



**OUR APPROACH  
TO WATER STEWARDSHIP**  
2019





## OUR PURPOSE

Our purpose is to make a difference by developing natural resources, improving people's lives now and for generations to come. We are trusted by our owners and partners to realise the potential of their resources.



## WHO WE ARE

South32 is a globally diversified mining and metals company. We produce bauxite, alumina, aluminium, energy and metallurgical coal, manganese, nickel, silver, lead and zinc at our operations in Australia, Southern Africa and South America. We are also the owner of a high grade zinc, lead and silver development option in North America and have several partnerships with junior explorers with a bias to base metals.



## OUR VALUES

### Care

We care about people, the communities we're a part of and the world we depend on.

### Trust

We deliver on our commitments and rely on each other to do the right thing.

### Togetherness

We value difference and we openly listen and share, knowing that together we are better.

### Excellence

We are courageous and challenge ourselves to be the best in what matters.

## IMPORTANT NOTICES AND DISCLAIMER

This document has been prepared by South32 Limited (ABN 84 093 732 597) for inclusion on South32's website and is for information purposes only. South32 has prepared this document based on information available as at June 2019. Performance metrics in this document apply to operations and one development option that have been wholly owned by South32, or that have been operated by South32 in a joint venture operation, from 1 July 2018 to 30 June 2019 (FY19).

South32 is a member company of the International Council on Mining and Metals (ICMM) and we report our sustainability information in accordance with the Global Reporting Initiative (GRI) Standards 'Core', including the GRI Mining and Metals Sector Disclosures. We align the reporting of our water data with the Minerals Council of Australia Water Accounting Framework (MCA WAF) and the ICMM Reporting Guidance and only include material input or outputs. We do not collect data from office locations as this is considered immaterial to the group overall and is predominantly managed through office lease agreements.

KPMG has provided independent assurance on the water data and information presented in the 2019 Sustainability Performance Report and the Management Disclosure Approach on our website, components of which are reflected in this report. A copy of the assurance opinion is located in our GRI Navigator, available at [www.south32.net](http://www.south32.net).

This document may contain forward-looking statements, including statements about plans, strategies and objectives of management; and anticipated productive lives of projects, mines and facilities. These forward-looking statements reflect reasonable expectations at the date of this document, however they are not guarantees or predictions of future performance.

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See the rest of our 2019 annual reporting suite at [www.south32.net](http://www.south32.net).



- Annual Report
- Corporate Governance Statement
- FY19 Sustainability Performance Report
- Our Approach to Climate Change
- Tax Transparency and Payments to Governments Report
- Modern Slavery Statement (November 2019)

# FROM THE CEO



I'm proud to present our first water report, which reinforces our commitment to the responsible management of water.

Our approach is holistic, centred on promoting better water use, effective catchment management and improved water security. To achieve this, we maintain water balances for all our operations, maintain water forecasts in our planning process, and undertake water resource risk and opportunity analyses.

We're focused on solutions that reduce our reliance on water. In FY19, we reduced our total water inputs by six per cent and improved our water efficiency by three per cent year-on-year.

In FY19 we completed our first water risk and opportunity analysis at our operations and we've committed to doing this every two years. From this work, we set targets at three of our operations with water-related material risk – Worsley Alumina, Hillside Aluminium and Mozal Aluminium. These targets align our water performance with the considerations of the local community. We will commence development of a target for Illawarra Metallurgical Coal in FY20.

As a member of the International Council on Mining and Metals (ICMM), we played a role in the development of the Council's Position Statement on Water Stewardship. It asks members to have strong and transparent water governance, effective water management, and to work with others to achieve responsible and sustainable water use. This year, we're sharing our first update on the progress made against these goals (Position Statement).

Access to water is a human right, and our planning considers all stakeholders. Through partnerships with the local community, we contribute to the advancement of the United Nations Sustainable Development Goals, particularly universal access to clean water and sanitation. In this report, we've included examples of our initiatives.

We recognise the significance of water-related risks to our business and to the community – and are shifting the way we think about water to a long-term, catchment-wide planning approach integrated across all areas of our business.

Water is a valuable resource we all share, and we'll continue to work with our host communities and stakeholders to make sure it's sustainably managed.

**Graham Kerr**  
Chief Executive Officer



# PURPOSE OF THIS REPORT

Our sustainability reporting provides transparent and accessible information that demonstrates how we are making a difference. Our Approach to Water Stewardship outlines our commitment to sustainable water management, and details our interactions with water, our associated risks and opportunities, and our performance for FY19.

As a member of the ICMM, we are committed to implementing the Position Statement on Water Stewardship. This year we are providing our first update on our progress against this Position Statement.

This report has been prepared in accordance with Global Reporting Initiative, and the ICMM's '*A practical guide to consistent water reporting*' (ICMM Guidelines) minimum disclosure standard, which sets out a framework for water reporting in the mining industry. Our water data is reported in line with the Minerals Council of Australia Water Accounting Framework (MCA WAF) input and output metrics. We have also considered the water-related disclosures required for CDP Water and the Dow Jones Sustainability Index.



# OUR APPROACH TO WATER STEWARDSHIP

We recognise that water is a valuable shared resource that requires integrated and effective management to ensure its availability and suitability for use by the whole of society. To achieve this, a fundamental shift in the way that water is managed globally is required.

Water is important to both our business, and the community. For us, water stewardship represents an opportunity for us to manage our interactions with water in a way that benefits everyone who relies on it.

As part of our approach to water, we:

- Integrate water management into our governance, policy, risk and business processes;
- Undertake water risk and opportunity analysis at each of our operations – taking into account environmental, social and economic factors;
- Assess the materiality of potential water-related risks and opportunities in line with our risk management framework, and determine appropriate controls;
- Set contextual water targets<sup>(1)</sup> at our operations with water-related material risk. These address catchment-level outcomes and help to broaden our perspective beyond operational needs; and
- Work together with stakeholders and the community to better understand their current and future needs, and any opportunities within the local water catchment.

We're focusing on solutions for all water users in the catchments in which we operate. This includes considering the impacts of climate change on water quality and quantity, the increasing pressure on water resources from population growth, and other societal trends (including industrialisation).

Access to water is a human right, and we have a responsibility to contribute to the United Nations Sustainable Development Goal (SDG) 6 through the way we manage water resources. For everyone working at our sites, we provide access to safe and affordable drinking water and sanitation (WASH) facilities.

## WHAT IS WATER STEWARDSHIP?

As an ICMM member, we are committed to meeting the goals of the ICMM Position Statement on Water Stewardship. The ICMM defines water stewardship as the use of water in ways that are socially equitable, environmentally sustainable, and economically beneficial.

<sup>(1)</sup> A contextual water target is a specific time-bound target that is set to deliver an intended outcome based on the environmental and social context of the local catchment. Refer page 16 for more detail.

# OUR WATER STEWARDSHIP JOURNEY

Since 2016, we've taken significant steps to address water stewardship.

## FY16

- Assessed short- and long-term water risks at Worsley Alumina refinery; and
- Constructed a desalination plant at Hillside Aluminium.

## FY17

- Established the internal Future Water Working Group;
- Commissioned the desalination plant at Hillside Aluminium;
- Contributed to the development of the ICMM Position Statement on Water Stewardship; and
- Constructed a water pipeline to allow transport of additional third-party surface water (non-potable) for Worsley Alumina refinery.

## FY18

- Assessed catchment-based water risks and opportunities for Worsley Alumina refinery;
- Built and commissioned a desalination plant at Mozal Aluminium; and
- Obtained access to third party surface water for Worsley Alumina refinery.

## FY19

- Assessed catchment-based water risks and opportunities for all operations;
- Set contextual water targets for Worsley Alumina refinery, Hillside Aluminium and Mozal Aluminium; and
- Released our first water report, Our Approach to Water Stewardship.

### FUTURE WATER WORKING GROUP

We set up the Future Water Working Group to encourage collaboration and integrated planning for water within our business. Representatives from our functions and operations meet to share information on the water-related activities of our operations, other industries and emerging technologies.

Our representatives are responsible for:

- Championing water stewardship in their functions and operations;
- Sharing knowledge on public policy, regulations and licences;
- Promoting efficient water use in our business activities;
- Collaborating with other operations in relation to water initiatives; and
- Helping to identify and realise water-related risks and opportunities for the business.

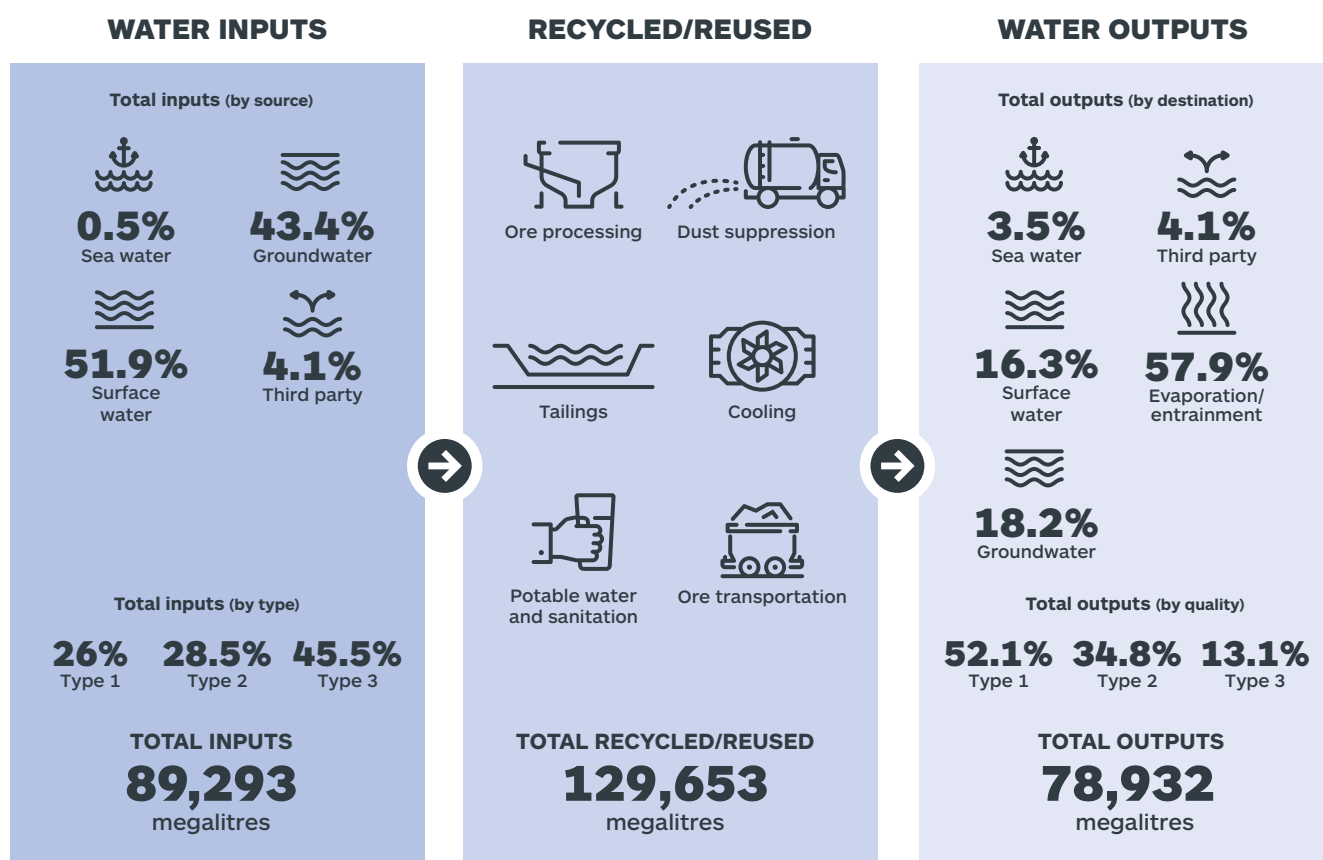
# WATER AT SOUTH32

Water is key to our business, and the communities and ecosystems in the catchments we operate in. We rely on it for our mining, refining and smelting processes, for dust suppression, tailings management and for water and sanitation facilities.

Our water comes from a variety of sources, including groundwater, surface water, sea water and third party suppliers. To limit our dependency on shared water, we recycle as much water as possible.

We also discharge it into the environment – we call these outputs, and classify discharge locations as groundwater, surface water, sea water, third party and ‘other’ – which includes evaporation.

We’ve summarised our water use for FY19 below<sup>(2)</sup>.



(2) In line with the MCA WAF, we define withdrawals as water inputs, and discharge as water outputs. Water quality is categorised as type 1 (close to drinking water standards), type 2 (suitable for some purposes) and type 3 (unsuitable for most purposes).

# OUR WATER RISK PROFILE

We're continuing to deepen our understanding of our water risk profile across all our operations and development options. In FY19, we completed a water risk and opportunity analysis at each of our operations and will continue to review the results in FY20. You can read more about our risk and opportunity analysis process in the Governance and risk management section of this report.

## WHAT RISK MEANS FOR US

### STRATEGIC RISK

We define a strategic risk as one that has the potential to significantly impact the delivery of our business goals and company strategy. Water is a key contributor to three of our strategic risks. These risks consider:

- **Security of supply of logistics chain and critical services** maintaining the ongoing security of water supply and the use of water for industrial purposes, which has the potential to lead to competition for water access and conflict amongst water users;
- **Climate change** and its projected physical impacts on our operations, including decreasing rainfall and drought, increasing frequency of extreme weather events and increasing temperatures; and
- **Changing societal expectations** and the importance of water in delivering outcomes that achieve shared value.

You can read more about our strategic risks on page 18 of our Annual Report.

### MATERIAL RISK

We define a material risk as one that has the potential to result in significant health, safety, environmental, reputational, legal, financial or community impact at our operations. A water-related material risk is a risk that is specifically related to water (e.g. supply, treatment, quality, use, storage or release) and meets the materiality threshold criteria as defined by our risk management framework.

## BASELINE WATER STRESS

Our operations and development options cover ten commodities across five countries. As at June 2019, 56 per cent of our operations were located within water stressed areas<sup>(3)</sup>. We determine baseline water stress<sup>(4)</sup> using the World Resources Institute (WRI) Aqueduct Tool<sup>(5)(6)</sup> based on operations within 'medium to high' areas of baseline water stress or above, including 'arid to low water use' areas<sup>(7)</sup>.

For the remainder of our operations:

- 16 per cent are located within areas of 'low to medium' baseline water stress; and
- 28 per cent are located within 'low' baseline water stress areas.

The more we understand our baseline water stress, the better we can assess the potential for water-related risk or opportunity within the water catchments where we operate. That said, baseline water stress is only one of several factors we consider when determining water-related risk.

For example, Worsley Alumina and Illawarra Metallurgical Coal are located in areas of (medium to high) baseline water stress. They are also exposed to risk associated with water scarcity and/or oversupply. Similarly, Mozal Aluminium and Hillside Aluminium are exposed to water scarcity risk, but their locations are characterised by (low to medium) baseline water stress using the WRI Aqueduct Tool.

For a deeper understanding of water risk, we look at:

- The results of our climate resilience assessments;
- Operational water requirements and production forecasts;
- Water supply options in the catchment;
- Socio-economic context;
- Rainfall and evaporation predictions; and
- Knowledge from local and regional governments on municipal water supply.

(3) Water stress is defined in the Glossary of this report.

(4) Baseline water stress is defined in the Glossary of this report.

(5) The WRI Aqueduct Tool is found here: <https://www.wri.org/our-work/project/aqueduct>. Accessed July 2019.

(6) We recognise the WRI Aqueduct Tool has limitations due to the limited detail of datasets for some of these locations, and the exclusion of groundwater resources.

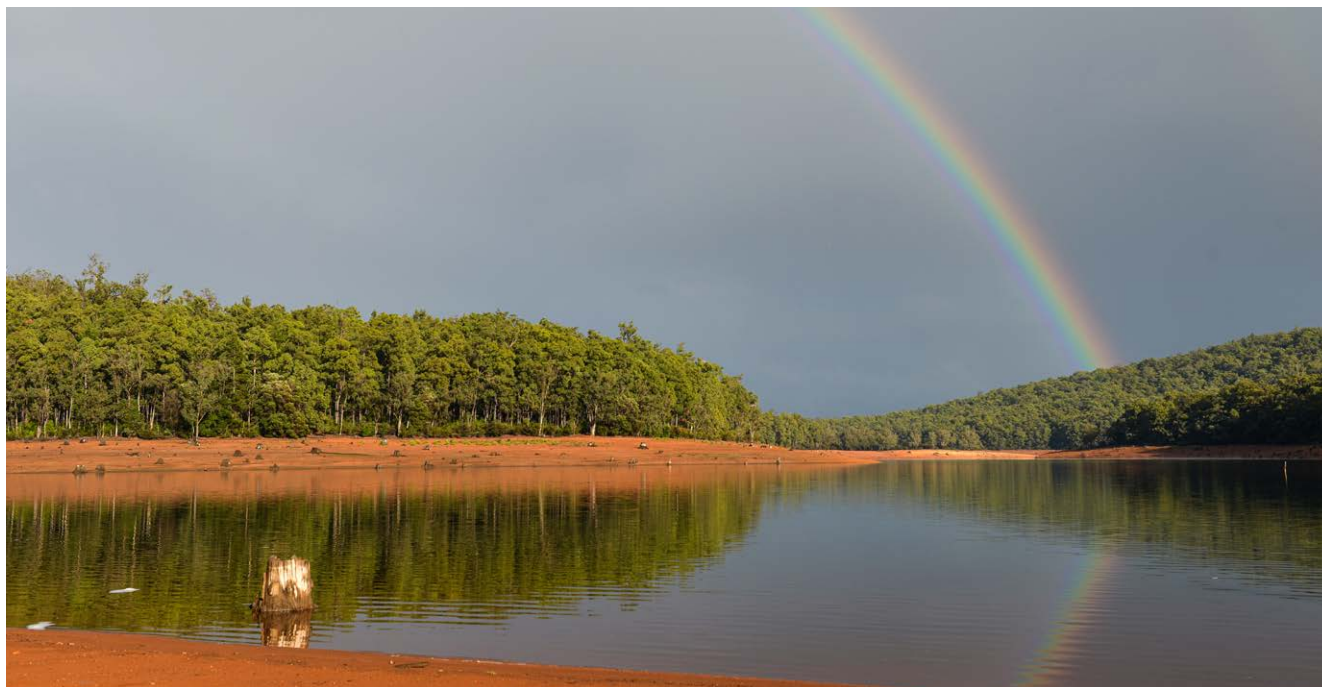
(7) The definition of 'arid and low water use' is derived from the WRI Aqueduct Tool and the descriptions for baseline water stress: Low (<10 per cent); Low to medium (10-20 per cent); Medium to high (20-40 per cent); High (40-80 per cent); Extremely high (>80 per cent); Arid and low water use; and no data.



## WATER-RELATED MATERIAL RISK

We are currently managing water-related material risk at five of our operations - Worsley Alumina, Hillside Aluminium, Mozal Aluminium, South Africa Energy Coal (SAEC) and Illawarra Metallurgical Coal.

We will continue to review our water risk profile to advance our understanding of the materiality of potential water-related issues.



### WORSLEY ALUMINA

Worsley Alumina consists of a bauxite mine and refinery in the southwest region of Western Australia – an area experiencing an increasingly drying climate. With declining rainfall and much less dam inflow in the region than in past years, Worsley Alumina faces a long-term water challenge.

#### Water-related Material Risk

The refinery is located within the Leschenault River catchment. We rely on onsite water storage and purchased water from the municipality for our operational needs during periods of low rainfall. With the drying climate causing increasing water scarcity risk, we sought to secure an alternative water source.

Following consultation with government and the community, we identified Wellington Dam as a water source option. With high levels of salinity, the water in the dam isn't suitable for potable use, and could be allocated for industrial use. In April 2017, we finished building a pipeline from Wellington Dam to the refinery.

By integrating water from the Wellington Dam, we worked to address our water scarcity risk and benefitted the community through a reduction in our reliance on potable water for the operation.

In FY18, around 800 megaliters (ML) or 3.4 per cent of our water inputs to the refinery came from the Wellington Dam. In FY19, we didn't require water from the Wellington Dam, as above-average rainfall during the year replenished our onsite water storage.

At Worsley Alumina, we're also managing oversupply risk. This is to prevent spillage from onsite water storage facilities to the environment, given the capacity of water storage within the refinery lease boundary. To manage the risk, we follow our water management strategy, which sets out controls including managing the water balance to ensure there's enough supply to:

- Sustain our operation at target production rates;
- Comply with approved ecological water releases to the Augustus River; and
- Sufficiently manage storage and capacity to prevent potential water overflow to the environment.

#### Contextual Water Target

This year, we set a contextual water target:

*To work towards a 10 per cent reduction in water demand at the refinery by FY28<sup>(8)</sup>.*

We're aiming to achieve a sustained reduction in water usage at the refinery. We've commenced studies to investigate technologies that can potentially strengthen climate resilience at the refinery, and over the next eight years, we'll implement water reduction projects to address the water scarcity risk.

You can read more about our contextual water target on page 16.

(8) Performance against the target will be assessed on an intensity basis (i.e. consumption/production), with FY19 as the base year.



## HILLSIDE ALUMINIUM

Hillside Aluminium is located in the Mhlathuze catchment in the northern coastal region of the province of KwaZulu-Natal in Richards Bay.

Land use in the catchment is dominated by afforestation regions, dryland sugarcane and irrigated crops. Around 50 per cent of the catchment is communally held land, which has seen relatively little agricultural or other forms of development. Cattle and subsistence farming are key activities in this area.

Irrigated agriculture largely occurs along the Mhlathuze River, downstream of the Goedertrouw Dam. Water released from the dam is abstracted by irrigators, either directly from the river or through canals. Water for urban, industrial and mining use is abstracted from the Mhlathuze Weir, treated and then distributed by the municipality.

### Water-related Material Risk

At Hillside Aluminium, we're exposed to the risk of variability in our water supply volumes from the catchment. The main potential impact is the reduction or disruption in production capacity due to reduced water availability. Until recently, our only source of water was from the municipality, which relies on surface water supply. Due to drought, this was identified as a material risk.

To address the risk, we established a grid-powered desalination plant that uses water from Richards Bay Harbour, securing an alternative water supply large enough for our processing needs. Using less water from the municipality benefits the local community and other water users in the catchment.

Given the economic benefit of water we purchase to the local economy, there needs to be a balance between buying water during catchment water surplus conditions and water-shortage events. We manage this balance to minimise conflict with other water users in the catchment.

When it came to desalination, we considered the trade-off between carbon, energy and water. In the end, our priority was to mitigate the operational risk through a second source of water.

We work with the Department of Water and Sanitation, and engage with other users in the Richards Bay Industrial Area. Water is managed in line with the requirements of our water use licence and associated disposal/recycling agreements.

We've put in place several water efficiency projects including water awareness campaigns for employees and contractors, addressing water leaks as 'breakdowns'; and reducing our reliance on municipal water supply by using desalinated water during periods of low water availability in the region. We also have an excess water-sharing agreement with neighbouring industry, Foskor Pty Ltd (Foskor), which you can read about on p.12.

### Contextual Water Target

This year, we set a contextual water target for Hillside Aluminium:

*We will develop an integrated and catchment-wide water management plan by the end of FY20, with the expectation that the plan will be fully implemented by FY23.*

We're aiming to contribute to building climate resilience in the catchment, both for Hillside Aluminium, our stakeholders and the community. You can read more about our contextual water target in our water targets on page 16.





**CASE STUDY:  
MANAGING WATER  
AT HERMOSA**

The Hermosa project is located within the Middle Sonoita Creek watershed in the Patagonia Mountains of Arizona.

With the project in exploration phase, we're using groundwater for dust suppression, drilling and conducting the voluntary remediation of an historic tailings storage facility, which we're undertaking with oversight from the Arizona Department of Environmental Quality.

We have a small water treatment plant to manage water associated with voluntary remediation activities. We're also using water diversion channels to divert stormwater away from site activities, in line with applicable permits.

We've undertaken extensive environmental surveys and will continue monitoring in line with our approved management plans and permits. This will help us assess changes in environmental conditions and the effectiveness of our management controls.

In line with Our Approach to Climate Change, we completed a climate resilience assessment in FY19 to consider design parameters for future climate scenarios. The outcomes will help us to develop and optimise the project.





## MOZAL ALUMINIUM

Mozal Aluminium is located within the Umbeluzi river catchment in the Maputo region of Mozambique. It sits within the Beluluane Industrial Park, which is bordered by the Matolo Estuary and the Matolo River.

Water at the operation comes from the Umbeluzi River and the Matola Estuary. We get additional supply from the local water utility, which is distributed by Fundo de Investimento e Património do Abastecimento de Água (FIPAG).

The Umbeluzi river catchment is subject to high future seasonal variability. We expect this to have an impact on the variability and unpredictability of our water supply. The fast-growing city of Maputo is also likely to place further strain on water availability.

Our climate resilience assessment has shown increasing drought conditions with changes in extreme weather patterns. Taking this into account, our rainfall-dependent water supply is likely to be highly variable and therefore unreliable, which could also affect supply to our operation.

## Water-related Material Risk

The increasing risk of water scarcity will potentially disrupt our production capacity. We see this as a water-related material risk. To manage it, we established a grid-powered desalination plant to secure an alternative, climate-resilient water source. You can read more about the process of securing an alternative water source in the case study on p.11.

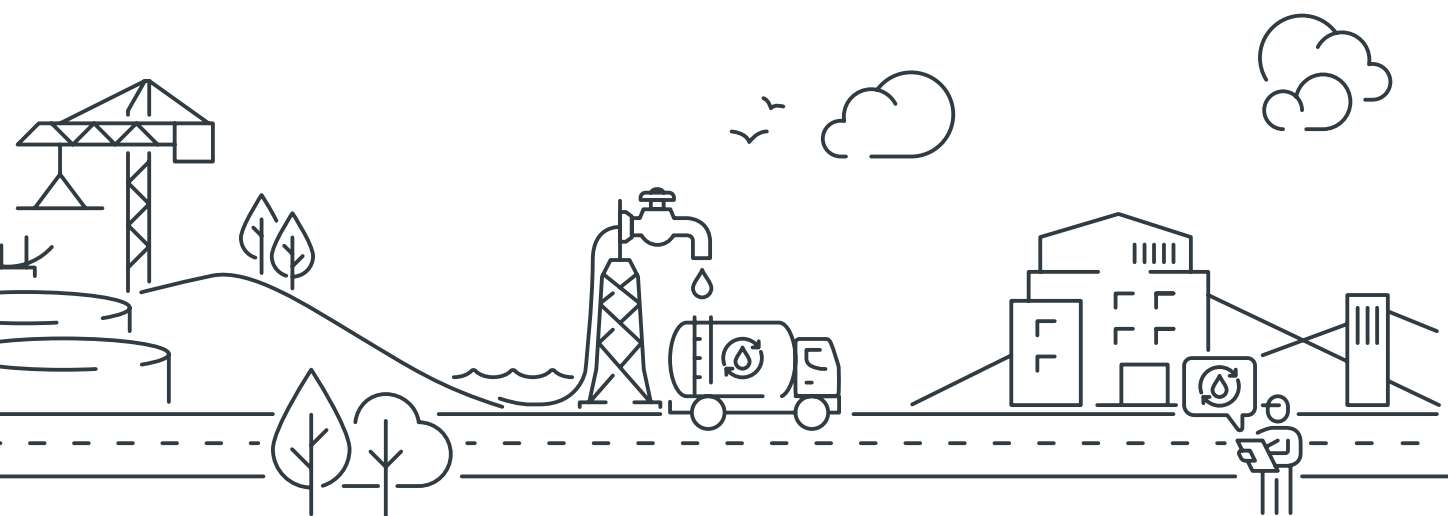
## Contextual Water Target

This year, we set a contextual water target for Mozal Aluminium:

*We will develop an integrated and catchment-wide water management plan by the end of FY20, with the expectation that the plan will be fully implemented by FY23.*

To reach this target, we'll work with government and other stakeholders in Mozambique to develop a catchment-wide management plan that balances short-term priorities with long-term opportunities. This will include consideration of other water sources to improve the resilience of users within the catchment.

You can read more about our contextual water target in our water targets on page 16.



## OUR PATHWAY TO SECURING AN ALTERNATIVE WATER SOURCE

In the Maputo region of southern Mozambique, rainfall in the 2015 and 2016 wet season was below average and dam storage had reduced to critical levels. In early 2018, with no rain forecast, the government announced water restrictions for Maputo and surrounding regions.

We immediately started research into an alternative water source. Groundwater and other surface water sources in the region were considered, however groundwater was too saline and low in availability, and other river sources were too remote. The best option for Mozal Aluminium was desalination.

We began a detailed options analysis to investigate location, energy supply, local catchment considerations and logistics. The learnings from completion of the desalination plant at Hillside Aluminium were valuable context for this process.

Three locations were considered. Our preferred location was close to the water source at the harbour, 17 kilometres from our smelter. Carbon emissions were another consideration. Given Mozal Aluminium sources most of its energy from hydroelectricity, the carbon emissions associated with operation of a desalination plant are negligible.

The desalination plant was commissioned in February 2018 and completed in time for successful integration into our aluminium operation by May 2018.

We currently transport water from the desalination plant to the smelter by road. We're now assessing the option of building a pipeline to improve logistical efficiency, and have been engaging with the community and the government about doing this. Desalination doesn't just give us access to an alternative water source – it also reduces our reliance on water from shared sources that are important for the community and other users in the local catchment.

In our options analysis, our key catchment-based considerations were:

- Location;
- Water supply options in the catchment;
- Socio-economic context and impacts on the local community;
- Physical impacts of climate change;
- Energy supply and carbon emissions;
- Operational water requirements and production forecasts; and
- Logistics.

**CASE STUDY:  
WATER SHARING IN THE  
MHLATHUZE CATCHMENT**

At Hillside Aluminium, we capture stormwater flow by directing it to an onsite impoundment dam. To reduce the volume of wasted stormwater that evaporates during storage, or is needed to be discharged to sea, we pump stormwater from the dam and pipe it to our neighbouring industry, Foskor, so they can use it.

We apply different minimum supply rates of the excess stormwater to Foskor during wet and dry seasons. We test the water quality and provide data to Foskor to make sure they fully understand the quality of the water they're getting.

Recycling is a win-win for everyone. Foskor uses the stormwater to process their product, while we reduce our impact on the natural environment. It also keeps our impoundment dam level low enough to cater for rainfall events.







## SOUTH AFRICA ENERGY COAL

We have four collieries at SAEC: Khutala, Wolvekrans, Klipspruit and Ifalethu, and five processing plants. We produce energy coal in the coalfields of the Olifant Catchment and Olifants Water Management Area, within the Mpumalanga Province of South Africa.

The land use surrounding SAEC includes agriculture, power supply infrastructure and other mining operations, with agriculture and mining being the main water users in the province.

SAEC is located within an area of medium to high baseline water stress. While the availability of good quality surface water in the region is declining, groundwater is in surplus.

### Water-related Material Risk

At SAEC, the water-related material risks are linked to excess water due to water generated in the underground mine voids and rainfall resulting in an increased water footprint. To manage these risks, we've installed water treatment plants to release water into the environment.

In the eMalahleni Local Municipality, a water reclamation plant is being used to partially treat water for reuse by a neighbouring mining operation. Excess water is also being treated to potable standards for integration into the municipal supply, which helps in meeting their water demand.

At Wolvekrans and Klipspruit, we're looking into installing modular treatment plants to reuse low quality excess water from dewatering activities. At Ifalethu, we're planning to increase our water treatment capacity to make room for the increasing volumes of dewatering predicted in the mining extension areas.

At Klipspruit, we're working closely with regulatory authorities to get the necessary authorisations to operate a modular water treatment plant, which has the potential to be upgraded in the future. We're already working on ways to reuse water – including piloting a water transfer scheme to the eMalahleni Water Treatment Plant that supplies potable water to the municipality and surrounding mines. We're also finalising a water-sharing agreement to Mzimkhulu Colliery, for use as dust suppression during construction activities.

Because SAEC is subject to a divestment process, we have not taken steps to consider a contextual water target.



## ILLAWARRA METALLURGICAL COAL

We have two underground coal mines at Illawarra Metallurgical Coal: Appin in the Georges River and the Hawkesbury-Nepean catchments, and Dendrobium in the Cordeaux and Avon Dam catchments. Both are located in water-sensitive environments, and we work with stakeholders to understand and manage our potential impact on these catchments.

### Water-related Material Risk

The water-related material risks at Illawarra Metallurgical Coal are linked to operational water management, and our ability to meet the increasing regulatory requirements and community expectations from a water access, use and discharge perspective. The risk profile is also influenced by our potential exposure to increasing water restrictions associated with a broader water supply issue across the Sydney region, and the proximity of the operations to water catchment areas and other sensitive receptors.

At Dendrobium, we're focused on assessing and managing our potential impacts on the local water catchments, as we understand the important role they play in the region's water supply network. Water generated from our mining activities is used to support the majority of our mining processes, with excess discharged into the environment. This excess discharge represents an opportunity, given it can potentially be reused by other water users.

We work closely with government agencies, such as WaterNSW, who are responsible for water regulation in our catchment. We're continuing to carry out comprehensive environmental assessments to support our mine planning. We operate under strict regulatory requirements, including management plans approved by WaterNSW.

In FY18, we engaged with the newly-formed Independent Expert Panel on Mining in Sydney's Drinking Water Catchment (the Panel) – formed as an advisory body to the NSW Government. In FY19, we worked with the Panel providing briefings and tours of the catchment area above the mine. To help the Panel progress their work, we also provided water-related data as requested.

The area surrounding Appin is potentially susceptible to water scarcity in the future. This is due to the changing climate and significant economic growth in the region. We operate a water filtration plant that's used to desalinate underground water for reuse in our mine processes, which reduces our reliance on water supply from the Sydney water catchment. The treated water is either pumped underground or discharged into the Nepean River, while the excess water (or brine) is discharged at a local industrial precinct, in line with environmental licences.

In FY19, we completed work to increase the capacity of the water filtration plant. This means we can reuse more water from underground, as well as reduce our consumption of potable water from local water providers.

We're looking into ways that we can improve discharge water quality from our Appin mine. We'll continue this into FY20, and make sure we keep our communities updated.

We will commence development of a contextual water target for Illawarra Metallurgical Coal in FY20, building on the approach and learnings from establishing targets at Hillside Aluminium, Mozal Aluminium and Worsley Alumina.



**CASE STUDY:**  
**OUR MINE PLANNING**  
**APPROACH AT ILLAWARRA**  
**METALLURGICAL COAL**

The concept of 'avoid, mitigate, offset' is a key part of our approach to mine planning at Illawarra Metallurgical Coal. We apply this upfront in our mine planning process when we're considering site selection and longwall design, as well as during construction and operation, to address potential impacts on biodiversity and water.

To minimise impacts to the natural environment, we incorporate key constraints into the design of longwalls and the layout of underground mining and surface infrastructure. These include underground setbacks of up to one kilometre from walls of prescribed dams, setbacks from named watercourses and key stream features including waterfalls and permanent pools, and avoiding mining beneath specific dam waterbodies.

For the next domain proposed at our Dendrobium mine, we've incorporated avoidance measures and setbacks into the design to minimise potential impacts to surface water features and surface water supply infrastructure. These include longwall setbacks from both the Avon and Cordeaux Dam walls, and setbacks from named watercourses including the Cordeaux River, Avon River and Donalds Castle Creek. The design also ensures we're not mining under the existing Avon and Cordeaux Dam waterbodies.





# OUR WATER TARGETS

During FY19, we introduced contextual water targets at three of our operations with water-related material risk: Worsley Alumina, Hillside Aluminium and Mozal Aluminium. In FY20 we will build on this work and commence development of a contextual water target at Illawarra Metallurgical Coal.

## WHAT IS A CONTEXTUAL WATER TARGET?

A contextual water target is a specific time-bound target that is set to deliver an intended outcome based on the environmental and social context of the local catchment. Setting targets, either quantitative or qualitative, will enable us to align our water performance with the thresholds of the catchment (quantitative), or through support of policies and initiatives at the catchment-level (qualitative).

## HOW DID WE SET MEANINGFUL CONTEXTUAL TARGETS?

We reviewed the results of the water risk and opportunity analysis we completed in FY19 and used the following information to inform appropriate targets:

- Existing water-related management activities;
- Internally focused operational targets for water use;
- Current and forecast status of catchment conditions;
- An understanding of the current catchment users and local regulatory processes (local water context) to the greatest extent available at each location; and
- Our external water commitments including SDG 6 targets.

Through this analysis, we determined that qualitative targets were appropriate for Hillside Aluminium and Mozal Aluminium, and that a quantitative target focused on our own water use would be most suitable for Worsley Alumina. We then held a series of workshops at operations to draft and assess the achievability and timing of these targets and developed a list of actions to support this.

## OUR CONTEXTUAL WATER TARGETS

Details on the three contextual water targets we set in FY19 are summarised below.

Operation	Our contextual water target	Considerations	Our next steps
Hillside Aluminium	Develop an integrated and catchment-wide water management plan by the end of FY20, with the expectation that the plan will be fully implemented by FY23.	We considered the needs of other catchment users and existing water initiatives in the Mhlathuze river catchment.	<ul style="list-style-type: none"> <li>■ Work with stakeholders in the Mhlathuze river catchment to develop a single management approach to address the shared water challenge; and</li> <li>■ Join the uMhlathuze Water Stewardship Partnership (uWASP), where we'll work with other industries, government and the community to develop a management plan. Refer to Partnerships and Collaboration for more information on uWASP.</li> </ul>
Mozal Aluminium	Develop an integrated and catchment-wide water management plan by the end of FY20, with the expectation that the plan will be fully implemented by FY23.	We considered the needs of other catchment users and existing water initiatives within the Umbeluzi river catchment.	<ul style="list-style-type: none"> <li>■ Engage with the Fundo de Investimento e Patrimônio do Abastecimento de Água and non-governmental organisations to understand current catchment status and long-term water projects in Maputo;</li> <li>■ Build capacity with a focus on broad-based water management and access to funding; and</li> <li>■ Develop an operating framework for our existing desalination plant.</li> </ul>
Worsley Alumina	Work towards delivering a 10 per cent reduction in water demand at the Worsley Alumina refinery by FY28.	We considered water demand at the refinery, long-term climatic conditions, and potential competition in the catchment. The target is based on detailed studies and is consistent with outcomes from recent climate modelling that points to an annual average water deficit in the southwest region where we operate.	<ul style="list-style-type: none"> <li>■ Carry out risk mitigation activities with the objective of protecting available water resources while supporting alumina production;</li> <li>■ Continue to work on identified water reduction projects; and</li> <li>■ Maintain engagement with the community, regulators and non-governmental organisations.</li> </ul>

# OUR PERFORMANCE

We report our water data in line with the MCA WAF, which is an accepted water accounting framework. It aims to improve data integrity and comparability in the mining sector - and ultimately improve water reporting across the industry.

Since FY18, we have integrated the ICM Reporting Guidelines into our reporting methodology.

## A NOTE ABOUT OUR TERMINOLOGY

In line with the MCA WAF, we define water withdrawals as inputs, and water discharge as outputs. These are summarised in the diagram on page 5 and detailed in the tables below. Water quality is categorised as:

- Type 1 - close to drinking water standards;
- Type 2 - suitable for some purposes; and
- Type 3 - unsuitable for most purposes<sup>(9)</sup>.

## THE BOUNDARY AND SCOPE OF THIS REPORT

This report covers our operating assets that have been wholly owned and/or operated by South32 between 1 July 2018 to 30 June 2019, and one development option<sup>(10)</sup>. It also includes SAEC. Hereafter, we refer to these assets as our 'operations'. The scope of this report does not include non-operated joint ventures or administrative offices.

Immaterial changes have been made to prior year data disclosures to better reflect current reporting practices. These data disclosures are shown in *italics*.



(9) The water quality categories in the MCA WAF are directly linked with current ICM definitions. Types 1 and 2 are considered 'High Quality' and type 3 considered as 'Low Quality'. The GRI definitions of water quality are divided into 'freshwater' (water with concentration of total dissolved solids equal to or below 1,000 mg/L) and all remaining quality as 'other water'. The GRI definition of 'freshwater' aligns with the MCA WAF definition of type 1. 'Other water' links to types 2 and 3 as reported in this report.

(10) Water performance data for FY19 does not include the Eagle Downs development option due to the immaterial water volumes utilised while the project is in development phase.

## INPUTS

An input is a volume of water that's received and intended for use by the operational facility. It includes water that has become available from within the facility (e.g. groundwater that may be accessed while dewatering the ore body) and will be reported by type, and source (seawater, groundwater, surface water and third party supplied). The data on inputs provided below doesn't include diversion<sup>(11)</sup> flows.

### BREAKING DOWN THE NUMBERS

In FY19, our total water inputs and our inputs of type 1 water decreased by six per cent (each) compared with FY18. This was mainly due to higher rainfall at several operations, as well as increased water recycling, which reduced our overall reliance on water from third party suppliers. Our use of seawater (type 3) decreased as Hillside Aluminium reduced its use of the desalination plant due to improved water access in the catchment (in line with local authority agreements).

In FY19, our water inputs from third party suppliers decreased by 22 per cent. This was due to several factors, including increased rainfall at some locations, which reduced our need for additional water supply.

Inputs by quality and source	Unit of measurement	FY17	FY18	FY19
Water input by quality – type 1	megalitres	20,051	24,601	23,230
Water input by quality – type 2	megalitres	29,234	23,845	25,447
Water input by quality – type 3	megalitres	42,952	46,626	40,616
Water input by source – surface water	megalitres	49,419	56,376	46,370
Water input by source – groundwater	megalitres	29,295	33,087	38,763
Water input by source – seawater	megalitres	415	863	456
Water input by source – third party water	megalitres	13,107	4,746	3,704

By quality, type 3 water made up 45.5 per cent of the water we withdrew in FY19, and by source, 52 per cent of our inputs came from surface water. Our total water inputs for operations with water-related material risk are as follows.

Total inputs for operations with water-related material risk	Unit of measurement	FY17	FY18	FY19
Total inputs – Worsley Alumina refinery	megalitres	16,690	23,785	19,088
Total inputs – Mozal Aluminium	megalitres	460	467	706
Total inputs – Hillside Aluminium	megalitres	899	1,355	837
Total inputs – Illawarra Metallurgical Coal	megalitres	7,496	5,643	5,618
Total inputs – SAEC	megalitres	32,363	30,885	28,083
<b>Total</b>	megalitres	57,908	62,135	54,332

At Mozal Aluminium, water inputs increased during FY19 as we conducted trials to run the desalination plant for optimum efficiencies.

For operations located in areas of baseline water stress<sup>(12)</sup>, the total water inputs by type and source are provided below. Most of the water withdrawn for these operations is type 3 water, making up 69 percent of the total water input by quality. By source, 50 per cent of water at these operations came from surface water in FY19.

Inputs in areas of baseline water stress	Unit of measurement	FY19
Water input by quality – type 1	megalitres	9,046
Water input by quality – type 2	megalitres	7,909
Water input by quality – type 3	megalitres	38,146
Water input by source – surface water	megalitres	27,764
Water input by source – groundwater	megalitres	25,016
Water input by source – seawater	megalitres	0
Water input by source – third party water	megalitres	2,321
<b>Total input from operations located in water stressed areas</b>	megalitres	55,101

(11) Our operational reporting model does not include the reporting of diversions, being water that is diverted away from or actively managed by a site but not used for any operational purposes.

(12) As defined using the WRI Aqueduct Tool found here: <https://www.wri.org/our-work/project/aqueduct>. Accessed July 2019.



## OUTPUTS

An output is a volume of water which is removed from the operational facility after it has been through a task, treated or stored for use. Outputs are grouped according to their destination, of which there are five categories (surface water, groundwater, seawater, third party (supplied) and 'other'). Between FY18 and FY19, the total water outputs across our operations increased by two per cent<sup>(13)</sup>.

Outputs by quality and destination	Unit of measurement	FY17	FY18	FY19
Water output by quality – type 1	megalitres	36,262	39,797	41,128
Water output by quality – type 2	megalitres	21,972	28,198	27,493
Water output by quality – type 3	megalitres	14,203	9,318 <sup>(14)</sup>	10,312
Total output to surface water	megalitres	15,163	13,581	12,828
Total output to groundwater	megalitres	3,585	14,270	14,352
Total output to seawater	megalitres	3,570	4,034	2,769
Total output to third party	megalitres	11,505	2,382	3,260
Total output to 'other'	megalitres	38,613	43,046	45,724

There was an increase to output 'other' between all our reported years due to improved water accounting, reporting efficiencies around data capture and an increase in evaporation from our processing facilities and water holding structures.

In FY19, 58 per cent of our water outputs were discharged to 'other', which comprises evaporation, water entrained in waste material such as tailings and concentrate, water lost in tasks and any other destination that does not include surface water, groundwater, seawater or third parties.

The total water outputs for our operations with water-related material risk are as follows.

Total outputs for operations with water-related material risk	Unit of measurement	FY17	FY18	FY19
Total outputs – Worsley Alumina refinery	megalitres	9,685	9,760	9,499
Total outputs – Mozal Aluminium	megalitres	245	340	262
Total outputs – Hillside Aluminium	megalitres	311	797	837
Total outputs – Illawarra Metallurgical Coal	megalitres	5,902	4,541	4,424
Total outputs – SAEC	megalitres	23,374	11,645	13,723
<b>Total</b>	megalitres	39,517	27,083	28,745

The total water outputs by type and source for our operations located within areas of baseline water stress are as follows.

Outputs in areas of baseline water stress	Unit of measurement	FY19
Water output by quality – type 1	megalitres	21,638
Water output by quality – type 2	megalitres	3,767
Water output by quality – type 3	megalitres	3,544
Water output to surface water	megalitres	5,801
Water output to groundwater	megalitres	81
Water output to seawater	megalitres	2,302
Water output to third party	megalitres	2,012
Water output to 'other'	megalitres	18,753

For our operations within areas of baseline water stress, 75 per cent of our outputs by quality are type 1 water. Evaporation of water is categorised in our reporting as type 1 in quality due to the physical nature of evaporation leaving solutes in place during the evaporation process. By source, 65 per cent of water at these operations was discharged to output 'other' in FY19. These account for evaporation and entrainment of water in our processes.

(13) In FY18, seepage and surface assumptions were updated in the GEMCO water model to create increased consistency in reporting between tailings facilities.

(14) There was a 15.2 per cent variance to an FY18 figure. This variance is due to an update to our water accounting during FY19, which has improved data accuracy.

## CONSUMPTION

We calculate water consumption in accordance with the MCA WAF and report it in line with the ICMM Guidelines. Consumption is defined as the calculated sum of evaporation, task or process loss, and water entrained in the outgoing product. Our water consumption increased by six per cent during FY19.

Water consumption	Unit of measurement	FY17	FY18	FY19
Total consumption by quality – type 1	megalitres	31,875	36,135	36,647
Total consumption by quality – type 2	megalitres	4,520	1,540	2,597
Total consumption by quality – type 3	megalitres	2,218	5,371	6,480
<b>Total consumption</b>	megalitres	<b>38,613</b>	<b>43,046</b>	<b>45,724</b>

In FY19, 80 per cent of the water we consumed was good quality type 1 water, with six per cent and 14 per cent consumption of type 2 and 3, respectively. Water consumption from our operations in water stressed areas made up 41 per cent of the total water consumed by all our operations during FY19.

Water consumption	Unit of measurement	FY17	FY18	FY19
Total consumption for operations located in water stressed areas	megalitres	N/A	N/A	18,753

## RECYCLING AND REUSE

Reused water is (worked) water that is used in a task within our operational boundary without treatment beforehand. Recycled water is (worked) water that is treated before it is used in a task within our operational boundary. Our total water withdrawal for FY19 was 89,293ML, and our total recycled and reused was 129,653ML. This resulted in a 10 per cent increase of recycling and reuse between FY18 and FY19.

Recycling	Unit of measurement	FY17	FY18	FY19
Water recycled and reused	megalitres	102,264	117,516 <sup>(15)</sup>	129,653

## WATER EFFICIENCY

Total water efficiency is calculated as a percentage of the total volume of water recycled and reused, based on our total water input. Overall, the water efficiency for our operations increased by three per cent in FY19.

Water efficiency	Unit of measurement	FY17	FY18	FY19
Total water efficiency	percentage	53	55	59
Total water efficiency for operations located in water stressed areas	percentage	N/A	N/A	21

The total water efficiency for sites in water stressed areas is represented as a portion of the total water efficiency for all operations, based on the operations located within areas of baseline water stress.

## FINES AND PENALTIES

In February 2019, Illawarra Metallurgical Coal was fined A\$30,000 by the NSW Environment Protection Authority. The fine comprised two A\$15,000 amounts for failure to operate/maintain pollution control equipment and alleged pollution/impact to the Georges River against conditions of our Environmental Protection Licence. No impacts to aquatic fauna were observed and potential environmental impacts were reduced due to prompt action by South32 to pump the discharge back to onsite storage dams at Appin East colliery. Tests two weeks after the Environment Protection Authority inspection showed water in the area was clear with no residue detected. South32 environment personnel carried out remediation work and have improved maintenance and monitoring systems with the intention to avoid a similar occurrence in the future.

We received three minor water fines relating to Hillside Aluminium.

(15) There was a 9.8 per cent variance to an FY18 figure. This variance is due to an update to our water accounting during FY19, which has improved data accuracy.



**CASE STUDY:  
WATER EFFICIENCY  
AT CERRO MATOSO**

At Cerro Matoso in Colombia, our ferronickel processing plant reuses a significant volume of water in its production process. The operation is authorised to capture water from the nearby Uré River, which it uses to cool liquid metal. This water is then transported and stored in cooling ponds before being pumped back through the plant for reuse in the same process. The cycle allows us to use a fraction of the water we're authorised to take from the river, significantly reducing our reliance on this shared resource.

We're also developing a water inventory model to help us identify new options for rainwater storage. This work could reduce the volume of water we're taking from the Uré River even further.



## ICMM POSITION STATEMENT ON WATER STEWARDSHIP

As an ICMM member, we're committed to following the Position Statement on Water Stewardship. South32 has made significant progress in implementing these commitments, with plans to further integrate them into our business practices in FY20. Our progress is outlined in the table below.

Table 1 Our progress against the ICMM Position Statement on Water Stewardship commitments

Goal	Commitment	Demonstrated Progress
<b>Apply strong and transparent corporate water governance</b>	<i>Disclosure</i>	Annual reporting in the South32 sustainability reporting suite, including this report – Our Approach to Water Stewardship.
	<i>Allocate responsibilities</i>	Responsibilities for water governance are clearly outlined in our water stewardship framework. All functions and operations have access to this framework through our internal communication hubs.
	<i>Integrate into business plan</i>	Water planning and forecasting requirements are reflected in our environment standards, and integrated into our life of operation planning process.
	<i>Water reporting publicly</i>	Annual reporting in the South32 sustainability reporting suite, including this report – Our Approach to Water Stewardship.
<b>Manage water at operations effectively</b>	<i>Maintain water balance and understand cumulative impacts of other users</i>	Our operations maintain a water balance, and the data is collated in accordance with the MCA WAF. Through our water risk and opportunity analysis, we're working to quantify and qualify the cumulative impacts of other users in each catchment.
	<i>Contextual water targets</i>	Contextual water targets have been developed and approved for three operations <sup>(16)</sup> that have been identified as having one or more water-related material risks.
	<i>Water quality and quantity</i>	We manage water quality and quantity at each operation in accordance with our environment standards, as well as local, regional and national legislative requirements.
	<i>Water, adequate sanitation and hygiene (WASH)</i>	Each operation manages WASH in accordance with our standards, as well as local, regional and national legislative requirements.
<b>Collaborate to achieve responsible and sustainable water use</b>	<i>Catchment risks and opportunities</i>	We completed a water risk and opportunity analysis at all operations in FY19. We're working to evaluate these potential water-related risks to determine materiality and identify appropriate controls.
	<i>Stakeholder engagement</i>	In line with our standards and processes, we proactively engage with stakeholders at a global and operational level.
	<i>External governance</i>	We actively engage and partner with governments, local authorities and non-governmental organisations, and view this as a key part of delivering catchment-based outcomes. Some examples are described in the Partnerships and Collaboration section of this report.
	<i>Water stewardship</i>	We continue to integrate our water stewardship framework into all business activities. Some examples of these initiatives have been included as case studies throughout this report.

(16) Work is ongoing to assess water-related material risk at remaining operations





**CASE STUDY:  
SECURING POTABLE  
WATER FOR OUR  
EMPLOYEES AT WESSELS**

The Wessels manganese mine in South Africa is currently in the late stages of a study that is looking at installing a water purification plant to deliver an alternative source of potable water for its employees. With only a single source of water at the operation, Wessels recognised the need for an alternative source of potable water to reduce the risk of water interruptions at site. The water purification plant has the potential to reduce calcium carbonate levels in the local water supply and treat water from the underground ventilation shaft to drinking water standards. This presents an opportunity to provide a secure, clean and reliable water source for our employees at Wessels.

# GOVERNANCE AND RISK MANAGEMENT

This section explains the policies and frameworks we have in place that support the integration of water stewardship across our business.

## GOVERNANCE

Our Board has ultimate responsibility for our company's governance and strategic direction. Our Sustainability Committee represents and assists the Board with its sustainability responsibilities including water stewardship.

In relation to water stewardship, the Sustainability Committee also:

- Represents the Board in managing water-related risks and opportunities;
- Reviews, ratifies and oversees water and sustainability matters involving risk management, risk controls and legal compliance;
- Reports on these matters to our Risk and Audit Committee; and
- Reviews and endorses our water targets.

Our Lead Team supports the work of both the Sustainability Committee and the Risk and Audit Committee, with overall responsibility for water management assigned to our Chief Executive Officer.

At a management level, the Chief Sustainability Officer is responsible for monitoring of water performance, reporting on water-related risks and opportunities, and providing governance updates to the Sustainability Committee. Our Chief Operating Officers are responsible for managing and executing specific projects aimed at controlling these risks and opportunities.

The table below summarises our governance processes, and outlines achievements from FY19 that support water stewardship across the business.

<b>Climate change</b>	We complete climate resilience assessments as part of Our Approach to Climate Change. They consider water-related drivers at our operations, including water scarcity, extreme weather events, rising temperatures and flooding. The results are integrated into our life of operation plans, and captured in our risk assessment processes. You can read Our Approach to Climate Change on our <a href="#">website</a> .
<b>Environment</b>	<p>Our operations manage their water resources in line with our environment standards, and the relevant legislative requirements in each jurisdiction.</p> <p>Our environment standards require each operation to adopt a holistic approach to water use and effective catchment management. At a minimum, this includes:</p> <ul style="list-style-type: none"> <li>■ Assessing the baseline conditions of water resources within the operation's area of influence;</li> <li>■ Maintaining a water balance and a water resource forecast;</li> <li>■ Water risk and opportunity analysis; and</li> <li>■ Documenting and managing potential environmental impacts (both actual and foreseeable).</li> </ul>
<b>Community and stakeholder engagement</b>	<p>In line with our community standards, we engage with stakeholders at a global and operational level. This involves identifying stakeholders that may influence or be impacted by an operation's interactions with water, including governmental and non-governmental organisations, regulators, other businesses and the community.</p> <p>Our standards also require each operation to undertake social baseline studies, social impact assessments and human rights due diligence, and develop locally appropriate community complaints and grievance processes.</p>
<b>Tailings</b>	<p>We established our tailings dam management standard in FY18, in line with our commitments to the ICMM Position Statement on Preventing Catastrophic Failure of Tailings Storage Facilities. It sets out the minimum requirements for responsible tailings dam management and conformance with industry practices.</p> <p>You can read more about our Tailings storage facilities management in our Tailings Storage Facilities Management 2019 Report on our <a href="#">website</a>.</p>
<b>Mine closure</b>	<p>All our operations have Closure plans that reflect the ICMM Closure Toolkit.</p> <p>In FY19, we released new standards that formalise our approach to closure management globally. These standards align with the ICMM <i>Guidelines for Encouraging Responsible Closure</i>, and they apply to all assets under our operational control. The standards cover four main areas: Closure planning; Closure cost provisioning; Progressive rehabilitation; and Execution of closure activities.</p>
<b>Human rights</b>	<p>We're working to mitigate potential human rights risks across our operations. Currently, this involves reviewing high priority areas of risk within our supply chain.</p> <p>As part of our community standards, our operations regularly conduct human rights impact assessments. These take into consideration human access to safe, sufficient and affordable water, sanitation and hygiene facilities. You can read more about this in our annual Modern Slavery Statement on our <a href="#">website</a>.</p>
<b>Health and safety</b>	<p>Our health and safety standards require us to consider the health, safety and wellbeing of our employees when assessing and managing WASH risks - at our operations, and within our host communities.</p> <p>All operations and facilities controlled by South32 monitor water quality and volumes associated with ablution and water treatment facilities. This includes providing potable water and sewage treatment facilities to keep our employees safe and healthy at work.</p>



## POLICIES AND FRAMEWORKS

Our sustainability policy sets out our company-wide commitment to sustainable development. It outlines our approach to material sustainability risks, and covers the principles and requirements set out in the ICMM Sustainable Development Framework, the ICMM Position Statement on Water Stewardship, and the *UN Global Compact*.

Our sustainability policy can be found at [www.south32.net](http://www.south32.net).

### ICMM POSITION STATEMENT ON WATER STEWARDSHIP

As an ICMM member, we were pleased to play a role in the development of the Position Statement on Water Stewardship. We're committed to implementing the requirements outlined in that statement, which include:

- Applying strong and transparent water governance;
- Managing water at operations effectively; and
- Collaborating to achieve responsible and sustainable water use.

These commitments form the foundation of our approach to water stewardship, which continues to strengthen with improved catchment-based water management.

To ensure our business understands these commitments, we've also developed a water stewardship framework that sets out the governing processes for our water-related activities.

## RISK MANAGEMENT

We have a framework that sets out our approach to risk management, including how we identify, monitor and manage the strategic and material risks associated with our activities. The risk management framework applies to all South32 employees, Directors, contractors and its subsidiaries.

Our management teams are responsible for implementing processes that mitigate risk and ensure compliance with our standards.

We consider risk across short (0-5 years), medium (5-15 years) and long-term (15 years and beyond) horizons. In line with our standards, risks must be monitored for potential health, safety, environmental, social, reputational, legal and financial impacts. The severity of a risk is assessed against a matrix that describes the degree of harm, injury or loss from the most severe impact, assuming control efforts are effective.

## WATER RISK AND OPPORTUNITY ANALYSIS

In FY19, we completed our first risk and opportunity analysis of all operations, in line with our environment standards. The process involves collating and reviewing information related to each operation and catchment, then workshopping the findings with a multidisciplinary team to identify potential water-related risks and opportunities. The process considers:

- The outcomes of our climate resilience assessments;
- Baseline water stress and potential for water conflict within the catchment;
- Existing water risks;
- Political context;
- Long-term land use change;
- The operational mine plan and associated water profile;
- Community concerns and complaints in relation to water;
- The outcomes of our annual materiality assessment; and
- Legal obligations for compliance.

Where a potential water-related material risk is identified, we use our risk management standards to determine its potential consequence and materiality. If a potential water-related risk is considered material, we use the materiality threshold and associated consequence of each risk to develop a water target that is relevant for the local catchment.

A water risk and opportunity analysis process is conducted at each of our operations every two years.

## RISK AT THE CATCHMENT-LEVEL

Holistically, catchment-level risks are influenced by the social, cultural, spiritual, environmental and economic contexts of our operations.

We recognise we have further work to do in understanding and mitigating the shared risks and cumulative impacts associated with supply and long-term availability of water for all users at catchment-level. We will continue to work with stakeholders in the catchments where we operate to deepen our understanding of the cumulative impact of our water interactions with those of other users. We will also continue to mitigate our potential impact on the catchments in which we operate by operating in accordance with environmental licenses and regulation, and through participating in catchment governance. We aim to build trust with all stakeholders in the catchments where we operate through open and transparent communication and collaboration.

Given the shared nature of water as a resource, we do not have the ability to directly manage all water-related risks within a catchment. Through our approach to water stewardship, we commit to understanding the proportionate responsibility of our business activities within the catchments where we operate, so that our actions together with the actions of other users, can contribute to a solution that benefits both business and the community into the future.

# MAKING A DIFFERENCE



We're committed to improving the social, economic and environmental conditions for the world we live in. This means contributing to the targets set out in the United Nations *Sustainable Development Goals* and in particular, SDG 6, which calls for clean water and sanitation for all people. Our contribution to this goal is outlined in the table below.

Table 2 Our progress against SDG 6

SDG 6 TARGET	WHAT THIS MEANS AT SOUTH32	OUR PROGRESS
<b>TARGET 6-1</b>  SAFE AND AFFORDABLE DRINKING WATER	<p>By 2030, achieve universal and equitable access to safe and affordable drinking water for all.</p> <p>All our operations provide potable water and sanitation facilities to keep our employees safe and healthy at work. We acknowledge that access to water is a human right, and work with service providers to improve access to drinking water in the communities surrounding our operations.</p>	<ul style="list-style-type: none"> <li>➔ In partnership with the Red Cross, we've installed 135 water tanks for communities in the uMhlathuze area surrounding Hillside Aluminium.</li> <li>➔ We improved water delivery infrastructure around our Planeta Rica project in Colombia.</li> <li>➔ South Africa Manganese is involved in the Vaal Gamagara Water Supply Scheme.</li> </ul>
<b>TARGET 6-2</b>  END OPEN DEFECTION AND PROVIDE ACCESS TO SANITATION AND HYGIENE	<p>By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.</p> <p>All our operations provide sanitation facilities for employees. In the communities surrounding our operations, we actively engage in education and awareness campaigns on sanitation and hygiene for women and girls.</p>	<ul style="list-style-type: none"> <li>➔ Through our partnership with the Imbumba Foundation's Caring4Girls program, we provide sanitary towels and health education for girls in the communities surrounding Hillside Aluminium.</li> </ul>
<b>TARGET 6-2</b>  END OPEN DEFECTION AND PROVIDE ACCESS TO SANITATION AND HYGIENE	<p>By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.</p> <p>Our operations manage water, including waste water, in accordance with local, state and national regulations. Further, our environment standards set minimum requirements to ensure that we're minimising potential water-related risks from our business.</p>	<ul style="list-style-type: none"> <li>➔ We have solar powered stormwater reuse at TEMCO.</li> <li>➔ Our process at Cerro Matoso achieves significant water reuse.</li> <li>➔ We have systems and processes in place to help us adhere to specific licence conditions at each of our operations.</li> </ul>
<b>TARGET 6-2</b>  END OPEN DEFECTION AND PROVIDE ACCESS TO SANITATION AND HYGIENE	<p>By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.</p> <p>Each of our operations collect and report water data to align with input and output components of the MCA WAF, and maintain a water balance. We're also working to integrate the water resource forecasting into our short, medium and long-term planning processes. Water forecasting has already been identified as part of the planning process for our Hillside Aluminium, Mozal Aluminium and Worsley Alumina operations, triggering deeper consideration of water efficiency measures at these sites.</p>	<ul style="list-style-type: none"> <li>➔ We've set a contextual water target at Worsley Alumina's refinery to work towards a 10 per cent reduction in water demand by FY28.</li> <li>➔ We've established desalination plants at Mozal Aluminium and Hillside Aluminium.</li> </ul>

## SDG 6 TARGET

## WHAT THIS MEANS AT SOUTH32

## OUR PROGRESS



By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.

We take a holistic, catchment-wide approach to water management at all of our operations.

At three of our operations, we've set contextual targets that specifically focus on catchment-based water management.

- ➔ We've set contextual water targets at Hillside Aluminium, Mozal Aluminium and Worsley Alumina.
- ➔ We have an excess water-sharing agreement with a neighbouring industrial facility to recycle stormwater at Hillside Aluminium.



By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

Our catchment-based approach to water management, combined with our respect for the land and biodiversity surrounding our operations, helps us avoid, reduce, minimise and offset potential impacts to water-related ecosystems, forests, wetlands, rivers, aquifers and lakes.

Our Intelligent Land Management (ILM) initiative has established a number of water-related projects, and we'll continue to do more in this space as our land assessments progress.

Through our community investments, we've also participated in projects that address the ecological restoration of water-related ecosystems.

- ➔ We run a wetland offsetting project at our Klipspruit colliery in South Africa.
- ➔ Our community team at Worsley Alumina invested in the following environmental projects:
  - Foreshore development in the Shire of Boddington;
  - Tunbridge Gully Restoration Project – in collaboration with the Peel Harvey Catchment Council; and
  - The Community River Restoration project in Collie.
- ➔ Through our ILM initiative, we contributed 84 hectares of land to conservation in the Illawarra region surrounding the Appin mine in New South Wales (NSW). An additional 67 hectares were contributed to conservation through the NSW Government BioBanking scheme.



By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, wastewater treatment, recycling and reuse technologies.

In the communities surrounding our operations, we're involved in education and awareness campaigns to improve water management and sanitation.

Our contextual water targets in South Africa and Mozambique will allow us to partner and cooperate with industry, government and non-government organisations to look at catchment-level solutions.

- ➔ We provided sponsorship funding for the construction of community boreholes in the Boane district following severe drought conditions in Mozambique.
- ➔ We collaborated with host communities surrounding Cerro Matoso to create a Community Climate Action Model aimed at managing water consumption.



Support and strengthen the participation of local communities in improving water and sanitation management.

In the communities surrounding our operations, we actively engage in education and awareness campaigns to improve water management, education and sanitation.

- ➔ Hillside Aluminium has a partnership with the South African Red Cross Society KwaZulu-Natal, and the uMhlathuze local municipality. Together, they're working on a Water Harvesting Project to help provide water services and water education in uMhlathuze, KwaZulu-Natal.
- ➔ SAEC sponsors the Rietspruit Agricultural Project.



# PARTNERSHIPS AND COLLABORATION

Our partnerships with government, host communities, non-government organisations and other industries are a key part of our approach to successful water stewardship – helping us achieve catchment-based outcomes. We've discussed two of our partnerships below.

## UMHLATHUZE WATER STEWARDSHIP PARTNERSHIP

In FY19, we engaged with the uMhlathuze Water Stewardship Partnership (uWASP) to explore a partnership opportunity. The uWASP is an active collaboration between government, private sector and civil society stakeholders - focused on water security solutions for the Mhlathuze catchment in KwaZulu-Natal.

Our participation in this partnership will enable us to progress the development of an integrated water management plan for the water catchment that Hillside Aluminium is located within.

The uWASP was set up to serve as a coordination hub for collective action and shared responsibility on water security across the uMhlathuze region. It drives collaboration between landowners, traditional authorities, community members and civil society organisations. The group is working towards putting short-term measures in place to improve water security for business, industry, forestry and agriculture producers, communities within the Richards Bay industrial complex and the wider uMhlathuze municipality. It will also identify and implement medium to long-term measures impacting the entire catchment area.

The key projects of the partnership address five main work areas including:

- Downstream water efficiency opportunities;
- Agricultural water stewardship practices;
- Ecological infrastructure requirements;
- The development of local community environmental champions for pollution control; and
- Enhanced management of the coastal lakes and surface water dams in the region.

## STRATEGIC WATER PARTNERSHIP NETWORK AND THE MINE WATER COORDINATING BODY

SAEC is an active member of the Strategic Water Partnership Network (SWPN) and the Mine Water Coordinating Body (MWCBC). Both are strategic organisations that tackle catchment-based water challenges and work with other mining companies and authorities to come up with solutions.

The MWCBC use the funds it collects from membership to conduct projects aimed at providing solutions to known water challenges – and issues monthly reports on their activities. At SAEC, we're involved in the catchment forum meetings, which are mainly made up of water users within a specific catchment.

We also share information on the mine water challenges and proposed solutions with other stakeholders. We do this during the public participation process to support respective applications lodged with authorities.

### CASE STUDY: SPARKING COLLABORATIVE IDEAS THROUGH THE SOCIAL IMPACT FESTIVAL

In 2018, we hosted an Impact Sparker event at our head office in Perth as part of the Social Impact Festival. Run in collaboration with the University of Western Australia's Centre for Social Impact, the festival is all about celebrating initiatives to spark social change in Western Australia.

Our event attracted over 50 people from various companies and industries. We shared stories and facilitated discussions about water scarcity, climate change, intelligent land management and talent diversity. Our goal was to inspire meaningful ideas and action on multi-faceted sustainability challenges facing our industry and broader society.

# OUR FUTURE WORK

Looking ahead through FY20, we will:

- Continue to assess the results of our FY19 water risk and opportunity analysis for all operations;
- Continue to fully integrate the objectives of the ICMM Position Statement on Water Stewardship into our business processes for existing operations and development options;
- Deepen our understanding of potential water-related risks and opportunities across all operations;
- Progress action plans against the contextual water targets we've set for Worsley Alumina, Mozal Aluminium and Hillside Aluminium;
- Commence development of a contextual water target for Illawarra Metallurgical Coal;
- Maintain water management requirements and commitments at SAEC;
- Continue collaborating through our Future Water Working Group;
- Progress the integration of operational water resource forecasts into our life of operation planning;
- Continue to engage with the communities surrounding our operations in relation to water management;
- Progress the development of water considerations with our supply chains;
- Consider our water intensity measures; and
- Continue to work with stakeholders in our water catchments to better understand the cumulative impact of our water interactions with other users at catchment-level.

# GLOSSARY OF TERMS

## Baseline Water Stress

The ratio of total annual water withdrawals to total available annual renewable supply, accounting for upstream consumptive use. Higher values indicate more competition among users. The values and definition of Baseline Water Stress have been derived from WRI Aqueduct (Working Paper) 2014.

## Catchment

The area of land from which all surface runoff and subsurface water flows through a sequence of streams, rivers, aquifers and lakes into the sea or another outlet at a single river mouth, estuary, or delta (GRI, 2018).

Note 1: Catchments include associated groundwater areas and might include portions of waterbodies (such as lakes or rivers). In different parts of the world, catchments are also referred to as 'watersheds' or 'basins' (or sub-basins).

Note 2: This definition is based on the Alliance for Water Stewardship (AWS), AWS International Water Stewardship Standard, Version 1.0, 2014.

## CDP

Carbon Disclosure Project

## Dewatering

Aquifer interception and removal of water from beneath the earth's surface. Does not include the removal of sea water.

## FY

Financial Year

## GRI

Global Reporting Initiative

## ICMM

International Council on Mining and Metals

## MCA

Minerals Council of Australia

## MWCB

Mine Water Coordinating Body

## Task

Tasks are operational activities that use water. This is based on the MCA WAF, 2014 definition.

## WASH

Water, sanitation and hygiene

## Water Scarcity

In accordance with the CEO Water Mandate, Corporate Water Disclosure Guidelines, September 2014, water scarcity refers to the volumetric abundance, or lack thereof, of freshwater resources.

## Water Stress

In accordance with the CEO Water Mandate, 2014; water stress refers to the ability, or lack thereof, to meet the human and ecological demand for freshwater. Stress comprises three primary components: availability, quality, and accessibility and is based on subjective elements and is assessed differently depending on societal values, such as the suitability of water for drinking or the requirements to be afforded to ecosystems.

## Water Risk

As defined by the CEO Water Mandate, 2014; water risk is the possibility of an entity experiencing a water-related challenge (e.g. water scarcity, water stress, flooding, infrastructure decay, drought). The extent of risk is a function of the likelihood of a specific challenge occurring and the severity of the challenge's impact. The severity of impact itself depends on the intensity of the challenge, as well as the vulnerability of the actor.

## Worked Water

Worked water is water that has been through a task. This is within our operational boundary. This is based on the MCA WAF, 2014 definition.

## WRI

World Resources Institute

## uWASP

uMhlathuze Water Stewardship Partnership

## WAF

Water Accounting Framework

## WRI

World Resources Institute

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