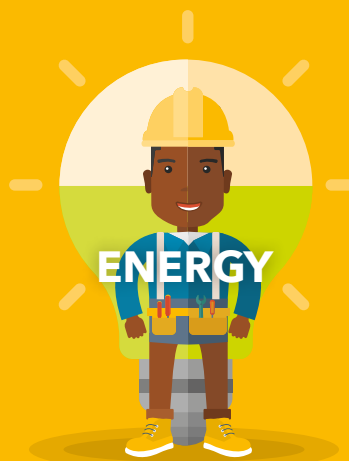




CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD



SMART LIVING HANDBOOK



Making sustainable living a reality in Cape Town homes

Making progress possible. Together.



**Making sustainable living a reality
in Cape Town homes**

**Electronic document
navigation shortcuts**

- Entries on the contents page link to the relevant page.
- The tabs on the right link to the first page of each section.
- The document title in the footer of each page links to the contents page.

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Every effort has been made to ensure the accuracy of information in this book at the time of publication, and to acknowledge photographs correctly. The City of Cape Town accepts no responsibility and will not be liable for any errors or omissions contained herein.

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**"WE ALL HAVE A
RESPONSIBILITY
TO LEARN HOW TO
LIVE AND DEVELOP
SUSTAINABLY
IN A WORLD
OF FINITE
RESOURCES."**

- ARCHBISHOP EMERITUS DESMOND TUTU, 2009



INTRODUCTION

Capetonians are at the heart of building resilience. We have emerged out of hundreds of years of racial oppression under colonialism and apartheid, and continue to grapple with the legacies of our traumatic past. Much work remains to be done, especially with regard to building city-wide social cohesion. At times, though, we have been able to come together to confront a collective challenge. This we proved again when we drove down water consumption during the 2016–2018 drought crisis – the worst the city region has experienced in recorded history.

The Cape Town Water Strategy was adopted in April 2019, and the Resilience Strategy towards the end of 2019. This was in the aftermath of the drought, during which dramatically low rainfall for three years in a row, exacerbated by climate change, had brought Capetonians uncomfortably close to the reality of the taps running dry. The episode severely tested the resilience of our city and its people. Through a comprehensive societal response, not least due to the heroic efforts of households and businesses to reduce consumption, the worst-case scenario was avoided.

For more information on the City's Resilience Strategy, other key strategic documents and the IDP, go to www.capetown.gov.za.

But while Cape Town undoubtedly showed a strong capacity for resilience in the face of drought, it would be less easy to argue that the city is objectively resilient to drought. What if there had been a fourth year of extremely low rainfall? What if certain sectors, already strained by chronic issues, such as food insecurity and unemployment, suffered from an unprecedented collapse in the midst of the drought? What if Covid-19 had arrived at the same time as the drought?

We must reflect on and learn from our challenges, take new actions to improve resilience, and apply new knowledge and innovative solutions to future shock events. It is in this context that the Cape Town Resilience Strategy offers a roadmap for a 21st-century metropolis. Cape Town is a vibrant city, home to a diversity of people, many of whom were born and raised here, and many of whom migrated here, drawn by the opportunities that our city has to offer. Cape Town is also the destination of hundreds of thousands of visitors every year, who come to experience our world-class beaches, mountains, fynbos, vineyards and culture. Tempering this vibrancy and opportunity, however, are a range of system-wide challenges posed by one-time shocks.

BACKGROUND TO THE HANDBOOK'S CREATION

The City has a partnership with the City of Aachen in Germany that is specifically aimed at promoting sustainable development in a practical way. One of the partnership's projects implemented in Cape Town was the 21 Households Project with families from Khayelitsha, Manenberg and Wynberg. In the course of a year, households met monthly to learn about sustainable living through practical, interactive workshops and outings. Eco-audits were done in their homes at the start and end of the project to determine the main focus areas that had to be addressed, as well as the eventual impact of the training.

The project was a great success in the local communities. It was repeated in different areas, and in all instances, households felt that they had been empowered to make better decisions that would improve their lives and benefit the environment. The participating households believed that it was important to get the message across to the broader community, and suggested that the workshop notes be printed in a handbook format.

Subsequently, the *Smart Living Handbook* was developed by AMATHEMBA Environmental Management Consulting and Sustainable Energy Africa on the City's behalf. It was based on AMATHEMBA's *Home Environmental Management Guide Book* and Sarah Ward's *The Energy Book*, and was first published in 2007.

Minor updates and reprints were done in 2008 and 2009. In 2010/11, Steadfast Greening and Icologie undertook an extensive update and review of the handbook and compiled the complementary *Smart Events Handbook* and *Smart Office Handbook*.

In 2018, the City again initiated an update by Steadfast Greening, with another two chapters added. Additional complementary resources were also compiled, namely the *Smart Living Audit Guide for Your Home*, *Smart Cooking and Home Safety Guide*, *Smart Living Audit Guide for Early Childhood Development Centres*, and the *Smart Driving Training Manual*.

All of these resources, including the *Smart Living Handbook*, are available for download from www.capetown.gov.za.
Search for: greener living.

HOW TO USE THIS HANDBOOK

We would all like to make good choices when it comes to managing our homes – good choices for our health, safety and pocket, but also for the environment. This handbook contains some useful information and handy tips to help you make the best choices to reduce your energy and water consumption and waste output. It also provides information on how to keep our natural world as strong and diverse as possible.

The handbook is divided into six chapters: Water, Waste, Environment, Transport, Energy and Heritage. The book contains a lot of information, so we recommend that you give yourself sufficient time to work through it. Attempting to read all the chapters together, and trying out all the new actions at once, could be difficult. Perhaps start with reading the summary of each chapter and decide which chapter interests you the most or will give you what you need to make smart decisions in your home, and then begin.

Different types of households are faced with different environmental issues. For example, high-income households may find that they are high consumers of electricity and need to explore ways to reduce their consumption. Informal households, on the other hand, may find that their greatest problem is householders' health and safety due to the unsafe use of energy. We hope this handbook will be relevant and useful to all Cape Town homes. If a section does not seem to relate to your issues, simply move on to the next one or explore and consider the issues facing you and your household.

Each chapter provides the following information:

- ✓ The key challenges relating to the resource
- ✓ What the City is doing to manage the resource or issue
- ✓ What you can do in your home to help conserve the resource
- ✓ Contacts and information sources, and steps for implementation

Activities and pictures are provided to help you interact with the issues, as well as for easy reference. Safety and health issues are also addressed in each of the chapters. And since community organisation and activity are vital for good governance, the handbook contains information on some interesting initiatives in Cape Town's civil society as well.

Guided by the information shared in this book, we can all make a difference by living smarter. Water and energy-saving products are available from most hardware stores and suppliers of plumbing or lighting devices in Cape Town. There are many waste recycling initiatives at schools and in communities, so consult your community newspaper for more details. Many "green" products are available locally - visit Cape Town Green Map at www.capetowngreenmap.co.za for more information. Our local nurseries are well stocked with indigenous plants and will be able to guide you on those best suited to your local area. Alternatively, contact Kirstenbosch for more information.

Play your part in making Cape Town more resource-savvy and resilient.

ACKNOWLEDGEMENTS

Compiling a book such as this requires research, input and advice from various sources. We are grateful to all who have contributed to the information contained in this handbook.

A special word of thanks goes to staff from the following City directorates and departments:

- ✓ Corporate Services Directorate:
Communication Department,
Publication Branch
- ✓ Energy and Climate Change Directorate:
Sustainable Energy Markets Department
- ✓ Informal Settlements, Water and Waste Services Directorate:
Water and Sanitation Department,
Solid Waste Management Department
- ✓ Spatial Planning and Environment Directorate:
Environmental Management Department
- ✓ Transport Directorate:
Transport Planning Department

WATER



Water is a scarce natural resource on which all life on Earth depends. We need to protect it and use it with care and respect. Providing water services in an urban context is

complex, particularly in an area where rainfall is unpredictable. The City of Cape Town works with residents to ensure sustainable services, and to become an even more water-wise city.

IMPORTANCE OF WATER

Less than 3% of all water on Earth is fresh water, and only a small percentage (around 0,3%) of this is available for use as surface water in rivers and dams. Most of this easily available water is already being used and polluted by human activity.

Cape Town is one of hundreds of cities across the world affected by water scarcity brought on by climate change, and we face an even drier future. For greater water security, we can no longer solely rely on our rain-fed dams. This is why the City, too, is now getting its water from new sources, such as groundwater, recycled water and desalinated sea water, to ensure that we and generations to come can continue to live and thrive in our beautiful city.

Here are just a few reasons why water is precious:

- ✓ Every living thing needs water to survive. All people, plants, animals, insects and birds – all creatures – need water to survive.
- ✓ Water is important for our health. Every cell in our body requires it. We must constantly be adding fresh, clean water to our body in order to keep it properly hydrated. We can live for weeks without food, but only three days without water.
- ✓ Water is important for hygiene. We need it to wash our bodies and clothes, and keep our homes clean. From brushing our teeth, to doctors and nurses washing their hands, water is important for hygiene.
- ✓ Nature needs water. Plants need water and sunlight to photosynthesise, so that they can create their food. Agriculture requires water for crop irrigation and keeping animals hydrated. We need water to keep our gardens green and in bloom.
- ✓ Commerce and industry need water. Water is essential for commercial buildings, operations and manufacturing. Particularly heavy industries often use large amounts of water for cooling or in their operations.
- ✓ Water keeps us fit and entertained. Swimming, diving, water-skiing, surfing and sailing are some of the things you can do in water. Water-based sports are an excellent way to stay fit. Swimming, for instance, uses almost all the muscles in your body and provides a full-body workout.

For these and many other reasons, we need to use water with care and protect our water resources and infrastructure. This includes preventing wastage or pollution of water sources and our rivers, streams, canals and vleis (wetlands).

INTRODUCTION TO NATURAL AND URBAN WATER SYSTEMS

The water that runs from your tap has travelled a long way and is part of a much larger natural water cycle and urban water management system. Traditionally, Cape Town relied on surface water in the form of rainwater and other precipitation¹ in our catchment areas, flowing into our dams. But rainfall is increasingly unreliable, which is why the City is now diversifying its water sources to include groundwater, desalinated sea water and recycled water.

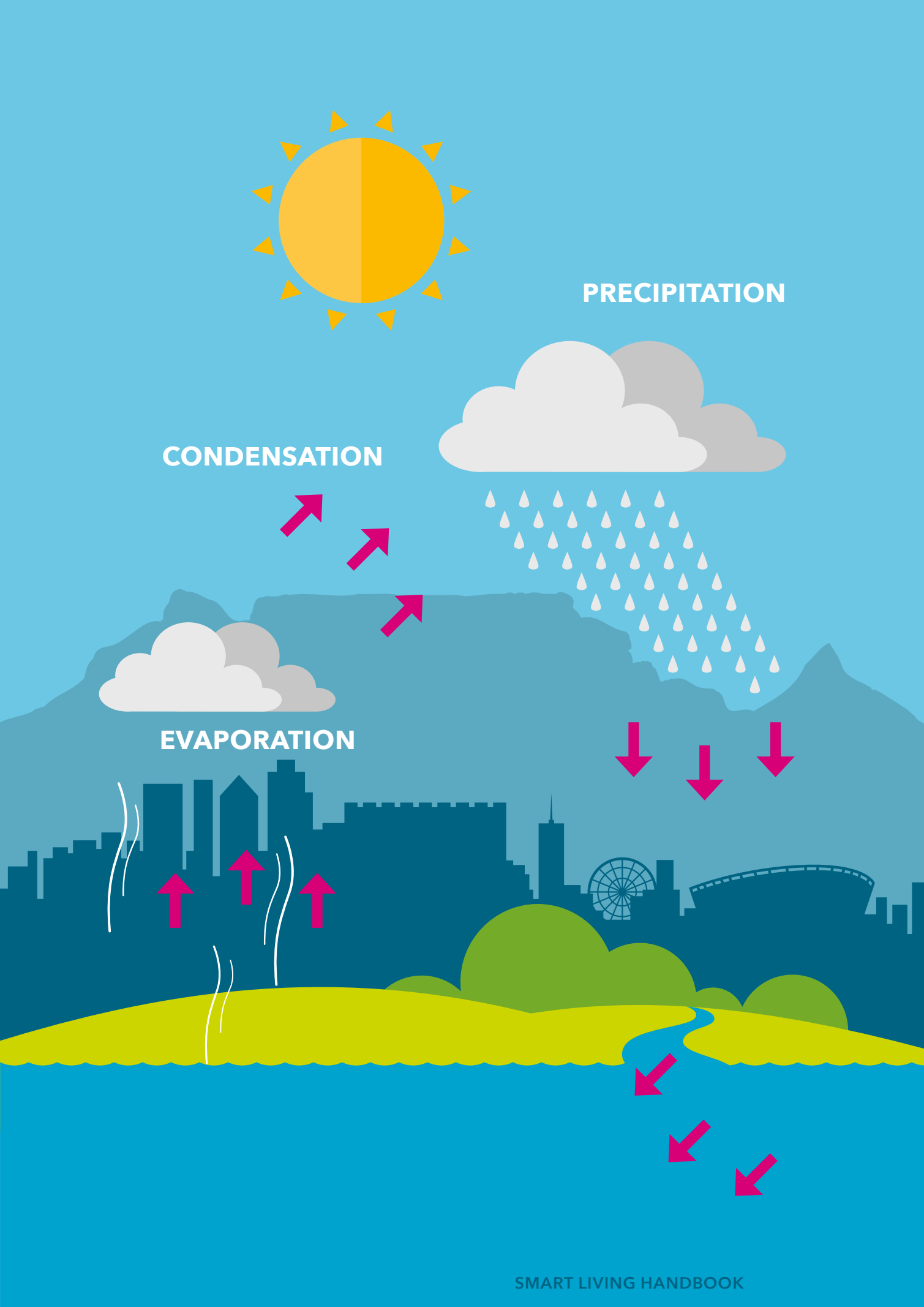
THE NATURAL WATER CYCLE AND RAINFALL IN THE CAPE TOWN CATCHMENT AREA

Water on Earth evaporates to become water vapour, which forms clouds. When this cools down, it condensates to become heavy raindrops, which fall down to the Earth as rain. Along with rain, other types of precipitation include hail, snow and dew.

Your water can come from hundreds of kilometres away as water vapour that evaporated off our shores due to the sun's heat. Water vapour rises, cools and condenses to form clouds off the ocean and falls as rain on the mountains surrounding Cape Town. From there, it runs down mountain streams and rivers to be stored in one of the dams supplying Cape Town and surrounding areas.

Unlike most of South Africa, Cape Town receives most of its rain in winter. Typically, however, Capetonians have used more water in the hot, dry and windy summer months, irrigating their gardens and topping up their pools.

¹ Water Services and the Cape Town Urban Water Cycle, August 2018.



Rainfall in Cape Town is not only unpredictable, but also uneven over the greater Cape Town metro area because of the presence of the mountains. Rainfall is highest on or close to mountainous areas. Clouds that form over the mountains when the southeastern wind blows also contribute to precipitation. Table Mountain's famous "tablecloth" dampens the top of the mountain, and this precipitation helps keep streams and springs flowing from the mountain for much of the year.

Some of the rainwater seeps into the ground to become groundwater and can be stored in naturally occurring underground water bodies called "aquifers". Other water gathers in streams, rivers or canals and is referred to as "surface runoff". This surface water flows down catchment areas and is collected in dams that supply our urban water needs.

The main catchment areas for Cape Town's dams are the mountain fynbos areas located to the east and northeast of the city, including the Hottentots Holland, Riviersonderend, Wemmershoek, Wellington and Porterville mountain ranges. Table Mountain is also a catchment area, although these days, it contributes less than 1% of Cape Town's total water supply.

PROTECTING OUR FRESHWATER ECOSYSTEMS

Not only do we live in a water-stressed country, but about 80% of South Africa's rivers are classified as threatened by urban development. We need to protect our freshwater ecosystems. Human activities, such as industry, settlement and recreation are popular along ecologically sensitive "green corridors", such as floodplains and wetlands, and should be carefully managed.

Water bodies, and particularly wetlands, play a very important role by controlling the flow of water, filtering impurities and replenishing groundwater. Wetlands naturally absorb greenhouse gases that are contributing to climate change. Natural vegetation in these areas should be protected, as it maintains biodiversity and reduces surface runoff, soil erosion and the risk of flooding. However, alien invasive vegetation is water-intensive and should be removed as far as possible.

WHY ARE INVASIVE ALIEN PLANT SPECIES A PROBLEM?

Invasive alien plants directly threaten our water security, ecosystems and the productive use of our land. They intensify the impact of fires and floods, increase soil erosion and absorb enormous amounts of water before it can flow into our dams.

Examples of common alien plants that consume lots of water include the silver wattle, cat's claw creeper, oleander, Port Jackson willow, watercress, kikuyu grass, weeping willow and silky oak.

One adult black wattle tree, for instance, can consume up to 200 litres of water per day, while eucalyptus (gum trees) use even more because of their ability to grow deep roots (30-50 m) and suck up groundwater effectively.

WATER IN OUR CITY

THE WATER SUPPLY SYSTEM THAT SERVES CAPE TOWN

A large water supply system brings water to your tap and deals with your wastewater in urban Cape Town.

Different spheres of government are involved. In terms of national legislation, the national Department of Human Settlements, Water and Sanitation (as it is currently called) is responsible for water resource management. In Cape Town, the City, as the municipality, is both a water services provider and a water services authority, which means it is involved in both providing and managing water services. This is unusual compared to other South African municipalities.

This was achieved through a combined effort by all consumers, the City and other WCWSS users.

The City was awarded international recognition for being the first in the world to halve its water use within such a short timeframe without resorting to intermittent supply. This was done on top of significant water efficiencies already achieved due to a successful water demand management programme since 2000.

WHAT ARE OUR WATER RIGHTS AND RESPONSIBILITIES?

WATER RIGHTS

In terms of the Water Services Act 108 of 1997, all water service authorities must provide access to water and sanitation services that are efficient, affordable, economical and sustainable.

CAPE TOWN'S SHARED WATER FUTURE

Having gone through a serious multi-year drought crisis, the City produced its Water Strategy in 2019. The document outlines the path towards a shared water future and lists the following five City commitments:

- ✓ Safe access to water and sanitation, particularly for those in informal settlements
- ✓ Wise use of water

- ✓ Sufficient, reliable water from diverse sources of bulk water supply, including groundwater from aquifers, reuse and the desalination of sea water
- ✓ Shared benefits from regional water resources
- ✓ Facilitation of the transition to becoming a "water-sensitive city" in the longer term

The strategy is being implemented through a collaborative approach. Find the link to the Water Strategy under **"CONTACTS AND RESOURCES"**.

In practice, this means that everyone must be able to access the water they need, which, in South Africa, is a minimum of 25 litres per day. In Cape Town, low-income households classified as “indigent” are entitled to receive 6 000 litres of water per household per month free of charge.² All other households need to pay for what they use to keep water and sanitation services financially sustainable. The City’s water webpage, “Think Water”, contains more information on water tariffs and indigent classification. Consult **“CONTACTS AND RESOURCES”** at the end of this chapter for a link.

The national requirement for water and sanitation services to informal settlements is one tap for 25 families within 200 m of any dwelling. In terms of communal and shared toilets, these must also be within 200 m of a dwelling as a minimum requirement. The City works towards a higher standard of one toilet for a maximum of five households, and one tap for 25 households, both within a maximum walking distance of 100 m. In situations of emergency relief, the City provides a “shared service”, which is one tap for 40 households within a 200 m radius, and one toilet for 10 households.

WATER RESPONSIBILITIES

To cover the cost of providing these services, the City must generate enough revenue from consumers. Charges for the provision of water supply and wastewater removal and treatment are intended to cover the cost of operating, maintaining, upgrading and expanding the City’s water and wastewater systems and services. Firstly, therefore, water users are responsible to pay for the water and sanitation services they use.

Secondly, you are responsible for using water wisely and carefully, especially in water-restricted conditions. This means maintaining taps, toilets, plumbing and pipes on your property to ensure that there are no leaks, and fixing any leaks as soon as these are detected. Leaks are a waste of water that can run up a high cost. So, to prevent loss of water and your hard-earned money, monitor your water usage on an ongoing basis to be able to detect a potential leak or unusual consumption early on.

In the event of an underground leak or a leak not visible to the eye on the primary plumbing, the City can grant a rebate based on average previous consumption, among other factors. Apply for the rebate at one of the City’s customer interaction centres (walk-in centres) that deal with payments. For a link to a list of City walk-in centres, see **“CONTACTS AND RESOURCES”**.

² As at the time of compiling this publication. See www.capetown.gov.za for updated information.

WHY TAP REMAINS TOPS IN CAPE TOWN

Cape Town's drinking water is of a very high standard, as most of it comes from largely unpolluted mountain catchment areas. The City has 12 water treatment facilities where water is consistently treated to the SANS 241 national standard for drinking-quality water.

Raw water entering treatment plants is constantly monitored and drinking water leaving the plants into the distribution network is tested every two hours. There are also approximately 250 sampling

points across town. All water is tested in the City's accredited Scientific Services laboratory, which uses sophisticated water testing instrumentation and methods. For a link to more information on water quality, go to **"CONTACTS AND RESOURCES"**.

There is no reason why people should not drink tap water in Cape Town. Costing about R10 per litre, bottled water is expensive (considering that one litre of tap water in your home costs 3c).³ The bottles also contribute to the waste sent to our landfill sites. Rather get your own reusable water bottle and refill it with our good-quality tap water.

³ According to 2019/20 tariffs. See the City of Cape Town's website for the latest tariffs.

Other responsibilities include:

- ✓ using alternative water safely;
- ✓ preventing pollution and sewer blockages;
- ✓ adhering to laws and by-laws; and
- ✓ reporting any water-related problems (see **"CONTACTS AND RESOURCES"** for contact details).

To read more about your water rights and responsibilities, the City has compiled a summary guide to its water and other by-laws and regulations.

Turn to **"CONTACTS AND RESOURCES"** to find out where you can download it.

WATER METER READING

The City reads over 660 000 meters every month, using mobile handheld devices. Ideally, meter reading should happen each month, which then serves as the basis for calculating consumers' water charges according to current tariffs.

However, some meters are not accessible. If your meter cannot be read, whether due to a locked gate, aggressive pet or other circumstances, and you do not submit your water reading, your bill will be an estimate based on your previous water use. As soon as the meter reader is able to get an actual reading, all cost estimates are updated and, if necessary, corrected.

You can help the City get an accurate reading for your water meter by doing the following:

- ✓ Know where your water meter is.
- ✓ Ensure that the meter is not covered by sand or weeds, is accessible to City officials, and easy to read.
- ✓ If your water meter is behind locked gates, under a parked vehicle or in an area guarded by dogs, you can submit the reading yourself 11 times a year. Consult **"CONTACTS AND RESOURCES"** for the relevant contact details. The 12th reading needs to be confirmed by a City meter reader.
- ✓ Alternatively, ask the City to relocate your meter to outside your property – check under **"CONTACTS AND RESOURCES"** where to do so.

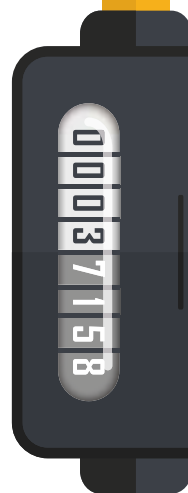


OUR WATER FOOTPRINT

Water is required to manufacture the goods we buy, produce the food we eat, and provide the services we benefit from. A “water footprint” is a measure of the total amount of water used to produce goods and services.

Let’s look at the example of coffee. Somewhere in Kenya, a farmer needs to plant and nurture his coffee shrubs so that he can pick the beans. He requires water to feed his shrubs, which will, after three to five years of growth, produce beans that he can pick. The beans are then washed, roasted and ground to make coffee. They then need to be packaged and transported before being sold. All along the process of coffee manufacturing, packaging and distribution, water is required. By the time you pour yourself a cuppa, the water footprint to produce it already comprises approximately 140 litres.

The Water Footprint Network has more information in this regard. See **“CONTACTS AND RESOURCES”** for their web address.



WATER IN YOUR HOME

HOUSEHOLD WATER-SAVING TIPS

Households consume some 70% of the water in Cape Town, making our homes a very important area of focus for saving water. We all need to incorporate wise water-saving habits into our daily lives to ensure that we adapt to our “new normal” – water scarcity. Any action we take to use water more efficiently makes a difference to the sustainability of our water resources. Remember, the more water you save, the less you pay – and the more water remains in our dams.

The residential water-saving tips in this section are based on Capetonians’ experience during the recent drought crisis.

TOILET FLUSHING AND SANITATION

- ✓ Only flush the toilet when necessary. Let the “yellow mellow” at home, work, school, gym and the shops. And do not use the toilet as a dustbin.

- ✓ Flush the toilet with greywater (laundry, bath and shower water) or another form of alternative water, such as rainwater, borehole or well-point water.⁴ If you’re using only alternative water, you can close the toilet stopcock (angle valve).
- ✓ Place a full glass bottle in your cistern to reduce each flush to a maximum of six litres (if you have no choice but to use municipal drinking water for flushing).
- ✓ Use less toilet paper to minimise the risk of sewer blockages.
- ✓ Use bleach or disinfectant to regularly sanitise toilets and surrounding areas, and keep hands sanitised to prevent health risks.

BODY WASHING AND PERSONAL HYGIENE

- ✓ Take short, stop-start showers. Wet your body. Turn off the tap. Soap. Rinse quickly.
- ✓ No shower? Take a sponge bath. Use minimal water in a basin, bowl or washtub (waskom).

⁴ Using water from alternative sources does pose some health and hygiene risks you must avoid. Keep hands and surface areas sanitised and disinfected, and do not keep greywater for longer than 24 hours. Also keep water containers in a safe place, as children can drown in them.

- ✓ Collect the water that runs while you wait for it to heat. Use that cold water wherever possible, or heat your water for a sponge bath in a kettle or on the stove.
- ✓ Collect as much washing water as possible and reuse for flushing toilets. Excess greywater can also be used for plants or washing vehicles.
- ✓ Do not let taps run for too long or at full flow. Use a cup for brushing teeth or shaving.
- ✓ Use waterless hand sanitiser instead of washing your hands with water every time.

LAUNDRY AND DISHES

- ✓ Only wash what is necessary.
- ✓ Wait for a full load before running washing machines and dishwashers. Some washing machine models even let you use final rinse water for the next washing cycle.
- ✓ Washing laundry by hand can use less water than many washing machines, especially older models with no eco-cycles. Check your machine's usage.
- ✓ Use as little soap as possible to save on rinse water.
- ✓ Reuse rinse water for the next wash wherever possible.
- ✓ Reuse laundry water for flushing toilets.

PLUMBING FITTINGS AND FIXTURES

- ✓ Fit flow restrictors on indoor taps to reduce the flow rate to less than six litres per minute, as per the City's current Water By-law.
- ✓ Install low-flow showerheads or fit a flow restrictor to your existing showerhead to reduce flow to a maximum of seven litres per minute, as per the City's current Water By-law.
- ✓ Reduce water pressure to your property by turning your stopcock lower and/or installing a flow restrictor on the main pipe connection from your meter.
- ✓ Find and fix leaks on your property - see page 24 for more in this regard.

GARDENS AND OUTDOOR AREAS

- ✓ Use a broom and harvested rainwater to clean hard outdoor surfaces.
- ✓ Cover your topsoil with a layer of mulch to reduce evaporation. Mulch with materials like grass clippings, shredded leaves, bark chips or straw.
- ✓ Modify your gutters and downpipes to collect rainwater in containers.

SWIMMING POOLS⁵

- ✓ Fit a pool cover to significantly reduce evaporation.
- ✓ Recycle backwash water.
- ✓ Harvest rainwater and direct it to your pool for top-ups by attaching pipes or plastic sleeves to your gutters.

OTHER WAYS TO SAVE WATER

- ✓ Use much less wherever you go in and around Cape Town. Remember, the municipal drinking water you use in other places (e.g. at work or at the shops) comes from the same dam system.
- ✓ Use minimal water for food preparation. For instance, do not run water to defrost or rinse food.
- ✓ Place a container in sinks, basins, the bath and shower to capture water for reuse.⁶ Containers in showers should be large enough to collect all shower water – a bucket may not be big enough to do the job. Water is heavy, so use jugs to flush your toilets with greywater.

- ✓ Harvest as much rainwater as you can. Store in sealed containers in a cool place and use for cleaning floors, outdoor hard surfaces (such as verandas, decks, paths and driveways), windows and vehicles, washing laundry and flushing toilets. Do not use for drinking, cooking or bathing, as per the City's Water By-law.

ESSENTIAL ITEMS FOR YOUR WATER-SAVING KIT

- ✓ A waskom (washtub container) for use in showers and baths to collect as much water as possible.
- ✓ Buckets or jugs to transfer water from the waskom to the toilet or outside.
- ✓ Containers to catch water in all basins and sinks for reuse.
- ✓ Bleach or disinfectant to keep the toilet area sanitised when using grey/alternative water for flushing.
- ✓ Pipes or plastic sleeves for your gutters to harvest rainwater for pool water top-ups or water tank collection.
- ✓ Single-ply toilet paper to prevent sewer blockages.
- ✓ Waterless hand sanitiser.

⁵ At some water restriction levels, no municipal drinking water may be used for pools, ponds or water features.

⁶ Note, however, that dirty, greasy water from dishwashing is not suitable for reuse.

SHOULD YOU CHANGE YOUR SHOWERHEAD?

Before you decide to change your showerhead or fit a flow restrictor, you should know how much water your showerhead uses. In terms of the City's current Water By-law, no showerhead should exceed a flow rate of seven litres per minute.

To test the flow rate of your showerhead, you will need a bucket, a stopwatch with a seconds timer, and a measuring cup. Now follow these simple steps:

- ✓ Hold a bucket under the showerhead with a fully opened cold-water tap for 12 seconds. Although you want to measure the flow

rate per minute, by doing only a fifth of a minute ($12 \times 5 = 60$ seconds), you are saving water, and the bucket is not that heavy either.

- ✓ Measure the amount of water in the bucket (e.g. 1 800 ml, or 1,8 litres).
- ✓ Calculate the amount of water used per minute by multiplying it by five (e.g. $1,8 \times 5 = 9$ litres per minute).
- ✓ If your shower flow rate is more than the City's prescribed maximum of seven litres per minute, you should replace your showerhead. Anything more than 1,4 litres in the bucket in the 12-second test means your shower is wasting water.



YOUR "HOW-TO" GUIDE FOR FIXING LEAKS

HOW TO FIND AND FIX LEAKS

Finding and fixing leaks is an essential part of reducing water wastage. Repairing leaks on your property is your responsibility. By law, leaks must be fixed quickly, which will also save you money. Tenants or those without a dedicated meter should also take action to stop leaks, whether by fixing the leak themselves or notifying the property manager or owner.

A single dripping tap can waste 15-90 litres per day, which is enough to fill an average swimming pool in a year. A toilet leak wastes up to four times as much, or one average pool's worth every third month. Many people do not realise they have water leaks in their home, allowing the water to go to waste for months or even years. This not only ends up costing you money, but also drains our dams unnecessarily.

While fixing a leak may cost a bit, it typically pays for itself very quickly, even within a month or two for a simple toilet, tap or geyser leak where a plumber replaces a washer. Payback is even faster if you do it yourself. To help you, the City has put together a handy DIY guide – page to **"CONTACTS AND RESOURCES"** at the end of the chapter for a link that will take you to it.

So, you think you might have a leak at home? This is how to check and make sure:

- ✓ Stop all water use. Close all taps on the property and do not flush toilets.
- ✓ Check and record your meter reading.
- ✓ Wait 15 minutes and take another reading. Make sure nobody has opened a tap or flushed a toilet since you first noted the meter reading.
- ✓ If there is a difference, you have a leak to fix.

In most instances, locating the leak is easy, if you know where to look. Always check the basics first – toilets, hot-water cylinder (geyser) overflow pipes, as well as taps. These are the most common.

CHECKING FOR A TOILET LEAK

If you have identified the toilet as the culprit, check for the cause. Remove the cistern cover and look at the water level inside:

- ✓ If the water is at the same level as the overflow pipe or is flowing into it, the water level is set too high, or the float valve is leaking and needs to be replaced (see page 26-27).
- ✓ If the water level is below both overflow pipes, the flush valve is leaking. Alternatively, the flush valve may be worn or perished, causing water to leak into the bowl. Replace the flush-valve washer (see page 26-27).

SETTING THE CORRECT WATER LEVEL

If there is water flowing from your overflow pipe, this means your water level is set too high. This may be fixed by lowering the float-valve setting in one of the following two ways:



Method 1: Close the isolating valve (stopcock), remove the split pin and lift the float arm from the cistern. Bend the float arm slightly downwards. To prevent damage, hold the arm with one hand while bending it with the other. If the float arm is old, it may be brittle and break easily, so be careful. When you are putting it back, make sure it fits in correctly. Finally, reopen the isolating valve and check that the new water level is lower.

1

Listen for water trickling into the toilet bowl.



2

Press a piece of toilet paper against the inside back surface of the bowl. If it gets wet, you probably have a leak.



3

Put 15 drops of food colouring into the toilet cistern. If, after 15 minutes, the water in the toilet bowl has changed colour, there is a leak.



- ✓ **Method 2:** If the valve is fitted with a screw-type adjuster, turn the screw to lower the float slightly. The water should rise to a level below the overflow, and the float valve should close off. If this does not happen and the water level continues to rise, causing the cistern to start overflowing again, the float-valve washer needs replacing (see how in the next section).

If you can't afford to call a plumber right away to fix a serious toilet problem, use the little stopcock (angle-valve) tap at the base of the toilet to keep it turned off between flushes.

REPLACING THE FLOAT-VALVE WASHER

Step 1: Close the isolating valve to shut off the water supply to the toilet.

Step 2: Remove the split pin and the float arm.

Step 3: Unscrew the cap.

Step 4: Remove the plunger by using water pressure to push it out. (Open the isolating valve slightly.)

Step 5: Unscrew the brass plunger to remove the washer held inside it.

Step 6: Fit a new washer. Reassemble the parts by working your way back from the fourth to the first step above.

Step 7: Open the isolating valve slowly and check that the float valve closes when the cistern is full.

REPLACING THE FLUSH-VALVE WASHER

Step 1: Close the isolating valve to shut off the water supply to the toilet. Remove the split pin and the float arm.

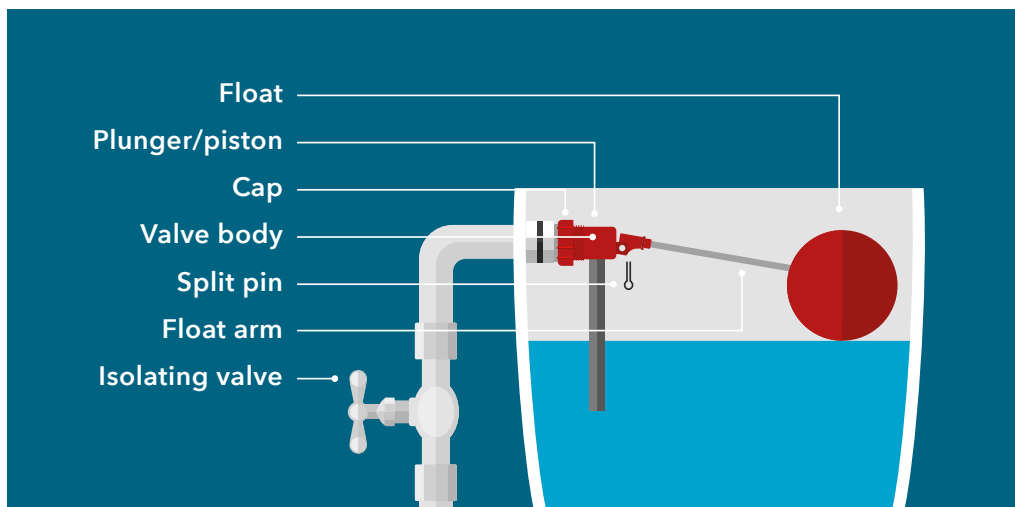
Step 2: Remove the spindle assembly. Be careful not to break the mechanism.

Step 3: Unscrew the bottom flange and remove the washer (remember which side this washer faced for when you fit the new washer). Work gently. If you cannot remove the top part of the flush valve, call a qualified plumber.

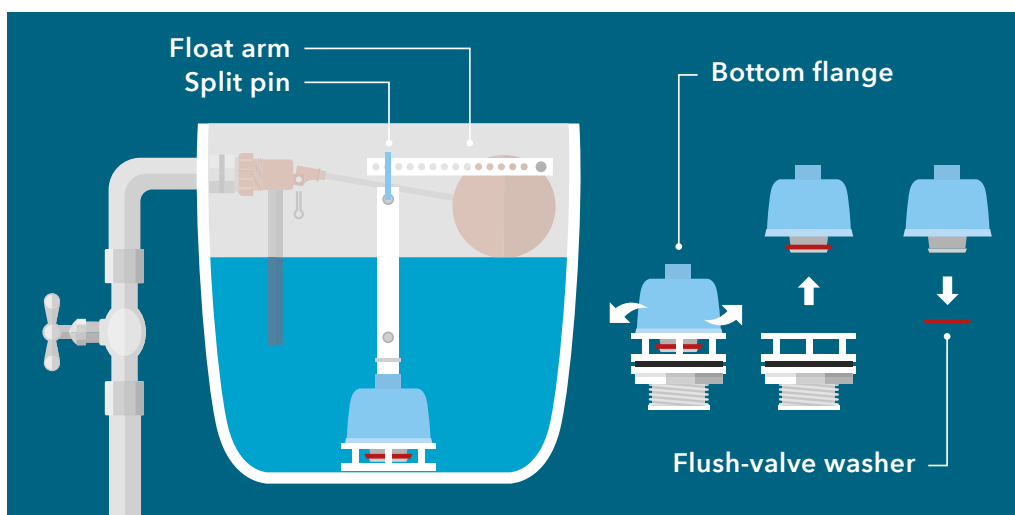
Step 4: Install a new washer with the sloping side facing upwards. Reassemble the parts by working your way back from the third to the first step above.

Step 5: Open the isolating valve slowly and check that there are no more leaks.

REPLACING THE FLOAT-VALVE WASHER



REPLACING THE FLUSH-VALVE WASHER



TIP: Different manufacturers use different mechanisms. To ensure that you get the correct replacement washer, take your existing old washer along when visiting the hardware store.

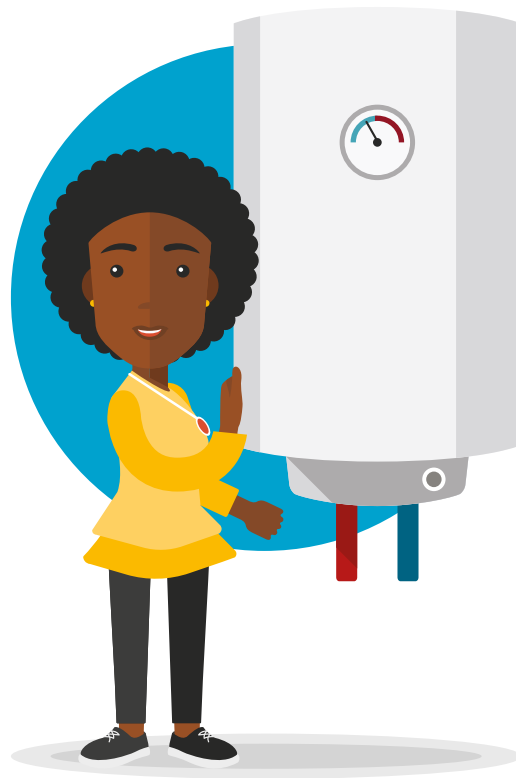
CHECKING FOR A LEAK IN THE HOT-WATER CYLINDER

Like toilet cisterns, hot-water cylinders (geysers) have an overflow pipe.

Most modern geysers are high-pressure with thermostat control and are fitted with a pressure-reducing valve. It is normal for water to drip from the overflow pipe, which is connected to an expansion relief valve. Water expands when heated, so a small amount is released through this valve to relieve the pressure inside the cylinder and prevent it from bursting. The drip could continue for an hour or more, losing up to two litres a day. However, this should stop when the temperature stabilises. Instead of wasting this water, the overflow can be directed to the garden or collected from the pipe to water plants. However, if it drips continuously, or the leaking is excessive, call a qualified plumber.

A gravity-fed (non-pressurised) cylinder has a float valve much like that found in a toilet cistern to control water flow. This can be adjusted to correct the water level and reduce water overflow. If worn, the float-valve washer needs to be replaced.

Both high-pressure and gravity-fed geysers are complex and can be very dangerous. The City recommends that you call a qualified plumber once the leak is found. For your convenience, the City has compiled a list of registered Cape Town plumbers – get the link to the list under **“CONTACTS AND RESOURCES”**. Please note, the City cannot be held responsible for any work done by any listed plumber.



REPLACING A TAP WASHER

Check all the taps in the home and garden for drips. A dripping tap usually means the washer needs replacing. This is how to do it:

Step 1: Close the main isolating valve or the isolating valve linked to the tap, then open the tap fully.

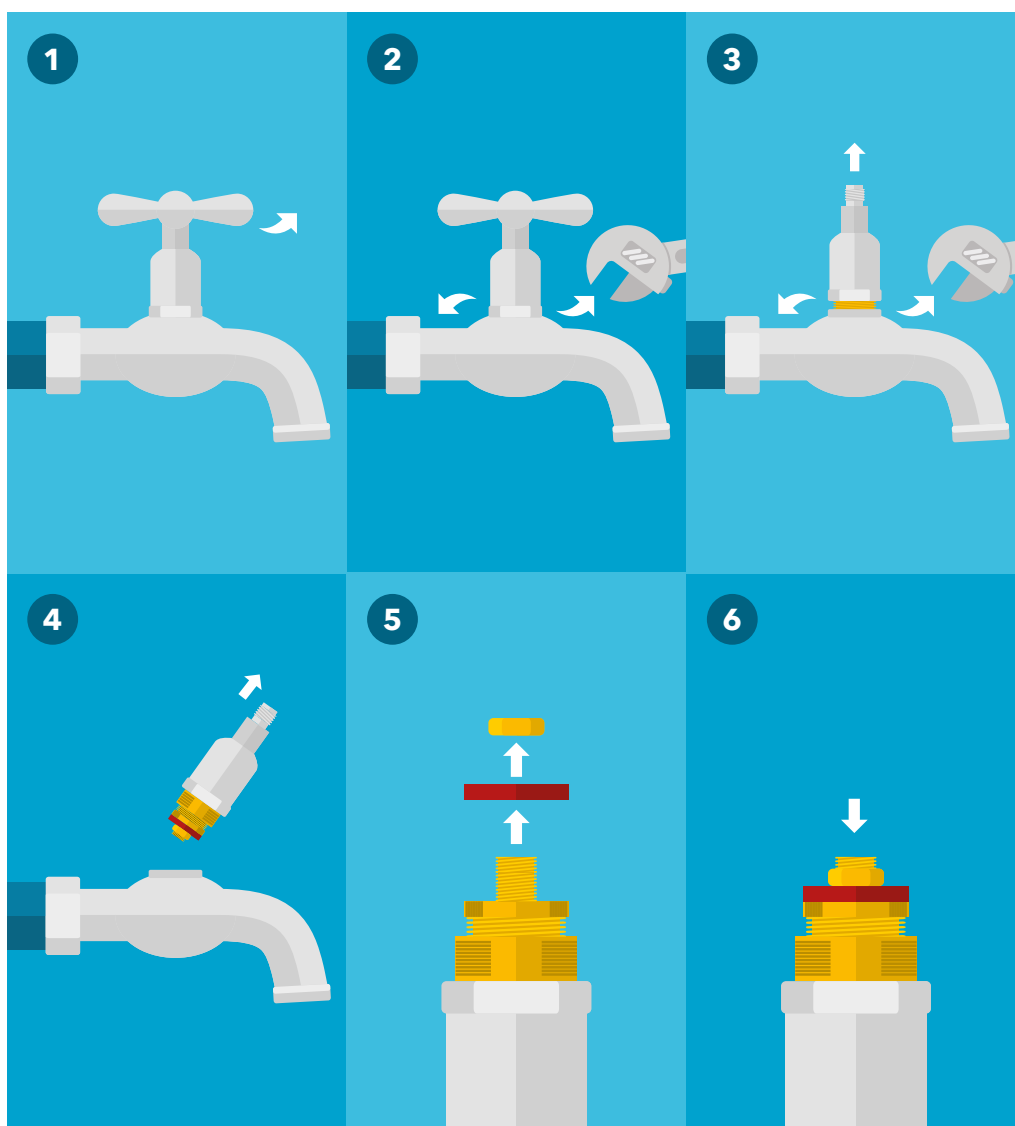
Step 2: Unscrew the cover. When unscrewing the tap, wrap a cloth around it to prevent it from being scratched.

Step 3: Unscrew the spindle.

Step 4: Remove the spindle.

Step 5: Unscrew the washer-retaining nut and remove the washer.

Step 6: Fit a new washer and replace the nut. Make sure that you have the correct washer size for the tap.



Step 7: Reinstall the spindle and screw down the cover.

Step 8: Close the tap, open the water supply slowly and check for leaks again. Do not overtighten the tap, as the new washer is softer and is easily damaged.

NOTE: Some taps are mixed with hot and cold supply controlled from a single lever, usually at the base of the tap. These and some other kinds of taps may not have washers, but rather integrated modules that need to be replaced. These are often specific to the tap manufacturer and model. For leaks from these and other taps without washers, it is best to call a qualified plumber.

MAKE POTENTIAL LEAKS MORE VISIBLE

A slow toilet or geyser leak might be difficult to spot. Your cistern and geyser overflows can serve as an early warning, so make these visible:

- ✓ Toilet cistern overflow often goes into the toilet bowl, where it cannot be easily seen. Instead, overflows should be directed outside the building, where you can see it.

- ✓ Geyser overflows or leaks from expansion valves, pressure relief valves and drip trays are often hidden. Direct any overflow outside into a tank for collection and reuse. There must be a visible air gap between the overflow pipe and the tank so that excessive overflow will be clearly visible, and action can be taken.



Greywater is **not** toilet water (which contains faecal matter and pathogens) or water from spas, jacuzzis and pools. Water from kitchen sinks and dishwashers contains grease, fats, oils, bacteria, food and other solid particles, and must therefore not be reused.

GENERAL RULES FOR GREYwater USE

Greywater is used entirely at the risk of the consumer. The City cannot be held liable for any consequential damage or loss arising directly or indirectly from the use of greywater.

✓ DO ...	⚠ DO NOT ...
✓ sanitise your hands after using greywater. ✓ use environmentally friendly detergents and soaps wherever possible. ✓ see the City's guide for the installation of alternative water systems (see "CONTACTS AND RESOURCES") and consult a specialist if you plan on installing an alternative water system that requires plumbing work (e.g. a borehole).	⚠ store greywater for longer than 24 hours, as this will lead to bad odour, slime build-up and health risks. If you do, the water needs filtration, disinfection and treatment, as advised by a specialist. ⚠ use greywater if any household member is sick. ⚠ reuse nappy-washing water. ⚠ allow children and animals near greywater. ⚠ ever ingest or swallow greywater. ⚠ spray greywater, as spraying disperses and spreads pathogens. ⚠ allow greywater to leave the property and flow into stormwater drains, streams or rivers. ⚠ use already reused greywater for anything else.

SOURCE OF GREYWATER	POSSIBLE CONTENTS	USE
“Warm-up”/lag water Cold water that runs while waiting for hot water from taps or showerheads.	This is still good-quality water and poses a low risk if used immediately, collected in clean, sanitary containers, and not combined with other water sources. Not recommended for drinking. If it has made contact with human bodies or potentially unclean surfaces, it is seen as greywater.	✓ Flushing toilets ✓ Cleaning indoor surfaces ✓ Laundry ✓ Dishwashing
Shower and bath water	Bacteria, hair, organic material, skin particles, lint, oil and grease, soap and detergents	✓ Flushing toilets* ✓ Cleaning vehicles* ✓ Garden irrigation*
Laundry water – from washing machine or handwashing The rinse water from a washing machine cycle has the lowest risk if you can capture it separately from the general water. Preferably use to wash vehicles, as other greywater can leave a residue. Rinse water can also be used for the next wash cycle.	Dirt, lint, organic material, oil and grease, sodium, nitrates and phosphates (from detergent), high salt and pH levels, bleach	✓ Flushing toilets* ✓ Cleaning vehicles* ✓ Garden irrigation*
Handbasin washing water	Bacteria, organic material, oil and grease, soap and detergent residue	✓ Flushing toilets* ✓ Cleaning vehicles* ✓ Garden irrigation*
Vegetable and fruit-rinsing water	Bacteria, organic matter and pesticide residue	✓ Flushing toilets* ✓ Cleaning vehicles*

* Use with caution, as indicated in the next section.

