Setting Site Water Targets Informed by Catchment Context

CASE STUDY: Upper Vaal River Basin and Berg and Breede River Basins, South Africa

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Project Team
Hannah Baleta and Tien Shiao

UN Global Compact CEO Water Mandate
www.ceowatermandate.org

Pacific Institute
www.pacinst.org

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Background: Setting Site Water Targets Informed by Catchment Context

The world's water resources are under growing pressure from rising water consumption, greater pollution, weak governance and climate change, exposing companies to increased water-related risks. In response, many companies are engaging in water stewardship and setting water targets to help address their water-related externalities and secure water for the growing needs of all users. However, few companies are creating targets that are informed by the catchment context. Site water targets informed by catchment context have an important role to play in addressing water challenges and driving informed actions at the local level.

Water issues are primarily local, with each catchment having unique hydrologic, environmental, social, cultural, regulatory and economic characteristics. Water risks to a company's site manifest at the local level and may be a function of a suite of water challenges, including access to water and sanitation, poor water quality, excessive water use, inadequate water governance, impacts to freshwater ecosystems and extreme events (floods and droughts).

In 2018, about 65 percent of companies reporting to CDP had water-related targets; only one-third of the reporting companies had site or catchment-level water targets that account for local context. Existing water targets set by companies typically focus on total water use, water efficiency and/or water quality, but may not address two vital questions:

1. Do these targets address the priority water challenge(s) for the site?
2. Are these targets in line with the desired conditions of the catchment?

Given that each catchment has a unique set of water resource challenges, setting effective targets requires companies to take local context into consideration. Developing site water targets informed by catchment context can help companies reduce their water risk and improve water security by aligning corporate water strategies with local and state water policy.

Guidance for developing such targets has been developed by a consortium of organizations including The Nature Conservancy, World Resources Institute, Worldwide Fund for Nature (WWF), CDP, the United Nations Environment Program, and the Pacific Institute in its role as co-secretariat of the CEO Water Mandate. The guidance aims to help companies set effective site water targets that are informed by catchment context, which can create value and lessen risks for the company and support collective action.[1] The guidance is intended for site staff or technical water specialists responsible for water management, as well as relevant corporate staff.

1 UN Global Compact CEO Water Mandate, Pacific Institute, CDP, The Nature Conservancy, World Resources Institute, WWF, UNEPDHI Partnership Centre for Water and Environment. 2019. Setting Site Water Targets Informed by Catchment Context: A Guide for Companies. www.ceowatermandate.org/site-water-targets.

The approach includes three main elements, outlined in Table 1. It is an iterative process, and challenges and targets should be reassessed periodically. Also, the approach may differ slightly for each company depending on their water stewardship maturity, capacity, and the role of water across their value chain. Further, to ensure global alignment, this process has been informed by and aligned with the Sustainable Development Goals (SDGs) and the main stewardship outcomes identified by the Alliance for Water Stewardship (AWS).

In 2018 and 2019, the project partners piloted the draft approach in catchments around the world. The Pacific Institute, in its role as co-secretariat for the CEO Water Mandate, coordinated pilots in Southern California, India, and South Africa. The findings of the South Africa case study are included in this document.

TABLE 1. **Three elements for setting site water targets that reflect the catchment context**

Elements for effective water target setting	**1** Water targets should respond to priority water challenges within the catchment	**2** Ambition of water targets should be informed by site's contribution to water challenges and desired conditions	**3** Water targets should capitalize on opportunities and contribute to public policy priorities
Recommended Actions	1.1. Understand operational risks, dependencies, and impacts	2.1. Determine desired condition for priority water challenges	3.1. Identify existing water stewardship initiatives, collective action efforts, and public policy initiatives in the catchment
	1.2. Determine spatial scope	2.2. Assess gap between current and desired conditions	3.2. Set targets that, when possible, contribute to existing efforts to meet desired conditions
	1.3. Prioritize water challenges within the catchment	2.3. Determine company contribution towards desired conditions	3.3. Determine implementation strategies and measure progress towards meeting targets
Desired Outcome	Targets address contextual water challenges and business risks	Target ambition is proportional to magnitude of the shared water challenge	Targets deliver tangible business value and drive action to meet he desired conditions

Source: UN Global Compact CEO Water Mandate, Pacific Institute, CDP, The Nature Conservancy, World Resources Institute, WWF, UNEPDHI Partnership Centre for Water and Environment. 2019.

Case Study: Upper Vaal River Basin and Berg and Breede River Basins

THE PILOT

The South Africa pilot was carried out in two catchments: the Upper Vaal, which is critical for supplying water to South Africa's economic hub, the Gauteng city-region, and the Berg and Breede catchments, which supplies the City of Cape Town with water. In each catchment, there were two participating companies. Other interested companies and institutions were kept informed of developments.

The purpose of the pilot was to help participating companies understand the local water context and engage with peer companies, public sector water managers, and other stakeholders in the catchment to align on key water challenges and set effective site level targets. This approach to water target-setting can help companies prioritize actions and investments that address the key water challenges in the region.

ELEMENTS FOR SETTING SITE WATER TARGETS

Element 1: Water targets should respond to priority water challenges within the catchment

The geographic scope of the water challenges was established by looking at the location and the corresponding hydrological catchment of the site. Sites where water is brought in through transfers from outside the hydrological catchment were also considered in the analysis. In alignment with Sustainable Development Goal 6 on water, six water challenges—water quantity, water quality, impacts to freshwater ecosystems, water-related extreme events, access to water, sanitation, and hygiene, and water governance—were used throughout the pilot to frame the discussion around the biggest concerns and needs in the basin. Water challenges were identified through analysis of basin reports, the WWF Water Risk Filter and conversations with key stakeholders including local government, water institutions and private sector water users (Table 2). The analysis based on the WWF Water Risk Filter is the best-known source of water risk-related information in South Africa in a single platform.

For each water challenge, the corresponding indicator in the WWF Water Risk Filter was used. The higher the risk indicator, the higher the priority of the challenge. These were summarised into a simple traffic-light approach tables (Table 5 and Table 8). Where information could have been improved, such as governance, additional indicators were used when possible. For example, governance was evaluated through the level of funding for water infrastructure and management or condition of water infrastructure. These additional risks were evaluated through discussions with stakeholders including the private companies, local government and water-related institutions.

TABLE 2. **Indicators and metrics used to evaluate the water challenges in each basin**

Water Challenge	WWF Water Risk Filter Indicator	WWF Water Risk Filter Metric
Water Quantity	Baseline water stress	Total annual water withdrawals/total available annual renewable supply
	Aridity Index	Function of precipitation, temperature and potential evapotranspiration
Water Quality	Present ecological status	Ecological status ranking
Important Water-Related Ecosystems	Ecosystem vulnerability	Freshwater ecosystem biodiversity assessment
	Freshwater Conservation Areas	National Freshwater Ecosystem Priority Areas
	Endemism	Count of endemic fish species
Extreme Weather Events	Projected change in occurrence of drought	Projected variability in precipitation patterns
	Projected change in occurrence of floods	Projected variability in precipitation patterns
	Crisis planning	Consideration of hydrologic extremes in water planning documents
Water, Sanitation and Hygiene	Drinking water	Access
	Sanitation	Access
Water Governance	Funding	Funding for water infrastructure and management
	Infrastructure	Condition of water infrastructure
	Integrated planning and management	Existence water management agency
	Integrated planning and management	Existence of "All Towns Water Strategy"

Source: Water Risk Filter. Website: https://waterriskfilter.panda.org/

Element 2: Ambition of water targets should be informed by site's contribution to water challenges and desired conditions

To further analyze the site's water challenges, the water risk filter was used at a sub-basin scale to evaluate water-related risks. This was supported with additional interviews with relevant stakeholders in the basin including the private companies, water management agencies, local government and water-related institutions active in the basin.

With regards to the desired conditions, government policy or strategy documents were used to better understand the ambition for the catchment. Although the WWF Risk Filter data included metrics that compare the current state to the desired conditions, it was useful to evaluate what the policy documents state regarding the catchment. For instance, the reconciliation study for the basin shows the gap between water demand and supply with suggested interventions going forward. This study gives an idea of the water supply challenges in the catchment. With regards to quality, each catchment in South Africa has resource quality objectives which outline the current and desired water quality parameters. These were also looked at to better inform the current state of the catchment with the desired conditions. Some policy documents were also used as indicators to suggest the level of preparedness for crises.

Element 3: Water targets should capitalize on opportunities and contribute to public policy priorities

To set site water targets, first a questionnaire was sent to each company regarding their dependencies and impacts on water in the basin. Questions were asked in the following sections: water management, wastewater management, water sanitation and hygiene, site governance, environmentally and culturally sensitive areas, site preparedness and reputational risk considerations. Where relevant, questions were altered to best suit the needs of the particular company. For example, questions were altered to distinguish between industrial manufacturing, tourism and service companies.

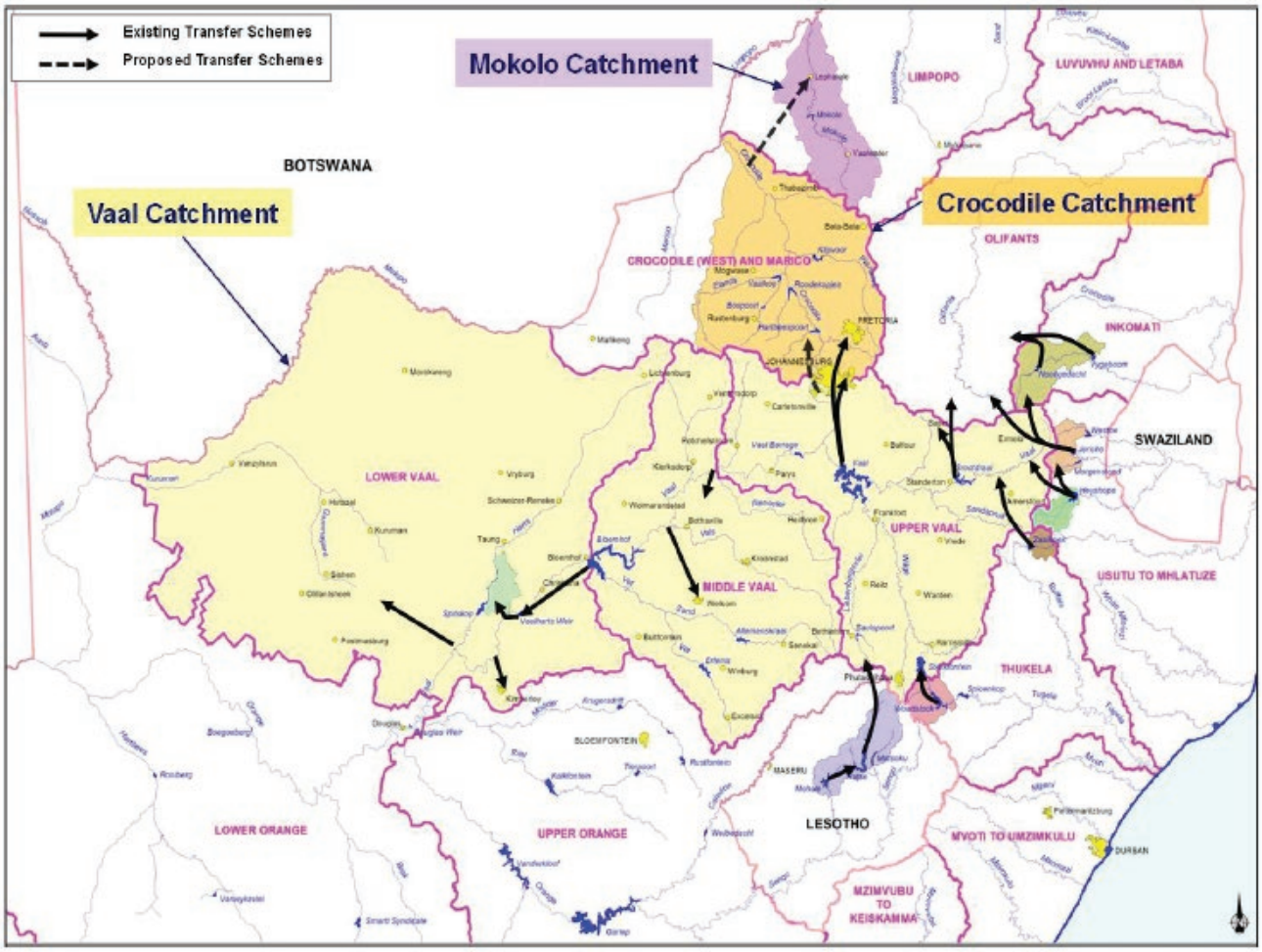
The answers to each question were then coded in a similar manner to the water challenges assessment. This was then used to compare the relevant company-related water challenges with the catchment-related water challenges to prioritize which water challenges, and therefore which water targets, were important for the site. Following the assessment of the company-related risks, overlain with the catchment-related challenges, discussions were held with the respective companies regarding their preferred focus areas for a target. This was an iterative process, where both internal and external considerations of targets, in addition to the different water challenges, were considered.

Pilot 1: Upper Vaal River Basin

OVERVIEW OF THE CATCHMENT

The Integrated Vaal River System (IVRS) includes the catchments of the Upper, Middle and Lower Vaal Water Management Areas. The system extends from Kuruman in the west to Ermelo in the east, and Johannesburg in the north to the Lesotho border in the south. Other sub-systems that also form part of or are linked to the IVRS are indicated on the map below (Figure 1). For this pilot, the Upper Vaal region is of primary interest. However, the risk implications of the interconnected (and transboundary) nature of the IVRS were also considered.

FIGURE 1. **The Integrated Vaal River System**



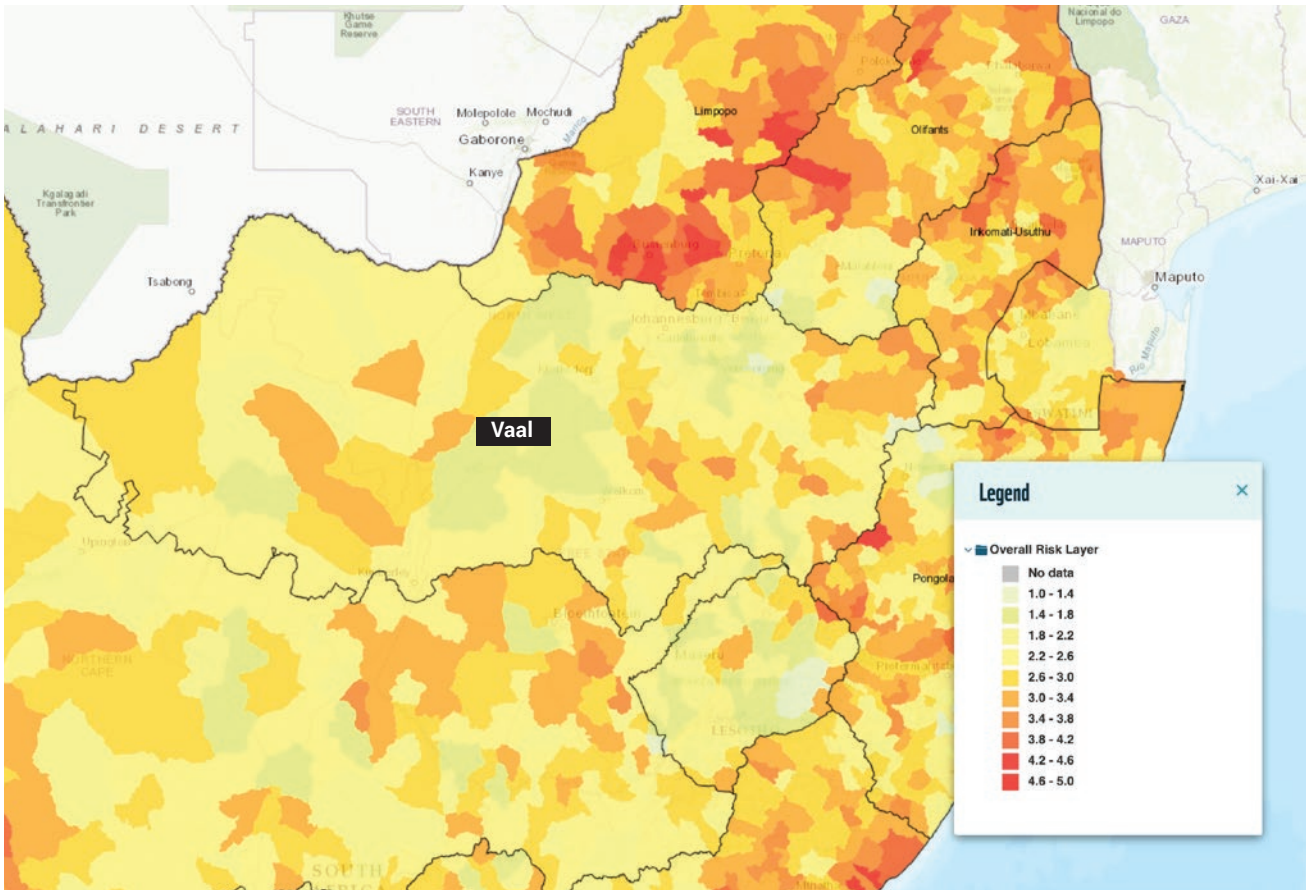
Source: South Africa Department of Water and Sanitation. Website: http://www.dwa.gov.za/Projects/Vaal/sa.aspx

The partners involved in the Upper Vaal pilot included Sasol and Unilever. However, a number of other institutions were involved and interested in the case study. These included the National Business Initiative, the Vaal River Strategy Steering Committee, Rand Water and Eskom.

PRIORITY WATER CHALLENGES

The first step of setting site water targets is focused on developing an initial understanding of the relevant water challenges for participating companies. A high-level assessment of the water challenges in the catchments are shown in Figure 2 using the WWF Water Risk Filter map function. This was used as a high-level screening to evaluate which challenges needed further investigation or additional metrics to clearly show the reality on the ground. The following figure from the WWF Water Risk Filter website provides an excerpt of a key indicator assessed.

FIGURE 2. **Vaal River System water challenges output from the WWF Water Risk Filter**



Source: Water Risk Filter. Website: https://waterriskfilter.panda.org/

A summary of the possible drivers of the water challenges are proposed in the following table (Table 3). These were collected through discussions with stakeholders, understanding the underlying causes of the different water challenges, and a review of relevant water-related literature on the catchment. The perceived priority challenges are in bold. This was determined following an assessment of the level of risks from the WWF Water Risk Filter and stakeholder discussions, since some companies had different priority challenges.

TABLE 3. **Vaal River System water challenges in order of priority**

	Water Challenge	Key Issues
1	**Water quantity**	Rapid urbanization and population growth
		Reliance on transfers from Lesotho and Tugela
		Wasteful/excessive water use (high levels of non-revenue water)
		Unlawful irrigation
2	**Water quality**	**Surface water contamination (diffuse pollution, discharges from industry and municipalities)**
		Groundwater contamination (mainly due to acid mine drainage)
3	**Important water-related ecosystems**	Poor wastewater treatment
		Lack of invasive species management and assessment
4	**Extreme weather events**	Climate change exacerbating hydrologic extremes
		Multiple crises planning documents from multiple agencies resulting in fragmented planning
5	**Water, sanitation and hygiene**	Lack of data/assessment on affordability of water, especially for low-income communities
		Sections of population without access to adequate water and sanitation
6	**Water governance**	**Financial mismanagement of municipal service providers**
		Inadequate maintenance of water infrastructure

CURRENT AND DESIRED CONDITIONS

Table 4 provides a summary of the water challenges. Where risk level is low, it can be assumed that the desired condition of the catchment is reasonably similar to that of the current condition. Where risk level is high, it can be assumed that the desired condition of the catchment is not similar to the current condition. Challenges highlighted in grey are perceived to be at the desired condition for the catchment.

TABLE 4. **Vaal River System current state diagnostic**

- 5 = VERY HIGH RISK = RED
- 4 = HIGH RISK = ORANGE
- 3 = MODERATE RISK = YELLOW
- 2 = LOW RISK = GREEN
- 1 = VERY LOW RISK = GREY

Water Challenge	Issue/Indicator	Metric	Water Source Status	
			Upper Vaal Surface Water	Integrated Vaal System Overall
Water quantity	Baseline water stress	Total annual water withdrawals/total available annual renewable supply	1	3
	Aridity Index	Function of precipitation, temperature and potential evapotranspiration	3	3
Water quality	Present ecological status	Ecological status ranking	3	4
Important water-related ecosystems	Ecosystem vulnerability	Freshwater ecosystem biodiversity assessment	4	3
	Freshwater Conservation Areas	National Freshwater Ecosystem Priority Areas	5	4
	Endemism	Count of endemic fish species	2	2
Extreme weather events	Projected change in occurance of drought	Projected variability in precipitation patterns	3	2
	Projected change in occurance of floods	Projected variability in precipitation patterns	2	2
	Crisis planning	Consideration of hydrologic extremes in water planning documents	1	1
Access to water, sanitation and hygiene	Drinking water	Access	2	3
	Sanitation	Access	2	3
Water governance	Funding	Funding for water infra-structure and management	5	5
	Infrastructure	Condition of water infrastructure	5	5
	Integrated planning and management	Existence water management agency	5	5
	Integrated planning and management	Existence of "All Towns Water Strategy"	5	5

Source: Water Risk Filter. Website: https://waterriskfilter.panda.org/

Although the table indicates that water supply levels are not at high risk, poor governance and management of the water supply system in the IVRS means the risk of water supply challenges is actually very high. This is further supported by the fact that there has been low rainfall in Lesotho in 2020 (the WWF Water Risk Filter data is from 2017), resulting in lower than normal dam levels, one of the core water supply sources for the Vaal.

SITE WATER TARGETS

This third and final element is focused on setting and communicating specific, measurable, achievable, relevant and time-bound (SMART) targets for how each site will reduce their water risk and contribute to meeting the desired condition for relevant water challenges.

The process consists of comparing catchment-related risks to company-related risks (gathered through the interview process and questionnaires) and identifying site targets that will reduce the site's water risks and contribute to the broader resilience of the basin. In each case the process was iterative and resulted in unique opportunities for site targets.

Table 5 is an example of what was used as a discussion point with each company to investigate possible targets that could mitigate either catchment or site-level challenges. As mentioned, the risk score for water supply was increased as a result of the recent climatic, governance and financial challenges in the basin.

TABLE 5. **Vaal River System comparison between catchment and site-level water challenges**

- 5 = VERY HIGH RISK = RED
- 4 = HIGH RISK = ORANGE
- 3 = MODERATE RISK = YELLOW
- 2 = LOW RISK = GREEN
- 1 = VERY LOW RISK = GREY

	Catchment	Site
Water quantity	5	4
Water quality	4	3
Environmentally and culturally important areas	4	3
Preparedness for crisis	2	3
Water, sanitation and hygiene	3	3
Water governance	5	1
Other (reputational risk)	1	5

EXPERIENCES FROM THE CASE STUDY WITH SASOL

Sasol is an integrated energy and chemical company based in South Africa. Sasol develops and commercializes technologies, including synthetic fuels technologies, and produces different liquid fuels, chemicals and electricity.

Their business units discussed the water challenges and possible targets that could be explored in order to mitigate both site and catchment-level risks. The comparative analysis was done for two of their sites. Catchment-level water challenges in addition to the context of the site were compared as discussed in the methodology above. These results were discussed in order to prioritize a particular suite of risks and then discuss possible mitigative measures.

A selection of possible strategies to mitigate some of the water-related risks identified are provided in Table 6. We carried out a comprehensive review of possible projects, based on our experience with target setting and water risk reduction strategies. The possible projects were prioritized by considering the site and catchment risks together with in-depth discussions with Sasol. Due to the nature of the challenges in the basin, which contribute to site-specific risks, the priority target is to reduce water losses in the catchment. Without secure water quantity, operations would cease. This outcome is becoming increasingly plausible considering the stress of water though increased demand and non-revenue water in the catchment, compounded by low rainfall.

TABLE 6. **Proposed water targets for the Integrated Vaal River System**

Water Challenge	Water Target
Water quantity	Improve facility water use efficiency
	Reduce facility absolute water use
	Replenish water use through recycling or reuse
	Support reduction of non-revenue water through Project 1600 with Rand Water
Water quality	Reduce or eliminate runoff from site (stormwater and dry-weather runoff)
	Remove contaminants from wastewater/effluent
	Restore wetlands to improve natural water filtration processes
	Support municipal wastewater treatment facility with financial or technical expertise
Important water-related ecosystems	Restore river
	Restore wetlands (local or source catchments)
	Remove non-native invasive plant species (local or source catchment)
Extreme weather events	Support initiatives that improve climate change resilience around flood and drought
	Develop a drought or flood management plan
Water, sanitation and hygiene	Provide access to water, sanitation and hygiene for communities in the catchment
	Establish formal policy on water, sanitation, and hygiene for employees in their workplace and communities
Water governance	Provide technical support to municipalities regarding financial management
	Provide technical support to municipalities regarding maintenance and operations of infrastructure
	Participate in platforms to improve Integrated Water Resources Management

Together with Sasol, the proposed targets were discussed and scored on their potential to reduce water risk at the site level, to reduce water risk at the catchment level, cost and overall (regulatory and reputational) risk. The results of the assessment are shown in Figure 3, with the proposed support of the Rand Water 1600 Project scoring the highest. Rand Water, the largest water board in South Africa, is currently non-compliant due to urban water losses; the board is abstracting more than its authorized requirement Project 1600 is an initiative by Rand Water to reduce its abstraction to comply by setting licensed water targets to its industrial and municipal customers. Project 1600 aims to provide guidance, support and oversight of progress made by the municipal sector to reduce water demand in order for Rand Water to comply with the abstraction limit until the next phase of the Lesotho Highlands Scheme.

FIGURE 3. **Prioritization of water targets**

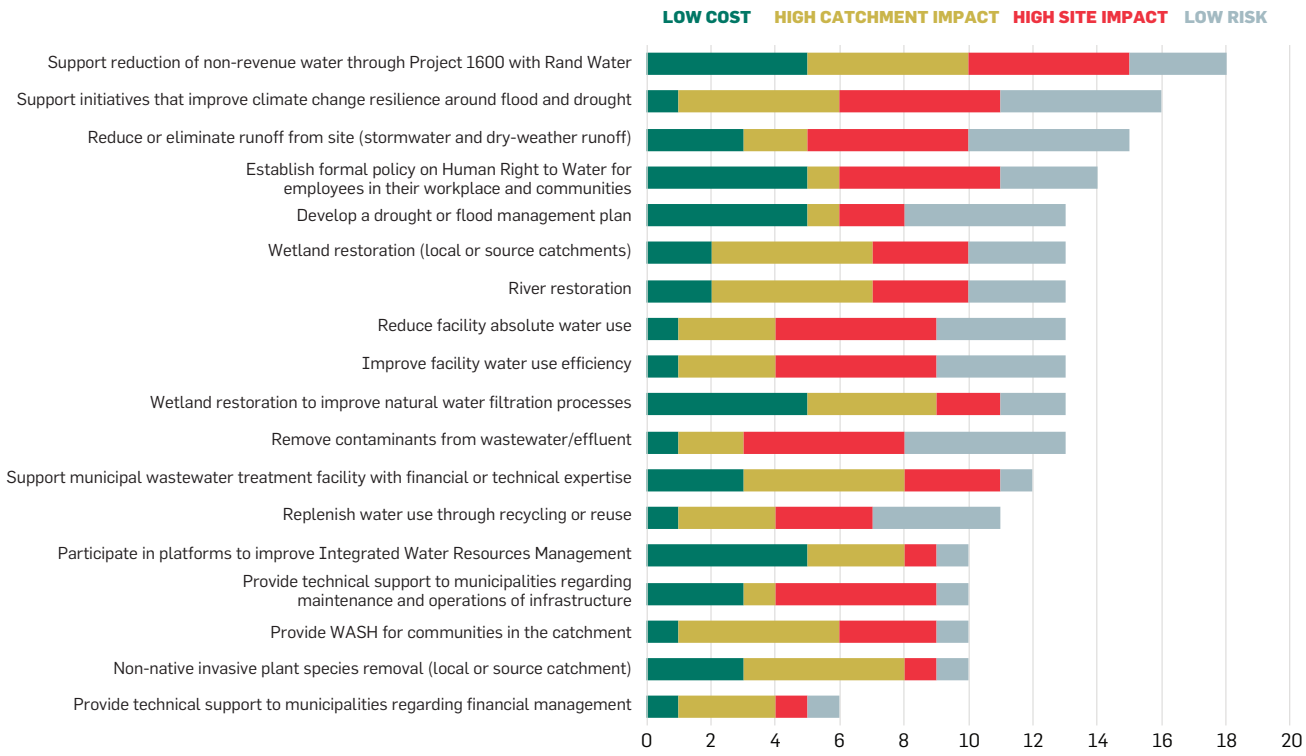
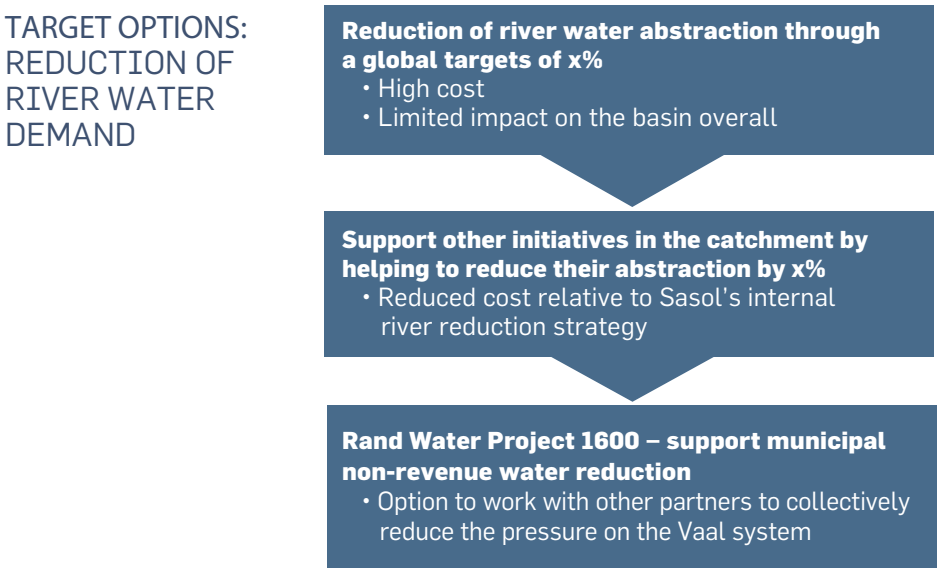


Figure 4 shows the narrative justification for supporting the Rand Water Project 1600 non-revenue water reduction:

FIGURE 4. **Justification for supporting Project 1600**



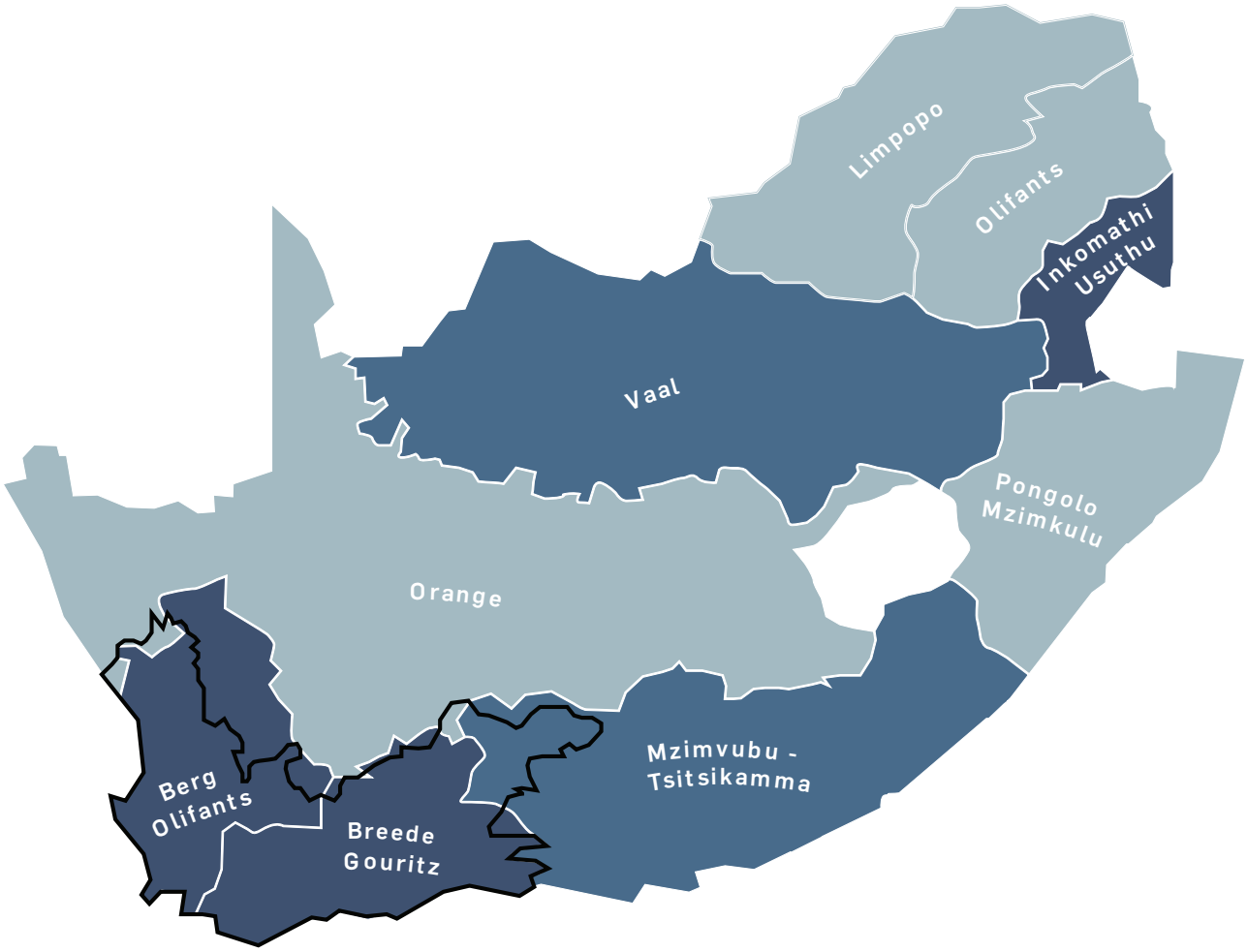
Sasol are currently in discussions with Rand Water and other related actors in the catchment to explore the full feasibility of an initiative such as what is being proposed.

Pilot 2: Berg and Breede River Basins

OVERVIEW OF THE CATCHMENT

The City of Cape Town is situated within the Western Cape Province of South Africa. The province is home to two Water Management Areas: the Berg-Olifants (Berg) and the Breede-Gouritz (Breede) as indicted by Figure 5. The majority of the Western Cape is supplied through the Western Cape Water Supply System (WCWSS). The WCWSS is a made up of interlinking dams, pipelines and distribution networks that supply several municipalities including the City of Cape Town, West Coast District Municipality (which supplies local municipalities Swartland, Saldanha Bay and Bergrivier), Stellenbosch Local Municipality and a selection of agricultural users. The focus of this pilot is primarily the WCWSS, recognising that there may be additional elements of consideration for the broader Berg and Breede required.

FIGURE 5. **Catchment area the City of Cape Town draws from**



Source: *GreenCape*, 2018. *Water Market Intelligence Report.*, 2018. https://www.greencape.co.za/assets/Uploads/GreenCape-Water-MIR-FINAL-20180406.pdf

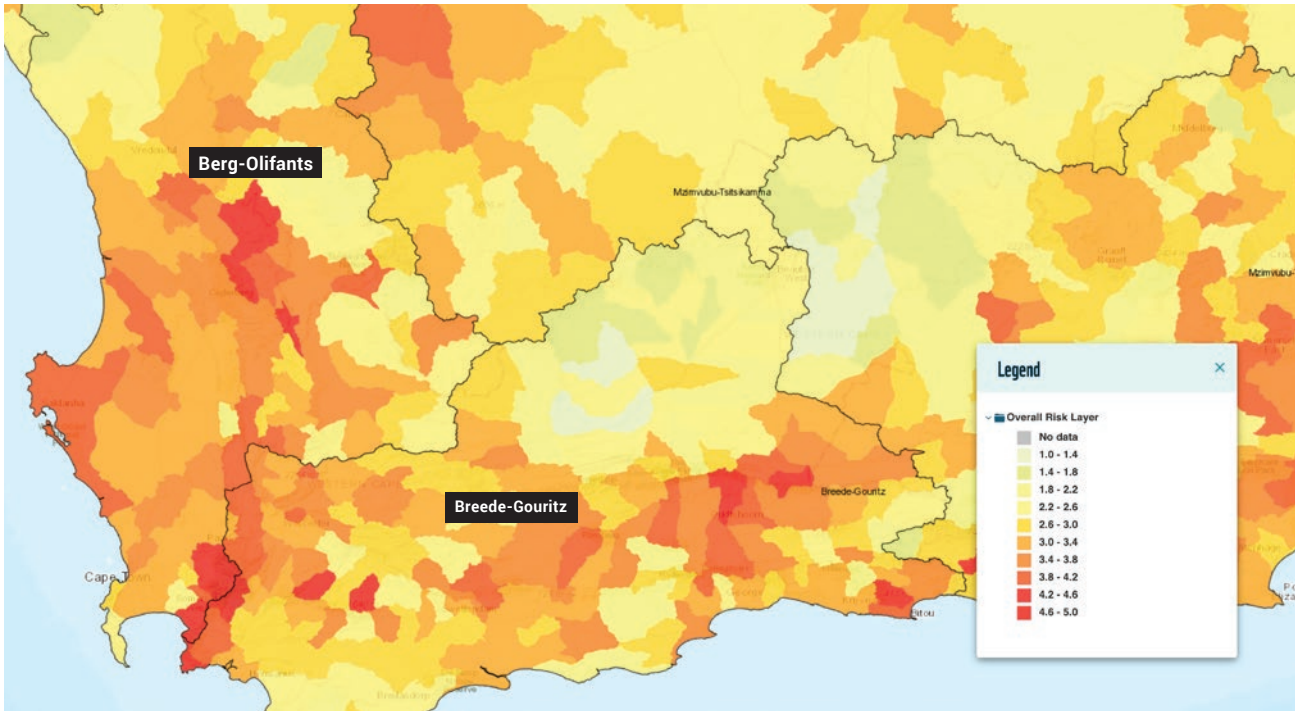
The partners interested in this case study were Woolworths and the Hilton Hotel Group. Institutions interested in the case study were GreenCape, The Nature Conservancy, WWF, and a number of government departments involved in water: Western Cape Government Environmental Affairs and Development Planning, the Department of Water Affairs and Sanitation and the Breede-Gouritz Catchment Management Agency.

PRIORITY WATER CHALLENGES

The first element of setting site water targets is focused on developing an initial understanding of the relevant water challenges for participating companies. A high-level assessment of the water challenges in the catchments are shown in Figure 6 using the WWF Water Risk Filter map function. This was used as a high-level screening to evaluate which challenges needed further investigation or additional metrics to clearly show the reality on the ground.

Aridity (water supply) in the catchment is of moderate to high risk, while there are water quality challenges that score in the high to very high-risk category. Furthermore, as experienced with the recent water challenges in Cape Town, climate change and future scarcity is a very real concern. In Figure 6 below, only an excerpt of a key indicator is shown for the catchment water challenges assessment. The next section describes how the catchments' current and desired conditions were analyzed, and includes the full suite of indicators compared using a traffic-light approach in table form.

FIGURE 6. **Berg and Breede River System water challenges output from the WWF Water Risk Filter**



Source: Water Risk Filter. Website: https://waterriskfilter.panda.org/

The drivers resulting in the water challenges were collated from the WWF Water Risk Filter and were identified through discussions with stakeholders, understanding the underlying data behind the WWF Water Risk Filter, and a review of additional secondary data of the basin (Table 7). Priority challenges are in bold. These were selected according to the WWF Water Risk Filter and stakeholder input.

TABLE 7. **Berg and Breede River System water challenges in order of priority**

	Water Challenge	Key Issues
1	**Water quantity**	Rapid urbanization and population growth
		Reduced rain in the catchment areas
		Wasteful/excessive water use (prior to the recent drought and resultant restrictions in 2018)
2	**Water quality**	Surface water contamination
		Groundwater contamination
3	**Important water-related ecosystems**	Land use change
		Lack of invasive species management and assessment
4	**Extreme weather events**	Climate change exacerbating hydrologic extremes
		Multiple crises planning documents from multiple agencies resulting in fragmented planning
5	**Water, sanitation and hygiene**	Lack of data/assessment on affordability of water (especially in low income areas)
		Sections of population without access to adequate water and sanitation
6	**Water governance**	Inadequate investment in new infrastructure
		Overlapping mandates from national, provincial and municipal levels causing confusion

CURRENT AND DESIRED CONDITIONS

Following prioritization of the water challenges in the catchment, a more refined understanding of the basin is developed by understanding the desired condition for each water challenge in the basin. Table 8 provides a summary of the water challenges. Where risk scores are low (grey), it can be assumed that the desired condition of the catchment is reasonably similar to that of the current condition. In other words, if colored in grey, the indicator is at the desired state for the catchment. Where risk levels are high, it can be assumed that the desired condition of the catchment is not similar to the current condition.

TABLE 8. **Berg and Breede River System current state diagnostic**

- 5= VERY HIGH RISK = RED
- 4 = HIGH RISK = ORANGE
- 3 = MODERATE RISK = YELLOW
- 2 = LOW RISK = GREEN
- 1 = VERY LOW RISK = GREY

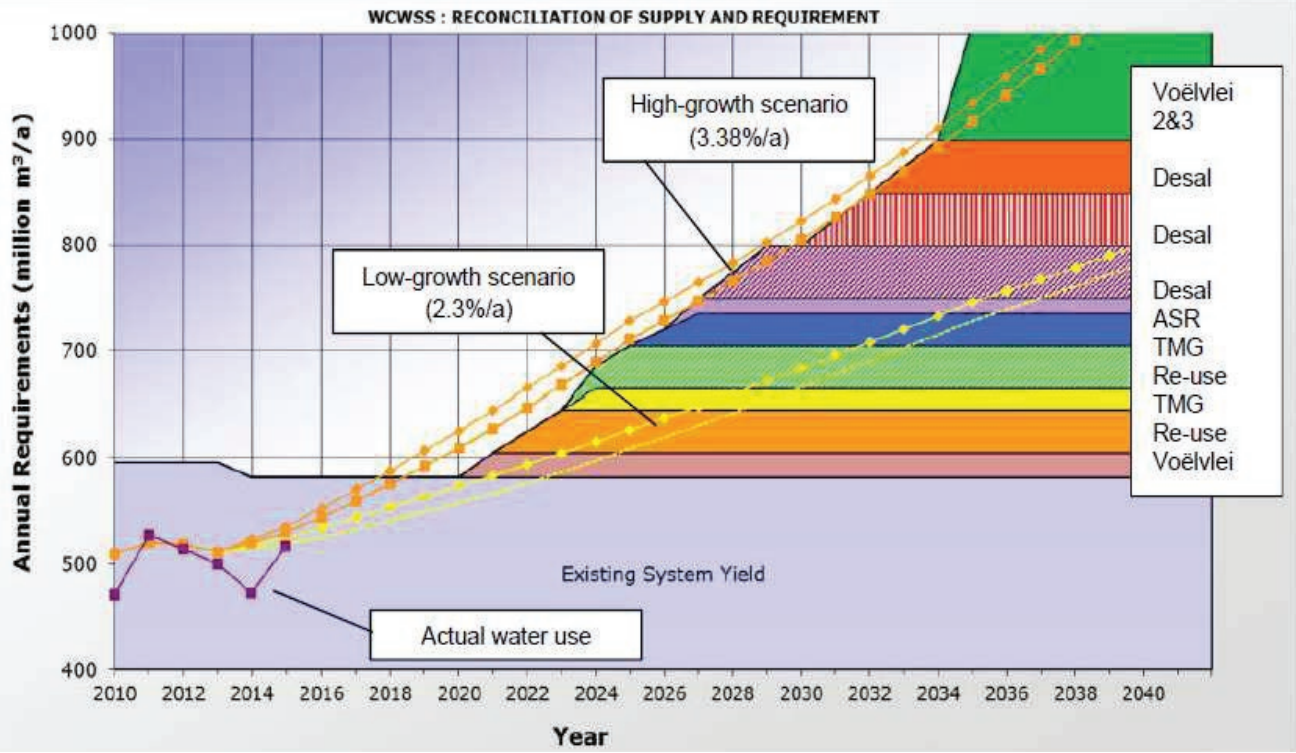
Water Challenge	Issue/Indicator	Metric	Water Source Status	
			Berg Surface Water	Breede Surface Water
Water quantity	Baseline water stress	Total annual water withdrawals/total available annual renewable supply	5	4
	Aridity Index	Function of precipitation, temperature and potential evapotranspiration	4	4
Water quality	Present ecological status	Ecological status ranking	5	4
Important water-related ecosystems	Ecosystem vulnerability	Freshwater ecosystem biodiversity assessment	4	1
	Freshwater Conservation Areas	National Freshwater Ecosystem Priority Areas	4	4
	Endemism	Count of endemic fish species	5	5
Extreme weather events	Projected change in occurence of drought	Projected variability in precipitation patterns	4	1
	Projected change in occurence of floods	Projected variability in precipitation patterns	3	2
	Crisis planning	Consideration of hydrologic extremes in water planning documents	2	
Access to water, sanitation and hygiene	Drinking water	Access	1	3
	Sanitation	Access	3	2
Water governance	Financial security	Status of municipal audit	3	
	Infrastructure	Condition of water infrastructure	4	
	Integrated planning and management	Existence water management agency	4	2
	Integrated planning and management	Existence of "All Towns Water Strategy"	5	5

Source: Water Risk Filter. Website: https://waterriskfilter.panda.org/

Water supply challenges are at a very high risk level in the Cape Town region, while water quality challenges remain in the Berg River in particular.

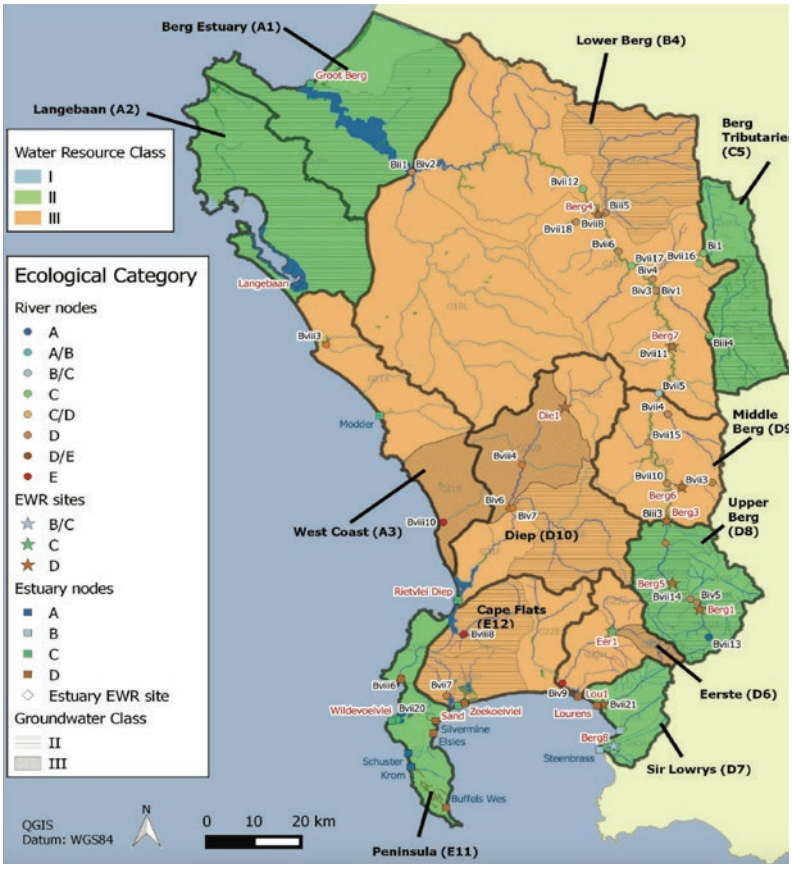
The reconciliation strategy for the City of Cape Town, in addition to the Resource Quality Objectives recently legislated by the Department of Water Affairs and Sanitation, were useful in establishing quantitative ideas of water supply and quality objectives for the basin (see Figure 7 and Figure 8).

FIGURE 7. **Desired conditions of the basin in terms of water supply is a point where demand does not outstrip supply**



Source: *Western Cape Department of Environmental Affairs & Development Planning*, 2018. https://www.westerncape.gov.za/eadp/files/atoms/files/05_Inland%20Water.pdf

FIGURE 8. **Desired conditions of the basin in terms of water quality is communicated through the water resource classes of the resource quality objectives**



Source: South Africa Department of Water and Sanitation, 2019. https://www.gov.za/sites/default/files/gcis_document/201905/42451gon655.pdf

SITE WATER TARGETS

The third and final element is focused on setting and communicating SMART targets for how each site will contribute to meeting the desired condition for relevant water challenges.

In some cases, companies already knew where their company-related water challenges were, but perhaps had not grasped the full extent to which the catchment-related issues might affect them. "Day Zero" was a good reminder of the shared nature of water challenges, indicating that even with the ultimate investments into efficiency, you cannot eliminate all risk.

Table 9 is an example of what was used as a discussion point with each company to investigate possible targets that could mitigate either catchment or site-level challenges. As discussed, the risk score for water supply was increased as a result of the recent climatic, governance and financial challenges in the basin.

TABLE 9. **Berg and Breede River System comparison between catchment and site-level water challenges**

- 5= VERY HIGH RISK = RED
- 4 = HIGH RISK = ORANGE
- 3 = MODERATE RISK = YELLOW
- 2 = LOW RISK = GREEN
- 1 = VERY LOW RISK = GREY

Water challenge	Catchment	Site
Water quantity	4	5
Water quality	5	3
Environmentally and culturally important areas	4	4
Preparedness for crises	2	2
Water, sanitation and hygiene	2	3
Water governance	5	2
Other (reputational risk)	1	2

A selection of possible targets that companies could explore in the Western Cape Water Supply System in response to the catchment water risks is shown in Table 10. We carried out a comprehensive review of possible projects, based on our experience with target setting and water risk reduction strategies. The possible projects were prioritized by considering the site and catchment risks. The exact nature and scope of the targets will need to be identified internally within each company.

TABLE 10. **Proposed water targets for the Western Cape Water Supply System**

Water Challenge	Water Target
Water quantity	Improve water use efficiency
	Reduce absolute water use
	Replenish water use through recycling or reuse
	Reduce non-revenue water through supporting the local municipality in water conservation and water demand management
Water quality	Reduce or eliminate runoff from site (stormwater and dry-weather runoff)
	Monitor wastewater/effluent for emerging contaminants
	Restore wetlands/meadows to improve natural water filtration processes
	Support municipal wastewater treatment facility
Important water-related ecosystems	Restore river
	Restore wetlands (local or source watersheds)
	Remove non-native invasive plant species (local or source watershed)
Extreme weather events	Support initiatives that improve climate change resilience around flood and drought
	Develop a stormwater management plan
Water, sanitation and hygiene	Provide water, sanitation and hygiene for communities in the watershed
	Establish formal policy on water, sanitation, and hygiene for employees in their workplace and communities
Water governance	Provide technical support to municipalities regarding financial management
	Provide technical support to municipalities regarding maintenance and operations of infrastructure
	Participate in platforms to improve Integrated Water Resources Management

EXPERIENCES FROM THE CASE STUDY WITH HILTON HOTELS & RESORTS

Hilton Hotels & Resorts has a number of sites in South Africa including one in Durban, one in Johannesburg and two in Cape Town. Although the water consumption of all sites in South Africa were analyzed, of particular interest in this research are the hotels in Cape Town.

Data from the Hilton Hotels and Resorts in Cape Town, shows that on average, the hotels are consuming a similar amount of water per room compared to what is perceived to be the "best practice" in Cape Town (see Figure 9). Therefore, although further water saving efficiencies are possible, to improve the risk profile of the hotel in terms of water scarcity, it is probably best for solutions to consider the broader catchment water security.

FIGURE 9. **Average water consumption of Hilton Hotels and Resorts in Cape Town**

Hotels were dramatically impacted during "Day Zero" in Cape Town. In addition to customer education, a number of water-saving practices were discussed and explored during the crisis. By using the site water targets informed by catchment context methodology, the steps proposed are likely to not only mitigate the hotels risks, but also contribute to broader catchment resilience.

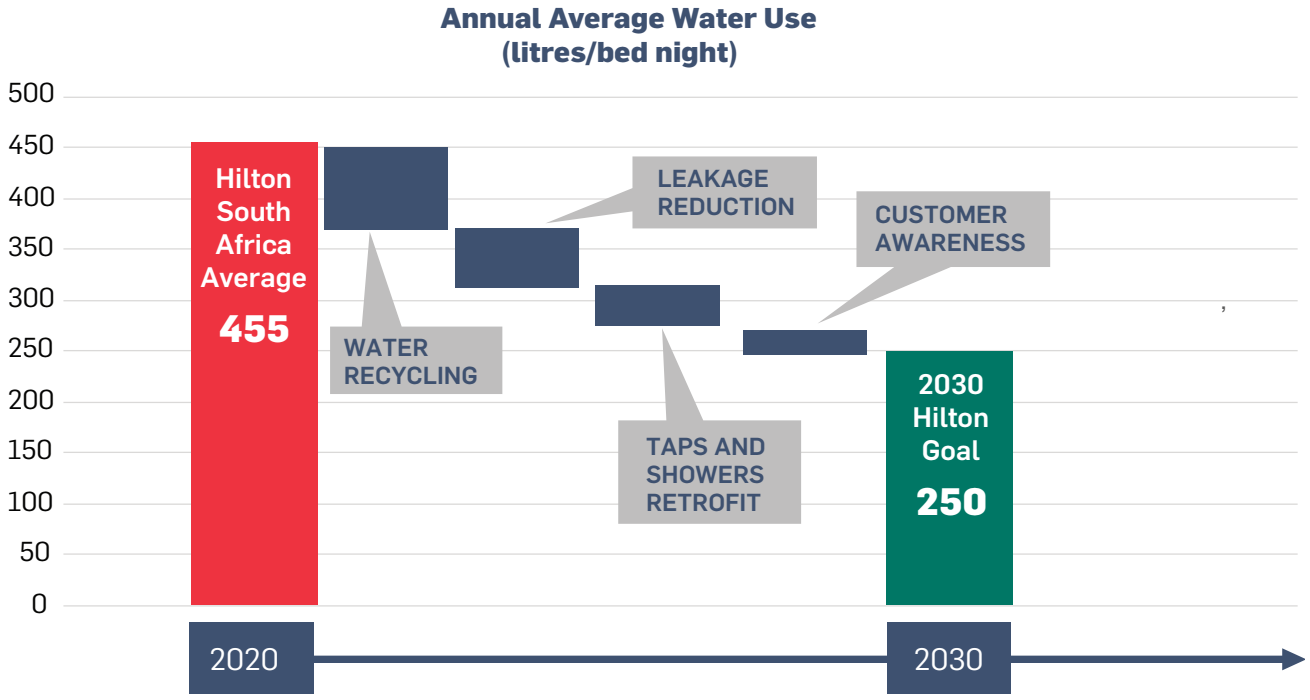
Examples of interventions taken by other hotels are shown in the Figure 10.

FIGURE 10. **Water saving interventions by hotels in Cape Town during the recent drought**

Radisson Blu Waterfront	Saltwater swimming pool using sea water
Table Bay Hotel	Flushing to non-potable water
Table Bay Hotel	Recycling backwash water for pool
Mount Nelson	Water from ice machines and ice buckets used to water gardens
Mount Nelson	Towels in public bathrooms replaced with disposable towels and the public bathroom taps aerated to reduce consumption by 40%
Tsogo Sun Hotels	Bath plugs removed, and water restrictors installed on all shower heads

Hilton Hotels & Resorts are currently carrying out discussions regarding the best suited interventions. The prioritization of interventions could consider using a framework such as shown in Figure 11.

FIGURE 11. **Possible options for reducing water consumption in Cape Town Hilton Hotel**



Conclusions and Key Learnings

This pilot helped participating companies understand the water context in which they are operating, from a hydrologic, governance and social perspective. This in turn should equip them to make informed and data-backed decisions about the water targets set and actions taken at their site and in the catchment.

The pilot companies in South Africa were extremely diverse in terms of their operations and therefore their water-related challenges. Due to these differences, the exact same methodology could not be used throughout. Regardless, below are some learnings based on the experience of the pilot, collected from the project team and pilot companies.

1. **Water challenges are often interrelated and connected.** The six categories of water challenges are often interrelated and connected, making it difficult to distinguish individually. This is especially the case with governance-related challenges manifesting in water supply or water quality challenges at the catchment level (such as in the IVRS). It is important to identify the root causes of particular water challenges in order to identify targets that mitigate the source and not the symptom.

2. **Data to determine the desired condition can be challenging to find.** In many cases, data is only available for water supply and water quality in the catchment. Engagement with the relevant public sector authority for the catchment is necessary to understand whether such data exists. If the information does not exist, it is acceptable to use a robust stakeholder process to determine the desired condition in which stakeholders would like the basin to be.

3. **Site targets can be specific or process-related, quantitative or qualitative.** Some targets are not useful when posed as a single volume or quality of water. In such cases, process-related site targets may be more relevant (i.e. development of a drought risk management plan). In addition, there are often limited quantitative targets or desired outcomes known at a basin level. Where there is a lack of quantitative guidance on the desired conditions of the catchment, it is better for a company to set qualitative targets than none at all.

Identifying site water targets that are informed by catchment context can require lengthy and in-depth analysis. However, in the spirit of shared water risk and stewardship, it may often make more economic (and practical) sense to look at opportunities within the broader catchment alongside risks the company faces alone. Targets that mitigate both company and catchment risks are likely to be superior and far-reaching.

The CEO Water Mandate's six core elements:

Direct Operations

Mandate endorsers measure and reduce their water use and wastewater discharge and develop strategies for eliminating their impacts on communities and ecosystems.

Supply Chain and Watershed Management

Mandate endorsers seek avenues through which to encourage improved water management among their suppliers and public water managers alike.

Collective Action

Mandate endorsers look to participate in collective efforts with civil society, intergovernmental organizations, affected communities, and other businesses to advance water sustainability.

Public Policy

Mandate endorsers seek ways to facilitate the development and implementation of sustainable, equitable, and coherent water policy and regulatory frameworks.

Community Engagement

Mandate endorsers seek ways to improve community water efficiency, protect watersheds, and increase access to water services as a way of promoting sustainable water management and reducing risks.

Transparency

Mandate endorsers are committed to transparency and disclosure in order to hold themselves accountable and meet the expectations of their stakeholders.