

NON-MOTORISED TRANSPORT

Background and approach

Planting

Water

Maintenance

Community Benefit



Background and approach



The City of Cape Town non-motorised transport projects prioritise pedestrian, cycle and other modes of transport.

The spatial design of these projects considers hard and soft landscaping elements in order to improve functionality, environmental quality and the aesthetic of the road reserve area.

After meeting with the City of Cape Town – Parks Department official and the Client, we are clear on the approach to be followed, which is encompassed in the following items.

It is more prudent to work with a long term strategic plan in mind to ensure optimal outcomes.

Elements in the landscape that may be used to enhance the natural and urban environment include:

- Trees
- Groundcovers
- Boulders, rocks, pebbles, gravel
- Paving in key locations
- Street furniture such as benches

Planting



Trees

Trees are the most important element in this environment as resource for absorbing carbon dioxide and giving off oxygen for human life.

They also provide shade for pedestrians, shelter from the elements and habitat for birds, insects and wildlife.

Trees are the most substantial green vertical element in the landscape that mitigates “urban heat island effect” created by large paved surface areas and they soften an otherwise harsh or hard living environment.

Trees also contribute to stormwater attenuation in the form of soil stabilization and absorption of water that seeps into the ground.

Many trees have deep roots to stabilise them and shallow roots to absorb food & water for growth.

These roots hold the ground in tact on slopes and in surfaces that require “soft stabilization”.

Shrubs

Shrub planting is often not a consideration on these projects, as these may become litter traps.

Thorny shrubs may be considered for the purpose of visual and acoustic screening or a vertical impenetrable barrier to guide & direct pedestrians.

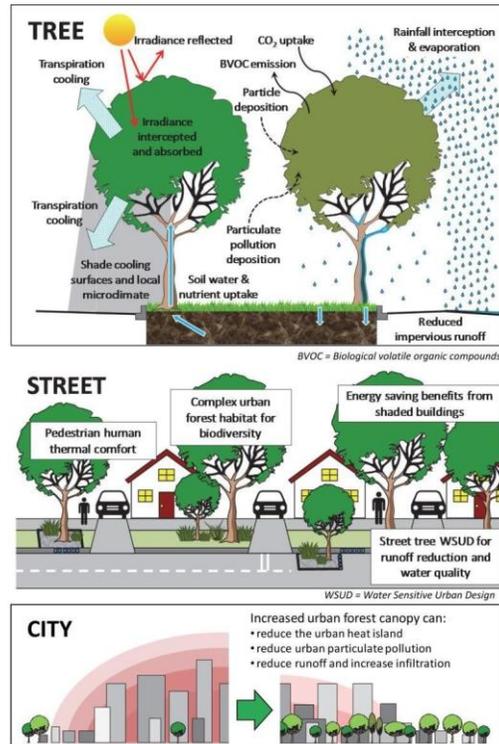
Groundcovers

Groundcover planting provides the benefit of soil stabilization and a horizontal plane green element with a similar function to trees.

Plant selection

The principle of selecting indigenous species:

- They are more adapted to the local climatic conditions such as wind and sun exposure, soils and drought.
- The species diversity is enormous, making selection and availability easier, improving the quality of habitat and chance of survival.
- Indigenous succulents require minimal water and are ideal in drought conditions.
- They tend to require alternative and in some cases less horticultural maintenance.
- The larger the size of trees and plants at time of sourcing the better chance of survival. Larger trees and plants can withstand more stress than smaller specimens, making it more preferable to plan for the ultimate long-term layout and strategically phase-in the work.



GREENPEACE

Water



Water, or the current scarcity thereof in the Cape Town Metro, is the most important constraint when considering the way forward in terms of implementation. For this reason, these projects will investigate the possibility to water 1. with effluent water via irrigation or water tanker. 2. to supplement such water with the use of water absorbent additives that release water slowly over time. 3. water with recycled / harvested water via irrigation or a water tanker.

The following apply:

Level 6B water restrictions will include:

Agricultural users need to reduce usage by 60% compared with the corresponding period in 2015 (pre-drought)

Borehole water use for outdoor purposes is discouraged in order to preserve groundwater resources.

Should borehole / wellpoint water be used for garden irrigation, this must be limited to a maximum of one hour only on Tuesdays and Saturdays before 09:00 or after 18:00.

Permission from the national Department of Water and Sanitation is required in order to sell or buy borehole/wellpoint water.

Excessive water users will be fined or have water management devices installed.

Irrigation or watering with municipal drinking water is illegal.

Water features may not use municipal drinking water.

All residents are strongly encouraged to install water efficient parts, fittings and technologies to minimise water use at all taps, showerheads and other plumbing mechanisms.

Boreholes and wells

Government regulation

National Government gazetted new guidelines for all borehole and wellpoint use, effective from [12 January 2018 Government Gazette No. 41381 \(Vol. 631\)](#).

Borehole/well point water use must be metered and all users are required to keep records and have these available for inspection.

Permission from the national Department of Water and Sanitation to sell or buy borehole/well point water.

The availability of groundwater depends on soil conditions. Good groundwater can be found in most parts of Cape Town, making it possible to install boreholes or well points. Using this water is free; however, it needs to be used responsibly as over-extraction harms the environment.

Take action

The [Water By-law \(2010\)](#) and [Water Amendment By-law \(2018\)](#) states that if you intend to sink a borehole or well point on your property you will need to apply and let us know at least 14 days before you install it - find out how below.

CITY CONNECT

[Apply to sink a borehole or wellpoint.](#)

Once installed, you will need to [register your borehole or well point](#).

If you already have a borehole or well point on your property, [please register it, or renew your registration](#), today. This helps us to gather information for environmental monitoring and research purposes – this is not so we can charge you. Water use from boreholes and wells remains free! As a thank you, we will send you a Certificate of Appreciation and a free weatherproof display sign.

See our handy [borehole registration poster](#) for more information on registering your borehole or well point.

Wells versus boreholes

Well points draw groundwater that is close to the surface, from about 8 - 10 metres. Boreholes can be shallow at a depth of about 30 m, or deeper at 100 m or more, and cost more than well points. Installing well points and boreholes is expensive and should be fully researched beforehand.

Use of groundwater

Not all groundwater is ideal for watering plants or indoor use, as it might have too much salt or iron in it. During the drought, limited irrigation is allowed in order to preserve groundwater. It should only be used for essential purposes indoors, such as toilet flushing, and only if it has received the appropriate treatment e.g. removing heavy metals.

Groundwater (like all alternative water) may not generally be used for drinking, cooking or body washing according to the [Water By-law \(2010\)](#) and [Water Amendment By-law \(2018\)](#). However, large developments can apply to become a Water Service Intermediary (see below) and treat this water for such use under certain conditions.



ALTERNATIVE WATER INSTALLATION GUIDELINES & DROUGHT CRISIS UPDATE

20 March 2018

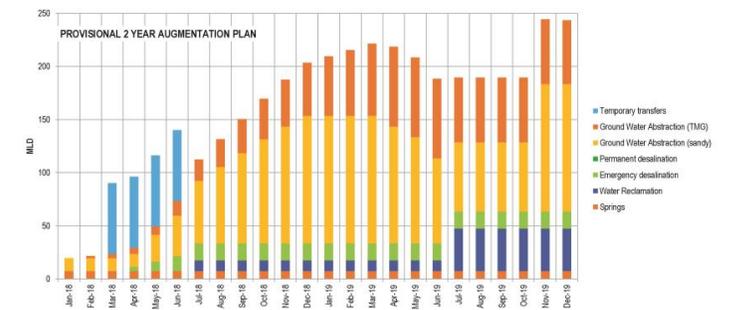
TOGETHER WE CAN
AVOID DAY
ZERO

Making progress possible. Together.

WHAT FORWARD LOOKING UTILITIES ARE DOING

- Diversification of supply mix (water source portfolio)
 - Desalination – 25%
 - Water Reuse – 25%
 - Groundwater Extraction – 25%
 - Surface/Dam Water – 25%
- Recharge of aquifers & reservoirs by reclaimed and desalinated water in wet years
- Maximise use of aquifers during dry years

SHORT TERM NEW WATER PROGRAMME - TBC



UNDER REVISION

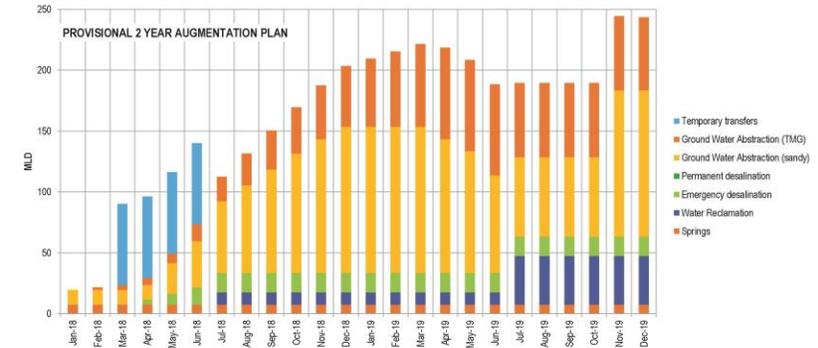


CITY OF CAPE TOWN
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STAD KAAPSTAD

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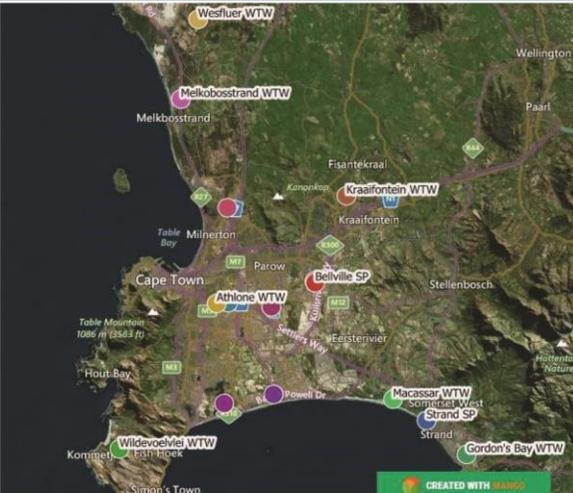
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TREATED EFFLUENT RE-USE FOR LARGE USERS

- Treated wastewater from treatment plants
- Cost is **R5.30/kl** compared to **R57/kl**.
- 75 million litres per day supplied through permanent pipeline connections
- 10 million litres from collection points
- Untreated for toilet flushing, irrigation, fire systems and other operational uses. Can be treated onsite to required quality.
- Email treated.effluent@capetown.gov.za
- So far mostly for
 - Industries & commercial operations
 - City Parks & Departments
 - Golf courses
 - School irrigation
 - Farmers



TREATED EFFLUENT RE-USE FOR LARGE USERS



Businesses can collect at designated collection points or can connect to existing treated effluent reticulation.

PARTNER RESOURCES

- GreenCape drought support service, website with useful case studies & resources. Contact Jane Reddick – jane@green-cape.co.za
- Green Building Council SA water & energy [benchmarking tool for offices](#)
- [Supplier database](#) for water saving & alternative water technologies and services on Western Cape Government's 110% Green webpage
- WWF's business campaign and Wednesday Water Files. www.wwf.org.za
- National Cleaner Production Centre for [free industrial water efficiency audits](#) Contact Andre Page – APage@csr.co.za <http://ncpc.co.za>





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**THINK
WATER**
THINK LESS 87% A DAY

City's position on installation of alternative water systems.

November 2017

Making progress possible. **Together.**

Alternative water for the 'new normal'

- **City promoting alternative water for operational uses** - but only if done responsibly to avoid health risks, contamination of drinking water supply and environmental damage.
 1. Rainwater
 2. Groundwater : boreholes, wellpoints and springs
 3. Greywater
 4. Treated effluent from City, and own treatment on site
 5. Surface water: rivers and streams on the property
 Stormwater will come in 'new build' guidelines, and ocean water not included yet



Installation guidelines

- **For installations of systems with plumbing**, not 'bucketing'
- **For homes & businesses**, but not for complex industrial systems
- Fairly **wide stakeholder inputs** so far.
- **Consistent with legislation and current Water Bylaw** which is to be updated soon. So position may be updated, but key principles will remain.
- **Full guideline document available soon.** Will cover:
 - Alternative water explanations and legislation overview
 - Appropriate uses, quality and treatment
 - Installation to prevent contamination – with illustrations
 - Application, registration and/or licensing requirements
 - Signage
 - What to look for in an installer
 - Checklists for pre-installation, installation & post-installation for each type



KEY PRINCIPLES FOR ALTERNATIVE WATER

1. **Quality required for different uses** – as per 1996 national guidelines
2. **Imperative to prevent potentially dangerous alternative water from contaminating drinking water system** on the premises and for surrounding area. Reduced Pressure Zone (RPZ) valve back-flow preventers mandatory.
3. **Quality required for different uses** – as per 1996 national guidelines. See matrix.
4. **Discharge to correct place** – overflow to stormwater or to sewer if harmful chemicals or substances
5. **Colour code the pipes**
6. **'Do not drink' signage**



SOURCES OF WATER:	RAINWATER	GROUND WATER	SURFACE WATER	GREYWATER	TREATED EFFLUENT
	TEST FIRST, AND TREAT ACCORDING TO USE				
USES OF WATER:					
Plant bed irrigation (subsurface)	4	4	4	4	4
Fire fighting	3 (Categories 3 & 4)	3 (Categories 3 & 4)	3 (Categories 3 & 4)	3 (Categories 3 & 4)	3 (Categories 3 & 4)
Vehicle cleaning	3	3	3	3	3
Food garden (subsurface) & lawn irrigation	4	4	4	4	4
Outdoor hard surface cleaning	3 (Category 4)	3 (Category 4)	3 (Category 4)	3 (Category 4)	3 (Category 4)
Swimming pools*	SANS 241*	SANS 241*	SANS 241*	SANS 241*	SANS 241*
HVAC	3 (All 4 categories)	3	3	3	3
Toilet flushing**	**	**	**	**	**
Fish ponds	1	1	1	1	1
Indoor surface and kitchen cleaning	1	1	1	1	1
Laundry washing	1	1	1	1	1
Cooking & food preparation	1	1	1	1	1
Body washing (ablution)	1	1	1	1	1
Drinking	SANS 241	SANS 241	SANS 241	SANS 241	SANS 241
Water features (no contact)	1	1	1	1	1
Water features (e.g. splash mat)**	SANS 241	SANS 214	SANS 241	SANS 241	SANS 241

KEY/ EXPLANATION

COLOUR CODE	RISK OF USE	WATER QUALITY REQUIRED FOR INTENDED USE	TESTING AND TREATMENT REQUIRED, FOR INTENDED PURPOSES
USE WITH DISCRETION	Low, negligible risk No direct human contact with water	Low	<ul style="list-style-type: none"> • No testing or treatment required. • Use with discretion.
TEST QUALITY AND TREAT FOR USE/S	Moderate risk Some human contact with water	Moderate	<ul style="list-style-type: none"> • Test water quality • Check results against national guidelines for intended use. Treat if required. • For this low risk category, treatment may be unlikely.
TEST QUALITY AND TREAT FOR USE/S	Medium risk Greater human contact	Medium	<ul style="list-style-type: none"> • Test water quality • Check results against national guidelines for intended use. Treat as required. • For this risk category, treatment is likely.
TEST QUALITY AND TREAT FOR USE/S	Very high risk High levels of contact and human ingestion	High	<ul style="list-style-type: none"> • Test water quality • Check results against national guidelines for intended use. Treat as required. • For this high risk category, high level of treatment is essential. • Regular quality testing necessary to determine ongoing water quality and suitability for use. Filtering and or treatment will be necessary.
	No alternative water sources permitted for these uses – as per City's Water Bylaw. Unless by contract as a Water Service Intermediary	N/A	N/A

Application, registration and licencing

ALTERNATIVE WATER TYPE	FROM NATIONAL DWS	FROM CITY OF CAPE TOWN
Rainwater	No licencing.	Approval for installation
Groundwater	Licencing – General Authorisation or Water Use Licence	Approval for drilling, and register the source, and get approval for installation
Surface water	Licencing – General Authorisation or Water Use Licence	Approval for installation
Greywater	No licencing.	Approval for installation
Treated effluent – own treatment	Licencing required.	Approval for installation
Treated effluent – from City	N/A for consumers buying from City	Approval for installation

RPZ valve back-flow preventer

- **Specifications & functionality outlined in SANS 1808-15.** If products approved according to this standard are not easily available locally, the City will also accept international standards for RPZs from organisations such as the German Institute of Standardization (Deutsche Institut vur Normung– DIN) or the American Water Works Association (AWWA). Locally available RPZ models include the products manufactured by ARI and Caleffi.
- **Local suppliers** so far:
 - Equilibrium Water, importing Caleffi range (www.equilibrium-water.com)
 - Ultra control valves (www.ultravalves.co.za)
 - Wholesale plumbing supply in Mphumalanga (www.wholesaleplumbingsupply.co.za)
- **City has approached these specialist retailers:** Plumblink, Incledon, CP&B, OnTap, Brights, Bucu, Build It and Builders Warehouse.

NOTE: City of Cape Town does not endorse any particular product or service provider and cannot be held liable for any non-performance.



Colour codes

- Greywater = lilac, Pantone 522 colour code
- Groundwater = dark green with two grey stripes
- Rainwater = no specific colour, but labelling recommended.
- Treated effluent = orange
- And with reference to SANS 10140-3: 2003, Edition 3 for identification colour

CITY WEBSITE USEFUL LINKS	SHORT URL
Water By-law (2010)	http://cct.gov.za/xAjse
Alternative water sources for your organisation	http://cct.gov.za/INIBT
Apply to sink a borehole or wellpoint	http://cct.gov.za/99C1r
Register a borehole or wellpoint	http://cct.gov.za/juF60
Apply to install and use an alternative water system	http://cct.gov.za/99C1r
Apply for supply of treated effluent	http://cct.gov.za/INPx2
Water saving toolkits- water saving posters, guides and materials to download	http://cct.gov.za/jwC7P



Signage for main thoroughfare and point of use



Appropriate signage as per SANS 1186-1:2008

PLEASE DO USE – BUT RESPONSIBLY

Under current Water Bylaw & legislation:

- **Alternative water systems subject to City approval**, and groundwater and surface water subject to national Dept of Water & Sanitation licencing.
- **No alternative water for drinking, cooking and body washing** (ablution). Due to health risks and City's statutory responsibility for providing drinking quality water.
- **No full 'off-grid' for water for homes and smaller businesses.** Risks & monitoring/enforcement costs too high to allow.
- **Some 'off-grid' for large consumers** such as large residential developments and businesses which contract with the City as Water Service Intermediary, and can show reliable treatment and monitoring system, and backflow-prevention.

Alternative water use entirely at risk of consumer, City not liable.



City approval & inspection

- Current groundwater and treated effluent applications systems stay 'as is' for now. Apply to borehole.water@capetown.gov.za and treated.effluent@capetown.gov.za respectively.
- Greywater & rainwater applications: download 'Alternative Water System Application Form' from City's website, see <http://cct.gov.za/bC2nV>. Email with attachments to water@capetown.gov.za
- Plumbing Certificate of Approval to be compulsory.
- City started engagement with plumbing industry associations IOPSA and PIRB, and they're pioneering training programmes now.



Maintenance



It is to be noted that the success of any landscape installation is governed by the quality of after-care and maintenance. This applies to both hard and soft landscaping, buildings, roads and any other piece of infrastructure. Trees and planting requires a minimum of 24 months horticultural maintenance to ensure optimal growth.

The challenge of vandalism and theft needs to be accounted for on all projects as a Provisional Sum



Community Benefits



Evidence shows that community involvement, upliftment and skills development are key aspects to the success of any project.

This is an aspect that may be considered on these projects in various forms such as:

- Horticultural maintenance training SETA or recognised NQF level accreditation.
- Public installations

