulators are factored into water related risk assessments. All of Gold Fields' regions have representatives that regularly engage with Government, via associations or directly, on water issues and potential regulatory changes.
River basin management authorities	Relevant, included	Gold Fields engages with river basin management authorities at a local level to gain insight into possible water quality and availability risks as well as future regulatory changes. Through this engagement, river basin management authorities at a local level are factored into water related risk assessments. South Deep is a member of the Rietspruit Catchment Forum. The mine's environmental department attends the Forum's meetings and shares water monitoring data. In addition, South Deep works together with a neighbouring mine on restoring the Leeuspruit River, which forms part of the Rietspruit catchment.
Statutory special interest groups at a local level	Relevant, included	Relevant local statutory special interest groups are factored into Gold Fields' water risk assessments. An example is Gold Fields' active engagement with the Far West Rand Dolomitic Water Association in South Africa. Gold Fields actively identifies and engages with the representatives of statutory special interest groups at a local level on a regular basis through formal and informal meetings.
Suppliers	Relevant, included	If suppliers operate within water scarce areas and if Gold Fields' believes that it has a direct impact on business then they would be incorporated into the risk assessments. Suppliers are required to comply with Gold Fields group sustainability policies and region-specific compliance standards. Standard supplier evaluation templates and weightings are determined case by case based on value and risk profile of vendor category covering commercial and non-commercial sustainability aspects like compliance, quality, safety, environment, human resources and social.
Water utilities at a local level	Relevant, included	Water utilities and suppliers are an important stakeholder for Gold Fields due to the importance of ensuring water security. Therefore these stakeholders are factored into water related risks assessments and engagement takes place regularly. Gold Fields actively identifies and engages with the representatives of water utilities/suppliers at a

Stakeholder	Choose option	Please explain
		local level on a regular basis through formal and informal meetings.
Other	Not relevant, explanation provided	Not applicable

W2.8

Please choose the option that best explains why your organisation does not undertake a water-related risk assessment

Primary reason	Please explain

Further Information

Module: Implications

Page: W3. Water Risks

W3.1

Is your organization exposed to water risks, either current and/or future, that could generate a substantive change in your business, operations, revenue or expenditure?

Yes, direct operations and supply chain

W3.2

Please provide details as to how your organization defines substantive change in your business, operations, revenue or expenditure from water risk

Each of Gold Fields' operations are exposed to water related risks with potentially substantive impacts. Water risks form part of Gold Fields' risk assessments. Risks are classified as strategic and operational, as the materiality of the two differ. Therefore separate matrices are used for strategic and operational risks. The two risk matrices are used to assess the severity and probability of each risk. Depending on the risk score, Gold Fields will decide if the risk warrants a position on the Group Risk Register. Gold Fields' definition of 'substantive change' is any change that will cause one or more day's loss of production if the probability of the incident occurring is once every fortnight or less. This definition applies to Gold Fields' direct operations as well as its suppliers that have a direct impact on operational performance.
The most important water related risks in 2016 for Gold Fields were:
- Losing social license to operate across all operations. The establishment and maintenance of a strong social licence to operate from Gold Fields' host communities, regional and national governments is essential for the sustainability and growth of the business. Gold Fields manages this risk through the implementation of Shared Value initiatives, community engagement and investment so as to avoid delays or disruptions at operations caused by communities
- Losing license to operate from a compliance perspective across all operations. Gold Fields is required to comply with regulations under its permits and licenses. Failure to do so could result in the curtailment or halting of production at the affected locations
- The risk of water reductions for operations in South Africa, Peru and Australia, as these regions are classified by the WBCSD tool as water stressed. The remote Cerro Corona and water scarce South Deep operations are particularly susceptible to the risks of drought. In 2016 drought conditions caused water shortages at South Deep, which resulted in two of the three reverse osmosis plants being shut down. Gold Fields' Australian operations have difficulty obtaining good quality freshwater, as the naturally available water is hypersaline. This water needs to be treated before it can be used in mine processes, increasing operational costs.

W3.2a

Please provide the number of facilities* per river basin exposed to water risks that could generate a substantive change in your business, operations, revenue or expenditure; and the proportion of company-widefacilities this represents

Country	River basin	Number of facilities exposed to water risk	Proportion of company-wide facilities that this represents (%)	Comment
South Africa	Orange	1	11-20	Gold Fields defines facilities as operations which include mining and processing.
Australia	Other: Western	4	41-50	Gold Fields defines facilities as operations which include

Country	River basin	Number of facilities exposed to water risk	Proportion of company-wide facilities that this represents (%)	Comment
	Plateau			mining and processing.
Ghana	Other: Ankobra	2	21-30	Gold Fields defines facilities as operations which include mining and processing.
Peru	Other: Tingo	1	11-20	Gold Fields defines facilities as operations which include mining and processing.

W3.2b

For each river basin mentioned in W3.2a, please provide the proportion of the company's total financial value that could be affected by water risks

Country	River basin	Financial reporting metric	Proportion of chosen metric that could be affected	Comment
South Africa	Orange	% global production capacity	11-20	Gold Fields defines facilities as operations which include mining and processing. All of Gold Fields' operations due to the nature of mining are affected in some way to water related risks, however this is at varying degrees and all risks are covered by management activities.
Australia	Other: Western Plateau	% global production capacity	41-50	Gold Fields defines facilities as operations which include mining and processing. All of Gold Fields' operations due to the nature of mining are affected in some way to water related risks, however this is at varying degrees and all risks are covered by management activities.
Ghana	Other: Ankobra	% global production capacity	31-40	Gold Fields defines facilities as operations which include mining and processing. All of Gold Fields' operations due to the nature of mining are affected in some way to water related risks, however this is at varying degrees and all risks are covered by management activities.
Peru	Other: Tingo	% global production capacity	11-20	Gold Fields defines facilities as operations which include mining and processing. All of Gold Fields' operations due to the nature of mining are affected in some way to water related risks, however this is at varying degrees and all risks are covered by management

Country	River basin	Financial reporting metric	Proportion of chosen metric that could be affected	Comment
				activities.

W3.2c

Please list the inherent water risks that could generate a substantive change in your business, operations, revenue or expenditure, the potential impact to your direct operations and the strategies to mitigate them

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
South Africa	Orange	Other: Acid Rock Drainage Management	Other: Ongoing Acid Mine Drainage generation	Water stress is an ongoing threat for significant parts of South Africa. As such water availability and water management is a sensitive public issue. Furthermore, South Deep is situated in an area of Gauteng which	>6 years	Unlikely	Medium-high	Other: Mine Closure Planning	During 2016, Gold Fields' South Deep mine spent a total of US$3.6 million on water management and projects which included ARD management. This total	Gold Fields' South Deep mine spent a total of US$ 3.6 million on water management and projects during 2016. Water projects include ARD management. South Deep implements a range of measures to

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				suffers from the historical impacts of more than 100 years of intensive, deep-level gold mining. High levels of Acid Rock Drainage (ARD) are a legacy feature of these operations that have long since shut down. South Deep is not contributing to local ARD. However, as the mine is likely to be one of the last operating mines in Gauteng it may feel additional social and regulatory pressures to address the surrounding issues of ARD as the surface waters are affected. These					spend is considered significant in the context of Gold Fields' operations.	prevent or contain Acid Rock Drainage (ARD) and there were no material cases of ARD reported in 2016. Proactive measures included: • Ongoing water monitoring; • Containment of any ARD generation on the old tailings facilities; • Water-treatment solutions that purify surplus fissure and process water to a potable standard; • Removal of the old South Shaft waste rock dump; • Revegetation of the mine's

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				pressures associated with ARD are therefore identified as a risk for Gold Fields' South African operations, South Deep.						environmental footprint; Underground ARD generation is well managed during the operational phase through ongoing pumping of underground water to surface water treatment facilities. Other key water management initiatives undertaken at South Deep during 2016 included: • Studying plume mitigation measures at the Doornpoort TSF and the old TSFs with implementation scheduled

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										for 2017; • Maintaining vegetation of the mine's two historic TSFs, which has reduced the generation of wind-blown dust to well below the legislated airborne dust level limits.
South Africa	Orange	Physical-Increased water stress	Higher operating costs	During 2016, South Africa found itself in a drought cycle that was one of the worst in 40 years. South Deep has over the past two years treated process water through the use of three reverse osmosis (RO) plants. The RO plants reduced the intake of Rand Water supply and	Current-up to 1 year	Highly probable	Medium-high	Promote best practice and awareness	During 2016, Gold Fields' South Deep mine spent a total of US$3.6million on water management and projects. This total spend is considered significant in the context of Gold Fields' operations.	During 2016 a climate change risk and vulnerability assessment was conducted for South Deep. The assessment was based on the ICMM's Mining Climate Assessment Tool. The tool gives insight into physical

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				associated water purchase costs. However the drought meant that the RO plants could not be operated for most of 2016. Currently, only one of the RO plants is operational. Due to the drought conditions, as well as an increase in water use at South Deep, the mine experienced water supply shortages during 2015/2016.						changes in precipitation, temperature, wind and water stress levels from 2025 to 2045 based on 15 global climate models. The assessment found that there is a risk of increased variability and intensity of rainfall which could expose South Deep to periods of drought and increased water stress. The implementation of water recycling and conservation practices is critical at South Deep. Water awareness initiatives

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										were introduced to encourage a reduction in water consumption. In addition, South Deep submitted an application to amend its 2011 Water Use License (WUL) in May 2015, which is still being reviewed by the Department of Water and Sanitation (DWS). In 2016 South Deep concluded a water supply agreement with Sibanye Gold to supply water from Sibanye's Ezulwini mine, via the Leeuspruit

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										stream. The plan to secure water to support South Deep during production ramp-up could also be negatively impacted by Sibanye's announcement on 31 August 2016 that it intends to close the Ezulwini (Cooke 4 Shaft) mine. South Deep is currently assessing the implications of the closure if such application were granted.
Peru	Other: Tingo	Other: ARD Management	Other: Ongoing Acid Rock Drainage generation	Acid Rock Drainage (ARD) at the Cerro Corona mine has been identified as a	Current-up to 1 year	Unlikely	Medium-high	Other: Mine Closure Planning	During 2016, Gold Fields' Cerro Corona mine spent a total of US$1.56	Gold Fields spent a total of US$ 16 million on water management

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				current operational and mine closure risk to Gold Fields. The drainage of acid mine water could potentially have damaging social and/or environmental impacts to the surrounding area. Without effective management strategies, such as mine closure strategies, Gold Fields could face reputational and financial liabilities.					million on water management and projects which included ARD management. In addition, Cerro Corona invested over US$ 3.17million in developing and upgrading water systems for nearby communities. Both of these costs are considered significant in the context of Gold Fields' operations.	and projects (including ARD management) during 2016. In addition, Gold Fields has implemented a number of shared value water projects at Cerro Corona. These involve building and maintaining potable water systems and remediation of historical environmental legacies (not caused by Gold Fields) that are contaminating a local stream. During 2016, Cerro Corona invested over US$3.1 million in developing and upgrading

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										water systems for nearby communities. The tailings and waste rock facilities at Cerro Corona were specially designed to mitigate the risks of ARD. Updates to Cerro Corona's geochemical and hydrogeological models will be completed during 2017 and will serve as input to the mine's post-closure water management plan.
Peru	Other: Tingo	Other: tailing storage facility stability	Other: Environmental and infrastructure damage	The tailing storage facilities at all of Gold Fields' operations are to some degree	Unknown	Unlikely	High	Other: best practice management, monitoring and external audit of	The most recent group-wide tailing storage facility (TSF)	All of Gold Fields' operations have tailings management plans in place,

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				at risk of instability and overtopping during extreme precipitation events. While this is a risk affecting all of Gold Fields' operations the severity and likelihood of the events depends on climate projections and the geophysical nature of the region of operations. The topography of Cerro Corona puts it at particular risk.				tailing storage facilities	audit was conducted during 2014 and cost US$100 000. This figure is not a cost estimate but is the actual cost incurred during 2014.	including closure and post-closure management plans. In total, Gold Fields' operations have 27 tailing storage facilities (TSFs) of which 16 are active. All TSFs, as well as associated pipeline and pumping infrastructure, are subject to an independent external audit every three years – or more frequently where required by local circumstances or regulations – as well as regular inspection and

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										formal annual reporting. Gold Fields' last Group-wide TSF audit was conducted in 2014, the next one will take place during 2017. During 2016, the Cerro Corona TSF was raised by 5m to 3,776m above sea level. To achieve this the mine had to relocate the spring for the nearby Las Tomas river from 3,771m to 3,800m above sea level. After receiving the required legal permits and reaching agreement with the

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										Manuel Vazquez Association (MVA), a community organisation, the spring was relocated during 2016. In line with its Life of Mine plan, Cerro Corona is planning to raise the TSF further from its current 3,776m to 3,800m over the next two years. The mine has regulatory approval to raise the TSF to that height and is engaging with the MVA to implement the provisions of the previously executed agreement.

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										The ICMM released a position statement, comprising a commitment to implement a new governance framework on tailings storage facilities in December 2016. Gold Fields supports the position of the ICMM and the Group reviewed its tailings management guidelines in early 2017 to ensure compliance with the new framework. Self-assessments and external Group-wide tailings audits

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										are being conducted during 2017 to ensure Gold Fields meets the ICMM's new framework as well as having critical controls in place to manage potential risks. Cerro Corona has an independent geotechnical review Board for its TSF. The Board reviews the TSF three times per year.
Peru	Other: Tingo	Reputational-Community opposition	Closure of operations	Water is a critical issue for communities in Peru and a large part of the active resistance by communities is	Unknown	Unlikely	High	Other: Comply with local legal requirements or own internal standards, whichever is	During 2016 Cerro Corona invested over US$3m in developing and	Cerro Corona has proactive engagements with community organisations and local governments

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				over water pollution by mines. Cerro Corona's high altitude location presents significant long term risks for water security. Increased water scarcity within a landscape of poorly developed water infrastructure and large water abstractions by mining operations is likely to encourage water activism. Water related activism and resistance from local communities could compromise Gold Fields' social licence to operate and disrupt				more stringent.	upgrading water systems for nearby communities. This total spend is considered significant in the context of Gold Fields' operations.	in terms of which it is a large supplier of potable water to the communities. During 2016 Cerro Corona invested over US$3m in developing and upgrading water systems for nearby communities. This financial figure is not a cost estimate but instead represent the actual amount spent by Gold Fields. During 2016 a climate change risk and vulnerability assessment was conducted for Cerro Corona. The assessment was based on

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				operations. Operations in the Cajamarca region have experienced serious impacts of water activism; however Cerro Corona has yet to be materially affected.						the ICMM's Mining Climate Assessment Tool. The tool gives insight into physical changes in precipitation, temperature, wind and water stress levels from 2025 to 2045 based on 15 global climate models. The assessment included local communities and found that there is a risk of water availability constraints which could lead to reduced agricultural productivity
Australia	Other: Western	Other: Security of water supply	Plant/production disruption leading to	Generally the shortage of water in the	1-3 years	Unlikely	Medium	Other: updating water	The costs associated with the	During 2016, a predictive and dynamic

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
	Plateau		reduced output	Western Australia region is driven by quality as much of the water is hypersaline. Gold Fields' operations have to treat all hypersaline water before it can be used and this can be expensive. In addition the Western region of Australia is particularly arid which increases the risk of water scarcity.				management strategy	water management strategy are managed in house.	water balance was developed for Gold Fields' Australian operations, using hydrology software systems. This enables the mines to account for the water inputs to and outputs from their operations and for the flows within the system. Post closure water management plans were also put into place. St Ives and Granny Smith Mines have water agreements with outside providers. St Ives' water

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										agreement was renewed early in 2015. Granny Smith's agreement with a neighbouring company for the provision of potable water was revised and signed off in late 2016. At Agnew Mine, a hydrological study on the Fairyland borefield suggests that the facility can be expanded to provide more water than the current design allows. This will supplement the existing water supply at the mine. Darlot Mine,

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										which Gold Fields announced in February 2017 it would put up for sale, is in the process of entering into an agreement with the nearby Murrin Murrin mine. Murrin Murrin is sourcing water from the same aquifer as Darlot, but will now be provided with supplementary water from the nearby Grey Mare borefield. This supplementary water supply will allow supply from the Darlot borefield to be reduced and the aquifer to be recharged.

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
Australia	Other: Western Plateau	Physical-Flooding	Plant/production disruption leading to reduced output	Extreme rainfall events (often associated with cyclones) can pose a risk to Gold Fields' Australian operations. Previously, Gold Fields' Granny Smith mine has experienced extreme rainfall events, with as much as 200 mm of rain falling over two days. This resulted in road closures, however the supply chain was not disrupted due to adequate storage onsite. Heavy rainfall events are also a safety risk at Agnew's underground operations. During the	Current-up to 1 year	Probable	Low	Other: increased focus on water management and weather monitoring	The cost of water management and weather monitoring is carried in-house by Gold Fields Australia.	Critical hazard management protocols have been put in place across all of Gold Fields' Australian operations, in response to this risk. During 2016, climate change risk and vulnerability assessments were conducted for the Australian operations. The assessments were based on the ICMM's Mining Climate Assessment Tool. The tool gives insight into physical changes in precipitation, temperature,

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				eighties, when Gold Fields did not own Agnew, the underground operations were flooded and a significant number of lives were lost. Both Darlot and Granny Smith have air strips to fly in personnel. However the air strips are unsealed and flights can be disrupted during intense periods of rainfall.						wind and water stress levels from 2025 to 2045 based on 15 global climate models. The assessments found that there is a risk of increased flooding events which could lead to pressure being placed on operational flood management capabilities and restrictions on personnel and suppliers' access to site. Weather data is monitored by Gold Fields' Australian operations to track any expected extreme

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										rainfall events or cyclones. The information from the Australian Government Bureau of Meteorology typically allows operations a few days' warning prior to experiencing any extreme rainfall. This allows the operations sufficient time to plan for the events. Each operation has a flood management plan in place. This is particularly necessary for St Ives, which is partly a surface mine. It also has

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										flood bunds installed on new pits. Furthermore, St Ives maintains spare mill capacity, which allows it to catch up after any delayed production due to flooding.
Ghana	Other: Ankobra	Physical-Flooding	Plant/production disruption leading to reduced output	Gold Fields' Ghanaian operations face some challenges on water management, including intense periods of precipitation, particularly during southern Ghana's two rainy seasons (March to July and September to November). The significant	Current-up to 1 year	Probable	Medium	Infrastructure investment	Water treatment costs at Gold Fields' Ghanaian mines is roughly US$ 2 million per year. This total spend is considered significant in the context of Gold Fields' operations.	In addition to infrastructure investment, Gold Fields also has effective pit dewatering strategies as well as sufficient pumping storage capacity. One of the most significant response strategies that Gold Fields

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				footprint of the Tarkwa mine means that there is a large watershed to manage. High precipitation levels produce large volumes of water on site which the mine is required to discharge responsibly. In addition, both Tarkwa and Damang mines experience prolonged periods of rainfall. This can reduce mine productivity as haulage trucks reduce speed when roads are wet. Wet conditions lubricate rocks which can reduce the life of truck tyres, as tyres are						Ghana has already implemented is the strategy to mine deeper areas of the mine pits during the dry season with the aim of creating a sump. The higher areas of the mine pits are then mined during the wet season. This allows for a certain amount of pit flooding during the wet season. In addition, Gold Fields' Ghanaian operations manage flooding by storing rainwater and separating clean and dirty

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				more easily torn. The life of tyres under normal conditions is approximately 5 500 hours which is reduced to 3 000 hours in wet conditions. Road maintenance requirements also increase as wet conditions persist. Reduced life of tyres and an increase in road maintenance may increase operational costs.						water (run-off). Rainwater is stored at Damang in the Lima pit before passing it through the RO plant prior to discharging. Water treatment costs are roughly US$ 2 million per year.
South Africa	Orange	Regulatory-Increased difficulty in obtaining withdrawals/operations permit	Higher operating costs	More stringent requirements are being applied to the process of obtaining and renewing water use licences	>6 years	Probable	High	Engagement with public policy makers	Gold Fields manages the costs associated with policy engagement for each operation in	This risk is managed by Gold Fields through compliance with existing water regulations

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				across all the regions in which Gold Fields operates.					house.	and community development projects.
Australia	Other: Western Plateau	Regulatory-Increased difficulty in obtaining withdrawals/operations permit	Higher operating costs	More stringent requirements are being applied to the process of obtaining and renewing water use licences across all the regions in which Gold Fields operates.	>6 years	Probable	High	Engagement with public policy makers	Gold Fields manages the costs associated with policy engagement for each operation in house.	This risk is managed by Gold Fields through compliance with existing water regulations and community development projects.
Ghana	Other: Ankobra	Regulatory-Increased difficulty in obtaining withdrawals/operations permit	Higher operating costs	More stringent requirements are being applied to the process of obtaining and renewing water use licences across all the regions in which Gold Fields operates.	>6 years	Probable	High	Engagement with public policy makers	Gold Fields manages the costs associated with policy engagement for each operation in house.	This risk is managed by Gold Fields through compliance with existing water regulations and community development projects.
Peru	Other: Tingo	Regulatory-Increased difficulty in obtaining withdrawals/operations permit	Higher operating costs	More stringent requirements are being applied to the process of	>6 years	Probable	High	Engagement with public policy makers	Gold Fields manages the costs associated with policy	This risk is managed by Gold Fields through compliance

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				obtaining and renewing water use licences across all the regions in which Gold Fields operates.					engagement for each operation in house.	with existing water regulations and community development projects.

W3.2d

Please list the inherent water risks that could generate a substantive change in your business operations, revenue or expenditure, the potential impact to your supply chain and the strategies to mitigate them

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
South Africa	Orange	Physical-Increased water stress	Higher operating costs	A number of the products required by Gold Fields' operations are highly water intensive to produce. Examples of such	1-3 years	Probable	Low-medium	Promote best practice and awareness	During 2016, Gold Fields spent a total of US$3.6million on water management and projects. This total spend	Gold Fields' South Deep mine spent a total of US$ 3.6 million on water management and projects during 2016. During 2016 a climate change

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				products include: diesel, cyanide and electricity. Gold Fields' South Deep mine in South Africa is in a particularly water stressed region. Electricity production in South Africa is water intensive and consumes 1.38m3 of water per MWh of electricity produced. Increased water stress may limit the production of water intensive products which could in turn disrupt Gold Field's operations. Alternative suppliers may need to be found at an increased cost to operations. In addition increased water stress means that					is considered significant in the context of Gold Fields' operations.	risk and vulnerability assessment was conducted for South Deep. The assessment was carried out using the ICMM's Mining Climate Assessment Tool. The tool gives insight into physical changes in precipitation, temperature, wind and water stress levels from 2025 to 2045 based on 15 global climate models. The assessment found that there is a risk of increased variability and intensity of rainfall which could expose South Deep to periods of drought and increased water stress. The implementation of water recycling and conservation practices is critical at South Deep. Water awareness initiatives were introduced to encourage a

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				the RO plants at South Deep are unable to operate which causes the mine to increase Rand Water (utility) purchases, ultimately increasing operating costs. Over the past two years, South Deep has made use of three RO plants. However currently, only one of the RO plants is operational. Further to this as water scarcity becomes a reality in South Africa, suppliers like Rand Water may not have enough water to supply large customers like South Deep. In periods of drought, Rand Water will most likely prioritise water supply to						reduction in water consumption. In addition, South Deep submitted an application to amend its 2011 Water Use License (WUL) in May 2015, which is still being reviewed by the Department of Water and Sanitation (DWS). In addition to promoting best practice and awareness, Gold Fields investigates supplier diversification. In 2015 South Deep concluded a water supply agreement with Sibanye Gold to supply water from Sibanye's Ezulwini mine, via the Leeuspruit stream. The plan to secure water to support South Deep during production ramp-up could also be negatively impacted by Sibanye's announcement on

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				residential areas over industry.						31 August 2016 that it intends to close the Ezulwini (Cooke 4) mine. South Deep is currently assessing the implications of the closure if such application were granted. To reduce South Deep's reliance on grid electricity, Gold Fields investigating the feasibility of a 40 MW PV plant at the mine.
Ghana	Volta	Physical-Increased water scarcity Physical-Increased water stress	Higher operating costs	Seasonal variation in rainfall poses a risk to the electricity supply of Gold Fields' Ghanaian operations. During 2016, Tarkwa and Damang sourced power from the Volta River Authority (VRA) and the Electricity Company of Ghana (ECG). Hydro-power	Current-up to 1 year	Probable	Medium-high	Increased capital expenditure	Gold Fields invested US$ 1 million for two Genser Power gas plants. The total investment is considered significant in the context of Gold Fields' operations.	During 2016, two Genser Power open cycle gas turbine power plants were commissioned at the Tarkwa and Damang mines. Gold Fields invested US$ 1 million for the two Genser Power gas plants. The power plants will supply a total of 40 MW of electricity. By January 2018, Genser should be in a position to provide

Country	River basin	Risk driver	Potential impact	Description of potential impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				schemes contribute significantly to Ghana's power, but with low dam levels due to a drought, security of electricity supply remains under threat. Daily load-shedding (brownouts) persisted through 2016.						100% of the power supply needs at these operations. The power plants will have sufficient on-site gas storage capacity to meet each mine's total load thereby mitigating any gas supply disruptions.

W3.2e

Please choose the option that best explains why you do not consider your organization to be exposed to water risks in your direct operations that could generate a substantive change in your business, operations, revenue or expenditure

Primary reason	Please explain

W3.2f

Please choose the option that best explains why you do not consider your organization to be exposed to water risks in your supply chain that could generate a substantive change in your business, operations, revenue or expenditure

Primary reason	Please explain

W3.2g

Please choose the option that best explains why you do not know if your organization is exposed to water risks that could generate a substantive change in your business operations, revenue or expenditure and discuss any future plans you have to assess this

Primary reason	Future plans

Further Information

Page: W4. Water Opportunities

W4.1

Does water present strategic, operational or market opportunities that substantively benefit/have the potential to benefit your organization?

Yes

W4.1a

Please describe the opportunities water presents to your organization and your strategies to realize them

Country or region	Opportunity	Strategy to realize opportunity	Estimated timeframe	Comment
Company-wide	Improved community relations	Mines within Peru often experience water activism due to increased water scarcity and poor water infrastructure. These negative water issues allow Gold Fields the opportunity to improve water infrastructure and provision and in turn strengthen the mine's social licence to operate. The strategy to realise this opportunity sits within Gold Fields' shared value initiatives. The shared value approach is based on 4 key pillars: 1. Strategic interventions to proactively address socio economic challenges; 2. Integration to proactively address socio economic challenges; 3. Participation in collaborative action with other stakeholders; 4. Transparency regarding Gold Fields' economic contributions. Through this strategy, Gold Fields implemented a four-year programme in 2014 to improve water quality and access to communities of Hualgayoc in the Cerro Corona direct area of influence. The programme aimed to promote, in partnership with government, remediation of legacy mining activities (not associated with Gold Fields). It involves building and maintaining potable water systems and remediation of historic environmental liabilities (not caused by Gold Fields) that are contaminating a local stream. During 2016 a number of community-based water systems were completed, benefiting 307 households. This opportunity has the potential to prevent community activism at Gold Fields' Cerro Corona operation. This opportunity could therefore have positive financial implications for Gold Fields.	Current-up to 1 year	
Company-wide	Other: Reduced mine closure liability due to good water management practices	Good water management practices are expected to reduce mine closure costs, which is an opportunity for Gold Fields. Gold Fields remains committed to responsible water stewardship and management. A Group Water Management Guideline was developed to assist Gold Fields' operations in leaving an enduring positive legacy. The Guideline is based on good practice, such as the United Nations Global Compact and the International Council on Mining and Metals Principles. All the operations are required to develop a water strategy and water management plan in accordance with this guideline. In addition Gold Fields is further enhancing its integrated approach to mine closure management with a focus on post-closure water management. South Deep has developed a post closure water management plan (Phase 1) taking into consideration the surrounding mines, whose underground water may enter South Deep's underground workings after they have closed. In terms of the financial implications, this opportunity has the potential to reduce mine closure costs for Gold Fields.	>6 years	
Company-wide	Cost savings	Reduced water use leads to reduced operational costs. Cost savings were evident at South Deep's reverse osmosis plants, which treat process water and reduce municipal intake. The plants cut water purchase costs by an estimated US$9000–12000/month.	Current-up to 1 year	

Country or region	Opportunity	Strategy to realize opportunity	Estimated timeframe	Comment
		Unfortunately only one of these plants remained operational during 2016, due to the drought in South Africa. The strategy to realise cost savings begins with the highest level of strategic guidance, the Group Water Management Guideline, which is translated into mine specific plans and strategies. Water reuse, recycling and conservation projects are part of the strategy to reduce water consumption and save costs. In terms of the financial implications, this opportunity has the potential to reduce expenditure on municipal/utility water.		

W4.1b

Please choose the option that best explains why water does not present your organization with any opportunities that have the potential to provide substantive benefit

Primary reason	Please explain

W4.1c

Please choose the option that best explains why you do not know if water presents your organization with any opportunities that have the potential to provide substantive benefit

Primary reason	Please explain

Further Information

Module: Accounting

Page: W5. Facility Level Water Accounting (I)

W5.1

Water withdrawals: for the reporting year, please complete the table below with water accounting data for all facilities included in your answer to W3.2a

Facility reference number	Country	River basin	Facility name	Total water withdrawals (megaliters/year) at this facility	How does the total water withdrawals at this facility compare to the last reporting year?	Please explain
Facility 1	South Africa	Orange	South Deep	5001	Much higher	Water withdrawals at the South Deep operation increased by 86% in the current reporting period. This was due to the refilling of South Deep's water storage dams and increased production demand. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 2	Ghana	Other: Ankobra	Damang	1564	About the same	Damang withdraws water from fresh surface water and renewable groundwater. The increase in fresh surface water was offset by the decrease in renewable groundwater. Additionally, an internal definitional change resulted in a comparable 2016 performance against 2015. Therefore, water withdrawal from Damang remained relatively similar compared to the previous reporting period, with a minor 7% increase.
Facility 3	Ghana	Other: Ankobra	Tarkwa	4251	About the same	Tarkwa uses 3 withdrawal sources: Fresh surface, renewable ground and municipal water. An increase in fresh surface water was offset by a decrease in both groundwater (renewable) and

Facility reference number	Country	River basin	Facility name	Total water withdrawals (megaliters/year) at this facility	How does the total water withdrawals at this facility compare to the last reporting year?	Please explain
						municipal water. As a result, water withdrawal from Tarkwa remained relatively similar compared to the previous reporting period, with a minor 1% increase. During 2016, Tarkwa had higher levels of water recycling and reuse.
Facility 4	Australia	Other: Western Plateau	St Ives	8758	Lower	The St Ives mine withdraws water from three sources: Fresh surface, groundwater (renewable) and municipal water. A net decrease across the three sources resulted in a 17% decrease of water withdrawn. St Ives opened three new pits during 2015 which increased fresh surface water withdrawal. However during 2016 less fresh surface water was withdrawn at the operation, which resulted in a 73% decrease.
Facility 5	Australia	Other: Western Plateau	Agnew	2191	About the same	Agnew only withdraws renewable ground water. Water withdrawal from Agnew remained relatively similar compared to the previous reporting period with only a minor decrease of 7%. This may be due to weather and operational requirements.
Facility 6	Peru	Other: Tingo	Cerro Corona	2568	Much lower	Cerro Corona withdraws from fresh surface and groundwater (renewable) water. Withdrawal from these sources decreased by 49% and 37% respectively. Water withdrawal at the Cerro Corona operation reduced by 45% when compared to the previous reporting period. This is due to drought conditions in the region, brought about by low rainfall events.
Facility 7	Australia	Other: Western Plateau	Darlot	537	About the same	Darlot only withdraws renewable ground water. Water withdrawal from Darlot remained relatively similar compared to the previous reporting period with only a minor increase of 6% attributed to increased production demand and a change in the internal definition of water withdrawal.
Facility 8	Australia	Other: Western Plateau	Granny Smith	5451	Lower	Granny Smith withdraws from brackish surface, groundwater (renewable) and municipal water. All of these sources decreased from 2015. Granny Smith's water withdrawal decreased by 38%, largely due to the definitional realignment at the site. Moreover,

Facility reference number	Country	River basin	Facility name	Total water withdrawals (megaliters/year) at this facility	How does the total water withdrawals at this facility compare to the last reporting year?	Please explain
						during 2016, a predictive and dynamic water balance was developed at Granny Smith which resulted in more accurate water accounting.

Further Information

Gold Fields defines “about the same” to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.

Page: W5. Facility Level Water Accounting (II)

W5.1a

Water withdrawals: for the reporting year, please provide withdrawal data, in megaliters per year, for the water sources used for all facilities reported in W5.1

Facility reference number	Fresh surface water	Brackish surface water/seawater	Rainwater	Groundwater (renewable)	Groundwater (non-renewable)	Produced/process water	Municipal water	Wastewater from another organization	Comment
Facility 1	1113	0	0	1572	0	0	2316	0	South Deep’s water withdrawal increased

Facility reference number	Fresh surface water	Brackish surface water/seawater	Rainwater	Groundwater (renewable)	Groundwater (non-renewable)	Produced/process water	Municipal water	Wastewater from another organization	Comment
									due to the refilling of South Deep's water storage dams and increased production demand.
Facility 2	1510	0	0	54	0	0	0	0	Water withdrawal by Damang remained relatively similar to the previous reporting period.
Facility 3	3660	0	0	582	0	0	9	0	Water withdrawal from Tarkwa remained relatively similar to the previous reporting period. During 2016, Tarkwa had higher levels of water recycling and reuse.
Facility 4	77	0	0	8304	0	0	377	0	St Ives opened three new pits during 2015 which increased fresh surface water withdrawal. However during 2016 less fresh surface water was withdrawn at the operation.
Facility 5	0	0	0	2191	0	0	0	0	Water withdrawal from Agnew remained relatively similar to the previous reporting period with only a minor decrease of 7%. This minor decrease was due to a change

Facility reference number	Fresh surface water	Brackish surface water/seawater	Rainwater	Groundwater (renewable)	Groundwater (non-renewable)	Produced/process water	Municipal water	Wastewater from another organization	Comment
									in the internal definition of water withdrawal.
Facility 6	1619	0	0	949	0	0	0	0	Water withdrawal at the Cerro Corona operation declined significantly when compared to the figure of the previous reporting period. This is due to drought conditions in the region, brought about by low rainfall events
Facility 7	0	0	0	537	0	0	0	0	Water withdrawal from Darlot remained similar to the previous reporting period with a minor increase of 6% attributed to increased production demand. This is also related to the change in the internal definition of water withdrawal
Facility 8	0	1046	0	4404.75	0	0	0.25	0	Granny Smith’s water withdrawal decreased by 38%. During 2016 a predictive and dynamic water balance was developed at Granny Smith which resulted in more accurate water accounting.

W5.2

Water discharge: for the reporting year, please complete the table below with water accounting data for all facilities included in your answer to W3.2a

Facility reference number	Total water discharged (megaliters/year) at this facility	How does the total water discharged at this facility compare to the last reporting year?	Please explain
Facility 1	399	Lower	South Deep's discharge decreased by 19% in the current reporting year. The only water that South Deep discharges is from its sewage treatment works in line with the water license. Therefore this discharge decreased due to a decrease in the amount of sewage treated. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 2	0	Much lower	No water was considered discharged from Damang in 2016 due to the revised internal definition of water withdrawal. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 3	2646	About the same	Tarkwa's water discharge increased by 9% during 2016 due to higher levels of water recycling and reuse and the improved water quality (as a result of rain-fed rinsing) discharged from the South heap leach facility. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 4	6185	Much higher	During 2015 St Ives was a closed water system and therefore no water was discharged. However during 2016 water was discharged from St Ives. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 5	0	About the same	Agnew is a closed water system and therefore no water is discharged from the operation. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 6	276	Much lower	Cerro Corona's water discharge decreased by 90% due to reduced water withdrawal as a result of the drought in the region, brought about by low rainfall events Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.

Facility reference number	Total water discharged (megaliters/year) at this facility	How does the total water discharged at this facility compare to the last reporting year?	Please explain
Facility 7	0	About the same	The Darlot operation makes use of a closed loop water system. This results in no water being willfully discharged from the facility. Gold Fields defines “about the same” to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 8	5597	Lower	Granny Smith’s discharge decreased by 25%. During 2016 a predictive and dynamic water balance was developed at Granny Smith which resulted in more accurate water accounting. Gold Fields defines “about the same” to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.

W5.2a

Water discharge: for the reporting year, please provide water discharge data, in megaliters per year, by destination for all facilities reported in W5.2

Facility reference number	Fresh surface water	Municipal/industrial wastewater treatment plant	Seawater	Groundwater	Wastewater for another organization	Comment
Facility 1	399	0	0	0	0	The South Deep operation discharges treated sewage water to a fresh surface water source. Prior to discharge, the water is treated at the operation to ensure the quality complies with environmental and water use regulations.
Facility 2	0	0	0	0	0	No water was defined as discharged from Damang in 2016 due to the revised internal definition of water withdrawal.
Facility 3	2646	0	0	0	0	Tarkwa’s water discharge increased by 9% during 2016. This was due to higher levels of water recycling and reuse and the improved water quality (as a result of rain-fed rinsing) discharged from the South heap leach facility.

Facility reference number	Fresh surface water	Municipal/industrial wastewater treatment plant	Seawater	Groundwater	Wastewater for another organization	Comment
Facility 4	6185	0	0	0	0	During 2015 St Ives was a closed water system and therefore no water was discharged (Small quantities of water are discharged into Lake Lefroy, via seepage dams. Lake Lefroy falls within the operation's boundaries). However during 2016 water was discharged from St Ives.
Facility 5	0	0	0	0	0	Agnew is a closed water system and therefore no water is discharged from the operation.
Facility 6	276	0	0	0	0	Cerro Corona's water discharge decreased by 90% due to reduced water withdrawal as a result of the drought in the region, brought about by low rainfall events.
Facility 7	0	0	0	0	0	Darlot makes use of a closed loop water system. This results in no water being discharged from the facility.
Facility 8	5597	0	0	0	0	Granny Smith's discharge decreased by 25%. During 2016 a predictive and dynamic water balance was developed at Granny Smith which resulted in more accurate water accounting.

W5.3

Water consumption: for the reporting year, please provide water consumption data for all facilities reported in W3.2a

Facility reference number	Consumption (megaliters/year)	How does this compare to the last reporting year?	Please explain
Facility 1	4602	Much higher	Water consumption at South Deep increased by 110% in 2016 compared to 2015. South Deep's water withdrawals increased due to the refilling of the water storage dams and increased production demand. In

Facility reference number	Consumption (megaliters/year)	How does this compare to the last reporting year?	Please explain
			addition Rand Water (utility) purchases increased due to a drought. The drought disrupted the operation of the RO plants and therefore the mine was unable to make use of recycled process water. Conversely, South Deep's discharge decreased by 19%, due to a reduction in the amount of sewage treated.
Facility 2	1564	Much higher	Water consumption at Damang was calculated as having increased by 139% due to a revised internal definition of water withdrawal. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 3	1605	About the same	Water consumption at Tarkwa decreased by 10% during the reporting period due to higher levels of water recycling and reuse. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 4	2573	Much lower	Water consumption at the St Ives operation decreased by 76%. St Ives opened three new pits during 2015 which increased fresh surface water withdrawal. However during 2016, less fresh surface water was withdrawn at the operation. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 5	2191	About the same	Agnew's water consumption decreased by 7% due to a change in the internal definition of water withdrawal. Gold Fields defines "about the same" to be between 0 – 10%. Above 10% change is considered lower/higher. Above 40% change is considered much lower/much higher.
Facility 6	2292	Higher	Water consumption at the Cerro Corona operation increased by 12% due to an increase in ore milled.
Facility 7	537	About the same	Water consumption at the Darlot facility increased by 6% due to a change in the internal definition of water withdrawal.
Facility 8	0	Much lower	Water consumption at the Granny Smith operation reduced by 111%. During 2016 a predictive and dynamic water balance was developed at Granny Smith which resulted in more accurate water accounting.

W5.4

For all facilities reported in W3.2a what proportion of their water accounting data has been externally verified?

Water aspect	% verification	What standard and methodology was used?
Water withdrawals- total volumes	76-100	The standard used: ISAE 3000 The methodology: KPMG's internal Sustainability Assurance Methodology The scope of methodology: KPMG assesses the risk environment of the process being reviewed as well as the controls in place and bases the procedures on these.
Water withdrawals- volume by sources	Not verified	Water withdrawals by source is not a commonly requested indicator, apart from the CDP Water Response. As this is not a common externally verified parameter, Gold Fields does not make use of an external verification body to verify its water withdrawals by source. Gold Fields has identified that the most material water parameters to its key stakeholders is total water withdrawal and water intensity per ounce of gold produced.
Water discharges- total volumes	Not verified	Five of the eight Gold Fields' operations discharge water. The St Ives, Agnew and Darlot operations are closed circuit systems; while the South Deep, Damang, Tarkwa, Cerro Corona and Granny Smith operations do discharge water. This parameter is not externally verified as in the cases where discharges occur, they are monitored in accordance with licence conditions agreed with the local environmental and water regulator (quality and volume).
Water discharges- volume by destination	Not verified	This parameter is not externally verified as in the cases where discharges occur, they are monitored in accordance with licence conditions agreed with the local environmental and water regulator (quality and volume). Each discharge destination is monitored and measured by Gold Fields to ensure compliance with regulations at all operations.
Water discharges- volume by treatment method	Not verified	Volume by treatment method is not externally verified as in the cases where discharges occur at an operation, they are monitored in accordance with licence conditions (quality and volume). All water that is discharged by Gold Fields' operations complies with the quality criteria set out in the relevant water use licenses.
Water discharge quality data- quality by standard effluent parameters	Not verified	Environmental incidents (level 3 and above) are assured by KPMG (in accordance with the ISAE 3000 Standard). Any significant exceedance of water quality discharge requirements is recorded as an environmental incident. A description of all level 3 and above environmental incidents, including the mitigation measures to address the incident, are recorded in Gold Fields' Integrated Annual Report.
Water consumption- total volume	Not verified	Water withdrawal (which is assured by KPMG) includes water consumption volumes at each of the Gold Fields operations.

Further Information

Module: Response

Page: W6. Governance and Strategy

W6.1

Who has the highest level of direct responsibility for water within your organization and how frequently are they briefed?

Highest level of direct responsibility for water issues	Frequency of briefings on water issues	Comment
Board of individuals/Sub-set of the Board or other committee appointed by the Board	Scheduled-quarterly	The highest level of direct responsibility for water within Gold Fields sits with the Safety, Health and Sustainable Development Committee (SHSD Committee). The SHSD committee is appointed by Gold Fields' Board of Directors and reports water management findings and recommendations to the board for consideration. This committee is a standing committee established by the Board with delegated authority from the Board. It is the responsibility of this committee, to assist the Board in its oversight of Gold Fields' environmental, health and safety programmes, as well as its socio-economic performance. The environmental programmes include water stewardship. More specifically in South Africa the directors of a company may be held directly and legally responsible for water related impacts. Therefore Gold Field's CEO and Directors hold the highest level of direct responsibility for water within the company.

W6.2

Is water management integrated into your business strategy?

Yes

W6.2a

Please choose the option(s) below that best explains how water has positively influenced your business strategy

Influence of water on business strategy	Please explain
Other: Drive costs down	Gold Fields' operations regularly monitor and report on their water use and quality of discharged water as part of the Group Water Management Guideline requirements. Continuous improvements in water efficiency help to meet formalised company requirements for water use reductions and this in turn reduces the costs of purchased water. The reverse osmosis (RO) plants which were installed at Gold Fields' South Deep operation reduced the mine's water purchase costs by an estimated US$9000–12000/month per month when they were in operation. Unfortunately the plants are currently not operating due to water shortages.
Other: Increased shared value	Shared value is created when business needs and social needs are addressed simultaneously. Gold Fields' business strategy actively pursues the creation of shared value in its operations. Water is a valuable resource in all of the areas in which Gold Fields operates and as such it has become a focus area for shared value creation. Gold Fields engages with multiple stakeholders on issues such as water security. This process supports Gold Fields' social license to operate and reduces the risk of disruptions initiated by local communities. An example of the initiatives undertaken by Gold Fields includes the four-year programme started in 2014 to improve water quality and access to communities of Hualgayoc in the Cerro Corona mine's area of direct influence.

W6.2b

Please choose the option(s) below that best explains how water has negatively influenced your business strategy

Influence of water on business strategy	Please explain
Increased capital expenditure	Gold Fields' Ghanaian operations are at risk of extreme precipitation events and surface water flows need to be managed. High precipitation levels produce large volumes of water on site which the mines are required to discharge responsibly. Water treatment in Ghana costs roughly US$ 2 million per year.

W6.2c

Please choose the option that best explains why your organization does not integrate water management into its business strategy and discuss any future plans to do so

Primary reason	Please explain

W6.3

Does your organization have a water policy that sets out clear goals and guidelines for action?

Yes

W6.3a

Please select the content that best describes your water policy (tick all that apply)

Content	Please explain why this content is included
Company-wide Performance standards for direct operations Incorporated within group environmental, sustainability or EHS policy Acknowledges the human right to water, sanitation and hygiene	Gold Fields' company-wide water policy is integrated into its Environmental and Sustainable Development Policy Statements, which are supported by and implemented through a Group Water Management Guideline. The Environmental Policy Statement considers environmental stewardship as per ISO 14001, which includes water. It commits Gold Fields to responsible water stewardship. Furthermore, water and human rights are entrenched through the 10 Principles of the International Council on Mining and Metals' Sustainable Development Framework, to which Gold Fields subscribes. The framework is implemented through the integration of the sustainable development requirements into the performance management system of the organisation.

W6.4

How does your organization's water-related capital expenditure (CAPEX) and operating expenditure (OPEX) during the most recent reporting year compare to the previous reporting year?

Water CAPEX (+/- % change)	Water OPEX (+/- % change)	Motivation for these changes
+35	-5	The CAPEX and OPEX figures reported in this table, our overall CAPEX and OPEX figures for Gold Fields. Water specific CAPEX and OPEX figures are difficult to extract because they are integrated into Gold Fields' mine capital operating expenses and are not separately recorded. Gold Fields overall CAPEX increased by 35% due to the acquisition of new fleet, the refurbishment of the main winder at Twin shaft and higher spend on employee accommodation.

Further Information

Page: W7. Compliance

W7.1

Was your organization subject to any penalties, fines and/or enforcement orders for breaches of abstraction licenses, discharge consents or other water and wastewater related regulations in the reporting year?

No

W7.1a

Please describe the penalties, fines and/or enforcement orders for breaches of abstraction licenses, discharge consents or other water and wastewater related regulations and your plans for resolving them

Facility name	Incident	Incident description	Frequency of occurrence in reporting year	Financial impact	Currency	Incident resolution

W7.1b

What proportion of your total facilities/operations are associated with the incidents listed in W7.1a?

W7.1c

Please indicate the total financial impacts of all incidents reported in W7.1a as a proportion of total operating expenditure (OPEX) for the reporting year. Please also provide a comparison of this proportion compared to the previous reporting year

Impact as % of OPEX	Comparison to last year

Further Information

Page: W8. Targets and Initiatives

W8.1

Do you have any company wide targets (quantitative) or goals (qualitative) related to water?

Yes, targets and goals

W8.1a

Please complete the following table with information on company wide quantitative targets (ongoing or reached completion during the reporting period) and an indication of progress made

Category of target	Motivation	Description of target	Quantitative unit of measurement	Base-line year	Target year	Proportion of target achieved, % value
Other: Develop post closure water management plans at all operations	Water stewardship	All our operations were required to develop post water management plans and dynamic water balances by end of 2016. During 2016, predictive and dynamic water balances were developed at all our operations (except Damang). These balances are based on hydrology software systems, providing predictive and dynamic outputs. A water balance of this type enables the mines to have a better understanding and control of the flows within the system, allowing them to identify water re-use, recycling and conservation initiatives.	Other: Develop post closure water management plans at all operations.	2015	2015	88%

W8.1b

Please describe any company wide qualitative goals (ongoing or reached completion during the reporting period) and your progress in achieving these

Goal	Motivation	Description of goal	Progress

Goal	Motivation	Description of goal	Progress
Other: Implement opportunities to enhance water re-use, recycling and conservation practices.	Other: Improve Water Management	The Group's water management guideline requires operations to identify opportunities to enhance water reuse, recycling and conservation practices.	In 2016, 16 initiatives were implemented in line with these guidelines, including the use of in-pit tailings disposals at our St Ives and Tarkwa mines. Many of these initiatives deliver multiple benefits, including cost savings, reduced impact in water scarce areas, improved regulatory compliance, identification and mitigation of water-related risks and reduction of mine closure liabilities, thereby enhancing Gold Fields' social licence to operate. These efforts will continue into the future.
Other: Strive for zero harm	Other: Maintain compliance licence to operate and social licence to operate	Gold Fields adopted its Water Management Guideline at the end of 2013. The guideline ensures that all operations have the appropriate designs and safeguard mechanisms in place to prevent contaminated water impacting the environment. We therefore have the goal to strive for zero harm through sound water management practices. The timescale for this goal will continue for the life of mine for each operation. We adopted this goal because operating a mine that does not strive for zero harm, would most likely result in the loss of the mining license. The goal will be successful if we receive no environmental fines during the reporting period.	We have reverse osmosis plants installed at three of our operations, namely: Tarkwa, Damang and South Deep. The reverse osmosis plants treat process water to a potable standard, which is then either recycled within the operation or discharged. Cerro Corona works closely with community elected representatives to monitor water quality and quantity at the Las Tomas spring and authorised discharge points around the operation. No significant environmental fines were received during 2016. Gold Fields has therefore made significant progress towards meeting its goal of striving for zero harm.
Strengthen links with local community	Other: Maintain social licence to operate	Gold Fields' Water Management Guideline aims to create shared value and leave an enduring positive legacy. To reach this goal, Gold Fields evaluates opportunities for the development and implementation of water-related shared value projects. Water has been identified as one of the most important issues for communities located near mining operations. It is for this reason that Gold Fields evaluates opportunities to supply clean water to host communities where possible. The timescale for this goal will continue for the life of mine of each operation. Gold Fields adopted this goal because community relationships are vital for maintaining a mine's social license to operate. Gold Fields' Cerro Corona mine is located in a region that is known for serious water related activism at both a local	Gold Fields has implemented a number of shared value water projects at Cerro Corona. These Involves building and maintaining potable water systems and remediation of historical environmental legacies (not caused by Gold Fields) that are contaminating a local stream. During 2016, Cerro Corona invested over US$3m in developing and upgrading water systems for nearby communities. Close to 90% of households in Hualgayoc now have access to sufficient clean running water. Apart from strengthening relationships between Gold Fields, the regulator and host communities, the remediation of legacy mining sites near Cerro Corona will significantly improve the quality of the water in the El Tingo River. Gold Fields has therefore made significant progress towards meeting its goal of building

Goal	Motivation	Description of goal	Progress
		and regional level. Although Cerro Corona has not been materially affected by such activism, this has had a serious impact on other operators in the region.	strong relationships.
Engagement with public policy makers to advance sustainable water policies and management	Recommended sector best practice	Gold Fields recognises that water is a 'shared resource' and should be responsibly stewarded. To effectively achieve this Gold Fields engages peers and policy makers to advance sustainable water policies and management practices. Gold Fields engages its peers through membership of the International Council on Mining and Metals (ICMM) Water Working Group. In 2016 ICMM adopted a Water Position Statement. The timescale for this goal will continue for as long as Gold Fields is in business. Gold Fields measures the success of this goal through the adoption of the ICMM Water Position Statement into company policy so that it aligns with global best practice on water management.	Gold Fields engagement with public policy makers is an ongoing process, which is supported by the Water Management Guideline. Gold Fields is also a member of the Water Working Group under the ICMM. Through the above-mentioned engagement, Gold Fields has made significant progress towards meeting the goal.

W8.1c

Please explain why you do not have any water-related targets or goals and discuss any plans to develop these in the future

Further Information

Module: Linkages/Tradeoff

Page: W9. Managing trade-offs between water and other environmental issues

W9.1

Has your organization identified any linkages or trade-offs between water and other environmental issues in its value chain?

Yes

W9.1a

Please describe the linkages or trade-offs and the related management policy or action

Environmental issues	Linkage or trade-off	Policy or action
Tarkwa and Damang's emissions have increased due to increased diesel consumption in generators.	Trade-off	Tarkwa and Damang's security of electricity supply is under threat, because of low dam levels in the Volta Basin. The mines source of electricity was until recently the Volta River Authority and the Electricity Company of Ghana, which is partly hydropower. Due to drought conditions, electricity supply at the mines was disrupted, which resulted in increased emissions due to increased usage of diesel generators. To address the threat of security of supply, both mines initiated a number of actions during 2016 as part of five-year energy security plan. These included making extensive use of diesel generators at Damang, amid relatively lower diesel prices, and reaching a power management agreement with the Energy Ministry for our Ghanaian mines. The most significant of these was the construction of two Genser Power owned gas turbine power plants to supply a total of 40MW of electricity to both mines under a power purchasing agreement. The total capacity of the Tarkwa plant (three 11MW units) and the Damang plant (five 5.5MW units) ensure a reliable supply to both operations. They were commissioned in December 2016 and will result in significant electricity cost savings. Tarkwa's electricity supply costs are expected to drop by about 14% and Damang's costs by about 30%. This trade-off is managed by Gold Fields' Climate Change Policy which speaks to investing in renewable, low-carbon energy solutions and energy efficiency initiatives to reduce greenhouse gas emissions.

Further Information

Module: Sign Off

Page: Sign Off

W10.1

Please provide the following information for the person that has signed off (approved) your CDP water response

Name	Job title	Corresponding job category
Nick Holland	Chief Executive Officer (CEO)	Chief Executive Officer (CEO)

W10.2

Please indicate that your organization agrees for CDP to transfer your publicly disclosed data regarding your response strategies to the CEO Water Mandate Water Action Hub.

Note: Only your responses to W1.4a (response to impacts) and W3.2c&d (response to risks) will be shared and then reviewed as a potential collective action project for inclusion on the WAH website.

By selecting Yes, you agree that CDP may also share the email address of your registered CDP user with the CEO Water Mandate. This will allow the Hub administrator to alert your company if its response data includes a project of potential interest to other parties using water resources in the geographies in which you operate. The Hub will publish the project with the associated contact details. Your company will be provided with a secure log-in allowing it to amend the project profile and contact details.

Yes

Further Information

CDP 2017 Water 2017 Information Request