MIDCOAST WATER

Our Water Our Future 2045

Summary

MidCoast Water's Integrated Water Cycle Management Strategy

Councillor Aled Hoggett
Chairperson
MIDCOAST COUNTY COUNCIL

CHAIRPERSON'S FOREWORD

It is with genuine pleasure that I present Our Water Our Future on behalf of the board of MidCoast Water.

MidCoast Water has a strong tradition of supplying essential water and sewerage services across the Gloucester, Great Lakes and Taree areas. Over the last seven years the Integrated Water Cycle Management Strategy has driven that tradition.

Since 2008 we have realized many of the goals we set ourselves. Our customers have taken up the challenge and dramatically reduced water use. MidCoast Water has built and commissioned major water treatment plants at Bootawa and Tea Gardens. We have also completed a number of recycled water projects that treat wastewater to be used for irrigating farmland and public spaces.

All this and much more has been achieved in a challenging environment.

Our Water Our Future is a timely revision of our 2008 plan.

Predicting the future is difficult, particularly when we are dealing with things like climate variability and population growth. Meeting these uncertainties requires sophisticated long term planning underpinned by detailed forecasting.

This plan takes a long view. It integrates expertise, experience and technology with our communities' expectations to recalibrate our strategy for securing future water supplies.

Our Water Our Future highlights the continued importance of water conservation solutions such as water smart appliances, rainwater tanks and leak management. These will help defer or avert expensive infrastructure projects.

It also shows the need for more pipes, storages and treatment plants. These include the proposed Nabiac Aquifer project that will help secure water supplies in Manning and Great Lakes. They also include water storages for Bulahdelah, Stroud and Gloucester and a further focus on increasing the reuse of treated wastewater.

At the same time MidCoast Water will continue our investigation of a second storage dam for the Manning water supply scheme and look at options for indirect potable reuse of treated wastewater.

Our Water Our Future was developed in discussion with our regulators, local councils and most importantly our community. A dedicated team of MidCoast Water staff supported a broad based Project Reference Group that refined the final strategy.

On behalf of MidCoast Water I want to thank everybody involved for their enthusiastic participation and commend to you Our Water Our Future.

WHAT IS INTEGRATED WATER CYCLE MANAGEMENT?

Integrated Water Cycle Management considers the water cycle as a whole.

It refers to the way MidCoast Water delivers these town water and sewer services in a way that does not harm the environment, and is economically and socially responsible and sound. It means that our communities will be able to thrive now and into the future.

Our Water Our Future is MidCoast Water's Integrated Water Cycle Management Strategy. It is an adaptable strategy for the next 30 years which aims to ensure that:

- Water is managed responsibly and sustainably
- There is sufficient quality drinking water now and into the future

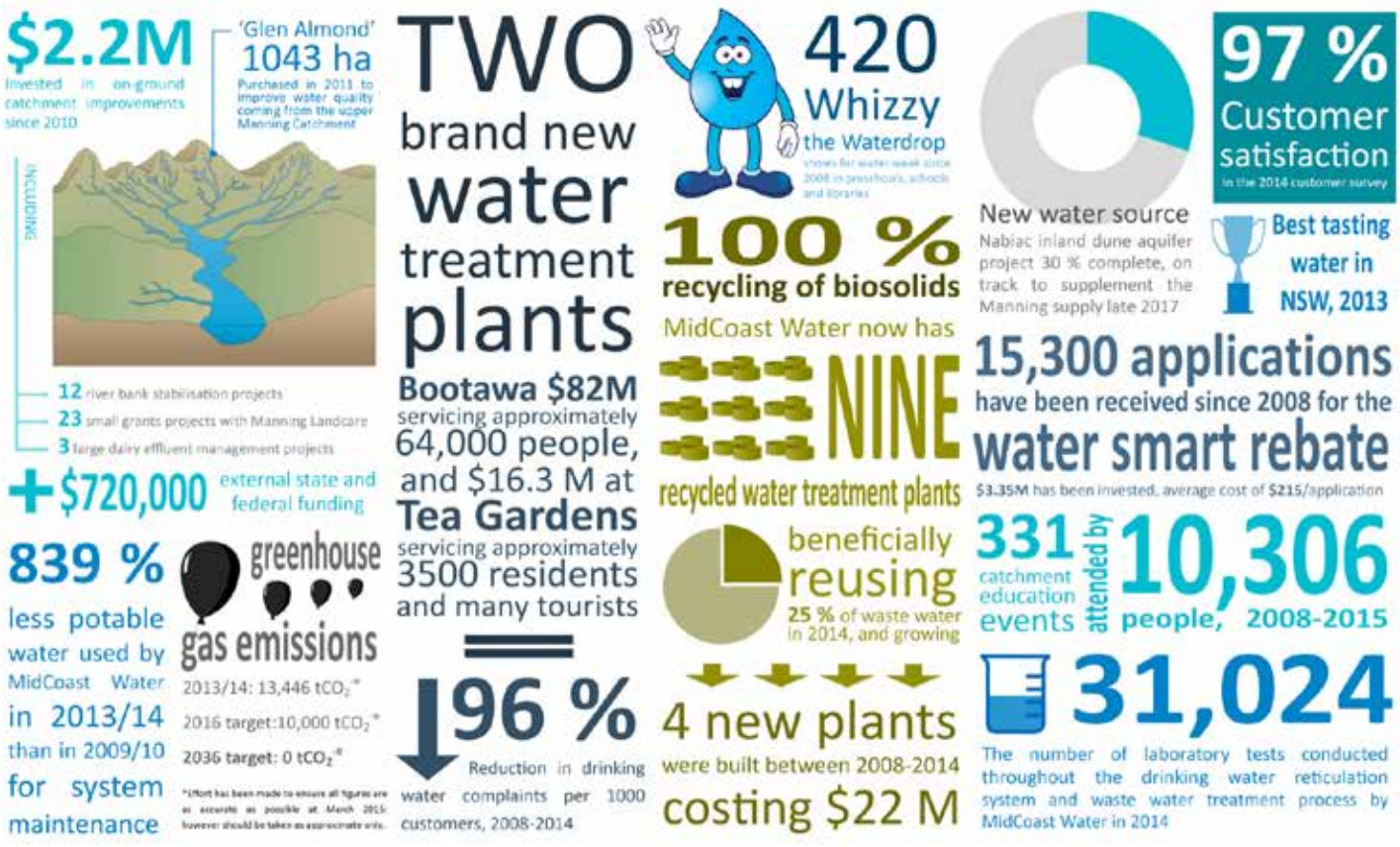
WHAT HAS BEEN ACHIEVED?

Over the past several years, we have reduced demand, constructed new water treatment plants to ensure we consistently provide quality drinking water.

We have constructed new recycled water schemes to increase the percentage we recycle, reduced our greenhouse gas emissions, and completed river bank stabilisation projects and other catchment management projects to help improve catchment health.

Our customers have helped us to achieve a 20% reduction in annual water use over the past decade or so.

OUR ACHIEVEMENTS



WHAT DOES THE FUTURE HOLD?

Water security, sustainable effluent management, climate variability, changing economic and regulatory environments, and changing social values.

These represent the important issues over the next thirty years that we need to consider and plan for.

"There is a need to adopt an adaptive approach to water management that confronts uncertainty by considering a wider range of climate conditions than those captured by the historical record"

- NSW Guidelines on Assuring F uture Urban Water Security

WHAT ARE THE ISSUES?

Before any options or solutions could be provided, the issues first had to be identified.

This process involved workshops, community consultation and a desktop review. The issues were broadly grouped into strategic and operational issues.

The Project Reference Group ranked water security as the most important issue to be addressed in the strategy.

The strategic issues identified can be grouped into the following:

- Water security and secure yield
- Effluent management
- Climate variability
- Compliance
- Unserviced communities
- Water quality and catchment management
- Leakage and infiltration
- Condition of major assets

The issues were compiled and confirmed in an initial Project Reference Group workshop on 4 June 2015. Options to address each issue were identified and assessed on a Triple Bottom Line basis, taking into account economic, social and environmental factors. Some were eliminated early based on a feasibility analysis. A second Project Reference Group workshop was held on 6 August 2015 with community and regulator representatives to help confirm the acceptability of the identified options.

WHAT ARE THE SOLUTIONS?

The remaining options were bundled together to form several solutions or scenarios. These were grouped into four sets – the base scenario, water scenarios, sewer scenarios and small village scenarios.

The 'base scenario' involves all the things we plan to undertake over the next 30 years – like reducing water use, reducing stormwater infiltration, continuing to undertake catchment management projects, continuing our recycled water schemes, and constructing water storages at Bulahdelah, Stroud and Gloucester.

A summary of the other scenarios, including a description, the Typical Residential Bill value and the Project Reference Group Workshop 1, environmental and social scores, is shown in Table 1. Selecting one scenario from each of the water, sewer and small village scenarios will provide a total solution to ensure that all identified issues are addressed.

Label	Scenario group	Scenario	Scenario Description	TRB 2045$	PRG1 Key Issue Score	Env Score	Social Score	Envl + Social Score
W1	Water	More Storage	A new dam at Peg Leg Creek	917	41.7	-4.2	16.7	13
W2	Water	Desalination	Brackish desalination at Bootawa	865	-8.4	-121.0	0.0	-121
S1	Sewer	Low Reuse (25%)	Business as usual – existing level of reuse	865	4.6	2.9	1.1	4
S2	Sewer	Medium Reuse (30%)	Expansion of agricultural reuse in Taree area	918	44.7	27.9	11.2	39
S3	Sewer	High Reuse (45%)	Expansion of agricultural reuse in Taree, Lansdowne, Old Bar and Bulahdelah. Additional public space irrigation at several locations.	939	194.2	123.6	87.2	211
W3 / S4	Water & sewer	Indirect Potable Reuse (65%)	Injection of recycled water into the Nabiac aquifer	1803	281.7	125.5	167.1	293
V1	Small villages	Small villages remain unserviced	Undertake planning only for the servicing of small villages (implementation outside the 30 year planning horizon)	0	-1.8	-1.3	-2.1	-3
V2	Small villages	Provide Sewer to Small Villages	Implement sewer systems only in small villages	35	3.0	1.3	3.7	5
V3	Small villages	Provide Water and Sewer to Small Villages	Implement sewer and water systems in small villages	70	4.5	0.0	6.7	7

WHAT DOES THE COMMUNITY SAY?

Community input was crucial to the Our Water Our Future strategy and has allowed the community and stakeholders to help shape the future of our water supply in the region.

The options you see in this report consider environmental, social and economic factors. Community input helped us to understand how you value water, the impact that this precious resource has on our lives, and helped us arrive at the final solutions.

What you told us

Our engagement activities revealed a strong recognition that water is a precious resource, and that climate variability and water security are important issues. When considering how we secure the Manning Water Supply Scheme; the biggest issue addressed in this strategy, new water storages and drinking recycled water were the most preferred solutions. Most people wanted us to do something to service small, currently unserviced villages and would like us to recycle more.

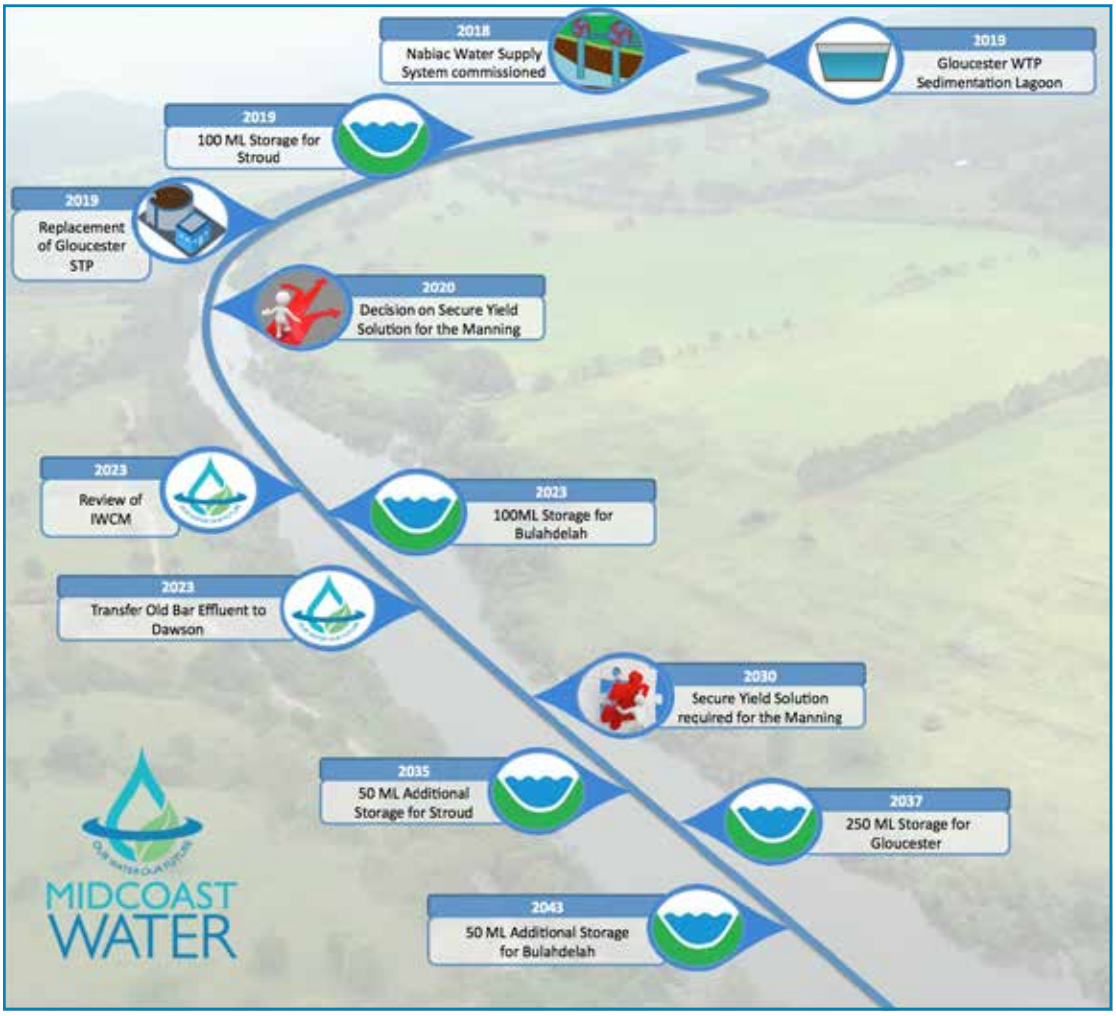
WHAT IS OUR PLAN FOR THE FUTURE?

Our Water Our Future provides a sustainable strategic plan for our community. The way forward involves:

- Reducing water use
- Ensuring water quality
- Securing water supplies
- Recycling and effluent management
- Servicing small villages

Our Water Our Future is intended to be an adaptable plan that is reviewed every four years, with a major review every eight years. This will ensure that changes to population predictions, climate predictions, operating environments and new technologies can be incorporated into our Integrated Water Cycle Management strategy.

The following sections detail our plans for the next thirty years. The major milestones are summarised in the timeline shown below.



REDUCING WATER USE

Reducing demand is important to MidCoast Water and has a role to play in providing some water security. Further reductions in water demand will have some benefit in postponing the need for expensive capital works to secure our water supplies.

MidCoast Water is committed to reducing demand as far as practicable and there are many options available that can help to achieve this.

- Continuation of the smart water rebate scheme including rebates for rainwater tanks.
- Community education on the efficient use of water and ways to reduce household and business demand.
- Consideration of changes to pricing including tariff pricing
- Behavioural change programs
- Smart meters to help reduce leaks and reduce demand slightly
- The targeting of high water users to help them reduce demand
- Reducing the number of leaks within the water supply system
- Reducing pressure in water supply systems, where appropriate
- Substitution of stormwater for some drinking water. E.g., for the irrigation of some public open spaces.

Although rainwater tanks and stormwater harvesting can reduce the overall demand on a water supply system, they may not be able to provide significant water savings during a drought.

ENSURING WATER QUALITY

Water quality improvements in our water supply areas have progressively been delivered over the last 10 years. MidCoast Water works to ensure the quality of the water that reaches our taps, as well as the quality of water in our catchments.

MidCoast Water will continue to provide quality drinking water in accordance with our Drinking Water Quality Management Plans.

Catchment management is an important part of the 'catchment to tap' philosophy and is about more than improving the quality of the water in the rivers. MidCoast Water supports several programs to assist farmers improve their management practices. We have undertaken these types of works in the Karuah, Crawford, Manning and Barrington River catchments.

MidCoast Water will continue working in our catchments, which includes continuing to be at the table on issues around coal seam gas and mining impacts, and supporting farmers to improve their management practices.

Target

We will establish a long term catchment management water quality monitoring program to look at reducing average turbidity in our rivers.

SECURING WATER SUPPLIES

Ensuring that we have enough water to meet demand, now and into the future, is vital. The reliability of our future supplies will be influenced by climate variability, the amount of water storage we have, and the demand for water.

Feasibility and Triple Bottom Line analyses steered us towards the long-term water security solutions for Bulahdelah, Stroud and Gloucester; additional off-stream storage. New large storages were found to be the optimal solution for these water supply schemes on the basis of technical, environmental, social and economic analyses.

Reducing water use and demand on our systems will help to increase water security and defer expensive long-term solutions.

A reduced level of service (the risk of longer and more frequent water restrictions) during the period up until the long-term water security solution is delivered may be experienced. Our customers have indicated that they are comfortable with the risk of increased restrictions.

THE MANNING SCHEME

The Manning Water Supply Scheme is MidCoast Water's largest water supply scheme and serves the majority of our population.

There currently is a large deficit between annual demand and secure yield. MidCoast Water currently sources water via Bootawa Dam which sources water from the Manning River. This supply will be supplemented with supply from the Nabiac Borefield in 2018 which will supply the Manning with an average of additional 8 ML per day from the Nabiac Inland Dune Aquifer.

Further reductions in water demand and improvements in operational efficiencies will have some benefit in deferring the need for large capital investments in water security and improving their affordability. However, as the planning processes for such augmentations will be substantial, additional focus on these activities will be required in coming years.

These planning processes for the Manning will need to look beyond the 30 year planning horizon. This is necessary as the options (Indirect Potable Reuse or Peg Leg Creek Dam) for augmentation from 2030 on will rely on large investments which will be financed over a long period and, in the case of the Peg Leg Dam solution, will have design lives of greater than 30 years.

Contingency Plans

Contingency plans will be required for emergency situations. For example, if there is a severe drought and we have not implemented one of the long term solutions for the Manning scheme. These plans will be developed and this is likely to involve planning for a temporary emergency desalination unit for the Manning Scheme. Although brackish desalination is currently ruled out as a permanent long term solution, it is feasible as an emergency contingency solution.

Securing our water supply for the Manning will have the added benefit of allowing us to move to a more sustainable extraction regime for the Manning River.

Nabiac Water Supply Scheme

We plan to construct the Nabiac water treatment plant which will treat water drawn from the Nabiac borefield and distribute it into the Manning supply scheme. This will add over 2,000 ML to our secure yield and will mean that water supplies are diversified by providing a second water source.

The Nabiac scheme has received over $9M in federal funding under the National Stronger Regions fund. The scheme is expected to be commissioned in 2018.

Long-term solutions

Further investigations into the water solutions of Indirect Potable Reuse and Peg Leg Creek Dam will be undertaken over the next five years to better inform the long-term decision as to how best provide water security for the Manning scheme.

Investigations, feasibility studies and business cases for the long-term secure yield solutions for the Manning will be undertaken, with a decision on the future direction of the Manning Water Supply Scheme to be made at the end of the five years.

Peg Leg Creek Dam

This solution would involve a new storage dam being constructed at Peg Leg Creek. Water would be pumped from the Manning River into the dam for storage, and from there it would then make its way to the Bootawa water treatment plant.

Indirect Potable Reuse

This solution would involve MidCoast Water installing 15 to 20 additional bores in the Nabiac Inland Dune Aquifer and recharging the aquifer with recycled water from the Hallidays Point and Forster sewage treatment plants, following further treatment at the Tuncurry recycled water treatment plant. This would allow us to extract an additional seven million litres of water per day.

This long term solution does not rely on rainfall and makes use of a resource which would otherwise be disposed of to the environment. Indirect Potable Reuse was popular with the community; however there are some existing constraints. There is currently no legislative framework in NSW for such an IPR scheme.

RECYCLING & MANAGING EFFLUENT

MidCoast Water is committed to reducing the amount of effluent discharged to natural areas by developing recycled water schemes.

Works to reduce stormwater infiltration into our sewerage systems will reduce the volumes of effluent we need to treat and will also go towards increasing the proportion of treated effluent reused.

MidCoast Water operates 14 sewer schemes and nine recycled water schemes through which we recycle 25% of our effluent. We beneficially reuse 100% of the biosolids produced at the sewage treatment plants on agricultural properties.

The community wants to see a higher proportion of treated effluent beneficially reused and we will investigate the expansion of the Taree agricultural reuse scheme as well Indirect Potable Reuse.

We plan to undertake the following effluent management works over the coming years.

- Eventual transfer of Old Bar's treated effluent to Taree, with some to be reused for farm irrigation. This is necessary as the exfiltration basins at Old Bar are under threat of erosion and the alternative effluent management solutions, a new ocean or river release, were deemed unacceptable.
- Replacement of the Gloucester sewage treatment plant. This is necessary as the existing plant is quite old, is reaching the end of its life and uses dated treatment technologies.

Recycled Water Schemes

We currently operate recycled water schemes in Taree, Wingham, Coopernook, Lansdowne, Stroud, Harrington, Tuncurry, Hawks Nest and Bulahdelah, with onsite reuse at Manning Point, where we use the recycled water to irrigate turf at the Manning Point sewerage treatment plant. The recycled water schemes provide water for irrigation for farms, and public open spaces including sports fields, golf courses and a cemetery.

Increased Recycling

We aim to increase the level of recycling undertaken across our effluent management schemes.

The level of reuse achieved over the next 30 years will depend upon the long-term water solution chosen for the Manning scheme. This is because, if the Indirect Potable Reuse solution is implemented, it would see us reusing 65% of our total effluent.

We are currently preparing the implementation of the Gloucester Recycled Water Scheme which will slightly increase the total proportion of effluent reused.

While recycling water is a fantastic way to reduce our impact on the environment and make use of a resource that is otherwise wasted, there is a need to balance the cost of constructing and operating water recycling schemes. The costs and benefits of extending our water recycling activities will need to be assessed in detail as plans are developed.

If water can be reused in an economically viable manner then this should always be attempted whenever possible.

Target

We will aim to increase the percentage of recycling over the next 30 years – either by implementing an Indirect Potable Reuse scheme or expanding recycled water agricultural irrigation or both

Infiltration Reduction

During wet weather, infiltration into our systems means that we have to treat much more than usual at our sewage treatment plants. In particularly leaky systems, such as Wingham, Taree and Gloucester (the older systems), the ratio of wet weather to dry weather inflow can be as high as 20:1.

The higher inflows mean we need to pump and treat more effluent which means that our costs are higher than they otherwise would be.

Remediation processes will consider available technologies and evaluate their efficiency to ensure an effective infiltration program is implemented.

Servicing small villages

We will provide sewer services to 'at risk' small villages pending government funding.

The small villages that are currently listed 'at risk' are Coomba Park, Nerong, Stroud Rd, Allworth, North Arm Cove, Pindimar and Bundabah. There are a number of small villages not included in this list which need to be considered when reviewing potential service extensions.

The prospect for proceeding with the provision of sewer services to these communities relies on government subsidy and contributions from new customers.

Extending services comes at significant upfront and ongoing costs.

From 2003 to 2005 the options for servicing the villages were further developed with cost estimates for each option prepared. In 2009 Crowdy Head was provided with reticulated sewerage with 25% subsidy from the NSW government.

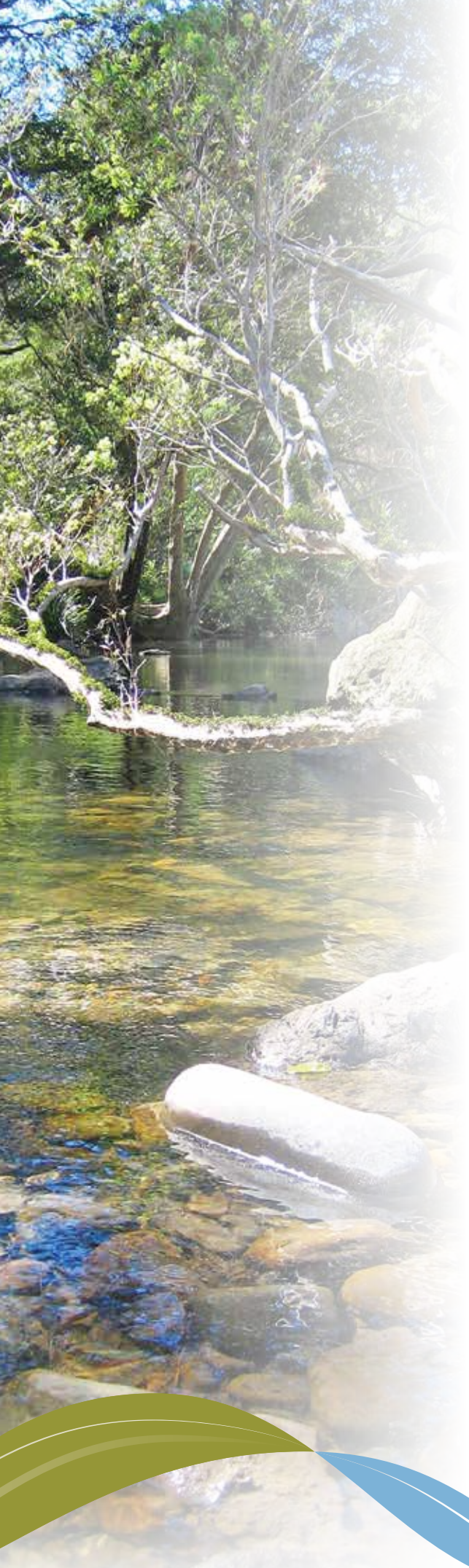
Other options for the small villages also need to be considered, as it is not just matter of either providing the villages with water and sewer services or not. For example, improving the existing onsite sewerage systems would help to reduce leaks and the subsequent environmental and health effects.

Target

We will aim to reduce stormwater infiltration by 10% in the Gloucester, Bulahdelah, Taree and Wingham schemes.

Target

We will provide sewer service to priority small villages by 2045 pending government subsidy.



Sustainability

Sustainability is a part of everything we do – from sourcing water to disposing of treated effluent to our everyday operations and practices.

We are always striving to improve the management of our resources to increase efficiency and sustainability. It is embedded in the way we do things.

In addition to our recycling of effluent and biosolids; we use solar panels for energy where it is costs effective and sustainable to do so; we ensure we abide by our Water Sharing Plans so that we maintain environmental flows in our rivers; we are involved in catchment management activities; and we fund bio-banking or carbon offset projects. We also undertake Triple Bottom Line analyses of options when decisions need to be made to ensure that we have considered the environmental, social and economic aspects of each option, and to ensure that the most effective solution has been selected based on cost- benefit and that the decision is a sustainable one.

Over the coming years we will endeavour to:

- Reduce overall energy consumption and carbon footprint – e.g., by the use of solar panels and continuing carbon offset works
- Reduce the volume of stormwater getting into the sewer systems that subsequently has to be treated at our sewage treatment plants.
- Increase operational efficiency – We will continue to improve the efficiency of our operations and compliance with best management guidelines and regulations.

Water Sharing Plans

To balance the competing needs of the environment and water users and preserve water resources in river and groundwater systems for the long term, water sharing plans are in place across most of New South Wales. Water sharing plans establish rules for sharing water between the environmental needs of the river or aquifer and water users, and also between different types of water use such as town supply, rural domestic supply, stock watering, industry and irrigation.

MidCoast Water is currently exempt from the water sharing rules for the Lower Manning River until augmentation of the 'Manning Headworks' is complete. This means that once the long term water security solution (Indirect Potable Reuse or Peg Leg Creek Dam) is put in place, beyond 2030, we will need to adhere to the water sharing plan and stop pumping from the river earlier than we do now, i.e., stop pumping from the river at higher flows than we do now.

This will mean more flow for the river and more sustainable river extraction practices.

WHERE TO FROM HERE?

The draft Integrated Water Cycle Management Plan 'Our Water Our Future' will be placed on public display until the end of February 2016.

Feedback from the community will be considered and incorporated into the final Our Water Our Future. It will then be adopted by our council.

MidCoast Water is currently in the process of improving our asset management strategy and developing asset class management plans. The outcomes of Our Water Our Future will provide inputs to the asset management plans. Further, greater detail of asset reliability, condition and criticality will inform detailed investigations into the Our Water Our Future strategy initiatives and the next iteration of the Integrated Water Cycle Management strategy.

It is important to note that Our Water Our Future is an adaptable strategy and will undergo regular review. We will also continue to engage our community to ensure they have a say in the future direction of water management in our area.

Key performance indicators and targets

The previous iteration of Our Water Our Future specified key performance indicators and targets. This strategy review has re-examined these targets which will be used to measure our success in implementing our Integrated Water Cycle Management strategy.

The revised and additional targets can be seen in Table 2, as well as the previous targets and the performance results for the last financial year. Most of the targets have not been adjusted; however some required adjustments based on recent information and data. For example, the total water extraction target (WC6) has been revised down, even from the 2036 target, due to population predictions being lower than they were during preparation of the previous strategy. The additional targets that were set out throughout this strategy have also been added to the table.

	Performance indicator	2014/15 performance	2036 * Target	Ultimate 2045 Target
WC	**WATER CONSERVATION**			
WC1	Residential Property Consumption (kL/yr/ET)	160	175	160
WC2	Commercial Property Consumption (kL/yr/connection)	706	750	750
WC3	Industrial Property Consumption (kL/yr/connection)	2,114	3,000	3,000
WC4	Public Consumption (kL/yr/connection)	422	390	390
WC5	Institutional Consumption (kL/yr/connection)	368	400	400
WC6	Total water extraction (ML/yr)	8,371	13400 #1	12800 #1
CS	**CUSTOMER SERVICE**			
CS1	Drinking water compliance (physical)	96.7	100	100
CS2	Drinking water compliance (bacteriological)	100	100	100
CS3	Drinking water compliance (chemical)	99.8	100	100
CS4	Water supply service complaints/1000 customers	N/A at this time	10	10
CS5	Sewerage service complaints - interruptions/1000 customers	N/A at this time	9	9
CS6	Customer satisfaction (water service) - source biennial survey	N/A	95	95
CS7	Customer satisfaction (sewerage service) - biennial survey	N/A	95	95

	Performance indicator	2014/15 performance	2036 * Target	Ultimate 2045 Target
WR	**WATER RESOURCE SECURITY & DIVERSITY**			
WR1	Residential savings resulting from rainwater rebate (ML/yr)	24	730	-
	Residential savings resulting from rainwater rebate (cumulative ML/yr) #2	132	-	730
WR2	Non-residential savings resulting from rainwater rebate (ML/yr)	28	180	180
	Number of smart water rebates per year			800
	Number of rainwater tank smart water rebates per year			25
	Install smart meters in one scheme or sub-scheme (to reduce demand by 5%)			1 scheme
	Audit top 30 water users to reduce water use (no. of customers audited)			30
	Reduce leakage for the Gloucester and Manning water supply schemes (% of total water supplied			<10%
WR3	Effluent recycled for irrigation (ML/yr)	885	#1	NA
	Effluent recycled for irrigation (%) #3	13		>30% #4
E	**ENVIRONMENTAL BENEFIT**			
E1	Effluent loads released to waterways/groundwater (t Total P + N + BOD + SS)	80	#4	#4
E2	Effluent released to waterways/groundwater (ML/yr)	5,856	#4	#4
E4a	Electricity GHG emissions (tCO2e)	15,503	0	0
E4b	Sequestration through plantations (tCO2e)	2,800		
E4	Nett electricity GHG emissions (tCO2e)	12,703		
E5	Develop environmental services model	Catchment plan completed	Model implementation	Model implementation
E6	Catchment Environmental services expenditure ($k/yr)	488	350	-
	Catchment Environmental services – average turbidity in rivers			decreasing
E9	Biosolids recycling	100%	100%	100%
	Reduce stormwater infiltration by 10% in the Gloucester, Bulahdelah, Taree and Wingham schemes			90% of 2015 infiltration
S	**SOCIAL BENEFIT**			
S1	Average residential water service bill ($/yr)	565	711	#5
S2	Average residential sewerage service bill ($/yr)	948	900	#5
S3	Contribution to community services ($k/yr)	232	230	230
S4	Water restrictions not more than 20% reduction in usage and not more than 5% of time	Compliance	Compliance	Compliance

Notes

* The 2036 target is from the previous Integrated Water Cycle Management strategy

#1 Based on growth assumptions

#2 This target is a new version of the WR1 target with cumulative annual volumes to be reported (as the original intention of the target was to report in this manner)

#3 This new target is similar to WR3 but expresses recycled effluent as a percentage of total rather than a volume.

#4 Depends on success of WR3, reducing water demand and selected long-term water solution for the Manning scheme (IPR or new dam)

#5 Depends on selected long-term sewer solution and water solution for the Manning scheme (IPR or new dam)