

POWER AND WATER CORPORATION

INDIGENOUS ESSENTIAL SERVICES ANNUAL REPORT²⁰¹¹



PowerWater

WE VALUE SAFETY

INTEGRITY

TEAMWORK

COMMITMENT

COMMUNICATION

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CHAIRMAN AND MANAGING DIRECTOR'S REPORT

Overcoming the challenges of the extreme Northern Territory climate is normal for the Indigenous Essential Services (IES) team. This year there have been some outstanding examples of ingenuity and resilience in providing people with continuous services throughout the 20 Territory Growth Towns and 52 remote communities.

This year we saw teams work through an unprecedented wet season with record rainfall exceeding 3m. In addition, Tropical Cyclone Carlos caused flooding in the Daly River region, 230km south of Darwin, while ex Tropical Cyclone Yasi cut roads through out much of Central Australia.

Much credit to the staff that maintained fuel supplies during these exceptional events and showed great ingenuity and commitment in maintaining supplies for generation of electricity. With roads and accesses cut, fuel was airlifted into the community of Ramingining, 800km east of Darwin, and even a barge was deployed with distillate fuel up the Roper River to Ngukurr, 600km south east of Darwin – an operation not undertaken for 10 years.

IES continued its work in meeting the increased demand for new services with the ongoing Australian and Northern Territory Governments

National Partnership on Remote Indigenous Housing, incorporating the former Strategic Indigenous Housing and Infrastructure Program (SIHIP).

In addition, the Australian Government's Closing the Gap on Indigenous Disadvantage agreement, the National Partnership Agreement on Remote Service Delivery, the Building Education Revolution program and the Northern Territory Government's Working Future policy has driven an increased demand for utility services and a need to expand the water and energy systems and capacity. These combined initiatives have rapidly consumed available infrastructure capacity and serviced land, with an increase of over 500 per cent in development requests for approval.

IES has continued to implement the Strategy for Safe Water with installation of continuous disinfection systems; for the first time; in many smaller communities and improved water quality surveillance.

IES continued the development of renewable energy systems and improvements in generation efficiency, as part of a 10 year strategy to reduce the reliance on distillate as a fuel source by 50 per cent by 2020.

These highly successful initiatives have only been possible through the passion, dedication and perseverance of the staff from Power and Water; and the 155 community based Essential Services Operators which are contracted to Power and Water.

We would like to take this opportunity to thank both Power and Water staff and Essential Services Operators for their commitment and dedication throughout the year.



Judith King, Chairman



Andrew Macrides, Managing Director

HIGHLIGHTS OF 2010-11

- Maintained high levels of customer satisfaction with scores across all satisfaction and performance rating close to 8 out of 10.
- Ongoing support and recruitment of Aboriginal employees with 155 full time and relief Essential Services Operators based in remote communities across the Northern Territory.
- Construction of a 37km powerline from Ampilatwatja to the nearby community of Arlparra providing a secure supply of power and reducing green house emissions, while reducing reliance on distillate.
- Sharing water stories with schools and local residents at Daly River, Beswick and Minyerri ensuring a mutually improved understanding of water scarcity.
- Working with schools to install roof top PV to reduce the use of diesel and provide schools with buyback opportunities.
- Respond to widespread flooding from Tropical Cyclone Carlos; ex Tropical cyclone Yasi and the extended wet season, which provided around twice the average annual rainfall over much of the Northern Territory.
- Collected water samples and carried out 90,500 analysis to verify the quality of the water.
- Galiwin'ku community water education and awareness project has given customers an enhanced understanding of water conservation.
- An automatic remote smart meter trial at the community of Santa Teresa has provided important water consumption data leading to water savings of 150,000 litres per year.
- Power and Water took ownership of the solar installations at Hermannsburg, Lajamanu and Yuendumu.
- Construction is underway for three new solar installations at three communities, Ti Tree, Kalkarindji and Alpururulam (Lake Nash) and a 20 year Power Purchase Agreement signed to secure solar power.
- Improved the sewerage services for the community of Palumpa ensuring services are maintained to the community during wet season flooding.
- Delivery of 113 Gigawatt hours of electricity, 9 Gigalitres of water pumped and 3.5 Gigalitres of sewage treated for Territory Growth Towns and remote communities in the NT.
- Operated in a safe manner with zero Lost Time Injuries.

BELOW: GUNBALANYA FUEL STORAGE



OUTLOOK FOR 2011-12

Both the Australian and Northern Territory governments made long term commitments to Closing the Gap on Indigenous Disadvantage. Essential services like water and electricity supply are essential for the successful outcome of these initiatives. IES Pty Ltd will continue to play an essential role in supporting ongoing development of the Territory Growth Towns (TGTs) and remote indigenous communities.

The Northern Territory Government *Territory 2030 Strategic Plan* and the *Climate Change Policy, A Working Future* policy initiatives all contain important commitments relating to essential service and infrastructure delivery in remote Indigenous towns and communities, including:

- The entitlement of remote Indigenous communities to standards of service and infrastructure broadly comparable with those in non-Indigenous communities of similar size, location and need elsewhere in Australia
- The need to strengthen economic development and indigenous employment which will PWC supports with the strategy for Indigenous Employment as well as the Essential Service Operators
- The replacement by 2020 of diesel as the primary source of power generation in remote towns and communities using renewable and low emissions energy sources instead
- The continuous focus on improving the water and wastewater supply through a focus on water quality, waste water management and ground water management, and water and energy demand management.

The policy initiatives of *Closing the Gap on Indigenous Disadvantage* and the joint Commonwealth and the *National Partnership Agreement on Remote Indigenous Housing (NPA RIH) and the NPA on Remote Service Delivery (NPA RSD)* will continue to significantly impact the demand for essential services, with an increased focus on both the capacity and reliability measures of services available.

Demand for both water and electricity is expected to continue to grow as a result of expected population growth as well as various Territory Government initiatives aimed at improving lifestyle and health outcomes for Indigenous people. Improved prosperity through programs to provide sustainable employment opportunities will also grow the demand for services with embodied energy and water.

Looking forward to 2011-12, IES will:

- Continue to improve the effective management and maintenance of the IES assets by using most appropriate methods and technologies and ensuring the required data is accurate and available.
- Continue to build on our strength as an integrated utility by maximising the local knowledge and integrated, place based planning and service delivery.

- Provide critical information about the condition, capacity, quality and constraints related to electricity, water and sewerage infrastructure to key stakeholders.
- Provide culturally appropriate information about the services and projects delivered by IES, and engage with nominated communities regarding water and energy efficiency.
- Build organisational capability with a strong focus on occupational health and safety and initiatives to develop the organisation's workforce capabilities, including the improved engagement and training of ESOs.
- Address financial sustainability by maximising revenue consistent with regulatory outcomes and through management of the revenue, expenditure control and efficiency gains.
- Develop a prioritised long term plan for infrastructure replacement and augmentation to address the current risks associated with aging infrastructure and allow for financial planning to meet government aspirations and initiatives.
- Respond to climate change and environmental concerns and policies as included in the Territory Government's 2030 strategy.

EXECUTIVE SUMMARY

Indigenous Essential Services Pty Ltd (IES) is a not-for-profit subsidiary of Power and Water Corporation, which provides electricity, water and sewerage services to the 20 Territory Growth Towns and 52 remote communities. The Northern Territory Government primarily funds the delivery of essential services through appropriation from Department of Local Government, Housing and Regional Services (DLGHRs), in addition revenue collected from providing services and other funding sources are invested in the provision of services.

Power and Water Corporation has been providing electricity, water and sewerage services to customers across the Northern Territory since 1987.

Power and Water aims to deliver reliable and equitable utility services to the Territory Growth Towns and remote communities in a competitive, efficient, safe, sustainable and reliable manner, while meeting the environmental obligations and supporting regional development and Indigenous employment and training.

The integrated utility structure and years of experience operating across the Territory enables Power and Water to cost effectively provide a continuous supply of essential services. For many years Power and Water has worked in an outsourced environment where we have established long term contracts and associations with local contractors, businesses and shires, which provides communities with stable and ongoing economic development and training opportunities for remote Indigenous organisations.

This ability to maintain 'value for money' is particularly challenging in an environment where the majority of the communities are relatively small, sparsely located and often experience a vast array of climatic conditions

from the cyclone and storm-prone tropics of the north to the deserts of Central Australia. Every day the Remote Operations team of people overcome the challenges of remoteness and climatic extremes to ensure that the integrity of services is maintained across more than 1.3 million square kilometres – nearly one sixth of Australia's land mass.

The effective delivery of power, water and sewerage services is achieved through the integration of Power and Water's operational delivery and planning teams in Remote Operations, which provide support for on-location Essential Services Operators (ESOs). More than 150 relief and fulltime ESOs are contracted by Power and Water in the towns and communities to provide the eyes on the ground, which can respond to different situations and needs quickly and effectively.

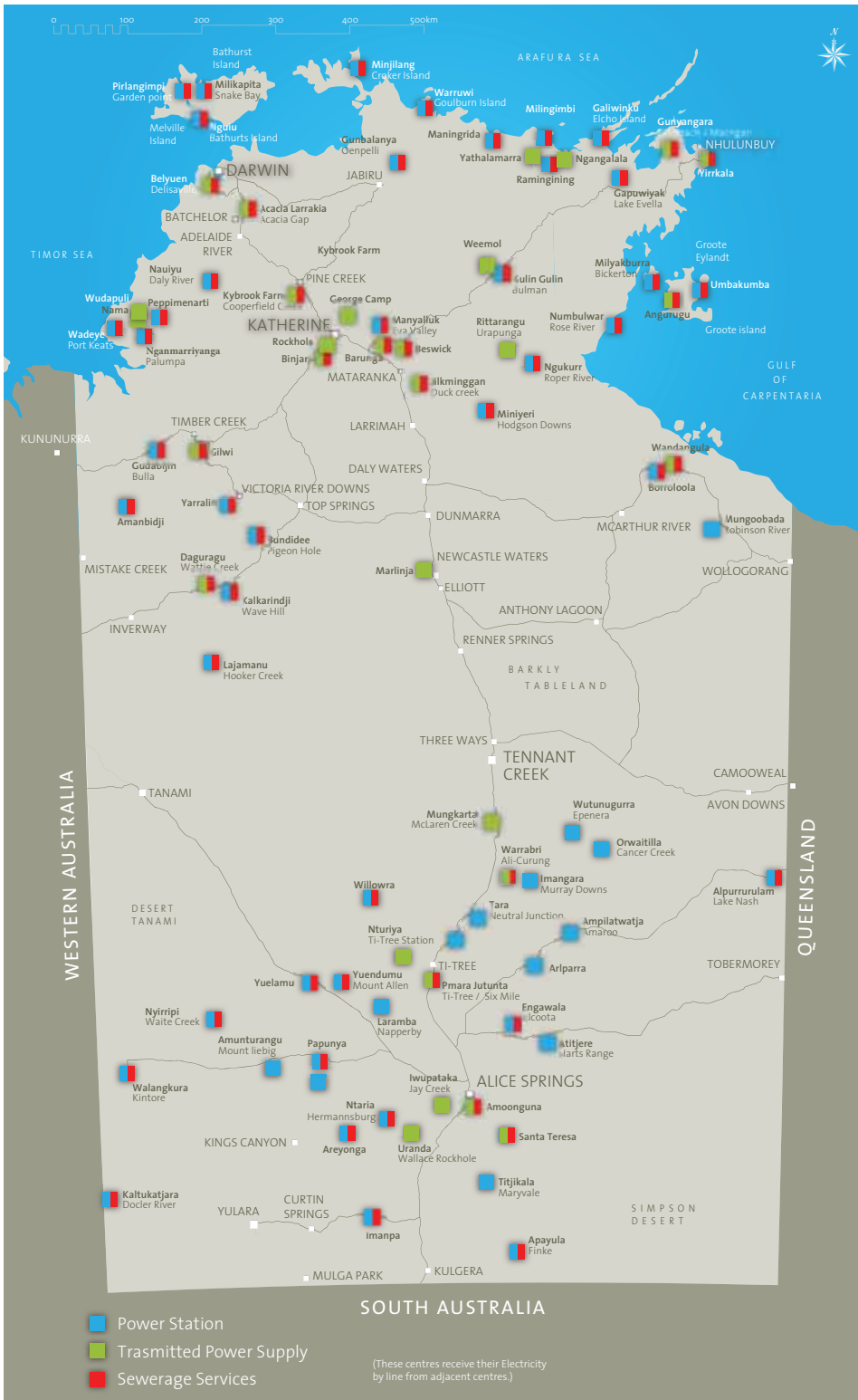
The benefit of strong and positive relationships with Indigenous people, communities, traditional owners, shires and land councils has been seen in annual customer satisfaction surveys. This survey monitors the quality of our services and level of satisfaction of our customers and supports Power and Water to provide safe and cost efficient essential services to all remote customers.

The delivery of essential services is crucial to achieving Northern Territory and Australian Government initiatives, which aim to improve the lives and health of Indigenous Territorians. Initiatives as Closing the Gap on Indigenous Disadvantage, Territory 2030, Climate change Policy and the Remote Service Delivery and Remote Indigenous Housing National Partnership Agreement. In addition, Power and Water will lead the Energy Source Strategy and Water for Healthy Communities program, which provide the framework to ensure the ongoing provision of appropriate electricity, water and sewerage services in towns and communities for people now and in the future.

"It is wicked to be a part of such an awesome team that is doing so many great things in communities and improving peoples lives"

Felicity Wall,
Remote Operations
Civil Engineer in Alice Springs

INDIGENOUS COMMUNITIES POWER, WATER AND SEWERAGE SUPPLY



*Retail licences for remote Indigenous communities are not shown on this map.

OUR BUSINESS

The delivery of services through a consolidated utility allows Power and Water to plan, manage, operate and upgrade essential services as one project. This allows interdependencies between energy, water and sewerage services to be appropriately and effectively managed for a varied and sparsely populated customer base, while maximising the use of resources. The approach also allows for the opportunity for innovation that may not be available if water and energy was managed and delivered by separate entities.

The combined utility structure enables significant operational and maintenance cost efficiencies as overheads can be shared across the service areas. A single communications network can be established for the remote monitoring and control of infrastructure and allows a single coordinated program for the delivery of routine maintenance, minor upgrades and capital projects.

The Remote Operations team of professional, technical and administration staff work cohesively across operational, planning and project delivery from our four regional

bases in Darwin, Katherine, Tennant Creek and Alice Springs. The team provides a comprehensive range of skills and understanding of water and energy and is in a strong position to support various Government reform agendas including climate change, renewable energy and water and energy conservation, Indigenous employment and economic development.

The IES asset portfolio consists of (Table 1):

- electricity generation infrastructure comprising mostly of diesel power stations

- electrical distribution systems, up to and including customers' meters
- water infrastructure including surface water harvesting, groundwater production bores, bore-pumps, tanks, transfer pumping stations, water treatment and water supply reticulation systems, up to the customers' property boundaries
- sewerage infrastructure, starting at the customers' boundaries, including collection mains, pumping stations and wastewater treatment, reuse and disposal systems

BELOW: ALL-TERRAIN VEHICLE USED TO ASSIST WITH FUEL TRANSFERS DURING WET SEASON



TABLE 1 : INDIGENOUS ESSENTIAL SERVICES PTY LTD
STATISTICAL SUMMARY AS AT 30 JUNE 2011

	UNITS	2006	2007	2008	2009	2010	2011
ELECTRICITY							
Generation							
Installed capacity (including solar)	MW	48	51	56	60	69	71
Installed capacity – solar	MW	0.5	0.7	0.7	0.8	0.8	0.8
Electricity generated (including solar)	GWh	94	95	97	106	112	103
Electricity generated – solar	GWh	1.0	1.6	1.0	0.8	0.7	0.3
Electricity sent out (including solar) [#]	GWh	86	86	89	109	120	110
Purchases from private suppliers	GWh	7	8	8	8	8	8
Distribution (22/11kV and below)							
HV Overhead	km	344	373	349	473	513	579
HV Underground	km	1	1	5	5	5	7
LV Overhead	km	253	278	278	278	278	325
LV Underground	km	1	1	4	3	3	3
SWER All Voltages	km	87	87	87	87	87	87
Sales^{##}	MWh	60,019	60,574	63,665	104,501	112,030	112,726
Customers (ie. services)	No. of installations	7,213	7,373	7,421	7,540	8,116	8,478
WATER							
Total sourced water	ML	9,733	9,250	9,846	9,848	9,792	9,002
Length of mains	km	649	649	649	652	654	654*
Customers (ie. services)^{**}	No. of meters	n/a	n/a	n/a	n/a	n/a	2,168
WASTEWATER							
Volume of sewage treated	ML	3,508	3,552	3,835	3,940	3,917	3,601
Length of sewer mains	km	302	303	303	305	307	303
Volume of effluent reused	ML	-	-	-	-	-	-
Customers (ie. services)^{**}	No. of installations	n/a	n/a	n/a	n/a	n/a	1,810

[#] From 2008-2009, Electricity Sent Out includes electricity sent out to IES communities purchased from Power and Water power grids. This has not been included in previous years.

^{##} From 2008-2009, Electricity Sales includes all prepayment and credit meter sales. Previous years' data does not include all prepayment meter sales.

* Estimated from 2010 data. A review is currently underway on length of water mains and data is being moved to a GIS system.

** Due to changes to the calculation methodology for this statistic, historical data is currently being reviewed for consistency and is not available at the time of publication.

ELECTRICITY SUPPLY

Electricity provided to the Territory Growth Towns and remote communities is predominantly generated by diesel-fired power stations. IES Pty Ltd owns and operates 52 diesel-fired power stations with an installed capacity of over 80 megawatts (MW).

Where the Territory Growth Towns and remote communities are in close proximity to existing electricity services, Power and Water purchases

power through agreements, such as with Rio Tinto Alcan at Gove and GEMCO on Groote Eylandt.

Power and Water currently uses renewable energy systems at six communities with an installed capacity of almost 800 kilowatts (kW). These systems utilise a range of solar technologies, including both concentrating Photovoltaic (PV) dishes and flat plate PV modules.

FACT:

IES PTY LTD MANAGES ONE OF THE LARGEST 'FLEETS' OF DIESEL GENERATION PLANTS IN AUSTRALIA WITH 177 DIESEL GENERATORS INSTALLED, RANGING IN SIZE FROM 50 KILOWATTS (kW) UP TO 1.6 MEGAWATTS (MW)



LEFT RAMINGINING TANK

POWER AND WATER CPV AND PV SOLAR POWER SYSTEMS IN THE NORTHERN TERRITORY



FACT:

THE REMOTE OPERATIONS TEAM ALSO MAINTAINS FIVE MINOR CENTRE POWER STATIONS ON BEHALF OF POWER AND WATER INCLUDING TIMBER CREEK, BORROLOOLA, DALY WATERS, ELLIOT AND TI TREE.

Power and Water is committed to continuing to increase the efficiency of its power generation operations and to gradually displace distillate in remote communities where it is economically efficient to do so. The road-map for achieving the long-term provision of reliable, cost-effective power supply is outlined in the Energy Source Strategy. In order to reach this goal Power and Water will pursue a diversified energy source mix in the near term, to allow a range of renewable and low emission energy source options to be assessed.

This Energy Source Strategy is underpinned by an economic assessment of available energy options for each community. The objectives of the strategy are to:

- minimise long term service delivery costs
- meet community demand growth
- make efficient use of emerging technologies and the availability of gaseous fuels
- prepare for the financial impacts of climate change.

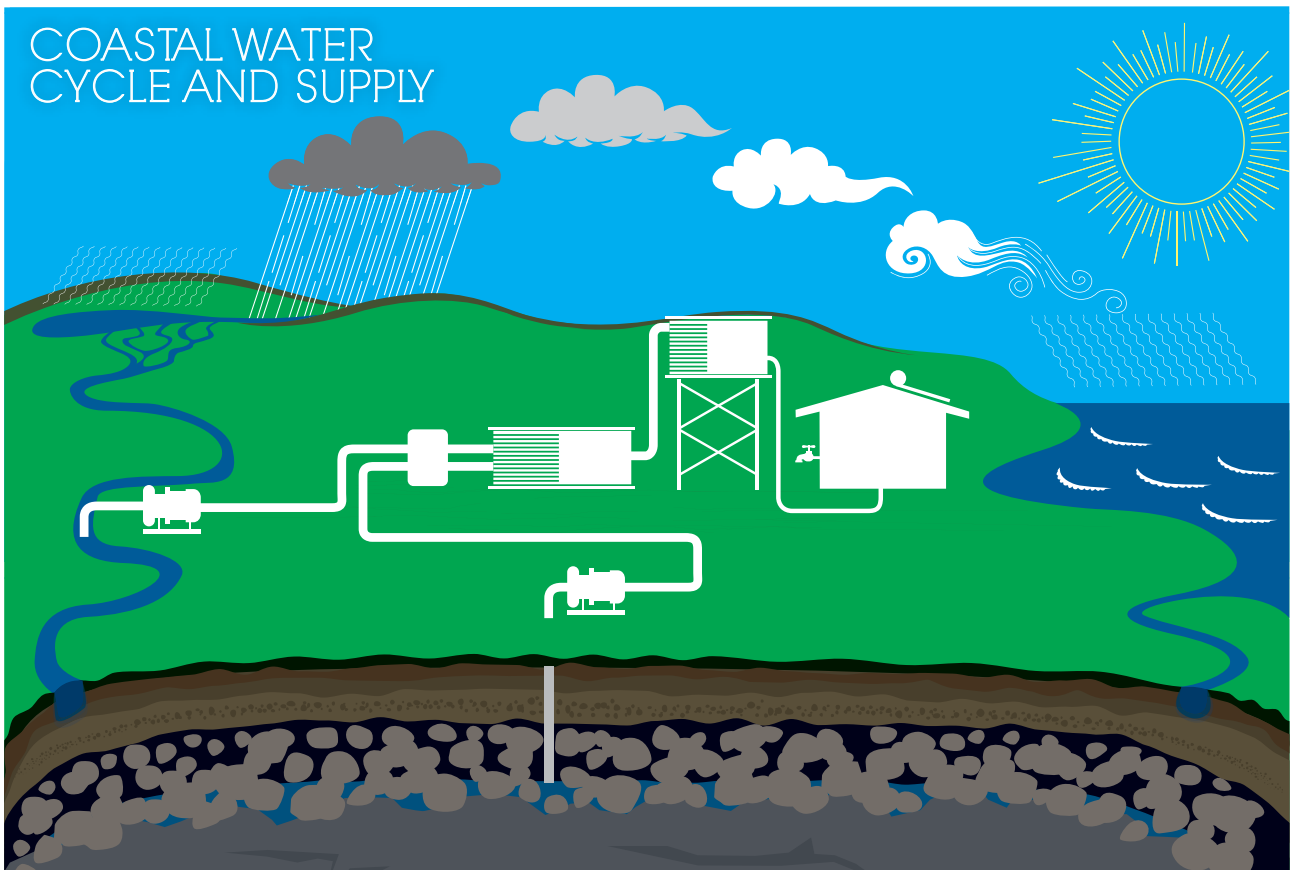
WATER SUPPLY

Power and Water supplies drinking water through more than 250 production bores, 160 water storage tanks and 600 kilometres of water distribution systems spread across the Territory.

Water is provided to residents for drinking using cost effective systems, where a number of production bores pump water from the underground aquifer to a central storage area where the water is disinfected and delivered via the distribution system using gravity.

In 68 towns and communities the water primarily comes from groundwater, contained in underground water bodies known as aquifers, which is extracted through production bores. The remaining three communities exclusively use surface water sources, such as rivers, creeks and dams. All the water supplies are disinfected before it is delivered to customers to drink. More information on the water source and the treatment can be found in Appendix A.

Power and Water has developed the Water for Healthy Communities initiative to ensure the provision of appropriate water and sewerage



services in Territory Growth Towns and remote communities, which includes water quality, water sustainability and wastewater management. This integrated approach is based on the principles of risk management, which focuses on adequate and safe water being available for communities and then after the water has been used, the treated wastewater is appropriately returned to the catchments. The objectives are to:

- Protect public health
- Provide appropriate service infrastructure
- Minimise any adverse effects operations have on the environment
- Continue improvement towards managing sustainable water resources
- Enhance involvement with community residents and stakeholders in water management.

SEWERAGE SERVICES

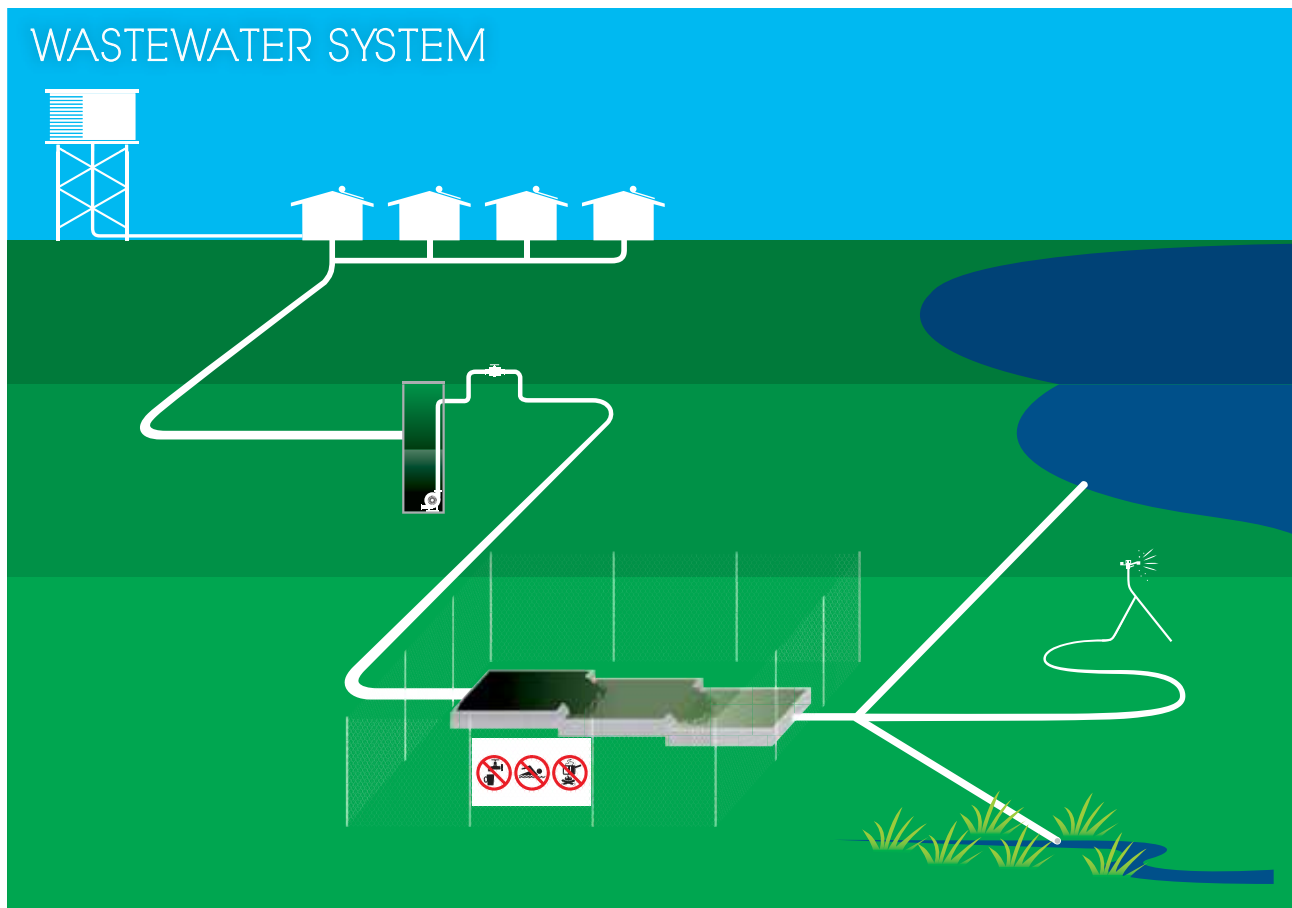
Power and Water manages reticulated sewerage services in 56 of the Territory Growth Towns and remote communities across the Northern Territory.

Sewerage services are provided by taking sewage and wastewater off-site through sewer pipes and sewerage pump stations to centralised waste stabilisation ponds for treatment and then the appropriate disposal of effluent (treated wastewater).

Sixteen communities rely on onsite wastewater treatment systems that are managed privately or as part of the public housing portfolio. These on-site systems are primarily septic tanks with a soak-away to dispose the excess effluent. Three communities use a combination of these systems.

Reliable and adequate wastewater collection, treatment and disposal infrastructure is necessary to minimise risk to public health and the environment. This must occur while complying with the Department of Health and DNRETAS regulations.

As part of Water for Healthy Communities, Power and Water has developed a Wastewater Management Strategy to strategically improve wastewater treatment systems in 56 of the Northern Territory's Growth Towns and remote communities by 2015. The strategy gives direction on managing wastewater, including guidelines on design, management, commissioning and ownership of the technology, public health issues, energy requirements, maintenance and security of assets, monitoring, approvals and stakeholder engagement.



RETAIL

The number of meter installations for power, water and sewerage services is steadily increasing across the Territory Growth Towns and remote communities.

All electricity, water and sewerage is charged at the uniform Power and Water tariff. Domestic Indigenous households are not charged for water and sewerage services, and electricity is purchased using prepaid power tokens. The 2010-11 financial year saw electricity sales of \$22.58 million, water sales worth \$1.99 million, and sewerage services worth \$1.16 million for IES.

WATER AND ENERGY CONSERVATION

It is acknowledged that the use of water and energy is expected to continue to grow strongly across the Territory Growth Towns and remote communities. Although population growth will continue to be a major driver of this growth, many of the Territory and Australian Government initiatives, aimed at improving lifestyle and health outcomes, will invariably lead to greater use of energy/water services. Improved prosperity through programs to provide sustainable employment opportunities will also increase demand for services with embodied energy and water.

Power and Water is working towards long-term plans to meet the growing demand for services, which includes system augmentation and replacement as well as the establishment of water and energy conservation programs through partnerships with the community and the various commercial, government and private consumers.

Power and Water also focuses on other initiatives such as the installation of water meters, improving operational

water efficiencies, and establishing community supported water efficiency approaches, including behaviour change, customer awareness campaigns aimed at reducing consumption and residential retrofit initiatives.

In partnership with cultural leaders and local shires and councils Power and Water is working on energy and water efficiency programs, which focus on sharing cultural stories, education and respectful engagement. Working with community members Power and Water has helped raise awareness about where water and electricity comes from and how to conserve these scarce resources and protect supplies for future generations. Power and Water has gained enormous support while working in partnership with the community and has been able to foster improved local ownership of the initiatives resulting in more effective programs, as well as providing an 'on-ground' insight into the operation of essential services.

PLANNING AND DEVELOPMENT

Power and Water provides strategic planning, asset management, reporting and project management capabilities through the planning and development group. This multidisciplinary team of technical and professional staff provide:

- Strategic planning for power, water and sewerage services including the expansion renewable and low emissions energy portfolio and capability
- Development of investment programs and funding submissions
- Project delivery capability for capital and minor works program including financial management and analysis
- Infrastructure asset management

including reporting of system performance

- Customer service and support for various developers
- Contract management capability including the supply and delivery of distillate
- Program planning and management expertise including hydro-geological assessment, groundwater investigations and monitoring
- Development and delivery of water and energy efficiency programs through community engagement and consultation
- Coordination of legislative and regulatory reporting requirements to relevant authorities for our services
- Water quality, water and wastewater treatment expertise including operational management and capital improvement requirements
- Development and implementation of Supervisory Control and Data Acquisition (SCADA) systems to provide infrastructure control and performance monitoring.

OUR OPERATIONS

Power and Water consistently reviews and monitors systems performance. This ensures that we are delivering reliable services cost efficiently for a sparsely populated customer base.

An overview of key operational performance is provided below:

ELECTRICITY SUPPLY

MEETING THE GROWING DEMAND FOR POWER

Power and Water aims to maintain reliable power services to residents in Territory Growth Towns and remote communities. This is achieved through an N-1 operating philosophy, which ensures that there is sufficient generation capacity in each community to meet the power demands in the event of a failure or routine maintenance of the largest generator on-site.

Improving the efficiency of the power stations is also a key part of Power and Water's ongoing operations. This is achieved by upgrading to the latest engine technology when generators come to the end of their operational life and refurbishing existing engines and relocating to new community that

requires additional generation capacity to maintain an N-1 philosophy. This way each power station is operated as efficiently as possible and capital investment required is kept to a minimum whilst meeting the growing demand for power services (Figure 1).

Station thermal efficiency data is analysed regularly to determine where efficiency gains can be achieved with individual generators.

MAINTAINING FUEL STOCKS

Diesel is the primary source of fuel for the power stations run by Power and Water in remote locations and ensuring sufficient supply of fuel is transported and stored securely on site is a major feat in logistics. Power and Water works closely with fuel contractors to overcome the obstacles of distance, access limitations and extreme climatic conditions, to make sure that the right amount of fuel is delivered at the right time and in the most cost-effective way.

FACT:

IN 2010-11 A TOTAL OF 33.07 MILLION LITRES OF DIESEL FUEL WAS TRANSPORTED TO POWER STATIONS ACROSS THE TERRITORY.

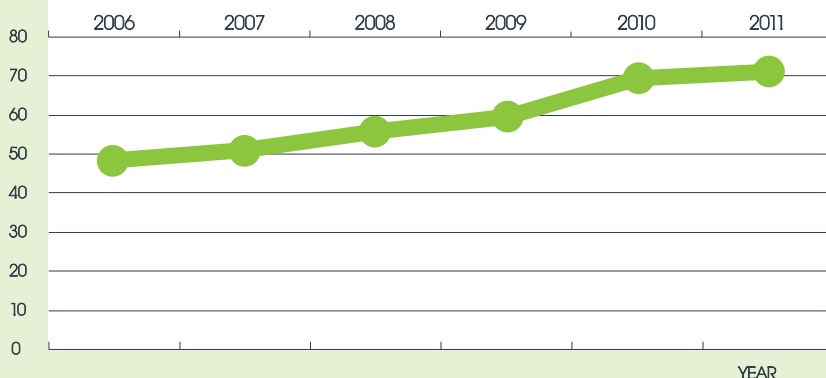
As the majority of communities receive their fuel by road, extensive work is undertaken throughout the dry season to ensure fuel supplies and other associated equipment is available and ready for use during the wet season when many communities can be isolated for up to six months due to heavy rainfall and flooding. Fuel delivery by barge is made for 13 coastal communities.

The prolonged wet season of 2010-11 with record 3m of rainfall saw many communities isolated for longer than usual. To ensure that services were maintained Power and Water deployed helicopters and all terrain trucks for emergency fuel drops for a number of communities to ensure they had sufficient supply.

STATE OF THE ART CONTROL SYSTEMS

Over the years of working across the Territory Power and Water has developed sophisticated control systems for the control of power systems by marrying together a variety of the best products available on the market. These systems remotely control the power generation and distribution systems to allow maximum efficiency of the systems under normal operation and maintain services to as many residents as possible in the event of a failure.

FIGURE 1
INSTALLED GENERATION CAPACITY INCLUDING SOLAR (MW)



GETTING POWER TO PEOPLE

Power and Water manages over 1,000 km of power distribution lines across the Territory. Power and Water's operation philosophy is to ensure that there is sufficient capacity in the systems to maintain services to residents in the event of a failure or outage within the distribution system.

Power and Water also has an on going program to connect power distribution networks for Territory Growth Towns and remote communities which are in close proximity to one another. To date Power and Water has decommissioned five less efficient power stations through this grid connection program, which increases cost efficiencies and decreases greenhouse emissions.

WATER SUPPLY

MANAGING WATER RESOURCES

Power and Water extracts water from groundwater and surface water resources in order to supply water to the Territory Growth Towns and remote communities across the Territory. Licences are required from the Department of Natural Resources, Environment, the Arts and Sport (DNRETAS) to extract the water from some of these sources, which means that Power and Water regularly reports on the amount of water that is taken and monitor the effect this has on groundwater resources. More information on the water sources and licences can be found in Appendix A.

During 2010-11 the communities of Gudabijin (Bulla) and Ngukurr exceeded their surface water extraction limits. Power and Water is working with DNRETAS to reduce the amount of water being extracted by reducing water consumption in

these two communities as well as investigating new water sources or increasing licence extraction limits based on the sustainability of the resource:

- Gudabijin (Bulla) relies on both groundwater and the East Baines River to supply the community with water. The licence limit breach occurred when a larger than expected volume of water was extracted from the river due to a decrease in the amount available from the groundwater source.
- Ngukurr also relies on both groundwater and water from the Roper River to supply the community. During 2010-11 the quality of the water extracted from the ground steadily deteriorated and the extraction from the higher quality river water was increased resulting in the licence limit breach. Power and Water is currently investigating alternative supplies for Ngukurr to greatly improve the water quality and reduce reliance on surface water resource.

Power and Water is working with stakeholders, including the Bureau of Meteorology (BOM), to increase knowledge and monitoring of the aquifers supplying remote communities in the Northern Territory. Investment from the BOM has funded part of the groundwater monitoring program, which has already seen 42 electronic water level stations installed to monitor aquifers supplying 21 remote communities as part of the BOM's Modernisation and Extension program. At its completion, the \$1.1 million project will monitor groundwater supplies for 34 communities. A map of groundwater monitoring installation sites can be seen at Appendix B.

IMPROVING OUR OPERATIONS TO SAVE WATER

Power and Water is continually working to improve its operational activities to help save water. Historically, a number of communities that have naturally high levels of iron in the water would regularly require the distribution

systems to be flushed clean to prevent the build up of iron that can cause the water to appear brown and discolour clothing. As an alternative Power and Water has changed the maintenance regime for production bores, which has minimised the need for flushing of the water distribution systems and resulted in large water savings. We are also installing Supervisory Control and Data Acquisition (SCADA) automated control systems for bore fields to better manage water systems including tank levels and bores to reduce tank overflows and water losses.

COMMUNITIES HELP CONSERVE WATER AND ENERGY

Power and Water acknowledges the important cultural connections between Indigenous people and their land. We have programs to work with the community through relationships with custodians, senior land owners, community members and Government.

A Community-based Social Marketing (CBSM) research technique was used to aid in developing a planned education campaign for Indigenous communities to reduce their water and energy consumption.

The technique identifies the barriers to water and energy conservation through seeking resident input in focus groups and consultations and looks at the barriers to changing environmental behaviours, such as reporting a leaking tap, or using air conditioners in more efficient ways. The research provides a good understanding of the barriers that need to be overcome to work with communities to reduce water and energy use.

During 2010-11 Power and Water worked with Daly River, Beswick and Minyerri, spending time with school children and local residents to share water stories and build a mutual understanding of community water resources. This included a tour of the water infrastructure, which highlighted the complex elements of the water supply system and help reinforce the important role the ESO plays in ensuring reliable delivery of safe water every day in the community.

FACT:

POWER AND WATER CURRENTLY HOLDS 18 WATER EXTRACTION LICENCES AND IS WORKING WITH DNRETAS ON THE APPROVAL OF MORE LICENCES.

Through these initiatives Power and Water has linked historical and cultural aspects of each community's water supply story with the water supply operations and cycle, including how water gets delivered to people's homes, with an emphasis on the importance of saving water.

MONITORING WATER DEMAND

Monitoring water consumption allows Power and Water to understand water use patterns and the implications of those patterns on sustainable extraction of water to ensure the long-term sustainability of the water supplies. As most Indigenous households are not individually metered the consumption is measured using the total water production figures. The total water production is measured daily and divided by total population to give a township demand of 'litres per equivalent person per day' (L/Ep/D). This figure accounts for all water used across the township or community including watering of public space, building and road maintenance, commercial, industry and irrigation usage. A detailed summary of the water consumption for each community serviced by Power and Water can be found in Appendix C

FACT:

TOTAL TOWN WATER CONSUMPTION VARIED ACROSS ALL THE REMOTE TOWNS AND COMMUNITIES RANGING FROM 138 TO 1836 LITRES PER EQUIVALENT PERSON PER DAY. THIS FIGURE INCLUDES ALL WATER USED ACROSS THE TOWNSHIP OR COMMUNITY INCLUDING WATERING OF PUBLIC SPACE, BUILDING AND ROAD MAINTENANCE, COMMERCIAL, INDUSTRY AND IRRIGATION USAGE.

Water meters are installed and water is charged at Northern Territory-wide uniform Power and Water tariffs for commercial, government and private properties including schools, shops, health clinics, police, government buildings and staff housing.

Power and Water is consistently working towards improving the quality and accuracy of consumption information to provide a better understanding of system performance and community consumption patterns. For example in four communities, Power and Water has installed water meters on all water connections, including Indigenous households, in Gunbalanya, Santa Teresa, Milingimbi and Miniyeri to support ongoing research and development programs.

PROTECTING WATER QUALITY

Over the last five years, Power and Water has been implementing a multiple barrier approach to prevent contamination and minimise potential hazards in order to provide safe drinking water to residents. This approach is based on the 2004 Australian Drinking Water Guidelines, and includes:

- protecting catchment areas
- ensuring tanks and bores are sealed to prevent contamination
- providing water treatment and disinfection of water
- maintaining chlorine residuals throughout the water distribution systems.

A key element of this approach is to ensure that all the water supply systems are disinfected either using chlorine and or ultraviolet disinfection systems. Chlorine is the preferred purifier as it is simple to use, destroys pathogenic micro-organisms very effectively, and provides protection throughout the pipe system that distributes water to customers.

The drinking water is regularly tested to ensure that the chlorine residual is in the optimum range – high enough to combat any microbiological contamination but low enough so it does not affect the taste of the water.

MONITORING WATER QUALITY

Power and Water runs an extensive Drinking Water Quality Monitoring Program to ensure the processes and infrastructure in place to protect and enhance water quality are working and to verify the quality of water provided to consumers. This Program is developed and reviewed annually in consultation with the Department of Health and is approved by the Chief Health Officer in accordance with the Australian Drinking Water Guidelines.

Regular monitoring includes both daily testing for chlorine residual to ensure effective disinfection and regular collection of water samples to test for microbiological contamination (*E. coli* detections and performance) and to analyse the characteristics of the water. Information on the water test results can be found in Appendix D.

In order to ensure that the water samples reach the analytical laboratory in time for testing Power and Water hires small charter planes to travel all across the Territory to collect the water samples from the communities and deliver them to the testing laboratories in Darwin and Alice Springs. During 2010-11 the analytical laboratories carried out 90,500 analyses to determine microbiological, physio-chemical, trace metal and radiological characteristics of the water.

FACT:

EACH YEAR MORE THAN 100 CHARTER PLANES TRAVEL ACROSS THE TERRITORY TO COLLECT MORE THAN 5,000 SAMPLES OF THE WATER FROM THE TOWNS AND COMMUNITIES.

WATER QUALITY RESULTS ARE REPORTED TO DEPARTMENT OF HEALTH

Power and Water has finalised a Memorandum of Understanding (MOU) with the Department of Health for managing drinking water quality. The MOU outlines the actions that need to be taken when water quality tests identify issues including when *E. coli* is detected in the water. In some instances, the Department of Health will take an extra protective step and issue a Precautionary Advice for Drinking Water to advise the community that drinking water should be boiled before consumption to destroy potentially harmful organisms in the water.

During 2010-11, positive *E. coli* detections occurred at Acacia Larrakeyah, Beswick, Gudabijin, Ikuntji, Jilkminngan, Laramba, Nganmarya, Ntaria and Wadeye. Of these detections, only one at Laramba indicated a significant risk to public health and the Department of Health issued a Precautionary Advice for Drinking Water. Additional information on this incident, including immediate responses, investigations and improvements are provided in Table 2.

Precautionary Advice for Drinking Water alerts were issued for Tiwi Island communities, Belyuen and Daly River during and following Cyclone Carlos in February 2011 when the security of the water supplies could not be assured during the record 3m of rainfall.

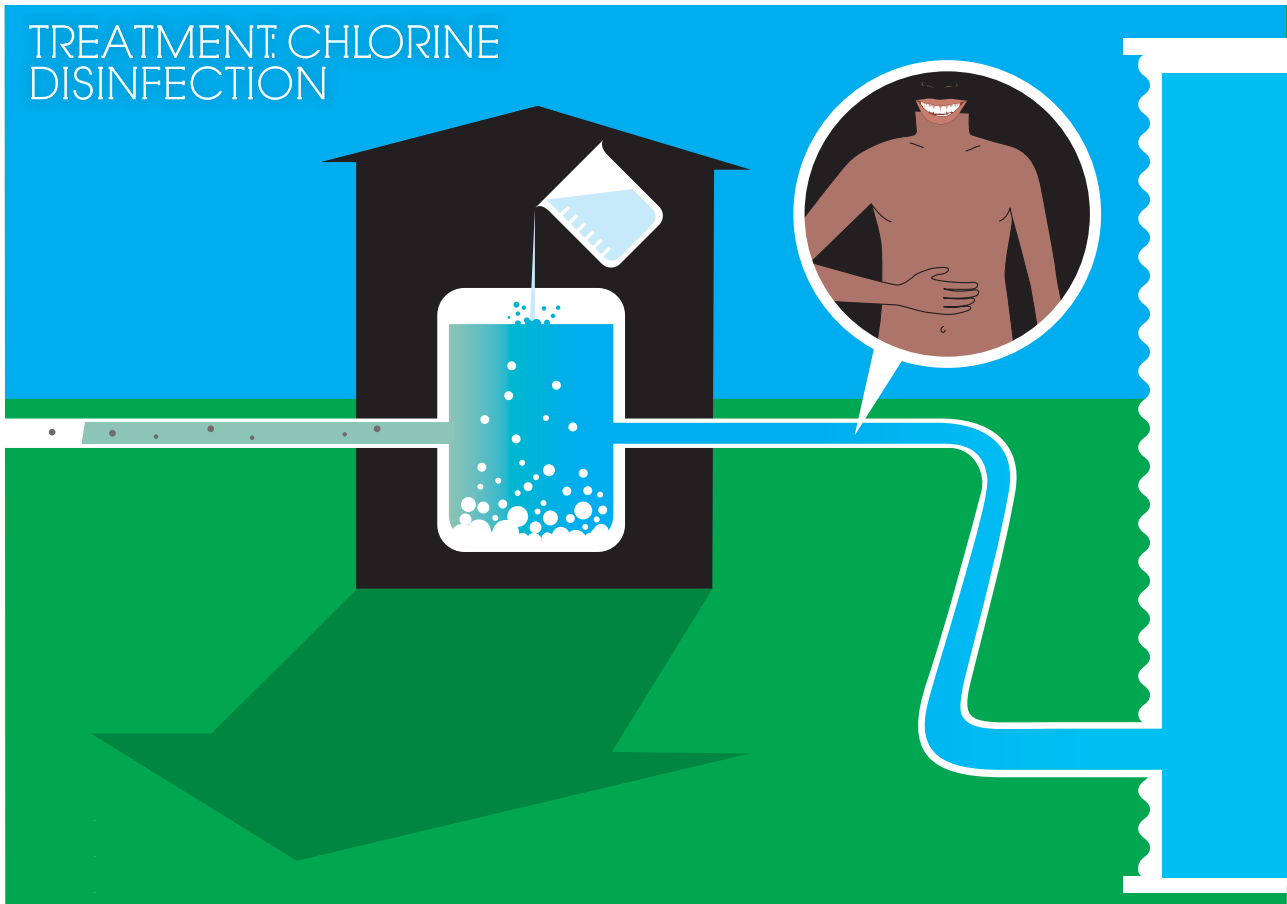


TABLE 2: DETAILS OF INCIDENTS RESULTING IN PRECAUTIONARY ADVICE FOR DRINKING WATER IN 2010-11

COMMUNITY	DATE OF ISSUE	INCIDENT DETAILS
Tiwi Islands and Belyuen	16 February 2011	<p>Due to high winds and heavy rainfall associated with Tropical Cyclone Carlos, a precautionary advice was issued to Tiwi Island communities and Belyuen.</p> <p>After the cyclone had passed and the security of the water supply was assured, the Department of Health lifted the Precautionary Advice on 18 February.</p>
Daly River	19 February 2011	<p>Due to heavy rain associated with ex-Tropical Cyclone Carlos, localised flooding prevented Power and Water from being able to maintain the chlorine system and ensure the safety of the water supply.</p> <p>When the weather eased and access was restored Power and Water manually added chlorine to the water supply system until the automatic chlorinator was reinstated and adequate chlorine residual levels were achieved. The Department of Health lifted the Precautionary Advice on 2 March.</p>
Laramba	24 March 2011	<p>Significant levels of <i>E.coli</i> were detected in Laramba’s water supply and a Precautionary Advice was issued.</p> <p>Power and Water undertook an inspection to identify the source of contamination and dosed the production bores and storage tanks. The system was then comprehensively flushed to draw the chlorinated water through the rising main and reticulation system to ensure disinfection of the whole water supply system. Following this, analysis of additional water samples confirmed that the water was clear from <i>E. coli</i> and other indicator bacteria and the Department of Health lifted the Precautionary Notice on 11 April.</p> <p>To prevent re-occurrence of such an event a new liquid chlorine system will be installed in a more appropriate location to ensure that the water supply can effectively disinfect the entire system continuously.</p>

SEWERAGE SERVICES

REMOTELY MONITORING WASTEWATER FLOWS

Power and Water is continuing to invest in remote monitoring systems that increase its capability to manage and monitor the performance of our wastewater systems from the regional centres. These systems have been installed in a selected number of communities and ensure ongoing

operation and if not, the system triggers a prompt response. This is vital to restoring services quickly as well as saving the cost of travelling to remote communities.

IMPACTS ON THE ENVIRONMENT

Following the treatment of the collected wastewater in the waste stabilisation treatment ponds the effluent is returned to the environment. Power and Water

and Department of Natural Recourses the Environment, Arts and Sports (DNRETAS) made significant progress towards licensing remote area wastewater discharges. Licences will allow Power and Water and DNRETAS to better collect data on wastewater systems and the environments they discharge to as well as meeting regulatory requirements.

BELOW: GUNBALANYA FUEL STORAGE AT NIGHT



MAJOR ACHIEVEMENTS

OVERCOMING EXTREME WEATHER

The towns and communities in the Southern and Barkly region are not usually subjected to isolation from heavy rainfall however during 2010-11 ex-cyclone Yasi seriously impaired road access to many towns and communities, resulting in emergency fuel deliveries being made to nearly all sites and some sites more than once.

When the roads to Epenerra, Ammaroo and Alcoota were all impassable for fuel deliveries, emergency deliveries were made by four wheel drive vehicles with trailers carrying drummed fuel and an all-terrain truck with a 4000 litre tank. Small teams of staff undertook the long and often arduous journey along flooded or washed out roads to ensure customers had sufficient fuel supplies to maintain services.

While the Northern and Katherine regions are more accustomed to effects of the wet season, the 2010-11 wet had significantly higher rainfall and lasted longer than usual, severely affecting operations in many communities:

- At Ramingining extensive damage to a 25km stretch of road between the barge landing and the power station resulted in Power and Water using a helicopter to transfer the fuel to maintain the power supply. Once the roads were safe to use an all-terrain vehicle was then barged to Ramingining maintain fuel transfers.
- During flooding in Beswick, power was turned off to several low lying areas of the community in order to prevent damage from rising flood waters. Power and Water staff made several trips to the community via helicopter to work with the ESO to keep the power supplies operational where possible.

FACT:

DURING THE WET SEASON OUR STAFF COORDINATED THE TRANSFER IN EXCESS OF 76,000 LITRES OF DIESEL (278 DRUMS) BY HELICOPTER TO MAINTAIN POWER SUPPLY TO RAMINGINING.

- Ex-Cyclone Carlos caused major flooding in the Daly River area and the lower section of the community was inundated by floodwater resulting in the community being evacuated. As a precaution the sewerage system and electricity supply was shut down to ensure safety of the community and the integrity of the equipment.

BELOW: FLOODING AT DALY RIVER
 FEBRUARY 2011



“The water was so high during the flood at Daly River that we couldn’t open the gate to the bore compound from the boat, as a result we have removed the fence and modified the elevated bore platforms to enable boat access to the pump controls”

Sean Carroll
Manager Project Infrastructure
and Development Darwin

- Ngukurr, which normally receives fuel by road, was also facing fuel shortages and alternative arrangements by barge were made. This required temporary barge landing facilities to be constructed, repairs to the road to allow access from the barge to the power station and a small fuel truck to transfer the 260,000 litres of diesel.
- Mungoobada (Robinson River) was inaccessible by road up until July 2010, and then closed again in September of the same year; resulting in the community being isolated and restricting fuel delivery for 48 weeks of the year.

IMPROVED SEWERAGE SERVICES AT PALUMPA

Palumpa is one of the three communities where a combination of on and off-site systems removes the sewerage from the houses. Historically the system would become overloaded when a portion of the community is inundated during the annual wet season rains. To improve services to this portion of the community the system was replaced with a more conventional gravity sewerage system, which is used in the majority of communities, that is able to more effectively operate during the wet season and ensure services are maintain all year round.

PLANNING FOR NEW NATURAL GAS-FIRED POWER STATION AT WADEYE

Wadeye is the largest Indigenous town in the Northern Territory and is located in close proximity to the Bonaparte Gas Pipeline. Power and Water will build a new gas-fired power station for Wadeye that will tap into the new gas supply to save millions of litres of diesel. During 2010-11 planning for the new gas-fired power station continued with the identification of the preferred site for the station and planning for construction.

FACT:

CONVERTING THE EXISTING POWER SUPPLY IN WADEYE FROM DIESEL TO NATURAL GAS-FIRED POWER STATION WILL DISPLACE APPROXIMATELY TWO MILLION LITRES OF DIESEL EVERY YEAR.

BELOW: HELICOPTER DOING FUEL TRANSFERS AT RAMINGINING DURING THE 2011 WET SEASON



PLANNING UNDERWAY FOR MORE SOLAR POWER

In 2009 Power and Water committed to three additional new solar powered stations to expand the existing renewable energy capacity at the three communities of Ti Tree, Kalkarindji and Alpururulam (Lake Nash). The Australian Government contributed \$5 million and the Northern Territory Government \$4 million toward the project. Construction of the three systems is due to commence in late 2011 following the signing of the Power Purchase Agreements (PPAs) between Power and Water with Epuron Pty Ltd and its subsidiary TKLN Solar Pty Ltd. Under the PPAs, over the next twenty years Power and Water will annually purchase an amount of solar energy generated by the systems at a set tariff and TKLN has responsibility for funding the remaining capital to build and maintain the solar power stations.

INCREASING POWER CAPACITY AT NGUKURR

In line with the N-1 operating philosophy, the generation capacity at Ngukurr power station was increased to keep up with the growing power demands of the community. The generation capacity is now sufficient to meet the power demands in the event of a failure or routine maintenance of the largest generator on-site. At the same time the control system was upgraded and is now fully automated.

A TRIAL USING 'SMART METERS'

A trial was conducted using 'smart meters' in Santa Teresa, which are able to remotely and automatically monitor large users and the continuity of water flow to identify leaks in the community. Preliminary evaluation of the trial recorded 150,000kL of water savings over the period.

Once the trial has been fully evaluated and all data use opportunities are

explored, Power and Water will use the smart meter information to help community residents to monitor and manage their own water consumption.

IMPROVING OUR SOLAR CPV DISH SYSTEMS

Recently Power and Water accepted ownership of three solar CPV dish power stations, at Hermannsburg, Lajamanu and Yuendumu following the receivership of the contractor. During 2010-11 Power and Water established and developed internal resource capacity to operate the systems and optimize the systems performance.

PLANNING TO TRIAL WIND ENERGY IN THE BARKLY REGION

Leading the way for sustainable generation for remote communities Power and Water has also contracted Epuron to begin construction of a 45 kW wind system at Alpururulam.

BELOW: TRANSPORTING FUEL TO NGUKURR BY BARGE



This wind system will investigate the viability of wind energy in the Barkly region and demonstrate the complementary nature of the solar and wind energy resource.

AMPILAWATJA REGIONAL ELECTRICITY GRID CONNECTION

The power station at Ampilawatja, 325km north of Alice Springs, was decommissioned and a 37km powerline was built to connect the community to the more efficient nearby Arlparra power station. The decommissioning of the power station at Ampilawatja avoided significant additional costs required and has resulted in lower greenhouse gas emissions through more efficient generation at Arlparra.

SUPPORTING SOLAR SCHOOLS

In 2010-11, Power and Water approved the grid-connection of a further six rooftop solar PV systems in remote community schools, bringing the total to nine. The solar PV systems range in size from 3kW up to 85kW and help to reduce diesel fuel use in these communities. The schools receive a buyback tariff for the solar power they export to the grid.

REFURBISHING YUENDUMU WASTE STABILISATION PONDS

Seven waste stabilisation ponds in series are used to treat the wastewater produced at Yuendumu. In 2010-11, two of these ponds were taken off-line to undergo major rejuvenation, which included the removal of accumulated sludge and replacing the concrete margins.

IMPROVING THE DISINFECTION OF WATER SUPPLIES

During 2010-11 thirteen liquid chlorine disinfection systems were installed. These new disinfection systems are being installed to provide a greater level of confidence in the quality of water supplied, significantly reduce the

risk of microbiological contamination affecting residents and optimise the operation of the water systems. The new systems allow the water supply to be monitored daily to ensure that the water is free of contamination and safe for the community to drink.

POWER DISTRIBUTION NETWORK UPGRADES

Following the extensive flooding at Daly River community during the wet season of 2010-11, Power and Water will upgrade the power distribution network to ensure improved security of supply and to help to maintain power supply in the event of flooding.

At Maningrida another high voltage feeder was installed in anticipation of continued demand growth and to meet the demands of the new subdivision proposed.



ABOVE: NEW DISINFECTION SYSTEM

UPGRADE POWER STATION AT GALIWINKU

A major \$3.6M project was undertaken at Galiwinku to upgrade to a new fully automated power station. The project involved the removal of the existing station and replacing it with a new building with an increased generation capacity of 5.4 MW. The new station has capacity for expansion and will be able to meet the growing generation needs of the community well into the future.

“The successful completion of the Galiwinku power station was due to a highly professional team of contractors and PWC staff, it was a pleasure to work with such a talented team”

Craig Finck
 Mechanical Coordinator
 Darwin

PLANNING UNDERWAY FORTHREE NEW WATER TREATMENT SYSTEMS

Some groundwater sources in Central Australia have naturally high levels of elements such as fluoride, nitrate and total dissolved solids, which affect the quality of the potable water supplied to the community. In order to improve the water quality and security of the water supply, Power and Water is planning to introduce new advanced water treatment systems at Warrabri (Ali Curung), Walangkura (Kintore) and Yuelamu.

This is the first time that Power and Water will be installing this type of advanced treatment technology in remote communities, which is necessary to reduce levels of naturally occurring nitrate and fluoride as well as salinity and hardness. Once installed, the drinking water supply for these three communities will be within the recommended levels of the Australian Drinking Water guidelines.

Throughout the project Power and Water has been working very closely

BELOW: OLD GALIWINKU POWER STATION



BELOW: UPGRADED GALIWINKU POWER STATION



with the communities who will receive the new treatment technologies to share understandings and ensure support for the changes to the water supplies. As well as community meetings support material like posters have been displayed in communities and question and answer sheets on the project have been distributed.

IMPROVING FUEL STORAGE

The Maningrida power station is the largest station across the Territory Growth Towns and remote communities. The \$1.3 million project extended the fuel holding capacity of approximately four weeks to more than 18 weeks with the installation of four new 110,000 litre fuel tanks. The additional fuel capacity will significantly reduce the risk of fuel stocks getting low during the annual wet season.

Every wet season the community of Gunbalanya (Oenpelli) is cut off due to heavy rainfall and flooding with roads impassable. To ensure ongoing fuel stocks a project to provide additional fuel tanks to increase on-site storage capacity to 1,040,000 litres was undertaken.

As well as increasing the fuel storage capacity at Maningrida and Gunbalanya bunds where installed to retain the fuel in the event of a spill and minimise impacts to the environment.

BELOW: NEW GUNBALANYA FUEL TANKS BEING DELIVERED TO SITE



TALKING ABOUT WATER QUALITY

In 2010-11 Power and Water completed Water Quality Fact Sheets for a number of communities across the Territory. The fact sheets were designed for ten targeted communities to provide them with a better understanding of the water supply system. The selected communities have water supplies with some elements present which are near the upper limit placed on water supplies by the Australian Drinking Water Guidelines. The fact sheets are available on our website and Power and Water has distributed and discussed water quality with community members and other stakeholders such as teachers, nurses and council staff.

POWER AND WATER CORPORATION

Power and Water Corporation has to meet water quality requirements set by the Northern Territory Department of Health based on expert recommendations.

Your water supply

This fact sheet is to tell you more about your water supply, its water quality and how we look after it.

Ali Curung's water comes from groundwater.

Two bores pump groundwater up from below the ground to a storage tank.

Water is kept clean by adding chlorine.

Your ESO checks the level of chlorine in the water every day.

Groundwater is stored under the ground in rocks, or between sand, silt, clay and gravel, which adds minerals to the water.

How do we look after your water supply?

Your water supply is automatically cleaned with chlorine to prevent bugs that are too small to see and make you sick. These bugs may be in the groundwater or tank and pipes.

- The water supply is checked each month:
 - to make sure there are no bugs in the water
 - to see that the system is being maintained properly.
- The water supply is checked 3 times a year:
 - to keep an eye on the levels of elements and minerals.

These samples are sent away and tested for quality.

PowerWater

1

IN OUR COMMUNITIES

Recent years have seen major changes in the Territory Growth Towns and remote communities, with the implementation of Australian and Territory Government initiatives, including the Building Education Revolution, Closing the Gap, Territory 2030, Working Futures and upgrading stores and health clinics. These initiatives have provided improvements in the lives of Indigenous people in these towns and communities and have also driven increased demand for the supply of electrical, water and sewerage services.

Power and Water is working with the Australian, Northern Territory and local governments to improve the lives of people in remote communities and Closing the Gap of Indigenous disadvantage through the National Partnership Agreement on Remote Service Delivery and Indigenous Housing.

In 2008 the Australian Government announced a 10-year, \$5.5 billion program to improve residential and commercial infrastructure in Indigenous communities to deliver facilities and services similar to those that could be expected in any Australian town of the same size.

The Northern Territory Government's *Working Future* strategy identified 20 of the biggest remote communities that are to be provided with additional services, buildings and facilities.

The strategy set a six-part plan to develop the 20 Territory Growth Towns, set a new path for homelands and outstations and co-ordinate the delivery of improved infrastructure, services

and development. It is a long-term, generational commitment based on delivering co-ordinated, targeted and accelerated development in Indigenous communities and changing the way governments invest in remote areas.

This approach is being put into place by developing Local Implementation Plans in the 20 remote Indigenous communities identified below as Territory Growth Towns under the *Working Future* policy.

TERRITORY GROWTH TOWNS

The following provides an overview of the essential services and Power and Water's key initiatives related to each Territory Growth Town. Please note that this report does not include information on the townships of Elliott and Borroloola, as essential services are delivered by Power and Water and not through IES Pty Ltd.

Power and Water is analysing capacities of essential service infrastructure in the Territory Growth Towns to determine the impact of the scheduled development on service delivery. A significant portion of the infrastructure (constructed shortly after the Northern Territory achieved self Government) has reached the end of its life and the cost of maintenance and asset replacement is increasing. To date, the funding allocation for the replacement of aging assets as well as planned augmentation to meet the increased capacity required has not been available resulting in deferral of major projects. Extension and upgrade of critical primary infrastructure is essential to meet secondary infrastructure development.

NORTHERN REGION



WURRUMIYANGA (NGUIU)
Population 1,641
 - Diesel power station
 - Good quality disinfected water, limited quantity of groundwater available
 - Water consumption – 798 L/EP/d
Projects:
 - Upgrade power station capacity
 - Upgrade fuel storage facilities
 - Refurbishment of bores
 - New ground level storage
 - New disinfection and fluoridation system
 - Additional water pipe-work
 - Water conservation program

MILINGIMBI
Population 1,153
 - Diesel power station
 - Good quality disinfected water, limited quantity of groundwater available under significant pressure
 - Water consumption – 612 L/EP/d
Projects:
 - Upgrade power station generation capacity
 - Investigate alternative water sources
 - Water conservation program

YIRRKALA
Population 884
 - Power supply purchased from private grid in Nhulunbuy
 - Good quality disinfected water, plentiful groundwater available
 - Water consumption – 711 L/EP/d
Projects:
 - New production bores



GAPUWIYAK (LAKE EVELLA)
Population 1,141
 - Diesel power station
 - Good quality disinfected water, limited quantity of groundwater available
 - Water consumption – 362 L/EP/d
Projects:
 - New production bores

UMBAKUMBA
Population 441
 - Diesel power station
 - Good quality disinfected water, limited quantity of groundwater available
 - Water consumption – 1015 L/EP/d
Projects:
 - Upgrade power station generation capacity
 - Refurbishment of existing bores
 - New fluoridation system

WADEYE
Population 2,110
 - Diesel power station
 - Good quality disinfected water, plentiful groundwater available
 - Water consumption – 629 L/EP/d
Projects:
 - New production bores
 - New gas-fired power station
 - New ground level storage
 - New disinfection and fluoridation system

GUNBALANYA (OENPELLI)
Population 1,138
 - Diesel power station
 - Good quality disinfected water, limited groundwater and surface water available
 - Water consumption – 744 L/EP/d
Projects:
 - Upgrade fuel storage capacity and facilities in 2010-11
 - Upgrade wastewater reticulation system
 - Water conservation program

NUMBULWAR
Population 867
 - Diesel power station
 - Adequate quality disinfected water, limited quantity of groundwater available
 - Water consumption – 653 L/EP/d
Projects:
 - Upgrade power station generation capacity
 - Upgrade existing bore-field

ANGURUGU
Population 1,051
 - Power supply purchased from private grid in Alyangula
 - Good quality disinfected water, plentiful groundwater and surface water available
 - Water consumption – 717 L/EP/d
Projects:
 - New production bores
 - New disinfection and fluoridation system
 - Upgrade of wastewater reticulation system
 - New waste stabilisation ponds

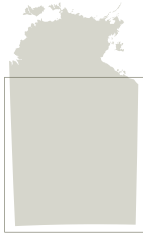
RAMINGINING
Population 836
 - Diesel power station
 - Good quality disinfected water, adequate groundwater available
 - Water consumption – 608 L/EP/d
Projects:
 - New ground level storage in 2010-11
 - Upgrade power station generation capacity

MANINGRIDA
Population 2,660
 - Diesel power station
 - Good quality disinfected water, plentiful groundwater available
 - Water consumption – 443 L/EP/d
Projects:
 - Upgrade fuel storage facilities in 2010-11
 - New power distribution system
 - New ground water storage
 - New water pipe-work
 - New disinfection and fluoridation system

GALIWIN'KU (ELCHO ISLAND)
Population 2,186
 - Diesel power station
 - Good quality disinfected water, limited quantity of groundwater available
 - Water consumption – 897 L/EP/d
Projects:
 - Increased power station capacity in 2010-11
 - New production bores
 - New ground level storage
 - New disinfection system
 - Water conservation program

- Power Station
- Transmitted Power Supply
- Sewerage Services

KATHERINE, BARKLY AND SOUTHERN REGION



DAGURAGU/KALKARINDJI
Population 703

- Diesel power station
- Good quality disinfected water, limited quantity of groundwater available
- Water consumption – Daguragu 1,212 L/EP/d Kalkarindji 827 L/EP/d

Projects:

- New solar dish system

LAJAMANU
Population 866

- Diesel power station and CVP solar dish power station –
- Adequate quality disinfected water Groundwater source could be limited (not well understood)
- Water consumption – 763 L/EP/d

Projects:

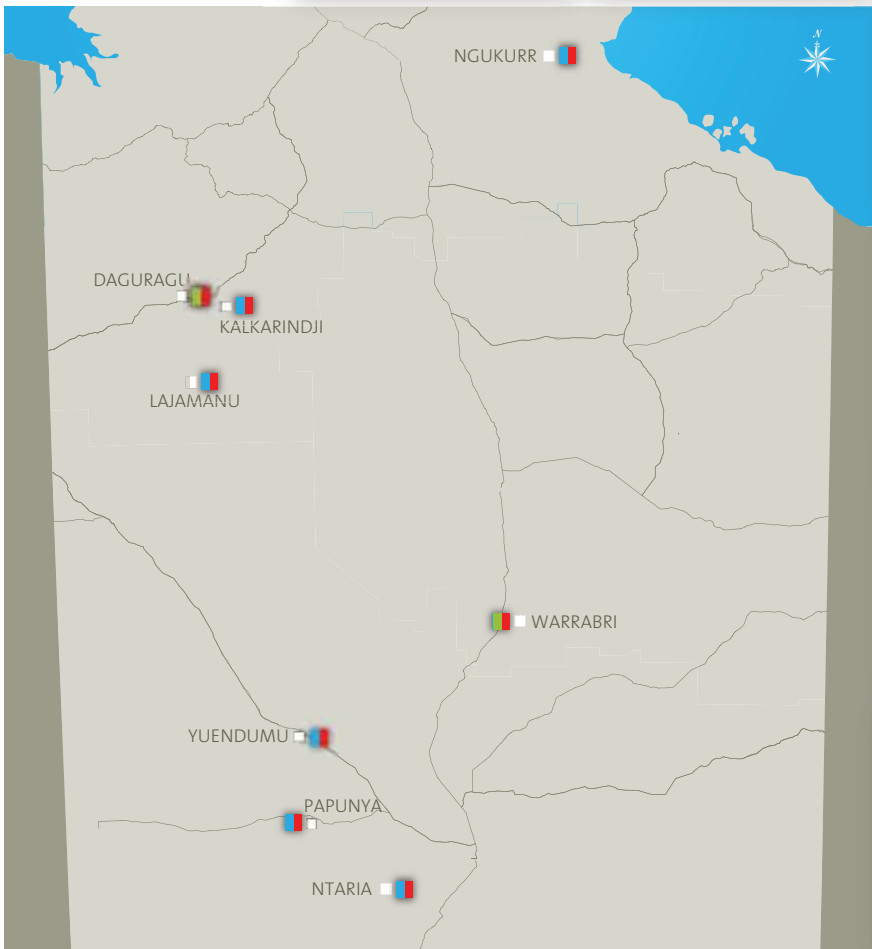
- Investigation for additional production bores
- Upgrade power station capacity

NGUKURR
Population 1,183

- Diesel power station
- Adequate quality disinfected water, limited quantity of groundwater available and surface water used seasonally
- Water consumption – 886 L/EP/d

Projects:

- Upgrade power station generation capacity in 2010-11
- New production bore



WARRABRI (ALI CURUNG)
Population 449

- Grid connected
- Marginal quality disinfected water, plentiful groundwater available
- Water consumption – 890 L/EP/d

Projects:

- New advanced water treatment system
- Water conservation program

YUENDUMU
Population 886

- Diesel power station and CVP solar dish power.
- Adequate quality disinfected water, limited quantity of groundwater available
- Water consumption – 573 L/EP/d

Projects:

- Refurbishment of waste stabilisation in 2010-11
- Upgrade fuel storage facilities

PAPUNYA
Population 386

- Diesel power station
- Marginal quality disinfected water, sufficient quantity of groundwater available
- Water consumption – 583 L/EP/d

Projects:

- New disinfection system in 2009-10
- New production bore

NTARIA (HERMANNSBURG)
Population 722

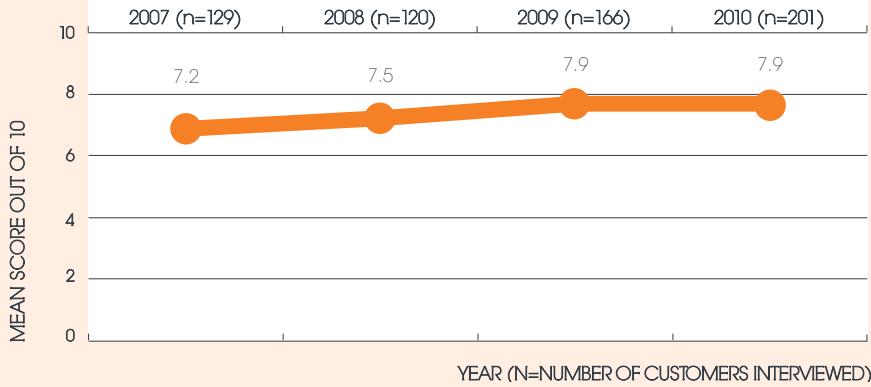
- Diesel power station and CVP solar dish power station.
- Marginal quality disinfected water, limited quantity of groundwater available under significant pressure
- Water consumption – 556 L/EP/d

Projects:

- Drilling new production bores
- Upgrade power station generation capacity

- Power Station
- Transmitted Power Supply
- Sewerage Services

FIGURE 2
OVERALL SATISFACTION WITH PWC SERVICES AND PEOPLE

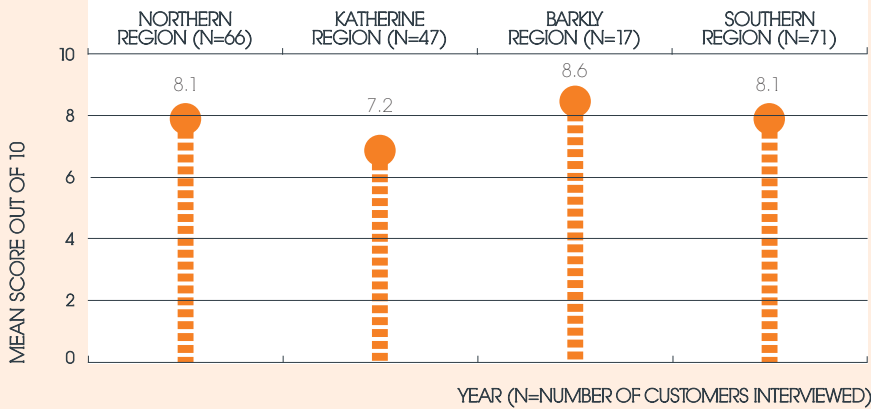


CUSTOMER FEEDBACK

Power and Water undertakes annual customer satisfaction research among its stakeholders across the Territory Growth Towns and remote communities it services. Telephone interviews were held with 201 of the listed customers between 15 November and 3 December 2010 and included major stakeholders of school principals, Health Clinic managers, Shire Service Managers, Australian Government Business Managers and community store managers.

The customer satisfaction survey results indicate that Power and Water is trusted and appreciated. Scores across all satisfaction and performance rating were close to 8 out of 10 showing that Power and Water is satisfying the needs of customers and stakeholders (Figure 2). Barkly region gave the highest score of 8.6 and Katherine region gave the lowest of 7.2 (Figure 3).

FIGURE 3
OVERALL SATISFACTION WITH PWC SERVICES AND PEOPLE BY REGION



OUR PEOPLE

The key to successful delivery of electricity, water and sewerage services to the Territory Growth Towns and remote communities is the Remote Operations team who make it happen. Across the Territory a team of multidisciplinary professionals and technical staff are committed to improving the environments of remote residents through reliable electricity, water and sewerage services. A committed and dedicated workforce ensure services are often delivered where others would consider it impossible.

We are at our best when it counts. Our people not only step up in emergency situations such as cyclones, flooding and other disasters and do what needs to be done to make sure that services are maintained for as long as possible and returned as soon as they can. But they are also there every day working with people, communities and groups to deliver the services while maintaining respect for the land and its traditional owners and people.

Power and Water's Remote Operations unit provides management, technical and professional services to IES, with the administrative and technical support of Power and Water. This integrated structure allows operational delivery and planning teams to work closely together to ensure that capital investment programs are delivered as cost effectively as possible across the energy, water and sewerage business.

Crucial to maintaining these services on the ground are the 155 full time and relief Essential Services Operators (ESOs), who work locally with shires or private contractors under contracts with IES. Trained by Power and Water to perform specific tasks such as testing water quality or maintaining adequate fuel supplies this group is fundamental to the delivery of services on the ground and ensure the integrity of Power and Water infrastructure.

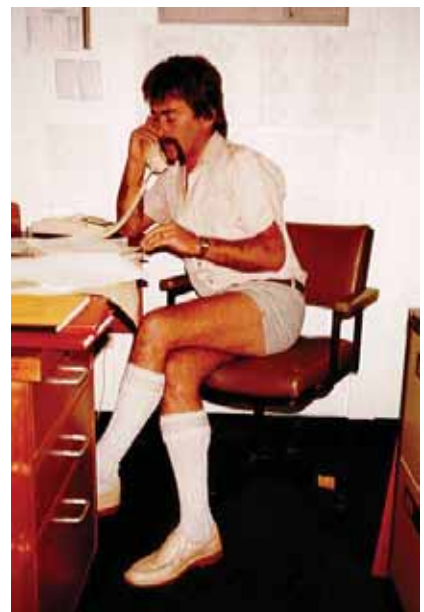
REMOTE OPERATIONS

Over the last few years the approach to servicing Territory Growth Towns and remote communities has been undergoing immense change. Externally this has primarily been driven by the implementation of the various Australian and Territory Governments' partnerships and initiatives, which have included significant investment in Territory Growth Towns, establishing new obligations for tenure and development and an overall increase in the expectations of the standard of services, monitoring and reporting.

Remote Operations has responded to the changing environment by developing our workforce capability to ensure that we continue to provide appropriate and cost effective services. Since 2007-08 the number of people in the team has grown with a particular focus on the employment of professional staff in water science, environmental science and environmental, civil, mechanical, electrical and renewable energy engineering. The addition of professional and technical skills has increased the strategic planning, asset management and project management capabilities of the team and allows us to manage the increasing demand for services against the infrastructure requirements.

OVER 30 YEARS OF SERVICE

Stephen Benaim started working with essential service infrastructure in remote communities back in 1979 and is an integral part of the Power and Water team as Manager of Electrical Operations. Steve's extensive experience operating and managing our infrastructure across the Territory provides us with invaluable knowledge and understanding of the systems. He says that *"he enjoys being able to get out in the bush"* and is planning on staying with Power and Water until he retires.



ABOVE: STEPHEN BENAIM AT WORK IN 1985

YOUNG PROFESSIONAL ENGINEER

Nerida Beard, Manager of Community Water Planning, was awarded the 'Highly Commended' Young Professional Engineer of the Year in the Northern Territory in 2011 by her industry peers from Engineers Australia. Engineers Australia's Individual Awards are to honour those individuals whose attributes have demonstrated great achievements and leadership within the engineering profession.

Nerida is an Environmental Engineer who has been a passionate advocate for sustainable water management throughout her career. She has contributed seven years in the field in the Northern Territory working to improve water management and engagement with Indigenous people in remote communities in the joint management of their water resources. As manager of the Community Water Planning team for four years, she is responsible for groundwater management and community water efficiency programs. The award recognises these achievements and her contribution to the engineering community through involvement in Women in Engineering and Engineers Without Borders initiatives.

SANTA TERESA SMART METERING PROJECT

'Smart Meters' water meters which regularly measure water consumption and store the information for analysis were installed in Santa Teresa, 80km from Alice Springs. The meters have been trialled to assess their robustness in remote locations and ability to provide online and continuous water consumption data to target water efficiency improvements in the community. This project was a finalist in the NT Research and Innovation Awards in 2011. Opposite: Jay Kennedy – Community Liaison Officer and Lee Morgan – Alice Springs Regional Manager, receive the Finalist certificate at the 2011 Research and Innovation Awards.

RESEARCH PAPER ON WASTE STABILISATION PONDS

Power and Water prepared a research paper based on the approach used to investigate the waste stabilisation pond capacity and rank system risks to prioritise capital investment required in the systems. Results of the investigation were presented at the 9th IWA Specialist Conference on Waste Stabilisation Ponds in Adelaide in 2011.

BELOW: NERIDA BEARD



BELOW: JAY KENNEDY – COMMUNITY LIAISON OFFICER AND LEE MORGAN – ALICE SPRINGS REGIONAL MANAGER, RECEIVE THE FINALIST CERTIFICATE AT THE 2011 RESEARCH AND INNOVATION AWARDS.



BELOW: ESSENTIAL SERVICES OPERATORS



ESSENTIAL SERVICES OPERATORS

Essential Services Operators (ESOs) play a key role in keeping electricity, water and sewerage services operating in some of the Territory’s most remote areas, often in harsh and difficult conditions. Across the Territory there are 155 ESOs who operate and maintain the supply systems through contracts with shires, councils, private contractors, pastoral companies, Indigenous incorporated bodies and community government councils.

The ESOs conduct daily, weekly and monthly duties for all essential service disciplines including water quality testing, diesel generator servicing and meter reading for retail services in remote communities. The ESO requires a broad range of skills, knowledge and experience in power, water and sewerage infrastructure, operations and customer services to safely, effectively and efficiently carry out all duties.

Power and Water provides comprehensive inductions, residential training courses, on site training and mentoring. In addition, quarterly reviews of contracts focus on ESO performance, workforce planning and developing capacity. Power and Water strives to ensure ESOs work in a safe environment with a commitment to occupational, health and safety training. Three-day training workshops

were held in the major regional centres of Darwin, Katherine and Alice Springs for ESOs.

Power and Water supports the trainees of the Certificate II in Electro technology and Certificate II in Water Operations in partnership with local shires, Group Training NT and Charles Darwin University. Both qualifications are suitable for the ESO traineeship program which aims to increase capacity within remote communities and Indigenous employment. Power and Water is committed to up-skilling local people within remote communities and providing a clear and achievable pathway to meaningful employment.

The current contractual model for the employment of the ESOs has enabled many of the Shires to leverage extended services such as municipal and community services with the sharing of vehicles, tools and administrative functions. Training programs have also benefited educational organisations with the delivery of generic courses such as occupational health and safety, computing, and soft skills (time management, interactive and numeracy). ESO role is critical and a role model in the community and Indigenous men can aspire to this position. The trainee structure provides guidance, mentoring and career paths with positive outcomes for Indigenous employment and education.

ESO AWARDS

During 2010-11 Power and Water started monthly ESO awards to recognise the valuable contribution of ESOs to our business. Nominations are made by Remote Operations’ staff based on the categories of Occupational Health and Safety, Environment and Quality. Since the program started 17 ESO have received awards and an example of an award is below.

January ESO Award Winner – Wayne Fogarty Location – Amanbidji

Wayne Fogarty recent efforts in response to a water outage over the Easter weekend at Amanbidji a sister community to Wayne’s normal community were excellent. Wayne travelled to site, assessed the situation, and undertook the necessary repairs to get the community back onto the water supply.

Wayne’s dedication as an ESO was exemplary in this instance, he not only got the community’s water back on he then stayed on at the community for a total of 2 days to monitor the water reticulation and disinfection systems.

INDIGENOUS EMPLOYMENT

Power and Water has been working to maximise Indigenous employment. The table below provides an overview of the number of Essential Services Officers (ESOs) identified as Aboriginal and Torres Strait Islander (ATSI) and non-ATSI in June 2011.

TABLE 3: NUMBER OF ESSENTIAL SERVICES OFFICERS (ESOs) IDENTIFIED AS ABORIGINAL AND TORRES STRAIT ISLANDER (ATSI) AND NON-ATSI IN JUNE 2011

REGION	NOMINATED ESO		NOMINATED RELIEF ESO		TOTAL ESOS	TOTAL	
	NON-ATSI	ATSI	NON-ATSI	ATSI		TOTAL ATSI	% ATSI
Northern	9	6	17	3	35	9	23.5
Katherine	13	11	12	14	50	25	50.0
Barkly and Southern	25	11	22	12	70	23	32.9
Total	47	28	51	28	155	57	36.8

OUR PARTNERSHIPS

Power and Water understands that a key element of the continuous improvement of services is achieved through partnerships with Government and key organisations.

Power and Water will continue to secure more (Australian Government) funding to improve and support the delivery of essential services. One successful model was the funding allocated by Bureau of Meteorology to ensure it can continue to improve its knowledge and service to communities.

More information on key partnerships established through regulatory relationships, service agreements, research and development and linkages are provided below.

REGULATORY RELATIONSHIPS

Power and Water maintains regulatory partnerships with the following departments and agencies:

- The **Department of Health** is the regulator of drinking water quality in the Northern Territory. Power and Water works very closely with the Chief Health Officer to establish and continuously review monitoring programs to verify water quality, incident response protocols and proposed actions to improve infrastructure for extraction, treatment, storage and distribution of potable water.

In 2010-11 a new Memorandum of Understanding was signed between Power and Water and the Department of Health, which documents the co-operative relationship and commitment by both parties to providing drinking water. The MoU confirms the Australian Drinking Water Quality Guideline as the peak reference for the management of water quality for the Territory Growth Towns and remote communities.

This *Indigenous Essential Services Annual Report 2010-11* is provided to the Chief Health Officer in compliance with regulatory obligations.

- The **Department of Natural Resources, Environment, the Arts and Sport** (DNRETAS) administers the *Water Act*, which provides for the investigation, allocation, use, control, protection, management and administration of water resources, and for related purposes. Power and Water works with NRETAS to obtain licences and report on water extraction from production bores and pollution discharges to waterways from wastewater treatment ponds.

SERVICE AGREEMENTS

DEPARTMENT OF LOCAL GOVERNMENT, HOUSING AND REGIONAL SERVICES

IES Pty Ltd has an agreement until 2013 with the Northern Territory Government, administered by the Department of Local Government, Housing and Regional Services (DHLG&RS) as its agent, to help fund the delivery of essential services in the communities.

The objectives of the agreement with the Northern Territory Government are to provide:

- Reliable and equitable services to Territory funded Territory Growth Towns and remote communities
- Effective management of the assets including optimal repair and maintenance programs
- Efficient financial management, providing low cost services, works, repair and maintenance programming.
- Support of regional development and Indigenous employment and training.

Power and Water and DHLG&RS work in close partnership to deliver services. The purchase of additional services by DLG&RS is on a fee-for-service basis. Ownership of water supply, sanitation and electricity assets is vested in IES Pty Ltd.

The agreement with the Northern Territory Government establishes the types of services to be provided and specifies service level guidelines.

POWER AND WATER CORPORATION

The Power and Water Corporation provides management, professional, technical, retail and corporate services to deliver commitments to customers and the Northern Territory Government as defined in an agreement with IES Pty Ltd.

RESEARCH AND DEVELOPMENT

As part of the continuous improvement of services Power and Water partners and participates in a number of research and development initiatives, including:

- Power and Water completed a collaborative project with University of New South Wales on Investigating Scale Formation and Prevention in Small Water Supplies Dependant on Groundwater. The project provided Power and Water a better understanding of potential impact of water supplied in the Northern Territory on infrastructure and fixtures and fittings. The outcomes of the research will help guide the long term planning to improve the quality of water supplied across the communities.

- A number of the communities managed by Power and Water have hard water, which is caused by naturally occurring calcium and magnesium in the water. Power and Water started an Honours project with Flinders University that will provide an Evaluation of the Impacts of Hard Water on Health Hardware and Hygiene in Remote Communities. The research project will help us to understand the long-term impact of hard water on pipes and infrastructure and how this may be managed in the future. The project is due for completion in December 2011.

LINKAGES

- A collaborative project between National Water Commission, DHLG&RS and Power and Water

is underway to Improve Water Management in Small Water Supplies in the Northern Territory. The project is focused on Homelands, rather than the towns and communities managed by Power and Water. The 2 year project aims to build capacity in a sustainable manner amongst service providers, communities and stakeholders, and put processes in place that ensure that those involved in water supply management in small communities in the Northern Territory have the confidence and ability to manage the water.

- Power and Water has established a relationship with the Centre for Renewable Energy at Charles Darwin University to ensure that the Northern Territory is well positioned to lead solar research and development in remote locations.

BELOW: SOLAR DISH AT SUNSET



OUR GOVERNANCE

CORPORATE GOVERNANCE STATEMENT

Indigenous Essential Services Pty Ltd is a wholly owned, not-for-profit subsidiary of Power and Water Corporation. Its Board of Directors, who are also on the Power and Water Board, are:

MS JUDITH KING (CHAIR)

BA, Foundation Fellow AICD – Chairman

Ms King is Board Chairman, and has been a director of Power and Water Corporation since its establishment. With extensive board experience in the private and public sector, she was formerly a director of Melbourne Water Corporation and Citipower and closely involved in the restructure and reform of the Victorian utility sector. Ms King's current appointments include Swinburne Ventures Ltd; National Ageing Research Institute; the Victorian Commission for Gambling Regulation; and Board of the NT Environmental Protection Authority. Ms King was awarded an Australian Centenary Medal in 2003.

MR BARRY CHAMBERS (UNTIL MAY 2011)

FIE Aust., FAICD

Appointed to the Power and Water Corporation board in March 2007, Barry Chambers has been a professional engineer with local, Territory and Federal governments in the areas of engineering services, infrastructure, public buildings, town planning, land management and environmental services. For 13 years he held Chief Executive Officer positions in NT government agencies – including the former Power and Water Authority – and as a director and chairman of various Corporations Act entities. He has extensive experience in strategic planning, project management, budget management, workplace relations, government decision making processes and ministerial liaison. He is currently Chairman of NT Build and the NT Building Practitioners board.

MERVYN DAVIES (FROM MAY 2011)

BEng, MEngSc, BCom

Mr Davies joined the Power and Water Corporation Board in May 2009. He has worked in all areas of electricity distribution, gaining extensive experience managing the businesses' financial and technical performance. He has held senior management positions at energy Australia, the country's largest electricity distribution company and his resume includes periods as Managing Director. Since leaving Energy Australia in 2002, Mr Davies has established a small engineering consultancy, specialising in electricity distribution system management. He has spent time developing and negotiating long-term capital expenditure plans and performance outcomes affecting the security of electricity supply to Sydney. He has University of New South Wales qualifications in engineering and economics.

MICHAEL HANNON AM

Mr Hannon was appointed to the Power and Water Board in August 2009. Mr Hannon is Chairman of the Hannon Group of Companies, a family-owned group operating public transport, property investment, crocodile farming and exporting businesses. Mr Hannon was born and permanently resides in Darwin and developed his career in the Northern Territory. The Hannon Group also has business interests in Queensland, Victoria and New South Wales. The group employ more than 300 Territorians and that number again interstate.

MR ANDREW MACRIDES

Dip Bus (Mgt), B Bus (Acc), MBA, FCBA, FAICD

Mr Macrides was appointed Managing Director of the Power and Water Corporation in June 2007. Born and raised in Darwin, Mr Macrides has extensive government and management experience, beginning his career in the accounting field in 1978. Prior to joining Power and Water Corporation in 1998, he worked across a range of sectors in the NT Government, including health, housing, community services and tourism. Following corporatisation on 1 July 2002, Mr Macrides was appointed General Manager Business Services and Chief Financial Officer with the Power and Water Corporation, and in May 2003 was appointed Company Secretary in addition to his role as General Manager Business Services.

APPENDICES

APPENDIX A: OUR WATER SUPPLY SYSTEMS

NORTHERN REGION

TABLE 4: SUMMARY OF WATER SUPPLY SYSTEMS IN THE NORTHERN REGION

COMMUNITY	SOURCE OF SUPPLY	TREATMENT	DISINFECTION	LICENSE NUMBER	LICENSE ISSUE AND EXPIRY DATE	MAX WATER ENTITLEMENT (ML/YR)
Acacia Larrakeyah (Acacia Gap)	Groundwater		Sodium hypochlorite			
Angurugu	Groundwater		Sodium hypochlorite			
	Surface water (Angurugu River)	Soda Ash (Treatment provided by GEMCO)	Sodium hypochlorite	202	22/12/2000 - 22/12/2010	20
Belyuen (Delisaville)	Groundwater		Sodium hypochlorite			
Galiwinku (Elcho Island)	Groundwater		Sodium hypochlorite			
Gapuwiyak (Lake Evella)	Groundwater		Sodium hypochlorite			
Gunbalanya (Oenpelli)	Groundwater		Sodium hypochlorite & Ultraviolet			
	Surface water (Fish Creek)		Sodium hypochlorite & Ultraviolet	Pending		
Gunyangara (Marngarr)	Groundwater		Sodium hypochlorite			
Maningrida	Groundwater		Calcium hypochlorite & Ultraviolet			
Milikapiti (Snake Bay)	Groundwater		Sodium hypochlorite			
Milingimbi	Groundwater		Sodium hypochlorite			
Milyakburra (Bickerton Island)	Groundwater		Sodium hypochlorite			
Minjilang (Croker Island)	Groundwater		Sodium hypochlorite			
Naiyu (Daly River)	Groundwater		Sodium hypochlorite	Pending		
Nganmariyanga (Palumpa)	Groundwater		Sodium hypochlorite			
Numbulwar	Groundwater		Sodium hypochlorite			
Peppimenarti	Groundwater		Sodium hypochlorite			
Pirlangimpi (Garden Point)	Surface Water	Sand Filtration	Sodium hypochlorite & Ultraviolet	Pending		
Ramingining	Groundwater		Sodium hypochlorite			
Wulkabimirri (outstation)	Groundwater (Ramingining water grid)		Sodium hypochlorite			
Umbakumba	Groundwater		Sodium hypochlorite			
Wadeye	Groundwater		Sodium hypochlorite	Pending		
Warruwi	Groundwater		Sodium hypochlorite			
Wurrumiyanga (Nguui, Bathurst Island)	Groundwater		Sodium hypochlorite			
4 Mile Camp (outstation)	Groundwater (Wurrumiyanga water grid)		Sodium hypochlorite			
Yirrkala	Groundwater		Sodium hypochlorite			

The alternative names provided are commonly known; other titles for the majority of these communities also exist.

KATHERINE REGION

TABLE 5: SUMMARY OF WATER SUPPLY SYSTEMS IN THE KATHERINE REGION

COMMUNITY	SOURCE OF SUPPLY	TREATMENT	DISINFECTION	LICENSE NUMBER	LICENSE ISSUE AND EXPIRY DATE	MAX WATER ENTITLEMENT (ML/YR)
Amanbidji (Kildurk)	Groundwater		Sodium hypochlorite			
Barunga	Surface water (Bamyili Spring)	Cartridge Filtration	Sodium hypochlorite & Ultraviolet	903009	23/06/2007 - 18/06/2012	201
Beswick	Groundwater		Sodium hypochlorite	Pending		
Binjari	Groundwater		Sodium hypochlorite	TLA01	18/12/2009 - 30/04/2019	50
Bunbidee (Pigeon Hole)	Groundwater		Sodium hypochlorite			
Dagaragu	Groundwater		Chlorine gas			
Gudabijin (Bulla)	Ground & Surface water (East Baines River)	Sand Filtration	Sodium hypochlorite	454	2/05/2002 - 2/05/2012	10
Gulin Gulin (Bulman)	Groundwater		Sodium hypochlorite	Pending		
Jilkminggan (Duck Creek)	Groundwater		Sodium hypochlorite			
Jodetluk (Gorge Camp - outstation)	Groundwater (Katherine water grid)		Sodium hypochlorite			
Kalkarindji (Wave Hill)	Groundwater		Chlorine gas			
Kybrook Farm	Groundwater		Sodium hypochlorite			
Lajamanu	Groundwater		Sodium hypochlorite			
Manyallaluk (Eva Valley)	Groundwater		Sodium hypochlorite	Pending		
Minyerri	Groundwater		Sodium hypochlorite	Pending		
Mungoobada (Robinson River)	Groundwater Surface water (Robinson River)		Sodium hypochlorite	908001	2/03/2007 - 20/10/2014	20
Ngukurr	Groundwater Surface water (Roper River)	Sand Filtration	Chlorine gas	452	2/05/2002 - 2/05/2012	60
Rittarangu (Urapunga)	Groundwater		Sodium hypochlorite	Pending		
Weemol	Groundwater		Sodium hypochlorite	Pending		
Yarralin	Groundwater		Sodium hypochlorite			

The alternative names provided are commonly known; other titles for the majority of these communities also exist.

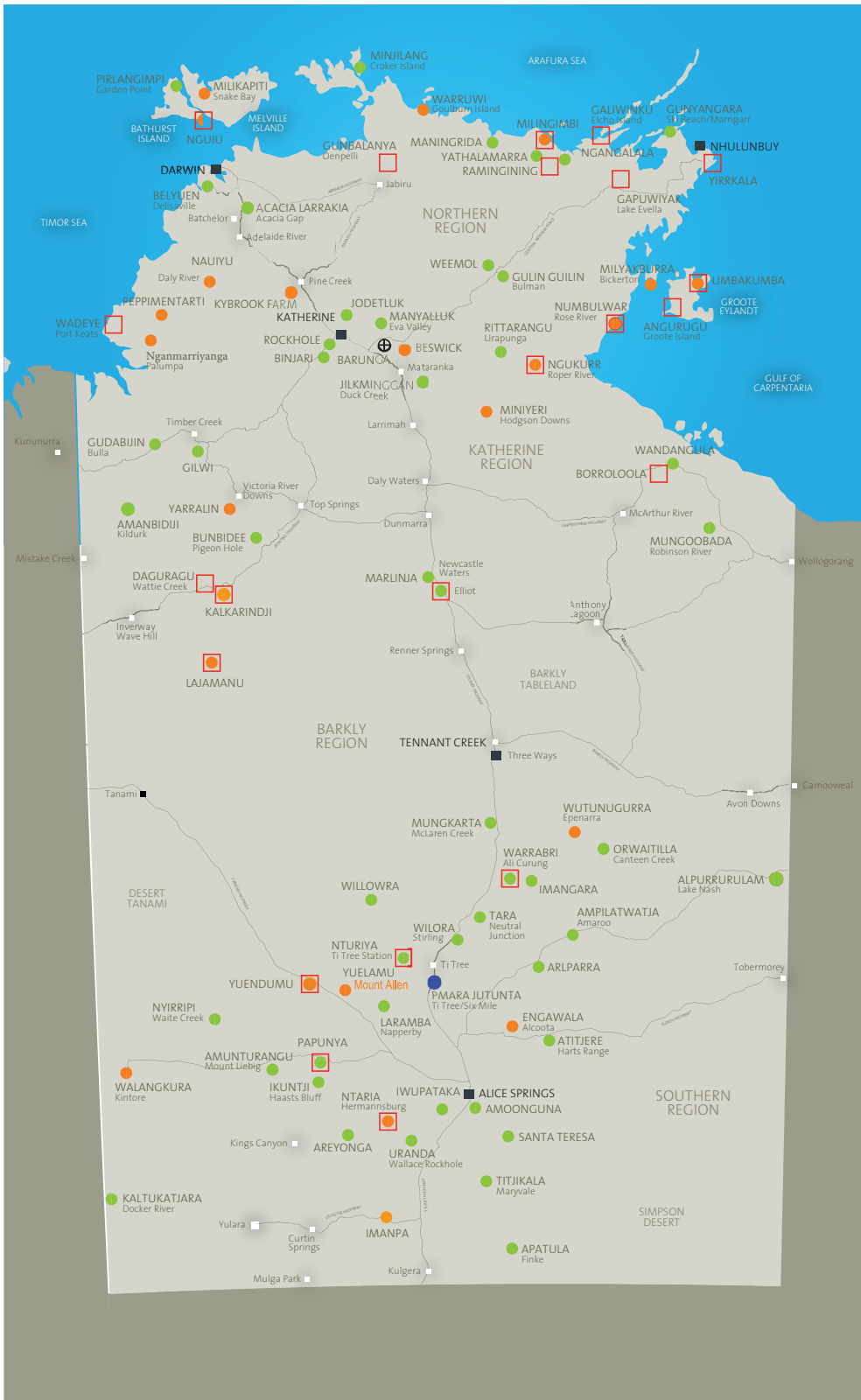
BARKLY & SOUTHERN REGIONS

TABLE 6: SUMMARY OF WATER SUPPLY SYSTEMS IN THE BARKLY AND SOUTHERN REGIONS

COMMUNITY	SOURCE OF SUPPLY	TREATMENT	DISINFECTION	LICENSE NUMBER	LICENSE ISSUE AND EXPIRY DATE	MAX WATER ENTITLEMENT (ML/YR)
Alpurrurulam (Lake Nash)	Groundwater		Calcium hypochlorite			
Amoonguna	Groundwater (Alice Springs water grid)		Chlorine gas			
Ampilatwatja (Ammaroo)	Groundwater		Ultraviolet			
Amunturangu (Mt Liebig)	Groundwater		Sodium hypochlorite			
Apatula (Finke)	Groundwater		Sodium hypochlorite	GAB001	1/09/2010 - 1/09/2020	96
Areyonga	Groundwater		Sodium hypochlorite			
Atitjere (Hart Range)	Groundwater		Sodium hypochlorite			
Engawala (Alcoota)	Groundwater		Sodium hypochlorite			
Ikuntji (Haasts Bluff)	Groundwater		Sodium hypochlorite			
Imangara (Murray Downs)	Groundwater		Sodium hypochlorite	WDP5007	31/07/2008 - 31/07/2018	30
Imanpa	Groundwater	Aeration	Sodium hypochlorite			
Kaltukatjara (Docker River)	Groundwater	Aeration	Sodium hypochlorite			
Kaporilya (outstation)	Groundwater (Ntaria water grid)		Sodium hypochlorite			
Laramba (Napperby)	Groundwater		Sodium hypochlorite			
Lyilyalanama (outstation)	Groundwater (Ntaria water)		Sodium hypochlorite			
Ntaria (Hermannsburg)	Groundwater		Sodium hypochlorite			
Nturiya (Ti Tree Station)	Groundwater		Ultraviolet	TTWZ3164	12/11/2001 - 30/11/2011	50
Nyirripi	Groundwater		Sodium hypochlorite			
Orwaitilla (Canteen Creek)	Groundwater		Sodium hypochlorite			
Papunya	Groundwater		Sodium hypochlorite			
Pmara Jutunta (Ti Tree 6 Mile)	Groundwater (Ti Tree water)		Sodium hypochlorite	TTWZ3172	31/12/2005 - 31/12/2055	150
				TTWZ3172	31/12/2005 - 31/12/2055	50
Santa Teresa	Groundwater		Sodium hypochlorite			

COMMUNITY	SOURCE OF SUPPLY	TREATMENT	DISINFECTION	LICENSE NUMBER	LICENSE ISSUE AND EXPIRY DATE	MAX WATER ENTITLEMENT (ML/YR)
Tara	Groundwater		Sodium hypochlorite	WDP5008	31/07/2008 - 31/07/2018	35
Titjikala (Maryvale)	Groundwater		Sodium hypochlorite			
Tjuwanpa Resource Centre	Groundwater (Ntaria water)		Sodium hypochlorite			
Ulpunda (outstation)	Groundwater (Ntaria water)		Sodium hypochlorite			
Walangkula (Kintore)	Groundwater		Ultraviolet			
Wallace Rockhole	Groundwater		Sodium hypochlorite			
Warrabri (Ali Curung)	Groundwater		Sodium hypochlorite	WDP5005	29/01/2007 - 29/01/2017	300
Willowra	Groundwater		Sodium hypochlorite			
Wilora (Stirling)	Groundwater		UV Ultraviolet	TTNZ001	29/09/2009 - 1/10/2059	40
Wutunugurra (Epenarra)	Groundwater		Sodium hypochlorite			
Yuelamu (Mt Allan)	Surface water (Yuelamu Dam)	Sand Filtration	Calcium hypochlorite & Ultraviolet	A028001	14/04/2008 - 17/04/2018	100
Yuendumu	Groundwater		Sodium hypochlorite			

APPENDIX B: MAP OF GROUNDWATER MONITORING SITES



□ Growth Towns ● Continuous monitoring sites
● Other communities ⊕ DNRETAS

APPENDIX C: COMMUNITY WATER CONSUMPTION 2010-11

NORTHERN COMMUNITIES	POPULATION	L/EP/D	ML/YR BULK CONSUMPTION
Acacia Larrakia (Acacia Gap)	92	363	12
Angurugu (Groote Is.)	1051	717	275
Belyuen (Delisaville)	217	1,324	105
Galiwinku (Elcho Is.)	2186	897	716
Gapuwiyak (Lake Evella)	1141	362	151
Gunbalanya (Oenpelli)	1138	744	309
Gunyangara/Marngarr (Ski Beach)	288	1,001	105
Maningrida	2660	443	430
Milikapiti (Snake Bay)	472	1,082	186
Milingimbi	1153	612	258
Milyakburra (Bickerton Is.)	139	579	29
Minjilang (Croker Is.)	336	783	96
Naiyu (Daly River)	493	320	58
Nganmariyanga (Palumpa)	418	973	148
Nguiu/Wurruyiyanga (Bathurst Island)	1641	345	206
Numbulwar	867	653	207
Peppimenarti	223	1,197	97
Pirlangimpi (Garden Point)	460	750	126
Ramingining	836	608	185
Umbakumba (Groote Island)	441	1,015	163
Wadeye (Port Keats)*	2110	629	484
Warruwi	474	367	63
Yirrkala	884	711	229

KATHERINE COMMUNITIES	POPULATION	L/EP/D	ML/YR BULK CONSUMPTION
Amanbidji (Kildurk)	93	511	17
Barunga	349	1,125	143
Beswick	483	920	162
Binjari	240	399	35
Bunbidee (Pigeon Hole)	207	550	42
Daguragu (Wattie Creek)	281	1,212	124
Gudabijin (Bulla)	132	642	31
Gulin Gulin (Bulman)	310	578	65
Jilkminggan (Duck Creek)	344	469	59
Kalkarindji (Wave Hill)	422	827	127
Kybrook Farm (Cooperfield Creek)	76	1,190	33
Lajamanu (Hooker Creek)	866	763	241
Manyallaluk (Eva Valley)	170	797	49
Minyerri	555	404	82
Mungoobada (Robinson River)	153	920	51
Ngukurr	1183	886	382
Rittarangu	92	988	33
Weemol	86	616	19
Yarralin	291	544	58

SOUTHERN AND BARKLY COMMUNITIES	POPULATION	L/EP/D	ML/YR BULK CONSUMPTION
Alpurrurulam (Lake Nash)	426	586	91
Amoonguna	346	317	40
Ampilatwatja (Amaroo)	481	315	55
Amunturangu/Watiyawanu (Mt Liebig)	342	366	46
Apatula (Finke)	253	593	55
Areyonga	311	266	30
Atitjere (Harts Range)	220	332	27
Engawala (Alcoota)	230	192	16
Ikuntji (Haasts Bluff)	154	474	27
Imangara	224	210	17
Imanpa	184	299	20
Kaltukatjara (Docke River)	445	347	56
Laramba (Napperby)	309	485	55
Ltyentye Apurte (Santa Teresa)	682	405	101
Ntaria (Hermannsburg)	722	556	147
Nturiya (Ti Tree Station)	327	78	9
Nyirripi (Waite Creek)	313	317	36
Orwaitilla (Canteen Creek)	141	742	38
Papunya	386	583	82
Pmara Jutunta (Ti Tree 6 Mile)	286	151	16
Tara (Neutral Junction)	47	934	16
Titjikala (Maryvale)	271	413	41
Uranda (Wallace Rockhole)	110	893	36
Walangkura/Walungurru (Kintore)	435	411	65
Warrabri (Ali Curung)	449	890	146
Willowra	340	295	37
Wilora (Stirling)	119	2,321	101
Wutungurra (Epenarra)	244	237	21
Yuelamu (Mt Allen)	268	204	20
Yuendumu	886	573	185

Population data: Community Attributes Master List (D2012/109559)

Northern Communities Water Data NR Communities Water use Monthly 2010 - 2011 (D2010/235520)

Katherine Communities Water Data KR Communities Water use Monthly 2010 - 2011 (D2010/235665)

Southern and Barkley Communities Water Data SR Communities Water use Monthly 2010 - 2011 (D2010/235535)

*Wadeye consumption includes Manthatpe consumption

APPENDIX D: WATER QUALITY TEST RESULTS

The following summary is intended to assist the reader to interpret results presented in this report. Additional information can be obtained by referring to the Australian Drinking Water Guidelines (ADWG) Fact Sheets available at: <http://www.nhmrc.gov.au/guidelines/publications/eh34>

HEALTH CHARACTERISTICS

Health characteristics are water quality characteristics which may present a risk to the health of the consumer, if the consumer were exposed to concentrations above ADWG levels over a lifetime.

ESCHERICHIA COLI (E. COLI)

E. coli is a bacterial coliform excreted from the intestines of warm-blooded animals, including humans, and is an indicator of recent faecal contamination. If E. coli is detected in a drinking water supply, immediate action is taken in accordance with established protocols to safeguard public health.

ARSENIC

ADWG recommend the concentration of arsenic in drinking water should not exceed 0.007mg/L. Arsenic can be introduced into ground and surface water naturally through the dissolution of minerals and ores, or from industrial effluent, atmospheric deposition (through the burning of fossil fuels and waste incineration), drainage from old gold mines, or the use of some types of sheep dip. Natural sources can make a significant contribution to the arsenic concentration in drinking water.

In Australia, arsenic concentrations typically range from less than 0.005mg/L to 0.015mg/L. Studies into the consumption of drinking water above 0.3mg/L over five to 25 years have shown effects on the skin, vascular system, nervous system, with the possibility of being carcinogenic.

BARIUM

The primary source of barium in drinking water is from natural sources. The ADWG recommend barium to be less than 0.7mg/L in drinking water. A number of epidemiological studies have been carried out on the effects of barium in drinking water on cardiovascular disease. No adverse effects were found with barium concentrations up to 7mg/L. In a study using a small number of volunteers, no adverse effects were observed after eight weeks exposure to drinking water with up to 10mg/L barium.

FLUORIDE

Fluoride is one of the most abundant elements in the Earth's crust. It naturally occurs in groundwater supplies, and is present in most food and beverage products and toothpaste. Additional fluoride is not added to any community water supplies.

The concentration of natural fluoride in Northern Territory groundwater supplies depends on the type of soil and rock that the water comes into contact with. Generally, surface water sources have low natural fluoride concentrations (around <0.1 to 0.5mg/L) and groundwater sources may have relatively high levels (range from 1-10 mg/L), particularly when the rock surrounding the water in the aquifer is rich in fluoride. The minimum fluoride for protection against dental caries is about 0.5mg/L, although around 1mg/L is required in temperate climates for optimal caries prevention. At concentrations of 1.5 to 2mg/L, teeth may become mottled due to dental fluorosis.

Most water supplies in the Northern and Katherine regions have naturally low fluoride levels due to the nature of the shallow groundwater supplies and use of surface water supplies in some communities. Most communities in the Barkly and southern regions have fluoride levels between 0.5mg/L and 1.5mg/L, of which three experience fluoride above the ADWG value of 1.5mg/L (Figure 4).

NITRATE

In the Northern Territory, elevated nitrate concentrations have been partially attributed to nitrogen fixing by native vegetation and cyanobacteria crusts on soils. Termite mounds also appear to be a significant nitrate source, possibly due to the presence of nitrogen fixing bacteria in many termite species and the nitrogen rich secretions used to build the walls of mounds. The ADWG recommend that nitrate levels between 50-100mg/L are a health consideration for infants less than three months, although levels up to 100mg/L can be safely consumed by adults.

URANIUM

Uranium is widely distributed in geological formations and can be found in groundwater aquifers surrounded by granite rocks and pegmatites and in some sedimentary rocks like sandstones. Uranium occurs as three naturally occurring isotopes and under the appropriate conditions can become soluble and therefore present in a region's groundwater. The transport of uranium in groundwater varies widely according to the aquifer conditions. Uranium may also be present in the environment as a result of mine tailings, and the use of phosphate pesticides.

AESTHETIC CHARACTERISTICS

Aesthetic characteristics are water quality characteristics associated with the acceptability of water to the consumer in terms of appearance, taste and odour.

HARDNESS (AS CALCIUM CARBONATE)

Hardness is primarily the amount of calcium and magnesium ions in water and is expressed as a calcium carbonate (CaCO₃) equivalent.

High hardness usually requires more soap to achieve lather and may lead to excessive scaling in hot water pipes and fittings. Soft water, or water low in total calcium and magnesium ions, may also cause corrosion in pipes, although this will depend on other

FIGURE 4
COMMUNITIES IDENTIFIED WITH AVERAGE FLUORIDE LEVELS AT OR GREATER THAN 1.5MG/L IN DRINKING WATER

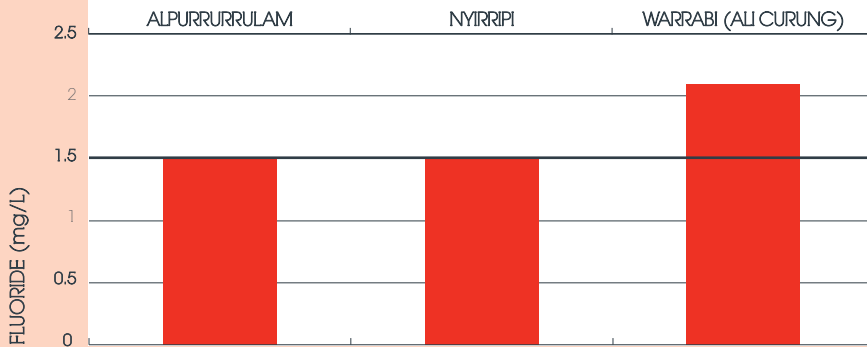
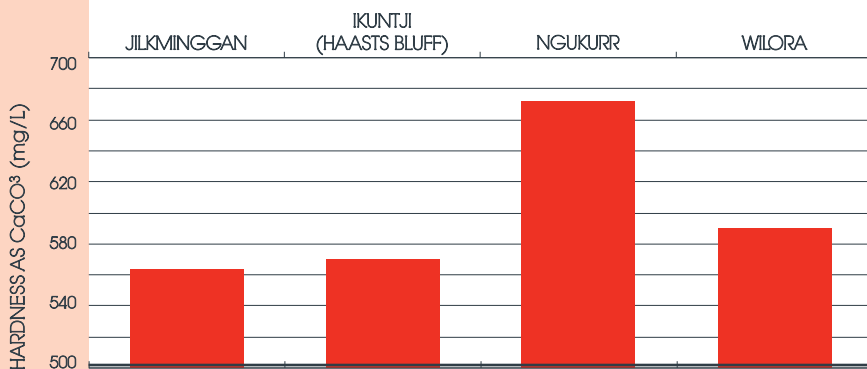


FIGURE 5
COMMUNITIES IDENTIFIED WITH AVERAGE HARDNESS LEVELS GREATER THAN 500MG/L IN DRINKING WATER



physical and chemical characteristics such as pH, alkalinity, and dissolved oxygen. The ADWG recommend hardness levels below 200mg/L to minimise scaling in hot water systems.

The ADWG describe various degrees of hardness as:

<60mg/L CaCO ₃	soft but possibly corrosive
60-200mg/L CaCO ₃	good quality
200-500mg/L CaCO ₃	increasing scaling problems
>500mg/L CaCO ₃	severe scaling

Hard water, or water with calcium carbonate levels above 500mg/L (Figure 5) may lead to excessive scaling of pipes and fittings, which can impact on infrastructure service life and indirectly impact health through impeding access to water.

IRON

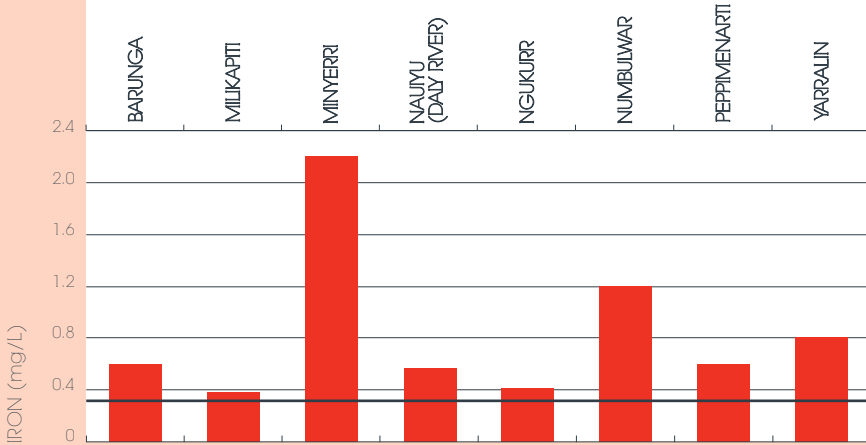
Iron has a taste threshold of about 0.3mg/L in water and becomes objectionable above 3mg/L. High iron concentrations give water an undesirable rust-brown appearance and can cause staining of laundry and plumbing fittings, fouling of ion-exchange softeners, and blockages in irrigation systems. Growths of iron bacteria, which concentrate iron, may cause taste and odour problems and lead to pipe restrictions, blockages and corrosion. The concentration of iron at the customer tap can also be affected by factors such as rusting iron pipes.

There are a number of communities regularly monitored for iron levels above 0.3mg/L and a limited number above 1mg/L (Figure 6). Power and Water has identified alternative groundwater sources for Nauiyu (Daly River) and expect to equip some of these in 2010-11 to reduce the iron levels.

Options to reduce iron levels in the other communities with high levels are being investigated. Short-term solutions to reduce iron levels such as blending water supplies are being trialled.

FIGURE 6

COMMUNITIES WITH AN AVERAGE IRON CONCENTRATION GREATER THAN 0.3MG/L IN THE DISTRIBUTION SYSTEM



pH

The ADWG recommend that pH levels in drinking water should be between 6.5-8.5 pH units. Levels below 6.5 pH units are likely to cause corrosion of pipes and fittings while levels above 8.5 pH units can cause scaling particularly on hot water systems.

pH is a measure of the hydrogen ion concentration of water. It is measured on a logarithmic scale from 0 to 14. A pH of 7 is neutral, greater than 7 is alkaline, and less than 7 is acidic.

SODIUM

Sodium is an essential element for humans, although there is currently no agreement on the minimum amount required. The sodium ion is widespread in water due to the high solubility of sodium salts and the abundance of mineral deposits. The ADWG recommend a trigger value of 180mg/L, when the taste becomes appreciable.

TOTAL DISSOLVED SOLIDS (SALINITY)

Total dissolved solids (TDS) are small organic and inorganic particles dissolved in water that can affect how the water tastes. TDS comprise sodium, potassium, calcium, magnesium, chloride, sulphate, bicarbonate, carbonate, silica, organic matter, fluoride, iron, manganese, nitrate and phosphate.

Water with low TDS can taste flat, while water with TDS above 500mg/L will affect taste and could cause scaling in taps, pipes, and hot water systems. Levels greater than 800mg/L significantly affect taste and may also cause moderate to severe scaling. Based on taste, the ADWG recommends TDS levels should be below 500mg/L. The ADWG provide guidance in the palatability of drinking water according to TDS concentration:

<80mg/L	Excellent quality for most domestic users;
80-500mg/L	Good quality;
500-800mg/L	Fair quality;
800-1000mg/L	Poor quality; and
>1000mg/L	May increase scaling, corrosion and taste.

NORTHERN REGION

REPORTED UNIT	ADWIG 2004	ACACIA LARRAKEVAH	ANGURUGU	BEMJEN	GAJWINKU (ECHO BEND)	CAPUMYAK (LAKE EVELLA)	GUNBALANA (OENPELLI)	GUNANGARA (MARRGARR)	
HEALTH CHARACTERISTICS²									
<i>E.coli</i> Detections	per year	0	1	0	0	0	0	0	0
<i>E.coli</i> Performance	%	98	97	100	100	100	100	100	100
Antimony	mg/L	0.003	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Arsenic	mg/L	0.007	0.0008	0.0005 ⁵	0.0009	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵
Barium	mg/L	0.7	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵
Boron	mg/L	4	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	0.1 ⁵	0.1 ⁵	0.2 ⁵	0.1 ⁵	0.1 ⁵	0.1 ⁵	0.1 ⁵
Lead	mg/L	0.01	0.001 ⁵	0.0002 ⁵	0.002 ⁵	0.001 ⁵	0.006	0.001 ⁵	0.001 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵
Nitrate	mg/L	50	2 ⁵	1 ⁵	1 ⁵	1 ⁵	2 ⁵	1 ⁵	1 ⁵
Annual Exposure to Radioactivity	mSv/yr	1	0.1 ⁵	0.09	0.18 ⁵	0.1 ⁵	0.11 ⁵	0.11 ⁵	0.12 ⁵
Selenium	mg/L	0.1	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.0004	0.00003	0.001	0.00001 ⁵	0.00002	0.00003	0.00001 ⁵
AESTHETIC CHARACTERISTICS²									
Aluminum	mg/L	0.2	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.12	0.02 ⁵
Chloride	mg/L	250	7	10	8 ⁵	11	12	8 ⁵	13
Copper	mg/L	2	0.01 ⁵	0.03	0.07 ⁵	0.02	0.09	0.03 ⁵	0.01 ⁵
Hardness	CaCO ₃ mg/L	200	219	9	16	6	7	6	10
Iodine	mg/L	0.15	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Iron	mg/L	0.3	0.02 ⁵	0.02 ⁵	0.1 ⁵	0.08 ⁵	0.19 ⁵	0.17	0.03 ⁵
Manganese	mg/L	0.1	0.005 ⁵	0.005 ⁵	0.009 ⁵	0.005 ⁵	0.007 ⁵	0.008 ⁵	0.005 ⁵
pH	pH Units	6.5-8.5	8.0	6.8	6.3	5.7	6	5.9	6.9
Sodium	mg/L	180	4	25	7	7	8	4	8
Sulfate	mg/L	250	2	1	1	1	0.3 ⁵	1	0.2 ⁵
Total Dissolved Solids	mg/L	500	237	89	69	41	46	60	31
True Colour	CU	15	2.6 ⁵	28.3 ⁵	2.6 ⁵	4.0	3.8 ⁵	7.0	1.8 ⁵
Turbidity	NTU	5	0.85 ⁵	11.6	1.7	0.5	1.1	2.8	0.9
Zinc	mg/L	3	0.01 ⁵	0.04	0.03 ⁵	0.02	0.03 ⁵	0.02 ⁵	0.02 ⁵
OTHER CHARACTERISTICS²									
Alkalinity	mg/L	#	219	51 ⁵	25 ⁵	20 ⁵	13 ⁵	12 ⁵	15 ⁵
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	0.015	0.023	0.009	0.018	0.02	0.02	0.026
Calcium	mg/L	#	44	2	6	1	2	1	3
Conductivity	µS/cm	#	439	119	58	55	55	34	57
Magnesium	mg/L	#	26.8	0.7	0.6	0.7	0.8	0.5	0.6
Potassium	mg/L	#	1.48	0.1 ⁵	3.4	0.8	0.1 ⁵	0.2	0.2 ⁵
Silica	mg/L	#	20.8	11	33.6	14	11.4	11.8	11
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

NORTHERN REGION

REPORTED UNIT	ADWG 2004	MANINGRIDA	MILKAPITI (SNAKE BAY)	MILINGIMBI	MIYAKURRA (BICKERTON ISLAND)	MINJILANG (CROCKER ISLAND)	NAJYU NAMBYU (DALY RIVER)	NGANARRRYANGA (PALLUPA)	NUMBULWAR	
HEALTH CHARACTERISTICS²										
<i>E.coli</i> Detections	per year	0	0	0	0	0	0	3	0	
<i>E.coli</i> Performance	%	98	100	100	100	100	100	92	100	
Antimony	mg/L	0.003	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0005	0.0002 ⁵	0.0002 ⁵
Arsenic	mg/L	0.007	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵	0.004	0.0005 ⁵	0.001
Barium	mg/L	0.7	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.15 ⁵	0.28
Boron	mg/L	4	0.02	0.02 ⁵	0.04	0.05	0.02	0.02	0.03 ⁵	0.04
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	0.1 ⁵	0.1 ⁵	0.1 ⁵	0.1 ⁵	0.1 ⁵	0.4	0.2 ⁵	0.1
Lead	mg/L	0.01	0.002 ⁵	0.002 ⁵	0.002	0.004	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵
Nitrate	mg/L	50	1 ⁵	1 ⁵	4	1 ⁵	1 ⁵	1 ⁵	1 ⁵	1 ⁵
Annual Exposure to Radioactivity	mSv/yr	1	0.14 ⁵	0.12 ⁵	0.16 ⁵	0.12 ⁵	0.13 ⁵	0.15 ⁵	0.12 ⁵	0.13 ⁵
Selenium	mg/L	0.1	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.000005	0.00001 ⁵	0.00002	0.000003	0.00002	0.00001	0.00001 ⁵	0.00004
AESTHETIC CHARACTERISTICS²										
Aluminum	mg/L	0.2	0.02 ⁵	0.03 ⁵	0.06	0.02 ⁵	0.09	0.13 ⁵	0.02 ⁵	0.02 ⁵
Chloride	mg/L	250	9	12	79	58	17	8 ⁵	24	24
Copper	mg/L	2	0.01 ⁵	0.02	0.03 ⁵	0.04 ⁵	0.02	0.01 ⁵	0.02 ⁵	0.01 ⁵
Hardness	CaCO ₃ mg/L	200	5	13	41	25	12 ⁵	132	55	196
Iodine	mg/L	0.15	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.03	0.01 ⁵	0.01 ⁵
Iron	mg/L	0.3	0.06 ⁵	0.38⁵	0.06 ⁵	0.07 ⁵	0.1 ⁵	0.57⁵	0.26 ⁵	1.2⁵
Manganese	mg/L	0.1	0.005 ⁵	0.005 ⁵	0.014 ⁵	0.026 ⁵	0.006 ⁵	0.4	0.06 ⁵	0.16
pH	pH Units	6.5-8.5	6.1	5.8	5.2	5.6	5.3	7.7	7.2	8.1
Sodium	mg/L	180	5	9	43	34	12	17	32	19
Sulfate	mg/L	250	1	1	8	4	4	5	9	34
Total Dissolved Solids	mg/L	500	39	50	177	127	57	194	162	282
True Colour	CU	15	2.5 ⁵	3.0 ⁵	2.8 ⁵	3.2 ⁵	2.3 ⁵	5.6 ⁵	5.5	6.7
Turbidity	NTU	5	0.8	2.8	0.7 ⁵	0.9	1.5	13.4	2.3	12.3
Zinc	mg/L	3	0.05 ⁵	0.04 ⁵	0.08	0.03	0.1	0.03 ⁵	0.01 ⁵	0.01 ⁵
OTHER CHARACTERISTICS²										
Alkalinity	mg/L	#	13 ⁵	21 ⁵	14 ⁵	15 ⁵	15 ⁵	172	86 ⁵	179
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	0.024	0.024	0.2	0.2	0.055	0.022	0.033	0.075
Calcium	mg/L	#	1	4	9	6	4	29	16	64
Conductivity	µS/cm	#	43	61	322	231	84	332	269	485
Magnesium	mg/L	#	0.7	0.6 ⁵	4.9	2.3	0.7	14.5	3.7	10.3
Potassium	mg/L	#	1.1	0.6 ⁵	0.7	0.3	0.1 ⁵	1	2.8 ⁵	2.4
Silica	mg/L	#	13.8	12.3	18.1	15.9	12.9	38.8	30.6	16.9
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

NORTHERN REGION

	ADWG 2004	REPORTED UNIT	PEPPINENARTI	PIRLANGIMPI (GARDEN POINT)	RAMINGINING	UIMBAKUMBA	WADEYE	WARRUMI	WURRUJIVANGA (NGUJU)	YIRRKALA
HEALTH CHARACTERISTICS²										
<i>E.coli</i> Detections	per year	0	0	0	0	0	1	0	0	0
<i>E.coli</i> Performance	%	98	100	100	100	100	99	100	100	100
Antimony	mg/L	0.003	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Arsenic	mg/L	0.007	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵
Barium	mg/L	0.7	0.08	0.06 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.05 ⁵
Boron	mg/L	4	0.03	0.02 ⁵	0.02 ⁵	0.2	0.02 ⁵	0.02	0.02 ⁵	0.02 ⁵
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	0.5	0.1 ⁵	0.1 ⁵	0.1 ⁵	0.1 ⁵	0.1 ⁵	0.1 ⁵	0.1 ⁵
Lead	mg/L	0.01	0.001 ⁵	0.002 ⁵	0.003 ⁵	0.003	0.001 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.003 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.003	0.002 ⁵	0.002 ⁵	0.002 ⁵
Nitrate	mg/L	50	1 ⁵	1 ⁵	1 ⁵	1 ⁵	1 ⁵	1 ⁵	1 ⁵	1 ⁵
Annual Exposure to Radioactivity	mSv/yr	1	0.13 ⁵	0.1 ⁵	0.09 ⁵	0.13 ⁵	0.09 ⁵	0.11 ⁵	0.13 ⁵	0.12 ⁵
Selenium	mg/L	0.1	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.000005 ⁵	0.000002 ⁵	0.000003	0.000001	0.00002	0.000006	0.000001 ⁵	0.00001
AESTHETIC CHARACTERISTICS²										
Aluminum	mg/L	0.2	0.02 ⁵	0.1	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.06	0.02 ⁵	0.22⁵
Chloride	mg/L	250	15	10	10 ⁵	40	14 ⁵	40	9 ⁵	11
Copper	mg/L	2	0.02 ⁵	0.3 ⁵	0.02	0.03 ⁵	0.02 ⁵	0.03 ⁵	0.01 ⁵	0.02 ⁵
Hardness	CaCO ₃ mg/L	200	69	5 ⁵	17	21	13	32	13	7
Iodine	mg/L	0.15	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Iron	mg/L	0.3	0.6⁵	0.12 ⁵	0.07 ⁵	0.02 ⁵	0.06 ⁵	0.05 ⁵	0.02 ⁵	0.17 ⁵
Manganese	mg/L	0.1	0.14	0.005 ⁵	0.005 ⁵	0.009 ⁵	0.01 ⁵	0.006 ⁵	0.005 ⁵	0.005 ⁵
pH	pH Units	6.5-8.5	7.2	6	5.7	5.8	5.8	5.3	6.1	5.9
Sodium	mg/L	180	16	7	6	22	7	21	5	7
Sulfate	mg/L	250	3	0.4	0.3 ⁵	4	0.6 ⁵	7	0.3	2
Total Dissolved Solids	mg/L	500	126	26	55	102	40	96	31	25
True Colour	CU	15	3.7 ⁵	7.6	2.0 ⁵	2.5 ⁵	3.0 ⁵	2.4 ⁵	2.4 ⁵	2.0 ⁵
Turbidity	NTU	5	4.9	3.4	1	1.9	1.6	1	0.9	48.8
Zinc	mg/L	3	0.04 ⁵	0.03 ⁵	0.01 ⁵	0.03 ⁵	0.03	0.04 ⁵	0.06 ⁵	0.02 ⁵
OTHER CHARACTERISTICS²										
Alkalinity	mg/L	#	95	12 ⁵	17 ⁵	16 ⁵	17 ⁵	19 ⁵	19 ⁵	15 ⁵
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	0.033	0.012	0.008	0.08	0.02	0.086	0.011	0.023
Calcium	mg/L	#	17	2	5	4	4	7	5 ⁵	2
Conductivity	µS/cm	#	227	36	47.6	153.3	50.7	171.4	41.2	56
Magnesium	mg/L	#	6.2	0.2	0.9	2.6	0.6	3.6	0.4	0.7
Potassium	mg/L	#	5.7	0.1 ⁵	0.3	0.7	0.3	0.2 ⁵	0.1 ⁵	0.5
Silica	mg/L	#	28.1	10.2	14.8	9.6	15.6	10.7	13.5	12
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

KATHERINE REGION

REPORTED UNIT	ADWG 2004	AMANBIDJI (KILDURK)	BARUNGA	BESWICK	BINJARI	BUNDEE (PIGEON HOLE)	DAGARAGU	GUDABUJIN (BULLA)	
HEALTH CHARACTERISTICS²									
<i>E.coli</i> Detections	per year	0	0	0	3	0	0	0	1
<i>E.coli</i> Performance	%	98	100	100	92	100	100	100	97
Antimony	mg/L	0.003	0.0003 ⁵	0.0013 ⁵	0.0068	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Arsenic	mg/L	0.007	0.0015	0.0015 ⁵	0.0066	0.0014	0.0005 ⁵	0.0013	0.001 ⁵
Barium	mg/L	0.7	0.17	0.07 ⁵	0.15 ⁵	0.18	0.05 ⁵	0.07	4.11
Boron	mg/L	4	0.52	0.02 ⁵	0.02 ⁵	0.02	0.08	0.08	0.12
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	0.1 ⁵	0.1 ⁵	0.1	0.4	0.3	0.2	0.7
Lead	mg/L	0.01	0.001 ⁵	0.001 ⁵	0.004 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵
Nitrate	mg/L	50	1 ⁵	1 ⁵	1 ⁵	1 ⁵	20	3	1 ⁵
Annual Exposure to Radioactivity	mSv/yr	1	0.12 ⁵	0.11 ⁵	0.09 ⁵	0.85 ⁵	0.12 ⁵	0.16	0.17 ⁵
Selenium	mg/L	0.1	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.0009	0.00007 ⁵	0.0002	0.001	0.002	0.001	0.0002
AESTHETIC CHARACTERISTICS²									
Aluminum	mg/L	0.2	0.03 ⁵	0.05	0.03 ⁵	0.03 ⁵	0.02 ⁵	0.02 ⁵	0.03 ⁵
Chloride	mg/L	250	145	8 ⁵	7 ⁵	14 ⁵	29	24	48
Copper	mg/L	2	0.01 ⁵	0.04 ⁵	0.1	0.01 ⁵	0.01 ⁵	0.02 ⁵	0.01 ⁵
Hardness	CaCO ₃ mg/L	200	381	174	304	290	312	251	240
Iodine	mg/L	0.15	0.02	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.02	0.02	0.01 ⁵
Iron	mg/L	0.3	0.16 ⁵	0.6 ⁵	0.06 ⁵	0.08 ⁵	0.02	0.02 ⁵	0.17 ⁵
Manganese	mg/L	0.1	0.014	0.008 ⁵	0.016 ⁵	0.007 ⁵	0.005 ⁵	0.026 ⁵	0.088 ⁵
pH	pH Units	6.5-8.5	7.8	6.8	7.5	7.6	7.3	7.9	8.3
Sodium	mg/L	180	190	7	6	10	26	28	29
Sulfate	mg/L	250	171	2	2	6	7	8	2
Total Dissolved Solids	mg/L	500	917	204	317	335	429	316	304
True Colour	CU	15	2.8 ⁵	7.7	2.6	3.2 ⁵	2	2.3 ⁵	4.1 ⁵
Turbidity	NTU	5	2	1.9	0.6	1.1	0.7	1.2	2.2
Zinc	mg/L	3	0.02 ⁵	0.4	0.4	0.02 ⁵	0.01 ⁵	0.03 ⁵	0.02 ⁵
OTHER CHARACTERISTICS²									
Alkalinity	mg/L	#	472	180 ⁵	323	315	355	296	264
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	0.2	0.021	0.015	0.062	0.068	0.083	0.098
Calcium	mg/L	#	60	34	59	64	69	48	34
Conductivity	µS/cm	#	1542	339.9	594.2	602.4	705	609	613
Magnesium	mg/L	#	56.8	21.5	38.4	32.2	34	31.6	37.5
Potassium	mg/L	#	4.2	1.5	2.1	4.7	2.1	4	5.3
Silica	mg/L	#	33.3	22.1	23.2	27.9	56.5	25.4	18.8
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

KATHERINE REGION

REPORTED UNIT	ADWG 2004	GULIN GULIN (BULMAN)	JILKMINGAN (DUCK CREEK)	JODETLUK (GORGE CAMP)	KALKARINDJI (WAVE HILL)	KYBROOK FARM	LAJAMANU	MANVALLUK (EVA VALLEY)	
HEALTH CHARACTERISTICS²									
<i>E.coli</i> Detections	per year	0	0	1	0	0	0	0	0
<i>E.coli</i> Performance	%	98	100	98	100	100	100	100	100
Antimony	mg/L	0.003	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0003 ⁵	0.0003 ⁵	0.0002 ⁵
Arsenic	mg/L	0.007	0.0005 ⁵	0.0007 ⁵	0.0005 ⁵	0.0014	0.008	0.0006 ⁵	0.0005 ⁵
Barium	mg/L	0.7	0.05 ⁵	0.05 ⁵	0.05 ⁵	0.11	0.05 ⁵	0.12	0.05 ⁵
Boron	mg/L	4	0.02	0.45	0.02 ⁵	0.12	0.02 ⁵	0.20	0.02 ⁵
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	0.1 ⁵	0.5	0.1 ⁵	0.3	0.7	0.3	0.1 ⁵
Lead	mg/L	0.01	0.001 ⁵	0.003 ⁵	0.001 ⁵	0.001 ⁵	0.002 ⁵	0.001 ⁵	0.002 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.002 ⁵	0.004 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.004 ⁵
Nitrate	mg/L	50	1 ⁵	1 ⁵	1 ⁵	5	1 ⁵	8	1 ⁵
Annual Exposure to Radioactivity	mSv/yr	1	0.12 ⁵	0.52	N/A	0.21 ⁵	0.12 ⁵	0.17 ⁵	0.14 ⁵
Selenium	mg/L	0.1	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.002 ⁵	0.001 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.0003	0.01	0.00001 ⁵	0.002	0.0003	0.002	0.00007
AESTHETIC CHARACTERISTICS²									
Aluminum	mg/L	0.2	0.02 ⁵	0.09 ⁵	0.02 ⁵	0.02 ⁵	0.04 ⁵	0.02 ⁵	0.02
Chloride	mg/L	250	10	255	8 ⁵	31	10 ⁵	132	8 ⁵
Copper	mg/L	2	0.01 ⁵	0.03 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.02 ⁵	0.02 ⁵
Hardness	CaCO ₃ mg/L	200	315	578	6	262	145	288	8
Iodine	mg/L	0.15	0.01 ⁵	0.19	0.01 ⁵	0.02	0.01 ⁵	0.17	0.01 ⁵
Iron	mg/L	0.3	0.03 ⁵	0.2 ⁵	0.1 ⁵	0.02 ⁵	0.1 ⁵	0.07 ⁵	0.26 ⁵
Manganese	mg/L	0.1	0.005 ⁵	0.17	0.006 ⁵	0.005 ⁵	0.06 ⁵	0.005 ⁵	0.005 ⁵
pH	pH Units	6.5-8.5	7.8	7.4	7.3	7.9	7.1	7.7	5.1
Sodium	mg/L	180	8	196	6	37	43	89	3
Sulfate	mg/L	250	1	216	0.2	13	3	57	0.2
Total Dissolved Solids	mg/L	500	328	1270	33	361	263	630	43
True Colour	CU	15	3.0 ⁵	3.6 ⁵	3.6 ⁵	1.7 ⁵	4.1 ⁵	2.0 ⁵	2.0 ⁵
Turbidity	NTU	5	0.3	1.9	0.6	0.7	1.9	1.0 ⁵	0.8
Zinc	mg/L	3	0.02 ⁵	0.05	0.06	0.01 ⁵	0.02	0.02	0.06
OTHER CHARACTERISTICS²									
Alkalinity	mg/L	#	348	517	24.5	307	222	260	17 ⁵
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	0.022	1.4	0.01	0.1	0.026	0.7	0.025
Calcium	mg/L	#	61	91	1	52	24	44	2
Conductivity	µS/cm	#	620	2046	43.5	678	448	1021	29
Magnesium	mg/L	#	39.8	86.1	0.8	31.8	20.6	43.1	0.6
Potassium	mg/L	#	2.5	25.7	0.5	4.5	1.4	8.6	0.4
Silica	mg/L	#	24.8	60	15.7	25	43.4	100	23
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

KATHERINE REGION

REPORTED UNIT	ADWG 2004	MINYERR	MUNGOOBADA (ROBINSON RIVER)	NGUKURR	RITRANGU	WEEMOL	YARRALIN
HEALTH CHARACTERISTICS²							
<i>E.coli</i> Detections	per year	0	0	0	0	0	0
<i>E.coli</i> Performance	%	98	100	100	100	100	100
Antimony	mg/L	0.003	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Arsenic	mg/L	0.007	0.003 ⁵	0.0005 ⁵	0.0006 ⁵	0.0005 ⁵	0.0005 ⁵
Barium	mg/L	0.7	0.34	1.15	0.64	0.15	0.05 ⁵
Boron	mg/L	4	0.18	0.12	0.06	0.04	0.032
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	0.3	0.9	0.2	0.1	0.1
Lead	mg/L	0.01	0.001 ⁵	0.001 ⁵	0.003 ⁵	0.001 ⁵	0.001 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵
Nitrate	mg/L	50	1 ⁵	4	1 ⁵	3 ⁵	1 ⁵
Annual Exposure to Radioactivity	mSv/yr	1	0.14 ⁵	0.13 ⁵	0.15 ⁵	0.12 ⁵	0.12 ⁵
Selenium	mg/L	0.1	0.001 ⁵	0.001 ⁵	0.002 ⁵	0.001 ⁵	0.001 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.00001 ⁵	0.003	0.001	0.0009	0.0003
AESTHETIC CHARACTERISTICS²							
Aluminum	mg/L	0.2	0.02 ⁵	0.03 ⁵	0.15 ⁵	0.02 ⁵	0.02 ⁵
Chloride	mg/L	250	16.5	30	398	70	10
Copper	mg/L	2	0.02 ⁵	0.02 ⁵	0.05 ⁵	0.02 ⁵	0.02 ⁵
Hardness	CaCO ₃ mg/L	200	101	495	638	282	358
Iodine	mg/L	0.15	0.01 ⁵	0.03 ⁵	0.02 ⁵	0.01	0.01 ⁵
Iron	mg/L	0.3	2.2⁵	0.06 ⁵	0.41⁵	0.02 ⁵	0.02 ⁵
Manganese	mg/L	0.1	0.25⁵	0.008 ⁵	0.014 ⁵	0.005 ⁵	0.005 ⁵
pH	pH Units	6.5-8.5	7.3	7.5	7.6	7.6	7.4
Sodium	mg/L	180	24	20	99	29	10
Sulfate	mg/L	250	11	6	36	3	0.3
Total Dissolved Solids	mg/L	500	181	552	985	381	391
True Colour	CU	15	4.2 ⁵	2.6 ⁵	4.3 ⁵	1.8 ⁵	3.7 ⁵
Turbidity	NTU	5	31.8	1.3	3.3	0.2	0.3
Zinc	mg/L	3	0.1	0.05 ⁵	0.04 ⁵	0.02 ⁵	0.02
OTHER CHARACTERISTICS²							
Alkalinity	mg/L	#	131	535	322	284	391
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	0.039	0.3	1.2	0.2	0.028
Calcium	mg/L	#	22	43	112	52	64
Conductivity	µS/cm	#	318	1000	1843	724	690
Magnesium	mg/L	#	11.6	94	88.4	36.8	48.1
Potassium	mg/L	#	5.1	3.9	6.5	2.7	2.8
Silica	mg/L	#	31	33.7	25.3	23.2	34.1
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

BARKLY REGION

REPORTED UNIT	ADWG 2004	ALPURRULAM (LAKE NASH)	IMANGARA (MURRAY DOWNS)	NTURVA ⁴	OWAITILLA (CANTEEN CREEK) ⁴	TARA	WARRABRI (ALI CURUNG)	WILLOWRA	WILORA (STIRLING) ⁴	WUTUNJURRA (EPENARRA) ⁴	
HEALTH CHARACTERISTICS²											
<i>E.coli</i> Detections	per year	0	0	0	0	0	0	0	0	0	0
<i>E.coli</i> Performance	%	98	100	100	100	100	100	100	100	100	100
Antimony	mg/L	0.003	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0003 ⁵	0.0002 ⁵
Arsenic	mg/L	0.007	0.0015	0.001	0.0005 ⁵	0.0005 ⁵	0.0006 ⁵	0.0026	0.0018	0.0016	0.0006 ⁵
Barium	mg/L	0.7	0.1	0.5	0.05 ⁵	0.1	0.05 ⁵	0.09	0.05	0.05 ⁵	0.44
Boron	mg/L	4	0.25	0.25	0.56	0.22	0.43	0.72	0.45	0.69	0.12
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	1.5	0.7	0.9	0.5	0.9	2.1	0.8	0.9	0.2
Lead	mg/L	0.01	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.003 ⁵	0.008 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.002 ⁵
Nitrate	mg/L	50	3	9	38	7	24	81	36	17	4
Annual Exposure to Radioactivity	mSv/yr	1	0.26	0.71	0.5 ⁵	0.4	0.61	0.81	0.83	0.71 ³	0.22 ⁵
Selenium	mg/L	0.1	0.002 ⁵	0.001 ⁵	0.003 ⁵	0.001 ⁵	0.002	0.003	0.003	0.005	0.001 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.01	0.012	0.015	0.001	0.004	0.011	0.025	0.021	0.002
AESTHETIC CHARACTERISTICS²											
Aluminum	mg/L	0.2	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.03 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵
Chloride	mg/L	250	192	25	337	92	554	200	176	518	42
Copper	mg/L	2	0.07 ⁵	0.01 ⁵	0.02 ⁵	0.03 ⁵	0.04 ⁵	0.04 ⁵	0.01 ⁵	0.04 ⁵	0.01 ⁵
Hardness	CaCO ₃ mg/L	200	461	152	303	121	292	246	250	597	179
Iodine	mg/L	0.15	0.18	0.1	0.33	0.14	0.33	0.31	0.26	0.43	0.08
Iron	mg/L	0.3	0.05 ⁵	0.03 ⁵	0.1 ⁵	0.08 ⁵	0.1 ⁵	0.06 ⁵	0.07 ⁵	0.1 ⁵	0.03 ⁵
Manganese	mg/L	0.1	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.014 ⁵	0.017 ⁵
pH	pH Units	6.5-8.5	7.7	8	7.6	7.3	7	8.1	8.1	7.8	7.5
Sodium	mg/L	180	145	30	221	88	209	211	138	295	30
Sulfate	mg/L	250	89	12	180	38	151	96	80	233	11
Total Dissolved Solids	mg/L	500	924	440	1150	487	1039	968	756	1708	321
True Colour	CU	15	2.6 ⁵	1.5 ⁵	3.7 ⁵	3.3	2.3 ⁵	3.4 ⁵	2.8 ⁵	5.3 ⁵	3.0 ⁵
Turbidity	NTU	5	0.9	0.2	0.6	0.9	1.2	0.9 ⁵	0.8	0.5 ⁵	1
Zinc	mg/L	3	0.02	0.01 ⁵	0.03 ⁵	0.03 ⁵	0.05 ⁵	0.01 ⁵	0.04	0.02	0.03
OTHER CHARACTERISTICS²											
Alkalinity	mg/L	#	482	336	217	249	198	373	263	400	200
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	0.8	0.1	1.8	0.5	1.6	1.0	1.0	3.0	0.2
Calcium	mg/L	#	60	39	68	27	38	32	49	95	40
Conductivity	µS/cm	#	1556	732.5	1827	847	1717	1626	1238	2650	555
Magnesium	mg/L	#	76	38.6	33.3	30.9	55	40	31	88.7	19.3
Potassium	mg/L	#	7.4	29.5	24.3	12.6	27.7	50.4	32.4	59.4	7.6
Silica	mg/L	#	67.4	79.5	76.8	60	21	60.2	86.1	90.3	61.3
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

SOUTHERN REGION

REPORTED UNIT	ADWG 2004	AMPILAWATJA (AMMAROO)	AMUNTURANGU (MT LIEBIG)	APATULA (FINKE)	AREYONGA	ATTIJERE (HARTS RANGE)	(ENGAWALA ALCOOTA)	IKUNTJI (HAAST'S BLUFF)	
HEALTH CHARACTERISTICS²									
<i>E.coli</i> Detections	per year	0	0	0	0	0	0	0	2
<i>E.coli</i> Performance	%	98	100	100	100	100	100	100	94
Antimony	mg/L	0.003	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0003 ⁵
Arsenic	mg/L	0.007	0.0005 ⁵	0.0006 ⁵	0.0005 ⁵	0.0008 ⁵	0.0005 ⁵	0.0005 ⁵	0.0005 ⁵
Barium	mg/L	0.7	0.05 ⁵	0.05 ⁵	0.12	0.1	0.06	0.12	0.05 ⁵
Boron	mg/L	4	0.28	0.26	0.07	0.18	0.14	0.14	0.32
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0003 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.005 ⁵	0.006 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	1.1	1.2	0.2	0.4	0.5	0.6	0.5
Lead	mg/L	0.01	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.002 ⁵	0.001 ⁵	0.003 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.01	0.002 ⁵	0.002 ⁵	0.003 ⁵
Nitrate	mg/L	50	29	18	9	8	30	13	7 ⁵
Annual Exposure to Radioactivity	mSv/yr	1	0.44	0.28	0.21	0.37	0.2	0.15 ⁵	0.6
Selenium	mg/L	0.1	0.002 ⁵	0.001 ⁵	0.001 ⁵	0.002 ⁵	0.002	0.002	0.002 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.008	0.006	0.001 ⁵	0.008	0.007	0.005	0.01
AESTHETIC CHARACTERISTICS²									
Aluminum	mg/L	0.2	0.16 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵
Chloride	mg/L	250	165	117	146	109	119	135	367
Copper	mg/L	2	0.01 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.03	0.02 ⁵	0.05 ⁵
Hardness	CaCO ₃ mg/L	200	446	270	187	410	279	383	578
Iodine	mg/L	0.15	0.18	0.23	0.03	0.1	0.1	0.13	0.24
Iron	mg/L	0.3	0.08 ⁵	0.08 ⁵	0.08 ⁵	0.12 ⁵	0.14 ⁵	0.13 ⁵	0.06 ⁵
Manganese	mg/L	0.1	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
pH	pH Units	6.5-8.5	7.8	7.7	7.7	8.1	8	7.9	7.6
Sodium	mg/L	180	115	98	85	57	113	82	165
Sulfate	mg/L	250	224	93	56	76	134	59	258
Total Dissolved Solids	mg/L	500	993	615	461	643	703	695	1275
True Colour	CU	15	2.9 ⁵	1.9 ⁵	2.3 ⁵	1.8 ⁵	3.7 ⁵	3.2 ⁵	4.1 ⁵
Turbidity	NTU	5	0.4 ⁵	1.1	0.8	1.7	0.8	4.5	1.4
Zinc	mg/L	3	0.03 ⁵	0.03	0.2	0.05 ⁵	0.04	0.03	0.2
OTHER CHARACTERISTICS²									
Alkalinity	mg/L	#	301	252	122	334	214	335	241
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	0.9	0.6	0.2	0.4	0.6	0.7	1.6
Calcium	mg/L	#	98	59	53	73	44	71	109
Conductivity	µS/cm	#	1495	1043	867	1116	1118	1177	1978
Magnesium	mg/L	#	53.8	29.8	13	55.1	41	50	74.2
Potassium	mg/L	#	23.8	13.7	6.4	8.3	8.8	7.1	28.5
Silica	mg/L	#	39.1	49.5	16.4	18.8	34.3	68.3	50.7
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

SOUTHERN REGION

REPORTED UNIT	ADWG 2004	IMANPA	KALUKATIARA (DOCKER RIVER)	LARAMBA (NAPPERBY)	NIARA (HERMANSBURG)	NYIRIPI	PAPUNYA	PMARA JUTUNYA (TITREE 6 MILE)	
HEALTH CHARACTERISTICS²									
<i>E.coli</i> Detections	per year	0	0	0	2	1	0	0	0
<i>E.coli</i> Performance	%	98	100	100	96	97	100	100	100
Antimony	mg/L	0.003	0.0002 ⁵	0.0002 ⁵	0.0003 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Arsenic	mg/L	0.007	0.0008 ⁵	0.0005 ⁵	0.0008 ⁵	0.0005 ⁵	0.0015 ⁵	0.0009 ⁵	0.001 ⁵
Barium	mg/L	0.7	0.05 ⁵	0.05 ⁵	0.25	0.05 ⁵	0.09	0.09	0.1
Boron	mg/L	4	0.77	0.14	0.34	0.16	0.3	0.3	0.32
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.006 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	0.8	0.4	1.1	0.4	1.5	1	0.8
Lead	mg/L	0.01	0.001 ⁵	0.001 ⁵	0.002 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.003 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.004	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.003 ⁵	0.002 ⁵	0.002 ⁵
Nitrate	mg/L	50	29	1 ⁵	36	5	26 ⁵	20	52
Annual Exposure to Radioactivity	mSv/yr	1	0.83	0.2	0.95	0.19	0.4	0.23 ⁵	0.25 ³
Selenium	mg/L	0.1	0.004	0.001 ⁵	0.003 ⁵	0.001 ⁵	0.002 ⁵	0.006 ⁵	0.002 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.011	0.00001 ⁵	0.038	0.005 ⁵	0.009	0.011	0.008
AESTHETIC CHARACTERISTICS²									
Aluminum	mg/L	0.2	0.03 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵
Chloride	mg/L	250	389	85	101	114	104	197	70
Copper	mg/L	2	0.02 ⁵	0.02 ⁵	0.1 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵	0.02 ⁵
Hardness	CaCO ₃ mg/L	200	432	278	272	315	246	247	199
Iodine	mg/L	0.15	0.59	0.1	0.31	0.07	0.17	0.25	0.14
Iron	mg/L	0.3	0.16 ⁵	0.12 ⁵	0.09 ⁵	0.17 ⁵	0.03 ⁵	0.11 ⁵	0.05 ⁵
Manganese	mg/L	0.1	0.019 ⁵	0.008 ⁵	0.006 ⁵	0.008 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
pH	pH Units	6.5-8.5	8.1	8.3	7.9	7.9	8.1	8.1	8
Sodium	mg/L	180	235	55	77	62	90	227	66
Sulfate	mg/L	250	244	64	36	63	45	85	38
Total Dissolved Solids	mg/L	500	1300	464	649	548	610	937	514
True Colour	CU	15	4.8 ⁵	2.6 ⁵	2.7 ⁵	2.9 ⁵	2.3 ⁵	2.5 ⁵	3.5 ⁵
Turbidity	NTU	5	8.2	1.1	0.3 ⁵	2.4	1.6	0.4	0.8 ⁵
Zinc	mg/L	3	0.3	0.02 ⁵	0.1	0.04	0.02	0.01 ⁵	0.04
OTHER CHARACTERISTICS²									
Alkalinity	mg/L	#	208	274	306	260	292	424	210
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	1.7	0.4	0.6	0.6	0.4	1.1	0.4
Calcium	mg/L	#	82	53	55	61	46	50	45
Conductivity	µS/cm	#	1975	843	1019	969	1004	1569	783
Magnesium	mg/L	#	55.1	35.7	32.4	39.8	31.8	29.6	21.6
Potassium	mg/L	#	30	11.2	38.3	7.1	27.1	11.1	18.4
Silica	mg/L	#	29.4	12	95.5	15.3	88.8	65.3	94.1
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

SOUTHERN REGION

REPORTED UNIT	ADWG 2004	SANTA TERESA	TIJIKALA (MARYVALE)	WALANGKULA (KINTORE)	WALLACE ROCKHOLE	YUELAMU (MT ALLAN)	YUENDUMU
HEALTH CHARACTERISTICS²							
<i>E.coli</i> Detections	per year	0	0	0	0	0	0
<i>E.coli</i> Performance	%	98	100	100	100	100	100
Antimony	mg/L	0.003	0.0009 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Arsenic	mg/L	0.007	0.0005 ⁵	0.001 ⁵	0.0009 ⁵	0.0009 ⁵	0.0007 ⁵
Barium	mg/L	0.7	0.51	0.31	0.05 ⁵	0.06	0.06 ⁵
Boron	mg/L	4	0.05	0.1	0.28	0.36	0.1
Cadmium	mg/L	0.002	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵	0.0002 ⁵
Chromium	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.035 ⁵	0.005 ⁵
Fluoride	mg/L	1.5	0.2	0.6	0.8	0.8	0.4
Lead	mg/L	0.01	0.002 ⁵	0.001 ⁵	0.001 ⁵	0.002 ⁵	0.002 ⁵
Mercury	mg/L	0.001	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵	0.0001 ⁵
Molybdenum	mg/L	0.05	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.005 ⁵
Nickel	mg/L	0.02	0.002 ⁵	0.002 ⁵	0.002 ⁵	0.008 ⁵	0.002 ⁵
Nitrate	mg/L	50	13	16	83	14	15
Annual Exposure to Radioactivity	mSv/yr	1	0.45	0.26 ⁵	0.13 ⁵	0.35	0.16
Selenium	mg/L	0.1	0.003 ⁵	0.001 ⁵	0.003 ⁵	0.003 ⁵	0.001 ⁵
Silver	mg/L	0.1	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵
Uranium	mg/L	0.02	0.005	0.004	0.002	0.005	0.006
AESTHETIC CHARACTERISTICS²							
Aluminum	mg/L	0.2	0.03 ⁵	0.02 ⁵	0.03 ⁵	0.8⁵	0.14 ⁵
Chloride	mg/L	250	12	50	118	142	49
Copper	mg/L	2	0.02 ⁵	0.02 ⁵	0.2 ⁵	0.02 ⁵	0.07 ⁵
Hardness	CaCO ₃ mg/L	200	249	213	462	273	94
Iodine	mg/L	0.15	0.02	0.04	0.15	0.13	0.08
Iron	mg/L	0.3	0.08 ⁵	0.03 ⁵	0.05 ⁵	0.25 ⁵	0.2 ⁵
Manganese	mg/L	0.1	0.005 ⁵	0.005 ⁵	0.005 ⁵	0.006 ⁵	0.016 ⁵
pH	pH Units	6.5-8.5	7.7	7.7	7.6	7.6	8
Sodium	mg/L	180	7	60	96	91	52
Sulfate	mg/L	250	11	24	68	65	73
Total Dissolved Solids	mg/L	500	308	404	857	580	257
True Colour	CU	15	2.2 ⁵	2.7 ⁵	2.3 ⁵	4.3 ⁵	5.3 ⁵
Turbidity	NTU	5	0.9	1.2	0.5	36.7⁵	2.7
Zinc	mg/L	3	0.03	0.05	0.03 ⁵	0.1	0.06 ⁵
OTHER CHARACTERISTICS²							
Alkalinity	mg/L	#	277	246	404	238	79
Beryllium	mg/L	#	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵	0.001 ⁵
Bromine	mg/L	#	0.05	0.1	1.1	0.5	0.3
Calcium	mg/L	#	63	57	72	62	27
Conductivity	µS/cm	#	550	718	1328	1082	471
Magnesium	mg/L	#	22.6	17.1	68.6	28.7	6.5
Potassium	mg/L	#	4.4	5.4	5.3	9.1	4.8
Silica	mg/L	#	17.4	35.6	89.1	18.8	3.5
Tin	mg/L	#	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵	0.01 ⁵

N/A Not Available

² 95th percentile reported

³ represents a single reticulation value

⁴ value includes data from 2006-2011

⁵ one or more values in calculation were below detection limits. Result may be higher than actual value

Indigenous Essential Services Pty Limited
(ACN 105 269 636)

FINANCIAL STATEMENTS

For the Year Ended

30 June 2011

Indigenous Essential Services Pty Ltd
 (ACN 105 269 636)
 Financial Statements for the year ended 30 June 2011

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DIRECTORS' REPORT

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

The directors present their report together with the financial report of the Indigenous Essential Services Pty Limited (the Company) for the year ended 30 June 2011 and the auditor's report thereon.

Directors

The directors of the Company at any time during or since the end of the financial year were:

Ms Judith King	Director since 26 June 2003; Appointed Chairman 1 July 2007.
Mr Barry Chambers	Director since 1 July 2007. Resigned on 19 March 2011.
Mr Andrew Macrides	Director since 1 July 2007.
Mr Michael Hannon	Director since 1 August 2009.
Mr Mervyn Davies	Director since 4 May 2011.
Mr Peter Vines	Director since 10 October 2005; Resigned on 8 October 2009.

Company Particulars

Indigenous Essential Services Pty Limited is an Australian proprietary company, incorporated and operating in Australia.

Principal Registered Office and Principal Place of Business:	Level 2 Mitchell Centre 55 Mitchell Street Darwin NT 0800
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Company Secretary:	Mr Kelvin Strange
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Principal Activities

The Company was formed on 26 June 2003 and commenced operations on 1 July 2003.

During the course of the financial year the principal activities of the Company as a not-for-profit entity were to provide electricity, water and sewerage services to remote Indigenous communities in the Northern Territory.

Controlling Entity

The Company's controlling entity is the Power and Water Corporation, a government owned corporation pursuant to the *Government Owned Corporation Act 2001*. In this report, the controlling entity is referred to as Power and Water.

Operating and Financial Review

The Company's net profit for the period of \$19,998,338 was higher than last year's (2010: \$11,846,920) principally due to additional capital funding being spent during the course of the financial year. Capital funding spent included receipts from the current financial year and funds rolled over from the previous financial year.

Changes in state of affairs

In the opinion of the directors, other than the matters mentioned above there were no significant changes in the state of affairs of the Company that occurred during the financial year under review.

Dividends

As a not-for-profit entity the Company paid no dividends during the financial year (2010: nil).

DIRECTORS' REPORT**Indigenous Essential Services Pty Limited for the year ended 30 June 2011****Environmental Regulation**

The Company's operations are subject to various environmental regulations under both Commonwealth and Territory legislations.

The Company regularly monitors compliance with environmental regulations. The directors are not aware of any significant breaches during the period covered by this report.

Events Subsequent to Reporting Date

There has not arisen in the interval between the end of the financial year and the date of this report any item, transaction or event of a material or unusual nature likely, in the opinion of the directors of the Company, to affect significantly the operations of the Company, the results of those operations, or the state of affairs of the Company in future financial years.

Future Developments

At the date of this report, there are no developments in the operations of the Company that, in the opinion of the directors, are likely to significantly impact the Company during the 2012 financial year.

The service contract between the Company and the Northern Territory Government to construct and maintain assets required to provide electricity, water and sewerage services to remote Indigenous communities in the Northern Territory expired on 30 June 2010. The contract was extended for a period of three years from 01 July 2010 to 30 June 2013. A review is currently being undertaken to determine the future impact on the Northern Territory Budget of delivering essential services to remote towns and Indigenous communities across the Territory, through a comprehensive analysis of the historical costs and forecast future costs of service delivery, including future demand growth.

Lead Auditor's Independence Declaration Under Section 307C of the Corporations Act 2001

The lead auditor's declaration of independence is set out on page 6 of the financial report.

Indemnification and Insurance of Directors and Officers*Indemnification*

The Northern Territory Government has indemnified the directors of IES Pty Limited's controlling entity Power and Water as well as the directors of Power and Water's wholly controlled entities for all liabilities that may arise from their position, except where the liability is incurred or arises out of actual dishonesty on the part of the director. The indemnity covers the full amount of any such liabilities, including costs and expenses.

Insurance Premiums

The following insurance policies were purchased by Power and Water to cover its directors and officers, and those of its subsidiaries. In accordance with normal commercial practices, under the terms of the insurance contracts, the nature of the liabilities insured against and the amount of premiums are confidential.

*Group Personal Accident Insurance**Professional Indemnity Insurance**Directors' and Officers' Liability*

This report is made in accordance with a resolution of Directors pursuant to s.298(2) of the Corporations Act 2001.



Ms Judith King
Director and Chairman



Mr Andrew Macrides
Managing Director

Dated at Darwin this 23rd day of September 2011

DIRECTORS' DECLARATION

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

In the opinion of the directors of Indigenous Essential Services Pty Limited ("the Company"):

- (a) the financial statements and notes, set out on pages 9 to 24, are in accordance with the *Corporations Act 2001*, including:
- (i) giving a true and fair view of the financial position of the Company as at 30 June 2011 and its performance for the year ended on that date; and
 - (ii) complying with Accounting Standards in Australia; and
- (b) there are reasonable grounds to believe that the Company will be able to pay its debts as and when they become due and payable.

Signed in accordance with a resolution of directors made pursuant to s.295(5) of the Corporations Act 2001.



Ms Judith King
Director and Chairman



Mr Andrew Macrides
Managing Director

Dated at Darwin this 23rd day of September 2011



Northern Territory Auditor-General's Office

Auditing for Parliament

indltr2011.docx

The Board of Directors
 Indigenous Essential Services Pty Limited
 Level 2, Mitchell Centre
 55 – 59 Mitchell Street
 Darwin NT 0800

22 September 2011

Dear Board Members,

Indigenous Essential Services Pty Limited

In accordance with section 307C of the *Corporations Act 2001*, I am pleased to provide the following declaration of independence to the directors of Indigenous Essential Services Pty Limited.

As auditor of the financial statements of Indigenous Essential Services Pty Limited for the financial year ended 30 June 2011, I declare that to the best of my knowledge and belief, there have been no contraventions of:

- (i) the auditor independence requirements of the *Corporations Act 2001* in relation to the audit; and
- (ii) any applicable code of professional conduct in relation to the audit.

Yours faithfully,

E. McGuinness
 Auditor-General for the Northern Territory



Auditor-General

**Independent Auditor's Report
to the Members of Indigenous Essential Services Pty Limited
Year ended 30 June 2011**

Page 1 of 2

I have audited the accompanying financial report of Indigenous Essential Services Pty Limited, which comprises the statement of financial position as at 30 June 2011, the statement of comprehensive income, the statement of cash flows and the statement of changes in equity for the year ended on that date, notes comprising a summary of significant accounting policies and other explanatory information, and the directors' declaration as set out on pages 5 & 9 to 24.

Directors' Responsibility for the Financial Report

The directors of the company are responsible for the preparation of the financial report that gives a true and fair view in accordance with Australian Accounting Standards and the *Corporations Act 2001* and for such internal control as the directors determine is necessary to enable the preparation of the financial report that is free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

My responsibility is to express an opinion on the financial report based on my audit. I conducted my audit in accordance with Australian Auditing Standards. Those standards require that I comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal control, relevant to the entity's preparation of the financial report that gives a true and fair view, in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the directors, as well as evaluating the overall presentation of the financial report.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Auditor's Independence Declaration

In conducting my audit, I have complied with the independence requirements of the *Corporations Act 2001*. I confirm that the independence declaration required by the *Corporations Act 2001*, which has been given to the directors of Indigenous Essential Services Pty Limited, would be in the same terms if given to the directors as at the time of this auditor's report.



Auditor-General

Page 2 of 2

Opinion

In my opinion, the financial report of Indigenous Essential Services Pty Limited is in accordance with the *Corporations Act 2001*, including:

- (a) giving a true and fair view of the company's financial position as at 30 June 2011 and of its performance for the year ended on that date; and
- (b) complying with Australian Accounting Standards and the Corporations Regulations 2001

A handwritten signature in blue ink, appearing to read 'F. McGuinness'.

F. McGuinness
Auditor-General for the Northern Territory
Darwin, Northern Territory

27 September 2011

Statement of Comprehensive Income

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

	Note	2011 \$	2010 \$
Continuing Operations			
Revenue from sale of goods	3 (a)	24,565,789	22,524,436
Revenue from rendering of services	3 (b)	85,838,795	69,479,856
Interest revenue		1,261,482	1,301,717
Other Income	3 (c)	2,881,442	5,041,444
Total revenue and income		114,547,508	98,347,453
Raw materials and consumables used		30,572,026	27,674,940
Depreciation and amortisation expenses		16,167,825	17,898,632
Other expenses	3 (d)	47,809,319	40,926,961
Surplus for the year from continuing operations		19,998,338	11,846,920
Surplus for the year		19,998,338	11,846,920
Other comprehensive income		-	-
Total comprehensive income for the year		19,998,338	11,846,920
Surplus attributable to Owner of the Company		19,998,338	11,846,920
Comprehensive income attributable to Owner of the Company		19,998,338	11,846,920

The statement of comprehensive income is to be read in conjunction with the notes to the financial statements.

Statement of Changes in Equity

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

	Note	2011 \$	2010 \$
Contributed Equity			
Balance at the beginning of the year		10	10
Other contributed equity		-	-
Balance at the end of the year	9	10	10
Retained Earnings			
Balance at the beginning of the year		190,668,094	178,821,174
Surplus for the year		19,998,338	11,846,920
Other comprehensive income		-	-
Balance at the end of the year	10	210,666,432	190,668,094
Total equity		210,666,442	190,668,104

The statement of changes in equity is to be read in conjunction with the notes to the financial statements.

Statement of Financial Position
Indigenous Essential Services Pty Ltd as at 30 June 2011

	Note	2011 \$	2010 \$
CURRENT ASSETS			
Cash and cash equivalents	4 (a)	62,520,946	36,872,953
Trade and other receivables	5	1,739,673	956,901
Inventories	6	5,891,031	4,719,833
Total current assets		70,151,650	42,549,687
NON-CURRENT ASSETS			
Property, plant and equipment	7	204,770,991	186,586,436
Total non-current assets		204,770,991	186,586,436
Total assets		274,922,641	229,136,123
CURRENT LIABILITIES			
Trade and other payables	8	64,256,199	38,468,019
Total current liabilities		64,256,199	38,468,019
Total liabilities		64,256,199	38,468,019
Net assets		210,666,442	190,668,104
EQUITY			
Contributed equity	9	10	10
Retained earnings	10	210,666,432	190,668,094
Total equity		210,666,442	190,668,104

The statement of financial position is to be read in conjunction with the notes to the financial statements.

Statement of Cash Flows

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

	Note	2011 \$	2010 \$
CASH FLOWS FROM OPERATING ACTIVITIES			
Receipts from customers		26,166,159	25,516,903
Payments to suppliers		(71,498,399)	(70,237,624)
Receipt of Government Grants		104,253,556	66,774,675
Interest received		1,267,202	1,225,301
Net cash provided by operating activities	4 (b)	60,188,518	23,279,255
CASH FLOWS USED IN INVESTING ACTIVITIES			
Proceeds from sale of property, plant and equipment		(188,146)	(8,788)
Purchase of property, plant and equipment		(34,352,379)	(29,016,683)
Net cash used in investing activities		(34,540,525)	(29,025,471)
Net increase/(decrease) in cash and cash equivalents		25,647,993	(5,746,216)
Cash and cash equivalents at beginning of year		36,872,953	42,619,169
Cash and cash equivalents at end of year	4 (a)	62,520,946	36,872,953

The statement of cash flows is to be read in conjunction with the notes to the financial statements.

Notes to the Financial Statements

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

1) Company Information

Indigenous Essential Services Pty Limited (the Company) is a not-for-profit proprietary company operating and domiciled in Australia. On 23 September 2011, Directors authorised the issue of the Company's financial report for the year ended 30 June 2011.

2) Statement of significant accounting policies

The significant accounting policies which have been adopted in the preparation of this report are:

(a) Statement of compliance

This general purpose financial report has been prepared in accordance with Accounting Standards and Interpretations and the *Corporations Act 2001*. Accounting Standards include Australian equivalents to International Financial Reporting Standards (A-IFRS).

Adoption of new and revised Accounting Standards

In the current year, the Company has adopted all of the new and revised Standards and Interpretations issued by the Australian Accounting Standards Board (AASB) that are relevant to its operations and effective for the current annual reporting period. Details of the impact of the adoption of these new accounting standards are set out in the individual accounting policy notes set out below.

Standards and Interpretations effective for the first time in the current period

The following new and revised Standards and Interpretations have been adopted in the current period and have affected the amounts reported or the presentation/disclosure in these financial statements:

Standard or Interpretation

Nature of Change to Accounting Policy

None

The following new and revised Standards and Interpretations have also been adopted in these financial statements. Their adoption has not had any significant impact on the amounts reported in these financial statements as they do not result in any changes to the Company's existing accounting policies. However, they may affect the accounting for future transactions or arrangements:

Standard or Interpretation

Nature of Change to Accounting Policy

AASB 2009-5 'Further Amendments to Australian Accounting Standards arising from the Annual Improvements Project'	The application of AASB 2009-5 has not had any material effect on amounts reported in the financial statements.
AASB 2009-8 'Amendments to Australian Accounting Standards - Group Cash-Settled Share-based Payment Transactions'	The application of AASB 2009-8 makes amendments to AASB 2 'Share-based Payment' to clarify the scope of AASB 2, as well as the accounting for group cash-settled share-based payment transactions. The Company does not have any share-based payments.
AASB 2009-10 'Amendments to Australian Accounting Standards - Classification of Rights Issues'	The application of AASB 2009-10 makes amendments to AASB 132 'Financial Instruments: Presentation' to address the classification of certain rights issues denominated in a foreign currency as either an equity instrument or as a financial liability. The Company has not entered into any arrangements that would fall within the scope of the amendments.
AASB 2010-3 'Amendments to Australian Accounting Standards arising from the Annual Improvement Project'	The application of AASB 2010-3 makes amendments to AASB 3(2008) 'Business Combinations' to clarify that the measurement choice regarding non-controlling interests at the date of acquisition is only available in respect of noncontrolling interests that are present ownership interests and that entitle their holders to a proportionate share of the entity's net assets in the event of liquidation. All other types of noncontrolling interests are measured at their acquisition-date fair value, unless another measurement basis is required by other Standards. The Company did not have any business combinations.
AASB 2010-4 'Further Amendments to Australian Accounting Standards arising from the Annual Improvement Project'	The application of AASB 2010-4 has not had any material effect on amounts reported in the financial statements.
Interpretation 19 'Extinguishing Financial Liabilities with Equity Instruments'	This Interpretation provides guidance regarding the accounting for the extinguishment of a financial liability by the issue of equity instruments. To date, the Company has not entered into transactions of this nature.

Notes to the Financial Statements
Indigenous Essential Services Pty Limited for the year ended 30 June 2011

Standards and Interpretations issued not yet effective

At the date of authorisation of the financial report, the following Standards and Interpretations were in issue but not yet effective. The Company does not intend to adopt any of these pronouncements before their effective dates. Initial application of these Standards and Interpretations will not affect the reported results or position of the Company as they do not result in any changes to the Company's accounting policies. Adoption will, however, result in changes to information currently disclosed in the financial statements.

<i>Standard or Interpretation</i>	<i>Effective annual reporting periods beginning on or after</i>	<i>Expected to be initially applied in the financial year ending</i>
AASB 2009-12 'Amendments to Australian Accounting Standards'	1 January 2011	30 June 2012
AASB 124 'Related Party Disclosures (revised December 2009)'	1 January 2011	30 June 2012
AASB 2009-14 'Amendments to Australian Interpretation - Prepayments of a Minimum Funding Requirement'	1 January 2011	30 June 2012
AASB 2010-5 'Amendments to Australian Accounting Standards'	1 January 2011	30 June 2012
AASB 9 'Financial Instruments', AASB 2009-11 'Amendments to Australian Accounting Standards arising from AASB 9' and AASB 2010-7 'Amendments to Australian Accounting Standards arising from AASB 9 (December 2010)'	1 January 2013	30 June 2014
AASB 2010-6 'Amendments to Australian Accounting Standards – Disclosures on Transfers of Financial Assets'	1 July 2011	30 June 2012
AASB 2010-8 'Amendments to Australian Accounting Standards – Deferred Tax: Recovery of Underlying Assets'	1 January 2012	30 June 2013

(b) Basis of preparation

The financial report is prepared on an historical cost basis. Cost is based on the fair values of the consideration given in exchange for assets.

These accounting policies have been consistently applied by the Company unless otherwise stated and are consistent with those of the previous year.

The financial report is presented in Australian dollars.

(c) Use and revision of accounting estimates

The preparation of the financial report requires the making of estimations and assumptions that affect the recognised amounts of assets, liabilities, revenues and expenses and the disclosure of contingent liabilities. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances, the results of which form the basis of making the judgments about carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimates are revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

(d) Revenue recognition

Revenue is recognised to the extent that it is probable that the economic benefits will flow to the Company and the revenue can be reliably measured. The following specific recognition criteria must also be met before revenue is recognised:

Sale of goods

Revenue from the sale of goods is recognised (net of discounts and allowances) when the significant risks and rewards of ownership of the goods have passed to the buyer and the costs incurred or to be incurred in respect of the transaction can be measured reliably. Risks and rewards of ownership are considered passed to the buyer at the time of delivery of goods to the customer. Sale of goods includes estimates for unbilled consumption of electricity and water as at reporting date.

Rendering of services

Revenue from the rendering of services is recognised when the service is provided, having regard for the costs incurred in providing those services.

Government grants

Revenue in the form of government grants is received from the Northern Territory Government. Government grants are assistance by the government in the form of transfers of resources to the Company in return for past or future compliance with certain conditions relating to the operating activities of the Company.

Government grants are not recognised until there is reasonable assurance that the Company will comply with the conditions attaching to them and the grants will be received.

Where the grant relates to an expense or capital item, it is recognised initially as deferred income in the statement of financial position and recognised as income over the periods necessary to match the grant on a systematic basis to the costs that it is intended to compensate.

Interest Revenue

Interest revenue is recognised as it accrues.

Notes to the Financial Statements

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

(e) Goods and services tax

Revenues, expenses and assets are recognised net of the amount of goods and services tax (GST), except where the amount of the GST incurred is not recoverable from the taxation authority. In these circumstances, the GST is recognised as part of the cost of acquisition of the asset or as part of the expense.

Receivables and payables are stated with the amount of GST included. The net amount of GST recoverable from, or payable to, the taxation authority (through Power and Water) is included as a current asset or liability in the statement of financial position.

Cash flows are included in the statement of cash flows on a gross basis. The GST components of cash flows arising from investing and financing activities which are recoverable from, or payable to, the taxation authority (through Power and Water) are classified as operating cash flows.

(f) Income tax consolidation

The Power and Water Corporation is the head entity in a tax-consolidated group comprising all of its wholly-owned subsidiaries apart from Indigenous Essential Services Pty Limited. Indigenous Essential Services Pty Limited was removed from the National Tax Equivalent Regime effective 1 July 2003 as a not-for-profit entity.

(g) Cash and cash equivalents

Cash assets include cash on hand and at bank.

(h) Trade and other receivables

Trade and other receivables are recognised and carried at the original invoice amount less an allowance for any uncollectible amounts. Trade receivables are on 14 day terms and other receivables are on 30 day terms.

(i) Inventories

Inventories are carried at the lower of cost and net realisable value. Costs are assigned to inventory based on the weighted-average purchase cost of bringing each item to its present location and condition. Net realisable value represents the estimated selling price for inventories less all estimated costs of completion and costs necessary to make the sale.

(j) Property, plant and equipment

Acquisition of assets

The carrying value of assets are originally stated at cost less accumulated depreciation and any accumulated impairment losses. Such cost includes the cost of replacing parts that are eligible for capitalisation when the cost of replacing the parts is incurred.

Where an asset is acquired at no cost, or for nominal cost, the cost is its fair value as at the date of acquisition.

Property, plant and equipment assets are measured at deemed cost being the fair value of assets at the transition date to AIFRS on 1 July 2004, less accumulated depreciation and less any impairment losses recognised at that date.

Depreciation and amortisation

Complex assets

The components of major assets that have materially different useful lives, are effectively accounted for as separate assets, and are separately depreciated.

Useful lives

All assets, excluding freehold land, have limited useful lives and are depreciated using the straight-line method over their estimated useful lives.

Assets are depreciated from the date of acquisition.

Depreciation rates and methods are reviewed annually for appropriateness. When changes are made, adjustments are reflected prospectively in current and future periods only. Depreciation is expensed.

The depreciation useful lives used for each class of asset are as follows:

Building, plant and equipment	June 2011	June 2010
Building and improvements	8 to 60 years	3 to 93 years
Plant and equipment	1 to 99 years	1 to 100 years
Intangibles	1 to 2 years	1 to 21 years

Impairment of assets

The carrying values of plant and equipment are assessed for impairment at each reporting date, with recoverable amounts being estimated when events or changes in circumstances indicate that the carrying value may be impaired.

The recoverable amount of plant and equipment is the depreciated replacement cost.

Depreciated replacement cost is defined as the current replacement cost of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

An impairment exists when the carrying value of an asset exceeds its estimated recoverable amount. The asset is then written down to its recoverable amount.

For property, plant and equipment, impairment losses are recognised in the statement of comprehensive income.

Derecognition and disposal

An item of property, plant and equipment is derecognised upon disposal or when no further future economic benefits are expected from its use or disposal.

Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the statement of comprehensive income in the year in which the asset is derecognised.

Notes to the Financial Statements

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

(k) Intangible assets

All intangible assets are acquired separately and are carried at cost less accumulated amortisation and accumulated impairment losses. Assets are amortised from the date of acquisition or from the time the asset is held ready for use. Amortisation rates and methods are reviewed annually for appropriateness. When changes are made, adjustments are reflected prospectively in current and future periods only.

The Company doesn't have internally-generated intangible assets.

Purchased software

All purchased software items have limited useful lives and are amortised using the straight-line method over their estimated useful lives.

(l) Payables

Trade payables and other payables are carried at amortised cost and represent liabilities for goods and services provided to the Company prior to the end of the financial year that are unpaid and arise when the Company becomes obligated to make future payments in respect of the purchase of these goods and services. Trade accounts payable are normally settled within 30 days.

(m) Financial Instruments

Financial instruments held by the Company consist of cash, trade and other receivables classified as 'loans and receivables' and payables classified as other financial liabilities measured and recognised in line with AASB 139 'Financial Instruments: Recognition and Measurement'. Interest revenue recognised is solely incurred by cash held.

(n) Leased Assets

The determination of whether an arrangement is or contains a lease is based on the substance of the arrangement and requires an assessment of whether the fulfilment of the arrangement is dependent on the use of a specific asset or assets and the arrangement conveys a right to use the asset.

Operating leases

Operating lease payments are recognised as an expense in profit or loss on a straight-line basis over the lease term.
Lease incentives are recognised in profit or loss as an integral part of the total lease expense.

Notes to the Financial Statements

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

	2011	2010
	\$	\$
3 Revenue and expenses		
<i>Revenue and expenses from continuing operations</i>		
(a) Sale of goods		
Electricity	22,576,335	20,838,288
Water	1,989,454	1,686,148
	<u>24,565,789</u>	<u>22,524,436</u>
(b) Rendering of services		
Recurrent grant	52,281,785	44,965,978
Capital grant	32,392,813	23,819,617
Services Rendered	1,164,197	694,261
	<u>85,838,795</u>	<u>69,479,856</u>
(c) Other income		
Community Service Obligations	2,522	5,006
Gifted assets	-	401,541
Capital contributions and recoverable works	2,814,530	4,597,846
Net profit/(loss) on disposal of property, plant and equipment	(188,145)	(8,788)
Other Income	252,535	45,839
	<u>2,881,442</u>	<u>5,041,444</u>
(d) Other expenses		
Repairs and maintenance	13,610,561	13,403,729
Direct personnel costs	12,403,451	10,274,202
Agents - Community Contract Fees	7,900,311	6,776,312
Other	13,894,996	10,472,718
	<u>47,809,319</u>	<u>40,926,961</u>

Notes to the Financial Statements
Indigenous Essential Services Pty Limited for the year ended 30 June 2011

	2011 \$	2010 \$
4 Cash and cash equivalents		
(a) Reconciliation of cash		
Cash at the end of the financial year as shown in the statements of cash flows is reconciled to the related items in the balance sheet as follows:		
Cash at bank	62,520,946	36,872,953
The weighted average interest rate on cash assets at 2011 is 4.42% (2010 : 3.46%)		
(b) Reconciliation of net surplus to net cash flows from operations		
Net Surplus	19,998,338	11,846,920
<i>Adjustments for:</i>		
Depreciation	16,167,825	17,898,632
Contributed assets provided free of charge	-	401,541
Net profit/(loss) on disposal of property, plant and equipment	(188,145)	(8,788)
<i>Changes in assets and liabilities</i>		
(Increase)/decrease in inventories	(1,171,198)	(855,451)
(Increase)/decrease in trade and other receivables	(782,772)	(538,233)
(Increase)/decrease in prepayments	-	4,355
(Decrease)/increase in trade and other payables	25,788,180	(4,684,215)
Net cash flows from operating activities	60,188,518	23,279,255
5 Trade and other receivables		
Current		
Interest receivable	119,626	125,346
Other debtors	1,620,047	831,555
	1,739,673	956,901
Receivables at 30 June 2011 are non-interest bearing.		
6 Inventories		
Materials and stores	13,853	1,711
Distillate stocks	5,877,178	4,718,122
	5,891,031	4,719,833

Notes to the Financial Statements
Indigenous Essential Services Pty Limited for the year ended 30 June 2011

7 Property, plant and equipment

June 2011	Land \$	Buildings \$	Plant and Equipment \$	Intangible Assets \$	Work in Progress \$	Total Property, Plant and Equipment \$
Cost						
Opening Balance	21,332	40,568,941	316,925,542	-	17,246,580	374,762,395
Transfer / Restructure	-	(7,270)	17,718	-	(9,237)	1,211
Additions	-	0	-	-	34,552,618	34,552,618
Transfer From WIP	-	393,343	20,091,730	24,768	(20,509,841)	-
Disposals	-	(54,763)	(330,422)	-	-	(385,185)
Closing Balance	21,332	40,900,251	336,704,568	24,768	31,280,120	408,931,039
Accumulated Depreciation						
Opening Balance	-	(22,384,242)	(165,791,717)	-	-	(188,175,959)
Transfer / Restructure	-	404	(1,616)	-	-	(1,212)
Depreciation	-	(1,695,977)	(14,447,080)	(24,768)	-	(16,167,825)
Disposals	-	9,897	175,051	-	-	184,948
Closing Balance	-	(24,069,918)	(180,065,362)	(24,768)	-	(204,160,048)
Written Down Value						
Opening Balance	21,332	18,184,699	151,133,825	-	17,246,580	186,586,436
Transfer / Restructure	-	(6,866)	16,102	-	(9,237)	(1)
Additions	-	0	-	-	34,552,618	34,552,618
Depreciation	-	(1,695,977)	(14,447,080)	(24,768)	-	(16,167,825)
Transfer From WIP	-	393,343	20,091,730	24,768	(20,509,841)	-
Disposals	-	(44,866)	(155,371)	-	-	(200,237)
Closing Balance	21,332	16,830,333	156,639,206	-	31,280,120	204,770,991

June 2010	Land \$	Buildings \$	Plant and Equipment \$	Intangible Assets \$	Work in Progress \$	Total Property, Plant and Equipment \$
Cost						
Opening Balance	21,332	36,053,175	282,705,250	-	26,964,138	345,743,895
Transfer / Restructure	-	31,922	89,044	-	(122,179)	(1,213)
Additions	-	0	401,541	-	29,083,570	29,485,111
Transfer From WIP	-	4,483,844	34,195,105	-	(38,678,949)	-
Disposals	-	0	(465,398)	-	-	(465,398)
Closing Balance	21,332	40,568,941	316,925,542	-	17,246,580	374,762,395
Accumulated Depreciation						
Opening Balance	-	(20,484,704)	(150,192,346)	-	-	(170,677,050)
Transfer / Restructure	-	(14,737)	15,947	-	-	1,210
Depreciation	-	(1,884,801)	(16,013,831)	-	-	(17,898,632)
Disposals	-	0	398,512	-	-	398,512
Closing Balance	-	(22,384,242)	(165,791,717)	-	-	(188,175,959)
Written Down Value						
Opening Balance	21,332	15,568,471	132,512,904	-	26,964,138	175,066,845
Transfer / Restructure	-	17,185	104,991	-	(122,179)	(3)
Additions	-	0	401,541	-	29,083,570	29,485,111
Depreciation	-	(1,884,801)	(16,013,831)	-	-	(17,898,632)
Transfer From WIP	-	4,483,844	34,195,105	-	(38,678,949)	-
Disposals	-	0	(66,886)	-	-	(66,886)
Closing Balance	21,332	18,184,699	151,133,825	-	17,246,580	186,586,436

Notes to the Financial Statements
Indigenous Essential Services Pty Limited for the year ended 30 June 2011

	2011 \$	2010 \$
8 Trade and other payables		
Payable to controlling entity	13,382,405	7,421,483
Other creditors and accruals	11,613,224	9,520,001
Unearned revenue	39,260,570	21,526,535
	<u>64,256,199</u>	<u>38,468,019</u>
<p>Trade and other payables are non-interest-bearing. The policy of the Company is to settle trade payables within 30 days. The Company has financial risk management policies in place to ensure that all payables are paid within the credit timeframe.</p>		
9 Contributed equity		
Issued and paid-up share capital		
10 (2010:10) ordinary shares of \$1 fully paid	10	10
	<u>10</u>	<u>10</u>
<p>Fully paid ordinary shares carry one vote per share and carry the right to dividends. The shares have no par value.</p>		
10 Retained earnings		
Retained earnings at beginning of year	190,668,094	178,821,174
Net surplus for the year	19,998,338	11,846,920
Retained earnings at end of the year	<u>210,666,432</u>	<u>190,668,094</u>
11 Commitments		
Capital expenditure commitments		
Contracted but not provided for and payable: within one year	<u>5,797,130</u>	<u>15,053,096</u>
12 Operating Lease Arrangements		
Payments recognised as an expense		
Minimum lease payments	751,179	599,315
Contingent rentals	-	-
Sub-lease payments received	-	-
	<u>751,179</u>	<u>599,315</u>

Notes to the Financial Statements

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

13 Financial instruments

(a) Financial risk management objectives and policies

The Company has various financial instruments such as trade receivables and trade payables. It is, and has been throughout the period under review, the Company's policy that no trading in financial instruments shall be undertaken. The main risks arising from the Company's financial instruments are liquidity risk and credit risk. The Board of Directors reviews and agrees policies for managing each of these risks and they are summarised below.

The Company's overall strategy remains unchanged from 2010.

(b) Market Risk

The Company provides electricity, water and sewerage services to remote Indigenous communities in the Northern Territory.

The Company receives grant funding from the Northern Territory Government to construct and maintain assets required to provide electricity, water and sewerage services to remote Indigenous communities in the Northern Territory. The Company is the only provider of these services to remote Indigenous communities in the Northern Territory.

The service contract between the Company and the Northern Territory Government expired on 30 June 2010. The contract has been extended for a period of three years from 01 July 2011 to 30 June 2013.

The following table sets out the source of the Company's income.

Source of Income	2011		2010	
	\$	%	\$	%
Grant funding	84,674,598	74%	68,785,595	70%
Electricity	22,576,335	20%	20,838,288	21%
Water	1,989,454	2%	1,686,148	2%
Services Rendered	1,164,197	1%	694,261	1%
Gifted Assets	-	0%	401,541	0%
Capital contributions and recoverable works	2,814,530	2%	4,597,846	5%
Other	1,328,394	1%	1,343,774	1%
Total Revenue	114,547,508	100%	98,347,453	100%

(c) Credit risk management

Credit risk represents the loss that would be recognised if counterparties failed to perform as contracted. The credit risk on receivables of the Company that has been recognised in the statement of financial position is the carrying amount net of any provision for doubtful debts.

The Company performs works on behalf of Northern Territory Government agencies and private companies on a recoverable works basis. Funding for general recoverable works is obtained upfront thereby reducing credit risk associated with these transactions.

(d) Liquidity risk management

The Company's objective is to provide continued and reliable services to remote Indigenous communities in the Northern Territory within the grant funding and sales revenue it receives. Each year the Company limits expenditure to the level of grant funding and sales revenue it receives for that year.

(e) Commodity price risk

The Company is exposed to changes in the price of distillate which is used to power electricity generators. Each year grant funding received from the Northern Territory Government is based on an operational budget that includes an estimated cost of distillate consumption. In the event the distillate price varies upwards and the Company does not have sufficient grant funds to continue operating, the Company can apply to the Northern Territory Government for additional grant funds.

Notes to the Financial Statements
Indigenous Essential Services Pty Limited for the year ended 30 June 2011

13 Financial Instruments (continued)

(f) Interest rate risk

Interest revenue is incurred solely on the cash balance held by the Company throughout the year. No interest expenses are incurred by the Company. Therefore the Company's exposure to interest rate risk is immaterial.

(g) Fair values

Net fair values of financial assets and liabilities approximate carrying values.

(h) Capital risk management

The Company's objectives when managing capital are to safeguard the principal business activities as a non-for-profit entity to provide electricity, water and sewerage services to remote Indigenous communities in the Northern Territory.

The capital structure of the Company consists of mainly cash and cash equivalents and equity attributable to the equity holder of the Company, comprising issued capital and retained earnings as disclosed in notes 9 and 10 respectively.

Operating cash flows are used to maintain and expand the Company's assets.

The Company is not subject to any externally imposed capital requirements.

The Company overall strategy remains unchanged from prior years.

Notes to the Financial Statements

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

14 Related party information

The following table provides the total amount of transactions that were entered into with related parties for the relevant financial year (for information regarding outstanding balances at year end refer to note 8).

Related party		Sales to related parties	Purchases from Related parties	Amounts owed by related parties	Amounts owed to related parties
		\$	\$	\$	\$
Power and Water Corporation	2011	-	20,567,888	-	13,382,405
Power and Water Corporation	2010	-	16,163,749	-	7,421,483
Northern Territory Government	2011	87,489,128	771,904	1,735,137	38,846,771
Northern Territory Government	2010	73,376,441	633,428	445,511	21,435,292

- (i) The controlling entity of the Company is Power and Water Corporation, a government owned corporation pursuant to the *Government Owned Corporations Act 2001*. Power and Water Corporation is wholly owned by the Northern Territory Government.
- (ii) The Company purchases electricity, water and sewerage services from Power and Water Corporation's infrastructure for remote Indigenous communities that are able to be connected to this infrastructure rather than requiring stand alone infrastructure. In addition, the Company purchases labour, accounting, computing, human resources, secretarial services and utility services for its operations from Power and Water Corporation.
- (iii) The Company receives operational and capital grants from the Northern Territory Government enabling it to provide electricity, water and sewerage services to remote Indigenous communities. The Company also receives recoverable works funds for specific projects undertaken on behalf of the Northern Territory Government and unrelated third parties.

15 Economic dependency

The Company's revenue is derived from two main sources as follows:

	2011	2010
	%	%
Revenue derived from the Northern Territory Government	76%	75%
Revenue from provision of utility services	24%	25%
	100%	100%

Notes to the Financial Statements
Indigenous Essential Services Pty Limited for the year ended 30 June 2011

16 Auditor's remuneration

	2011	2010
	\$	\$
Audit Services:		
Auditors of the Company - NT Auditor-General	22,766	23,827

17 Director and executive disclosures

Directors

The names of each person holding the position of director within Indigenous Essential Services Pty Limited during the financial year are listed in the Directors' report.

Directors do not receive any compensation for their directorship. No director has entered into a material contract with the Company since the end of the previous financial year and there were no material contracts involving directors' interest subsisting at year-end.

Compensation of key management personnel

Indigenous Essential Services Pty Ltd has no employees.

18 Events after the reporting period

There has not arisen in the interval between the end of the financial year and the date of this report any item, transactions or event of a material or unusual nature likely, in the opinion of the directors of the Company, to affect significantly the operations of the Company, the results of those operations, or the state of affairs of the Company in future financial years.

Notes to the Financial Statements

Indigenous Essential Services Pty Limited for the year ended 30 June 2011

19 Reinstatement of Comparatives

Annually, the Company is required to produce a Statement of Corporate Intent (SCI) which sets out the budgeted financials for the following five year period. The SCI is approved by Cabinet of the Northern Territory Government. Historically the revenue and expense categories used in the financial statements has differed from those used in the SCI. As many of the Company's key stakeholders refer to both sets of financials, the categories in the annual financial statements have been aligned to those used in the SCI in order to improve annual comparative analysis.

The Statement of Cash Flows was restated to include work in progress accruals in the purchase of property, plant and equipment category in line with Power and Water Corporation's account classifications.

Statement of Comprehensive Income

Indigenous Essential Services Pty Limited for the year ended 30 June 2010

	Note	Original \$	Restated \$	Change \$
Continuing Operations				
Revenue from sale of goods	3 (a)	22,524,436	22,524,436	-
Revenue from rendering of services	3 (b)	69,525,695	69,479,856	45,839
Interest revenue		1,301,717	1,301,717	-
Other Income	3 (c)	4,995,605	5,041,444	(45,839)
Total revenue and income		98,347,453	98,347,453	
Raw materials and consumables used		27,674,940	27,674,940	-
Depreciation and amortisation expenses		17,898,632	17,898,632	-
Other expenses	3 (d)	40,926,961	40,926,961	-
Surplus for the year from continuing operations		11,846,920	11,846,920	-
Surplus for the year		11,846,920	11,846,920	
Other comprehensive income		-	-	-
Total comprehensive income for the year		11,846,920	11,846,920	
Surplus attributable to Owner of the Company		11,846,920	11,846,920	-
Comprehensive income attributable to Owner of the Company		11,846,920	11,846,920	-

Statement of Cash Flows

Indigenous Essential Services Pty Limited for the year ended 30 June 2010

	Note	Original \$	Restated \$	Change \$
CASH FLOWS FROM OPERATING ACTIVITIES				
Receipts from customers		25,516,903	25,516,903	-
Payments to suppliers		(70,902,601)	(70,237,624)	(664,977)
Receipt of Government Grants		66,774,675	66,774,675	-
Interest received		1,225,301	1,225,301	-
Net cash provided by operating activities	4 (b)	22,614,278	23,279,255	(664,977)
CASH FLOWS USED IN INVESTING ACTIVITIES				
Proceeds from sale of property, plant and equipment		(8,788)	(8,788)	-
Purchase of property, plant and equipment		(28,351,706)	(29,016,683)	664,977
Net cash used in investing activities		(28,360,494)	(29,025,471)	664,977
Net increase/(decrease) in cash and cash equivalents		(5,746,216)	(5,746,216)	
Cash and cash equivalents at beginning of year		42,619,169	42,619,169	
Cash and cash equivalents at end of year	4 (a)	36,872,953	36,872,953	

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Peko Road, Tennant Creek

Shop 8, Alice Plaza

36 Todd Mall, Alice Springs

