



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

DEVELOPMENT MANAGEMENT INFORMATION GUIDELINE SERIES

RESOURCE EFFICIENCY FOR DEVELOPMENT



This booklet gives a summary of the regulations, policies, best practice and outlines the process to be followed to facilitate resource efficient developments.

Making progress possible. Together.

November 2019

Please note that this document (and the content/requirements it contains) will be updated over time. Check this website for more updated versions:
www.capetown.gov.za/ResourceEfficiencycriteria

Produced by the City of Cape Town's Spatial Planning and Environment and Energy and Climate Change Directorates.

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Although based on law, the information provided in this document is presented in an informal and plain language format to provide advice and guidance on development matters and procedures to customers and members of the public. Should there be any discrepancy with provisions in the underlying legislation, the actual legislation takes precedence and should be consulted directly. Alternatively, please obtain independent professional advice on the matter. The City of Cape Town does not accept any liability for any action taken based on the information contained herein.

For queries e-mail: Planning.BuildingManagement@capetown.gov.za

Quick reference



Regulation: Development proposals must comply with these criteria as they are entrenched in an act of parliament, municipal by-law or regulation. These criteria are legally enforceable and non-compliance may result in severe penalties.



Policy: Development proposals should comply with these criteria as they are entrenched in City policy or strategy. Non-compliance with these criteria may result in the rejection of a building or land use application.



Best practice: These criteria are (voluntary) best practice and demonstrate innovation. It is likely that these guidelines may in future be incorporated in legal instruments or policy and it is therefore advisable that developments aim to adhere to these criteria.



Process: This specifies a process, standards or standard operating procedure that developments or proposals must comply with for approval.



QR code: QR codes are used throughout the booklet. Scan the QR code with your phone to gain quick access to the regulation, policy or document being referenced in the text. All QR codes have a number that corresponds with the website links provided under End notes on page 58.



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1. Introduction, purpose and how to use this document

The City of Cape Town has the legal competency and authority to regulate, enforce and manage development and land use. The City has also made significant commitments to sustainability and resource efficiency in the built environment. Notably, promoting resource efficiency and increasing resilience to environmental, economic and social shocks related to climate change are key priority focus areas of the current five-year Integrated Development Plan (IDP)¹.

This Resource Efficiency Criteria for Development document is a reference guide to a large number of policies, legal directives, and guidelines that form part of the City's overall sustainability framework related to the built environment, and presents them conveniently in one document. Collectively, these are criteria for development in a broad sense.

While some are still voluntary and some are mandatory and require compliance, they are all considered important by the City of Cape Town as criteria for development.

The aim is to facilitate more resource efficient development amongst landowners and developers and their teams who want to put forward proposals for new developments, and for those who want to improve the efficiency of their existing buildings, landscapes and infrastructure (a retrofit).

It provides developers, architects, draughtspersons and planning professionals (and in the building sector in general) with the information and guidance required to comply with national regulations, City policies and legal requirements related to resource efficiency. It has relevance in building plan, site development plan, and land use submission processes.



The document covers seven categories of environmental resource related areas, namely:

- Site selection
- Transport
- Water
- Energy
- Construction materials
- The natural environment
- Waste management

Decisions made in each of these areas have a high environmental and socioeconomic impact. It starts with the nature and location of the development, which has important consequences for Cape Town's urban form and for the people who live and work here. The City of Cape Town recognises that resource efficiency is critical to economic growth and increases a city's competitiveness and resilience. This is reflected in the City's [Energy2040 goal](#)², which includes a 37% reduction in carbon emissions, with 21% coming from energy efficiency alone. Following a business-as-usual trajectory would result in a doubling of energy costs by 2040, and other negative impacts.

To become a lower carbon, more resource efficient, resilient and equitable city, Cape Town needs to be remodelled with increased densification and mixed-use in areas of economic activity, with modal shifts to public transport and more efficient private transport (e.g. higher passenger occupancy), increased water, materials and energy efficiency and use of renewable energy. This will help build an economically and environmentally resilient City.

For each of the categories, the guidelines, policies, and legal directives are colour-coded according to their legally binding nature:



Regulation: Development proposals must comply with these criteria as they are entrenched in an act of parliament, municipal by-law or regulation. These criteria are legally enforceable and non-compliance may result in severe penalties.



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Best practice
These criteria are (voluntary) best practice and demonstrate innovation. It is likely that these guidelines may in future be incorporated in legal instruments or policy and it is therefore advisable that developments aim to adhere to these criteria.



Process: This specifies a process, standards or standard operating procedure that developments or proposals must comply with for approval.



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The criteria are presented in FAQ (frequently asked questions) format with the intention to make it as user-friendly as possible.

2.

Resource efficiency criteria



Site selection

For Cape Town to become a lower carbon, more resource efficient and equitable city, the built environment needs to be remodelled to increase urban efficiency.

Land use modelling shows that connected, inward growth is the most cost-effective way of reducing the social and economic costs of the current inefficient urban form. The revised Municipal Spatial Development Framework (MSDF) (2018)³ will guide public and private investment decisions that will affect Cape Town's future spatial structure. It identifies areas where development is desirable and/or areas where urban development is discouraged.

The MSDF provides a spatial vision and direction that informs submissions, motivations and the assessments of development proposals and applications from the public and private sectors. It strongly advocates for land use intensification based on transit-oriented development (TOD) and related urban design principles. It also provides a prioritised investment framework for the future roll-out of infrastructure investment in the City.

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Developments must demonstrate how they:

- contribute to spatial transformation;
- align with the City's investment priorities and avoid risk elements (such as floodlines, noise contours, etc.); and
- avoid negative impacts on critical natural assets.

While the MSDF neither grants nor removes land use rights, it is the principal policy tool when the City evaluates applications for new or enhanced land use rights. Importantly, the decisions made by the Municipal Planning Tribunal on land development applications must be consistent with the MSDF.

How does the City prioritise development in certain areas?



The MSDF supports the prioritisation of public investment and incentivised private sector investment in growth areas in the *Urban Inner Core* and, to a lesser degree, the *Incremental Growth Areas*.

The Urban Inner Core includes the majority of the city's existing industrial and commercial nodes; the airport, ports and primary freight infrastructure; three Integration Zones; Integrated Public Transport Network (IPTN) corridors; and Transit Accessible Precincts (the stations and stops associated with the IPTN). These areas will be the focus of incentives and regulatory reform in support of spatial transformation. The purpose is to unlock development to create large-scale economic opportunities in proximity to areas of social need and to maximise latent land use rights, and secondly to maximise the potential of vacant land.

Incremental Growth and Consolidation Areas are areas where the City is committed to servicing existing communities and where new development will be subject to infrastructure capacity. This area is informed by the existing built extent of the city not adjacent to transport corridors and nodes. Development in this area is subject to capacity, and limited incentives are offered by the City.

View the [spatial transformation areas map](#).





High-density development - Bo-Kaap

What is land use intensification and what does it mean for proposed developments?

The concept of land use intensification combines densification and diversification. Depending on their location, developments should aim to achieve a greater spectrum of mixed uses (commercial, industrial and residential) and/or the increased use of space, both horizontally and vertically. Land use intensification can be equally appropriate within existing areas/properties or new developments by increasing the number of units, gross leasable area and/or population thresholds in accessible, high opportunity locations.

The MSDF promotes appropriate dense and diverse land uses in proximity to existing and planned high capacity, high-quality public transport.



Residential intensification is encouraged in locations with good public transport accessibility, and also at concentrations of employment, commercial development, social amenities, and civic functions.

Employment intensification and land use diversification are encouraged closer to areas with existing high population densities.

Conversely, the following land uses may negatively impact on land use intensification, particularly in the Urban Inner Core:

- single residential developments around main transport corridors and stations;
- low worker density around main transport corridors and stations (such as large warehousing);
- noxious land uses that limit the nature of development on adjacent land;
- mono-functional, single storey public sector buildings; and single storey schools and sports fields that are not shared.

How does the City assess applications according to spatial transformation, densification and intensification criteria?



The City's decisions on intensification are informed by a range of criteria related to the location, form, extent, scale, height, and orientation of buildings. The City of Cape Town Development Management Scheme (schedule 3 of the [Municipal Planning By-law, 2015](#))⁵ determines the legal parameters of density and built form.

The MSDF, district, and local plans contain broad, location specific guidelines to inform rezoning applications to alter the use and intensity aspects of the zoning. Moreover, particular areas are targeted for land use intensification and contain associated density parameters. Contextual informants of density decisions include: the natural environment, heritage, infrastructure, transport impact assessment, social facilities, and socio-economic conditions.

Criteria that inform decisions include:

- access to public transport;
- proximity to places of employment, services, and facilities;
- proximity to open spaces; and
- infrastructure capacity.

For a development located in a priority location (for example, located in proximity to a transit-accessible precinct), the City will provide technical expertise to advise developers on the best use of available land use rights for their location, and how to make use of available incentives. This support for development will have to consider any applicable development directives, where other authorities have processes that must be complied with, as well as resource limitations and infrastructure availability.

In addition to the provisions listed above, density guidelines – summarised in the table overleaf – are included in the MSDF.



Proximity to open spaces - a smart park in Site C, Khayelitsha

	Targeted Location/Area	Densification Policy 2012
Citywide incremental densification	All locations as permitted by the zoning scheme or application for new rights.	Second dwellings as of right
Affordable housing initiatives	Informed by spatial structure locations.	80 - 300 du/ha (net)
Corridors and metropolitan and sub-metropolitan urban nodes	<p>Nodes: Metropolitan nodes at Cape Town CBD, Bellville sub-metropolitan nodes at Claremont, Wynberg, Mitchells Plain and Khayelitsha and emerging metropolitan nodes at Somerset West and Philippi.</p> <p>Corridors: Voortrekker Road/Van Riebeeck Road (CBD to Bellville CBD), southern suburbs Main Road to Muizenberg, R27/Marine Drive/Koeberg Road and Blaauwberg Road, Phase 2A/Govan Mbeki (between Claremont/Wynberg and Metro South-East), AZ Berman (to Mitchells Plain CBD), Bonga/Walter Sisulu (to Khayelitsha CBD), Blue Downs-Symphony Way Corridor.</p>	<p>100 - 375 du/ha (net)</p> <p>4 - 15 storeys</p>
District and local urban nodes in addition to existing and indicative transit accessible precincts (TAPs)	<p>Supportive corridors: Jan Smuts Drive/Strandfontein, Spine Road extension, Retreat Road/Fifth Avenue, Klipfontein Road, Giel Basson Extension/Jan van Riebeeck/35th Avenue, Hindle Road, Durban to Wellington to Botfontein roads, Birkshire Boulevard (to be established), Marine Drive and Otto du Plessis, Somerset West Main Road to Strand. District and local nodes to be confirmed via district plans.</p>	<p>75 - 175 du/ha (net)</p> <p>3 - 8 storeys</p>



The City's [Smart Building Handbook](#)⁶ promotes greyfield and brownfield redevelopment and limits the development of greenfield sites.

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Are there areas where development is discouraged?



The City will not invest or encourage development in Discouraged Growth Areas (DGA), which include protected areas based on natural and agricultural assets, areas with a lack of social and physical infrastructure and areas that do not contribute to spatial transformation, inward growth or the premise of transit-oriented development. Intensification proposals in DGA will not ordinarily be supported.

Critical Natural Asset Areas are areas that contribute significantly to the City's future resilience or have a protected status in law. Development here will be limited to tourism related development opportunities that do not compromise the natural asset.

Transport

The transport sector consumes 64% of energy and accounts for 34% of carbon emissions in Cape Town and provides an immediate opportunity to significantly reduce the [City's emissions](#)². In addition, Cape Town is recognised as the most congested city in South Africa, impacting negatively on the wellbeing of citizens; the economic competitiveness of the city; and the environment more generally.

The City is committed to promoting dense, transit-oriented growth and development, as well as an efficient, integrated public transport system, as outlined in the [Comprehensive Integrated Transport Plan \(CITP\) 2018-2023](#)⁷ and [Integrated Public Transport Network Plan \(IPTN\) 2032](#)⁸. Public transport is the key driver for addressing Cape Town's spatial reality, with all its urban inefficiencies, social inequality, and carbon-intensive design.

Should a proposed development be in proximity to public transport?



The MSDF prioritises development close to public transport opportunities and development corridors directing land use intensification initiatives within areas well served by public transport.



Dense development in Transit Accessible Precincts (TAPs) – areas which are within a 500-metre walking distance of rail and BRT stations – are prioritised. A number of these TAPs are already demarcated as Public Transport (PT) Zones and are included as an overlay zone in the [Development Management Scheme \(Schedule 3, Chapter 11\)](#)⁵. PT Zones have reduced requirements for onsite parking as a measure to promote densification in areas with access to good quality public transport (i.e. within walking distance from stations).



Public transport - MyCiti bus service

What about non-motorised transport?



The City's [Non-Motorised Transport \(NMT\) Strategy \(2014\) Vol1](#)⁹ and [Vol2](#)⁹ requires integrated land use development appropriately suited for non-motorised transport. The policy and strategy provide the following policy statements applicable to new developments:

- NMT is to be given proper consideration in the design of buildings, external landscaping, and precincts;
- NMT needs and requirements must take priority in the development and management of residential areas and open space networks; and
- NMT considerations should be addressed in all developments in Cape Town through integrated planning.



According to the MSDF, when assessing development applications, consideration will firstly be given to the current level of availability of non-motorised transport (NMT) as a motivation for densification. The intended land use activity and intensity will be considered in land use planning and development in recognition of the availability of NMT. High-density developments should also provide sufficient space to accommodate NMT.



The City's [Urban Design Policy \(2013\)](#)¹⁰ requires that non-motorised transport facilities be considered from the commencement of the design process for developments that are likely to attract public patronage (shopping centres, public facilities, and public transport interchanges).

The facilities provided must cater for the different needs of residents, staff and visitors. A range of facilities including bicycle parking, change and shower rooms and storage facilities are integral to this NMT infrastructure. The location of these facilities must ensure safe and convenient access. Furthermore, new developments should:

- achieve greater levels of integration, spatial continuity and improved permeability for pedestrians and cyclists.
- provide linkages and generous sidewalks around and to important destinations that attract high levels of pedestrian traffic.
- ensure universal access to all buildings and transport facilities and access along popular pedestrian routes.



Are there any limitations on the number of parking spaces in a development?



The Parking Policy for the City of Cape Town (2014)¹¹ specifies minimum parking standards in areas served by public transport and affordable housing and upgrading projects.

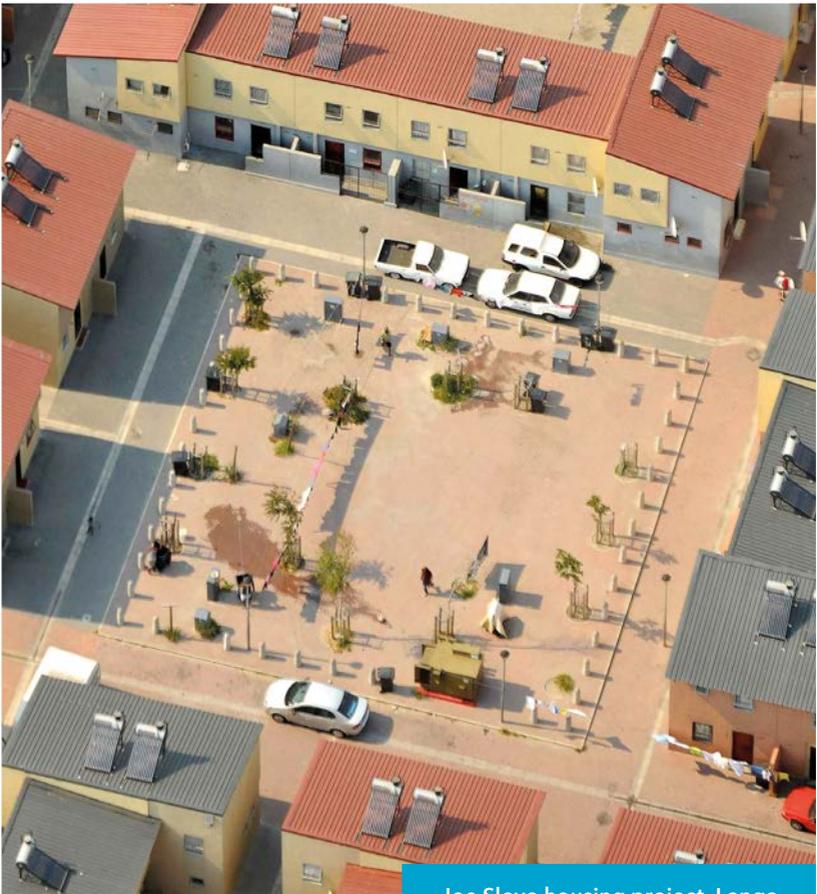


The MSDF (Policy 38) directs reductions in parking requirements in areas deemed to be well served by public transport as a measure to promote densification in areas with access to good quality public transport. Therefore, new developments located in the defined PTA 1 and 2 (public transport area) should aim to reduce allowable parking in terms of the Development Management Scheme⁵.

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Joe Slovo housing project, Langa

Water

Water scarcity and the ongoing drought pose significant challenges for people in Cape Town. The situation is expected to worsen due to climate change and increased population growth. This section aims to encourage initiatives that reduce potable water consumption in buildings through maximising water efficiency, promoting the use of alternative water and water reuse practices.

Are there any water conservation criteria that need to be incorporated into a development?



The City's Amended Water By-law (2018)¹³ contains a range of legally enforceable requirements that should be fully incorporated into the design and management of buildings. In terms of the Water By-law, no person may negligently, purposefully or wastefully:

- permit pipes or water fittings to leak;
- use water fittings that are incorrectly adjusted or defective, or permit such use; and
- inefficiently use water or allow an inefficient use of water to persist.

Accordingly, new developments must ensure that any equipment or plant connected to the water installation uses water in an efficient manner.



New developments must install water conservation and demand management systems, or alternative water systems, and these must be approved by the City before development proceeds. The full details of any proposed water conservation and demand management system or alternative water systems such as a greywater system, air conditioner or bleed-off for flushing toilets, irrigation, swimming pool top-up or top-up for non-domestic purposes must accompany the building plans.

Note: Also see the criteria for water sensitive urban design and stormwater management in the natural environment section.

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What type of water fittings should I use for my development and what are the water saving requirements?

The Amended Water By-law¹³ has a range of water conservation and demand management legal requirements that relate to new developments, including:

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General



Booster pumps are required for low pressure areas and onsite storage for fire-fighting as per the relevant legislation and norms and standards.



Pipes and water fittings in a water installation must bear:

- the standardisation mark of the SABS in respect of the relevant SANS specification issued by the bureau; and
- a certification mark issued by the SABS to certify that the pipe or water fitting complies with an SABS mark specification or a provisional specification issued by the SABS, provided that no certification marks must be issued for a period exceeding two years.

Indoors



Hand basins provided in public facilities must be fitted with demand-type taps. The maximum flow rate from any tap installed in a hand basin may not exceed 6 l per minute. It is recommended that taps be fitted with water saving aerator or an in-line flow restrictor/ in-line water saving insert.



Water closet cistern capacity may not exceed 6 l in capacity. All automatic flushing cisterns fitted to urinals must be replaced with either manually operated systems or non-manual apparatus that cause the flushing device to operate only after each use of such urinal and must be properly maintained. No automatic cistern or tipping tank may be used for flushing a urinal. A waterless urinal system is a water efficient alternative.



The City recommends that all toilets be fitted with a close coupled or low-level cistern. All toilets must be fitted with a dual flush mechanism consisting of a maximum of 3 l per flush on the low-flush setting and a maximum of 6 l per flush on the high-flush setting.



In line with City procurement principles, if hot water is to be supplied to the kitchen sink, an under-sink hot water cylinder or an in-line water heater should be installed as close as possible to the draw-off point so as to minimise water wastage while waiting for water to heat up.

Outdoors



With regard to pools and ponds, the following regulations apply: developers may not use automatic top-up systems using a float valve fed from a potable water source to supply swimming pools and garden ponds; all swimming pools using municipal water must be covered by a solid pool cover when not in use. Note that swimming pool water must comply with drinking quality standards as per SANS 241.



It is recommended that parks and sports fields use alternative water sources such as harvested stormwater, treated effluent or borehole water for irrigation purposes before using potable water. Licensing procedures to be followed as required by the water source (e.g. borehole) and intended use.



Where a new irrigation system, which is to be supplied from an existing domestic connection or another existing irrigation connection, is installed:

- the size of the existing connection must be reviewed by the City;
- all materials used in the system must comply with SABS requirements;
- it shall be installed in such a way as to minimise water wastage onto hard surfaces; and
- it shall be able to be adjusted to prevent water wastage during cooler or rainy weather conditions.

All irrigation systems, including automated sprinklers, must be adjustable to prevent water wastage during cooler or rainy weather conditions, and must remain so adjusted at all times.



Recommended irrigation methods include low-level spraying and drip irrigation, which reduces loss due to evaporation. Drip irrigation should be laid below a thick layer of mulch and irrigation times are to be limited to early morning and evening to conserve water resources. In addition, the use of controllers that reduce the water supply on a seasonal basis based on plant water demand is recommended.



Hosepipes (used to irrigate a garden, park, or sports field) connected to a potable water source must have a controlling device, such as a sprayer, attached to the hose end and must be fitted with an automatic self-closing device. Adhere to water restrictions that are in place which may restrict watering methods and times.

What type of water fittings should I use for my development and what are the water saving requirements? (continued)



Terminal water fittings installed outside any buildings other than a residential dwelling must:

- incorporate a self-closing device;
- have a removable handle for operating purposes;
- be lockable to prevent unauthorised use; or
- be of a demand type that limits the quantity of water discharged in each operation.

These are also recommended for outside fittings in residential buildings.

Required flowrates



Water-efficient fixtures and fittings should be installed with the following maximum flowrates:

- Wash hand basins: 6 l/min
- Showers: 7 l/min



Recommended flow rates:

- Toilets: 3,6 l/flush
- Bathroom taps: 4 l/min
- Kitchen taps: 5 l/min
- Urinals: waterless is the most preferred urinal type, alternatively 1,9 l/flush
- Dishwashers: 0,93 l/place setting
- Laundry washing machine: 7,2 l/kg of clothing washed for machines up to 10 kg and 10 l/kg of clothing washed for machines greater than 10 kg capacity
- Outside taps: 5 l/min

What about alternative water systems?

“Alternative water” means water sourced from a supply other than municipal drinking quality water, e.g. greywater from domestic use, water from a rainwater tank, and groundwater from a borehole, wellpoint or spring, surface water from streams, rivers and treated effluent/wastewater. The City has published detailed [Guidelines on Installation of Alternative Water Systems](#).^{QR#}

QR#



General



Where a property is supplied with both potable water and alternative water sources, the owner must ensure that:

- **no interconnection** is effected between the two installations that supply municipal potable water and any alternative water. The required level of backflow prevention (as outlined in SANS 1808-15) is a **reduced pressure zone (RPZ)** backflow preventer;
- the pipework is correctly colour coded, as per SANS 10140-3:2003; and
- the appropriate signage, as per SANS 1186-1:2008, is displayed.



Discharge or overflow of alternative water must go to the appropriate reticulation system – greywater and treated effluent to the sewer system and rainwater to the stormwater drains.

Greywater



Greywater is defined as water from baths, showers, hand basins and washing machines, provided that environmentally friendly laundry detergents are used. Conventional laundry detergents have high phosphate and salt content, which are harmful to the environment.



The City promotes the installation of greywater systems in new developments for garden and landscaping irrigation (where appropriate) and toilet flushing. There are many greywater systems available on the market, some of which are very economical and easy to install. Note that untreated greywater should not be stored for longer than 24 hours without first being treated.



The City’s Water and Sanitation Department has published a brochure for further information on the safe use of greywater. Also see the full and summary versions of the [Guidelines for Alternative Water Installations and Risks of Groundwater](#)¹⁴ leaflet.

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Greywater system at the Manenberg advice centre

What about alternative water systems? (continued)



While greywater reuse for irrigation is encouraged, there are health and horticultural considerations. If greywater is used for irrigation, it is recommended that drip irrigation be installed below a thick layer of mulch away from the leaves, particularly if used in a food garden. The spraying of greywater is discouraged. If spray irrigation is pursued, it is recommended that the height of the spray is kept at a low level and that the setting be so that the droplets are large and focused on the area under irrigation to prevent wide dispersal. All food grown using greywater must be well rinsed and root vegetables cooked. The prolonged use of greywater is discouraged as it can cause damage to soil (also see Guidelines for the Installation of Alternative Water).

Rainwater harvesting



The City encourages rainwater harvesting in new developments. Rainwater harvesting is a key part of alternative water supply options for non-potable water demand in new developments.

A rainwater tank may be connected for use in garden irrigation systems, laundry washing, household cleaning, windows and outdoor hard surfaces, toilet flushing or topping up the swimming pool, but not counter/table tops where food preparation happens. However, as with all alternative water sources, there must be no connection with the municipal potable water mains. As with the installation of any water storage tank, rainwater tanks must be installed with sufficient space around them for maintenance and other requirements in the By-law for tanks.

One can collect 500 ℓ of rainwater if 5 mm of rain is collected on a 100 m² roof. A 5 000 ℓ tank used primarily for flushing the toilet in winter rainfall areas could save up to 15% of annual municipal water consumption.



The City's Water and Sanitation Department has published a pamphlet for further information on [rainwater harvesting](#)¹⁵. Also see the Guidelines for Installation of Alternative Water for more updated information and requirements.

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Rainwater harvesting

Boreholes/groundwater



The Water By-law states that if you intend to sink a borehole or wellpoint on your property, you will need to notify the City of Cape Town at least 14 days before installation. A completed application form to sink a borehole or wellpoint, along with a drainage layout plan showing the point of extraction, must be submitted to the Water and Sanitation Department.

Once installed, all systems must be registered with the City. Once registered, the City will provide a free sign to display on the property. This is a legal requirement during water restrictions and is necessary to avoid fines issued by water inspectors.

See [how to register a borehole or wellpoints with the City](#).

What about alternative water systems? (continued)



The use of water resources, including groundwater abstracted from aquifers via boreholes/wells, rivers or streams, is allowed for reasonable household use, small garden irrigation (not for commercial purposes) and watering of animals (under Schedule 1 of the National Water Act 1998, updated September 2014.)

The maximum annual volume allowed is determined by factors such as the size of property and abstraction rate, as calculated in the revised [General Authorisation for the Taking and Storing of Water \(2016\)](#)¹⁶.

Amounts exceeding the allowed volume of litres per day require an application to the national Department of Water and Sanitation (DWS) for a Water Use Licence (WUL). A WUL is also needed if the water is used for commercial purposes, irrigation or if groundwater abstraction takes place within a 500 m radius from the boundary of a wetland or estuary, within a 100 m radius from the delineated riparian edge of a watercourse (including rivers) or within 500 m from the highwater mark of the ocean.

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The national DWS gazetted [new guidelines for all borehole and wellpoint use](#)¹⁷, (effective from 12 January 2018), which stipulate:

- borehole/wellpoint water use must be metered and all users are required to keep records and have these available for inspection; and
- permission from the national Department of Water and Sanitation is needed to sell or buy borehole/wellpoint water.

Because water resource allocations may change, we recommend that you first check with the DWS before commencing to use water resources.

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The Water By-law states that where water is being used with the required permission from groundwater sources such as boreholes, wellpoints, springs or surface area water from rivers and streams, or stored rainwater or treated effluent, it shall be used sparingly and efficiently and in line with the watering/irrigation times determined by the City if it is used for gardening purposes.

What about storage tanks?



In terms of the Water By-law, any person who installs a storage tank must install it in such a position that its exterior and interior can readily be inspected, cleaned and maintained, unless it is a concrete reservoir that is buried or partly sunk into the ground and has been designed, constructed and tested in accordance with the relevant standard set, where only the interior is accessible for inspection and cleaning – SANS 10100-1 and SANS 1200-G or as amended. A storage tank could be used for rainwater harvesting, greywater collection or onsite storage for firefighting. Note that untreated greywater should not be stored for longer than 24 hours without first being treated.



No building plan application is required for underground or on-ground storage tanks or greywater systems. An application is only needed if the tank is on a one-metre high structure.

What about wastewater and industrial effluent?



The City's Wastewater and Industrial Effluent By-law¹⁸ contains a range of legally enforceable requirements that must be fully incorporated into the design and management of buildings.

The following directives of the by-law are of relevance to new developments.

Where applicable and on receipt of written notice by the Council, every owner of a property shall:

- construct a private sewer installation on the premises;
- connect a private sewer installation to the municipal sewer, whether directly or indirectly as required by the Council;
- enlarge the capacity of a private sewer installation to accommodate a greater discharge; or
- reconstruct a private sewer installation to comply with the requirements of the Council;
- submit and implement a waste management plan including, inter alia, a waste minimisation schedule; and
- submit and implement a chemical management plan including, inter alia, an inventory.

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What about wastewater and industrial effluent? (continued)

Owners of property with private sewer installations must prevent the entry of groundwater or stormwater into the private sewer, or leakage of wastewater from the private sewer.

No person shall:

- construct, erect or lay any building, structure or other obstruction over or in such a position or in such a manner as to interfere with or endanger any municipal sewer; or
- excavate, open up or remove the ground above, next to, under or near any municipal sewer.

Restaurants and office/institutional kitchens must install and appropriately maintain grease traps since oils and fats can cause blockages of the sewer reticulation network and thus contribute to sewage overflows. Grease traps must be connected to the sewer network.

Car washing areas and facilities must not drain to the stormwater network.



The City promotes the use of treated effluent (recycled water) for irrigation, construction or industrial purposes as a way to conserve Cape Town's limited municipal potable water supply.

Treated effluent, or recycled water, is wastewater that has been treated at a wastewater treatment (or sewerage) works and then piped via a separate network of pipes to various consumers.

For [treated effluent tariffs](#), follow [this link on the City's website](#)¹⁹ for the water tariffs, including treated effluent. For more information see our [Treated Effluent Amended By-law](#)²⁰ and [Treated Effluent FAQs](#)²¹.



It is possible to seek permission from the City to treat blackwater on site, using a package plant for reuse. The City does not encourage this option because raw domestic wastewater or even partially treated domestic wastewater is extremely hazardous to both human and ecological health. Furthermore, the proximity of the package plants to people within the developments/sites may pose serious health risks.

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Each application is judged on merit, upon serious consideration by the City. Requests would be entertained in situations that would benefit (and the extent thereof) rather than compromise the City in term of its obligations, for example:

- proposed developments being in a remote area outside the City's potable water and wastewater network perimeter;
- in an area where new water and wastewater services are not planned in the foreseeable future;
- existing municipal wastewater treatment works that do not have adequate capacity; and
- reuse of the treated effluent for water conservation reasons.

These installations require considerable management, technical expertise, monitoring and reporting; and would have to comply with Environmental Impact Assessment (EIA) processes, Green Drop requirements and other relevant water standards.

Developers wishing to apply must follow the [Application to operate as a water services intermediary \(WSI\)' process](#)²² available on the City's website.

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Should the landscaping of a development be water wise?



Landscapes should be planted with **water wise and indigenous** trees, shrubs, and groundcovers that will require less water and almost no fertilisers or pesticides. Plants that can withstand prolonged periods without watering should be grouped together. Generally, waterwise plants can be recognised by their leaves that are grey, waxy or hairy and filled with oil.



Landscapes should be planted with indigenous shrubs and flowers

Should the landscaping of a development be water wise? (continued)



If planned correctly, irrigation requirements can be reduced or eliminated. This is achievable if the planting is phased is started before the winter rains and if the soil medium is appropriate for the plant selection.

Landscapes should be watered with greywater or rainwater with a properly designed irrigation system that can be adjusted or switched off if it rains. Refer to the section on water fittings for more details on irrigation requirements.

Mulching and composting should be used in landscapes to conserve soil moisture and reduce the evaporation of water. Mulch materials include straw, bark chips, gravel, pebbles, exposed aggregate, nut shells, and leaves.

The [Cape Town Green Map website](#)²³ provides further guidance on planting indigenous, water wise gardens.

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Energy

The built environment (commercial and residential) is a large energy user and accounts for approximately 33% of energy consumption and 58% of carbon emissions in Cape Town. There is thus an opportunity to reduce demand and improve energy efficiency measures through building design principles and practices. This section aims to facilitate reductions in overall energy consumption in developments through efficient energy usage and utilising alternative energy sources generated from low-emission sources.

What is SANS 10400-XA?



SANS 10400-XA 'Energy Usage in Buildings'²⁴ is the mandatory building regulation that was first added to the National Building Regulations²⁵ in 2011 to improve the energy efficiency of buildings. In this document, the SANS 10400-XA referred to is the 2011 Edition 1 version, which will be updated over time.



Note that the SANS 10400-XA is mandatory and refers to SANS 204, which is currently a voluntary standard. SANS 204 contains performance levels that are higher than SANS 10400-XA and defines the minimum requirements that must be adhered to. It is anticipated that within three to five years the performance level in SANS 10400-XA will be increased to SANS 204 levels and it is therefore advised that future buildings be designed according to SANS 204.

What type of development does SANS 10400-XA apply to?



Applications for new building work, including extensions in the following building categories, must comply with these requirements: entertainment and public assembly, theatrical and indoor sport, place of instruction and worship, exhibition hall, museum, place of detention, hospital, residential, healthcare, large shop, small shop, wholesaler's store, offices, hotel, dormitory, domestic residence, dwelling house and hospitality.

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Does SANS 10400-XA apply to subsidy houses?



In response to the introduction of SANS 10400-XA, the national Department of Human Settlements introduced amendments to the 'Norms and Standards for the Construction of Stand-alone Residential Dwellings' and 'Adjustment of the Housing Subsidy Quantum'. The new standards were based on the requirements of the SANS 10400-XA, which require the addition of measures to improve the thermal performance of dwellings.



Accordingly, all subsidy houses now require:

- the installation of a ceiling with a prescribed air gap for the entire dwelling;
- the installation of above-ceiling insulation comprising a 130 mm mineral fibreglass blanket for the entire house;
- special low-emissivity clear and emissivity opaque safety glass for all window types;
- plastering of the internal walls;
- rendering on external walls;
- smaller size windows and;
- public transport-orientated development.

What do I have to do to comply with the SANS 10400-XA?



Note that the SANS 10400-XA²⁴ building regulation referred to here is the 2011 Edition 1 version.

In terms of the National Building Regulations and Building Standards Act, SANS 10400-XA (Energy Usage in Buildings), all new proposed building works, including extensions, are required to be designed and constructed so that they:

- are energy efficient while fulfilling user needs in respect of thermal comfort, lighting, hot water, and vertical transport; and
- have a building envelope and services that facilitate the efficient use of energy appropriate to their function and use, internal environment and geographical location, in the assessment of development applications.

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Building work will comply with these regulations if they follow one of the following processes:

- Adhere to a 'deemed to satisfy' process by following SANS 10400. In this case, the competent person (trained in the SANS 10400-XA content) appointed by the owner must ensure that –
 - the orientation of the building is in accordance with SANS 204;
 - the fenestration is in accordance with the requirements of SANS 10400-XA or SANS 204;
 - the building envelope, including the roof assembly, is in accordance with SANS 10400-XA or SANS 204; and
 - hot water production is in accordance with the requirements of SANS 10400-XA.
- A competent person prepares and submits a '**rational design**' that 'demonstrates that the energy usage of such building is equivalent to or better than that which would have been achieved by compliance with the requirements of SANS 10400-XA'.
- The building has a theoretical energy usage performance, determined using certified thermal calculation software, less than or equal to that of a reference building in accordance with SANS 10400-XA.

Which mandatory energy efficiency criteria are required?



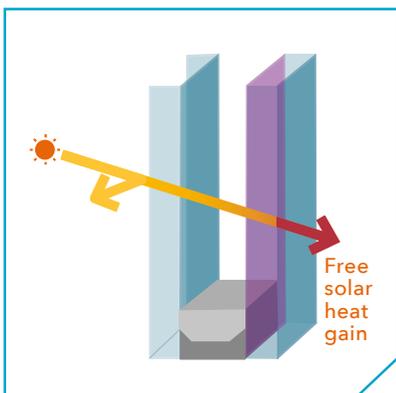
Building envelope: According to SANS 10400-XA (which refers to SANS 204), the building envelope needs to comply with the specifications of two tables that outline the maximum energy demand and maximum annual energy consumption related to different building types and climatic zones/locations. Buildings that are cooler in summer and warmer in winter bring greater thermal comfort and reduce the need for expensive heating and cooling. The following key areas relating to the building envelope impact on energy efficiency in the Cape Town area (note that these are not the full set of requirements, which should be referenced in the SANS 10400-XA and SANS 204):

Orientation: The building should be compact in plan with rooms that are used most and the major areas of glazing placed on the northern side of the building to allow solar heat to penetrate the glazing during the winter months. The major axis of the building should run east-west and the roof overhang should provide shading to the windows from the midday summer sun.

Which mandatory energy efficiency criteria are required? (continued)

Floors: Exposed slabs should be insulated to the R-values specified in SANS 204. If an underfloor heating system is installed, the installed heating system must be insulated with insulation that has an R-value of no less than 1.

External walls: Conventional construction has a 'deemed to comply ruling', while non-conventional construction needs to comply to a minimum R-value for each climatic zone (using insulation and/or cavity) to moderate heat loss and gain. The appointed competent professional should advise on how best to achieve compliance.



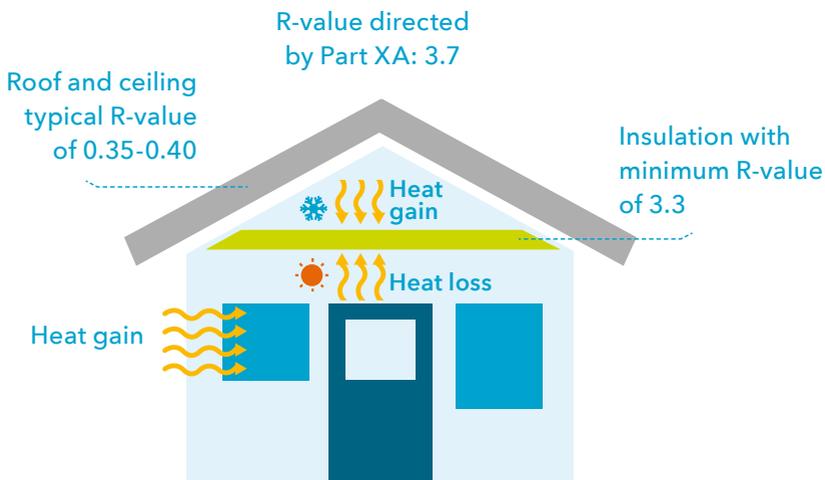
Double glazing



Laying insulation in a ceiling space

Fenestration: If a floor of a building has windows that are the equivalent of more than 15% of the net floor area in size, special requirements are set in SANS 204 that need to be met to reduce the impact of energy losses and gains through windows and glazed doors. These include the glazing/glass, frames, and shading of the window/door opening. These additional requirements and checks are related to thermal conductivity and solar heat gain.

Roof assemblies: The combination of the roof and ceiling is required to achieve a minimum R-value set out in SANS 10400-XA for different kinds of buildings in different climate zones. In Cape Town's temperate coastal zone, the main heat losses are through the roof so that is the best place to insulate. The objective is to reduce heat loss in winter and heat gain in summer.



Insulation is one of the most effective ways of improving the energy efficiency of buildings. A well-insulated house minimises heat flows through the building envelope. As a result, less energy is required to keep the building cooler in summer and warmer in winter. Most heat losses and gains are through the roof of buildings and thus ceiling and roof insulation is the most effective way of insulating a home. There are different types of thermal insulation, namely; bulk insulation, reflective foil insulation, and composite bulk insulation. Please refer to SANS 204 Energy Efficiency in Buildings for detailed guidance and the required minimum insulation levels for the different areas of the building envelope.



Insulation: It is compulsory for all new buildings in South Africa to install roof insulation. SANS 10400-XA stipulates the minimum R-value of roof assembly (roof and ceiling) required.



Insulation of hot water pipes: All exposed hot water pipes need to be insulated. As per the SANS 10400-XA requirements, exposed pipes with an internal diameter of less than or equal to 80 mm should be insulated with a minimum R-value of 1.00 and those with an internal diameter of greater than 80 mm should be insulated with a minimum R-value of 1.50

What are the requirements regarding water heating?



Hot water requirements: In terms of SANS 10400-XA, 50% of the hot water requirements of a building must be heated by means other than electrical resistance. The two alternate means are solar water heaters and heat pumps. Any additional hot water requirements for extensions (i.e. bathrooms and kitchens) will also need to comply.



Solar water heaters: The installation of solar water heaters is guided by SANS 10106. New developments should fully comply with these standards. Note that if a renovation or addition is required for a building older than 60 years, or that is located in a heritage protection overlay zone, advice on how to position a solar water heater should be sought from heritage officials at the [City of Cape Town's Environmental Management Department](#).

Reference documents: SANS 10106 and SANS 6210



Property owners and developers should install quality solar water heaters that are SABS approved and should make use of reputable and trustworthy suppliers. The City also promotes the installation of heat pumps where solar water heaters are unsuitable. However, note that there is currently no national SABS standard for heat pumps.

Should I install a smart meter to improve a building's energy management?



In terms of [national electricity regulations](#)²⁷, proposed developments with large theoretical energy usage (monthly consumption of 1 000 kWh and above) must have a smart meter installed.

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All developments planning to have grid-tied, feed-in solar PV systems are required to have AMI meters installed by the City, at the owner's cost.



The City's [Smart Building Handbook](#)⁶ promotes the use of real-time monitoring. In terms of the guidelines, 'The effective operation of buildings requires an environment rich in data on building performance. Real-time feedback on building performance is the only way for facilities managers to be alerted to poorly performing systems.'

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Are there any procedures I need to follow for installing small-scale embedded generation, especially solar PV?



Small-scale embedded generation e.g. solar photovoltaic (PV) systems: Provisions in the Electricity Supply By-law (2010) require that developers seeking to install small-scale embedded generation (SSEG) systems (such as solar PV, micro-hydro or wind turbines smaller than 1 MVA) must comply with the City's [Requirements for Small-Scale Embedded Generation \(SSEG\)](#)²⁸ and register with the City of Cape Town before installation and connection.

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CONNECTING WITHOUT APPROVAL IS ILLEGAL AND DANGEROUS

Illegally connected systems could compromise the safety of your family, our family and the electricity grid.

All new and existing PV systems must be authorised by the City of Cape Town

The banner features a graphic of a hand holding a lightning bolt, with a solar panel in the background, all enclosed in a red border.

Go to www.capetown.gov.za/solarPV to find out how to register your system

Are there any procedures I need to follow for installing small-scale embedded generation, especially solar PV? (continued)



All SSEG systems have to be registered for authorisation with the City. The requirements for authorisation of grid-tied systems are summarised below:

SSEG applications	Grid-tied, feed-in	Grid-tied, reverse power flow blocking
Type of system	Electricity generated from this system is used on the property and any excess is fed back onto the electricity grid. Also known as grid-tied with export option.	Electricity generated from this system is used on the property only when there is a demand for it. Any excess electricity is blocked from feeding back onto the grid. Also known as grid-tied with no export option or grid-tied non-feed-in.
Connection to the grid?	Connected directly to the electricity grid or through the building's internal wiring.	Connected to the electricity grid through the building's internal wiring
Electricity tariffs	SSEG tariff	Does not change tariff.
Required meter	AMI meter. The City will install this but the owner must cover cost of the installation.	Prepayment meter, which will be installed and paid for by the City.
Required inverter	A City-approved inverter is required	A City-approved inverter is required.
Required forms to submit for the authorisation process	Form 1: "Application for Connection of SSEG" (GEN/ EMB) Form 2: "Application for a New or Modified Electricity Supply Service" (AMI meter)	Form 1: "Application for Connection of SSEG" (GEN/EMB) Form 2: "Application for a New or Modified Electricity Supply Service" (prepayment meter)
Documents during the authorisation process	<ol style="list-style-type: none"> 1) SSEG Installation Commissioning Report (Appendix 1 of Form 1) signed off by an ECSA-registered electrical professional 2) A final copy of circuit diagram 3) An electrical installation Certificate of Compliance (CoC) 4) Signed Supplementary Contract for Embedded Generation with City 	<ol style="list-style-type: none"> 1) SEG Installation Commissioning Report (Appendix 1 of Form 1) signed off by an ECSA-registered electrical professional 2) Final copy of circuit diagram 3) An electrical installation Certificate of Compliance (CoC) 4) Signed Supplementary Contract for Embedded Generation with City

Please note that off-grid or stand-alone solar PV systems must also be registered with the City.

Visit www.capetown.gov.za/SolarPV for guidance on the authorisation process and to access the relevant forms and documentation. For detailed guidance on the full application process and criteria, see the “Requirements for Small-scale Embedded Generation document”²⁸.



To ensure compliant, quality installations, it is recommended you use a SAPVIA PV GreenCard accredited PV installer who can issue a GreenCard for your installation. The PV GreenCard programme is an industry-led initiative that will bolster the standard of quality for small-scale solar PV installations and consumer confidence. See www.pvgreencard.co.za for more information and to find accredited installers.



The City promotes grid-tied feed-in systems. The City now allows consumers to feed excess power generated by the PV system back onto the electricity grid and receive an offset electricity tariff. However, systems must remain net consumers on average (over a rolling 12-month period). As detailed above, these systems have to be approved by the City and go onto the SSEG tariff.

See the “Rooftop PV: Guidelines for Safe and Legal Installations in Cape Town”²⁹ booklet for more information. This document will guide you through choosing a PV system and design, and includes a helpful checklist for before, during and after installation as well as help with choosing a good service provider.



Small-scale wind turbines: Wind turbine infrastructure is listed as a consent use in a number of zones in the City of Cape Town Development Management Scheme. This means that the installation of wind turbine infrastructure requires permission from the City.

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Rooftop solar systems can include solar photovoltaic (PV), shown on the left and right of the image above, that converts sunlight into electricity. Alternatively or additionally, a solar water heater, as shown in the middle of the image above, can be installed to heat water directly using the sun's thermal energy.

Do I have to register stand-alone/off-grid SSEG systems for authorisation?



Off-grid systems have to be registered so that it can be confirmed that they are not connected to the grid in any way and so that they are not mistaken for grid-tied systems. The requirements are summarised below.

Off-grid or stand-alone	
Type of system	A physically separated and electrically isolated system such as a solar-powered pool pump. Also known as non-grid-tied.
Connection to the grid?	Not connected to the grid at all either directly or through the building's wiring.
Electricity tariffs	Does not change tariff.
Required meter	No, but the use of a prepayment meter for your property is encouraged.
Required inverter	A City-approved inverter is encouraged but not required.
Required forms to submit for authorisation process	Form 3: "Declaration for Off-Grid Small-scale Embedded Generation".
Documents during the authorisation process	1) An electrical installation Certificate of Compliance (CoC) and test report for electrical installations. 2) Schematic diagram from an electrician.

Application forms and instructions to [apply for authorisation for off-grid or stand-alone small-scale embedded generation](#)³⁰ can be found on the City's website.

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What types of lighting should I install?

Lighting: SANS10400 stipulates the required light levels for different areas to be followed.



Energy-efficient lighting systems should be selected as they can substantially reduce energy costs. The choice of lighting must take into consideration the required light levels, energy demand, and energy consumption. The installation of more efficient lighting such as light-emitting diodes (LEDs) and compact fluorescent lamps (CFLs) are encouraged.

Construction materials

The production and use of construction materials can have significant environmental impacts. All materials require natural resources, energy, and water during the extracting, production and transportation stages, resulting in materials having an embodied energy and water. Materials with higher embodied energy and water are less sustainable and should not be used. This section details guidelines and practices that encourage building materials with a low embodied energy and water as a way of reducing the negative effect that buildings have on the natural environment. Furthermore, building materials that do not contain harmful chemicals are encouraged as they are healthier for building occupants, construction workers as well as the environment.

Are there any criteria for the type of materials to be used in a development?



Locally sourced: The City's [Smart Building Handbook](#)⁶ promotes the use of locally sourced materials and local labour for new developments. Products and materials sourced and manufactured in the vicinity of a development reduce the energy embodied in transporting materials over long distances to the site. Additionally, sourcing locally boosts the local economy, and reduces the transportation costs and delivery times of products and materials.

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Robust: The City's [Design and Management Guidelines for a Safer City](#)³¹ encourage the use of locally sourced and robust materials so that a locality maintains 'its physical quality over time'. In a lifecycle assessment approach, the use of robust materials reduces carbon emissions and embodied energy.

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Alternative building materials: Alternative building materials include materials that are not commonly used in building construction. These include straw bales, sandbags, cob, adobe, mud bricks, stones, rammed earth, reused shipping containers, and reinforced expanded polystyrene. These alternative materials often have improved environmental benefits over conventional materials, such as improved thermal performance, lower embodied energy, reduced volume of material, and lower greenhouse gas emissions.



'Green' materials: There are useful local guidelines and resources available for materials that help achieve more environmentally sustainable buildings. Green Cape's [Catalogue of Green Building Materials](#)³² is a guide towards Compliance in the Western Cape. Alternatively, use products that have been tested by recognised product certification schemes such as [Ecostandard](#)³³ and [Ecospecifier](#)³⁴. These schemes assess various products according to different criteria, regulations and/or performance standards and can provide information that will assist in choosing the preferred product. Please refer to their websites for detailed information on the schemes, assessment criteria and list of certified products.

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'Healthy' materials: Materials selected for developments must be free from volatile organic compounds (VOCs) and formaldehyde. VOCs are organic compounds that release harmful gases over time and may have adverse health effects. Exposure to VOCs can lead to eye, nose and skin irritations, headaches, nausea, dizziness, and lethargy. VOCs are emitted from products such as paints, carpets, adhesives, sealants, varnishes, waxes and composite wood products. It is highly recommended that when specifying and selecting products and materials that contain VOCs, low or no emissions VOC and formaldehyde products are selected.



Sustainably sourced, reused and recycled building materials:

Developers are encouraged to specify products and materials that participate in responsible sourcing schemes. For instance, timber products must be either recycled wood, reused wood, wood from sustainably managed sources and/or certified by the Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification (PEFC). The use of recycled building materials is encouraged as it reduces the amount of virgin materials that need to be extracted and reduces the amount of waste sent to landfill.



Topsoil and materials management on site: The City's [Smart Building Handbook](#)⁶ promotes the stockpiling and conservation of topsoil during construction activities, so that the existing site topsoil can be reused in the landscaping portions of the development, thereby preserving a rich organic material containing a seed stock. Measures such as temporary or permanent planting, fencing, mulching or earth dykes are proposed. In addition to stockpiling and conserving topsoil, other material streams on site should be separately stored and managed to avoid contamination of building material streams and thus resulting in the reduction of wasted materials.

6



Natural environment

Cape Town is a water-scarce city, has a high carbon footprint, and has an increasingly limited ability to absorb and treat waste and pollutants. According to the City's [Environmental Strategy](#)³⁵, Cape Town is situated within a unique and diverse natural environment, which contributes to the city's future resilience and offers significant benefits in terms of the ecosystem goods and services it provides. The natural environment is an irreplaceable asset that provides a myriad of ecosystem goods and services, and a host of associated economic and social benefits to the citizens of Cape Town.

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It is important that development responds positively to natural features and ecosystems and improves water quality. Retaining ecosystem goods and services reduces costs to the City as well as risks and impacts associated with extreme events (e.g. floods, droughts, coastal erosion from high seas).

What are some of the general 'natural environment' considerations I have to take into account in my development?



The City's [Urban Design Policy \(2013\)](#)¹⁰ requires new developments to protect, value and enhance the natural environment through sustainable design. These requirements stipulate, among other things, that developments must:

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- protect and enhance environmental resources and ecologically sensitive areas, ensure that these are suitably integrated into the design of new developments with suitable setbacks and buffers, and ensure that buildings relate positively to open space systems through the arrangement of the built form and the design of its interface with its associated landscape;
- ensure the continuity of the city's open space network by arranging development and new open spaces in such a way that they become viable and meaningful spatial corridors that support biodiversity, including the functioning of the water cycle;
- respond positively to environmental conditions such as orientation, rain and wind patterns so as to also improve the micro-climate by creating, for example, wind barriers; and

What are some of the general 'natural environment' considerations I have to take into account in my development? (continued)

- start the design process by understanding and working in harmony with the natural drainage patterns of the site and apply the principles of water sensitive urban design (WSUD) so as to arrive at a layout that is water sensitive and space efficient, minimises the disruption of the natural hydrological cycle and works together with other related gravity systems such as sewerage.

New developments should seek to combine and connect open space uses like sustainable urban drainage systems (SUDS), playgrounds and allotment gardens to use space more effectively and increase shared use.

What consideration must I give to Water Sensitive Urban Design?



The [Management of Urban Stormwater Impacts Policy](#)³⁶ includes the following criteria for achieving Water Sensitive Urban Design:

New developments, including both greenfield areas and redevelopment in brownfield areas, as well as additional development on an already developed site, must be planned and designed to incorporate sustainable urban drainage systems.

Criteria for the application of sustainable urban drainage systems shall indicate:

- the size of the development site;
- the type of development (e.g. residential, industrial, commercial);
- the location of the development site;
- the sensitivity, importance and the potential for rehabilitation of the receiving waters;
- existing Catchment and River Management Plans for the area; and
- existing Stormwater Masterplans for the area.

Aquifer recharge and management plans also need to be taken into consideration, where applicable.

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New developments should as far as possible consider the integration of the water cycle into the design and the responsiveness of the development to water quality and stormwater quantity issues.

What about stormwater management?

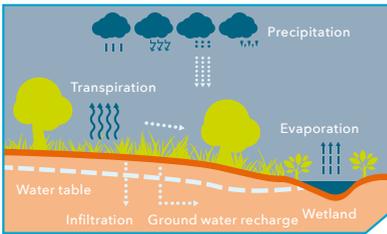


The City's Stormwater Management By-law³⁶ contains a range of legally enforceable requirements that should be fully incorporated into the design and management of buildings and the greater development site. In terms of this by-law, no person may:

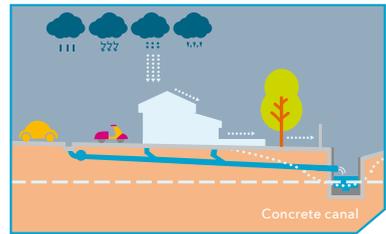
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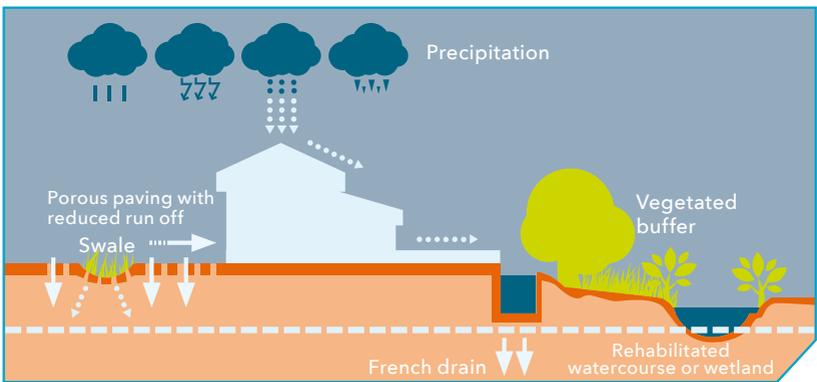
- discharge or permit anything other than clean stormwater to enter the stormwater network;
- damage any part of the stormwater network;
- infill or obstruct the flow of water through the stormwater network; and
- undertake any activity that will increase flood levels or potential flood risk.



Natural hydrological system



Stormwater management without regard for nature



Responsible approach to stormwater management

What about stormwater management? (continued)



The City's [Management of Urban Stormwater Impacts Policy](#)³⁶ requires new developments above a certain size to use sustainable urban drainage system principles in their design to manage their stormwater run-off on site. Any water passing out of a development area must not flow faster or at greater volumes than before development commenced. Measures to encourage infiltration and reduce water pollution also need to be included. The following are essential means for developments to apply sustainable urban drainage system principles:

- minimise hardened surfaces by using gravel, grass blocks, lawn or porous paving as parking areas and driveways;
- direct gutters into flower beds, lawns or water tanks instead of into drains;
- large scale developments must include 'treatment trains' to improve water quality and allow for onsite storage; and
- design ecologically sensitive stormwater treatment facilities, which can be managed as a natural asset to the development i.e. convey surface stormwater via shaped detention or retention ponds and/or swales with gradual sides and plant with locally indigenous wetland species (where practical) instead of piping it underground.



The City's [Management of Urban Stormwater Impacts Policy](#)³⁶ encourages developments to "Slow It, Spread It, Sink It" in order to:

- improve the quality of stormwater runoff;
- control the quantity and rate of stormwater runoff discharges from development; and
- encourage groundwater recharge.



The City requires Best Management Practice measures (to manage run-off quality and quantity) to be constructed and remain located within the boundaries of a private development. This is particularly applicable to private, single-erf developments or private, enclosed and/or gated office parks, industrial parks, blocks of flats, group housing estates, or similar developments where the infrastructure within the boundary of the development site remains in private ownership.

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What if my building interfaces with the natural environment?



The City's [Design and Management Guidelines for a Safer City](#)³¹ requires development to be orientated toward the open space for improved safety through increased surveillance. Practically, this means that in the case of subdivisional type developments, roads are to be placed adjacent to the open space (where practical). In the case of sectional title type developments, communal gardens must be placed adjacent to the common boundary abutting the open space and buildings must be orientated toward the open space (i.e. increased surveillance). Boundary fence treatment shall incorporate visually permeable fencing, which must be designed, specified and installed appropriately in relation to the location and habitat.

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Should the development design aim to consolidate ecological areas and open spaces?



The City's [Design and Management Guidelines for a Safer City](#)³¹ states that in planning new neighbourhoods, open spaces (whether parks or natural or ecological areas) should be consolidated into well-defined networks of interrelated spaces that are overlooked by development.

The said open space networks should strive to accommodate fauna movement through appropriate ground level permeability boundary treatment. Where appropriate, minimum biodiversity connectivity corridor widths must be identified from the outset as a base design informant.

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Should a development have ecological buffers around rivers and wetlands?



The City's [Floodplain and River Corridor Management Policy](#)³⁷ requires all new developments to ensure that adjacent rivers, wetlands, and vleis are provided with adequate buffers. Buffer widths may vary between 10 m for small streams or concrete canals, up to 40 m for rivers and 70 m for wetlands. Recommended buffer areas have already been set for many of the larger river systems in the city. Where they have not been determined for a particular system, a **freshwater ecologist** would need to be consulted.

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What should I do if my proposed new development is adjacent to a conservation area?



Applications for new developments adjacent to conservation areas must minimise habitat fragmentation by placing development at degraded portions of habitat. Stormwater facilities should not be located in a critical biodiversity area or ecological support areas.

New developments adjacent to conservation areas must be designed to take fire into consideration and flammable materials and sources of ignition adjacent to conservation areas should be avoided in new developments.

A fireproof design should be utilised, which may include non-flammable roof and gutters or fire-resistant landscaping. The City's [Veldfire Related Planning Guidelines \(2004\)](#)³⁸ provide practical ways to lower the risk of veldfire damage to infrastructure and development.



Developments that include listed activities may be required to submit an (EIA) in terms of the EIA Regulations (2014, as amended). A required component of this is an Environmental Management Programme, which needs to cover all phases of the development from construction to operation.

If an EIA is not required, the City's Environmental and Heritage Management may still request, if felt to be necessary, an Operational Phase Environmental Management Plan (OEMP), which includes specific rules and regulations as well as environmental education features. The OEMP should also include effective restrictions to prevent dumping of garden refuse into the conservation area or adjacent open space, the containment of pets and livestock roaming through the conservation area and directing outdoor lighting to not impact on the conservation area.



The Standard Operating Procedure (SOP): Guidelines For New Developments Adjacent to Conservation Areas states that developments adjacent to conservation areas should use local indigenous species in landscaping and may not introduce invasive and/or alien plant species in the landscaping. This is important in sensitive systems where there is a risk of hybridisation.

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Waste management

Are there any general criteria pertaining to waste that I should consider in my application?



The City's Integrated Waste Management By-law³⁹ has a range of directives that apply to both the generation and disposal of construction waste and responsible waste management during the operation of a building. The by-law contains a range of legally enforceable requirements that should be fully incorporated into the design and management of buildings. In terms of the said by-law, any waste generator, including a generator of construction waste, must:

- avoid the generation of waste;
- separate waste to minimise waste and its impacts on the environment;
- reuse, recycle or recover waste wherever possible;
- store recyclable waste separately from non-recyclable waste;
- separate industrial waste into liquids, components, and materials that can be treated for recycling or reuse;
- manage waste so that it does not endanger the health or the environment or create a nuisance;
- maintain suitable cleanliness and hygiene standards on their premises as required by the City's Environmental Health By-law⁴⁰;
- dispose of recyclable waste by contracting with an accredited service provider (recycling facility) or delivering it to a licensed waste disposal or recycling facility and ensure that waste is managed in an environmentally sensitive manner.

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Reuse, recycle or recover waste wherever possible

Should I recycle and minimise construction and demolition waste?



Building waste: Building waste (also known as building and demolition waste) refers to the waste produced through the construction, alteration, repair or demolition of structures and includes rubble, earth, wood, and rock. The masonry portion, including concrete, mortar, brick, excavated natural stone and sand, is commonly known in the industry as builders rubble, or rubble. The City's [Integrated Waste Management By-law \(as amended\)](#)³⁹, has several directives aimed at managing building waste, including:

- building waste should, where possible, be reused and recycled (including bricks, window frames, doors, and rubble);
- building waste may not be stored in containers provided by the City for residential waste or deposited in a public litter bin;
- building waste may not be dumped onto/into any public place, municipal drain, land, vacant land, stream, watercourse, street, road, wetland, coastline or any place to which the public has access;
- building waste should be removed and disposed of at a licensed crushing plant or any other licensed building waste disposal facility;
- building waste contaminated by a portion of hazardous waste must be deposited at a licensed waste disposal facility for the treatment and disposal of hazardous waste; and
- if building waste is required to be stored on City property, a permit is required.



Recycled and reused building and demolition waste: The City's [Smart Building Handbook](#)⁶ promotes the use of recycled or reused building and demolition waste, whether from an onsite demolition, or from other sources. Demolition waste can be crushed and reused as a subbase material or fill for a replacement structure or as subgrade for driveways or similar applications, rather than being dumped.



Reused building materials: Developers are encouraged to examine existing buildings to determine if some aspects of the structure can be reused, either by retaining and building onto it, or reusing existing materials, such as roof tiles, ceiling trusses or bricks in the new structure. Old doors and windows can also be reused. Recycled bricks, made from crushed rubble with little cement requirements, are effective substitutes for more conventional types of brick.

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The use of recycled or reused materials saves costs and reduces the environmental impacts of using virgin materials, resulting in increased material efficiency.

Which processes for building waste are required by the IWM By-law?



The City's Integrated Waste Management By-law (as amended)⁴¹ includes the following processes:

- the by-law makes provision for the seizure or impoundment of vehicles concerned with the commission of offences under the by-law, such as dumping of building and other waste;
- developers are required to have a weighbridge certificate (or similar) as proof that the full mass of builders rubble was disposed of at a licensed waste disposal facility for that category of waste, prior to an occupancy certificate or any final approvals being granted; and
- for applicants submitting plans to the City in terms of the National Building Regulations and the Building Standards Act, Act 103 of 1977²⁵, an integrated waste management plan (IWMP), which includes plans to minimise and manage the building waste, is required for all demolition applications, as well as developments with an architectural area of 500 m² or larger.

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Up to three loads per day of non-hazardous builders' rubble or recyclables, or garage or garden waste (using a vehicle with a carrying capacity of 1 500 kg [1,5 tons] or less) can be dropped off free of charge on any day of the week at one the City's drop-off sites, which are licensed waste management facilities.

What should be included in my integrated waste management plan (IWMP)?



Integrated Waste Management Plans (IWMPs): All demolition applicants, as well as those applying for developments with an architectural area of 500 m² or larger, must submit their IWMP covering the construction phase of the development, in terms of the 'Integrated waste management plan for building waste generators' form⁴².

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What should be included in my integrated waste management plan (IWMP)? (continued)



This is followed, upon completion of the building or demolition works, by the submission of the 'Confirmation of waste generated, reused, recycled and disposed' form, with proof attached, detailing which waste was disposed or recycled where, in terms of the 'Drop-off facility delivery note' form. These two forms are available once the demolition or building plan has been approved.

According to the City's [Integrated Waste Management By-law](#)³⁹, an IWMP must include:

- an assessment of the quantity and type of waste that will be generated;
- a description of the services required to store, collect, transport and dispose of such waste;
- a description of how they intend separating recyclable and non-recyclable material at the point of source;
- the waste minimisation and pollution prevention plans of such waste generator;
- the impact or potential impact on the environment of the waste created by them;
- the type or characteristics of waste of an environmentally sensitive nature produced or the amount of natural resources that are consumed in the manufacturing or production process that result in waste; and
- targets for waste production through waste minimisation, reuse, recycling and recovery measures or programmes that can minimise the consumption of natural resources and the method of disposal of waste.

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Should I set up systems to recycle and reuse waste during the operation of a building?



Onsite recycling and waste storage facilities: According to the Integrated Waste Management By-law, new developments should incorporate mechanisms for reuse, recycling and waste minimisation by, for example:

- providing designated, covered storage and recycling space in buildings and developments;

- providing facilities for separation at source into the following waste categories as a minimum: recyclable waste (glass, tin, metal, paper, and plastic), organic (compostable) waste and general waste. Additional facilities for building waste and e-waste (if appropriate) can also be considered;
- providing and using waste compactors, only where appropriate, after waste separation has taken place; and
- enter into agreements with local accredited service providers, for refuse collection, as well as recycling.

What about garden waste?



Garden waste management: The City's Integrated Waste Management By-law defines garden waste as organic waste from gardening or landscaping activities and directs that 'garden waste should, where possible, be composted on the property or stored in a compost heap'. New developments should provide adequate onsite facilities for the composting of organic waste, or alternatively, for the separation of organic waste. to facilitate a contract with an accredited organic waste service provider to collect the separated organic waste for offsite composting.



Composting facilities: Facilities or suitable provision for indoor storage of certain types of kitchen organic waste (fruit and vegetable waste) can also be included, as this waste can be fed into certain composting systems, such as composting containers or worm composting systems.

Do I need to provide public refuse bins or receptacles for a development?



Provision of public refuse bins or receptacles: Developments should consider the provision of bins in appropriate locations (for example, at the start and end of footpaths) in terms of the City's [Design and Management Guidelines for a Safer City](#)³¹. Bins for the separation of recyclable waste and non-recyclable waste are preferable, provided a recycling collection system, using an accredited waste service provider to collect the waste and recyclables, is planned along with the placement of the receptacles. It is recommended that such public refuse or recycling receptacles are placed within a secured and formally managed area or space to avoid the receptacles attracting public dumping, littering or vandalism.

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3.

Summary of regulation and policy-related resources



Site selection

City of Cape Town policies, regulations, and guidelines

Municipal Spatial Development Framework (2018)



Municipal Spatial Development Framework
2017 - 2022 Executive Summary



MSDF Thematic Maps



Municipal Planning By-law, 2015



Densification policy (2012)



Transport

City of Cape Town policies, regulations, and guidelines

Comprehensive Integrated Transport Plan 2018-2023 (CITP)



Integrated Public Transport Network Plan 2032 (IPTN)



Non-motorised Transport Strategy Volume 2: Policy Framework



Parking Policy for the City of Cape Town (2014)



City of Cape Town Development Management Scheme (2016)
(Schedule 3 of MPBL)



Urban Design Policy (2013)



Water

National policies, regulations, and guidelines

Government Gazette No. 41381 (Vol. 631)



City of Cape Town policies, regulations, and guidelines

Water By-law (2010)



Amended Water By-law (2018)



Water (continued)

City of Cape Town policies, regulations, and guidelines

General Authorisation for the Taking and Storing of Water (2016)



Wastewater and Industrial Effluent By-law



Treated Effluent FAQs



Treated Effluent Amendment By-law (2015)



Water Conservation and Demand Management Strategy



Guidelines on Installation of Alternative Water Systems



Safe Use of Greywater



Rainwater Harvesting



Energy

National policies, regulations, and guidelines

National Building Regulations and the Building Standards Act, Act 103 of 1977



SANS 10400-XA 'Energy Usage in Buildings'



Electricity Regulation Act, 2006



City of Cape Town policies, regulations, and guidelines

Smart Building Handbook



Solar Water Heater Programme



Requirements for small-scale embedded generation document



Rooftop PV: guidelines for Safe and Legal Installations in Cape Town



Apply for authorisation for grid-tied small-scale embedded generation on City's website



Construction materials

City of Cape Town policies, regulations, and guidelines

Design and Management Guidelines for a Safer City



Smart Building Handbook



Green Cape's Catalogue of Green Building Materials



Natural environment

City of Cape Town policies, regulations, and guidelines

Environmental Strategy



Management of Urban Stormwater Impacts Policy



Urban Design Policy



Stormwater Management By-law



Design and Management Guidelines for a Safer City



Floodplain and River Corridor Management Policy



Veldfire-Related Planning Guidelines



Waste management

City of Cape Town policies, regulations, and guidelines

Design and Management Guidelines for a Safer City



Integrated Waste Management By-law



Integrated Waste Management Amended By-law, 2016



Environmental Health By-law



Integrated Waste Management By-law (2009)



Amended Integrated Waste Management By-law (2010)



Integrated Waste management plan for building waste generators



Integrated Development Plan (IDP) 2017-2022



Energy2040 Goal



End Notes

¹ Cape Town Integrated Development Plan (IDP) 2017-2022

<http://resource.capetown.gov.za/documentcentre/Documents/City%20strategies%2c%20plans%20and%20frameworks/IDP%202017-2022.pdf>

² Cape Town Energy2040

http://resource.capetown.gov.za/documentcentre/Documents/Graphics%20and%20educational%20material/Cape_Town_Energy2040_brochure_2015-11.pdf

³ Municipal Spatial Development Framework (MSDF) 2017-2022

http://resource.capetown.gov.za/documentcentre/Documents/City%20strategies%2c%20plans%20and%20frameworks/Cape%20Town%20Metropolitan%20Spatial%20Development%20Framework_2018-04-25.pdf

⁵ City of Cape Town Municipal Planning By-law, 2015

<http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Municipal%20Planning%20By-Law%20containing%20all%20amendments.pdf>

⁶ City of Cape Town Smart Building Handbook

http://resource.capetown.gov.za/documentcentre/Documents/Procedures%2c%20guidelines%20and%20regulations/Smart-Building-Handbook_2012-06.pdf

⁷ Comprehensive Integrated Transport Plan (CITP) 2018-2023

<https://tdacontenthubfunctions.azurewebsites.net/Document/1794>

⁸ Integrated Public Transport Network Plan (IPTN) 2032

<https://tdacontenthubfunctions.azurewebsites.net/Document/13>

⁹ Non-motorised Transport (NMT) Policy and Strategy Volume 1 and 2

<https://tdacontenthubfunctions.azurewebsites.net/Document/30>

<https://tdacontenthubfunctions.azurewebsites.net/Document/31>

¹⁰ City of Cape Town Urban Design Policy, 2013

<http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Urban%20Design%20-%20%28Policy%20number%2012986%29%20approved%20on%2004%20December%202013.pdf>

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<http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Parking%20Policy%20for%20the%20City%20of%20Cape%20Town%20-%20%28Policy%20number%2017913%29%20approved%20on%2024%20April%202014.pdf>
- ¹² City of Cape Town Water By-law, 2010
<http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Water%20By-law%202010.pdf>
- ¹³ City of Cape Town Water Amendment Water By-law, 2018
<http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Water%20Amendment%20By-law%202018.pdf>
- ¹⁴ City of Cape Town Safe Use of Greywater
<http://resource.capetown.gov.za/documentcentre/Documents/Graphics%20and%20educational%20material/Safe%20Use%20of%20Greywater%20booklet.pdf>
- ¹⁵ City of Cape Town Water and Sanitation Department: Alternative Water Resources: Rainwater Harvesting
http://resource.capetown.gov.za/documentcentre/Documents/Graphics%20and%20educational%20material/Alternative_Water_Resources_Rainwater_English.pdf
- ¹⁶ Department of Water and Sanitation, National Water Act, Act 36 of 1998: Revision of General Authorisation For The Taking and Storing of Water
https://www.gov.za/sites/default/files/gcis_document/201609/40243gen538.pdf
- ¹⁷ Government Gazette No. 41381 (Vol. 631), 2018
http://www.dwa.gov.za/Documents/Gazettes/41381_12-1_WaterSanitation.pdf
- ¹⁸ City of Cape Town Wastewater and Industrial Effluent By-law, 2013
<http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Wastewater%20and%20Industrial%20Effluent%20By-law%202013.pdf>
- ¹⁹ City-wide tariffs
<http://www.capetown.gov.za/Work%20and%20business/Meet-the-city/The-City-budget/City-wide-tariffs>

- ²⁰ City of Cape Town Treated Effluent Amendment By-law, 2015
<http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Treated%20Effluent%20Amendment%20By-law%202015.pdf>
- ²¹ City of Cape Town Treated Effluent Water FAQs
http://resource.capetown.gov.za/documentcentre/Documents/Procedures,%20guidelines%20and%20regulations/Treated%20Effluent%20FAQs_branded.pdf
- ²² How to apply to operate as a water services intermediary (WSI)
<http://www.capetown.gov.za/City-Connect/Apply/Municipal-services/Water-and-sanitation/apply-to-install-and-use-an-alternative-water-system>
- ²³ Cape Town Green Map website
<https://www.capetowngreenmap.co.za/>
- ²⁴ SANS 10400-XA 'Energy Usage in Buildings'
<http://www.sans10400.co.za/download-regulations/>
- ²⁵ National Building Regulations and Building Standards Act, Act 103 of 1977
https://www.thedti.gov.za/business_regulation/acts/building_standards_act.pdf
- ²⁶ City of Cape Town Solar Water Heater programme
<https://saveelectricity.org.za/solar-water-heaters/>
- ²⁷ Electricity Regulations for Compulsory Norms and Standards for Reticulation Services
<https://www.gov.za/documents/electricity-regulation-act>
- ²⁸ Requirements for small-scale embedded generation
<http://resource.capetown.gov.za/documentcentre/Documents/Procedures,%20guidelines%20and%20regulations/Requirementst%20for%20Small-Scale%20Embedded%20Generation.pdf>
- ²⁹ Rooftop PV Guidelines for Safe and Legal Installations in Cape Town
https://saveelectricity.org.za/wp-content/uploads/2018/09/4255-FA-CCT-Energy-PV-Brochure_September2018.pdf

- ³⁰ Apply for authorisation for off-grid or stand-alone small-scale embedded generation
<http://www.capetown.gov.za/City-Connect/Apply/Municipal-services/Electricity/apply-for-authorisation-to-install-a-small-scale-embedded-generation-system>
- ³¹ City of Cape Town Design and Management Guidelines for a Safer City
<http://resource.capetown.gov.za/documentcentre/Documents/Procedures,%20guidelines%20and%20regulations/Design%20and%20Management%20Guidelines%20for%20a%20Safer%20City.pdf>
- ³² Green Cape Catalogue of Green Building Materials
<https://greencape.co.za/assets/Green-Building-Material-Catalogue-Final.pdf>
- ³³ EcoStandard
<https://ecostandard.co.za/wp/>
- ³⁴ Ecospecifier
<http://www.ecospecifier.co.za/>
- ³⁵ Environmental Strategy for the City of Cape Town
<http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Environmental%20Strategy.pdf>
- ³⁶ Management of Urban Stormwater Impacts Policy
<https://tdacontenthubstore.blob.core.windows.net/resources/a94a77ac-81f8-46ae-bf39-b95e9d3e396c.pdf>
- ³⁷ Floodplain and River Corridor Management Policy
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³⁹ City of Cape Town Integrated Waste Management By-law, 2009

<http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Integrated%20Waste%20Management%20By-law%202009.pdf>

⁴⁰ City of Cape Town Environmental Health By-law, 2003

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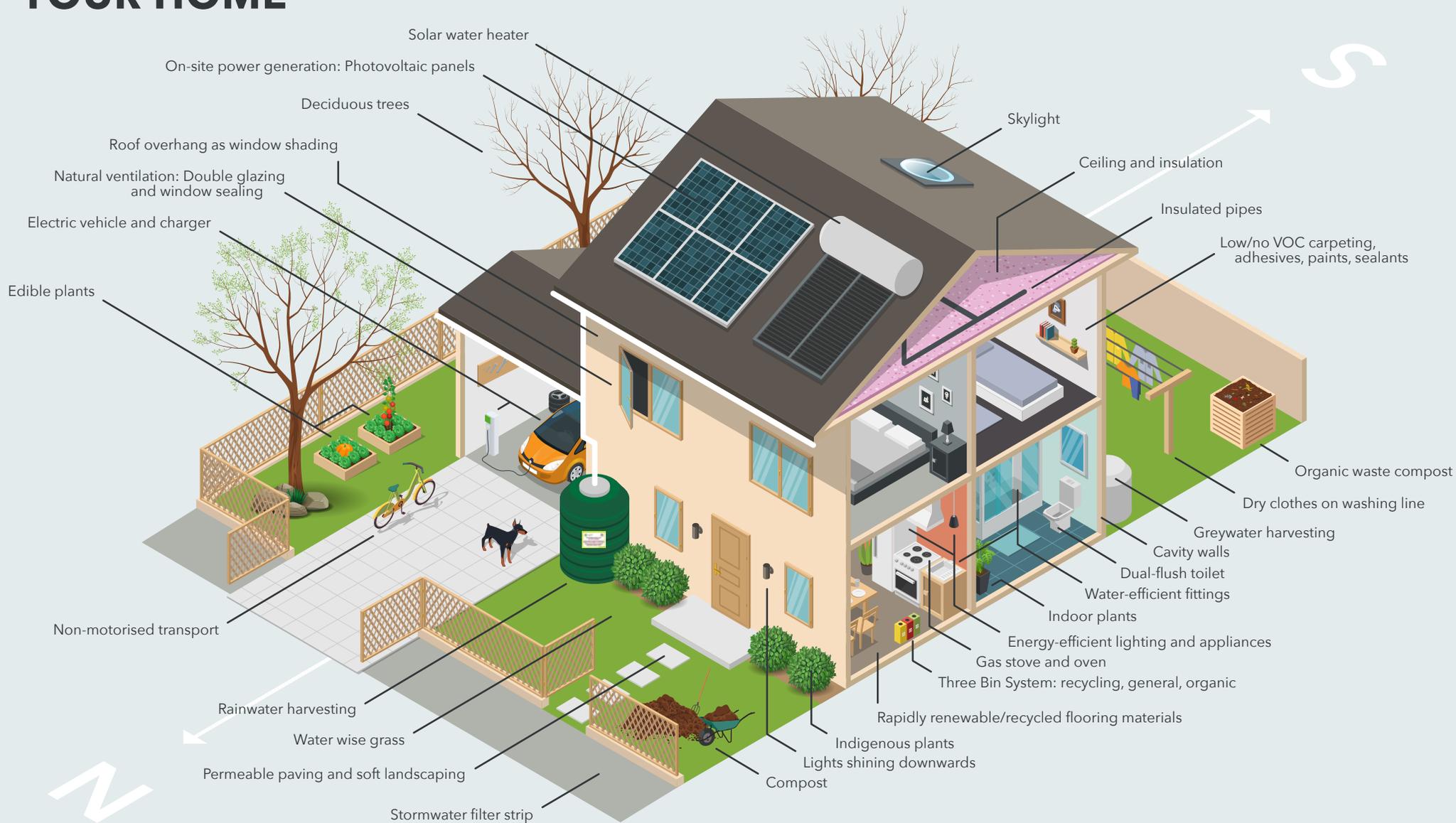
⁴¹ City of Cape Town Integrated Waste Management Amended By-law, 2010

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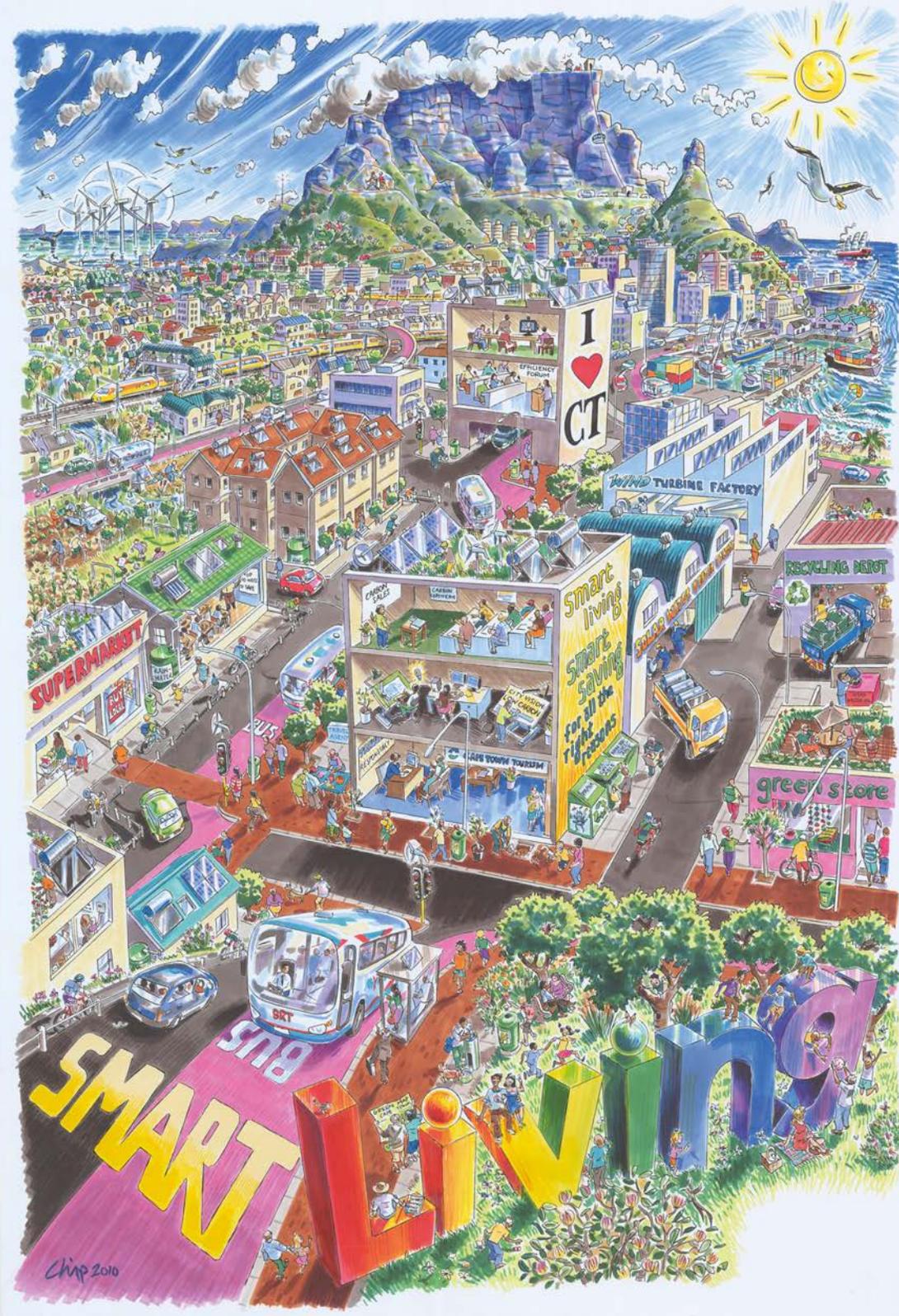
⁴² SWM001 - Integrated Waste management plan for building waste generators

<http://resource.capetown.gov.za/documentcentre/Documents/Forms,%20notices,%20tariffs%20and%20lists/Integrated%20Waste%20management%20plan%20for%20building%20waste%20generators%20Application%20form.pdf>

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