10.0

CONSERVING OUR NATURAL RESOURCES

10.1 ENVIRONMENTAL SUSTAINABILITY, INCLUDING WATER RESOURCES ADEQUACY

MANAGEMENT APPROACH

Adequate supplies of raw water resources are paramount to Umgeni Water, which together with reliable sources of energy, water treatment chemicals and other resources, are crucial for sustainability of the water business. The entity therefore is steadfast in protecting, conserving and efficiently using and sustaining these resources.

Environmental management programmes and plans are embedded in all components of the water business life cycle, namely, during planning, construction, operation and decommissioning. Umgeni Water has classified its environmental management programmes as Corporate, Operational or Integrated Environmental Management:

- Corporate Environmental Management focuses on aligning the business activities to environmental sustainability and promoting a shift towards the state of a green economy;
- Operational Environmental Management focuses on ensuring compliance with applicable environmental legislation and regulations and ensuring the entity avoids and/or minimises environmental impacts from business activities;
- Integrated Environmental Management focuses on identification, mitigation and implementation of management plans for potential environmental impacts associated with infrastructure developments.

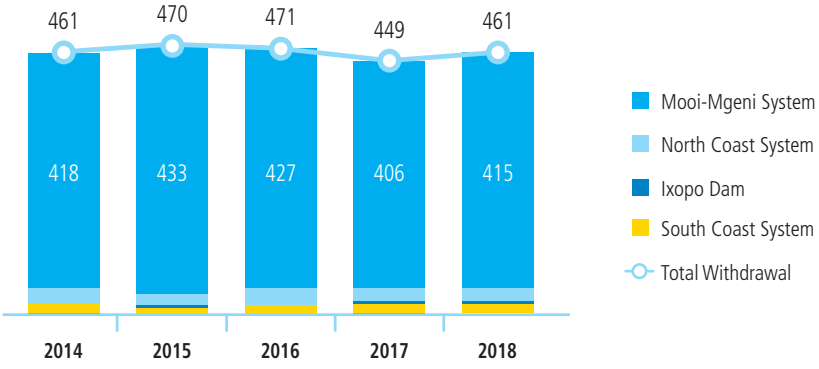
Umgeni Water, as a public water services entity in South Africa, complies with all mandatory environmental disclosure requirements. Notwithstanding this, the entity continues to improve alignment of environmental indicators with other national and internationally accepted indicator disclosure requirements, including the Global Reporting Initiative (GRI) and King IV Report on Corporate Governance, in terms of materiality and relevance. Relevant aspects include: materials, including chemicals and water resources, energy efficiency, greenhouse gas emissions, carbon footprint mapping, biodiversity and waste management, amongst others.

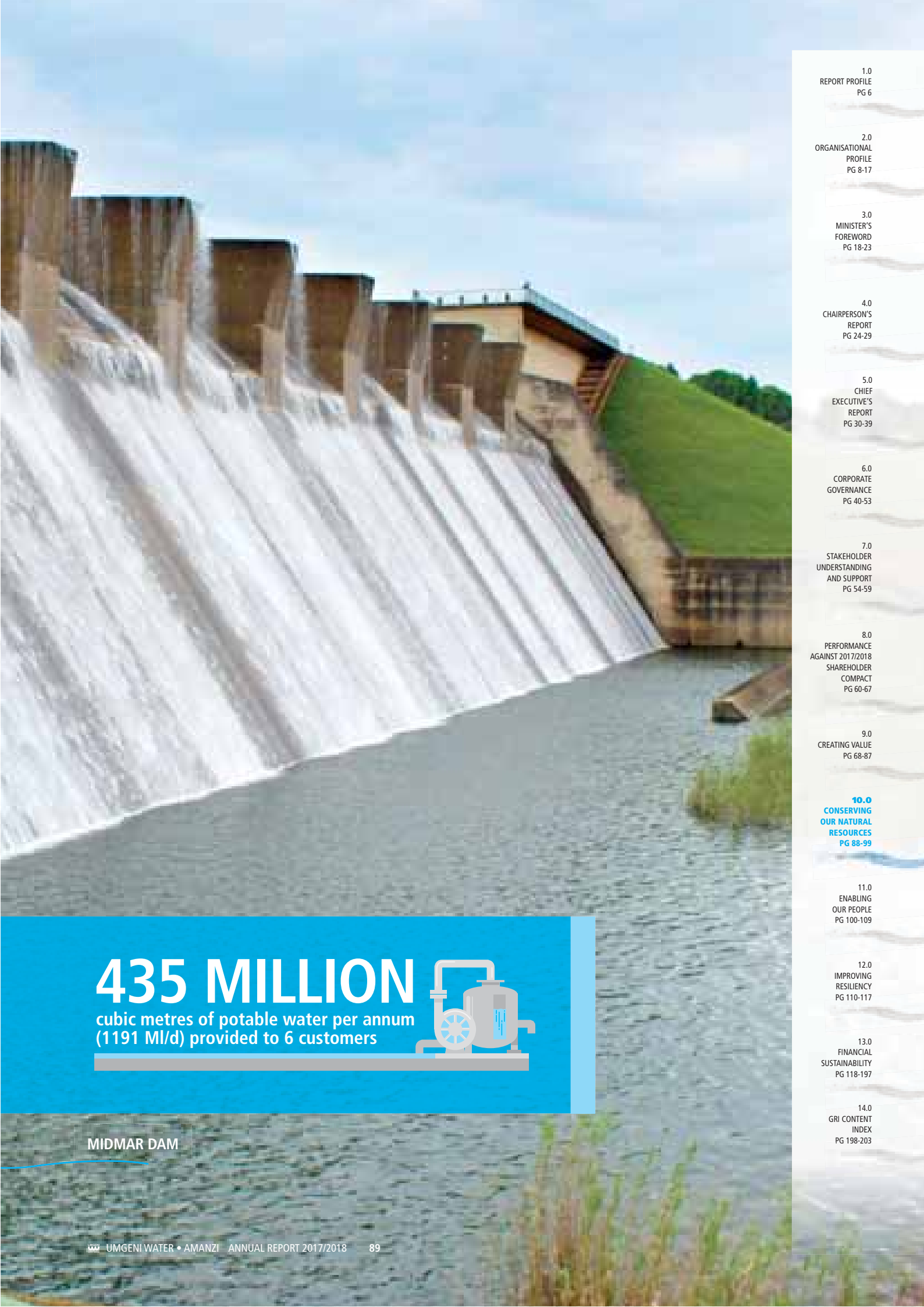
WATER RESOURCES ADEQUACY

Umgeni Waters' core business function is to treat and supply bulk potable water – a business highly dependent on the availability of sustainable water resources. The reconciliation between water resource availability and water demand is therefore of primary importance to the entity and forms an integral part of the infrastructure planning process. Understanding what water resources are available to the entity, both current and future resources, and what factors affect the assurance level of these resources, is crucial to balancing supply with customer demand and maintaining supply sustainability into the future.

The primary water sources used by the entity, include fourteen (14) impoundments on three (3) major water resource systems, namely, the Mgeni System (Mooi and Mgeni rivers), the North Coast System (uMdloti, iMvutshane, uThukela and uMvoti rivers) and the South Coast System (Nungwane, Mzimayi, uMuziwezinto and Mhlabatshane rivers). Total water withdrawal by source is shown in **Figure 10.1**.

Figure 10.1: Water Withdrawal by Source (million m^3)





435 MILLION

cubic metres of potable water per annum (1191 Ml/d) provided to 6 customers

MIDMAR DAM

"The primary water sources used by the entity, include fourteen (14) impoundments on three (3) major water resource systems, namely, the Mgeni System (Mooi and Mgeni rivers), the North Coast System (uMdloti, iMvutshane, uThukela and uMvoti rivers) and the South Coast System (Nungwane, Mzimayi, uMuziwezinto and Mhlabatshane rivers)."

In the reporting period, progress was made with the following water resource dam developments:

- Smithfield Dam (DWS) as part of the uMkhomazi Water Project, for which the feasibility study was completed and construction is anticipated to be completed by 2030;
- Hazelmere Dam raising (DWS), for which construction is in progress and expected to be completed in 2019; and
- Ngwadini Dam (UW), as part of the Lower uMkhomazi Scheme, for which the detailed design commenced in 2017/2018, is planned for completion in 2018/2019 and construction to start thereafter.

CLIMATE CHANGE AND WATER RESOURCES

The natural climate is the principal determinant of water availability whether surface or groundwater. It is therefore crucial for Umgeni Water to incorporate climatic impacts when planning and designing water infrastructure, particularly given the significant costs and long planning period required for major infrastructure investments such as dams, pipelines, buildings and transport infrastructure.

The Department of Environmental Affairs, under the Long Term Adaptation Scenarios identified the main response to climate change for water boards as coherent planning of water resources, as well as developing water resilience. In this regard, Umgeni Water has largely been proactive in incorporating climate change impacts into its planning processes. The climate change initiatives undertaken by Umgeni Water in 2017/2018 are:

- The upgrade of Umgeni Water's Water Resources Management System (WRMS) to a user-friendly decision-support system with improved functionality (Water Resources Management Decision Support System, commonly referred to as WRMDSS) was completed in 2017. The purpose of the upgrade was to improve the monitoring of hydrological information within each system. Umgeni Water's WRMS is a multipurpose system that allows effective monitoring of drought and flood parameters and therefore enhances the organisation's response to these climatic scenarios;
- Umgeni Water is developing a flood forecasting and early warning system for uMgungundlovu District Municipality under the uMngeni Resilience Project that is facilitated and coordinated by South African National Biodiversity Institute (SANBI). This system will increase adaptive capacity and build resilience to the impacts of climate change within local communities. The duration of this project is three (3) years and the deliverable is to provide a real-time flood forecasting and early warning system to alert communities of impending flood events. The design of this system commenced in May 2017 and the project is anticipated to be completed in April 2020.
- A Climate Change Research Study was initiated in May 2018 to update a previous study that was undertaken in 2012. This project will investigate the potential impacts of climate change on future water supply within Umgeni Water's Operational Area and surrounding catchments. The suite of climate scenarios that are used in this study are the most recent IPCC accredited GCMs from the World Climate Research sponsored, Coordinated Regional Climate Downscaling Experiments (CORDEX). Hydrological simulations will be undertaken using the ACRU Model to try to project the impacts of climate change on water resources within the area. The variables that are being assessed include reference potential evaporation, rainfall, and accumulated streamflow, as well as design rainfall and streamflow.

WASTEWATER REUSE

Umgeni Water has piloted a reuse plant at its Darvill Wastewater Treatment Works. The 2 Ml/d direct reuse demonstration plant comprises a conventional water treatment works to provide high-pressure wash water followed by an advanced treatment process plant. The plant is to be used for evaluating the effectiveness of reuse processes and will also be used as a demonstration plant where outside organisations and learning institutions (universities and schools) can visit, learn and understand the benefits of wastewater reuse and the processes involved in treating wastewater to potable standards.

RAW WATER QUALITY

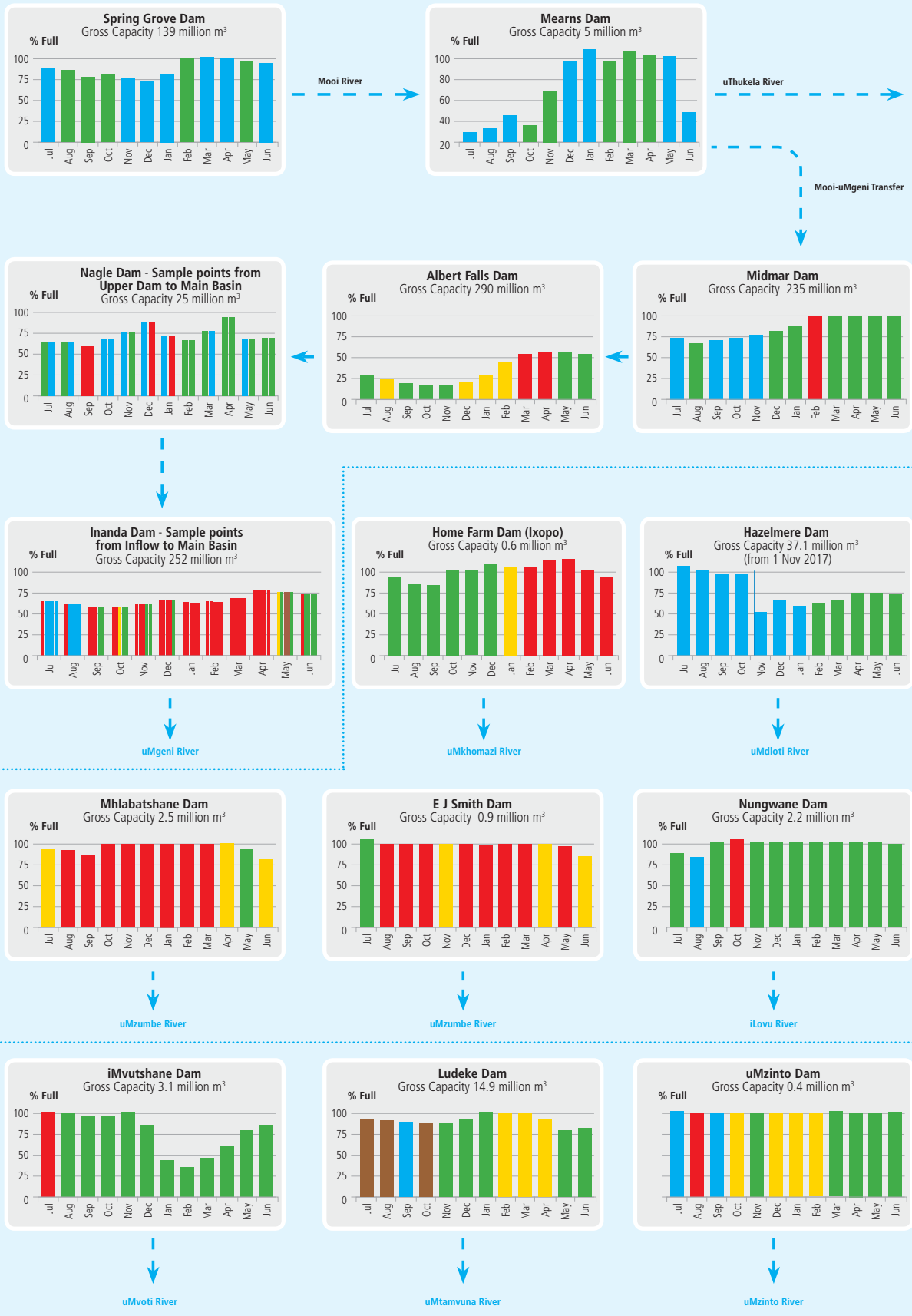
The status of raw water quality per resource is shown in **Table 10.1** and **Figure 10.2**. Water quality risks associated with Umgeni Water's raw water supplies can arise from various catchment and impoundment aspects including: eutrophication (nutrient enrichment and its associated threats including algal blooms, taste and odours and aquatic weed infestations), faecal contamination and associated pathogen risks, suspended solids and chemical constituents (including iron and manganese). The effects of these aspects in turn relate to raw water treatability, chemical usage and other cost implications, and may contribute to final water non-compliance with SANS 241 Drinking Water specification.

Umgeni Water has set resource quality objectives for water resources used for abstraction and use these alert levels to assess and mitigate treatability risks, optimise raw water quality and provide early warnings of adverse raw water quality.

Table 10.1: Resource Water Quality

System	Catchment	Impoundment/ Abstraction	Abstraction Water Quality Status and Trends					Comments
			2014	2015	2016	2017	2018	Adverse Raw Water Quality
Inland & Central Coast	Mooi	Spring Grove Dam	-	Filling	Excellent	Excellent	Excellent	-
		Mearns Dam	Good	Good	Good	Good	Excellent	-
	uMgeni	Midmar Dam	Good	Good	Excellent	Excellent	Good	-
		Albert Falls Dam	Good	Good	Good	Good	Moderate	Increased turbidity, nutrient concentrations and algal counts were associated with sustained low water levels. The refilling of the dam and flooding of exposed vegetation and soils contributed to adverse water quality.
		Nagle Dam	Moderate	Good	Good	Excellent	Good	-
		Inanda Dam	Moderate	Moderate	Moderate	Moderate	Good	Upper dam reaches unsatisfactory but good at abstraction point.
North Coast	uMdloti	Hazelmere Dam	Good	Excellent	Moderate	Poor	Excellent	-
	uMvoti	iMvutshane Dam & River abstraction	-	Good	Good	Moderate	Good	
	uThukela	River abstraction	-	Poor	Poor	Moderate	Unsatisfactory	Elevated turbidity, total organic carbon, aluminium and *E. coli* counts due to inputs associated with poor agricultural practices in the catchment.
South Coast	iLovu	Nungwane Dam	Moderate	Moderate	Good	Good	Good	-
	uMzimayi	EJ Smith Dam	Poor	Poor	Poor	Moderate	Unsatisfactory	Elevated *E. coli*, turbidity, iron and total organic carbon concentrations associated with rainfall events and sewer inputs from Umzinto Town.
	uMhlabatshane	Mhlabatshane Dam	-	-	Filling	Moderate	Unsatisfactory	Elevated *E. coli*, turbidity, iron and total organic carbon concentrations due to inputs from the catchment arising from poor agricultural practices.
	uMzinto	uMzinto River abstraction downstream of uMzinto Dam	Moderate	Moderate	Moderate	Good	Moderate	Occasional elevated *E. coli* counts and iron concentrations associated with significant rainfall events in the catchment.
	uMtamvuna	Ludeke Dam	-	-	-	Good	Moderate	Intermittent nutrient and turbidity inputs from the catchment.
	uMthwalume	uMthwalume River abstraction	Moderate	Moderate	Moderate	Good	Good	Variable quality associated with run-of-river abstraction, with elevated turbidity, total organic carbon and iron concentrations arising from rainfall events in the catchment.
	iXobho	Home Farm Dam	Poor	Poor	Poor	Poor	Unsatisfactory	Eutrophication associated with sewer inputs from Ixopo Town and the iXobho catchment. Extensive alien aquatic weed infestation poses a significant risk to the sustainability of this resource.

Figure 10.2: Map of Water Quality Status of Water Resources



Key - Impoundment Water Quality Index Classes*

Excellent | Good | Satisfactory | Poor | Unsatisfactory

* River and dam water quality is based on the revised Umgeni Water, Water Quality Index. This index is calculated using the following determinands: *E. coli*, iron, manganese, turbidity, conductivity, nitrate, ammonia, total phosphorus (TP), soluble reactive phosphorus (SRP), total organic carbon (TOC), Biotic Index scores, algal numbers, chlorophyll a, Taste and Odour compounds and algal toxins.

Catchment water quality management plans include:

- Monitoring of water resource quality to assess raw water treatability;
- Assessing risks associated with deteriorating trends in eutrophication, chemical contamination, pathogens and turbidity;
- Engaging in catchment management activities to influence resource quality and quantity objectives that will balance environmental objectives and safeguarding consumer health; and
- Monitoring and improving the quality of waste discharges from operational sites.

The Department of Water and Sanitation (DWS), as the custodian of South Africa's water resources, is kept informed of the quality, trends and potential risks associated with raw water resources.

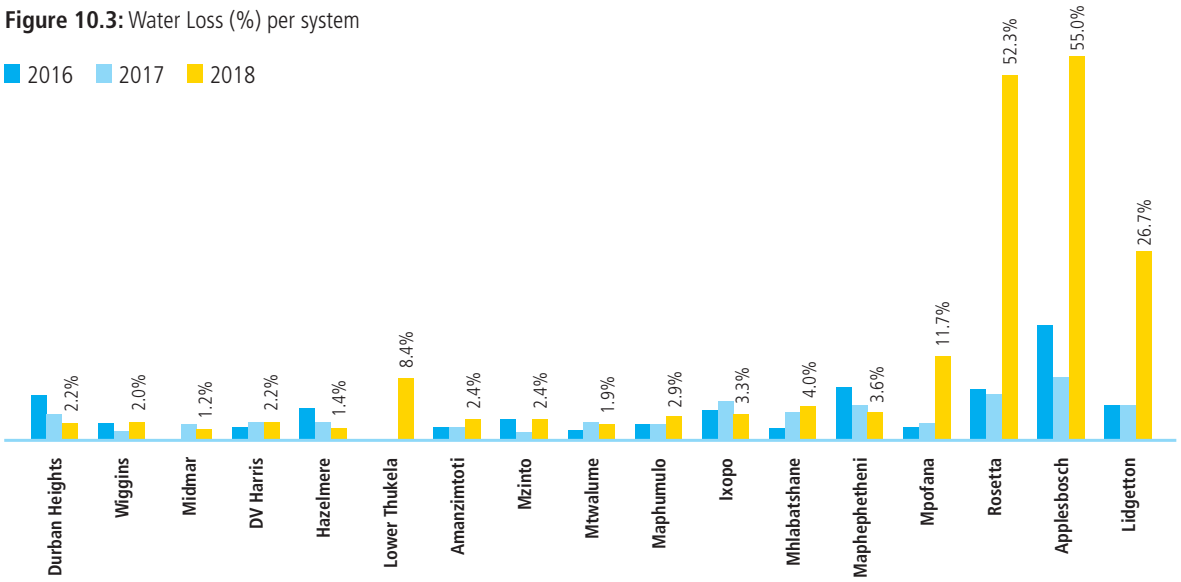
WATER LOSS MANAGEMENT

Umgeni Water strives to use the water abstracted from resources assiduously. Water balancing and water loss management measures are in place per treatment system. Overall water loss levels have been maintained below the entity's target level of 5% over the years. Water loss trends are shown in **Figure 10.3** below.

The systems with losses above 5% are as follows:

- Lower Thukela at 8.4%. The works is new and is currently operating at 30% capacity. The water loss per cent will progressively reduce, as uptake from this works increases; and
- The infrastructure for Rosetta, Appelsbosch, Lidgetton and Mpofana small schemes are in need of refurbishment. Small schemes are to be replaced by more efficient and effective regional schemes in the short to medium term.

Figure 10.3: Water Loss (%) per system



MATERIALS USAGE AND EFFICIENCY

Water is the most significant input materials for Umgeni Water, as described in the previous section, followed by energy, which is discussed below. In addition, Umgeni Water has a high reliance on water treatment chemical resources and is therefore committed to improving the usage efficiency thereof.

CHEMICALS USAGE AND EFFICIENCY

The chemical usage trend for the last five (5) years is presented in **Figure 10.4**. During the current assessment period, Umgeni Water utilised a total of 9.1 million kg of water treatment chemicals. This is a slight increase in usage over the prior year. The reason for this increase was due to the treatment of high volumes of raw water with unsatisfactory quality associated with drought, catchment activities and the operation of additional plants. Chemicals were applied to ensure that the quality of the potable water was of acceptable standard and that the quality was maintained to the point of use.

Umgeni Water has implemented various initiatives to optimise the use of water treatment chemicals. These include:

- Testing the effectiveness of water treatment chemicals for each raw water

system/plant. This informs the selection of the optimal treatment chemical and therefore prevents inefficiency/unnecessary usage;

- Monthly chemical optimisation audits to ensure that optimal use of treatment chemicals is maintained and to facilitate a prompt response should a problem be identified through the monthly sampling;
- Monitoring and evaluation of the water treatments process per plant, which identifies areas of process improvement and operational efficiency;
- Monitoring and assessing seasonal variation of the water column / dam levels, to assess levels with optimal raw water quality; and
- Participating in catchment management activities and forums and contributing to the information base, including provision of water quality data. This influences decisions on catchment land use activities and more sustainable development.

Figure 10.4: Chemical Usage and Efficiency Trends

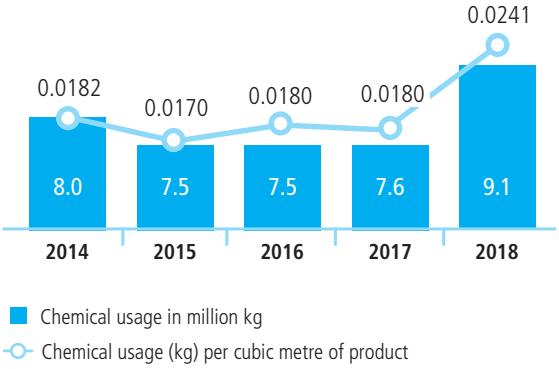
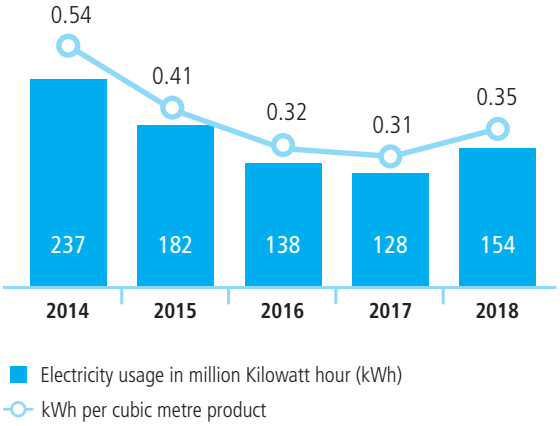


Figure 10.5: Electricity Usage and Efficiency Trends



ENERGY USAGE, CARBON FOOTPRINT AND EMISSIONS REDUCTION INITIATIVES

The total electricity usage for the reporting period was 154 million KWh. This increase is associated with increases in raw and potable water pumping in the year. Electricity usage and efficiency trends are shown in **Figure 10.5**.

Umgeni Water's direct CO_2 emission contributions emanate from vehicles, boats, generators and other fuels. Indirect CO_2 emissions are largely due to electricity usage and to a lesser extent, flights and waste generation.

The entity's carbon footprint is predominantly due to electricity consumption (approximately 99%), which is one of the main inputs to water and wastewater treatment processes.

Specialist research work to review/develop an improved method for calculating carbon emissions was concluded in the past year. The study outcome will be assessed and a revised emissions calculation method will be developed for Umgeni Water sites in the coming period.

The carbon footprint trend over the years is shown in **Figure 10.6** and **Table 10.2**.

Figure 10.6: CO_2 Equivalents (Tonnes)

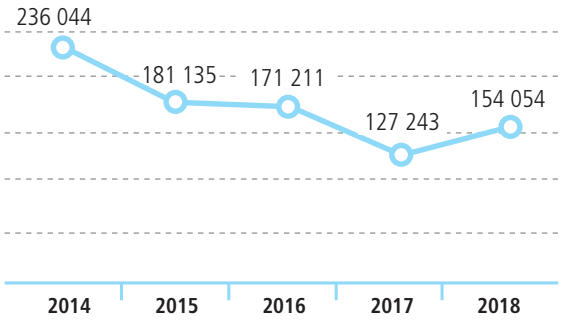


Table 10.2: CO_2 Equivalents (tonnes)

CO_2 equivalents (tonnes) per activity	2010	2011	2012	2013	2014	2015	2016	2017	2018
Electricity	131 851	163 392	208 071	153 280	234 575	180 117	170 287	126 326	152 653
Travel: Car	1 407	1 334	2 086	137	1 035	204	177	94	622
Travel: Air	143	143	81	71	87	91	99	66	65
Waste	989	299	262	196	305	684	620	720	714
Other fuel	40	40	98	82	42	39	29	37	0
TOTAL	**134 430**	**165 208**	**210 598**	**153 766**	**236 044**	**181 135**	**171 211**	**127 243**	**154 054**

CARBON FOOTPRINT AND ENERGY CONSERVATION

Carbon footprint can be described as the total amount of carbon dioxide and other greenhouse gas (GHG) emissions (expressed as carbon dioxide equivalents or CO_2e) for which an organisation or site is responsible or which it has control over, resulting from business activities. The six (6) key greenhouse gases are: Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O) and three groups of fluorinated gases, Sulphur Hexafluoride (SF_6), Hydrofluoric Carbons (HFCs), and Perfluoro Carbons (PFCs).

BIODIVERSITY MANAGEMENT

UMNGENI ECOLOGICAL INFRASTRUCTURE PARTNERSHIP (UEIP)

The UEIP is a joint partnership committed to the management and harnessing of the potential ecosystem resources in the Mgeni River catchment. Umgeni Water as a signatory of this partnership has contributed to the UEIP by supplying valuable water quality data information and experience to a number of projects. This information has increased awareness of the challenges associated with land use-related water quality impacts.

Progress with these initiatives in the 2017/2018 reporting year included the provision of technical and/or financial support to:

- 'Save Midmar Dam' project - Umgeni Water is working closely with uMgungundlovu District Municipality, KZN Department of Environment and Traditional Affairs and local communities to rehabilitate and restore wetlands in the Mpophomeni area. This forms part of the Ecological Infrastructure for Water Security project; and
- The ongoing 'Enviro-champs' project, community-based environmental monitoring programme, which assists with the implementation of water conservation measures and sewer reticulation monitoring.

RESEARCH PROJECT: FLOATING WETLANDS

Constructed floating wetlands have been successfully used for water quality enhancement and wetland habitat creation in many parts of the world. An Umgeni Water funded research project has commenced with the appointment of students from Durban University of Technology (Civil Engineering Faculty) to pilot floating wetlands using a variety of plant species in several aquatic environments. It is anticipated that this research project using modest technology will identify the most appropriate non-invasive plant species to improve water quality in nutrient enriched aquatic environments. If successful, the goal would be to implement floating wetlands at strategic wastewater treatment works and water resources to reduce the nutrient load to the receiving aquatic environment. Project work has commenced and research will continue into 2018/2019.

ALIEN AQUATIC WEED MANAGEMENT

Well-managed and sustainable water resources are critical to Umgeni Water's core responsibility of supplying sustainable potable water supply. Alien aquatic weeds introduced into various water resources pose a significant risk to water quality and quantity. The primary threats are posed by Water Hyacinth (Eichhornia crassipes); Water Lettuce (Pistia stratiotes) and Kariba weed (Salvinia molesta). These free-floating aquatic plants are extremely difficult to control in eutrophic waters due to their exponential growth rate and invasion of the riverine environment.

In 2017/2018, progress with Alien Aquatic Weed Management at Umgeni Water included:

- Maintaining close cooperation with the Alien Weed Working-group;
- Release of bio-control in several impoundments and river systems; and
- Regular monitoring and assessment of the weed status.

MSINSI HOLDINGS LAND AND SUSTAINABLE RESOURCE MANAGEMENT

Msinsi Holdings SOC Ltd, a wholly-owned subsidiary of Umgeni Water, is mandated to manage the land and biodiversity of the areas around the dams owned or managed by Umgeni Water in a manner that balances the divergent factors of local community development provision of recreational facilities for the public and water resources/ biodiversity protection.

These reserves are located at:

- Spring Grove Dam;
- Albert Falls Dam;
- Nagle Dam;
- Inanda Dam; and
- Hazelmere Dam.

Detailed management plans for each of the reserves in line with industry best practice have been completed and form the basis

for all operations in the reserves. In the past year, Msinsi has been successful in protecting the habitats and ensuring an ecologically sustainable and protected water environment through implementing its resource management plans, which focused on:

- The management of the game and species according to the carrying capacity of each reserve;
- Local community development;
- Recreation for the public;
- Grassland management;
- Control of pollution inside the purchase areas; and
- Removal of alien invasive plants, both terrestrial and aquatic.

The ecological balance was effectively managed during this period through the implementation of Reserve Management Plans. In particular, carrying capacity was managed to ensure sustainability of wildlife populations and measures to mitigate poaching, which has been a significant threat to the reserve wildlife, were put in place.

Security patrols are conducted as per a patrol plan in order to identify and mitigate security risks to the reserves, including ensuring reserve fence lines are in good condition. Msinsi Holdings continues to be seen as a significant player in the conservation and tourism sector in KwaZulu-Natal and the state-owned company will continue to ensure that ecosystem services provided by water and environmental resources continue to be sustainable.

Stakeholder engagement successfully created value for Msinsi's operations and the communities at large during this reporting period.

Msinsi continued providing environmental education, targeting surrounding communities. Thirty-two (32) environmental education initiatives in areas of water conservation environmental awareness and commemoration of environmental special days were implemented. These initiatives reached schools and communities living adjacent to Msinsi-managed establishments.

Sourcing labour within the communities around Msinsi operations created job opportunities for the communities with a total of 384 temporary jobs created during the reporting period.

In partnership with other stakeholders, a total of eighteen (18) learners received training opportunities in fields ranging from Hospitality to Human Resources Management. Msinsi Holdings is planning to sustain its training programmes in order to continue to contribute to skills development, particularly for the youth from neighbouring communities.

WASTE MANAGEMENT

The organisation improved its waste management and recycling efforts in the year. Less waste was produced per million cubic metres of potable water treated when compared to the previous year with 1 745 kg per million m^3 (1 806 kg per million m^3 in 2017). Waste recycled increased significantly with 16 927 kg (2.23%) of waste recycled compared with prior year 2 765 kg (0.37%). This improvement is attributed to the recycling initiatives implemented across the organisation.

The water treatment residues from the Water Treatment Works and the sludge from the Wastewater Treatment Works are not included in these waste streams. A study to assess the sustainable long term management option of the sludge and the residues is in progress. Trends in waste management are shown in **Figures 10.7** and **10.8**.

Figure 10.7: Waste Produced per million cubic metres of potable water treated

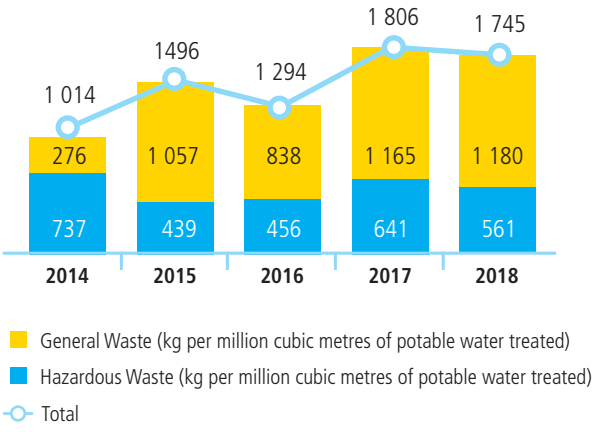
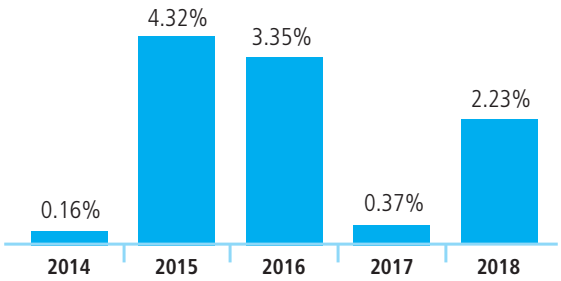


Figure 10.8: Percentage of Waste Recycled



ENVIRONMENTAL PERFORMANCE OF OPERATIONAL SITES

Annual environmental audits are undertaken at operational sites, the objectives of which are:

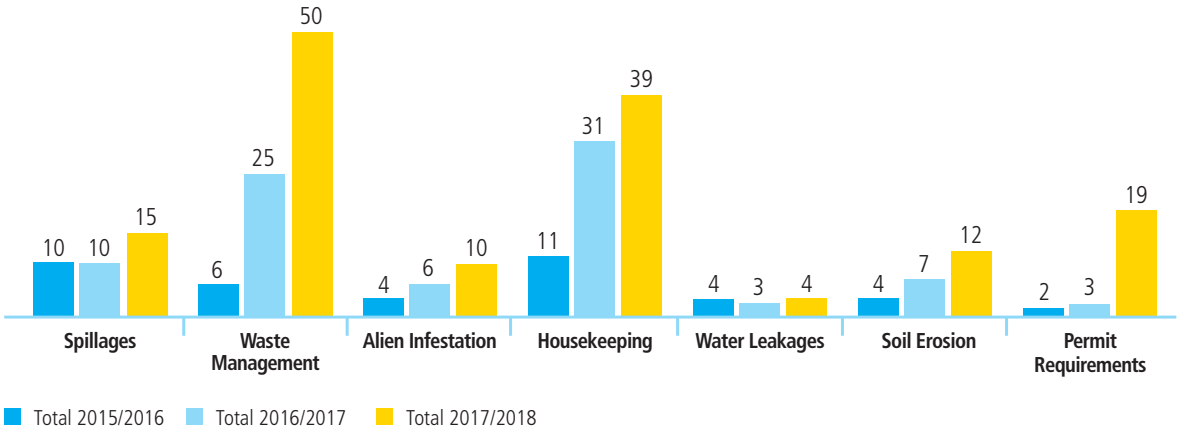
- To assess whether the site is complying with all applicable environmental legislation and regulations;
- To assess internal policy and procedural compliance in relational to environmental management;
- To assess the status of energy consumption, waste management and biodiversity management at the site and alignment with corporate environmental sustainability initiatives; and
- To recommend mitigation measures to address areas of non-conformance.

In the reporting period, environmental audits were undertaken at Water Treatment Works and Wastewater Treatment Works, dams, workshops and regional offices. The main findings **(Figure 10.9)** were:

- Poor housekeeping;
- Inadequate waste management in relation to waste separation, storage and implementation of waste recycling measures;
- Contamination of the surrounding environment due to concrete and oil spillages that were not cleared;
- Soil erosion;
- Non-compliance with permit requirements; and
- Wastage of non-renewable resource and water leakage.

Environmental performance was generally good. Most findings had risks ranging from minor to moderate. Mitigation measures will be implemented to ensure continuous improvement of environmental management at sites.

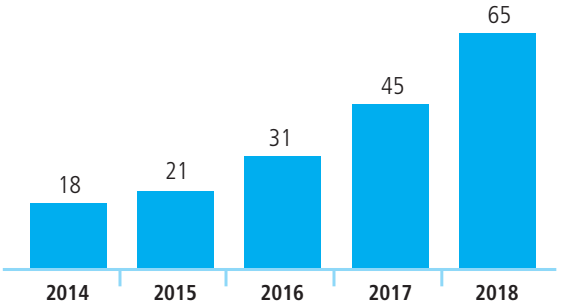
Figure 10.9: Environmental Management Findings from Audits



ENVIRONMENTAL INCIDENTS

There were sixty-five (65) environmental incidents recorded for the 2017/2018 financial year, compared to forty-five (45) incidents in the previous year **(Figure 10.10)**. Umgeni Water, has, in the recent past, acquired additional water and wastewater treatment works, for which systems will progressively be put in place to improve performance.

Figure 10.10: Environmental Incidents



INTEGRATED ENVIRONMENTAL MANAGEMENT

The entity currently has sixteen (16) projects in the planning, design or procurement phase, which are being managed through the Integrated Environmental Management System. This system is in accordance with the provisions of the Environmental Impact Assessment Regulations of the National Environmental Management Act (NEMA), which states that projects that trigger listed activities as stipulated in the regulations are required to obtain an environmental authorisation (EA) prior to any construction activities occurring. The process of obtaining an EA can either be through a basic assessment (BA) process or a scoping and full environmental impact assessment (EIA). The status of some key Infrastructure Projects is shown in **Table 10.3**.

Table 10.3: Environmental Authorisation status for Key Bulk Infrastructure Projects

Project Name	EA Status Requirements
uMkhomazi Water Project Phase 1	EIA application in progress
Richmond WWTW Upgrade	EIA application in progress
Lower uMkhomazi BWSS	EIA application in progress
uMzimkhulu BWSS	EIA application in progress
Vulindlela BWSS	BA application in progress
Mpofana WWTW Upgrade	Procurement process in progress
Elysium Desalination Project	EIA application in progress
uMshwathi BWSS Phase 4	EIA application in progress
Mhlabatshane Phase 2	EA obtained
Lower uMkhomazi BWSS – Ngwadini Dam	EA obtained
Trustfeeds Wastewater Treatment Works	EA obtained

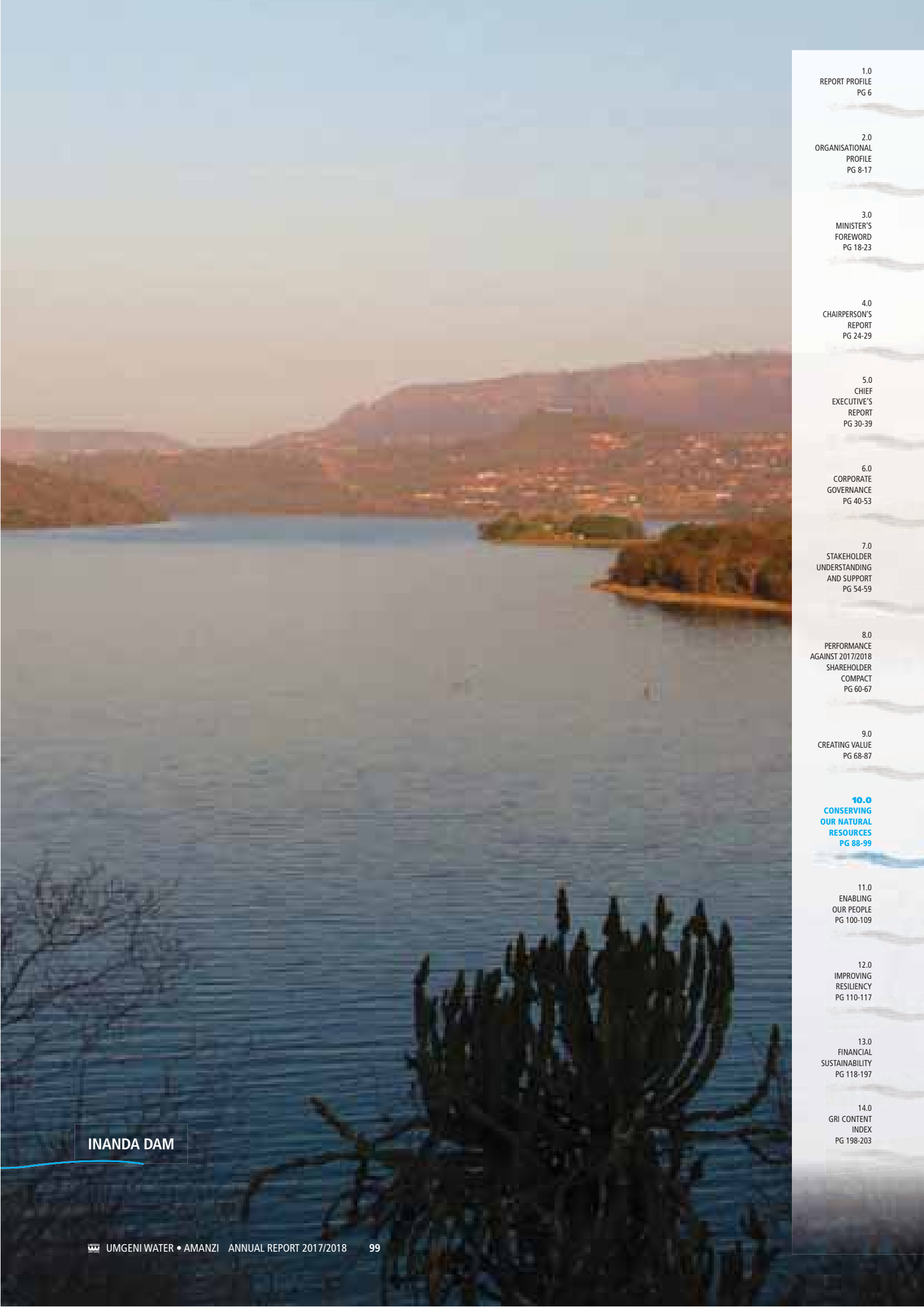
Where project developments do not trigger listed activities as defined in the Act, environmental screening is undertaken and project specific Environmental Management Plans are developed. This ensures that all the potential environmental impacts emanating from project implementation are eliminated or minimised to acceptable levels.

Seven (7) projects are currently in the construction phase and are monitored for compliance against the Environmental Management Plan requirements of the EA by independent external Environmental Control Officers, internal Environmental Site Officers Environmental Officers and Environmental Scientists.

Overall environmental performance has been satisfactory with the following minor challenges, of which mitigation procedures were recommended and implemented:

- Outstanding rehabilitation of disturbed areas causing erosion and land degradation;
- Improper top soil storage, leading to heaps exceeding acceptable height as per regulation;
- Hydrocarbon spill containment procedures not followed or properly implemented, leading to ground and surface water pollution;
- Weed infestations in construction and stockpile areas;
- Improper solid waste management with respect to construction surplus material and domestic waste, leading to poor housekeeping; and
- Poor storm water management, leading to soil erosion.

Despite the above-mentioned environmental impact challenges, good environmental practise will continue to be pursued and all activities will diligently be conducted in an environmentally sustainable manner.



INANDA DAM