W0. Introduction

W0.1

(W0.1) Give a general description of and introduction to your organization.

Profile and Strategy

AECI is a diversified Group of 16 companies. It is based in South Africa and has an international footprint. It operates in 26 countries on six continents — Africa, Europe, Asia's South Eastern region, North America, South America and Australia.

Products and services are essential inputs in the businesses of a broad range of customers as follows:

• the global mining sector

• the plant and animal health industry in Europe, the USA and Africa

• the water treatment market in Africa

• the food and beverage, road infrastructure and general industrial sectors, mainly in Southern Africa. Although we have a presence in 26 countries, we only report in this submission on those countries in which we have manufacturing operations.

In line with this strategy, businesses were managed in five growth pillars in the year under review: Mining Solutions (AEL Intelligent Blasting, Experse and Senmin), Water & Process (ImproChem), Plant & Animal Health (Nulandis and Schirm), Food & Beverage (Lake Foods and Southern Canned Products), and Chemicals (Chemfit, Chemical Initiatives, ChemSystems, Industrial Oleochemical Products, Much Asphalt and SANS Technical Fibers). Included in this pillar is the Specialty Minerals South Africa joint venture. These pillars are AECI's key reporting segments. More information is provided on each of these pillars below:

*· **Mining Solutions:** these businesses provide a mine-to-mineral solution for the mining sector internationally. The offering includes surfactants for explosives manufacture, commercial explosives, initiating systems and blasting services right through the value chain to chemicals for ore beneficiation and tailings treatment*

*· **Water & Process:** ImproChem provides integrated water treatment and process chemicals, and equipment solutions, for a diverse range of applications in Africa. These include, inter alia, public and industrial water, desalination and utilities*

*· **Plant & Animal Health:** Nulandis manufactures and supplies an extensive range of crop protection products, plant nutrients and services for the agricultural sector in Africa. Schirm, based in Germany, is a contract manufacturer of agrochemicals and fine chemicals with a European and US footprint. It is the premier provider of external agrochemical formulation services in Europe.*

*· **Food & Beverage:** the businesses in this pillar supply ingredients and commodities to the dairy, beverage, wine, meat, bakery, health and nutrition industries. The other main activity is the manufacture and distribution of a broad range of juice-based products and drinks, including formulated compounds, fruit concentrate blends and emulsions.*

*· **Chemicals:** AECI's Chemicals businesses supply chemical raw materials and related services for use across a broad spectrum of customers in the manufacturing, infrastructure and general industrial sectors, mainly in South Africa and in other Southern African countries. SANS Technical Fibers is based in the USA.*

AECI also has a property division, Acacia Real Estate. Its main activities are the management of the Company's leasing portfolio and the provision of services at the Umbogintwini Industrial Complex in KwaZulu-Natal. Together with Head Office support functions, including the treasury, Acacia Real Estate constitutes the Group's sixth reporting segment, namely Property & Corporate.

All business activities are underpinned by the Group's BIGGER values — of being Bold, Innovative, Going Green and being Engaged and Responsible.

Going Green and Climate Change

AECI is committed to driving solutions for a sustainable future. In line with our value of Going Green, we aim to provide sustainable alternatives for our customers, work smarter and conserve resources and energy, and take into account how our business activities and processes impact people and the environment. With this in mind we rolled out our new Going Green programme, aligned with United Nations Sustainable Development Goals (UN SDGs). The aim is to minimise environmental impact and drive a beyond compliance mind-set in the Group's own operations and across the value chain. This will boost AECI's visibility as a Company of Choice.

Total water withdrawals for the 2019 financial year (1 January to 31 December) were 3 454 ML. Withdrawals increased by 3.2% owing mainly to the inclusion of Schirm and

Much Asphalt's data for the full 12-month period. These businesses were incorporated into the Group in February and April 2018, respectively.

The following water-related issues were identified among our most material matters:

a) inadequate supply of water of the requisite quality, leading to production interruptions in South Africa, and

b) extreme or unpredictable weather events (failure to mitigate and adapt to the effects of climate change, leading to drought or floods, water shortages and reduced mining and agricultural output).

As such, we continue to focus on minimising and managing water-related risks while maximising opportunities.

W-CH0.1a

(W-CH0.1a) Which activities in the chemical sector does your organization engage in?

Bulk organic chemicals
Bulk inorganic chemicals
Specialty organic chemicals
Specialty inorganic chemicals

W0.2

(W0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date
Reporting year	January 1 2019	December 31 2019

W0.3

(W0.3) Select the countries/areas for which you will be supplying data.

Australia
Botswana
Burkina Faso
Congo
Germany
Ghana
Guinea
Indonesia
Mali
Senegal
South Africa
United Republic of Tanzania
United States of America
Zambia
Zimbabwe

W0.4

(W0.4) Select the currency used for all financial information disclosed throughout your response.

ZAR

W0.5

(W0.5) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.

Companies, entities or groups over which financial control is exercised

W0.6

(W0.6) Within this boundary, are there any geographies, facilities, water aspects, or other exclusions from your disclosure?

No

W1. Current state

W1.1

(W1.1) Rate the importance (current and future) of water quality and water quantity to the success of your business.

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Important	Direct use - Good quality freshwater is used at all manufacturing facilities within the Group. As such, we have selected 'vital.' AEL Modderfontein, for example, is the most significant water user within the Group. It uses water in the manufacture of Nitric Acid and Ammonium Nitrate Solution. An absence of sufficient amounts of freshwater could impact on production. It is expected that our future dependency on freshwater will always be critical to our operations. However, we may see a reduced dependency on freshwater as we continue to look for areas of efficiency. Indirect use – For some of our suppliers and customers, having sufficient amounts of good quality freshwater is vital. Freshwater is used in the manufacturing processes for some of our suppliers and customers. For example, some of our operations are dependent on Eskom for the supply of electricity. Eskom, in turn, is dependent on sufficient amounts of good quality freshwater for the generation of this electricity. We have selected 'important' as the rating as our suppliers and customers are not all equally reliant on freshwater. It is expected that freshwater will always be important to some of our suppliers and customers.
Sufficient amounts of recycled, brackish and/or produced water available for use	Neutral	Neutral	Direct use - Group operations do not use significant volumes of recycled, brackish and/or produced water. As such, the direct use importance rating has been selected as 'neutral.' This may change based on future water dependency especially in areas that are water scarce, such as the Western Cape. Our dependency on recycled water may increase in the future, with more of our businesses implementing water reuse and recycling projects. For example, AEL has introduced recycled process water into its manufacturing facilities at Modderfontein. The water treatment solution has been provided by ImproChem. Indirect use – Some of our suppliers and customers use recycled or brackish water. For example, we use coal in some of our operations to generate steam. Some coal mines are dependent on recycled water. We have selected 'important' as the rating as our suppliers and customers are not all equally reliant on recycled water. Going forward, we expect the dependency of our suppliers and customers on recycled and brackish water to increase as they look for alternatives to freshwater supply. ImproChem, for example, installed and secured service contracts for four desalination plants in prior years.

W1.2

(W1.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100%	Water withdrawals are measured regularly, monitored and reported monthly to AECI Head Office by all facilities (100%). Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked regularly. Readings are also checked against municipal invoices on a monthly basis and are verified independently. Information is reported internally and to the regulatory authorities on a monthly and/or annual basis, as required..
Water withdrawals – volumes by source	100%	Water withdrawals by source are measured regularly, monitored and reported monthly to AECI Head Office by all facilities (100%). This is done for all sources. Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked regularly. Readings are also checked against municipal invoices on a monthly basis and are verified independently. Information is reported internally and to the regulatory authorities on a monthly and/or annual basis, as required.
Entrained water associated with your metals & mining sector activities - total volumes [only metals and mining sector]	<Not Applicable>	<Not Applicable>
Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector]	<Not Applicable>	<Not Applicable>
Water withdrawals quality	100%	Water quality is measured and monitored for all facilities (100%) that draw from fresh water resources. Quality is not measured and monitored for withdrawals from municipalities. Relevant here, therefore, is the Property business which draws water from a river. The water quality is monitored by an accredited laboratory on a daily basis. This information allows adjustments to be made in water treatment, if required.
Water discharges – total volumes	100%	Discharges are measured regularly, monitored and reported monthly to AECI Head Office by all facilities (100%) where discharge occurs. Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked on a regular basis. Readings are also compared against municipal invoices on a monthly basis. Information is reported internally and to regulatory authorities on a monthly and/or annual basis, as required.
Water discharges – volumes by destination	100%	Discharges are measured regularly, monitored and reported monthly to AECI Head Office by all facilities (100%) where discharge occurs. The destination of the discharge is known and discharges are measured and monitored by destination. Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked on a regular basis. Readings are also compared against municipal invoices on a monthly basis. Information is reported internally and to regulatory authorities on a monthly and/or annual basis, as required.
Water discharges – volumes by treatment method	100%	Discharges are measured regularly, monitored and reported monthly to AECI Head Office by all facilities where discharge occurs (100%). The treatment method of the discharge is known by destination and discharges are measured and monitored by destination. Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked on a regular basis. Readings are also compared against municipal invoices on a monthly basis. Information is reported internally and to regulatory authorities on a monthly and/or annual basis, as required.
Water discharge quality – by standard effluent parameters	100%	Water discharge quality is measured and monitored for all facilities (100%) where discharge occurs. Water discharge quality is analysed by accredited laboratories on a daily or weekly basis and reported to the regulatory authorities on a monthly and/or annual basis, as required. Analyses conducted internally are compared to analyses conducted by the regulatory authorities.
Water discharge quality – temperature	Not relevant	This is not relevant to our businesses. We do not have any facilities where the temperature of discharges is of concern. We do not have any water use licences that require monitoring and reporting on water discharge temperature.
Water consumption – total volume	100%	Given the complexity of measuring water consumption (such as evaporation, for example), it is not always measured directly. Most our operations calculate consumption from a water balance, using measured withdrawals and discharges. All water withdrawals and discharges are measured regularly, monitored and reported to AECI Head Office by each facility. Consumption is measured and monitored regularly as a result.
Water recycled/reused	76-99	This is monitored by some businesses, where water is reused or recycled (75%-100%). Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked regularly. This information is reported to and consolidated at AECI Head Office level.
The provision of fully-functioning, safely managed WASH services to all workers	100%	The provision of potable water, adequate sanitation and hygiene for all employees is a priority. All facilities ensure the availability of fully functioning WASH services for their employees and site contractors. Although not metered by any specific equipment, provision is monitored on a daily basis by all facilities to ensure that there are no interruptions in supply.

W1.2b

(W1.2b) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, and how do these volumes compare to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	3454.44	Higher	Water withdrawals are measured regularly, monitored and reported monthly to AECI Head Office by all facilities. Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked regularly basis. Water withdrawals by Group operations increased by 3.2%, from 3 347.00 ML in 2018 to 3 454.44 ML in 2019, owing mainly to the inclusion of Schirm and Much Asphalt's data for the full 12-month period. These businesses were incorporated into the Group in February and April 2018, respectively. It is expected that volumes will reduce in future with the launch of the new Going Green programme and associated interventions. Water is a key focus area of Going Green For all responses, we have used the following rating scale – • "Much lower" pertains to data of decreasing trend which has a difference of 20% or more from the preceding financial years' data. • "Lower" pertains to data of decreasing trend which has a difference of more than 1% and less than 20% from the preceding financial years' data. • "About the same" pertains to data which has no difference or a difference of less than 1% from the preceding financial years' data. • "Higher" pertains to data of increasing trend which has a difference of more than 1% and less than 20% from the preceding financial years' data. • "Much higher" pertains to data of increasing trend which has a difference of 20% or more from the preceding financial years' data.
Total discharges	2221.36	Higher	Discharges are monitored by all facilities where they occur. Monitoring is at facility level and is undertaken on a daily basis using equipment that is calibrated and checked regularly. Discharges by the Group's operations increased by 2.19%, from 2 173.70 ML in 2018 to 2 221.36 ML in 2019. This is in line with the increase in the volume of withdrawals and due mostly to increased runoff at AEL Modderfontein as a result of higher rainfall in the year. Further reductions in discharges are anticipated in future given that water optimisation and effluent reduction projects will be implemented at certain facilities in the next five to 10 years.
Total consumption	1233.88	Higher	Consumption is calculated using a water balance as it is difficult to measure it directly. It is assumed that the difference between total water withdrawals and total discharges represents total water consumption. The number year-on-year was higher due to increased withdrawal volumes as a consequence ofthe inclusion of Schirm and Much Asphalt's data for the full 12-month period. These businesses were incorporated into the Group in February and April 2018, respectively. Going forward, we anticipate that consumption will reduce in line with withdrawals.

W1.2d

(W1.2d) Indicate whether water is withdrawn from areas with water stress and provide the proportion.

	Withdrawals are from areas with water stress	% withdrawn from areas with water stress	Comparison with previous reporting year	Identification tool	Please explain
Row 1	Yes	11-25	About the same	WRI Aqueduct	WRI Aqueduct and internal Company knowledge are used to identify stressed areas from which we source water. In terms of WRI Aqueduct, various indicators are used to classify areas as water stressed. This includes inter-annual variability, flood occurrence, drought severity and regulatory risks. We also use Company knowledge, which is informed by the assessment and monitoring of the broader context in which the Group operates in terms of the political and economic landscape, industry, labour and financial market trends. To understand the context in which the Group operates, we analyse research materials and industry benchmarking studies by institutions such as the World Economic Forum, the World Bank and Control Risk.

W1.2h

(W1.2h) Provide total water withdrawal data by source.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	889	Higher	Water withdrawals are measured regularly, monitored and reported monthly to AECI Head Office by all facilities. Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked regularly. The volume withdrawn was 1.99% higher than in the previous year due to an increase in water withdrawals by Chemical Initiatives. The business reported that this was due to an increased number of shutdowns and start-ups in 2019. Prior to start- up, water is used to clean equipment. It is anticipated that water withdrawals from fresh surface water will reduce going forward as we look for alternative water sources and focus on optimising water usage.
Brackish surface water/Seawater	Not relevant	<Not Applicable>	<Not Applicable>	Not applicable as no Group businesses withdraws any brackish surface water or seawater for use in operations. This is not anticipated to change going forward.
Groundwater – renewable	Relevant	38.8	About the same	Water withdrawals are measured regularly, monitored and reported monthly to AECI Head Office by all facilities. Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked regularly. Renewable groundwater is used by AEL's operations in countries outside South Africa. This resource is also used by Much Asphalt. There was a 0.10% decrease in withdrawals of renewable groundwater year-on-year due to the inclusion of Much Asphalt for the full 12 months of 2019. Much Asphalt was acquired in April 2018. Going forward, there may be an increase in water withdrawn from groundwater (renewable) sources as we explore options to alleviate pressure on municipal water networks.
Groundwater – non-renewable	Not relevant	<Not Applicable>	<Not Applicable>	Not applicable as no Group business withdraws water from non-renewable groundwater sources. This is not anticipated to change going forward.
Produced/Entrained water	Not relevant	<Not Applicable>	<Not Applicable>	Not applicable as none of our businesses make use of produced water. This is not anticipated to change going forward.
Third party sources	Relevant	2526.64	Higher	This refers to water obtained from municipalities and from other third parties. Water withdrawals are measured regularly, monitored and reported monthly to AECI Head Office by all facilities. Monitoring is conducted at a facility level on a daily basis using equipment that is calibrated and checked on a regular basis. In spite of the implementation of water efficiency initiatives, there was a 3.7% increase in withdrawals from third parties, owing mainly to the inclusion of Schirm and Much Asphalt's data for the full 12-month period. These businesses were incorporated into the Group in February and April 2018, respectively. We anticipate that our water from third party sources will reduce further going forward given the launch of the new Going Green programme in the reporting year. One of the key focus areas of this programme is water. Under this programme, we will continue to implement water-related projects going forward.

W1.2i

(W1.2i) Provide total water discharge data by destination.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Relevant	1040.76	Much higher	Discharges are measured regularly, monitored and reported monthly to AECI Head Office by all facilities where they occur. Monitoring is conducted at facility level on a daily basis using equipment that is calibrated and checked regularly. Readings are also compared against municipal invoices on a monthly basis. Information is reported internally and to regulatory authorities on a monthly and annual basis, as required. Water discharged to fresh surface water refers to effluent discharged to a river course under a Water Use Licence (WUL) for the AEL Modderfontein facility. Discharges to fresh water increased by 21.22% this year, from 858.60 ML to 1 040.76 ML. This resulted from higher runoff at the site due to increased rainfall. Runoff is reported in discharges to fresh surface water. Going forward, we anticipate that these discharges will reduce as we continue to implement effluent treatment projects.
Brackish surface water/seawater	Relevant	23.14	Higher	This refers to discharge to sea from our Property business. Monitoring is conducted at on a daily basis using equipment that is calibrated and checked on a regular basis. Discharges increased by 10.22%, from 20.99 ML in the 2018 financial year to 23.14 ML in the 2019 financial year. This increase is due to changes in the make-up of tenants operating within the complex as well as increased water withdrawals by Chemical Initiatives. Our discharges are dependent on the discharges from tenants. As such, it is difficult to forecast discharges going forward as we have limited control over volumes discharged. However, we expect to see a reduction going forward as our tenants focus on reducing withdrawals and associated discharges.
Groundwater	Not relevant	<Not Applicable>	<Not Applicable>	There is no discharge to groundwater. This is not anticipated to change going forward.
Third-party destinations	Relevant	1157.46	Lower	This refers to effluent discharged to a municipal sewer. Discharges are measured regularly, monitored and reported monthly to AECI Head Office by all facilities that have discharges. Monitoring is conducted at a facility level on a daily basis using equipment that is calibrated and checked on a regular basis. Readings are also compared against municipal invoices on a monthly basis. Information is reported internally and to authorities on a monthly and annual basis where required. Discharges to municipal treatment plants decreased by 10.56%, from 1 294.11 ML in the 2018 financial year to 1 157.46 ML in 2019 financial year. This was mostly due to efforts to reduce effluent made by our operations and improved reporting. We anticipate a reduction in discharges going forward as we continue to implement effluent treatment projects and look at ways to reuse and recycle water. The Group is working towards zero effluent discharges from key sites in the longer term.

W-CH1.3

(W-CH1.3) Do you calculate water intensity for your activities in the chemical sector?

Yes

W-CH1.3a

(W-CH1.3a) For your top five products by production weight/volume, provide the following water intensity information associated with your activities in the chemical sector.

Product type
Specialty inorganic chemicals

Product name
Sulphuric acid

Water intensity value (m3)
3.17

Numerator: water aspect
Total water withdrawals

Denominator
Ton

Comparison with previous reporting year
Higher

Please explain
Sulphuric acid is manufactured by Chemical Initiatives and supplied to a diverse range of customers. Water intensity is calculated by dividing the volume of water withdrawn by the tonnes of acid produced. Water intensity is monitored at business level to track costs (i.e. to identify areas of poor efficiencies and put in place measures to achieve optimal efficiencies). The water intensity associated with sulphuric acid production increased by 8.87% between 2018 and 2019. Owing to a higher number of shutdowns and start-ups in the year under review. Prior to starting up, water is required for cleaning of equipment. It is anticipated that water intensity for sulphuric acid production will decrease going forward as Chemical Initiatives continues to look at ways to reduce withdrawals.

Product type
Specialty inorganic chemicals

Product name
Nitric Acid

Water intensity value (m3)
5.43

Numerator: water aspect
Total water withdrawals

Denominator
Ton

Comparison with previous reporting year
Lower

Please explain
Nitric acid is manufactured by AEL . This acid is then used in the manufacture of explosives for the mining sector. Water intensity is calculated by dividing the total volume of water withdrawn by the tonnes of nitric acid produced. Water intensity is monitored at the Modderfontein facility to identify areas of poor efficiencies and put in place measures to redress these. The water intensity associated with nitric acid production decreased by 12.19% between 2018 and 2019. The decrease can be attributed to the following – a) decreased withdrawals from municipal supply b) no withdrawals from the purified sewerage effluent c) decreased withdrawals from fresh surface water. We anticipate further decreases going forward as the business continues to focus on reducing its withdrawals.

Product type
Specialty inorganic chemicals

Product name
Flocculants, frothers, collectors, depressors

Water intensity value (m3)
1.6

Numerator: water aspect
Total water withdrawals

Denominator
Ton

Comparison with previous reporting year
Higher

Please explain
Senmin is a manufacturer and supplier of mining chemicals used in the beneficiation of a wide range of ores such as platinum, copper, zinc and coal. It also manufactures and supplies polyacrylamide for tailings treatment. The intensity is calculated by dividing the total volume of water withdrawn by the total amount of product produced. Water intensity is monitored at Senmin's facilities to identify areas of poor efficiencies and put in place measures redress these. Water intensity increased by 2.16% year-on-year owing to pressure washing of the plant and equipment. It is anticipated that water intensity will decrease going forward as we put in place initiatives to reduce water withdrawals in line with the new Going Green programme.

W1.4

(W1.4) Do you engage with your value chain on water-related issues?
Yes, our customers or other value chain partners

W1.4c

(W1.4c) What is your organization's rationale and strategy for prioritizing engagements with customers or other partners in its value chain?

AECI engages with a broad spectrum of stakeholders. Key stakeholders include employees, trade unions, internal and external auditors, shareholders and fund managers, financiers, customers, suppliers, technology and business partners, local and national government structures, industry bodies, neighbouring communities, special interest groups and the media. All engagements are viewed as being significant. Our engagement with government and communities is discussed below -

· Government: Engaging with relevant authorities is a business imperative. Such engagement may range from advocacy initiatives to cooperative work

Engagement typically takes place in meetings or through the provision of written commentary on policies and regulations. We also engage with government through CAIA, the industry association for the chemicals industry. The success of engagement is measured through our understanding of the regulations, our preparedness to comply and our compliance with the regulations.

· Communities - We engage with our communities on water-related issues. Engagement is typically done through meetings with community members. At Modderfontein and Chloorkop, AEL, C.I., ChemSystems and Nulandis form an integral part of the functioning of a Community Awareness and Emergency Response Committee. At the Umbogintwini Industrial Association, issue-specific stakeholder and community liaison forums deal with water quality etc. Engagement with communities is also typically done through organised projects. One example was the project in Hammanskraal in northern Gauteng where we installed a water filtration solution and provided food gardens. Success is measured by whether the communities are comfortable with the actions we take to minimise our impact on the environment.

All engagement is subject to the Group's Code of Ethics and Business Conduct. This Code is designed to provide clear guidelines for engaging with all stakeholders.

W2. Business impacts

W2.1

(W2.1) Has your organization experienced any detrimental water-related impacts?

Yes

W2.1a

(W2.1a) Describe the water-related detrimental impacts experienced by your organization, your response, and the total financial impact.

Country/Area & River basin

South Africa	Berg-Olifants

Type of impact driver & Primary impact driver

Physical	Drought

Primary impact
Reduced revenues from lower sales/output

Description of impact
In prior years, the drought in the Western Cape impacted several Group businesses. Examples include: a) Nulandis sells products for the agricultural sector, the success of which is heavily reliant on weather and associated rainfall patterns. The drought in the Western Cape had a negative effect on Nulandis' profits in 2018, with results reducing from R133 million in 2017 to R119 million. b) Persistent drought effects impacted the performance of the local water treatment chemicals market in 2018. Diminished water flow rates result in lower turbidity and hence lower dosages of purification chemicals. This had a negative effect on ImproChem's revenue in the 2018 financial year (declined from R1 454 million in 2017 to R1 376 million). Although both businesses improved in the current reporting year, certain of our businesses remain particularly exposed to water-related risks. For example, the late onset of summer rainfall in 2019 in some inland provinces of South Africa saw some farmers delay planting, again impacting Nulandis' performance to 31 December.

Primary response
Develop new products and/or markets

Total financial impact
140000000

Description of response
The financial impact is reported as the reduced profit from Nulandis and ImproChem in 2018. It also includes the cost to manage this impact which is the spend on research and development in the 2019 financial year. In response to this, we a) continue to engage with customers to understand their changing needs and to identify how best AECI can meet these b) continue to invest in research and development which allows our businesses to diversify their product mix. Examples include a) Nulandis developed a holistic product and service plant health offering for sustainable agricultural practices across its customer base. Included in the offering are solutions to reduce water usage and allow crops to better withstand the effects of variable weather patterns associated with climate change. b) We invested in SupPlant. This technology is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of crops, soil, air, and irrigation in a field, vineyard or orchard.

W2.2

(W2.2) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?
No

W3. Procedures

W-CH3.1

(W-CH3.1) How does your organization identify and classify potential water pollutants associated with its activities in the chemical sector that could have a detrimental impact on water ecosystems or human health?

AECI is a diverse company providing products to a broad spectrum of customers in the mining, water treatment, plant and animal health, food and beverage, infrastructure and general industrial sectors. Most manufacturing sites are ISO14001 certified and those in South Africa are signatories to Responsible Care®. A differentiated approach to the management of potential water pollution is in place, depending on the risks posed to water ecosystems or human health in the region or country of operation.

We classify products according to the Globally Harmonised System and we classify waste according to the SANS 10234 standard. All products have safety data sheets which categorise substances according to severe toxic and ecotoxic effects, high persistence in the natural environment and potential to bio accumulate. It is from these safety data sheets that potential water pollutants are identified.

Water-related impacts on ecosystems and human health were considered for our operations which discharge effluent to sea and to river:

As already indicated, our Property business discharges effluent to sea. For this operation, annual independent Ecological and Physico-chemical Marine Monitoring surveys are conducted to assess the status of the seabed communities and the extent of any detectable effects arising from the effluent discharges to the offshore receiving environment.

We have one operation that discharges into a river course. This operation is bound by a Water Use Licence (WUL) and we adhere to its conditions. The effluent arising from the process is nitrogen-based. The higher nitrogen load is of concern due to the increased risk of eutrophication of the Jukskei River catchment. Eutrophication is characterised by excessive plant and algal growth as a consequence of the availability of one or more limiting growth factors needed for photosynthesis. This can have adverse consequences for drinking water sources, fisheries and recreational water bodies. Compliance is monitored and enforced by the National Department of Water and Sanitation. In addition, the WUL requires the operation to conduct:

1. annual biomonitoring assessments

2. quarterly and biannual groundwater monitoring, where there is a risk (risk determined based on historical activities), and

3. surface water monitoring where effluent is discharged to a fresh water resource.

Where effluent is discharged to a municipal sewer, operations are bound by local municipal requirements which stipulate limits for effluent discharged in terms of quantity and quality.

Water-related impacts in our value chain, particularly those to which our customers are exposed, are considered. ImproChem provides water treatment solutions in the public and private sector where customers' processes result in the release of pollutants to stressed water resources. The impact varies across both sectors.

W-CH3.1a

(W-CH3.1a) Describe how your organization minimizes adverse impacts of potential water pollutants on water ecosystems or human health. Report up to ten potential pollutants associated with your activities in the chemical sector.

Potential water pollutant	Value chain stage	Description of water pollutant and potential impacts	Management procedures	Please explain
Nitrogen	Direct operations	AEL manufactures explosives for the mining sector. The effluent arising from the process is largely nitrogen based. The increased nitrogen load is of concern due to the increased risk of eutrophication to the Jukskei River catchment.	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages Other, please specify (Implementation projects)	The operation monitors compliance with effluent quality standards on a daily, weekly and monthly basis. Immediate action is taken to rectify any non-compliances by, for example, containing spillages, identifying process safety risks and mitigating them, and ensuring the integrity of fail-safe equipment. Measures to prevent spillage, leaching, and leakage are in place. High risk operations are ISO 14001 certified and have continuous incident management systems to prevent and manage environmental incidents. Success of management interventions is measured by monitoring the surface water and boreholes around the site on a daily, weekly, quarterly and annual basis and conducting independent assessments of surface water and groundwater. One such assessment is the biomonitoring study conducted in the receiving environment to assess the biotic integrity of the Modderfontein Spruit and Jukskei River.
Anionic surfactants	Direct operations	Chemical Initiatives manufactures surfactants for the home care industry. These products contain sodium. If they find their way into a fresh water stream, high levels could impact aquatic life.	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages Other, please specify (Environmental and waste water procedures)	High anionic surfactants could find their way into a fresh water stream when there is loss of containment from the process. The following initiatives have been implemented on site to minimise loss of containment: a) the integrity of equipment is inspected regularly to confirm its suitability for use. Associated equipment such as pumps is repaired immediately in the event of a leak b) all areas have effluent sumps and trenches which contain and control the flow of effluent to the treatment plant c) the treatment plant treats effluent before discharge to the municipal sewer d) all storage areas are bunded, thereby containing leaks. Success is defined as having zero incidences of loss of containment.
Sulphuric acid	Distribution network	Chemical Initiatives manufactures sulphuric acid. This product may represent a danger to aquatic organisms at certain concentrations based on ecotoxicological testing performed on fish and fresh water invertebrates. It is also dangerous to human health: can cause severe skin burns and eye damage. When released into the upper atmosphere, sulphuric acid presents as particles or droplets. The particles dissolve in clouds, fog, rain or snow, resulting in very diluted acid solutions. This may impact the environment as wet acid deposition ('acid rain').	Other, please specify (Training, monitoring and risk assessment)	AECI is currently developing a strategy to track, manage and mitigate transportation incidents in the Group. Engagement with transporters is key and will focus on aspects such as training, audits, tracking systems, route risk assessments and driver fatigue. Currently, AECI businesses track all transportation incidents involving their products. If there is an accident and product spills, the environmental specialist or manager ensures that clean-up is conducted effectively with minimal impact on the receiving environment. Success is defined as having zero product transportation incidents.
Ammonium Nitrate	Distribution network	AEL manufactures explosives for the mining sector which are transported by contractors to mining sites. In the event of a transportation incident and spillage of product, the risk of eutrophication increases if the spilt product enters a river course. This can have adverse effects on drinking water sources, fisheries and recreational water bodies.	Management procedure under development Other, please specify (Training, monitoring and risk assessment)	AECI is currently tracking, managing and mitigating transportation incidents. Engagement with transporters is key and will focus on aspects such as training, audits, tracking systems, route risk assessments, driver fatigue. Currently, AECI businesses track all transportation incidents involving their products. If there is an accident and product spills, the environmental specialist or manager ensures that clean-up is conducted effectively with minimal impact on the receiving environment. Success is defined as having zero product transportation incidents.

W3.3

(W3.3) Does your organization undertake a water-related risk assessment?

Yes, water-related risks are assessed

W3.3a

(W3.3a) Select the options that best describe your procedures for identifying and assessing water-related risks.

Direct operations

Coverage
Full

Risk assessment procedure
Water risks are assessed as part of an enterprise risk management framework

Frequency of assessment
More than once a year

How far into the future are risks considered?
More than 6 years

Type of tools and methods used
Tools on the market
Enterprise Risk Management
International methodologies

Tools and methods used
WRI Aqueduct
ISO 31000 Risk Management Standard
Other, please specify (Analysis of research materials and industry benchmarking studies by institutions such as the World Economic Forum, the World Bank and Control Risk)

Comment
We identify risks to our direct operations. This risk assessment process covers all businesses and all geographies in which we operate. We assess risks bi-annually basis. Risks are evaluated up to 10 years into the future. We use a combination of tools and methodologies. The risk assessment process is underpinned by the Group Risk Management Policy and the Group Enterprise Risk Management Framework which are based on the principles of ISO 31000 and King IV in South Africa. We also use WRI Aqueduct to identify water-stressed areas. The identification of risks at Group level is also informed by the assessment and monitoring of the broader context in which we operate in terms of the political and economic landscape, industry, labour and financial market trends. Work includes the analysis of research materials and industry benchmarking studies by institutions such as the World Economic Forum, the World Bank and Control Risk. These serve as an early warning system or a mechanism for the identification of future risks and opportunities.

Supply chain

Coverage
Partial

Risk assessment procedure
Water risks are assessed as part of an enterprise risk management framework

Frequency of assessment
More than once a year

How far into the future are risks considered?
More than 6 years

Type of tools and methods used
Tools on the market
Enterprise Risk Management
International methodologies

Tools and methods used
WRI Aqueduct
ISO 31000 Risk Management Standard
Other, please specify (Analysis of research materials and industry benchmarking studies by institutions such as the World Economic Forum, the World Bank and Control Risk)

Comment
All our businesses are required to identify risks in their supply chain. We assess risks on bi-annually. Risks are evaluated up to 10 years into the future. We use a combination of tools and methodologies. The risk assessment process is underpinned by the Group Risk Management Policy and the Group Enterprise Risk Management Framework which are based on the principles of ISO 31000 and King IV in South Africa. We also use WRI Aqueduct to identify water-stressed areas. The identification of risks at Group-level is also informed by the assessment and monitoring of the broader context in which we operate in terms of the political and economic landscape, industry, labour and financial market trends. Work includes the analysis of research materials and industry benchmarking studies by institutions such as the World Economic Forum, the World Bank and Control Risk. These serve as an early warning system or a mechanism for the identification of future risks and opportunities.

Other stages of the value chain

Coverage
Full

Risk assessment procedure
Water risks are assessed as part of an enterprise risk management framework

Frequency of assessment
More than once a year

How far into the future are risks considered?
More than 6 years

Type of tools and methods used
Tools on the market
Enterprise Risk Management
International methodologies

Tools and methods used
WRI Aqueduct
ISO 31000 Risk Management Standard
Other, please specify (Analysis of research materials and industry benchmarking studies by institutions such as the World Economic Forum, the World Bank and Control Risk)

Comment
All our businesses are required to identify risks to which their customers are exposed. They are also required to identify risks relating to other stakeholders (local communities, government etc.). We assess risks bi-annually. Risks are evaluated up to 10 years into the future. We use a combination of tools and methodologies. The risk assessment process is underpinned by the Group Risk Management Policy and the Group Enterprise Risk Management Framework which are based on the principles of ISO 31000 and King IV in South Africa. We also use WRI Aqueduct to identify water-stressed areas. The identification of risks at Group-level is also informed by the assessment and monitoring of the broader context in which we operate in terms of the political and economic landscape, industry, labour and financial market trends. Work includes the analysis of research materials and industry benchmarking studies by institutions such as the World Economic Forum, the World Bank and Control Risk. These serve as an early warning system or a mechanism for the identification of future risks and opportunities.

W3.3b

(W3.3b) Which of the following contextual issues are considered in your organization's water-related risk assessments?

	Relevance & inclusion	Please explain
Water availability at a basin/catchment level	Relevant, always included	Water availability at river basin level is always included in our risk assessments. Our operations are reliant on sufficient volumes of good quality fresh water. It is acknowledged that an inadequate supply of this resource would compromise our ability to operate optimally. Group businesses are required to identify water-related risks to their operations, suppliers and customers. In this process they consider both current and emerging risks presented by water availability. One example is the Property business at Umbogintwini which withdraws water from the river basin, treats it and distributes it to tenants at the Umbogintwini Industrial Complex. The business has a Water Services Agreement with the Department of Water and Sanitation and assesses water availability regularly. Availability and the associated risks are assessed in through WRI Aqueduct and internal company knowledge. The latter includes information gathered from engagement with stakeholders such as the Department of Water and Sanitation and the local catchment authorities.
Water quality at a basin/catchment level	Relevant, always included	Changing water quality could have a negative impact on the supply of our products and services, especially in those businesses where water is a product input. Group businesses are required to identify water-related risks to their operations, suppliers and customers. In this process they consider both current and emerging risks presented by water quality for both withdrawals and discharges. One example is AEL Modderfontein where water is abstracted from fresh surface water. This abstraction is governed by a WUL that requires that water quality be assessed regularly. Water quality and the associated risks are assessed through WRI Aqueduct and internal company knowledge. The latter includes information gathered from engagement with stakeholders such as the Department of Water and Sanitation and local catchment authorities.
Stakeholder conflicts concerning water resources at a basin/catchment level	Relevant, always included	Stakeholder conflicts are always factored into our water-related risk assessments. Major conflicts could result in supply interruptions, impacting our ability to operate optimally. We acknowledge that our own water use impacts stakeholders at a basin/catchment level. Our businesses are required to identify water-related risks to their operations, suppliers and customers. In this process they consider both current and emerging risks presented by existing or potential stakeholder conflicts. They do this using internal company knowledge gathered from ongoing engagement with stakeholders. For example, local communities neighbouring our facility in Modderfontein attend Community Awareness and Emergency Response Committee meetings where material water issues are discussed, among other matters At Umbogintwini, issue-specific stakeholder and community liaison forums under the auspices of the Umbogintwini Industrial Association deal with water quality, air emissions and other matters of interest/concern to stakeholders.
Implications of water on your key commodities/raw materials	Relevant, always included	Risks associated with water quantity and quality, and the associated impact on our key commodities and raw materials, are relevant and always included in risk assessments. An example is our fruit concentrates beverage business which, in 2017, was required to purchase strategic consignments of raw materials owing to the effects of the drought in the Western Cape and severe flooding in Argentina (two key supply areas). Although a correction occurred in 2018, the supply chain remains exposed to water-related risks. As such, all our businesses are asked to identify risks to direct operations, suppliers and customers. In this process they consider both current and emerging risks in the value chain. They do this through WRI Aqueduct and internal company knowledge. The latter includes information gathered through engagement with stakeholders in the value chain.
Water-related regulatory frameworks	Relevant, always included	Water-related regulatory frameworks always considered in risk assessments. We acknowledge that non-compliance could impact on our ability to operate optimally. We consider risks associated with current and emerging regulations relevant to our own operations, suppliers and customers at individual business level and at Group level. This requires engagement relevant regulatory authorities. Such engagement ranges from advocacy initiatives associated with the development of legislation and standards to cooperative work with those regulators who have the responsibility of governing the Group's activities through the application of these laws and standards. For example, AEL Modderfontein must comply with stringent requirements set by Department of Water and Sanitation on water quality (groundwater and surface water). This is factored into the water-related risk assessment. We engage regularly with the Department to ensure that expectations are communicated and managed. We also engage with government through CAIA, the industry association for chemical producers in South Africa.
Status of ecosystems and habitats	Relevant, always included	The impact that our water withdrawals and discharges have on ecosystems and habitats is relevant and always included in risk assessment. As a responsible corporate citizen, we are committed to protecting the ecosystems and habitats in which we operate. Group businesses are required to identify water-related risks to their operations, suppliers and customers. In this process, they consider both current and emerging risks that could impact the status of ecosystems and habitats using internal company knowledge which is often informed by monitoring. For example, AEL Modderfontein conducts biomonitoring assessments of the Jukskei River catchment, the results of which inform our identification and assessment of associated risks. We also identify these risks through engagement with stakeholders such as local communities and local authorities. Risks associated with ecosystems and habitats, if any, are managed by individual Group facilities in collaboration with government, other local water users and local communities.
Access to fully-functioning, safely managed WASH services for all employees	Relevant, always included	Providing potable water, adequate sanitation and hygiene for all employees is of utmost importance to AECI and is always included in risk assessments. All Group facilities ensure the availability of fully functioning WASH services for all employees and contractors. This access is integrated into the day-to-day operation of facilities and monitored by them. We acknowledge that a shortage of clean water due to drought or infrastructure challenges would present a risk to our people's wellbeing and could hamper operations Both current and emerging risks to the provision of WASH services are considered in a number of ways, including WRI Aqueduct and internal company knowledge. The latter includes information gathered through engagement with employees and their representative unions, where they exist, other local water users, communities and others.
Other contextual issues, please specify	Not considered	Not applicable

W3.3c

(W3.3c) Which of the following stakeholders are considered in your organization's water-related risk assessments?

	Relevance & inclusion	Please explain
Customers	Relevant, always included	Our customers are potentially exposed to water-related risks. These risks could impact on demand for our products and services and, consequently, we always include customers in our water-related risk assessments. Nowhere was the impact of water-related risks more evident than in the Western Cape in 2018. Owing to drought effects in the province, demand and output from the agricultural sector declined and Nulandis reported lower profits as a consequence. ImproChem also reported lower earnings as a consequence of depressed trading conditions in the water treatment market. The drought resulted in diminished water flow rates and hence lower turbidity which meant lower sales of purification chemicals. We consider all current and emerging risks to customers. Group businesses engage with their customers on an ongoing basis and as a matter of course to identify mutual risks and opportunities The management of this risk is well demonstrated by our new products and services that assist customers to reduce their water withdrawals and manage their water-related risks. An example is our collaboration with SupPlant. an Israeli-based aggrotech company that developed a sensor-based system. The system waters crops autonomously in response to gathered data, at the same time optimising water consumption and alerting farmers as to the overall health of the crops, soil, air and irrigation in a field, vineyard or orchard.
Employees	Relevant, always included	Employees require fully functioning WASH services. Group facilities ensure these are provided to all employees and contractors. These services are factored into the risk assessment process. It is also accepted that the behaviour of our employees can impact our water usage. As such, employee behaviour is also factored into water-related risk assessments. The AECI Group engages with its employees as a matter of course. This engagement between leadership at all levels and the employee complement as a whole is effected through, inter alia, electronic and printed communication d and formal structures such as trade unions, wage bargaining councils, and committees and forums mandated to deal with matters that affect employees and/or are of interest to them.. Engagement on water-related issues is also through the new Going Green programme, with. employees being encouraged to identify ways in which the Group's environmental impact can be minimised, and the BIGGER Idea platform. This platform is the medium whereby employees are able, and encouraged, to submit their innovative ideas for improving all aspects of the current business and propose opportunities in new areas. This has proved extremely useful not only for water-related matters but also for suggestions on improvements in safety, health and environmental performance as a whole.
Investors	Relevant, always included	AECI is reliant on the continued support of its investors in order to realise its growth aspirations in a sustainable manner. Investor interest in the responsible management of water-related risks and opportunities is increasing. AECI communicates with these stakeholders by way of a number of processes, including announcements released on the JSE's Stock Exchange News Service (SENS), the dissemination of financial results and other reports electronically and in print, business-specific presentations, site visits and one-on-one or small group meetings. The Company's Chief Executive, Chief Financial Officer and the other Executives conduct timely presentations on the Group's performance and strategy to institutional investors, financiers, financial analysts and the media in South Africa. The Executive Directors also undertake international roadshows in Europe and the USA, aimed mostly at potential investors. Further, there are regular one-on-one meetings with this group of stakeholders. Presentations, corporate actions and financial results, as well as any other information deemed relevant, are published on the Company's website. Stakeholders are advised of such newly-published items via SENS. Additional information on the Company, such as inter alia its management and governance policies and structures, is also available at www.aeciworld.com. We also communicate information on water-related issues through our participation in the investor-driven Water Security CDP.
Local communities	Relevant, always included	Communities living within the footprint of influence of manufacturing and storage sites could be impacted by our operations. As such we engage with local communities regarding the impact of our facilities on, inter alia, water availability and quality. This engagement is facilitated by formal structures in place. At Modderfontein, for example, AEL oversees the functioning of a Community Awareness and Emergency Response Committee. At the Umbogintwini Industrial Complex, issue-specific stakeholder and community liaison forums under the auspices of the Umbogintwini Industrial Association deal with water quality, air emissions etc. Engagement with communities is also through organised projects and programmes.
NGOs	Relevant, always included	Although no NGOs and special interest groups have expressed concerns regarding our management of water, they are relevant and always included in risk assessments. If an NGO were to express a concern, we would engage with them to fully understand and address the concern to the extent possible, directly or through CAIA. We do work closely with NGOs on specific environmental protection initiatives. An example of this in 2019 was a project in Hammanskraal, northern Gauteng. A report released by the South African Human Rights Commission in August 2019 confirmed that water in that area was not fit for human consumption and did not comply with South Africa's drinking water standards. The AECI Community Education and Development Trust (CEDT), ImproChem and Nulandis stepped in. We worked with Gift of the Givers and the Wildlife and Environment Society of South Africa, among other partners. ImproChem contributed a world-class water filtration solution that is benefiting five schools, a clinic and the wider community in the area. Nulandis established food gardens at each school as well as plant and soil health products and training in their application for optimal results. The CEDT contributed to boreholes and water education programmes at each location. Approximately 5 000 beneficiaries were impacted directly.
Other water users at a basin/catchment level	Relevant, always included	Other water users at catchment level are relevant and always factored into risk assessments. It is acknowledged that these users have the ability to impact water availability and quality, both of which are critical to our optimal operation. As such, Group businesses are required to identify risks associated with these users. Current and future risks are identified. Engagement is through direct meetings, meetings of industry associations and interactions with neighbouring communities.
Regulators	Relevant, always included	Legal compliance is of utmost importance to AECI and, as such, engagement with relevant authorities is a business imperative. Regulators are always considered in water-related risk assessment to confirm compliance with existing requirements and to be prepared for any amended or new regulations. Non-compliance could compromise the sustainability of the Group's operations. Engagement ranges from advocacy initiatives associated with the development of legislation and standards to cooperative work with those regulators who have the responsibility of governing the Group's activities through the application of relevant laws and standards. To facilitate engagement, AECI and/or its businesses may choose to develop relationships with relevant government and regulatory entities in a proactive manner. This engagement typically takes place in meetings or through written commentary on policies and regulations. We also engage with government through CAIA.
River basin management authorities	Relevant, always included	It is acknowledged that these authorities influence water sourcing and water management in specific catchments. We engage with them to understand risks and determine options for mitigating them. For example, the Department of Water and Sanitation is engaged regularly on the material issue of compliance with the WUL at Modderfontein. River basin management authorities are engaged as and when required. Engagement takes place through direct meetings, industry associations and written correspondence.
Statutory special interest groups at a local level	Relevant, always included	No statutory special interest groups have expressed concern regarding AECI's water usage and management practices. However, these stakeholders are relevant and are always included in our water-related risk assessments because water is a shared resource. In some cases, these stakeholders are aligned with communities in which we operate. Although their engagement requirements often overlap with those of communities, their needs are recognised separately. Wherever possible, they are encouraged to participate in the Group's affairs via existing structures (liaison forums and the like). Where this is not possible separate arrangements are made to meet their needs. Arrangements include meetings, site/business visits and participation in/support of interest group initiatives. Examples of interest groups in South Africa include the Modderfontein Conservation Society, the Wildlife and Environment Society of South Africa and residents' associations.
Suppliers	Relevant, always included	We acknowledge that if our suppliers were to be impacted by water-related risks, their ability to deliver the products and services the Group requires could be compromised. In mitigation, Group businesses engage with their suppliers on an ongoing basis. Terms of engagement with both suppliers and customers are clearly defined and, where appropriate, Group-wide policies and procedures guide the businesses to ensure that related risks are properly understood and managed in line with AECI's risk appetite.
Water utilities at a local level	Relevant, always included	Engagement with water utilities occurs for facilities that are supplied by them so as to identify and manage any risks associated with supply. It is acknowledged that certain Group facilities could not operate without these utilities. Accordingly, Group businesses are required to identify risks associated with water utilities and their ability to supply sufficient volumes of fresh water of the requisite quality. Engagement is through meetings, industry associations and written correspondence.
Other stakeholder, please specify	Not relevant, explanation provided	Not applicable

W3.3d

(W3.3d) Describe your organization's process for identifying, assessing, and responding to water-related risks within your direct operations and other stages of your value chain.

The Group follows a risk management methodology comprising both bottom-up and top-down processes. The methodology adopts a holistic approach in identifying, analysing, evaluating, treating, monitoring and reviewing risks. This risk assessment process covers all businesses and their value chain, in, all geographies where they operate.

Site-level risks are identified, assessed a bottom-up process. Management teams of individual businesses are required to identify risks and quantify the likelihood, timeline and magnitude of each. The teams are also required to formulate risk management plans. The AECI Head Office provides support in the risk identification and prioritisation process through workshops and other forums. The WRI Aqueduct is often used to identify water-related risks at operational level and to identify water-stressed areas by using various indicators. These indicators include inter-annual variability, flood occurrence, drought severity and regulatory risks.

The top-down process involves management at Head Office level. Risks identified at site level are reviewed and rolled up to Group level, as appropriate. Risk identification at Group level is also informed by the assessment and monitoring of the broader context in which the Group operates in terms of the political and economic landscape, industry, labour and financial market trends. Work includes the analysis of research materials and industry benchmarking studies by institutions such as the World Economic Forum, the World Bank and Control Risk. These serve as an early warning system or a mechanism for the identification of future risks and opportunities.

Risks, including water-related risks, are prioritised on a 5 x 5 rating scale that sets out potential impact (magnitude of impact) and estimated probabilities (likelihood of occurrence). The potential impact is classified as minor, moderate, serious, major or severe and is linked to both a qualitative and quantitative residual risk value. The estimated probability is classified as almost certain (monthly basis), likely (once in one year), possible (once in three years), unlikely (once in five years) or rare (once in more than five years). Opportunities are also prioritised using a similar approach based on impact and likelihood.

The risk assessment process and terminology are underpinned by the Group Risk Management Policy and the Group Enterprise Risk Management Framework which are based on the principles of ISO 31000 and King IV in South Africa.

Outcomes of the risk assessment process inform decision-making. Water-related risks to inform our business strategy and certain financial planning elements. Nowhere is this more evident than in the new Going Green programme. The objective of this programme is to minimise environmental impact and drive a beyond compliance mind-set in the Group's own operations and across the value chain. One of the key focus areas is water. Through this programme, we continue to prioritise the identification and implementation of water-related initiatives. AEL, for example, has introduced recycled process water into its manufacturing facilities at Modderfontein. The water treatment solution has been provided by ImproChem. The Group is also working towards zero effluent discharges from key sites in the longer term and will then be in a position to offer this solution to other upstream and downstream industry players.

W4. Risks and opportunities

W4.1

(W4.1) Have you identified any inherent water-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes, both in direct operations and the rest of our value chain

W4.1a

(W4.1a) How does your organization define substantive financial or strategic impact on your business?

Substantive financial impact is defined in the consequence scales. A rating ranging from minor to severe is included in the consequence table with an associated financial amount. The table below outlines the ratings and associated financial impact -

Severe: >R120 million (loss or gain)

Major: >R80 – R120 million (loss or gain)

Serious: >R40 – R80 million (loss or gain)

Moderate: >R5 – R40 million (loss or gain)

Minor: R0 – R5 million (loss or gain)

A *substantive financial impact is considered in the event of a rating higher than moderate (i.e. serious, major or severe). This means that the loss or gain must be above R40 million for the risk or opportunity to be considered to have a substantive financial impact on the business. The definition applies to risks and opportunities in own operations and through the value chain.*

For example, in the reporting year, extreme or unpredictable weather events (failure to mitigate and adapt to the effects of climate change, leading to drought or floods, water shortages and reduced mining and agricultural output) was identified to be one of our most material matters. It is acknowledged that this risk could result in a loss or gain above R40 million. Nowhere was this more clearly seen than during the drought in the Western Cape. Nulandis sells products for the agricultural sector, the success of which is heavily reliant on weather and associated rainfall patterns. The drought in the Western Cape had a negative effect on Nulandis' profits in 2018, with results reducing from R133 million in 2017 to R119 million. In addition, diminished water flow rates result in lower turbidity and hence lower dosages of purification chemicals. This had a negative effect on ImproChem's revenue in the 2018 financial year (declined from R1 454 million in 2017 to R1 376 million).

W4.1b

(W4.1b) What is the total number of facilities exposed to water risks with the potential to have a substantive financial or strategic impact on your business, and what proportion of your company-wide facilities does this represent?

	Total number of facilities exposed to water risk	% company-wide facilities this represents	Comment
Row 1	3	1-25	Three Group facilities have been identified as being exposed to water-related risks: the Nulandis operation and AEL Modderfontein, in Gauteng, and SCP's operation in the Western Cape. The rationale for this identification is as follows: them is given below - a) Nulandis sells products for the agricultural sector, the success of which is heavily reliant on weather and associated rainfall patterns. The drought in the Western Cape had a negative effect on Nulandis' profits in 2018. In this reporting year, Nulandis' performance reflected a more normalised rainfall season in the Western Cape. However, the late onset of summer rainfall in some inland provinces saw some farmers delay planting. b) In 2017, SCP was required to purchase strategic consignments of raw materials owing to extreme weather events (drought in the Western Cape and severe flooding in Argentina). This had a negative impact on trade working capital. Although a correction was evident in 2018, the supply chain remains exposed to water-related risks. c) For AEL Modderfontein, we have identified risks associated with regulatory compliance. AEL uses water from a river course and discharges water into a river course. As such, it is subject to a Water Use Licence (WUL). Compliance with this licence is of utmost importance. These facilities have been affected by water-related issues in prior years and continue to be exposed to these risks. As such, focus is placed on the management of these water-related risks.

W4.1c

(W4.1c) By river basin, what is the number and proportion of facilities exposed to water risks that could have a substantive financial or strategic impact on your business, and what is the potential business impact associated with those facilities?

Country/Area & River basin

South Africa	Limpopo

Number of facilities exposed to water risk
2

% company-wide facilities this represents
1-25

Production value for the metals & mining activities associated with these facilities
<Not Applicable>

% company's annual electricity generation that could be affected by these facilities
<Not Applicable>

% company's global oil & gas production volume that could be affected by these facilities
<Not Applicable>

% company's total global revenue that could be affected
11-20

Comment
Nulandis and AEL Modderfontein are exposed to water-related risks (see above).

Country/Area & River basin

South Africa	Berg-Olifants

Number of facilities exposed to water risk
1

% company-wide facilities this represents
1-25

Production value for the metals & mining activities associated with these facilities
<Not Applicable>

% company's annual electricity generation that could be affected by these facilities
<Not Applicable>

% company's global oil & gas production volume that could be affected by these facilities
<Not Applicable>

% company's total global revenue that could be affected
1-10

Comment
SCP is exposed (see above).

W4.2

(W4.2) Provide details of identified risks in your direct operations with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.

Country/Area & River basin

South Africa	Other, please specify (All)

Type of risk & Primary risk driver

Physical	Severe weather events

Primary potential impact
Reduction or disruption in production capacity

Company-specific description
Extreme or unpredictable weather events are considered matters. These events could result in damage to property, plant and equipment. In addition, they could lead to the temporary closure of the impacted operation, resulting in reduced production and hence financial returns. Although no such incidents have occurred to date, it is acknowledged that this risk is real and must be managed.

Timeframe
4-6 years

Magnitude of potential impact
High

Likelihood
About as likely as not

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
57220000

Potential financial impact figure - minimum (currency)
<Not Applicable>

Potential financial impact figure - maximum (currency)
<Not Applicable>

Explanation of financial impact
The financial impact is estimated at 1% of the value of the property, plant and equipment as of 2019.

Primary response to risk
Use risk transfer instruments

Description of response
Portfolio diversification of our portfolio is one mitigation measure. We invest in diverse businesses that operate in different countries. We also manage this risk through its transfer through insurance. This applies in instances where the risk cannot be eliminated this through our own actions (i.e. risks beyond our control).

Cost of response
110000000

Explanation of cost of response
The cost of the response is the value of our insurance premiums for the reporting year.

Country/Area & River basin

South Africa	Limpopo

Type of risk & Primary risk driver

Regulatory	Regulation of discharge quality/volumes

Primary potential impact
Reduction or disruption in production capacity

Company-specific description
AEL discharges effluent into a fresh surface water course. The most critical aspect related to this is the WUL issued by the Department of Water and Sanitation. The WUL specifies very stringent compliance conditions. Non-compliance with all of these conditions could result in fines or temporary closure of the operation.

Timeframe
Current up to one year

Magnitude of potential impact
High

Likelihood
More likely than not

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
114290000

Potential financial impact figure - minimum (currency)
<Not Applicable>

Potential financial impact figure - maximum (currency)
<Not Applicable>

Explanation of financial impact
The financial impact is estimated at 1% of the revenue from the Mining Solutions Pillar as AEL forms part of this pillar.

Primary response to risk
Other, please specify (Water related capital expenditure)

Description of response
This risk is managed through engagement with the Department of Water and Sanitation on the effluent discharge quality, groundwater quality parameters and target levels. It is also managed 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 site's strong effluent system and, a neutralisation plant.

Cost of response
28820000

Explanation of cost of response
The cost of the response is the water-related capex for the 2019 financial year for AEL Modderfontein.

W4.2a

(W4.2a) Provide details of risks identified within your value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.

Country/Area & River basin

South Africa	Berg-Olifants

Stage of value chain
Supply chain

Type of risk & Primary risk driver

Physical	Drought

Primary potential impact
Reduced revenues from lower sales/output

Company-specific description
This risk relates to disruptions to customers' operations as a result of changing weather patterns. It is acknowledged that any such disruptions could reduce demand for our products and hence a reduction in revenue. Examples include: a) Nulandis sells products for the agricultural sector, the success of which is heavily reliant on weather and associated rainfall patterns. The drought in the Western Cape had a negative effect on Nulandis' profits in 2018, with results reducing from R133 million in 2017 to R119 million. b) Persistent drought effects impacted the performance of the local water treatment chemicals market in 2018. Diminished water flow rates result in lower turbidity and hence lower dosages of purification chemicals. This had a negative effect on ImproChem's revenue in the 2018 financial year (declined from R1 454 million in 2017 to R1 376 million).

Timeframe
Current up to one year

Magnitude of potential impact
High

Likelihood
Virtually certain

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
92000000

Potential financial impact figure - minimum (currency)
<Not Applicable>

Potential financial impact figure - maximum (currency)
<Not Applicable>

Explanation of financial impact
The potential financial impact is the reduced profit realised by Nulandis and ImproChem in 2018, primarily as a consequence of the drought in the Western Cape.

Primary response to risk

Direct operations	Develop new products and/or markets

Description of response
This risk is managed as follows: a) Ongoing engagement with customers to understand their changing needs and to identify how best AECI can meet these. b) Investment in research and development which allows businesses to diversify their product mix. Examples include: c) Nulandis developed a holistic product and service plant health offering for sustainable agricultural practices across its customer base. Included in the offering are solutions to reduce water usage and allow crops to better withstand the effects of variable weather patterns associated with climate change. d) We invested in SupPlant. This technology is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of crops, soil, air, and irrigation in a field, vineyard or orchard.

Cost of response
64000000

Explanation of cost of response
The cost of the response is given as the investment in R&D made in the 2019 financial year.

Country/Area & River basin

South Africa	Berg-Olifants

Stage of value chain
Supply chain

Type of risk & Primary risk driver

Physical	Drought

Primary potential impact
Reduction or disruption in production capacity

Company-specific description
Water-related risks such as drought effects have the potential to impact our supply chain. This was experienced in the juice concentrates business. In 2017, SCP was required to purchase strategic consignments of raw materials owing to extreme weather events (drought in the Western Cape and severe flooding in Argentina). This had a negative impact on trade working capital. Although a correction was evident in 2018, the supply chain remains exposed to water-related risks.

Timeframe
Current up to one year

Magnitude of potential impact
High

Likelihood
Virtually certain

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
40000000

Potential financial impact figure - minimum (currency)
<Not Applicable>

Potential financial impact figure - maximum (currency)
<Not Applicable>

Explanation of financial impact
The financial impact is reported as the impact of the purchase of the strategic consignments on trade working capital for SCP in 2017

Primary response to risk

Supplier engagement	Other, please specify (Engagement with suppliers)

Description of response
We engage with our suppliers to identify these risks and to manage them effectively. This engagement also allows us to identify and plan for disruptions. The response in the case of SCP was to purchase strategic consignments of raw materials.

Cost of response
0

Explanation of cost of response
There is no cost to this response as our businesses engage with their value chains as a matter of course.

W4.3

(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?
Yes, we have identified opportunities, and some/all are being realized

W4.3a

(W4.3a) Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.

Type of opportunity
Products and services

Primary water-related opportunity
New R&D opportunities

Company-specific description & strategy to realize opportunity
The rising cost of water coupled with concerns about adequate long-term availability in many geographies is prompting companies to view water conservation as an imperative in terms of business sustainability. The opportunity is considered strategic as it opens up opportunities for AECI to develop new products and services. Examples include – a) Savannah grazing supplements launched by Chemfit, a division of AECI, to farmers in the Karoo. The supplement can be used by farmers to counteract the effects of dry, woody stalks in grass which result from the drought. b) Water use efficiency and preservation of top soil are being pursued by Nulandis through their NuWay® programme. c) Biocult and Nulandis have developed products to assist clients manage the impacts of water-related risks Examples include Biocult's Mycorrhizae to enhance root mass and supply nutrients and Nulandis' Dekompakt to prevent soil crusting and hence water run-off and Genie Boost which assists with the conversion of crop residues into valuable soil humus. This opportunity is managed in the following ways – a) Ongoing engagement with customers to understand their needs and to identify how best AECI can meet these needs. b) Investment in research and development which allows our businesses to diversify their product mix.

Estimated timeframe for realization
Current - up to 1 year

Magnitude of potential financial impact
High

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
297990000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact
It is estimated that products and services resulting from research and development activities are likely to contribute 1% of the Group's revenue in the next five years. The value reported is 1% of total Group revenue for the 2019 financial year.

Type of opportunity
Markets

Primary water-related opportunity
Expansion into new markets

Company-specific description & strategy to realize opportunity
The rising cost of water coupled with concerns about adequate long-term availability in many geographies is prompting companies to view water conservation as an imperative in terms of business sustainability. This opens up new markets into which AECI can sell new and existing products and services. ImproChem, for example, provides water treatment chemicals and services to municipalities and water boards such as Rand Water Board. Due to the drought in the Western Cape, diminished water flow rates result in lower turbidity and hence lower dosages of purification chemicals. 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 due to water restrictions. To assist in maximising opportunities such as this, the AECI Growth Office (AECI.GO) was established in 2017. Its mandate covers two main areas: enhancing the delivery of the Group's current businesses ("Business of Today") and identifying disruptors and customer needs that will shape the Business of Tomorrow. In the Business of Tomorrow, investment in research and development has included products that enable customers to reduce their water withdrawals or increase their resilience in the face of water-related challenges. One example is our investment in SupPlant. This technology is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of crops, soil, air, and irrigation in a field, vineyard or orchard.

Estimated timeframe for realization
Current - up to 1 year

Magnitude of potential financial impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
297990000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact
It is estimated that sales of products and services into new markets are likely to contribute 1% of the Group's revenue in the next five years. The value reported is 1% of total revenue for the 2019 financial year.

Type of opportunity
Efficiency

Primary water-related opportunity
Improved water efficiency in operations

Company-specific description & strategy to realize opportunity
There are internal opportunities to reduce water withdrawals and discharges. Related initiatives have the potential to improve water use efficiency and reduce operating

costs. To realise these opportunities, the new Going Green programme was launched in 2019. The objective of this programme is to minimise environmental impact and drive a beyond compliance mind-set in the Group's own operations and across the value chain. One of the key focus areas is water.

Estimated timeframe for realization
Current - up to 1 year

Magnitude of potential financial impact
Low

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
20000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact
Roll-out of the new Going Green programme across the Group is expected to result in significant cost saving projects. These savings are estimated to be in excess of R20 million.

W5. Facility-level water accounting

W5.1

(W5.1) For each facility referenced in W4.1c, provide coordinates, water accounting data, and a comparison with the previous reporting year.

Facility reference number
Facility 1

Facility name (optional)
AEL Modderfontein

Country/Area & River basin
Please select

Latitude
-26.111455

Longitude
28.143172

Located in area with water stress
Yes

Primary power generation source for your electricity generation at this facility
<Not Applicable>

Oil & gas sector business division
<Not Applicable>

Total water withdrawals at this facility (megaliters/year)
1449.26

Comparison of total withdrawals with previous reporting year
Lower

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes
222.71

Withdrawals from brackish surface water/seawater
0

Withdrawals from groundwater - renewable
0

Withdrawals from groundwater - non-renewable
0

Withdrawals from produced/entrained water
0

Withdrawals from third party sources
1226.55

Total water discharges at this facility (megaliters/year)
1436.28

Comparison of total discharges with previous reporting year
Higher

Discharges to fresh surface water
1040.76

Discharges to brackish surface water/seawater
0

Discharges to groundwater
0

Discharges to third party destinations
395.53

Total water consumption at this facility (megaliters/year)
12.98

Comparison of total consumption with previous reporting year
Much lower

Please explain
This refers to AEL Modderfontein. Withdrawals and discharges are measured and monitored. Consumption is determined using a water balance from measured withdrawals and discharges. Water withdrawals decreased by 13.43%, from 1 674.00 ML in 2018 financial year to 1 449.26 ML in 2019. The decrease can be attributed to the following – a) decreased withdrawals from municipal supply b) no withdrawals from the purified sewerage effluent c) decreased withdrawals from fresh surface water. Discharges increased by 19.73%, from 1 199.60 ML in the prior year to 1 436.28 ML year. This was due to increased run-off as a result of higher rainfall in 2019. Consumption decreased due to lower water withdrawals and higher discharges. Going forward, a reduction in withdrawals, discharges and consumption is anticipated as we implement projects aimed at improving water use efficiency and increasing water recycling.

Facility reference number
Facility 2

Facility name (optional)
Nulandis Lilianton (Boksburg)

Country/Area & River basin

South Africa	Limpopo

Latitude
-26.076621

Longitude
28.186538

Located in area with water stress
Yes

Primary power generation source for your electricity generation at this facility
<Not Applicable>

Oil & gas sector business division
<Not Applicable>

Total water withdrawals at this facility (megaliters/year)
13.4

Comparison of total withdrawals with previous reporting year
Lower

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes
0

Withdrawals from brackish surface water/seawater
0

Withdrawals from groundwater - renewable
0

Withdrawals from groundwater - non-renewable
0

Withdrawals from produced/entrained water
0

Withdrawals from third party sources
13.4

Total water discharges at this facility (megaliters/year)
5.89

Comparison of total discharges with previous reporting year
Much higher

Discharges to fresh surface water
0

Discharges to brackish surface water/seawater
0

Discharges to groundwater
0

Discharges to third party destinations
5.89

Total water consumption at this facility (megaliters/year)
7.51

Comparison of total consumption with previous reporting year
Much lower

Please explain
Nulandis, at its Lilianton site in Gauteng, measures withdrawals and discharges. Consumption is calculated as the difference between measured withdrawals and discharges. Water withdrawals decreased by 10.57%, from 14.98 ML in 2018 to 13.40 ML. This decrease was due to changes in the product mix manufactured in the reporting year. Discharges increased by 27.76%, from 4.61 ML in 2018 to 5.89 ML. This increase is also due to changes in the product mix. The discharges are dependent on the cleaning of reactors between different product batches. Consumption decreased as a result of a decrease in withdrawals and an increase in discharges. Going forward, a reduction in withdrawals, discharges and consumption is anticipated as we continue to implement water use efficiency and effluent reduction projects.

Facility reference number
Facility 3

Facility name (optional)
Southern Canned Products (SCP)

Country/Area & River basin

South Africa	Berg-Olifants

Latitude
-33.912762

Longitude
18.64396

Located in area with water stress
Yes

Primary power generation source for your electricity generation at this facility
<Not Applicable>

Oil & gas sector business division
<Not Applicable>

Total water withdrawals at this facility (megaliters/year)
29.09

Comparison of total withdrawals with previous reporting year
Higher

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes
0

Withdrawals from brackish surface water/seawater
0

Withdrawals from groundwater - renewable
0

Withdrawals from groundwater - non-renewable
0

Withdrawals from produced/entrained water
0

Withdrawals from third party sources
29.09

Total water discharges at this facility (megaliters/year)
24.73

Comparison of total discharges with previous reporting year
Higher

Discharges to fresh surface water
0

Discharges to brackish surface water/seawater
0

Discharges to groundwater
0

Discharges to third party destinations
24.73

Total water consumption at this facility (megaliters/year)
4.36

Comparison of total consumption with previous reporting year
Higher

Please explain

This refers to SCP. Withdrawals are measured and monitored. Consumption is determined using a water balance from withdrawals and discharges. Water withdrawals increased by 16.68%, from 24.90 ML in 2018 financial year to 29.09 ML. This was due to higher in production. Discharges also increased by 16.68%, from 21.17 ML in 2018 to 24.73 ML. This was is in line with withdrawals and also attributable to increased production. Consumption increased in line with withdrawals. Going forward, a reduction in withdrawals, discharges and consumption is anticipated as we implement projects aimed at water conservation.

W5.1a

(W5.1a) For the facilities referenced in W5.1, what proportion of water accounting data has been externally verified?

Water withdrawals – total volumes

% verified
76-100

What standard and methodology was used?
ISAE3000

Water withdrawals – volume by source

% verified
76-100

What standard and methodology was used?
ISAE3000

Water withdrawals – quality

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

Water discharges – total volumes

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

Water discharges – volume by destination

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

Water discharges – volume by treatment method

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

Water discharge quality – quality by standard effluent parameters

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

Water discharge quality – temperature

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

Water consumption – total volume

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

Water recycled/reused

% verified
Not verified

What standard and methodology was used?
<Not Applicable>

W6. Governance

W6.1

(W6.1) Does your organization have a water policy?

Yes, we have a documented water policy that is publicly available

W6.1a

(W6.1a) Select the options that best describe the scope and content of your water policy.

	Scope	Content	Please explain
Row 1	Company-wide	Reference to international standards and widely-recognized water initiatives Company water targets and goals Commitment to align with public policy initiatives, such as the SDGs Commitments beyond regulatory compliance Commitment to water-related innovation Commitment to stakeholder awareness and education Commitment to water stewardship and/or collective action Other, please specify (A commitment to our Going Green Programme)	Water-related considerations are referenced in our overarching Group SHEQ Policy. We do not have multiple policies in place. Instead, one holistic Policy guides our thinking relative to all SHEQ issues and demonstrates the commitment of top management. The Policy is supported by a more focused framework which governs its implementation and speaks directly to water-related issues. The Group SHEQ Policy is publicly available. It covers all our operations in all of the geographies in which we operate. It covers the following: a) acknowledgement of our impact on the environment b) to ensure compliance in line with ISO 14001 c) to set, measure and report on target. d) to introduce Key Performance Indicators (KPIs) to drive the achievement of targets e) to support and align with the Global Reporting Initiative f) to drive innovative environmental solutions in current operations and the Business of Tomorrow g) to create awareness on Going Green among internal and external stakeholders h) to drive a culture of good environmental practice and a beyond compliance mind-set in the workplace i) to improve market competitiveness through Green Chemistry and best available technology in AECI's products and services j) to reduce AECI's environmental impact through measurement and target setting. k) to improve the visibility of AECI's Going Green programme among external stakeholders.

W6.2

(W6.2) Is there board level oversight of water-related issues within your organization?

Yes

W6.2a

(W6.2a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for water-related issues.

Position of individual	Please explain
Board-level committee	The AECI Board, in conjunction with management, is ultimately responsible for the execution of the strategy. It is acknowledged that strategic goals cannot be achieved without effective management of water-related risks and opportunities. Accordingly, water-related risks are included in some of our most material matters: a) inadequate supply of water of the requisite quality, b) compliance risk, including compliance with tax and environmental laws and regulations, and c) extreme or unpredictable weather events. The AECI Board is ultimately responsible for overseeing the identification and management of material matters that could influence the delivery of AECI's strategy and growth objectives both positively and negatively. Leadership and oversight of the management of these material matters is the Board's responsibility. As such, the Board is ultimately responsible for water-related issues. The Board met six times in 2019. SHEQ is the first item on the agenda at every meeting. In April 2019, a special Board meeting was convened and the agenda focused on the Group's approach and practices in regard to environmental management. A detailed action plan was formulated and progress against this has been added as a standing item on the Board meeting agenda. Water-related decisions made in the reporting year included, among others: a) the development of improvement/reduction targets, to be achieved by 2025 b) the decision to develop a dedicated strategy for sustainable development c) the release of a dedicated sustainability report d) the launch of a new Going Green programme which includes water as a key focus area The Board has delegated the primary responsibility to consider, recommend and monitor AECI's activities with regard to environmental matters, including water, to the Social and Ethics Committee. This Committee reports to the full Board. Where required, the Social and Ethics Committee also draws on the work of the Board-appointed Risk Committee.

W6.2b

(W6.2b) Provide further details on the board's oversight of water-related issues.

	Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Row 1	Scheduled - all meetings	Monitoring implementation and performance Overseeing acquisitions and divestiture Overseeing major capital expenditures Providing employee incentives Reviewing and guiding annual budgets Reviewing and guiding business plans Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding strategy Reviewing innovation/R&D priorities Other, please specify (compliance aspects)	The Board met six times in the year. One of the two special meetings convened focused on the Group's approach and practices in regard to environmental management. The Board recieves reports from the Social and Ethics Committee to which it has delegated responsibility to consider, recommend and monitor AECI's activities with regard to environmental matters, including water-related items. The Social and Ethics Committee met quarterly in 2019. It reported to the full Board on its work as it related to water issues at all meetings of the Board, including the first special meeting. The information conveyed by the Social and Ethics Committee to the Board typically covers the following: a) compliance with water-related legislation b) water-related risk and opportunity identification and management c) performance against water use reduction targets, and d) progress made in terms of key water-related initiatives such as effluent reduction projects. The information is conveyed through written reports. The Board uses this information to satisfy itself that all water-related material matters have been identified and are being managed effectively. This, in turn, provides the Board with reassurance that AECI will be able to deliver its strategy and achieve its growth objectives. It also allows the Board to evaluate whether proper policies, procedures and controls are in place for managing water-related issues. In 2019, the integration of water-related issues into risk management as a whole was evident. It was identified as a material matter. Several of the matters identified were water related. An example is extreme or unpredictable weather events (failure to mitigate and adapt to the effects of climate change, leading to drought or floods, water shortages and reduced mining and agricultural output). Another was the inadequate supply of water of the requisite quality, leading to production interruptions in South Africa.

W6.3

(W6.3) Provide the highest management-level position(s) or committee(s) with responsibility for water-related issues (do not include the names of individuals).

Name of the position(s) and/or committee(s)
Chief Executive Officer (CEO)

Responsibility
Both assessing and managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues
More frequently than quarterly

Please explain
The Chief Executive is the highest management-level position with responsibility for water. The Chief Executive has the overall, primary management and leadership role in the organisation. This includes responsibility for water-related issues. The Chief Executive is ultimately responsible for assessment and monitoring of water-related issues given their significance for the successful execution of the strategy and the achievement of business objectives. The Chief Executive is responsible for mobilising resources in the organisation for this. The Chief Executive reports to the Board. The Chief Executive is supported by the Group Safety, Health and Environment Manager. This Manager has day-to-day responsibility for water-related issues and reports directly to the Chief Executive. The Manager is supported by the Group Environmental Specialist. Along with the Chief Executive, the Social and Ethics Committee is also responsible for oversight and guidance on water-related issues.

W6.4

(W6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?

	Provide incentives for management of water-related issues	Comment
Row 1	Yes	

W6.4a

(W6.4a) What incentives are provided to C-suite employees or board members for the management of water-related issues (do not include the names of individuals)?

	Role(s) entitled to incentive	Performance indicator	Please explain
Monetary reward	Director on board Corporate executive team Other, please specify (Environmental, health & safety manager)	Reduction of water withdrawals Reduction in consumption volumes Improvements in efficiency - direct operations Improvements in waste water quality - direct operations	The short-term incentive is awarded in recognition of the performance and the achievement of AECI and individuals' own goals and objectives. The long-term incentive is awarded in recognition of the creation of shareholder value and long-term performance and sustainability. It is recognised that water management is integrated into the above. Effective management of water-related risks and opportunities, promotes growth, value creation, and enhances performance and sustainability. Effective management of water-related risks and opportunities requires the reduction of water withdrawals and consumption and the improvement of efficiency. AECI is working towards zero effluent discharges from key sites. Commitment to the Going Green programme feeds into the Key Performance Indicators (KPIs) of Managing Directors/Managing Executives of individual Group businesses. The implementation of water use efficiency and effluent reduction projects, and the achievement of water-related targets, are part of this. More specifically, the impact is on the short-term incentive award. Commitment to the Going Green programme feeds into the KPIs of Safety, Health and Environmental (SHE) Managers at individual Group businesses. The implementation of water use efficiency and effluent reduction projects, and the achievement of water-related targets, are part of this. More specifically, the impact is on the short-term incentive award.
Non-monetary reward	Director on board	Reduction of water withdrawals Reduction in consumption volumes Improvements in efficiency - direct operations Improvements in waste water quality - direct operations	An environmental award is given to the Managing Director/Managing Executive of the Group business that outperforms in terms of reducing water usage, GHG emissions, energy and waste generation. This award acknowledges excellent levels of environmental compliance, the quality of data reporting, the severity and nature of environmental incidents and improvements made in environmental management, and commitment to the Going Green programme. In 2019 this award was received by ChemSystems. This business implemented a biotreatment project to reduce the chemical oxygen demand of a customer's effluent. It also recycled vessel wash water and installed a recycling station at its production site.

W6.5

(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?
Yes, direct engagement with policy makers
Yes, trade associations

W6.5a

(W6.5a) What processes do you have in place to ensure that all of your direct and indirect activities seeking to influence policy are consistent with your water policy/water commitments?

AECI ensures that all of its direct and indirect activities that influence policy are consistent in terms of messaging through the following:

a) Adherence to the Group SHEQ Policy, the standardised SHEQ Framework and supporting procedures by all Group businesses. The Managing Directors/Managing Executives of the businesses confirm that their businesses are in compliance with AECI's SHEQ Standards and Policy. Where such confirmation cannot be given, the level of non-compliance is described and details of the plans in place to achieve compliance are provided.

b) AECI engages with its businesses to obtain feedback, consolidates this feedback and relays it to government and/or industry associations as required. All engagement with government and industry associations in South Africa, such as CAIA, takes place at Group-level.

c) AECI ensures consistent messages are conveyed to stakeholders through central coordination of stakeholder engagement. This is done in collaboration with the Group Communication and Investor Relations Manager and the Group Strategic Relationships Manager.

d) AECI has introduced programmes such as Going Green to drive consistent messaging. All processes related to the Going Green programme are linked directly to AECI's values.

Going forward, consistency and alignment will also be achieved through the dedicated strategy for sustainable development currently being developed.

W6.6

(W6.6) Did your organization include information about its response to water-related risks in its most recent mainstream financial report?

Yes (you may attach the report - this is optional)

W7. Business strategy

W7.1

(W7.1) Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	> 30	Long-term is defined as more than five years into the future, in line with other business practice time horizons. Water-related risks and opportunities are integrated into our long-term business objectives. The Group's strategy or long-term business objective is to be the supplier of choice in the markets in which it operates and to continue to grow domestically as well as through ongoing expansion of its footprint within the geographies and markets served. It is acknowledged that this cannot be achieved without effective management of water-related risks and opportunities. In fact, water-related risks are captured in some of our most material matters, including: a) Inadequate supply of water of the requisite quality, leading to production interruptions in South Africa; b) Compliance risk, including compliance with tax and environmental laws and regulations; and c) Extreme or unpredictable weather events. For this reason, we continue to focus on the management of water-related risks and opportunities. Water-related decisions made in the reporting year included, among others: a) the development of improvement/reduction targets, to be achieved by 2025 b) the decision to develop a dedicated strategy for sustainable development. The strategy will include key focus areas aligned with the UN SDGs. c) the release of a dedicated sustainability report d) the launch of a new Going Green programme which includes water as a key focus area
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	> 30	Long-term is defined as more than five years into the future, in line with other business practice time horizons. Water-related issues are integrated into our plan for achieving the strategy or long-term business objectives. More specifically, the management of water-related risks and opportunities is part of this plan as it is seen as a critical element in realising the strategy. Nowhere is this more evident than in the new Going Green programme. The objective of this programme is to minimise environmental impact and drive a beyond compliance mind-set in the Group's own operations and across the value chain. One of the key focus areas is water. It can also be seen in our research and development focus areas. The AECI Growth Office (AECI.GO) was established in 2017. Its mandate includes identifying disruptors and customer needs that will shape the Business of Tomorrow. In the Business of Tomorrow, investment in research and development has included products that enable customers to reduce their water withdrawals or increase their resilience in the face of water-related challenges. Examples include: a) Our investment in SupPlant. This technology is a sensor-based system that waters crops according to gathered data. b) Participation by Nulandis in a disruptive digital farming platform through collaboration with a third party or direct investment. c) The implementation of desalination plants by ImproChem.
Financial planning	Yes, water-related issues are integrated	> 30	Long-term is defined as more than five years into the future, in line with other business practice time horizons. Water-related issues are integrated into financial planning elements. More specifically, water-related risks and opportunities are considered in financial planning. Examples include: a) Water-related risks and opportunities impact on our revenues in the short-, medium- and long-term. As such, we consider them in revenue expectations. In prior years, the drought in the Western Cape impacted several Group businesses. Nulandis sells products for the agricultural sector, the success of which is heavily reliant on weather and associated rainfall patterns. The drought in the Western Cape had a negative effect on Nulandis' profits in 2018, with results reducing from R133 million in 2017 to R119 million. b) Water-related risks and opportunities also impact our operating costs in the short-, medium- and long-term. When forecasting operating costs, we consider these risks. Examples include the increased price of water as a result of restrictions in the Western Cape and the higher-than-inflation electricity price increase trend. c) Mitigating water-related risks can require capital investment. For this reason, water-related risks and opportunities impact capital allocation in the short-, medium- and long-term and are considered in the capital allocation process. One example is the capital allocated to our longer-term zero effluent discharge projects at some key sites.

W7.2

(W7.2) What is the trend in your organization's water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

Row 1

Water-related CAPEX (+/- % change)
-16.45

Anticipated forward trend for CAPEX (+/- % change)
20

Water-related OPEX (+/- % change)
-5.72

Anticipated forward trend for OPEX (+/- % change)
10

Please explain
Water-related capex decreased in the financial year owing to the completion of the effluent reduction project at Chemical Initiatives. We anticipate that water-related capex will increase in future with the roll out of our Going Green programme and our efforts towards zero effluent discharges from key sites. We anticipate increases in the region of 20%. Water-related opex decreased due changes in our withdrawals. Our withdrawals for AEL Modderfontein decreased. It is anticipated that water-related opex will increase going forward due to increasing water tariffs. We anticipate increases in the region of 10%.

W7.3

(W7.3) Does your organization use climate-related scenario analysis to inform its business strategy?

	Use of climate-related scenario analysis	Comment
Row 1	Yes	

W7.3a

(W7.3a) Has your organization identified any water-related outcomes from your climate-related scenario analysis?
Yes

W7.3b

(W7.3b) What water-related outcomes were identified from the use of climate-related scenario analysis, and what was your organization's response?

	Climate-related scenarios and models applied	Description of possible water-related outcomes	Company response to possible water-related outcomes
Row 1	2DS	AECI acknowledges the need to limit the increase in global average temperature to below 2°C above pre-industrial levels. For this reason, climate change has been integrated into our Group-wide business strategy in the short-, medium- and long-term. This will safeguard our growth and sustainability in a low carbon economy. In terms of the results of the scenario analysis, it is clear that limiting the rise in temperature can limit the impact of climate change. However, even if the rise in global average temperature were limited to below 2°C above pre-industrial levels, the operating environment would still be water-constrained environment. This is particularly true for Group operations in South Africa. Given this, we need to enhance our ability to operate in a water-constrained environment.	To enhance our ability to operate in a water-constrained environment, we have undertaken the following - a) committed to Going Green as a corporate value. This value underpins all our business activities as we drive solutions for a sustainable future. More specifically, we provide sustainable alternatives for our customers, we work smarter and conserve resources and energy and we take into account how our work and processes impact on people and the environment b) launched the new Going Green programme, with the objective to minimise environmental impact and drive a beyond compliance mind-set in the Group's own operations and across the value chain. Water is one of the key focus areas of this programme c) implemented and sustained water use efficiency and water security initiatives. AEL, for example, has introduced recycled process water into its manufacturing facilities at Modderfontein. The water treatment solution has been provided by ImproChem d) worked further towards achieving zero effluent discharges from key sites in the longer term. Thereafter, these solutions will be offered to other upstream and downstream industry players.

W7.4

(W7.4) Does your company use an internal price on water?

Row 1

Does your company use an internal price on water?
No, but we are currently exploring water valuation practices

Please explain
We do not have a single internal price for water. However, we do consider the costs associated with water supply, treatment and the management of water-related risks and opportunities when compiling business plans, budgets and considering new investments. We consider the actual price associated with water. We do not believe a single internal water price would be accurate given that all our businesses are charged different rates for water and effluent, depending on location and other factors. For this reason, we use water prices as close as possible to actual prices to ensure the robustness of our business plans, budgets and investment decisions.

W8. Targets

W8.1

(W8.1) Describe your approach to setting and monitoring water-related targets and/or goals.

	Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Row 1	Company-wide targets and goals	Goals are monitored at the corporate level	Active water efficiency targets were in place in prior years. However, the applicable timeframes have lapsed. For this reason, in 2019 we focused on setting new targets to 2025. These targets will be active in 2020 and progress against them will be included in our 2020 CDP Response. In setting the new targets, significant focus has been placed on selecting a base year and ensuring that data on water withdrawals for this base year is accurate. For this reason, our base year water withdrawals are currently being assured by a third party. Although we did not have an active target in 2019, we continued to implement water use efficiency initiatives. As already indicated, we also launched our new Going Green programme. The purpose of this programme is to – a) drive innovative environmental solutions in current and future operations b) create awareness of Going Green among internal and external stakeholders c) drive a culture of good environmental practice and a beyond compliance mind-set in the workplace d) improve market competitiveness through Green Chemistry and best available technology in AECI's products and services e) reduce AECI's environmental impact through measurement and target setting f) improve the visibility of the Going Green programme among external stakeholders g) align Going Green with the UN SDGs This is part of AECI's broader Sustainable Development Strategy in development and due for finalisation in 2020. In Going Green programme, all employees are encouraged to identify ways in which AECI's environmental impact can be minimised. We also have goals in place to optimise our water usage, reduce our effluent discharges and minimise our environmental impact. The goals are applicable to all Group businesses in all geographies of operation. Progress towards meeting the goals is measured and monitored at Group level. The measurement of progress is simplified through the use of information that is already collated at Group level as indicators.

W8.1b

(W8.1b) Provide details of your water goal(s) that are monitored at the corporate level and the progress made.

Goal
Other, please specify (Optimise our water usage)

Level
Company-wide

Motivation
Other, please specify (Cost reduction)

Description of goal
Our goal is to reduce water withdrawals and improve water use efficiency in all our businesses and all geographies in which they operate. The motivation behind this goal is cost reduction and reduced exposure to water-related risks. Note that the timelines are indicative as it is an ongoing goal that is measured each year by comparing water withdrawals from the year in question against water withdrawals from the previous year. The goal is being implemented primarily through our new Going Green programme. The purpose of the programme is to - a) drive innovative environmental solutions in current and future operations b) create awareness of Going Green among internal and external stakeholders c) drive a culture of good environmental practice and a beyond compliance mind-set in the workplace d) improve market competitiveness through Green Chemistry and best available technology in AECI's products and services e) reduce AECI's environmental impact through measurement and target setting f) improve the visibility of the Going Green programme among external stakeholders g) align Going Green with the UN SDGs This is part of AECI's broader Sustainable Development Strategy in development and due for finalisation in 2020. Water is one of the key focus areas of this programme.

Baseline year
2018

Start year
2018

End year
2019

Progress
The indicator is water withdrawals and success is measured by a decrease. We monitor withdrawals and efficiency at Group level to monitor progress towards achieving our related goal. Water withdrawn by the Group's operations increased by 3.2%, due mainly to the inclusion of Schirm and Much Asphalt for the full 12-months this year. We anticipate a more accurate comparison next year. We also note that the water intensity of some of our products decreased year-on-year as a result of efforts to reduce withdrawals and increase water re-use and recycling.

Goal
Other, please specify (Cost reduction and compliance)

Level
Company-wide

Motivation
Other, please specify (Cost reduction and compliance)

Description of goal
Our goal is to reduce effluent volumes in all our businesses and all geographies in which they operate. The motivation cost reduction and compliance. Note that timelines are indicative as the goal is reviewed each year in the context of current performance versus that in the prior year. Initiatives to achieve this goal are implemented primarily through the new Going Green programme.

Baseline year
2018

Start year
2018

End year
2019

Progress
The indicator is discharges. Success is measured by a decrease in discharge volumes. We monitor discharges at Group-level to measure towards the achievement of our goal. In 2019 discharges increased in line with higher withdrawals.

W9. Verification

W9.1

(W9.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1a)?
Yes

W9.1a

(W9.1a) Which data points within your CDP disclosure have been verified, and which standards were used?

Disclosure module	Data verified	Verification standard	Please explain
W1 Current state	Total withdrawals	ISAE 3000	Total water withdrawals are verified by a third party. We verify this parameter owing to its importance for the business. It provides an indication of our efficiency and is a measure of our dependence on water. Our independent assurance was undertaken by Deloitte which selected the verification standard. Verification is conducted annually basis. For more information, please see the independent assurance provider's report on page 56 of our 2019 integrated report .

W10. Sign off

W-FI

(W-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

W10.1

(W10.1) Provide details for the person that has signed off (approved) your CDP water response.

	Job title	Corresponding job category
Row 1	Mark Dytor	Chief Executive Officer (CEO)

W10.2

(W10.2) Please indicate whether your organization agrees for CDP to transfer your publicly disclosed data on your impact and risk response strategies to the CEO Water Mandate's Water Action Hub [applies only to W2.1a (response to impacts), W4.2 and W4.2a (response to risks)].

Yes

SW. Supply chain module

SW0.1

(SW0.1) What is your organization's annual revenue for the reporting period?

	Annual revenue
Row 1	24799000000

SW0.2

(SW0.2) Do you have an ISIN for your organization that you are willing to share with CDP?

No

SW1.1

(SW1.1) Could any of your facilities reported in W5.1 have an impact on a requesting CDP supply chain member?

No, CDP supply chain members do not buy goods or services from facilities listed in W5.1

SW1.2

(SW1.2) Are you able to provide geolocation data for your facilities?

	Are you able to provide geolocation data for your facilities?	Comment
Row 1	No, not currently but we intend to provide it within the next two years	

SW2.1

(SW2.1) Please propose any mutually beneficial water-related projects you could collaborate on with specific CDP supply chain members.

SW2.2

(SW2.2) Have any water projects been implemented due to CDP supply chain member engagement?

No

SW3.1

(SW3.1) Provide any available water intensity values for your organization's products or services.

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain Questions?
I am submitting my response	Investors Customers	Public	Yes, submit Supply Chain Questions now

Please confirm below

I have read and accept the applicable Terms