Module: Introduction

Page: W0. Introduction

W0.1

Introduction

Please give a general description and introduction to your organization

AECI is a South African-based explosives and specialty chemicals company focused on providing products and services to a broad spectrum of customers in the mining, manufacturing and agricultural sectors. It has regional and international businesses in Africa, South East Asia, the USA and Australia. AECI was registered as a company in South Africa in 1924 and has been listed on the JSE since 1966.

The Group has five growth pillars. The focus of four of the growth pillars is on domestic growth as well as ongoing expansion outside South Africa in the Group's chosen strategic areas of Mining Solutions, Water Solutions, Agrochemicals and Food Additives and Ingredients. The fifth growth pillar focuses on the proactive management of a portfolio of specialty chemicals business.

Mining Solutions comprises AEL Mining Services ("AEL"), Senmin and Experse, Water Solutions is anchored in ImproChem and Agrochemicals in Nulandis. Lake Foods ("Lake") and Southern Canned Products ("SCP") constitute the Food Additives and Ingredients pillar.

AECI understands the importance of effectively managing water use and providing customers with products and services that allow them to do likewise. With this in mind, AECI has focused on reducing its water usage and realised an 8.5% reduction in 2016. Within AECI, ImproChem is a company that offers water, wastewater and process water solutions for customers across the spectrum of industries. ImproChem has an established footprint in Africa, where water remains a scarce resource.

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

Note that the following categories have been used to further define increase or decrease margins in data throughout this questionnaire. • "Much lower" pertains to data of decreasing trend which has a difference in 10% or more from the preceding financial years' data. • "Lower" pertains to data of decreasing trend which has a difference of more than 0% and less than 10% from the preceding financial years' data. • "About the same" pertains to data which has no difference from the preceding financial years' data. • "Higher" pertains to data of increasing trend which has a difference of more than 0% and less than 10% from the preceding financial years' data. • "Much higher" pertains to data of increasing trend which has a difference in 32% or more from the preceding financial years' data.

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	Important	Have not evaluated	Although AECI's operations are not necessarily significant water users, they still rely on sufficient amounts of good quality freshwater to operate. As such, water quality and quantity are important and AECI is focused on the effective management of this resource. One example is the recent introduction of an effluent reduction and water reuse programme within the Group. In terms of this programme, ImproChem will review water and effluent systems at AECI's facilities and, thereafter, it will facilitate optimisation projects to address instances of significant water usage and discharge volumes. Indirect water use has not yet been evaluated due to the current focus on direct water use and areas of regulatory compliance.

Water quality and quantity	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of recycled, brackish and/or produced water available for use	Neutral	Have not evaluated	Groupoperations do not use significant volumes of recycled, brackish and/or produced water. As such, the direct use importance rating has been classified as ‘neutral.’ Note that ImproChem's recently introduced effluent reduction and water reuse programme may result in an increase in the use of recycled water by the Group. Indirect water use has not yet been evaluated due to the current focus on direct water use and areas of regulatory compliance.

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	Water withdrawals are measured regularly, monitored and reported monthly to AECI Head Office by all facilities.
Water withdrawals- volume by sources	76-100	Water withdrawals by source are measured regularly, monitored by source (e.g. abstracted from river or municipality) and reported monthly to AECI Head Office by all facilities.
Water discharges- total volumes	76-100	Water discharges are measured regularly , monitored and reported monthly to AECI Head Office (total effluent in m3).
Water discharges- volume by destination	76-100	Total effluent is reported to AECI Head Office, not split up by destination.
Water discharges- volume by treatment method	76-100	Water discharges are reported to AECI Head Office by all facilities. AECI Head Office is aware of the treatment method applied to these discharges.
Water discharge quality data- quality by standard effluent parameters	76-100	Reported regularly in line with permit requirements.
Water consumption- total volume	1-25	Water consumption is not measured directly. It is calculated based on water withdrawals and discharges which are measured and reported to AECI Head Office by each facility.

Water aspect	% of sites/facilities/operations	Please explain
Facilities providing fully-functioning WASH services for all workers	Less than 1%	The importance of providing potable water, adequate sanitation and hygiene for all employees is recognised. All facilities ensure the availability of fully-functioning WASH services for employees. However, this is not reported separately.

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	380	Lower	Decrease of approximately 1% due to AEL Modderfontein accelerating recycling programmes in its operations, therefore abstracting less water from the dam.
Brackish surface water/seawater	0	Lower	No abstraction from surface water in 2016.
Rainwater	0	Not applicable	
Groundwater - renewable	0	Not applicable	This was incorrectly reported in the previous year and should have been reported as fresh surface water. No groundwater is abstracted by the Group's operations.
Groundwater - non-renewable	0	Not applicable	No groundwater is abstracted.
Produced/process water	0.27	Much lower	92% decrease in the Property segment due to reduced steam production as a result of reduced demand in 2016.
Municipal supply	2282.27	Much lower	12% decrease attributable to AEL's Modderfontein operations where recycling programmes were accelerated and leak management improved. A reduction in on-line time at the No.9 nitric acid plant also had an effect.
Wastewater from another organization	476.84	Higher	6.84% increase in the amount of wastewater used by Specialty Minerals South Africa business due to an increase in production.

Source	Quantity (megaliters/year)	How does total water withdrawals for this source compare to the last reporting year?	Comment
Total	3139.76	Lower	8.4% decrease attributable predominantly to AEL's Modderfontein operations where recycling programmes were accelerated and leak management improved. A reduction in on-line time at the No.9 nitric acid plant also had an effect.

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	1592	Much lower	This represents the effluent discharge from the Modderfontein complex which accounts for the majority of discharge to surface water in the Group. There was a reduction of approximately 13% due to various projects which reduced the amount of effluent discharged to surface water.
Brackish surface water/seawater	21.5	Much higher	Only the Property segment discharges effluent to sea. The effluent treatment plant in the Umbogintwini Industrial Complex treats effluent from mostly non-AECI companies (tenants), the increase of approximately 14% effluent discharged to sea was largely due to an increase in production output of one of the tenants.
Groundwater	0	Not applicable	No significant effluent discharged to groundwater
Municipal/industrial wastewater treatment plant	1120	Much higher	42.5% increase due to the effluent project at AEL Modderfontein where a significant amount effluent to fresh surface water has been diverted to sewer in efforts to reduce impacts on the river.
Wastewater for another organization	0	Not applicable	Group facilities do not provide waste water to other companies.

Destination	Quantity (megaliters/year)	How does total water discharged to this destination compare to the last reporting year?	Comment
Total	2732.87	Higher	3.6% increase due to an increase in the amount of effluent discharged to sea by the property segment and an increase in effluent to the sewer system by AEL Modderfontein.

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
3139.76	Much lower	Water consumption is calculated as water withdrawals minus water discharges. As such, it follows the same change trends as those in water withdrawals and water discharges.

W1.3

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

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

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	Limpopo (WMA)	Reg-Regulation of discharge quality/volumes leading to higher compliance costs	Higher operating costs	AEL draws water from a natural water resource and also discharges effluent into the same resource. AEL was issued with a Water Use Licence (WUL) by the Department of Water and Sanitation for the use of water from this natural water resource and the discharging of effluent into the same resource. The WUL specifies very stringent compliance conditions which require capital-intensive projects will need to be implemented in order to ensure compliance.	Short term	Approximately R8m has been spent during 2016 on the cooling tower purge water treatment plant, diversion of effluent to sewer, effluent neutralisation, and stormwater rehabilitation project.	Increased capital expenditure	Over the years, AEL has spent significant amounts on source reduction projects, external monitoring of plumes, pre-treatment, diversion of effluent, clean and dirty water separation, upgrading the liming station etc. To ensure compliance with the WUL, a specific compliance management project database has been developed. Key priority initiatives have been identified to facilitate compliance with the conditions of the WUL. The status of the implementation of these initiatives is monitored on a monthly basis by the AECI Executive Committee. Ongoing discussions take place with the Department of Water and Sanitation to ensure that initiatives for achievement of compliance are acceptable to that Department.

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	All facilities	The Group follows the risk management methodology comprising both bottom-up and top-down processes. The risk management methodology adopts a holistic approach in identifying, analysing, evaluating, treating, monitoring and reviewing risks. More specifically, the bottom-up identification and prioritisation process is supported by workshops with the management teams of the Group's businesses (facility-level). The top-down process (company-level) involves management at Corporate Head Office. The bottom-up process ensures

Risk assessment procedure	Coverage	Scale	Please explain
			that all potential risks are identified whilst the top-down process ensures that the risks are discussed at top management-level. Through this process, AECI ensures that the management of risks is an integral part of its corporate governance system and that it is integrated into its day-to-day business activities. The risk management methodology is supported by appropriate software.

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	Business unit	>6 years	

W2.4

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

Not evaluated

W2.4a

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

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
Important but not any immediate business priority	Yes	Next 24-36 months	There are plans in place to evaluate the impact of water risks on the company's growth strategy within the next two to three years. Note that AECI is already actively managing water issues and has plans in place to reduce water withdrawals and discharges. ImproChem recently started an effluent reduction and water optimisation programme for facilities in the Group. In addition, AECI offers products and services to customers that assist them in reducing their own water withdrawals and managing and/or reducing the impacts of their water-related risks.

W2.5

Please state the methods used to assess water risks

Method	Please explain how these methods are used in your risk assessment
Other: Internal company knowledge	Internal company knowledge is used to assess water risks. Personnel at Group facilities understand the manufacturing processes and their reliance on sufficient water of the right quality. Internal company knowledge relates to all of the Group's direct operations.

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	This applies to AEL, particularly to operations in Zambia and Modderfontein. It is factored into the water risk assessment.
Current water regulatory frameworks and tariffs at a local level	Relevant, included	AEL Modderfontein has stringent requirements set by Department of Water and Sanitation on water quality (groundwater and surface water). As such, this is factored into the water risk assessment.
Current stakeholder conflicts concerning water resources at a local level	Relevant, included	This applies to Modderfontein, particularly in terms of property development. As such, it is factored into the water risk assessment.
Current implications of water on your key commodities/raw materials	Relevant, not yet included	This is important, but not an immediate or material business priority. The current focus is on direct water use and the focus on indirect water use will commence going forward.
Current status of ecosystems and habitats at a local level	Not relevant, explanation provided	No significant issues have been identified in terms of water withdrawals and discharges on ecosystems and habitats. Risks associated with ecosystems and habitats, if any, are managed by the individual facilities.
Current river basin management plans	Not relevant, explanation provided	This is not a material business issue and is managed at a facility level where applicable.
Current access to fully-functioning WASH services for all employees	Not relevant, explanation provided	AECI accepts the importance of providing potable water, adequate sanitation and hygiene for all employees. All facilities ensure the availability of fully-functioning WASH services for all employees. This is integrated into the day-to-day operations of the facilities.
Estimates of future changes in water availability at a local level	Not relevant, explanation provided	Estimates of future potential regulatory changes at a local level are considered in risk assessments.
Estimates of future potential regulatory changes at a local level	Not relevant, explanation provided	Estimates of future potential regulatory changes at a local level are considered in risk assessments. One example would be any changes to the WUL at AEL Modderfontein.
Estimates of future potential stakeholder conflicts at a local level	Not relevant, explanation provided	This has not been highlighted as a material business issue. Regular engagement with stakeholders take place. For example, local communities attend the Community Awareness and Emergency Response committee meetings where inter alia material water issues are discussed. However, should a risk be identified, it would need to be managed through engagement with stakeholders.

Issues	Choose option	Please explain
Estimates of future implications of water on your key commodities/raw materials	Not relevant, explanation provided	This has not been highlighted as a material business issue. The current focus is on direct water use and the focus on indirect water will commence going forward.
Estimates of future potential changes in the status of ecosystems and habitats at a local level	Not relevant, explanation provided	This is not a material business issue and is assessed at facility level where applicable.
Scenario analysis of availability of sufficient quantity and quality of water relevant for your operations at a local level	Not relevant, explanation provided	Scenario analysis of the availability of sufficient quantity and quality of water relevant to the Group's facilities at a local level is considered in risk assessments.
Scenario analysis of regulatory and/or tariff changes at a local level	Not relevant, explanation provided	Scenario analyses of regulatory changes and/or tariff changes at a local level are considered in our risk assessments. One example would be any changes to the WUL at AEL Modderfontein. Another would be increases in prices of water for the Group's facilities.
Scenario analysis of stakeholder conflicts concerning water resources at a local level	Not relevant, explanation provided	This has not been identified as a material business issue. Regular engagement with stakeholders take place. For example, local communities attend the Community Awareness and Emergency Response committee meetings where inter alia material water issues are discussed. However, should a risk be identified, it would need to be managed through engagement with stakeholders.
Scenario analysis of implications of water on your key commodities/raw materials	Not relevant, explanation provided	This has not been highlighted as a material business issue. The current focus is on direct water use and the focus on indirect water will commence going forward.
Scenario analysis of potential changes in the status of ecosystems and habitats at a local level	Not relevant, explanation provided	This has not been identified as a material business issue.
Other		

W2.7

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

Stakeholder	Choose option	Please explain
Customers	Relevant, not yet included	Customers are not yet factored into risk assessments as water risks in the value chain are not an immediate business priority. We are currently focusing on direct water use and will start to focus on indirect water use going forward.
Employees	Not relevant, explanation provided	Employees require fully-functioning WASH services. Group facilities ensure that these services are provided to their employees. Other material water issues in the business relate to regulation and pricing and, therefore, are not necessarily associated with employees. An example would be ensuring compliance with the WUL requirements.
Investors	Relevant, included	Investors are factored into water risk assessments. Information is made available to investors on related water withdrawals, discharges and risks associated with water. This is done through the Integrated Annual Report and the Water Carbon Disclosure Project. Investors are given the opportunity to engage with AECI on any risks.
Local communities	Relevant, included	Where there may be material water issues, local communities are involved in the risk assessment process. For example, local communities attend the Community Awareness and Emergency Response committee meetings where material water issues are discussed.
NGOs	Not relevant, explanation provided	There are no NGOs linked to the material water issues identified and no NGOs have expressed concerns with regards water use by Group facilities.
Other water users at a local level	Not relevant, explanation provided	The current focus by Group on direct water use and the focus on interaction with water users at a local level will commence going forward where a risk is identified in this regard.
Regulators	Relevant, included	The Department of Water and Sanitation is engaged regularly in terms of the material issue of compliance with the WUL.
River basin management authorities	Relevant, included	The Department of Water and Sanitation is engaged regularly in terms of the material issue of compliance with the WUL. River basin management authorities are engaged as and when required.
Statutory special interest groups at a local level	Not relevant, explanation provided	No statutory special interest groups have expressed concern regarding AECI’s water usage and management practices.
Suppliers	Relevant, not yet included	Suppliers are not yet factored into risk assessments as water risks in the value chain are not an immediate business priority. We are currently focusing on direct water use and will start to focus on indirect water use going forward.
Water utilities at a local level	Relevant, included	Water utilities are engaged as and when required.
Other		

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 only

W3.2

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

AECI uses a consequence scale to rate risks. The ratings are Minor, Moderate, Serious, and Major. Substantive change in the business' operations, revenue or expenditure from water risks can therefore be aligned with the Serious and Major ratings per the consequence scales:

Serious rating: Measurable environmental harm – medium-term recovery.High potential for complaints from stakeholders and community. This represents > R 20m-50m loss or gain

Major rating: Prolonged environmental impact. High-profile community concerns raised – requiring significant rectification measures. Government agency inquiry.

This represents > R50m – R120m (Loss or gain)

The above ratings apply to direct operations at this stage and are reviewed on an ad-hoc basis.

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	Limpopo (WMA)	1	Less than 1%	AEL is the most significant user of water in the Group, but is not necessarily a significantly water-intensive business. The most significant risk would relate to water quality, particularly in terms of the stringent conditions imposed by the WUL issued by the Department of Water and Sanitation. This risk is actively managed by AECI through engagement with the Department of Water and Sanitation and through the implementation of various initiatives.

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	Limpopo (WMA)	% global revenue	21-30	As stated, the most significant risk would relate to AEL's stringent WUL conditions. This risk is actively being managed by AECI through engagement with Department of Water and Sanitation and through the implementation of various initiatives.

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	Limpopo (WMA)	Regulatory-Regulation of discharge quality/volumes leading to higher compliance costs	Higher operating costs	AEL discharges effluent into a natural water resource. The most critical aspect related to this water use is the WUL that has been issued by the Department of Water and Sanitation. The WUL specifies very stringent compliance	Current-up to 1 year	Probable	Medium	Increased capital expenditure	Total amount spent during 2016 was approximately R8m.	This risk is managed through engagement with the Department of Water and Sanitation on the effluent discharge quality, groundwater quality parameters and target levels

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
				conditions which will require capital intensive projects to be implemented.						and through the implementation of projects to ensure compliance with the WUL. Examples of WUL-related projects approved to date are a cooling tower purge water treatment plant, diversion of effluent to the strong effluent system, a neutralisation plant etc.
South Africa	Other: Various river basins	Regulatory-Higher water prices	Higher operating costs	If water prices increase significantly, operating costs will increase and it is possible that some products would not be able to be cost-effectively manufactured. This would result in a decrease in product	1-3 years	Probable	Medium	Engagement with public policy makers Increased capital expenditure	The cost of the projects to be implemented by ImproChem is expected to be greater than R50m.	This risk is managed through engagement with local authorities on water pricing and through the implementation of initiatives that increase water efficiency and/or offer alternative

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
				availability and a subsequent loss of revenue.						sources of water. An example would be the effluent reduction and water re-use programme in the Group that is being implemented by ImproChem. The first project was initiated at Chempark in Chloorkop, Johannesburg in early 2017.

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

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
Other: Focus on direct operations	AECI understands that water use in the supply chain may be significant and may pose a risk to its operations. However, it has been focusing primarily on effective management of its own water usage, mainly through the implementation of the ImproChem effluent reduction and water reuse programme. It is anticipated that greater focus will be placed on indirect water usage going forward once direct water use management has been optimised. Note that AECI has focused and continues to focus on the development of new products for its customers to assist its customers in reducing their own water withdrawals, effluent discharges and the impacts of their own water-related risks.

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
South Africa	Improved water efficiency	AECI has identified opportunities for water recycling, reuse and efficiency. To realise these opportunities, AECI introduced the Green Gauge Programme which ran up to the end of 2015. In this programme, water assessments were conducted at 15 of Group manufacturing facilities. Several opportunities were identified and implemented. The cost of conducting the water assessments was in excess of R1m. Note that the Green Gauge Programme has ended and has been replaced with the Going Green Programme. It is AECI's intention that further water recycling,	1-3 years	

Country or region	Opportunity	Strategy to realize opportunity	Estimated timeframe	Comment
		reuse and efficiency will be identified and implemented as part of this programme. ImproChem recently initiated an effluent reduction and water optimisation programme for facilities within the Group. The first project was initiated at Chempark in Chloorkop, Johannesburg in early 2017. The cost of the project is estimated to be in the region of R50 million.		
South Africa	Sales of new products/services	Rising costs, tighter regulations and concerns about adequate availability in many geographies, prompting companies to view water conservation as an imperative. AECI believes that this is an immediate opportunity, especially since the Group operates in countries that are considered water scarce. In this regard, AECI offers both products and services to customers to assist them in reducing the water withdrawals and/or mitigate the impact of water shortages. More specifically, ImproChem, AECI's Water Solutions business, is likely to benefit from this. This increased demand will most likely result in financial benefits for the Group. In addition, AECI has developed various products such as Savannah grazing supplements etc. that assist customers to reduce the impact of water shortages. Savannah grazing supplements, for example, provide much-needed nutrients to livestock that are not necessarily getting full nutritional value from the veld grass due to drought conditions.	1-3 years	

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	Limpopo	AEL Modderfontein	1429	Lower	Approximately 5% lower than previous year due to recycling programmes and improvement in leak management.

Further Information

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	0	125	0	0	0	0	1303	0	

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	1869	Lower	12% lower than previous year due to: 1. Commissioning of the Cooling Tower Purge Water Treatment plant at AEL Modderfontein which completed in the latter part of 2016. More water is now recycled for use through the cooling towers. 2. The neutralisation project was commissioned in March 2016. Effluent no longer flows into the natural environment from the Pentolite plant and is now being diverted to the lagoons, also at AEL Modderfontein.

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	1591	278	0	0	0	External sources of effluent from industries also contribute to the total discharge into fresh surface water.

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	0	This is our first year of measurement	Last year's consumption was reported as withdrawal so it is not possible to compare the consumption. Some water is consumed for heating and cooling. No water exits with the product. External sources of effluent from industries also contribute to the total discharge.

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	ISAE 3000 standard
Water withdrawals- volume by sources	Not verified	Water withdrawals by source were not verified.
Water discharges- total volumes	Not verified	Water discharges were not verified.
Water discharges- volume by destination	Not verified	Water discharges by destination were not verified.
Water discharges- volume by treatment method	Not verified	Water discharges by treatment method were not verified.
Water discharge quality data- quality by standard effluent parameters	51-75	The water discharge quality data relating to discharge into surface water is reported to the Department of Water and Sanitation. This report is subject to both internal and external audits.
Water consumption- total volume	Not verified	Water consumption has been calculated as water withdrawals minus water discharges. However, it has not been verified.

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	Sporadic-as important matters arise	The Social and Ethics Committee considers water specifically in relation to the impacts of the AECI Group's activities and those of its products and services.

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
Tighter operational performance standards	During 2011 and 2012, AECI embarked on an extensive environmental targeting process called the Green Gauge Programme which focused on resource efficiency related to water and energy. The water-related component focused on water conservation and demand management to ensure that the Group addresses the management of water in a consistent and integrated manner. Targets for a reduction in water withdrawals were set by the Group's facilities (absolute and specific) and management teams measured themselves on a quarterly basis against these targets. Initiatives were implemented to reduce water withdrawals. The Green Gauge Programme was completed and has been replaced with the Going Green Programme which aims to achieve further reductions in water use.

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	One of AECI's subsidiaries discharges effluent into a natural water resource. The most critical aspect related to this water use is the Water Use Licence (WUL) that has been issued by the Department of Water and Sanitation. The WUL specifies very stringent compliance conditions which will require capital intensive projects to be implemented to ensure compliance.

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
Incorporated within group environmental, sustainability or EHS policy Other: Incorporated within group environmental, sustainabiilty or EHS policy	AECI has a Group-wide Safety, Health and Environmental policy. Water is one issue governed by this policy.

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
-22.54	348	CAPEX was significantly higher in 2016 due to completion or commencement of the following projects relating to the Water Use Licence: 1. Effluent treatment feasibility study 2. Waste Emulsion Processing 3. Rerouting W5A effluent to sewer 4. Treatment plant for Cooling Tower purge 5. Sewerage line replacement 6. Ammonia/Dets stormwater Drain rehabilitation 7. Effluent neutralisation plant 8. Effluent filtration

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, goals only

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

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
Other: Water optimisation and effluent reduction	Other: Regulatory, cost savings, water saving	One of AECI's companies, Improchem, is rolling out a water optimisation and effluent reduction programme at Group facilities. The goal is to reduce the amount of potable water purchased and reduce the amount of effluent discharged. The aim is also to achieve compliance with the WUL requirements.	The project kicked off in 2017.
Sustainable agriculture	Sales of new products/services	There is a company-wide focus on Green Chemistry, particularly for customers in the agricultural sector. AECI aims to identify innovative products that can, for example, enable plants to withstand drought conditions.	Significant progress was made in 2016 towards achieving this goal. For example, Improchem, AECI's water solutions division, provides water treatment chemicals and services to municipalities and water boards such as Rand Water. Due to the recent drought, the demand for chemicals required to treat turbidity decreased resulting in reduced revenue for Improchem in this area. However, opportunities arose due to, for example, an increase in other contaminants causing a concern relating to water taste and odour and treatment of borehole water and grey water.

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
AECI accepts that there is a link between water and energy usage, particularly for operations that use water and energy for heating and cooling. An initiative focused on optimising the energy efficiency of boilers or chillers may also have the added benefit of reducing water usage. The same is true for an initiative focused on optimising water usage.	Linkage	Over the past few years, Acacia (AECI's property segment) has been converting its boilers from coal to gas. The use of gas increases efficiency, reducing energy consumption and GHG emissions. The use of more efficient boilers may also reduce water usage.

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
Mark Dytor	Chief Executive	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