CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

GREEN INFRASTRUCTURE PROGRAMME

BEST PRACTICE GUIDELINES

TREES

Making progress possible. Together.

Electronic document navigation shortcuts:

- Entries on the contents page link to the relevant page.
- The document title on the top left of each page links to the contents page.

Please note:

These guidelines are not intended to be prescriptive. Instead, the principles contained in this document are meant to guide property owners, City officials, designers, developers, architects, planners and community members in managing and improving our green infrastructure collectively and sustainably to create safe, contextually-appropriate environments.

Every effort has been made to ensure the accuracy and quality of the information in this document. The City cannot be held responsible and will not be liable for any errors or omissions contained herein. If you have any comments, suggestions or updates, please send an e-mail to **enviro@capetown.gov.za**.

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Cover photograph: Government Avenue.

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INTRODUCTION

Trees are an essential part of our natural landscape and form part of Cape Town's cultural and aesthetic backdrop. Trees have a large part to play in making Cape Town a resilient city that can adapt to climate change. Whether trees are indigenous or exotic, collectively, they form part of our urban forest, and offer valuable social, ecological and economic benefits.

Kirstenbosch

Social benefits:

- Connecting people to nature
- Adding aesthetic and green value to landscapes
- Absorbing traffic noise pollution
- Providing windbreaks and privacy
- Providing shade and cooling hot areas
- Improving physical health
- Sustaining cultural/spiritual values
- Creating memorable spaces

Ecological benefits:

- Capturing carbon and producing oxygen
- Releasing moisture into the atmosphere through transpiration
- Creating habitats and safe refuge for other organisms (some species depend on trees for survival)
- Conditioning soil to improve its quality
- Binding soil to prevent erosion
- Slowing rainwater/stormwater runoff

Economic benefits:

- Increasing property values
- Creating indirect savings by reducing building heating and cooling costs
- Reducing infrastructure costs, e.g. stormwater management
- Offering commercial and livelihood value (food, fruit, flowers, bark, roots, medicine and timber)

DEFINING KEY CONCEPTS

Arboriculture: The planting, management and care of trees and shrubs, and the study thereof.

Arborist: A professional with experience and training who has the technical and theoretical knowledge to manage and care for trees and shrubs.

Canopy: The upper layer or habitat zone formed by mature tree crowns. Also, the extent of the outer layer of leaves of an individual tree or group of trees.

Champion tree: Extraordinary single trees and groups of trees assigned "champion" status by the national Department of Environment, Forestry and Fisheries (DEFF). Champion status is assigned according to trees' biological attributes, age or heritage significance and enjoy protected status under section 12 of the National Forests Act 84 of 1998.

Cultural landscape: Landscapes that include both natural and man-made aspects, and that have been affected, influenced, or shaped by human involvement. This is expressed in various ways, patterns and elements, the relationship between these, and the meaning they have for people.

Dripline: The area below and within the tree canopy area, where main feeder roots of the tree are located (see figure 1).

Endemic tree: A tree that is native to a certain region and is not found anywhere else. (Compare "indigenous tree".)

Exotic tree: Trees introduced to South Africa from other countries.

Felling: Tree removal.

Indigenous tree: A tree originating or occurring naturally in a certain geographical area or country. (Compare "endemic tree".)

Invasive alien: A species included in the 2016 list of alien and invasive species in terms of the National Environmental Management: Biodiversity Act (NEMBA) of 2004. They are difficult to control, and may be harmful to indigenous habitats.

Lopping: The indiscriminate cutting off of lateral tree branches or limbs.

Protected tree: A tree protected in terms of the National Forests Act 84 of 1998.

Pruning: The removal of tree parts to control or enhance their performance or function in the landscape, including crown lifting, reduction and cleaning.

Riparian: Adjacent to, or within the floodplain, of a watercourse or wetland.

Root ball: The main base mass of roots and soil (normally as transplanted with a tree or shrub).

Significant tree: A tree that is considered exceptional in terms of cultural, historical, scientific or aesthetic value.

Skilled tree worker: A person who, through training and experience, has great tree knowledge, and is familiar with maintaining and removing trees, and the equipment used for such, and has demonstrated ability in the specialised techniques involved.

Specimen tree: A tree that is particularly beautiful, interesting or unusual, and which is a focus of attention.

Topping: Also "heading", "tipping", "hat-racking", "rounding over". The indiscriminate cutting of tree branches on the main limb and all lateral branches to the same height.

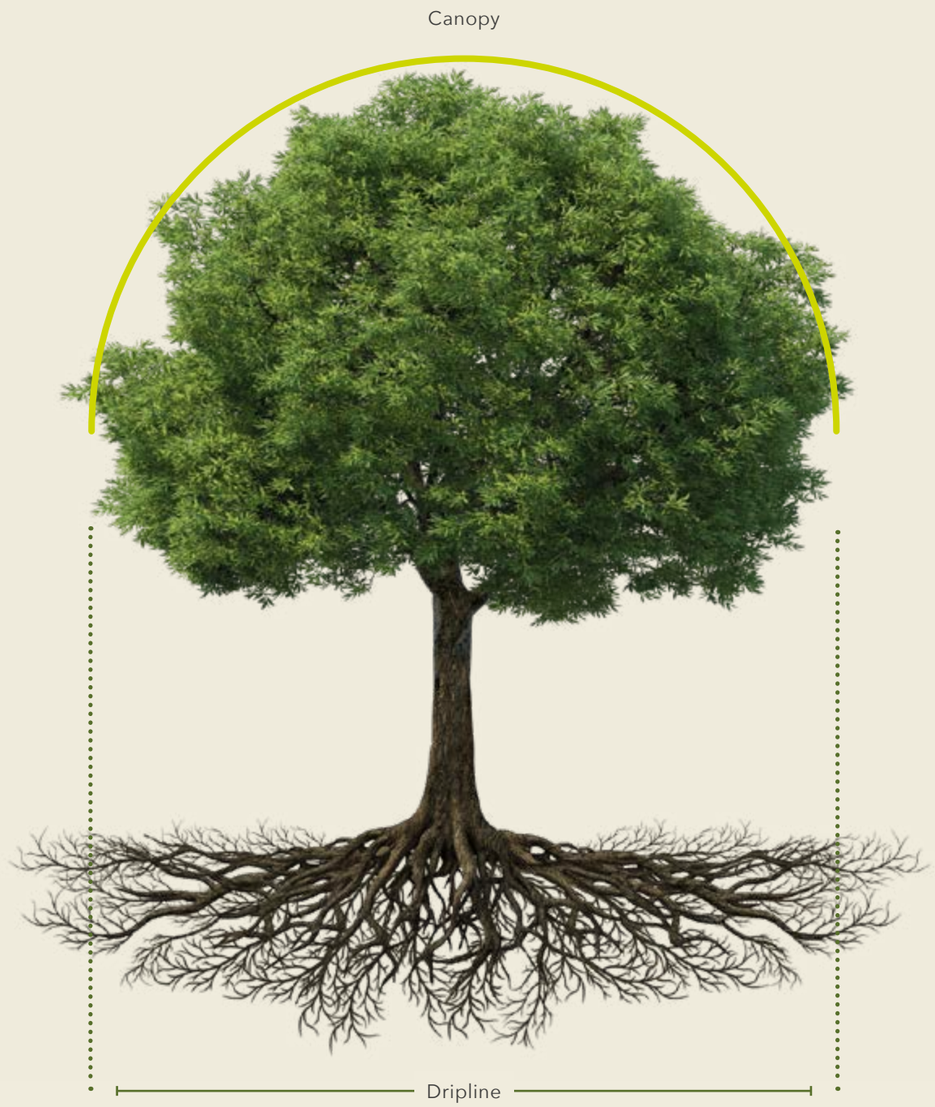
Transplanting: The digging out of a tree in one location and replanting it in another.

Tree: A woody, self-supporting plant with a stem diameter greater than 10 mm at average adult chest height, and a height greater than 3 m if single-stemmed and greater than 5 m if multi-stemmed, and includes the root zone.

Tree management: The protection and maintenance of the existing tree asset base in the city, as well as the planning, planting and maintenance of new trees.

Urban forest: The sum of all trees growing within an urban area.

FIGURE 1: CANOPY AND DRIPLINE



GUIDELINE 1:

CERTAIN TREES MAY NOT BE REMOVED WITHOUT PRIOR AUTHORISATION.

Certain trees are protected by law.

1.1 In addition to guarding over all live trees in natural forests, the National Forests Act currently provides for **47 specific protected tree species**. (For a full list of these species, turn to annexure A.) This means that no-one may:

- cut, disturb, damage or destroy these protected trees; or
- possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire any product derived from them;

unless the DEFF has granted a licence or exemption. Pruning does not require a licence, provided it does not exceed 25% of the canopy.

1.2 The same restrictions apply to any tree or groups of trees listed as **champion trees** in terms of the National Forests Act. (For a list of these, turn to annexure B.)

1.3 In terms of section 38(1) of the National Heritage Resources Act (NHRA), any person who intends to undertake a development, which by definition in the NHRA includes "any removal or destruction of trees", must submit a Notification of Intent to Develop (NID) to, and receive approval from, Heritage Western Cape (For a full list of these development categories, turn to annexure C).

1.4 Any area designated as a heritage area in terms of the NHRA (which includes the Bakoven, Clifton and Glen Beach Bungalow Area), requires special consent from the responsible authority (refer City of Cape Town Environment and Heritage Management) for any proposed alteration or development that affects such heritage area. This includes the removal or destruction of trees.

1.5 In terms of section 162(1)(b)(v) and 1(e) of the City of Cape Town Development Management Scheme (schedule 3 to the City's Municipal Planning By-law, 2015), no-one may destroy or remove a tree, boundary hedge or mature plantings in a **heritage protection overlay zone (HPOZ)** without prior City approval. To check whether your property falls within an HPOZ, follow this link to the City's map viewer: www.capetown.gov.za/CityMapViewer. [Find your property by putting in the street address; Zoom in; In the Layer List Toolbox, under "Themes" click on "Land Administration", click on "Zoning Scheme" (Street name and land parcel); under "Themes" click on "Heritage" and "Declared HPOZ Areas"]. Figure 2 shows how an HPOZ is depicted on the map viewer.

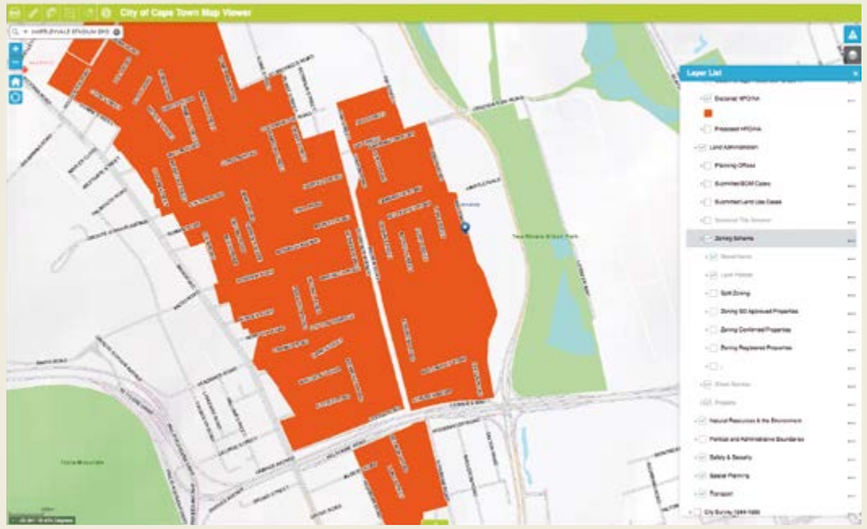
1.6 Section 188(3)(j) and (k) of the Development Management Scheme, in turn, prohibit the felling, uprooting or destruction of a mature tree or hedge in the Bakoven, Clifton and Glen Beach Bungalow area without prior City approval. This is because the area is considered a **local area overlay zone**.

1.7 **Trees on City land**, including all street verges, public places and parks, are protected and may not be pruned or removed without written permission from the City's Recreation and Parks Department. This prohibition is contained in no fewer than three City documents, namely the Public Parks By-law (section 10) (2010), the Tree Management Policy (section 7.2) (2014) and the By-law relating to Streets, Public Places and the Prevention of Noise Nuisances (section 9) (2007).

1.8 Trees may also be protected through **title deeds, planning approval conditions or town planning schemes**. The City's requirements for building plan submission, in terms of section A6(g)(ii) of the National Building Regulations and Buildings Standards Act, require that trees on City land, that could be affected by proposed vehicular access routes, be shown. The applicant would also have to show if any protected trees or City trees on the property and the neighbouring property, whose root zone extends onto such property, would be affected by development proposals. An omission of relevant information in this regard could constitute fraud/misrepresentation on the part of the applicant, as it could cause the City to approve a plan that doesn't comply with all other legislation.

1.9 If you suspect a tree is being felled without permission, contact the City's Recreation and Parks Department.

FIGURE 2: EXAMPLE OF AN HPOZ AS FOUND ON THE CITY'S MAP VIEWER



Arderne Gardens

GUIDELINE 2:

PROTECT EXISTING TREES, ESPECIALLY SIGNIFICANT OR MATURE ONES.

Cape Town's natural environment is a huge tourist drawcard. Trees enhance the natural and built environment and the cultural landscape. Moreover, trees are becoming increasingly important in the fight against climate change. Therefore, all trees must be protected from damage that may weaken them and reduce their lifespan.

2.1 **Do not fell** a tree unless absolutely necessary, such as if the tree poses a risk to people or property (also see guideline 10). Always first attempt to prune (see guideline 5) or (in the case of small trees) transplant before felling (see guideline 6).

2.2 Make every effort to **protect trees** that:

- have a long life expectancy;
- are healthy;
- are specimen trees or part of a tree grouping;
- are feature or landmark trees;
- are part of several of the same species of trees that occur in the same suburb, thereby are within the context and adding to the local area character;
- are street trees, or are visible from the street;
- form part of an avenue or row of trees;
- constitute boundary vegetation;
- are of cultural landscape value;
- are found within heritage or protected areas; and
- are mature and contribute to the local ecology.

2.3 Guard against labelling non-invasive exotic trees as bad trees. **Mature exotic trees can offer immense benefits** without posing a threat to ecological resources. They should be retained and incorporated into proposed developments in urban areas, as:

- they add to cultural landscapes – e.g. mature stone pines give sculptural effect;
- they can be extraordinary specimen trees – e.g. the Moreton Bay fig (*Ficus macrophylla*) found in Arderne Gardens, Claremont; and
- they display distinctive place-making elements in and around Cape Town – e.g. avenues of oak or blue gum trees.

Take care to distinguish between invasive alien species (see guideline 9) and non-invasive alien species.

2.4 We should all encourage, protect and **celebrate champion trees**. Fifteen individual or groups of champion trees currently fall within the jurisdiction of the City of Cape Town (turn to annexure B for a list). Forms to identify and nominate a tree or group of trees for champion tree status are available from DEFF. Any member of the public may make nominations. Champion trees enjoy the same protection as protected tree species.

2.5 The City's Recreation and Parks Department have a process to identify and **document significant trees** in Cape Town. A tree may be considered worthy of inclusion in the significant tree inventory if:

- it has outstanding aesthetic quality;
- it has exceptional height, trunk circumference or canopy spread;

- it has an association with particular historical or cultural events;
- it has an association with a well-known public figure or ethnic group;
- it is of great age;
- it is an outstanding example of a specific species;
- it is of a rare or unusual species; or
- it is likely to be a remnant or regrowth of an historical avenue.

Any member of the public may nominate individual trees or groups or avenues of trees on private or public land for significant tree status. The prescribed form and further details are available from the Recreation and Parks Department.

2.6 Pay special attention to **trees on sites with buildings or structures older than 60 years**. These trees may contribute to the significance rating for the entire site or heritage resource, as part of the historical context.

2.7 Both the Public Parks By-law (section 10) (2010) and the By-law relating to Streets, Public Places and the Prevention of Noise Nuisances (section 9) (2007) **prohibit the marking, painting or attaching of any advertisements to a tree** in a public park or public road. In addition, no-one may break or damage a tree.

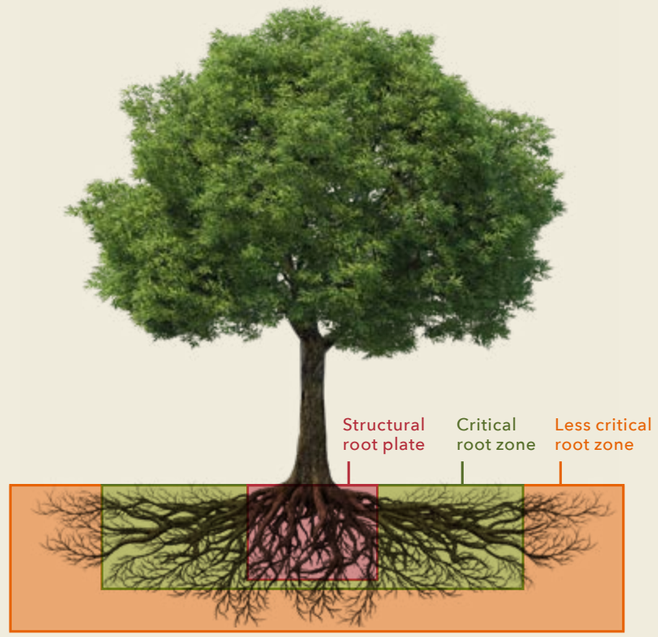
2.8 Immediately notify Recreation and Parks if trees on public land are being **stripped of their bark**, as this could cause a tree to die. The City will investigate, and may paint the bark of the tree with an appropriate, non-toxic paint to deter muti harvesters. This practice has been successfully introduced on fever trees in central Cape Town.

2.9 Protect the **roots within the dripline** of the tree (see figure 3).

- The most essential roots are those in the structural root plate (red area). Damaging these roots may leave a tree unable to stay upright, and may be fatal for the tree.
- The next important root zone is the critical root zone, also called the "tree protection zone" (which includes the structural root plate), located under the reach of the branches (dripline) (green area). This area contains about 85% of a tree's root mass. Any damage to the transport and feeder root system in this area will likely reduce the tree's health and chances of survival. The finer roots in the top 500 mm of soil supply trees with water and nutrients.
- Roots outside the critical root zone, the less critical root zone (orange area), are less critical for tree survival. However, to compensate for this root loss, extraordinary care must be given to roots in the critical root zone (green area).

2.10 Any kind of root damage reduces tree health and vigour due to insufficient absorption of water and nutrients. A tree's chances of survival are substantially reduced once critical roots are damaged and the roots can no longer support the canopy. To ensure tree survival, the **entire critical root zone should be protected** from damage. This is especially true for vulnerable trees, i.e. trees that are in poor health, are very old or of a susceptible species.

FIGURE 3: TYPICAL ROOT ZONES OF A TREE



2.11 **Do not pave or hard-surface** too close to any tree trunk, as this reduces penetration of rainwater, air and biological activity to the roots. A rule of thumb is to keep out of the dripline when paving or hard-surfacing (see figure 4).

2.12 **Do not compact the earth** in the critical root zone. This suffocates the small feeder roots found in the top 500 mm of soil (see figure 4).

2.13 Take care when cutting or mowing grass so as not to damage tree trunks. An alternative is to spray herbicide approximately 30 cm around the base of the tree, and then to mulch the area to prevent grass regrowth.

2.14 **Do not change ground levels** around trees. Lowering the level of soil will remove valuable roots, while raising soil levels will suffocate roots.

FIGURE 4: FACTORS THAT MAY DAMAGE TREES

COMPACTED SOIL:
Starves roots of air and water.

HARD SURFACES:
Rainwater drains away from tree, reducing water to the roots.

TRENCHES:
Roots are cut and root system is damaged.

MACHINES:
Spillage of oil and petrol pollutes the soil, and machines cause damage.

2.15 **Go slow on the fertiliser**, as this may end up damaging the tree. As the tree absorbs nutrients, it becomes dependent on the fertiliser, which may not always be available. Rather provide mulch or compost.

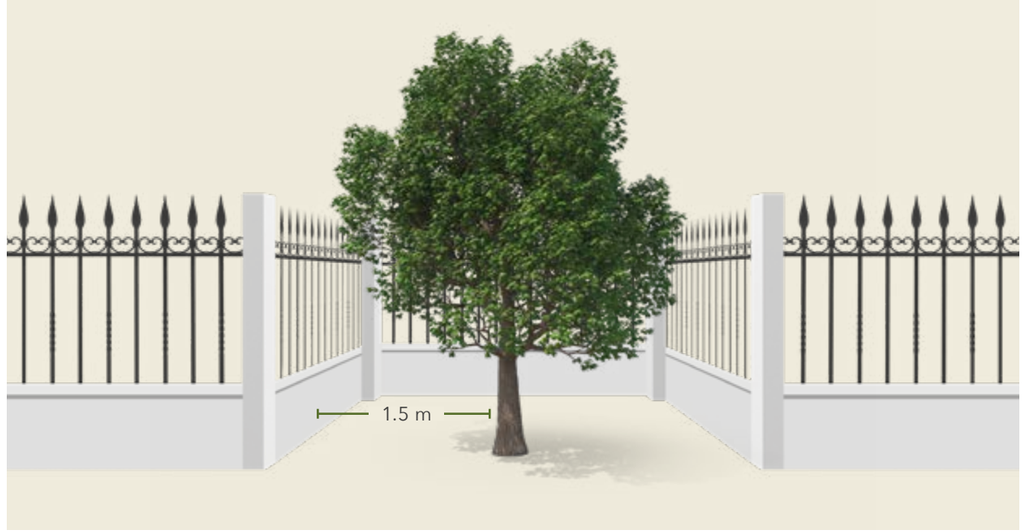
2.16 **Take care not to overwater trees**, as this may drown the roots. Try to water trees in the morning instead of the evening, and avoid wetting the leaves of the tree.

2.17 Always **try to keep the status quo with regard to water flows**. Do not cut off intercepting groundwater flows that supply the tree, especially on slopes, or drain excessive water towards trees, as this may drown them (see figure 14).

2.18 For most tree problems there are **solutions**. Arborists or skilled tree workers can advise on the best and most cost-effective way to deal with any problem, including:

- pruning branches to let in more sunshine;
- cutting back roots and redirecting growth;
- transplanting smaller trees; and
- segmenting boundary walls with tree-friendly fencing, or stepping back walls (see figure 5).

FIGURE 5: BOUNDARY WALL STEPPED BACK SO THAT TREE MAY BE RETAINED



GUIDELINE 3:

PLANT AS MANY TREES AS POSSIBLE.

Planting additional trees across Cape Town will ensure that the city and its residents derive maximum benefit from a greener environment.

3.1 The **planting of appropriate resilient tree species** is encouraged in all new developments to:

- increase biodiversity;
- ensure greening throughout Cape Town;
- soften and lend a "human scale" to buildings;
- serve as a traffic-calming measure; and
- provide shade and reduce heat.

It is particularly important to have trees abutting the public realm.

3.2 Create **tree avenues in your street** and get your neighbours involved in communal tree-planting efforts.

3.3 Developments that include **excavation for basements** must be set back from the abutting road and sidewalk, to accommodate tree planting on the sidewalk. Also, ensure sufficient ground space above the basement to provide for tree planting. As a general guideline, the top of the basement ceiling should not be closer than 2 m from the natural ground level. This will ensure sufficient soil depth and space for tree root growth above the basement ceiling.

3.4 As far as possible, **plant water-wise, indigenous trees** instead of exotic trees. Indigenous trees are naturally adapted to the local environment and climate, which means they stand a better chance of surviving and thriving, especially in a water-stressed city. However, considering that the Western Cape is not historically a tree rich area, the planting of new trees does not exclude the use of appropriate exotic species; provided that they are non-invasive and are suited to local conditions.

3.5 Ensure a **variety of trees** to increase biodiversity.

3.6 Do not overlook the **value of fruit and nut trees**, but be mindful of the potential nuisance factor, including berry or fruit stains and insects. To successfully grow fruit and nut trees, you will require specialist input, e.g. from a local nursery.

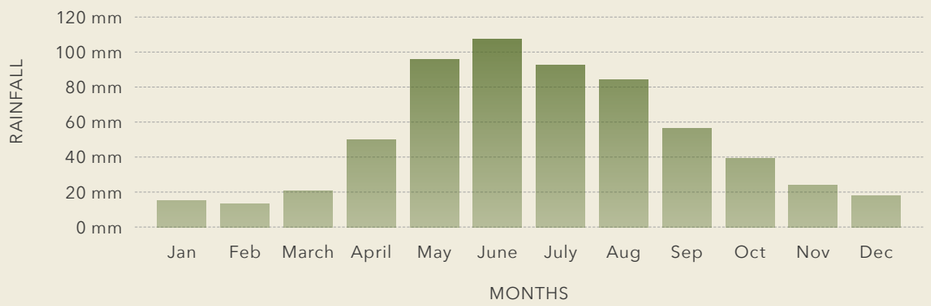
3.7 Consider **trees with medicinal value**.

3.8 As a general rule, plant as big a tree as possible, preferably with a **minimum container size of 50 L**.

3.9 **Planting into the ground is preferred** to using planters, as the tree will have access to groundwater instead of relying on artificial irrigation, as well as be better able to withstand wind.

3.10 Consider **local factors and context** when planting. These include wind tolerance and direction, the sun, the water table, irrigation and drainage, the soil type, rate of growth, canopy size and density, fruit-bearing trees, deciduous or evergreen, and the size of the planting space. (Turn to annexure G for guidance on species selection.)

FIGURE 6: MONTHLY AVERAGE RAINFALL IN CAPE TOWN



3.11 Plant at the **right time of year**. Cape Town receives winter rainfall, so trees should be planted in the higher rainfall months of late autumn and winter (see figure 6).

3.12 If you have no choice but to remove a tree (see guideline 10), **plant replacement trees**. Use the opportunity to select a more suitable species or place to plant, even if this means looking beyond your site. To assist you in making a selection, consult annexure G, "Guidelines for species selection", for advice on what species to plant in different conditions and areas.

3.13 To plant a tree on City land – including all street verges, public places and parks – you will require **the City's written permission** in terms of the Public Parks By-law (section 10) (2010) and the Tree Management Policy (sections 7.1.3-7.1.5) (2014). This is to ensure that the tree planted is appropriate in terms of soil type, size and species, that the necessary way-leave approval is in place (i.e. that no underground services will be affected), and that a sustainable source of non-potable water is available.

3.14 In certain circumstances, members of the public may apply to Recreation and Parks to **plant trees from Newlands nursery** in their neighbourhoods. These requests will be processed via the Recreation and Parks Department using a Tree Planting Request form or way-leaves for the planting of new trees. The prescribed application form is available on request. An appropriate tree will be chosen and the applicant will be responsible for the irrigation of the tree until it is established.

3.15 When planting trees in cultural landscapes, consider using trees of similar shape, texture and colour to those already there.

Government Avenue

GUIDELINE 4:

ENSURE GOOD TREE MAINTENANCE.

Good maintenance ensures that trees survive and thrive in our water-stressed climate.

4.1 **Understand the final look of the tree** to be planted, and then plan the maintenance accordingly:

- Ensure an uncompacted space around the base of the tree.
- Mulch that area with a 100 mm layer of woodchips or compost.
- Create a tree basin around each tree to hold 80-100 litres of water.
- Add a good helping of organic fertiliser once a year.

4.2 **Mulch retains moisture** in the soil, warms the soil, and prevents weeds from growing. Rain filtrates slowly through the mulch, supplying moisture to the tree roots for longer periods. Mulching reduces garden maintenance and encourages worms, which aerate the soil and slowly add nutrients. If the soil is dry, water it before applying mulch. Do not cover the tree trunk with mulch, as this triggers collar rot. The tree trunk needs air to survive. Mulch should be evenly spread (in a thin, 50-100 mm layer) and should extend as far out as the dripline of the tree; do not stack it around the trunk (see figure 7). Too much mulch may suffocate the roots directly beneath the tree dripline. Mulch using old tree leaves, compost, grass cuttings, kitchen scraps or woodchips. Renew the mulch every six months.

FIGURE 7: MULCHING

INCORRECT MULCHING:
Mulch volcano.

CORRECT MULCHING:
Able to see the base of the trunk or root flare.

4.3 As we live in a winter rainfall area, trees require water in summer to grow and function. This makes **watering the single most critical factor** in establishing and maintaining trees in Cape Town during the dry and windy summer season.

4.4 **Sustainable watering** should be employed to maintain plantings. Generally, a new tree requires 80 litres of water a week (based on a 20 litre tree bag) in the first year, after which watering frequency can be reduced to every second and third week in the second and third years respectively. (This would also depend on the requirements of specific sites, species and size.) Symptoms of a water-stressed tree include out-of-season leaf dropping, no fruit, die-back of stems, and reduced growth of new leaves. Be mindful that overwatering can also stress trees.

4.5 Use **alternative water options**, such as rainwater and groundwater, instead of municipal drinking water to irrigate your garden, including trees. However, take care when using greywater, as it tends to degrade soil quality over time. See the City's brochure on the safe use of greywater at www.capetown.gov.za/thinkwater. Also be sure to use any form of alternative water as wisely as possible, as it is equally precious.

4.6 Install the **most efficient watering methods**, such as drip irrigation and "direct to root zone" deep irrigation systems. A cost-effective option is to plant old soft-drink bottles upside down with the bottom cut off to funnel water down into the soil where the roots are and to prevent excessive surface moisture loss to evaporation. If you use sprinklers, consider investing in a "smart controller" (which is connected to internet-based weather forecasts and rainfall sensors) and geared sprinklers, which are more efficient than other spray types.

Green Point Urban Park

GUIDELINE 5:

ENSURE APPROPRIATE TREE PRUNING.

Trees may need to be pruned to allow more sunlight through, for safety reasons, to reduce vagrancy, and to prevent injuries caused by low-hanging branches. This must be done correctly to protect the shape and lifespan of the tree.

5.1 When pruning, **steer clear of the main branches**.

5.2 **Avoid lopping or topping** of trees, as:

- the cuts could lead to decay and sunburn;
- new shoots are anchored only in the outermost layers of the parent branches, and are weakly attached;
- new shoots grow uncontrollably and are prone to breaking, especially in windy conditions;
- instead of reducing risk by reducing height, the risk of limb failure in the long term increases; and
- it causes increased maintenance costs and liability.

5.3 **Not all trees need to be pruned.** You may want to keep some canopies low, for example, to prevent people from walking below, or to allow for better habitat for birds and fauna along river corridors, or to provide shelter against the wind.

5.4 **There are various methods to prune trees** depending on site requirements, tree species and condition.

5.5 **Pruning may be formative or restorative.** Formative pruning improves the shape of young trees and encourages the formation of good stem and branch structure. Restorative pruning is done on more mature trees when they are damaged.

5.6 Depending on what type of tree it is, **check the best time to prune**. Avoid pruning when trees are coming into leaf, or in autumn when trees' ability to close wounds is diminished.

5.7 **Sometimes a tree must be reduced in height or spread** such as to clear areas around utility lines. In this case, it is best to approach an arborist or skilled tree worker to ensure the natural shape of the tree remains preserved.

5.8 If more sunlight is required, one could undertake **crown thinning** by removing secondary and small branches to reduce the density of the canopy (see figure 8). Branches removed should not exceed 4 cm in diameter.

5.9 **Crown lifting** allows space under the tree to make room for people or vehicles to pass under (see figure 8). However, too much pruning could make the tree top-heavy, which could lead to instability.

5.10 **Crown reduction** is the reduction in the overall canopy height and the length of the peripheral branches (see figure 8). This should be undertaken in exceptional circumstances only, such as in between buildings. To make room for electrical lines, first explore the use of spacers before turning to crown reduction or removing branches.

5.11 **Crown cleaning** is the removal of dead and dying branches (see figure 8). This should be done when the tree is putting people or property at risk.

FIGURE 8: TREE PRUNING

BEFORE

CROWN CLEANING

CROWN THINNING

CROWN LIFTING

CROWN REDUCTION

5.12 **Root trimming and cutting** should occur only when necessary. Roots should be cut at the correct angle, using clean, sharp instruments. Install root barriers to protect property or utilities. The amount of roots cut must be kept to a minimum, as roots give trees stability and sustenance. Roots must be kept moist and covered to prevent drying out and dying. Sharply cut roots create a flush of new roots, which aid recovery. Do not use picks or spades to cut, as this leaves roots frayed and exposed to disease. Generally, roots thicker than a person's wrist should not be cut.

5.13 Certain **palm tree species** may hold several years of dead fronds (large, divided leaves) and may suddenly shed these, which may pose a hazard to people below. If you have a *Phoenix canariensis* (Canary Island date palm) in your garden, have the accumulation of dead fronds removed from the top down every year.

5.14 **Trees on City-owned land** may only be pruned by Recreation and Parks or its agents.

5.15 In certain circumstances, for trees on City land, **residents may undertake minor formative pruning** of branches with a diameter of less than 5 cm. This, however, still requires prior written authorisation from the City to determine aspects such as species, number of trees, purpose of pruning, and pruning method.

FIGURE 9: PRUNING (GOOD) VERSUS TOPPING (BAD)

YEAR 1:	YEAR 6:
The **topped** tree is an unsightly stub, and a remnant of a once lovely tree. 	In a relatively short time, the **topped** tree is as tall, far bushier and more dangerous than it was to begin with. 
If **pruned correctly**, size is reduced, but form and beauty are retained. 	The **correctly pruned** tree is safer, more beautiful and its size is better controlled. 

GUIDELINE 6:

CONSIDER TRANSPLANTING INSTEAD OF FELLING TREES.

Instead of losing a tree that needs to be removed, consider saving the tree by planting it elsewhere on site, or transplanting it to an alternative site.

6.1 **Consult an arborist or skilled tree worker** on the best transplanting method, and particularly on the transplanting of any mature tree.

6.2 Be mindful of the **risks and costs involved in transplanting trees**. Transplanting tends to have a low success rate (33% survival rate). Smaller trees generally have a better chance of survival.

6.3 Only **certain species transplant well**, provided you follow the correct procedures and provide appropriate after-care.

6.4 During a transplant, keep the root ball moist and intact.

FIGURE 10: REMOVAL OF A TREE FOR TRANSPLANTING

STEP 1
Dig a trench around the root area. Trench width: 30 – 50 cm (spade width).

STEP 2
Trim the root ball and deepen the trench. Do not pry the tree loose.

STEP 3
Undercut the root ball to a tapered shape before prying loose.

GUIDELINE 7:

DO NOT TRENCH, BUILD OR EXCAVATE TOO CLOSE TO TREES.

Maintain a proper distance from trees when trenching, building or excavating to protect the root zone and tree canopy.

7.1 **Maintain the soil levels around a tree**, as changes to the gradient could cause tree injury. The damage may not be immediately visible, but will become apparent over time. If grade changes are required, maintain soil depth around the tree. This could be done by constructing a tree well to serve as a retainer around the trunk. It takes the form of an open-joint wall of shell, rock, masonry or brick in a circle around the trunk, with at least 1 m between the trunk and the wall. The wall should be as high as the top of the new grade (see figure 11).

7.2 Tree wells or pits should be as large as possible to allow for greater soil exposure, and so that critical roots can breathe and not be compacted by being paved over.

7.3 **Do not pave or hard-surface** up to the trunk of a tree (see figure 12). Development and excavation should be set back outside the tree dripline. If this is impossible, install root barriers to protect foundations.

FIGURE 11: MAINTAIN SOIL LEVELS AROUND THE TREE

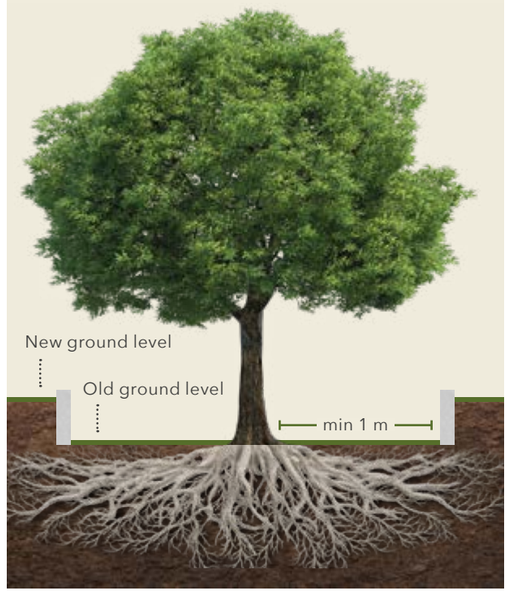


FIGURE 12: HARD SURFACING REMOVED AROUND BASE OF TREE

7.4 **Decorative tree grids** (see figure 13) allow more root space and are safe to walk on, so they are a good option for sidewalks.

7.5 Where trees are planted close to roads, sidewalks and buildings, **use root barriers to redirect tree roots**, thereby preventing damage to infrastructure and services.

7.6 **Changes in site hydrology** are often an overlooked stress factor that could lead to the demise of a tree. For instance, trenches up-slope of a tree, basement structures blocking underground water flow, or hard surfacing around the base (see figure 14) all result in a mature tree getting less or much more water than normal.

FIGURE 13: TREE GRIDS ARE A GOOD OPTION FOR CITY SIDEWALKS

FIGURE 14: TRENCH CUT ABOVE A TREE

Cape Town City Hall

GUIDELINE 8:

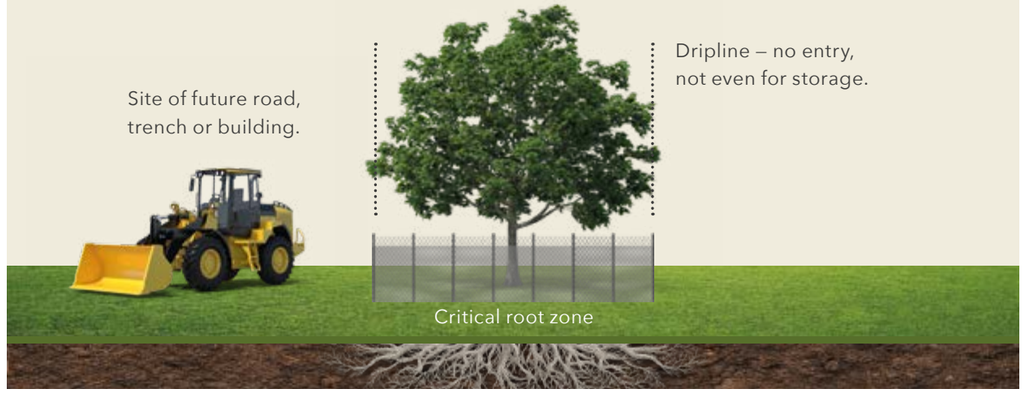
ENSURE TREE PROTECTION ON CONSTRUCTION SITES.

Take special care to prevent unnecessary or unforeseen damage to trees during construction work.

8.1 Trees may only start showing signs of decay years after construction work. This is why it is important to **protect trees and their root zones** to avoid having to replace them in future.

8.2 For trees to be retained, survey and accurately plot tree canopies, and **ensure protective hoarding (fencing)** ideally steel-frame wire mesh ready fencing, **around the dripline** of the canopy to safeguard the tree during all on-site work. Ideally, install shade cloth on the fence to help prevent windblown materials entering the tree and root zone. This should be a no-go or restricted-access zone (see figure 15). Fences should be erected before demolition or construction begins, and kept intact until final inspection post-construction. Protecting groups of trees instead of individuals is recommended where possible. The City may require that the hoarding off of trees be shown on a building plan, prior to its approval.

FIGURE 15: PROTECTIVE HOARDING IN LINE WITH THE DRIPLINE



8.3 **Water trees before construction begins and after completion**, and prevent access to this damp area. Trees store water, which they will use at a later stage when stressors occur during construction. Maintain irrigation.

8.4 **Prevent root exposure** to the sun and air. Mulch the entire root zone beneath the dripline with a 15-30 cm thick layer of bark chips or mulch.

8.5 **Do not store materials or equipment or park heavy construction vehicles under trees**, as the extra weight compacts the soil and puts stress on the tree roots. Topsoil must be stored in 2 m piles and protected with shade cloth to be used for landscaping after construction. The topsoil contains all the nutrients trees need. Also ensure that hazardous substances are stored downslope from trees at least 3 m away to prevent soil pollution and subsequent tree poisoning.

8.6 **Do not rinse paint or chemicals, or have a hand-washing zone or tap** near tree roots.

8.7 Regularly **spray down leaves** to wash off accumulated construction dust in order to allow for transpiration in the leaves. Dust blocks the stomata (pores) and may cause leaves to turn yellow and drop off and the tree to die or suffocate, as it cannot photosynthesise.

8.8 **After construction**, remove temporary fences, rehabilitate compacted areas and water trees. However, do not fertilise trees within the first year of construction.

8.9 **Do not trench near roots.** Trenching cuts through the main roots and may harm the tree. Use horizontal drilling methods (tunnelling) to avoid the root system, as most roots occur in the top 500 mm of the soil surface (see figure 16).

FIGURE 16: TRENCHING VERSUS TUNNELLING

8.10 For **trees on City-owned land**, all developers, utility companies and contractors must obtain a way-leave from the City (Recreation and Parks) prior to commencing with any work that may affect the trees.

8.11 **Monitor trees during construction**. An environmental control officer (ECO) should be appointed to check tree protection measures and tree health in accordance with an environmental management plan (EMP), which contains method statements as to how trees on site should be protected. In addition, ECOs provide training and induction to labourers on site, raising awareness of the sensitive areas and ensuring compliance with the EMP. An EMP and ECO may be a requirement for a demolition or construction site where trees may be negatively impacted. This may be a condition of land use approval or may need to be provided prior to building plan approval.

8.12 Site development layout plans must show all trees to be protected and the location of taps, ablution facilities, storage areas and access routes (away from trees and their root protection zones).

Silver Tree | *Leucadendron argenteum*

GUIDELINE 9:

ENSURE EFFECTIVE CONTROL OF INVASIVE ALIEN SPECIES TO WARD OFF THE THREATS THEY POSE.

Invasive alien species on your property can be a liability. Certain species should be immediately removed and destroyed, as they pose a threat to both indigenous and exotic trees and other vegetation. Cape Town is particularly vulnerable to the introduction of invasive alien species and harmful pathogens due to the vast number of commodities arriving and passing through for trade and commerce. Moreover, once invasive alien fauna has contaminated a tree, it may need to be removed to control and reduce the spread of the faunal species.

9.1 The **2016 Alien and Invasive Species List**, issued in terms of the National Environmental Management: Biodiversity Act (NEMBA), categorises invader plants into four different categories, each with specific actions required. These are:

- category 1a (combat or eradicate) (see annexure D);
- category 1b (control);
- category 2 (permit required); and
- category 3 (exempted, except if found in riparian zones).

The NEMBA regulations require all landowners to fulfil their duty of care by, among others, notifying DEFF Biosecurity Compliance Section of invasive species on their properties. DEFF will provide advice and, wherever possible, help remove and manage the invasive alien species.

9.2 At a local level, **the City has an Invasive Species Unit** that can assist landowners. If you have a category 1a tree on your property (see annexure D), immediately contact the unit. While they deal primarily with City land, they also advise private landowners on the way forward.

9.3 Moreover, the City has **identified 26 target plant species, including eight target trees** (see annexure F), as part of the early detection and rapid response (EDRR) programme. Any sighting of these species must be reported to the City's Invasive Species Unit in the online reporting tool available on www.capetowninvasives.org.za. (Note: Although there are 383 plants listed in South Africa's invasive species legislation, only the 26 target species identified by the City should be reported to the City's Invasive Species Unit.)

9.4 The **regulations in terms of the Conservation of Agricultural Resources Act (CARA)** are still in force and being administered by the Department of Agriculture, Land Reform and Rural Development's (DALRRD) Directorate of Land Use and Soil Management. The regulations are primarily aimed at the agricultural sector and are not enforced in the urban context. Placing restrictions on the growth, propagation and trade of listed species, the legislation is based on the principle of 'polluter pays', making land users (owners or lessees) responsible for keeping their land free of invasive plants. Turn to annexure E for an explanation of the CARA categories, a list of CARA category 1 trees that need to be immediately removed and destroyed, and a link to all other CARA lists.

9.5 Trees not in the category 1 lists of either NEMBA or CARA do not necessarily need to be removed. Many people rely on the CARA category 3 invader status to motivate for felling trees on private property, while the fact that these trees may no longer be planted has actually increased their rarity value. In many instances, these trees play an important part in our heritage areas, adding to suburbs' character and sense of place. Examples of such **stately exotics to be retained** include syringas (*Melia azedarach*), jacarandas (*Jacaranda mimosifolia*), and stone pines *(Pinus pinea)*.

9.6 To establish the NEMBA and/or CARA category of a specific tree, consult www.invasives.org.za. Go to "Plants A–Z" and insert the tree name.

9.7 The **polyphagous shot-hole borer (PSHB)** is a tiny invasive black beetle from Asia that has recently arrived in South Africa. It is smaller than a sesame seed (2 mm) and has been spotted in trees in and around Cape Town. The PSHB beetle bores tunnels in the trunks and branches of host trees (see figure 17) and then lays its eggs inside. They carry the *Fusarium euwallaceae* fungus from one tree to the next, which grows in the tunnels to serve as a 'food source' for larvae and adult beetles. This fungus disrupts the flow of water and nutrients to the tree, causing branch dieback and, ultimately, tree death.

To **identify** PSHB, look for:

- round entry holes on the tree, less than 2 mm wide;
- dark, wet staining, thick gumming, streaks of white powder or fine sawdust coming from holes; and
- dieback – dead branches with wilting leaves may be a sign of *Fusarium* infection.

Don't remove any possibly PSHB infested trees. **Report** any suspected PSHB sightings. The City's Invasive Species Unit has an online reporting tool available on **www.capetowninvasives.org.za**. Click on "Report a PSHB sighting" to give your details and the location of the infected tree. Residents can also upload images of the tree and entry tunnels, as this will help the City make a speedy identification. Officials from the Invasive Species Unit and an arborist from Recreation and Parks will investigate the reported sighting.

The website above also contains extensive information about the PSHB, including an 18-page Polyphagous Shot-Hole Borer Protocol. Do consult it to **learn more** about this destructive beetle.

FIGURE 17: PSHB (ENTRY) HOLES AND FUNGAL STAINS

Australian cheesewood | *Pittosporum undulatum*

GUIDELINE 10:

REMOVE A TREE ONLY IF IT POSES AN UNMANAGEABLE RISK.

Trees should not pose any risk of damage to property, humans, animals, infrastructure or services.

10.1 Correct tree care and maintenance must be implemented to **reduce the public liability** resulting from trees falling over or dropping branches.

10.2 **Routine risk assessments** of trees and branches by an arborist or skilled tree worker can prevent injury. Assessments may show signs of decay and will indicate how much time the tree has left before intervention will be needed. Prune a tree before branches pose a risk of falling off and hurting someone.

10.3 A tree should only be felled if it is posing an unmanageable risk to people, property or infrastructure.

10.4 Always **first check for any wildlife in the branches** – such as birds or squirrels and their nests – before removing the tree. Remove and protect such wildlife before felling starts. If there are fledglings, wait until they have left the nest before felling the tree.

10.5 If a tree, growing on private property, **interferes with overhead wires or is a source of annoyance, danger or inconvenience** to public road users, the City may instruct a property owner in writing to prune or remove the tree or growth. Failing this, the City may take action to prune or remove the tree or growth at such owner's expense.

10.6 If unsure about the management intervention required or whether the tree is on City land, **always first consult the City's Recreation and Parks Department**.

ANNEXURE A:

LIST OF PROTECTED TREE SPECIES

IN TERMS OF THE NATIONAL FORESTS ACT 84 OF 1998, REGULATION NO. 1602 OF 23 DECEMBER 2016

BOTANICAL NAME	COMMON NAME	OTHER NAMES: Afrikaans (A), Sepedi (P), Sesotho (S), Setswana (T), Tshivenda (V), isiXhosa (X), isiZulu (Z)	TREE NO.
Adansonia digitata	Baobab	Kremetart (A), Seboi (S), Mowana (T)	467
Afrocarpus falcatus	Outeniqua yellowwood	Outeniekwa-geelhout (A), Mogôbagôba (S), Umkhoba (X), Umsonti (Z)	16
Afzelia quanzensis	Pod mahogany	Peulmahonie (A), Mutokota (V), Inkehli (Z)	207
Balanites maughamii	Torchwood	Groendoring (A), Ugobandlovu (Z)	251
Barringtonia racemosa	Powderpuff tree	Poeierkwasboom (A), Iboqo (Z)	524
Boscia albitrunca	Shepherd's tree	Witgat (A), Mohlôpi (S), Motlhôpi (T), Muvhombwe (V), Umgqomogqomo (X), Umvithi (Z)	122
Brachystegia spiciformis	Msasa	Msasa (A)	198.1
Breonadia salicina	Matumi	Mingerhout (A), Mohlomê (S), Mutu-lume (V), Umfomfo (Z)	684
Bruguiera gymnorrhiza	Black mangrove	Swart wortelboom (A), Isikhangati (X), Isihlobane (Z)	527
Cassipourea swaziensis	Swazi onionwood	Swazi-uiehout (A)	531.1
Catha edulis	Bushman's tea	Boesmanstee (A), Mohlatse (S), Igqwaka (X), Umhlwazi (Z)	404
Ceriops tagal	Indian mangrove	Indiese wortelboom (A), Isinkaha (Z)	525
Cleistanthus schlechteri var. schlechteri	False tamboti	Vals tambotie (A), Umzithi (Z)	320
Colubrina nicholsonii	Pondo weeping thorn	Pondo-treurdoring (A)	453.8
Combretum imberbe	Leadwood	Hardekool (A), Mohwelere-tšhipi (S), Motswiri (T), Impondondlovu (Z)	539
Curtisia dentata	Assegai	Assegaai (A), Umgxina (X), Umagunda (Z)	570
Elaeodendron transvaalense	Bushveld saffron	Bosveldsaffraan (A), Monomane (T), Ingwavuma (Z)	416
Erythrophysa transvaalensis	Bushveld red balloon	Bosveld-rooiklapperbos (A), Mofalatsane (T)	436.2
Euclea pseudebenus	Ebony guarri	Ebbehout-ghwarrie (A)	598
Ficus trichopoda	Swamp fig	Moerasvy (A), Umvubu (Z)	54
Leucadendron argenteum	Silver tree	Silwerboom (A)	77
Lumnitzera racemosa var. racemosa	Tonga mangrove	Tonga-wortelboom (A), Isikhaha-esibomvu (Z)	552
Lydenburgia abbottii	Pondo bushman's tea	Pondo-boesmanstee (A)	407

BOTANICAL NAME	COMMON NAME	OTHER NAMES: Afrikaans (A), Sepedi (P), Sesotho (S), Setswana (T), Tshivenda (V), isiXhosa (X), isiZulu (Z)	TREE NO.
Lydenburgia cassinoides	Sekhukhuni bushman's tea	Sekhukhuni-boesmanstee (A)	406
Mimusops caffra	Coastal red milkwood	Kusrooimelkhout (A), Umthunzi (X), Umkhakhayi (Z)	583
Newtonia hildebrandtii var. hildebrandtii	Lebombo wattle	Lebombo-wattel (A), Umfomothi (Z)	191
Ocotea bullata	Stinkwood	Stinkhout (A), Umhlungulu (X), Umnukane (Z)	118
Ozoroa namaquensis	Gariep resin tree	Gariep-harpuisboom (A)	373.2
Philenoptera violacea	Apple-leaf	Appelblaar (A), Mphata (S), Mohata (T), Isihomohomo (Z)	238
Pittosporum viridiflorum	Cheesewood	Kasuur (A), Kgalagangwe (S), Umkhwenkwe (X), Umfusamvu (Z)	139
Podocarpus elongatus	Breede River yellowwood	Breederivier-geelhout (A)	15
Podocarpus henkelii	Henkel's yellowwood	Henkel-se-geelhout (A), Umsonti (X), Umsonti (Z)	17
Podocarpus latifolius	Real yellowwood	Opregte geelhout (A), Mogôbagôba (S), Umcheya (X), Umkhoba (Z)	18
Protea comptonii	Saddleback sugarbush	Barberton-suikerbos (A)	88
Protea curvata	Serpentine sugarbush	Serpentyn-suikerbos (A)	88.1
Prunus africana	Red stinkwood	Rooi stinkhout (A), Umkhakhase (X), Umdumezulu (Z)	147
Pterocarpus angolensis	Wild teak	Kiaat (A), Morôtô (S), Mokwa (T), Mutondo (V), Umvangazi (Z)	236
Rhizophora mucronata	Red mangrove	Rooi wortelboom (A), Isikhangathi (X), Umhlume (Z)	526
Sclerocarya birrea subsp. caffra	Marula	Maroela (A), Morula (S), Morula (T), Umganu (Z)	360
Securidaca longepedunculata	Violet tree	Krinkhout (A), Mmaba (T)	303
Sideroxylon inerme subsp. inerme	White milkwood	Wit melkhout (A), Ximafana (X), Umakhwelafingqane (Z)	579
Tephrosia pondoensis	Pondo poison pea	Pondo-gifertjie (A)	226.1
Vachellia erioloba	Camel thorn	Kameeldoring (A), Mogohlo (S), Mogôtlhô (T)	168
Vachellia haematoxylon	Grey camel thorn	Vaalkameeldoring (A), Mokholo (T)	169
Warburgia salutaris	Pepper-bark tree	Peperbasboom (A), Molaka (S), Mulanga (V), Isibaha (Z)	488
Widdringtonia cedarbergensis	Clanwilliam cedar	Clanwilliam-seder (A)	19
Widdringtonia schwarzii	Willowmore cedar	Baviaanskloof-seder (A)	21

www.lawsofsouthafrica.up.ac.za/index.php/current-legislation (Environment and Conservation; National Forest Act No 84 of 1998; Regulations and Notices).

ANNEXURE B:

LIST OF CHAMPION TREES

IN THE CITY OF CAPE TOWN AREA IN TERMS OF THE NATIONAL FORESTS ACT 84 OF 1998

BOTANICAL NAME	DESCRIPTION	LOCATION	CHAMPION TREE REGISTER NO.
Cinnamomum camphora (camphor tree) The Vergelegen trees	Historic trees planted more than three centuries ago by Governor WA van der Stel – very large trees with large landscape impact	Vergelegen Estate, Somerset West	12
Eucalyptus and a variety of other tree species (Tokai arboretum – all mature trees)	Arboretum of historical significance with trees planted there since 1885. Laid out by Joseph Storr Lister at the beginning of the forestry industry	Table Mountain National Park, Cape Town	13
Ficus macrophylla (Moreton Bay fig) Arderne fig tree	Landmark tree planted by tree pioneers, Ralph and Henry Arderne	Arderne Gardens, Claremont	33
Auracaria heterophylla (Norfolk Island pine) Arderne pine	Landmark tree planted by tree pioneers, Ralph and Henry Arderne	Arderne Gardens, Claremont	34
Quercus suber (cork oak) Arderne Cork oak	Landmark tree planted by tree pioneers, Ralph and Henry Arderne	Arderne Gardens, Claremont	39
Quercus serris (Turkey oak) Arderne Turkey oak	Landmark tree planted by tree pioneers, Ralph and Henry Arderne	Arderne Gardens, Claremont	40
Pinus halepensis (Aleppo pine) Arderne Alleppo pine	Landmark tree planted by tree pioneers, Ralph and Henry Arderne	Arderne Gardens, Claremont	41
Agathis robusta (Queensland kauri) Arderne kauri	Landmark tree planted by tree pioneers, Ralph and Henry Arderne	Arderne Gardens, Claremont	42
Eucalyptus saligna (Sydney blue gum/saligna gum) Herbert Baker chapel trees	Group of scenic trees standing next to a chapel designed by Sir Herbert Baker	Orpen Road, Cape Town	51
Sequoia sempervirens (California redwood) Table Mountain grove	Redwood trees planted in 1897, forming a landmark and recreational area for local residents, including tall Monterey pines at the fringe of this grove	Tokai plantation, Table Mountain National Park	52
Ficus macrophylla (Moreton Bay fig) The Kindergarten Giant	Large landmark tree at the University of Cape Town campus	University of Cape Town, Cape Town	71
Ficus macrophylla (Moreton Bay fig)	Landmark trees of the same vintage as the Arderne Gardens trees (about 160 years old)	Fernwood Avenue, Newlands	75
Cinnamomum camphora (camphor tree) Hohenort Grove	Grove of camphor trees of about 250 years old, growing behind cellars on a historic farmyard	Cellars-Hohenort Hotel, Brommersvlei Road, Constantia	76
Quercus suber (cork oak) Ina Paarman oak	Tree on the property of Ina Paarman of food condiments fame, planted in the mid-19th century	Constantia Main Road	79
Ficus elastic (rubber tree) The Company's Garden Giant	Larger tree forming a focal point to the entry to the Company's Gardens	Company's Gardens, Cape Town	84

ANNEXURE C:

SECTION 38(1) OF THE NATIONAL HERITAGE RESOURCES ACT 25 OF 1999

Any person who intends to undertake a development categorised as –

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m,

(b) the construction of a bridge or similar structure exceeding 50 m in length,

(c) any development or other activity which will change the character of a site –

  (i) exceeding 5 000 m^2 in extent; or

  (ii) involving three or more existing erven or subdivisions thereof; or

  (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(d) the re-zoning of a site exceeding 10 000 m^2 in extent.

ANNEXURE D:

LIST OF NEMBA CATEGORY 1A TREES

TO BE REMOVED AND DESTROYED IMMEDIATELY IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT 10 OF 2004

BOTANICAL NAME	COMMON NAME
Acacia adunca	Cascade wattle, Wallangarra wattle
Acacia fimbriata	Fringed wattle, Brisbane wattle
Acacia implexa (Benth)	Screw-pod wattle
Acacia paradoxa	Kangaroo wattle
Acacia stricta	Hop wattle
Paulownia tomentosa	Empress tree, princess tree, royal Paulownia
Triplaris americana	Ant tree

Note that for the sake of this guideline only the category 1a species are listed, however, the 2016 Alien and Invasive Species List, issued in terms of the National Environmental Management: Biodiversity Act, categorises invader plants into four different categories, each with specific actions required. These are:

- category 1a (combat or eradicate);
- category 1b (control);
- category 2 (permit required); and
- category 3 (exempted, except if found in riparian zones, in which case it reverts to a category 2).

For the full category lists (2016), see **www.environment.gov.za** and **www.environment.co.za**.

Note these lists are continuously amended, the latest draft amendment being 2018.

ANNEXURE E:

LIST OF CARA CATEGORY 1 TREES

TO BE REMOVED AND DESTROYED IMMEDIATELY IN TERMS OF THE CONSERVATION OF AGRICULTURAL RESOURCES ACT (CARA) 43 OF 1983

BOTANICAL NAME	COMMON NAME	BOTANICAL NAME	COMMON NAME
Acacia dealbata	Silver wattle/Silwerwattel	*Leptospermum laevigatum*	Australian myrtle
Acacia implexa	Screw-pod wattle	*Paraserianthes lophantha*	Stink bean
Acacia longifolia	Long-leaved wattle	*Pittosporum undulatum*	Australian cheesewood
Acacia paradoxa	Kangaroo wattle	*Psidium x durbanensis*	Durban guava
Acacia pycnantha	Golden wattle	*Rhus succedanea*	Wax tree
Achyranthes aspera	Burweed	*Sesbania punicea*	Red sesbania
Albizia lebbeck	Lebbeck tree	*Solanum mauritianum*	Bugweed
Albizia procera	False lebbeck	*Spartium junceum*	Spanish broom
*Eucalyptus conferruminata**	Spider gum	*Tamarix chinensis*	Chinese tamarisk
Hakea drupacea	Sweet hakea	*Tamarix ramosissima*	Pink tamarisk
Hakea gibbosa	Rock hakea	*Tecoma stans*	Yellow bells
Hakea sericea	Silky hakea	*Triplaris americana*	Ant tree

* *Eucalyptus conferruminata* (spider gum) adds value to the urban context, and, as a category 1b in terms of NEMBA, may remain if it is not in a riparian/protected area.

Note that for the sake of this guideline only the category 1 species are listed, however, the section 15 regulations of CARA divide invasive plants into three categories. These are:

- category 1 trees are prohibited, and may not occur anywhere;
- category 2 trees (commercially used plants) may be grown in demarcated areas, providing that there is a permit in place and that steps are taken to prevent their spread; and
- category 3 trees may no longer be planted. Existing trees may remain, as long as all reasonable steps are taken to prevent their spread, and they are not allowed in riparian areas.

For the regulations and full category lists, see **www.lawsofsouthafrica.up.ac.za/index.php/current-legislation (Environment and Conservation; Conservation of Agricultural Resources Act No 43 of 1983; Regulations and Notices).**

ANNEXURE F:

CITY OF CAPE TOWN'S LIST OF TARGET TREES

Pearl acacia | *Acacia podalyriifolia:* One of the most popular and widely cultivated wattles. It is an evergreen tree, growing 3-6 m high, with silvery-grey to dull green, oval, velvety leaves. Flowers are bright yellow and spherical, and appear in long, showy sprays from June to August. Greyish brown, velvety seed pods are usually 30-80 mm long and 15-20 mm wide.

Sweet hakea | *Hakea drupacea:* A dense spreading or erect tree up to 6 m high. The leaves are smooth and up to 100 mm long, and form sharp-pointed needles of 30-50 mm long and of a dark-green to grey-green colour. There are 46–84 flowers, cream in colour and fragrant, forming elongated, axillary clusters up to 20 mm long, and flowering from June to September. Seeds consist of woody capsules approximately 25 mm long and 20 mm wide.

Australian cheesewood | *Pittosporum undulatum:* An evergreen tree growing up to 12 m high, with slender branches and native to eastern Australia. It has smooth, grey bark and leaves, which are up to 150 mm long, thin, shiny and dark green. The flowers are white and fragrant, up to 13 mm long with five downward-curving petals, flowering from August to September. Fruits are showy, two-halved capsules up to 13 mm in diameter, orange turning brown, and the seeds are surrounded by a sticky pulp.

Tree of heaven | *Ailanthus altissima:* A fast-growing deciduous tree from China that can grow 20 m tall or more. It has smooth stems with pale grey bark and twigs that are light chestnut brown, especially in the dormant season. In late spring, clusters of small, yellow-green flowers appear near the tips of branches. Seeds are produced on female trees in late summer to early autumn. Fruits are papery, somewhat twisted, winged structures called samaras, which are tan to pink-coloured.

Hop wattle | *Acacia stricta:* An erect or spreading shrub or tree of 3-6 m tall, native to Australia. The bark is smooth and flowers appear from July to October. Seed pods are more or less straight, raised over seeds, straight-sided, usually 4-10 cm long and 2-5 mm wide, and have a papery to leathery texture.

Red-flowering tea tree | *Melaleuca hypericifolia:* A multiple-branched small tree from New South Wales in Australia that grows up to 4,5 m tall. It is erect at first, and then starts to spread. It has a very firm papery to corky bark, and the oblong leaves occur in opposite pairs. Small orange-red flowers are borne on showy, dense spikes from spring to early summer.

Screw-pod wattle | *Acacia implexa:* An erect or spreading tree native to Australia, which grows 5-12 m high and often suckers (shoot rising from a woody plant, often some distance away from the main stem) freely. Pale yellow to cream, fluffy, ball-shaped flowers appear in summer. There are usually four to eight flowers on each raceme. A highly distinguishing feature is the seed pods, which are curved to twisted or coiled, raised over seeds, 6-20 cm long, 4-7 mm wide, and papery to leathery in texture.

Peppertree wattle | *Acacia elata:* A large, oval-shaped thorn-less evergreen tree growing 12-18 m tall, native to Australia. Pale yellow or cream, globular flower heads appear in panicles from October to December. Trees produce 4-17 cm long seed pods, which are more or less flat and straight-sided, or slightly constricted between seeds.

ANNEXURE G:

GUIDELINES FOR SPECIES SELECTION[1]

✔ Suitable – may be planted here; provides attribute
✖ Not Suitable – should not be planted here; does not provide attribute

BOTANICAL NAME	COMMON NAME	INDIGENOUS	DROUGHT TOLERANCE[2]	MAIN ROUTES/ FREEWAYS: Larger open areas	PAVEMENTS: Narrow smaller spaces	CBD/ PARKING AREAS	COASTAL AREAS	SANDY SOILS	CLAY SOILS	WINDY AREAS	WIND BREAKS	SCREENING	BIRDS/BEES/ BUTTERFLIES	SCENTED TREES	FAST-GROWING	SIZE
		Y: Yes	**H:** High **M:** Med **L:** Low	Larger trees, no dense bush	Smaller, narrow-growing, mild roots	Spreading crown, shade, mild roots							Produces nectar pollen, fruit			**S:** Small: <3 m **M:** Medium: 3-5 m **L:** Large: 7 m+
Afrocarpus falcatus (male only)	Outeniqua yellowwood	**Y**	**M/H**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**L**
Agonis flexuosa	Willow myrtle		**H**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**
Aloidendron barberae	Tree aloe	**Y**	**M/H**	✔	✔	✔	✖	✔	✔	✖	✖	✖	✔	✖	✖	**M**
Araucaria columnaris	Captain Cook's pine		**M**	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	**L**
Araucaria heterophylla	Norfolk Island pine		**M**	✔	✖	✖	✔	✔	✖	✖	✖	✖	✖	✖	✖	**L**
Brabejum stellatifolium	Wild almond	**Y**	**M**	✔	✖	✖	✖	✖	✖	✖	✖	✖	✔	✖	✖	**M**
Brachychiton acerifolia	Australian flame		**M**	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	**L**
Brachylaena discolor	Coast silver oak	**Y**	**H**	✖	✔	✖	✔	✖	✖	✔	✔	✔	✖	✖	✔	**M**
Buddleja saligna	False olive	**Y**	**H**	✔	✔	✔	✔	✖	✔	✖	✔	✔	✔	✖	✔	**M**
Burchellia bubalina	Wild promegranate	**Y**	**M/H**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**M**
Callistemon viminalis	Weeping bottlebrush		**H**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✔	**S**
Calodendrum capense	Cape chestnut	**Y**	**L/M**	✔	✔	✖	✖	✖	✔	✖	✖	✖	✔	✖	✖	**L**
Carissa macrocarpa (shrub)	Num-num	**Y**	**M/H**	✖	✖	✖	✖	✖	✔	✖	✖	✖	✖	✖	✖	**S**
Celtis africana	White stinkwood	**Y**	**M/H**	✔	✔	✔	✖	✖	✔	✖	✖	✖	✔	✖	✖	**L**
Celtis sinensis	Chinese nettle		**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**L**
Ceratonia siliqua	Carob		**H**	✔	✔	✔	✖	✔	✖	✖	✖	✖	✖	✖	✖	**L**
Citrus limon	Lemon		**M**	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	**S**
Combretum erythrophyllum	River bushwillow	**Y**	**H**	✔	✔	✖	✖	✖	✔	✖	✖	✖	✔	✖	✖	**L**
Cunonia capensis	Red alder	**Y**	**L/M**	✔	✔	✖	✖	✖	✖	✖	✖	✖	✔	✖	✖	**L**
Curtisia dentata	Assegai	**Y**	**L/M**	✔	✔	✖	✔	✖	✖	✖	✖	✖	✔	✖	✖	**L**
Cussonia spicata	Cabbage tree	**Y**	**H**	✖	✖	✖	✔	✖	✖	✖	✖	✖	✔	✖	✖	**M**
Dais cotinifolia	Pompon	**Y**	**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**S**
Diospyros whyteana	Bladder-nut	**Y**	**M**	✖	✖	✖	✖	✖	✖	✔	✖	✖	✔	✖	✖	**S**
Dodonaea angustifolia	Sand olive	**Y**	**H**	✔	✔	✖	✔	✖	✖	✔	✖	✖	✖	✖	✔	**S**
Dombeya rotundifolia	Wild pear	**Y**	**H**	✖	✖	✖	✔	✖	✖	✖	✖	✖	✖	✖	✖	**M**
Dovyalis caffra	Kei apple	**Y**	**H**	✖	✖	✖	✔	✖	✖	✖	✖	✔	✖	✖	✖	**S**
Ekebergia capensis	Cape ash	**Y**	**M/H**	✔	✖	✔	✔	✖	✖	✖	✖	✖	✔	✖	✖	**L**
Erythrina caffra	Coast coral	**Y**	**M/H**	✔	✖	✖	✔	✔	✖	✖	✖	✖	✔	✖	✖	**M**

[1] These are guidelines only, and most factors are variable. Always rely on training and experience to make the most appropriate selection.
[2] All trees require irrigation to establish successfully.

✔ Suitable – may be planted here; provides attribute
✖ Not Suitable – should not be planted here; does not provide attribute

				Larger open areas	Narrow smaller spaces												
		Y Yes	**H** High **M** Med **L** Low	Larger trees, no dense bush	Smaller, narrow-growing, mild roots	Spreading crown, shade, mild roots							Produces nectar pollen, fruit			**S** Small: <3 m **M** Medium: 3-5 m **L** Large: 7 m+	
Eucalyptus ficifolia	Red-flowering gum		**H**	✔	✖	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**L**	
Ficus natalensis	Natal fig	**Y**	**H**	✔	✖	✖	✖	✖	✔	✖	✔	✔	✖	✖	✔	**L**	
Ficus rubignosa	Port Jackson fig		**H**	✔	✖	✖	✖	✔	✖	✖	✖	✖	✔	✖	✔	**L**	
Ficus sur	Cape fig	**Y**	**M**	✔	✖	✖	✖	✖	✖	✖	✖	✖	✔	✖	✖	**L**	
Gardenia thunbergia	Wild gardenia	**Y**	**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**	
Ginkgo biloba (male only)	Maidenhair tree		**M**	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	**L**	
Harpephyllum caffrum	Wild plum	**Y**	**M/H**	✖	✖	✖	✔	✔	✖	✖	✖	✖	✔	✖	✖	**L**	
Ilex mitis	Cape holly	**Y**	**M**	✔	✔	✔	✖	✖	✔	✖	✖	✖	✔	✖	✖	**M**	
Kigelia africana	Sausage tree	**Y**	**H/H**	✔	✔	✖	✖	✖	✖	✖	✖	✖	✔	✖	✖	**M**	
Kiggelaria africana	Wild peach	**Y**	**M/H**	✔	✔	✖	✖	✖	✖	✖	✔	✖	✔	✖	✔	**L**	
Liquidambar styraciflua	Sweetgum		**L/M**	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**	
Loxostylis alata	Tarwood	**Y**	**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**L**	
Nuxia floribunda	Forest elder	**Y**	**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**M**	
Ocotea bullata	Stinkwood	**Y**	**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**M**	
Olea europaea subsp. africana	Wild olive	**Y**	**H**	✔	✔	✔	✔	✖	✖	✔	✖	✖	✔	✖	✖	**M**	
Olinia ventosa	Hard pear	**Y**	**M**	✖	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**M**	
Persea americana	Avocado		**L/M**	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**	
Phoenix canariensis	Canary Island datepalm		**H**	✔	✔	✔	✔	✖	✔	✖	✖	✖	✔	✖	✖	**M**	
Phoenix reclinata	Wild date palm	**Y**	**M**	✔	✖	✖	✔	✖	✔	✖	✖	✖	✔	✖	✖	**M**	
Pittosporum viridiflorum	Cheesewood	**Y**	**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**M**	
Platanus x acerifolia	London plane		**M/H**	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	**L**	
Podocarpus elongatus	Breede river yellowwood	**Y**	**M/H**	✔	✔	✔	✖	✔	✖	✖	✖	✖	✔	✖	✖	**L**	
Podocarpus henkelii	Henkel's yellowwood	**Y**	**L**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**L**	
Podocarpus latifolius	Real yellowwood	**Y**	**L/M**	✔	✔	✔	✖	✖	✖	✖	✔	✖	✔	✖	✖	**L**	
Portulacaria afra (shrub)	Elephant bush/Spekboom	**Y**	**H**	✔	✖	✖	✖	✔	✖	✖	✖	✔	✖	✖	✔	**S**	
Prunus africana	Red stinkwood	**Y**	**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**M**	
Prunus amygdalus	Almond		**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**	
Prunus cerasifera	Cherry plum		**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**	

[2] All trees require irrigation to establish successfully.

✔ Suitable – may be planted here; provides attribute
✖ Not Suitable – should not be planted here; does not provide attribute

BOTANICAL NAME	COMMON NAME	INDIGENOUS	DROUGHT TOLERANCE[2]	MAIN ROUTES/ FREEWAYS: Larger open areas	PAVEMENTS: Narrow smaller spaces	CBD/ PARKING AREAS	COASTAL AREAS	SANDY SOILS	CLAY SOILS	WINDY AREAS	WIND BREAKS	SCREENING	BIRDS/BEES/ BUTTERFLIES	SCENTED TREES	FAST-GROWING	SIZE
		Y: Yes	**H:** High **M:** Med **L:** Low	Larger trees, no dense bush	Smaller, narrow-growing, mild roots	Spreading crown, shade, mild roots							Produces nectar pollen, fruit			**S:** Small: <3 m **M:** Medium: 3-5 m **L:** Large: 7 m+
Pterocelastrus tricuspidatus	Candlewood	**Y**	**M**	✖	✔	✔	✔	✖	✖	✖	✖	✖	✔	✖	✖	**M**
Punica granatum	Pomegranate		**M**	✖	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**
Quercus cerris	Turkey oak		**H**	✔	✖	✖	✖	✔	✔	✔	✔	✔	✖	✖	✖	**M / L**
Quercus ilex	Holly oak		**H**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**
Quercus nigra	Water oak		**M**	✔	✖	✔	✖	✖	✔	✖	✖	✔	✖	✖	✔	**M / L**
Quercus palustris	Pin oak		**M/H**	✔	✖	✔	✖	✖	✔	✖	✖	✖	✖	✖	✖	**L**
Quercus suber	Cork oak		**M/H**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**L**
Rapanea melanophloeos	Cape beech	**Y**	**L/M**	✔	✔	✖	✖	✖	✔	✖	✖	✖	✔	✖	✖	**M**
Rauvolfia caffra	Quinine tree	**Y**	**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✔	**M / L**
Schotia afra	Karoo boerbean	**Y**	**H**	✔	✔	✔	✔	✔	✔	✔	✖	✔	✔	✖	✖	**M / L**
Searsia chirindensis	Red currant	**Y**	**M**	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✔	**M**
Searsia lancea	Sweet karee	**Y**	**H**	✔	✖	✖	✖	✔	✖	✖	✖	✖	✖	✖	✔	**M**
Searsia pendulina	White karee	**Y**	**M/H**	✔	✔	✖	✔	✔	✔	✔	✔	✔	✔	✖	✔	**M**
Sideroxylon inerme	White milkwood	**Y**	**H**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✖	✖	**L**
Strelitzia nicolai	Natal wild banana	**Y**	**M/H**	✔	✖	✖	✔	✔	✖	✔	✖	✖	✔	✖	✖	**M**
Syagrus romanzoffiana	Queen palm		**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**
Syncarpia glomulifera	Turpentine tree		**M/H**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	**M**
Syzyigium cordatum	Waterberry	**Y**	**M/H**	✔	✔	✖	✔	✔	✖	✖	✔	✔	✔	✖	✖	**M**
Syzygium guineense	Water pear	**Y**	**M/H**	✔	✔	✔	✖	✖	✖	✖	✖	✔	✔	✖	✔	**M**
Tarchonanthus camphoratus	Camphor bush	**Y**	**H**	✔	✖	✖	✔	✔	✖	✔	✔	✔	✔	✖	✔	**M**
Trichilia emetica	Natal mahogany	**Y**	**M**	✔	✖	✖	✖	✖	✔	✖	✖	✖	✔	✖	✖	**L**
Ulmus parvifolia	Chinese elm		**M**	✔	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	**L**
Vachellia karroo	Sweet-thorn	**Y**	**H**	✔	✖	✔	✔	✔	✔	✔	✖	✔	✔	✔	✔	**L**
Vachellia xanthophloea	Fever tree	**Y**	**M/H**	✔	✖	✔	✖	✖	✖	✖	✖	✖	✖	✖	✔	**L**
Vepris lanceolata	White ironwood	**Y**	**M**	✔	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✖	**M**
Viburnum species	Viburnum		**M**	✖	✔	✔	✖	✖	✖	✖	✖	✖	✔	✖	✔	**S**
Virgilia oroboides	Blossom tree	**Y**	**M**	✔	✖	✖	✔	✔	✔	✔	✔	✔	✔	✔	✔	**M**
Washingtonia robusta	Mexican fan palm		**M/H**	✔	✔	✔	✔	✔	✖	✔	✖	✖	✖	✖	✔	**M**

[2] All trees require irrigation to establish successfully.

ANNEXURE H:

LEGISLATIVE AND POLICY FRAMEWORKS

National

- Conservation of Agricultural Resources Act 43 of 1983 (delegated authority: Department of Agriculture, Land Reform and Rural Development (DALRRD))
- National Building Regulations and Building Standards Act 103 of 1977 (delegated authority: City of Cape Town)
- National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) and its associated regulations, and 2016 Alien and Invasive Species list (delegated authority: DEFF)
- National Forests Act 84 of 1998 and its associated regulations (delegated authority: DEFF)
- National Heritage Resources Act 25 of 1999 (delegated authority: South African Heritage Resources Agency (SAHRA))

City of Cape Town

- Climate Change Policy, 2017
- Cultural Heritage Strategy, 2005
- Design and Management Guidelines for a Safer City (Best practice guidelines for the creation of sustainable, safe and lively neighbourhoods in Cape Town), undated
- Environmental Strategy, 2017
- Greening the City, 1982
- Landscape Plans (booklet 8), Development Management Information Guideline Series, 2018
- Municipal Planning By-law, 2015
- Polyphagous Shot-Hole Borer Protocol, version 1: 28 May 2019 (delegated authority: Invasive Species Unit)
- Public Parks By-law, 2010 (delegated authority: Recreation and Parks)
- Safe Use of Greywater, undated
- Streets, Public Places and the Prevention of Noise Nuisances By-law, 2007 (delegated authority: Roads)
- Tree Management Policy, 2014 (delegated authority: Recreation and Parks)
- Tree Works Procedure, 2015 (delegated authority: Recreation and Parks)

ANNEXURE I:

REFERENCES AND RESOURCES

- Department of Agriculture, Forestry and Fisheries (DAFF). 2019. "Frequently Asked Questions and Model Answers (FAQs: Agriculture). Available online: www.daff.gov.za.
- National Tree Safety Group (NTSG). 2011. *Common sense risk management of trees. Guidance on trees and public safety in the UK for owners, managers and advisers.* Available online: www.jabooth.co.uk.
- Rabie, Christine. 2015. Presentation on tree protection delivered to City staff, Green Point Urban Park Environmental Education Centre, Cape Town.
- TreeKeepers Cape Town. Undated pamphlet. *Our big trees are valuable. Let's keep them standing tall.* www.treekeeperscapetown.org.za.

ANNEXURE J:

CONTACT DETAILS OF KEY ROLE-PLAYERS

Department of Agriculture, Land Reform and Rural Development, Land Use and Soil Management

021 944 1422 (Cape Town)
dlusm@nda.agric.za (Pretoria)
www.daff.gov.za

Department of Environment, Forestry and Fisheries

a) Biosecurity Compliance
021 441 2700
0800 205 005 (environmental crime hotline)
iascompliance@env.gov.za

b) Forestry (Protected Tree Licences)
021 944 1416
www.environment.gov.za

Heritage Western Cape

021 483 9869 / 9598
ceoheritage@westerncape.gov.za
www.westerncape.gov.za
www.hwc.org.za

City of Cape Town Invasive Species Unit

021 444 2356 / 2377 / 7793 / 0860 103 089
invasive.species@capetown.gov.za
www.capetowninvasives.org.za

City of Cape Town Recreation and Parks

021 400 4688 / 3734 / 3062 / 9534 / 0860 103 089
arborist@capetown.gov.za
www.capetown.gov.za

City of Cape Town Environmental and Heritage Management

heritage@capetown.gov.za
www.capetown.gov.za

City of Cape Town Electricity Generation and Distribution

021 444 2178 / 0860 103 089
power@capetown.gov.za
www.capetown.gov.za

ANNEXURE K:

LIST OF ACRONYMS

CARA:	Conservation of Agricultural Resources Act 43 of 1998
DAFF:	Department of Agriculture, Forestry and Fisheries
DALRRD:	Department of Agriculture, Land Reform and Rural Development
DEFF:	Department of Environment, Forestry and Fisheries
ECO:	Environmental Control Officer
EDRR:	early detection and rapid response
EMP:	Environmental Management Plan
HPOZ:	Heritage Protection Overlay Zone
NEMBA:	National Environmental Management Biodiversity Act 10 of 2004
NHRA:	National Heritage Resources Act 25 of 1999
NID:	Notice of Intent to Develop
PSHB:	polyphagous shot-hole borer
SAHRA:	South African Heritage Resource Agency

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