

Our strategy for **Climate Change**

2017 - 2023

Establishing the foundations
for change



WESTERNPORT
WATER.

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Glossary of acronyms and abbreviations

Westernport Water	WPW
Greenhouse gas emisisions	GHGs
Memorandum of understanding	MOU
Sewage pump station	SPS
Waste water treatment plant	WWTP
Water Services Association of Australia	WSAA
Intelligent Water Networks	IWN



Integrated water management

Our vision

Westernport Water leads through collaboration and innovation to deliver sustainable water and wastewater services that improve the health and liveability of our community.

Message from the Managing Director

We recognise climate change is a significant challenge for Westernport Water, the environment and our community.

As a water business our performance is directly linked to the climate. We rely on rainfall in our catchments to fill our dams. When it's hot our customers typically consume more water and this places additional strain on treatment plants, pump stations and pipes. During intense rainfall events stormwater gets into our sewer network and can sometimes result in overflows to drains, rivers and streams. In everything that we do, we always have one eye on the climate.

The climate is changing more rapidly than it has in the past and there is scientific consensus that the emission of greenhouse gases from human activity is driving this change.

But it's not just the science that is telling us the climate is changing rapidly, we experience and feel these changes first hand. When I talk to our engineers or field crews many have directly observed changes in the climate over their time working with Westernport Water. For them it's not an abstract concept in a graph or chart, but something real that impacts the way they work.

This strategy has been developed to reduce our greenhouse gas footprint (mitigation) and change the way we work to ensure the physical impacts of climate change (adaptation) are managed effectively.

It is important to think long term, to be strategic and to manage climate change risks and opportunities proactively, not reactively. I am confident we can do it, for a number of reasons.

There is a strong driver from the Victorian Government to reduce emissions and adapt to climate change. Our Board and the executive team have made climate change a priority for the business. Our staff are committed and ready to get on with the job. We are also working with many of our local and regional partners to identify and develop solutions. More importantly our customers are telling us that they want us to act.

In addition to the detail in the strategy there are two key messages I'd like to reinforce around how we take this strategy and turn it into action.

Firstly, I want to integrate our response to climate change across all areas of our business. This isn't just an environment issue, but an issue that impacts all parts of our Corporation. Secondly, we need to place our customers at the centre of our thinking on climate change and collaborate with them as we develop and implement solutions that benefit our community.

I look forward to working with you to make Westernport Water climate ready.

Peter Quigley, Managing Director

Challenges

Responding

Leadership



Why we need a Climate Change Strategy?

What the science tells us

Climate change includes variations in the patterns of weather and changes in natural systems such as oceans, land surfaces and ice sheets, occurring over time scales of decades or longer. It is caused by both natural causes and human activities that alter concentrations of CO₂, methane, nitrous oxide and other greenhouse gases.

If society does not take action to reduce GHGs, carbon dioxide concentrations in the atmosphere are expected to double from pre-industrialised levels by 2050. As a result of these projected emissions the International Panel on Climate Change is predicting global average temperatures to increase by between 2 to 4.5 per cent by 2100.

Climate change risks will have an effect on the community through reduced rainfall, heatwaves, sea level rise and drought. This will also have an impact on the operating environment of WPW and require us to put plans in place to protect assets and ensure we continue to deliver quality products and services to our customers.

There are risks and opportunities, we are preparing for both

Like any change faced by businesses, communities and governments there are risks, but there are also opportunities. The key to dealing with any change is to be prepared and on the front foot, putting in place measures and taking action to minimise the risks and maximise the opportunities.

As a service provider climate change presents challenges to WPW. We rely directly on natural systems such as catchments for the raw water that we distribute through our drinking water system. Our services are delivered via networks of physical assets that are energy intensive (treatment and pumping). Many of these assets will be directly impacted by climate induced changes to the weather and sea levels.

Legislative and policy drivers

As a regulated service provider, WPW is subject to a range of laws, policies, codes and guidelines. Most notably the Statement of Obligations issued by the Victorian Minister for Water under the Water Industry Act 1994 which requires WPW to manage risk in a systematic way, including climate change. It also specifically requires WPW to consider climate change scenarios in planning and to develop measures to adapt to climate change.

On 23 February 2017 the Victorian Government introduced new legislation. The *Climate Change Act 2017* provides the legislative foundations to manage climate change risks, maximise the opportunities that arise from decisive action, and drive a more climate resilient Victoria. The Victorian Government is first tackling emissions from government agencies.

The water sector makes up the largest proportion of government emissions at 24 per cent and the sector has been tasked with providing an emissions reduction pledge to address their collective GHG emissions. WPW's contribution to the Victorian Government's Take2 pledge is an 8 per cent reduction in GHG emissions by 2025. WPW now is challenged to meet the long term goal of reducing emissions to achieve net-zero by 2050.

Net zero GHG emissions

Net-zero GHGs occurs when those GHGs that are unavoidable are balanced by equivalents in carbon storage. The more emissions are reduced, the less sequestration is needed to achieve net-zero.

Climate Change Mitigation

Reducing greenhouse gas emissions to the atmosphere to prevent significant rises in global temperatures.

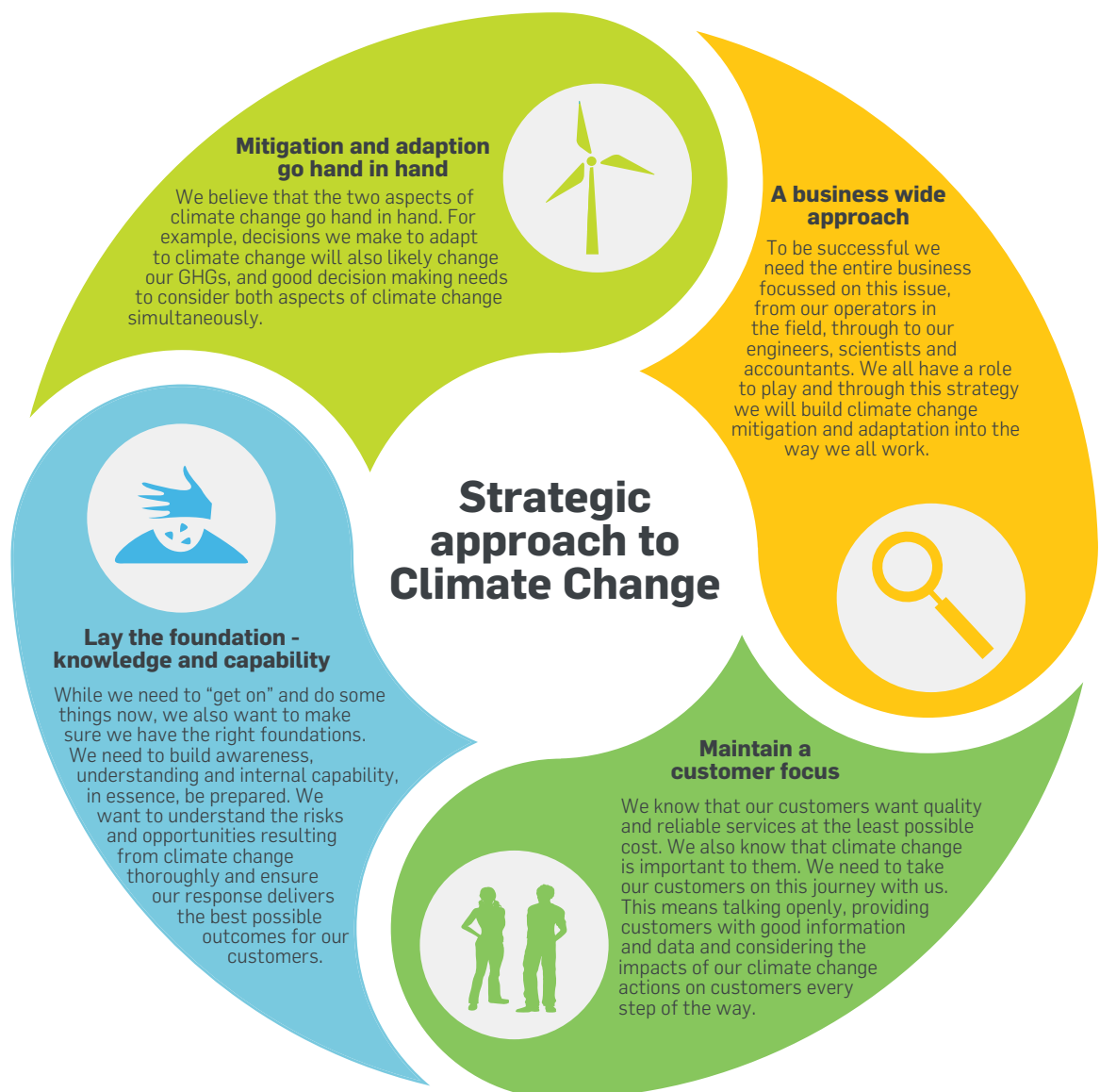
Climate Change Adaptation

Prepare for the impacts of climate change on assets, supply and demand forecasting, people and the environment by changing how we do things.

Our approach to climate change

This Strategy has been developed to set out the direction and context for WPW's action on climate change. The first iteration of the Strategy will be a six year strategy to bring it into alignment with Pricing Submission 1 (2017/18 though to 2022/23). The Strategy will then be reviewed annually.

Our approach to climate change, and the development and implementation of this Strategy, will be underpinned by four key principles:



Climate change in the water sector

Where do our emissions come from?

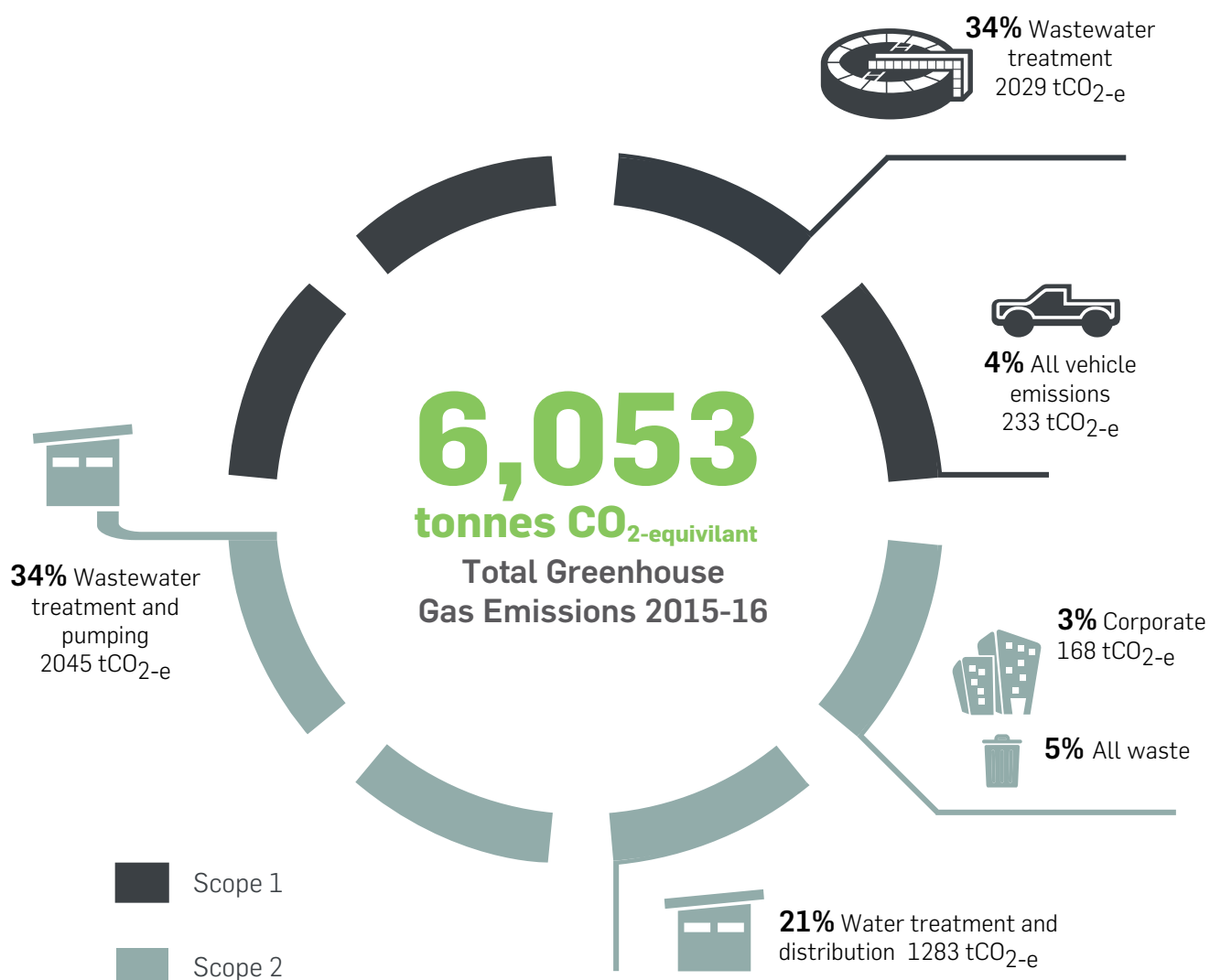
Water utilities are energy intensive businesses and the water sector in Victoria generates 24 per cent of all GHGs from government operations. GHGs are categorised as either direct emissions (Scope 1) or indirect emissions (Scope 2). The majority of WPWs emissions are Scope 2 emissions and are generated from the electricity we purchase and use for the treatment and distribution of water and wastewater.

What are our emissions generated from?

Westernport Water emits direct and indirect emissions described as Scope 1 and Scope 2 emissions.

Scope 1: All direct emissions from sources that are owned and controlled by the Corporation.

Scope 2: Are all indirect GHGs from consumption or purchase of electricity.



GHGs are reported as tonnes of CO₂-e to take into account the many types of greenhouse gases that are emitted. Other GHGs include methane, nitrous oxide and ozone.

How will climate change impact on our business?

Government and scientific institutions have undertaken significant modelling to better understand how the climate will change as a result of increases in GHGs. While we don't have a detailed understanding of the impacts of climate change on our local environment, we have a good understanding of the broad changes, many of which are being felt right now, and can make a preliminary assessment of how these changes may impact on our business.

Changing operating environment



Risks

Gaps in knowledge and speed of technology changes.

Interdependency on fixed energy retailers.

Balancing population growth with finite water resources

Opportunities

New and emerging technology including decentralised renewable energy creating dependency from external energy providers.

Increasing efficiency and decreasing cost of technology.

Increased skills and employee development opportunities.

More frequent and severe rainfall events



Risks

Increased inflow and infiltration to sewer network, and more spills to the environment.

Physical damage to assets located on or near waterways.

Opportunities

Ability to capture peak flows in reservoir.

Increase bushfire risk



Risks

Vegetation loss in catchments, resulting impact on water yield and water quality to Candowie Reservoir.

Ability to respond to extreme events and natural disasters.

Generally drier days and more frequent and severe droughts



Risks

Less water flowing into the catchment and risks to water security and increased reliance on Melbourne Pool connection.

Opportunities

Increased demand for recycled water.

Increased efficiency and revenue from recycled water market.

Coastal storm surges and foreshore erosion/recession



Risks

Increased frequency of overflows from sewerage system as emergency discharge points release excess sewage.

Generally hotter days and more heatwaves



Risks

Increased water demand and higher peak flows that need to be accommodated in infrastructure planning and operations, leading to higher costs of service delivery.

Decrease asset life and increasing operating complexity.

Increased potential for algal growth in Candowie Reservoir, with resulting impacts on drinking water taste and odour.

Biological and chemical process impacted resulting in environmental or amenity issues.

Increase risk to staff and contractors.

Opportunities

Increased revenue through demand and increase in visitors to the area providing increase in economic benefit to the community.

Use of diverse water sources to protect public spaces and deliver healthy and resilient urban landscapes.

Increased opportunities for integrated water management and collaboration with planning partners for local solutions.

Rising sea levels



Risks

Permanent inundation of service areas, leading to increasing cost to relocate assets.



Rising sealevel impact our community

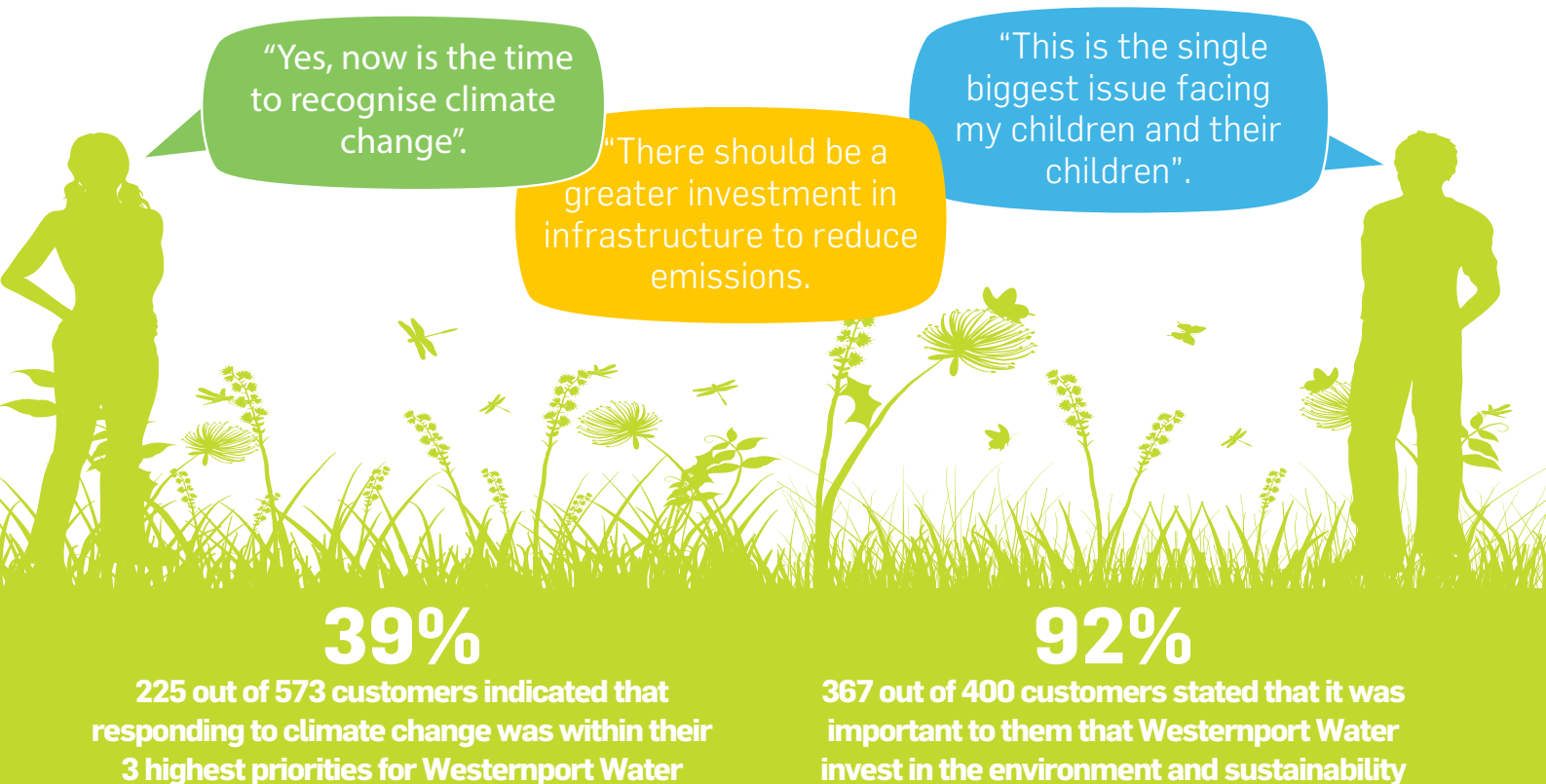
What have we done so far?

This Strategy is not our first effort to address climate change. Between 2009 and 2015 we reduced our emissions from 7000 tonnes down to around 6000 tonnes CO₂-e. This was achieved through a number of operational changes, such as changes to the times we pump water and wastewater, treatment plant process improvements and the replacement of old equipment with more efficient equipment that uses less electricity.

From an adaptation perspective we take into account climate change, particularly in the design phase of projects and the sizing of pumps, pipes and storage in the network, to ensure there is adequate capacity to deal with peak flows.

What are our customers telling us?

Recognising and understanding what our customers and community value in relation to the environment, climate change and water management will ensure that our practices are consistent with their expectations.



We will reduce our greenhouse gas emissions

Using a two phased approach we will ensure we achieve emission reductions affordably and to also provide us the time to plan for the future.

	Goal	Target date
Phase 1	8 per cent reduction in GHF emissions from 2017	2025
Phase 2	Net zero GHG emissions	2050

To drive these reductions and integrate the measures across the business we are developing a detailed *Climate Change Mitigation Plan* to identify, assess and select mitigation actions that are achievable and affordable. The plan will be completed by 2021/22 to enable projects to be considered during the development of our next Pricing Submission for the period 2023-28. Key components of the plan will include:

- Ongoing evaluation of our performance, testing of our assumptions and gathering of data to ensure we learn from actions we implement to continually improve and deliver efficient solutions to reduce our emissions.
- Detailed financial analysis of initiatives to ensure we are prioritising investments that deliver the best possible return on investment (ROI) in terms of GHG reductions.
- Engagement with customers and our local community to test the appetite for mitigation projects.

Stakeholders - We will work with external stakeholders, particularly our water sector partners at the regional and State level to share knowledge and implement collective initiatives.

Gippsland Regional Water Alliance - WPW will continue to work closely with other Gippsland water corporations to leverage off projects being undertaken, learn from their experience and understand the challenges associated with these projects.

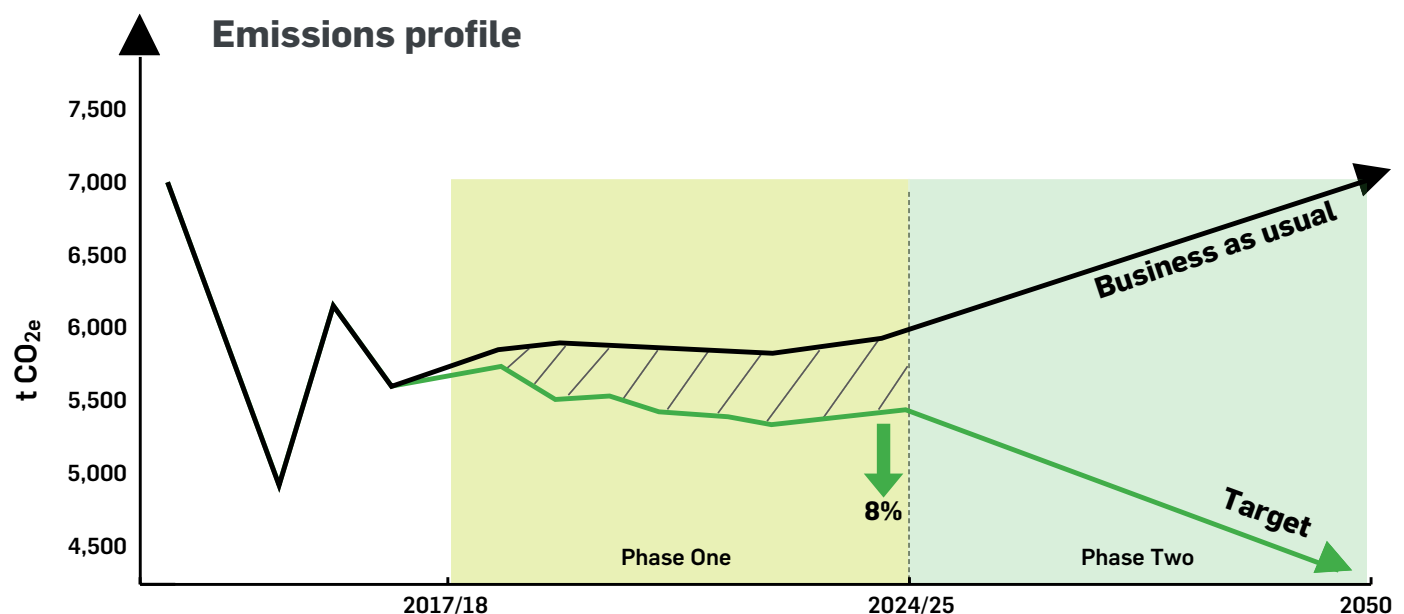
Intelligent Water Network - The IWN program is a partnership between VicWater, 18 Victorian water corporations and the Department of Environment, Land, Water and Planning. The IWN investigates new technologies and innovations to meet common challenges such as population growth, ageing infrastructure and climate variability in a more efficient manner.

Our Pledge

Westernport Water pledges to reduce its greenhouse gas emissions by 8% by 2025.

Phase 1 - 8% reduction by 2025

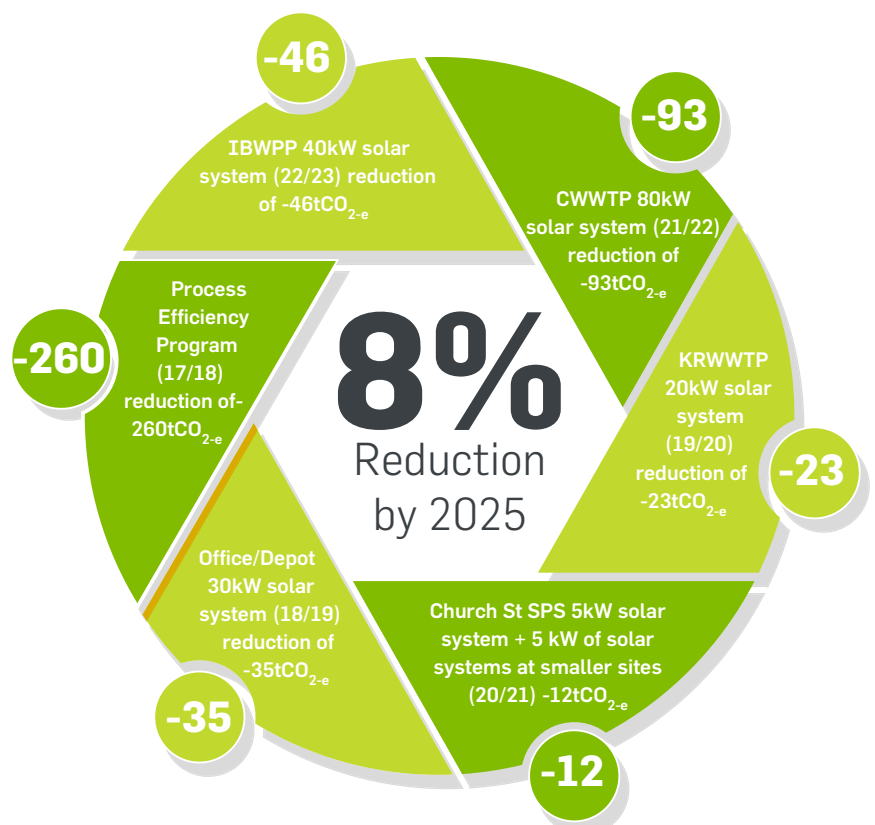
As part of the Victorian Government's TAKE2 Pledge WPW has committed to reduce GHGs by 8 per cent by 2025. These reductions will be achieved through improvements to treatment processes and installation of solar power at specific sites. These projects have been assessed costed and integrated into WPW's future works plan over the next five years.



Phase 1 activities

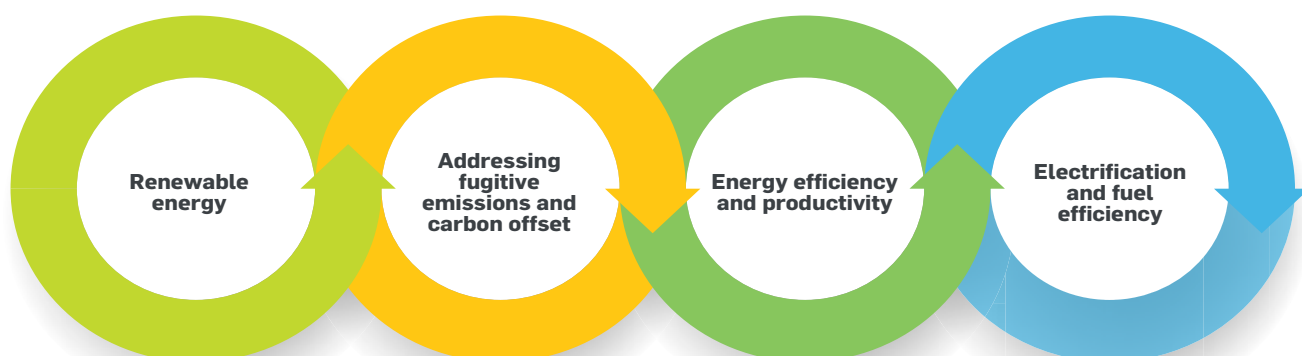
An 8 per cent = a total emission reduction of 464tCO_{2-e}

-tCO_{2-e} Reduction of tCO_{2-e} for each activity



Phase 2 - Net Zero reduction by 2050

Net Zero by 2050 is an ambitious goal and requires, on average, a reduction in GHGs of around 220 tCO₂, per annum from 2025 until 2050. Over the next five years we will investigate, assess and select a range of mitigation initiatives to ensure this goal is achieved. This will include a mix of investment across the four pillars of emission reduction:



Renewable Energy

We will continue to investigate opportunities to change our energy supply over to renewable sources, particularly solar power.

Large scale renewable IWN project

IWN is exploring the feasibility of establishing a large scale renewable facility. It is estimated a 30MW system would supply 25 - 30 per cent of the group's total electricity consumption (based on total aggregate usage from all water corporations excluding Melbourne Water). The IWN is also assessing the potential for the water corporations involved to purchase electricity under a common Power Purchase Agreement which then directly funds a new renewable energy project in Victoria

Renewable energy powered sites and facilities

Beyond 2024/25 we will investigate additional options for sourcing energy through increased onsite, behind the meter renewable energy, such as solar and the potential for energy storage. We recognise that the speed of technology advancement and innovation is fast moving and the cost of new technologies is decreasing at a rapid rate. We will build on our learnings and knowledge developed from the implementation of Phase 1 projects to ensure the success of Phase 2.

WPW is committed to working closely with our regional water partners to gain shared knowledge and experiences to test and apply to our own operating environment, creating efficiencies in project development and implementation.

Working with landholders in our catchment



Decentralised sources of renewable energy

There are fantastic opportunities and examples of decentralised community ownership models for delivering renewable energy solutions across Victoria and the water sector. Our community consultation and engagement sessions have indicated that our customers want WPW to play a bigger part in community led renewable solutions. There are a number of different projects already underway in Victoria which we can learn from. We will actively work with our community to assist and identify opportunities, projects or initiatives for decentralised renewable energy.

Decentralised renewable energy can be developed in a number of different ways, Hepburn Community Wind Farm and Totally Renewable Yackandandah are two examples of community renewable energy programs that has community at the heart and is based on community partnerships, community ownership of energy supply and community led governance systems.

Scope 1 emissions and carbon capture

The highest contributor (55 per cent) of scope one greenhouse gas is from WPW's wastewater services, as such we have a great opportunity to take more action in the reduction of emissions. Some 34 per cent of emissions from our WWTP's are largely from methane gas released to the atmosphere from the digester at the Cowes WWTP, described as fugitive emissions. This presents an opportunity to investigate covering and flaming off the methane gas and potentially utilising the energy if economically viable.

However these measures are typically expensive and do not completely eliminate emissions from the treatment process. As part of our strategy WPW will look at a number of research and development opportunities to reduce emissions or to offset those emissions.

Carbon storage

For those GHGs which cannot be avoided we will pursue carbon storage and sequestration initiatives to offset these emissions in order to achieve the net-zero goal. Carbon storage opportunities may arise from Green Carbon (carbon stored in vegetation), Brown Carbon stored in soil or Blue Carbon systems (stored in marine or aquatic systems). Where possible we will take an integrated approach to carbon storage and seek to enhance environmental and recreational values.

Energy efficiency and productivity

While significant improvements have been made in recent years to improve the efficiency and productivity of our systems, WPW will continually review the way we do things in an effort to identify further improvements. This will include real time monitoring of electrical consumption within the network and optimisation of network operations, selection of energy efficient equipment for new projects and as part of our program of renewals and maintenance on existing assets.

Fuel efficiency and electrification

The GHGs from WPW's fleet of passenger vehicles, light trucks, plant and equipment make up around 4 per cent of total emissions. While there is an opportunity to transition passenger vehicles and some light trucks to electrical or hybrid technology there is currently limited opportunity with our larger vehicles, trucks and plant. However, when renewing or upgrading items in our fleet we will consider electrical, hybrid or low emission models.

We will adapt to Climate Change

To effectively meet the challenges of climate change we must change our approach to how we plan, design, build and operate our assets and transform how we go about doing business.

To drive our adaptation measures we will develop a Climate Change Adaptation Plan. The Plan will be informed by the *Climate Change Adaptation Guidelines* issued by the Water Services Association of Australia in February 2016. These guidelines were developed by the water sector and provide a structured methodology for the identification, assessment, implementation and review of adaptive measures. The plan will be completed by June 2019.

Phase	2017/18	2018/19	2019/20	2020/21	2021/22
Prepare & Commit	✓				
Assess	✓				
Plan & response		✓	✓		
Embed			✓		
Monitor				✓	✓

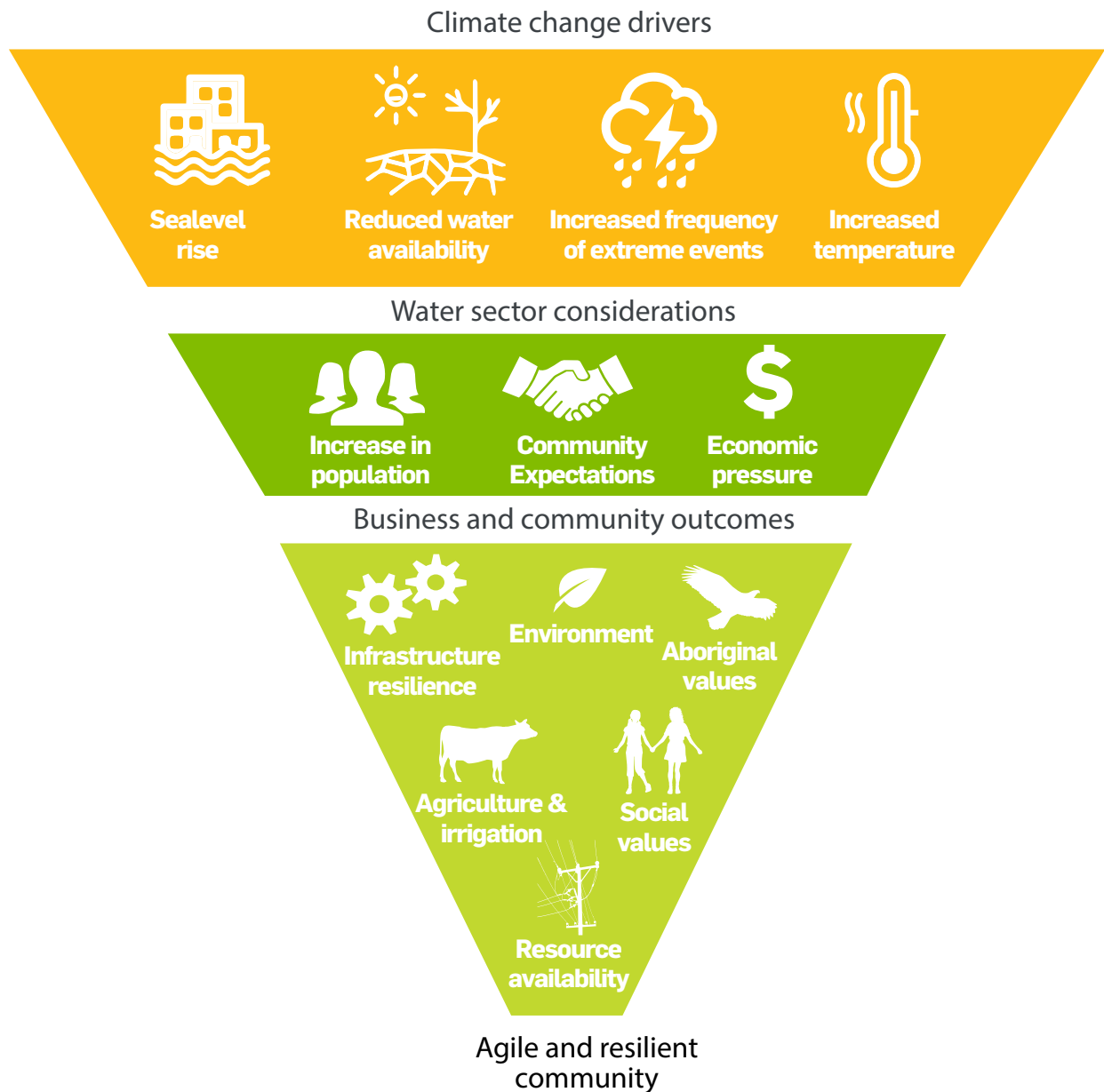
Free plantation Cowes Wastewater Treatment Plant
Free plantation Cowes Wastewater Treatment Plant



Our adaption plan

The Adaptation Plan will also consider how we continue to operate and meet customer expectations whilst protecting our people from the impacts of climate change, particularly risks from increased temperatures and storm events.

The figure below sets out the drivers and challenges in responding to climate change impacts and the values, assets and services we will consider in developing our plan.



Our strategic initiatives

In addition to our climate change mitigation and adaptation plans WPW will pursue a range of strategic initiatives to respond to climate change at the organisational level. These strategic initiatives have been developed to align with the strategies in our corporate plan.

Strategy	Climate change initiatives	A/M*	Timeframe
Customers	Provide clear and concise climate change information and data when engaging with customers and the community on projects.	M	2018 Ongoing
<i>Engage with customers on climate change action</i>	Develop a dedicated climate change section on our website where customers can monitor our progress and access industry specific information about climate change.	AM	
People	Build capability into our workforce to enable the business to better integrate climate change mitigation and adaptation into all levels of decision making, from day to day operational decisions through to long term strategic planning.	AM	2017-22
<i>Prepare and protect our people for, and from, climate change</i>	Protect our people from the impacts of climate change, particularly increases in temperature and the severity of storm events.	A	
Assets	Plan, design and operate our assets to minimise the generation of greenhouse gas emissions while maintaining service levels and keeping services affordable to customers.	M	2017-22 Ongoing
<i>Integrate climate change mitigation and adaption into all aspects of asset management</i>	Undertake a risk based assessment of climate change impacts on existing assets and develop strategies and plans to minimise risks and maximise opportunities.	A	
	Develop systems and tools to optimise the operation of plant and systems to minimise energy consumption whilst maintaining necessary service levels.	M	
Community	Working with our existing relationships and strategic alliances to identify and develop projects and initiatives.	AM	2017-22 Ongoing
<i>Work with others to achieve climate change outcomes through partnerships and strategic alliances</i>	Actively work with our communities to identify and develop opportunities, projects and initiatives for decentralised renewable energy.		
Environment	Identify and assess carbon sequestration and offsetting opportunities and develop a framework for integrating these opportunities into our mitigation actions and appropriate response plans.	M	2017-22
<i>Pursue opportunity to respond to climate change while protecting and enhancing local environmental values</i>			
Business	Integrate climate change into key governance processes, from strategic business planning through to policy and processes.	AM	2017-22 Ongoing
<i>Make our business climate ready and integrate climate change into key policies and processes</i>	Review emergency management plans to ensure they have adequately considered climate change and appropriate response plans.	A	

* A = Adaptation, M = Mitigation, AM = Adaptation and mitigation initiatives



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For more information about
Westernport Water's
Climate Change Strategy
www.westernportwater.com.au