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Open Space and Trees Project - Part 1A (Arborist Review)

1. Detailed peer review of the current list of tree species excluded from regulated tree controls

2. Opinion on whether *Eucalyptus* as referred to in Regulation 3F(4)(a) should also include the genera *Corymbia* and *Angophora*

Review and report requested by Attorney General's Department, Planning and Land Use Services Division, Government of South Australia.

Review and report prepared by Dr Dean Nicolle during February and March 2022. Reviewed and finalised in April 2022.

Report dated the 28th of April 2022.

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1.0 BACKGROUND

1.1 Introduction

The Open Space and Trees Project has been initiated by the State Planning Commission, and will include:

***Part 1**: Immediate review of several regulatory matters*

a) Review the types of tree exempt from regulated tree controls (i.e. the 'Arborist Review').

b) Quantify an appropriate off-set contribution for the removal of regulated and significant trees (in lieu of planting replacement trees).

***Part 2:** Longer term review of regulated and significant tree regulations (subject to the endorsement of the Minister for Planning and Local Government)*

Undertake a comprehensive review of regulated tree legislative measures during 2022.

***Part 3:** Urban greening – the impact of infill development*

a) Review the operation of the new Urban Tree Canopy Off-set Scheme following 12 months of operation, including the fees set under the Scheme and the spatial application of the Scheme.

b) Review and report to the Minister on the operation of the Commission's 'infill tree policy' within the Planning and Design Code, with reference to the use of the Urban Tree Canopy Off-set Scheme.

c) As part of the preparation of the new 30-Year Plan for Greater Adelaide, commencing in 2022, review the tree canopy target in light of data and methodologies available, and further investigate how the planning and development system can further urban greening outcomes.

This review and report considers only Part 1(a) of the Open Space and Trees Project, as detailed in *Section 1.1 - Introduction* of this report.

1.2 2007 *Treelogic* report

An unauthored report compiled by *Treelogic* in 2007 (*Treelogic* 2007) was used to inform and generate the list of excluded tree species currently in the Regulations. The following summarises the key components of the 2007 *Treelogic* report:

- The 2007 *Treelogic* report contains a list of tree species that can potentially reach a trunk circumference greater than two metres at maturity, which have been planted or considered to be prevalent in metropolitan Adelaide, and were generally considered by the report authors to be 'problematic'.
- Each tree species in the 2007 *Treelogic* report was assessed against 'five forms of risk', which included:
    - *Failure Risk* – the propensity for the species to develop physiological and structural defects that increase the risk of whole or partial tree failure.

- *Weed Risk* – the risk of spreading into surrounding environment, to disrupt or compete with the native vegetation.
- *Health Risk* – the potential for species to develop characteristics adverse to human health, including allergens, irritants, poisons or physical obstructions (i.e. large thorns).
- *Fire Risk* – the potential for a tree species to burn. It should be noted that this matter forms its own exemption from tree controls under the Regulations in Medium or High Risk Bushfire Hazard areas.
- *Potential Infrastructure Damage* – the potential of species to develop surface-oriented or vigorous root systems which may conflict with infrastructure.

- Limited supporting scientific evidence in the 2007 *Treelogic* report suggests that the risk criteria and subsequent tree risk assessments may have been prepared based on the experience of the individuals who prepared the report.
- The list of excluded species in the Regulations appears to have been broadly focused on non-Australian native (as opposed to Australian native) trees, and those which were ranked by the report's authors as high or moderate-high risk, with an emphasis on their perceived risk of failure, fire (flammability) and infrastructure damage.
- The 2007 *Treelogic* report also discusses the many variables that make it difficult to use and manage a list of tree species excluded from regulated and significant tree controls.

2007 Treelogic report review findings

In October 2021, the Department undertook a desktop review of the 2007 *Treelogic* report to understand the current list of trees exempt from regulated tree controls under the Regulations. The outcomes as summarised by the Department were:

- The list of tree species currently excluded from tree controls under the Regulations differs from the broader list provided in the 2007 *Treelogic* report; however, the Department supports in-principle the current tree species list excluded from tree controls under the Regulations.
- The current list of tree species excluded from tree controls under the Regulations contains a number that were considered environmental weeds in South Australia and/or declared weeds under the *Landscape South Australia Act 2019*. However, their inclusion on the list does not appear to take into consideration other environmental, cultural, or aesthetic benefits that may be associated with these species when cultivated as trees in an urban environment.
- A number of the tree species on the excluded species list, while exotic species, are also common street trees planted in Adelaide (i.e. *Celtis*, *Fraxinus* and *Platanus* species).
- While the 2007 *Treelogic* report raised some questions over the use of an excluded species list, the cost of application and time required for assessment of trees on a case-by-case basis would have supported the use of an exempt species list. In that context, the continued use of an excluded species list is supported by the Department.

Additional Initial Investigations by the Department

The Department's initial investigations indicated that, in 1995, the genus *Corymbia* was created by splitting trees from the *Eucalyptus* genus. However, both genera maintain many close similarities, and it is understood (by the Department) there is still disagreement among botanists as to whether separating *Corymbia* and *Eucalyptus* is valid.

There are currently approximately 100 species of *Corymbia*. Some common species planted in suburban areas of Adelaide include the Red flowering Gum, Lemon-scented Gum and Spotted Gum.

Regulation 3F(4)(a) provides that all trees within genus *Eucalyptus* be excepted from the exclusion for controls for trees within 10 metres of an existing dwelling or swimming pool. That is, if a *Eucalyptus* is less than 10 metres from an existing dwelling or swimming pool, regulated tree controls still apply.

While the 2007 *Treelogic* report notes one species of *Corymbia* (Lemon-scented Gum), it is unclear whether this issue was considered in their report, and whether the inclusion of *Eucalyptus* in the Regulations was intended to also include *Corymbia*, given the close relationship and similarities between the two genera. The Department considers that this matter warrants further, more detailed consideration as part of a more detailed regulatory review.

1.3 Project Brief

The scope of the Project (Part 1A) Brief is as follows:

1. Undertake a detailed peer review of the current list of tree species exempt from regulated tree controls, against the Framework (as described below in section 1.2 *Project Framework and Objectives*). This should include consideration of tree species that are:
    - Capable of growing to the size of a regulated tree or larger (trunk with circumference of 2 m or more, or multiple trunks with total circumference of 2 m or more, measured 1 m above ground); and
    - Commonly occurring in urban areas within Greater Adelaide and/or large regional townships in South Australia.

    and
2. Provide an opinion on whether the genus *Eucalyptus* as referred to in Regulation 3F(4)(a) should be extended to also include trees within the genera *Corymbia* and *Angophora*, given the close association and similarities between those three genera.

1.4 Project Framework and Objectives

The overall objectives of the Open Space and Trees Project (all three parts) are to:

1. Increase urban green cover, to reduce the impact of climate change and enhance amenity;

   and

2. Mitigate the risks and costs associated with large trees in an urban setting.

1.4.1 *Objectives*

The Project (Part 1A – Arborist Review) should seek to achieve the following objectives:

1. Recognise the value of large trees in an urban setting, and the benefits they bring, such as increasing urban green cover, providing habitat value, to reducing the impact of climate change and enhancing amenity;
2. Mitigate the risks and costs associated with large trees in an urban setting;

These objectives are further described in the following planning policy documents:

- State Planning Policy 5: Climate Change includes the following policies aimed at achieving the objective of providing for development that is climate ready, so that our economy, communities and environment will be resilient to climate change impacts:
    - Mitigate the impacts of rising temperatures by encouraging water sensitive urban design, green infrastructure and other design responses.
    - Protect and enhance areas that provide biodiversity and ecological services and maximise opportunities for carbon storage.
    - Encourage decision-making that considers the impacts of climate change and that draws on the best available information.
    - Encourage development that does not increase our vulnerability to, or exacerbate the impacts of, climate change and which makes the fullest possible contribution to mitigation.
- State Planning Policy 6: Housing Supply and Diversity includes policies aimed at facilitating an affordable and diverse range of housing:
    - A well-designed, diverse and affordable housing supply that responds to population growth and projections and the evolving demographic, social, cultural and lifestyle needs of our current and future communities.
    - Develop healthy neighbourhoods that include diverse housing options; enable access to local shops, community facilities and infrastructure; promote active travel and public transport use; and provide quality open space, recreation and sporting facilities.

In the context of the Project, the cost and risks associated with urban trees should be considered, given the potential impact this may have on the cost of tree removal (and in turn the cost of undertaking development, including providing an affordable housing supply).

- The 30-Year Plan for Greater Adelaide includes a target for urban green cover to be increased by 20% in metropolitan Adelaide by 2045.
- The Regulated and Significant Tree Overlay in the Planning and Design Code includes a desired outcome aimed at conservation of regulated and significant trees to provide aesthetic and environmental benefits and mitigate tree loss. This Overlay would apply to development affecting trees which fall within the definition of a regulated or significant tree. The Overlay includes performance outcomes which are considered in an assessment of whether tree damaging activity can occur.

1.4.2 *Framework*

The Department has developed the following Framework for assessment of the current excluded species list within the Regulations. The purpose of this framework is to ensure that the Project is undertaken within an appropriate context and purpose, and to ensure that any recommended changes to the exempt species list are appropriately justified.

Value assessment:
The trees for consideration on the exempt species list should be assessed in light of the value they bring to urban environments, and the positive impacts they have in reducing the impacts of climate change. This value assessment should be based on the matrix below:

Value	Description	Measure	Weighting
Amenity	The aesthetic value of a tree, and its contribution to character and amenity of an area, particularly in an urban context.	Typical tree appearance, size and type including trunk, canopy, foliage, flowers and fruits.	Medium
Biodiversity Conservation Benefit	The ability for the tree to support or provide a habitat for a diverse range of other plants, animals and micro-organisms.	Typical tree size, canopy type, propensity for tree species to be used for habitat, shelter or food source by native fauna.	High
Carbon Storage	The potential for the tree to store carbon at maturity.	Typical tree trunk size and dry weight.	Medium
Urban Cooling Effect	The potential for a tree to provide shade cover and reduce the impact of the urban heat effect.	Typical tree canopy size and potential for shade cover at maturity.	High
Protection of Native Species	The tree is a native species which warrants protection.	The tree is indigenous to Greater Adelaide or regional South Australia and/or a remnant tree species, and/or listed under the *National Parks and Wildlife Act 1972* as a rare or endangered native species.	High

Risk and Cost Assessment:

The Project should apply a risk-based assessment of those trees with a medium-high risk of causing harm to people or causing damage or unreasonable interference to property or infrastructure. This risk assessment should be based on the matrix below:

Risk / Cost	**Description**	**Weighting**
Failure	Propensity for the species to develop physiological and structural defects that increase the risk of whole or partial tree failure.	High
Weed	Risk of spreading into surrounding environment, to disrupt or compete with the native vegetation.	Medium
Health	Potential for species to develop characteristics adverse to human health, including allergens, irritants, poisons or physical obstructions (i.e. large thorns).	Medium
Fire	Potential for a tree species to burn.	Medium. This risk is not weighted as high as additional exemptions from tree controls apply under the Regulations in Medium or High Risk Bushfire Hazard areas.
Infrastructure Damage	Potential of species to develop surface-oriented or vigorous root systems which may conflict with infrastructure.	Medium
Maintenance Costs	Ongoing cost for tree maintenance, including pruning, lopping, etc.	Medium

2.0 REVIEW OF EXEMPT TREE SPECIES

Undertake a detailed peer review of the current list of tree species exempt from regulated tree controls.

2.1 Current status of regulations

Regulation 3F(4) of the *Planning, Development and Infrastructure (General) Regulations 2017* (the Regulations), which were transitioned in full from the *Development Regulations 2008*, provides the list of tree species which are excluded from the definition of 'regulated tree' and 'significant tree' under the *Planning, Development and Infrastructure Act 2016* (the *PDI Act 2016*).

The list includes 21 species of trees as well as one genus of trees (all *Ficus* species, excluding *Ficus macrophylla* located more than 15 metres from a dwelling) which are excluded from regulated and significant tree protections in all cases (herein referred to as being 'generically exempt'). These 21 species are all non-Australian natives, with the genus *Ficus* composed of both Australian native (but locally non-indigenous) and non-Australian native species.

In addition, any tree which is located less than 10 metres from an existing dwelling or swimming pool is excluded from regulated and significant tree protections, unless that tree is of the species *Agonis flexuosa* (willow myrtle) or a species of *Eucalyptus*, in which case the tree controls still apply.

In addition, Schedule 4, clause 18 of the Regulations currently excludes tree damaging activity in relation to the following trees from the definition of development under the *PDI Act 2016*:

a) the tree is within one of the following species of trees:
   - *Melaleuca styphelioides* (Prickly-leaved Paperbark); or
   - *Lagunaria patersonia* (Norfolk Island Hibiscus); or

b) the tree is within 20 metres of a dwelling in a Medium or High Bushfire Risk area within a Hazards (Bushfire Protection) Overlay under the Code[1]; or

c) the tree is on land under the care and control of the Minister, who has primary responsibility for the environment and conservation in the State; or

d) the tree is on land under the care and control of the Board of the Botanic Gardens and State Herbarium; or

e) the tree is dead.

[1] *Note that there may be a conflict between the* Planning, Development and Infrastructure (General) Regulations 2017 *and the* Native Vegetation Regulations 2017 *in areas where both the* PDI Act 2016 *and the* Native Vegetation Act 1991 *apply and the tree is 2 m or more in trunk circumference. The Native Vegetation Regulations 2017 Division 1 Clause 1(1) prescribes general exemption from control within 10 m of a dwelling, however Clause 17(1) requires CFS approval for removal of trees <2m in circumference if within 20 m of a dwelling.*

2.2 Methodology

2.2.1 *Assumptions*

Trunk size triggers

The current regulations in *PDI Act 2016* define a 'regulated tree' as having '*a trunk circumference of 2 m or more, or in the case of trees that have multiple trunks, that have trunks with a total circumference of 2 m or more* [presumably the sum of all trunk circumferences] *and an average circumference of 625 mm or more, measured at a point 1 m above natural ground level*'. The current regulations in *PDI Act 2016* define a 'significant tree' as having '*a trunk circumference of 3 m or more, or in the case of trees that have multiple trunks, that have trunks with a total circumference of 3 m or more* [presumably the sum of all trunk circumferences] *and an average circumference of 625 mm or more, measured at a point 1 m above natural ground level*'.

The Project Brief provided to me included a note stating '*Note: the exempt tree species review should not consider the tree trunk size trigger currently included in the Regulations. This may be the subject of a broader review in Part 2 of the Project at a later date*'.

While this note is acknowledged, it is not possible to provide advice or recommendations regarding species to be excluded from the Regulations without knowledge of the trunk size triggers for which the regulations will apply. I have therefore assumed that the trunk size triggers are those of the current Regulations. If however, the trunk size triggers were to be varied in the future (increased total, decreased total, different measuring position on trunk, different method of calculating trunk circumference of multi-trunked trees, etc), this may impact the list of species recommended to be excluded from the Regulations. This is particularly the case for multi-trunked species.

I am supportive of, and recommend, the broader-scale comprehensive review of regulated tree legislative measures as proposed in Part 2 of the Open Space and Trees Project. If trunk size triggers are modified following that broader-scale review, I recommend that the list of tree species excluded from the regulated tree controls also be revised at that time.

Large regional townships

The Project Brief provided to me includes the detailed peer review of the current list of tree species excluded from regulated tree controls for both Greater Adelaide (within which the current Regulations apply) and large regional townships in South Australia (where the current Regulations do not apply).

The list of 202 tree species that I have assessed is primarily based on my observations and records of qualifying trees in the Greater Adelaide area (which I define as extending south to Sellicks Beach, north to include the Town of Gawler LGA, and inland to include the District Council of Mount Barker LGA). The assessment of species is similarly based on my observations, experience, and records of these species in the Greater Adelaide area.

While this species list and data will largely be applicable to other regional townships in South Australia, there may be some difference in growth of some species in some regional towns due to climatic conditions. Most notable is the range of average annual rainfall; for South Australian centres with populations exceeding 10,000 people, it varies from 269 mm to 662 mm (http://www.bom.gov.au):

- Greater Adelaide (Kent Town) – 547 mm
- Greater Adelaide (Noarlunga) – 447 mm
- Greater Adelaide (Gawler) – 423 mm
- Greater Adelaide (Mount Barker) – 432 mm
- Mount Gambier – 662 mm
- Murray Bridge – 357 mm
- Port Augusta – 270 mm
- Port Lincoln – 406 mm
- Port Pirie – 331 mm
- Victor Harbor – 479 mm
- Whyalla – 269 mm

Of note are two regional towns (Port Augusta and Whyalla) that receive approximately half the average annual rainfall as that of Greater Adelaide. The scoring for climate suitability in these two towns is likely to be significantly different to the species' score for Greater Adelaide.

I recommend that should any of these regional towns consider regulated tree controls similar to those in Greater Adelaide, then the list of tree species excluded from the regulated tree controls for that town be further reviewed in consideration of its different climatic conditions.

Taxonomic hierarchy

Following the International Code of Botanical Nomenclature (Turland *et al.* 2018) and standard application of taxonomic hierarchy, I have assumed that the listing of a taxon[2] at any rank (e.g. a genus, species, etc) includes *all* the lower-level taxa within the listed taxon. For example, for a listed species, all subspecies, varieties, and cultivars of that species are considered part of that species.

2.2.2 *Tree species assessed*

A total of 202 species, hybrids, and cultivars (herein together referred to as 'species' for simplicity) were assessed (see *Appendix 1 Species Assessed*). A total of 200 of the 202 species assessed were selected using my observations and records of trees recorded or capable of attaining a trunk circumference (or combined trunk circumference) of ≥2 metres in Greater Adelaide and other regional urban areas in South Australia.

[2] *A taxon (plural: taxa) is a taxonomic grouping of related organisms at any rank, such as a species, genus, family, and kingdom.*

An additional two species, *Acer saccharinum* (Silver Maple) and *Salix chilensis* 'Fastigata' (Chilean Pencil willow), have not been recorded/observed with a trunk circumference (or combined trunk circumference) of ≥2 metres in Greater Adelaide, but are currently listed as generically exempt in Regulation 3F(4)(b) of the *PDI Act (2016)*, and have therefore also been assessed.

2.2.3 *Tree frequency*

For each of the 202 species, I have indicated its frequency in the Greater Adelaide area (regardless of its trunk circumference) and have also indicated its frequency as a tree with a trunk circumference (or combined trunk circumference) of ≥2 metres in Greater Adelaide. The frequency categories are 'Very common', 'Common', 'Occasional', 'Rare', 'Very Rare', and (for *Acer saccharinum* and *Salix chilensis* 'Fastigata') 'None'. This frequency information (for both the species and for trees of each species with a trunk circumference of ≥2 metres) is based on my records and observations assessing and auditing tens of thousands of trees throughout Greater Adelaide over the last 20 years.

2.2.4 *Value Assessment*

The Value Assessment (VA) of each species is based on the matrix provided to me by the Department and reproduced in Section 1.4.2 – *Framework*. The relative weighting of the various Value Assessment criteria was undertaken by scoring high-weighted criteria with a maximum score of 10 and medium-weighted criteria with a maximum score of 5 (see Table 1).

- ***Amenity Value***, weighted as 'moderate', was scored from 5 (Very high amenity value) to 0 (Low amenity value), as such:

  5 – Very high: Species with very large, leafy canopies and with stereotypically very aesthetically-attractive features.

  4 – High: Species with large, leafy canopies and/or with stereotypically aesthetically-attractive features.

  3 – Moderate to high: Species with moderately large, leafy canopies and/or with stereotypically aesthetically-attractive features.

  2 – Moderate: Species with moderate-sized canopies and with stereotypically moderately aesthetically-attractive features.

  1 – Low to moderate: Species with moderately small and/or sparser canopies and/or with stereotypically less aesthetically-attractive features.

  0 – Low: Species with relatively quite small or quite sparse canopies and with stereotypically less aesthetically-attractive features.

- ***Biodiversity Conservation Benefit***, weighted as 'high', was scored from 10 (Very high biodiversity conservation benefit) to minus 5 (Invasive species), as such:

10 – High: Species that are locally indigenous to Greater Adelaide.

5 – Moderate: Flowering species that are Australian native but locally non-indigenous to Greater Adelaide.

2 – Low: Species that are not Australian native but have some value to nectar-, fruit- or seed-eating native fauna, and some Australian native species of lower feed value to fauna and are not locally non-indigenous to Greater Adelaide.

0 – Negligible: Species that are not Australian native and have negligible value to nectar-, fruit- or seed-eating Australian native fauna, such as most cold-climate winter-deciduous species and Northern Hemisphere conifers.

-5 – Invasive: Species that are known to be invasive (i.e. weedy) in natural environments in the Greater Adelaide area.

- ***Carbon Storage***, weighted as 'moderate', was scored from 5 (High carbon storage potential) to 1 (Low carbon storage potential), as below. There was negligible data available on the carbon storage potential of the 202 species assessed. As such, Carbon Storage was scored based on the estimated typical mature biomass of a mature tree of the species. It could be argued that faster-growing species sequester carbon *more rapidly* that slower growing species, however, faster-growing species tend to be shorter lived and have less dense wood, such that the sequestered carbon is stored for a shorter period of time (eventually being released as the tree decays). However, species growth rate and longevity were not been considered when assessing the carbon storage potential of species.

  5 – High: Higher carbon storage potential due to estimated high biomass of mature trees of the species (i.e. large trees and/or dense wood).

  3 – Moderate: Moderate carbon storage potential due to estimated moderate biomass of mature trees of the species (i.e. moderate-sized trees and/or moderate density wood).

  1 – Low: Lower carbon storage potential due to estimated lower biomass of mature trees of the species (i.e. smaller trees and/or less dense wood).

- ***Urban Cooling Effect***, weighted as 'high', was scored from 10 (Very high urban cooling effect) to 2 (Low urban cooling effect), as detailed below. There is negligible data available on the urban cooling effect of the 202 species assessed. Urban Cooling Effect is considered higher in species with larger, denser canopies, and is also higher in species with high water use (due to increased rates of transpiration). As such, Urban Cooling Effect was scored based on the typical mature canopy size and density of a species, and the known or presumed transpiration rates of its leaves.

  10 – Very high: Species forming very large, leafy canopies and having high water use.

  8 – High: Species forming large, leafy canopies and/or having high water use.

  5 – Moderate: Species forming moderate-sized canopies and/or having moderate water use.

2 – Low: Species forming smaller, sparser canopies and/or having very low water use.

- ***Protection of Native Species***, weighted as 'high', was scored as 10 (Locally indigenous species) to 0 (Non-Australian native species), as such:

  10 – Locally indigenous: Species that are locally indigenous to the Greater Adelaide area.

  5 – Non-indigenous Australian native: Species that are Australian native but are locally non-indigenous to the Greater Adelaide area.

  0 – Non-Australian: Species that do not occur naturally in Australia.

2.2.5 *Risk and Cost Assessment*

The Risk and Cost Assessment (RCA) of each species is based on the matrix provided to me by the Department and reproduced in Section 1.4.2 – *Framework*; however, two additional criteria were used that I consider to be important in assessing the Risk and Cost Assessment of each tree.

- ***Failure***, weighted as 'high', was scored from 10 (Very low failure potential) to minus 10 (High failure potential). The propensity to structurally fail is most typically related to the characteristics of an individual tree rather than the species. Caution should therefore be exercised when considering a species for exclusion from the regulations on its failure potential alone. Nevertheless, some generalisations regarding the failure propensity of species can be made, especially if restricted to a particular climate and environment (e.g. within the Greater Adelaide area).

  10 – Very low: Species that are generally very structurally sound and have a very low incidence of structural failure (whole tree and any part of the tree) in the Greater Adelaide area.

  7 – Low: Species that are generally structurally sound and have a low incidence of structural failure (whole tree and any part of the tree) in the Greater Adelaide area.

  4 – Low to moderate: Species that are generally structurally sound but can develop structural flaws and exhibit a low to moderate incidence of structural failure (whole tree and any part of the tree) if not adequately maintained in the Greater Adelaide area.

  0 – Moderate: Species that may develop structural flaws and may exhibit a moderate incidence of structural failure (whole tree and any part of the tree) if not adequately maintained in the Greater Adelaide area.

  -10 – High: Species that typically develop structural flaws and can have a high incidence of structural failure (whole tree and any part of the tree) if not adequately maintained in the Greater Adelaide area.

- ***Weed***, weighted as 'moderate', was scored from 5 (Nil weed potential) to minus 5 (Significant weed potential), as detailed below. Weediness was assessed on the known or potential weediness of species in the Greater Adelaide area, and not on the weediness of the species in other areas outside of South Australia. For example, *Cinnamomum camphora* (Camphor Laurel) is a major environmental weed in the rainforests and wet eucalypt forests of the north coast of New South Wales, but is not known to be weedy at all in South Australia, presumably due to the much lower rainfall in SA. As such, *C. camphora* is scored as having 'nil' weediness in the Greater Adelaide area.

    5 – Nil: Species that are not known to be weedy in the Greater Adelaide area.

    0 – Minor: Species that are known to be minor environmental weeds in the Greater Adelaide area.

    -2 – Moderate: Species that are known to be moderate environmental weeds in the Greater Adelaide area.

    -5 – Significant: Species that are known to be significant environmental weeds in the Greater Adelaide area.

- ***Health***, weighted as 'moderate', is scored from 5 (Nil health issues) to minus 5 (Significant health issues), as detailed below. Health issues relating to trees may include thorns or prickly foliage, high pollen loads, and foliage or seeds which can irritate skin.

    5 – Nil: Species not associated with human health impacts when grown in the Greater Adelaide area.

    0 – Minor: Species known to present minor health issues for a relatively small number of individuals across the Greater Adelaide area.

    -2 – Moderate: Species known to present moderate health issues to some individuals across the Greater Adelaide area.

    -5 – Significant: Species with one or more characteristics which can affect a considerable number of individuals across the Greater Adelaide area.

- ***Fire***, weighted as 'moderate', was scored from 5 (Very low fire potential) to minus 5 (High fire potential), as detailed below. The flammability of species is related to the trunk, branch and canopy features of the species, with species with higher flammability having features such as the build-up of thin, ribbony dead bark in the canopy, having very tiny leaves (e.g. *Cupressus* species), or the build-up of very small diameter dead branchlets in the canopy of the tree.

    5 – Very low: Species that are relatively non-flammable when grown in the Greater Adelaide area.

    3 – Low: Species with low flammability when grown in the Greater Adelaide area.

    0 – Moderate: Species with moderate flammability when grown in the Greater Adelaide area.

    -5 – High: Species that are relatively very flammable when grown in the Greater Adelaide area.

- ***Infrastructure damage***, weighted as 'moderate', was scored from 5 (Low infrastructure damage potential) to minus 10 (Very high infrastructure damage potential), as detailed below. The potential to damage infrastructure has been scored only in relation to the roots of a tree damaging surface or subsurface infrastructure, and does not consider the potential infrastructural damage from structural failure of the tree (this is covered under 'Failure' assessment). The risk of infrastructure damage is typically more correlated to the characteristics of infrastructure and the site (infrastructure type, design, proximity, soil type, etc) than to the species. Caution should therefore be used in considering a species for exclusion from the regulations on its infrastructure damage potential alone. Nevertheless, some generalisations regarding the infrastructure damage potential of species can be made on the basis of their mature size and root distribution, and especially if restricted to a particular climate and environment (e.g. within the Greater Adelaide area).

    5 – Low: Species with a low potential to damage surface or subsurface infrastructure due to the relatively small size of the tree and the lack of extensive surface roots.

    0 – Moderate: Species with a moderate potential to damage surface or subsurface infrastructure due to the moderate to large size of the tree but the lack of extensive surface roots.

    -5 – High: Species with very high potential to damage surface or subsurface infrastructure due to the large size of the tree and/or the presence of extensive surface roots.

    -10 – Very high: Species with very high potential to damage surface or subsurface infrastructure due to the large size of the tree and the presence of extensive, large-diameter surface roots.

- ***Maintenance costs***, weighted as 'moderate', was scored from 5 (Very low maintenance costs) to minus 5 (High maintenance costs). Maintenance costs considered primarily relate to ongoing pruning costs associated with the species when grown in the Greater Adelaide area. For most species, there is a general relationship between the size of the tree and the maintenance costs, with larger trees generally having higher ongoing maintenance costs. Maintenance costs are usually more correlated to site influences (e.g. proximity of dwellings and other structures, soil type, wind exposure, human influences and attitudes) than to the species. Maintenance cost is a subset of the life-cycle cost of a tree, with slow-growing, long-lived, resilient species tending to have the lowest life-cycle costs (e.g. *Quercus* species - oaks – do not require pruning over many decades in their youth and early maturity).

    5 – Very low: Species which typically have very low maintenance costs when grown in the Greater Adelaide area.

    3 – Low: Species which typically have low maintenance costs when grown in the Greater Adelaide area.

    0 – Moderate: Species which typically have moderate maintenance costs when grown in the Greater Adelaide area.

    -5 – High: Species which typically have high maintenance costs when grown in the Greater Adelaide area.

The additional Risk and Cost Assessment categories used in the assessment of all 202 species are:

- ***Climate Suitability***, indicating the suitability of the species to the climate in Greater Adelaide, including air temperature (minima, averages and maxima), rainfall (averages, variability and seasonality), and humidity (averages). Species which are poorly suited to the climate in Greater Adelaide (e.g. cold-climate high-rainfall species) score lower than those that are highly suited to the local climatic conditions (e.g. most locally indigenous species). Species that are intolerant of increased temperatures and aridity (i.e. associated with climate change) also score lower than those more tolerant of such climate change. Some caution should be exercised when considering the exclusion of a species from the regulations on climate suitability alone, because climate and environmental conditions (e.g. rainfall and groundwater conditions) vary greatly across Greater Adelaide, and even species that are generally poorly suited to Adelaide's climate may flourish in particular areas (e.g. along rivers or in areas with shallow groundwater).

  Because I consider Climate Suitability is important in the Risk and Cost Assessment of a species, I have weighted it as 'high'. Climate Suitability was scored from 10 (Very high climate suitability) to minus 10 (Very low climate suitability), as such:

  10 – Very high: Locally indigenous species and some non-indigenous species that are very highly suited to the existing and projected climate in the Greater Adelaide area.

  5 – High: Species that are well suited to the existing and projected climate in the Greater Adelaide area.

  0 – Moderate: Species that are moderately-well suited to the existing and/or projected climate in the Greater Adelaide area.

  -5 – Low: Species that are poorly suited to the existing and/or projected climate in the Greater Adelaide area.

  -10 – Very low: Locally non-indigenous species that are very poorly suited to the existing and projected climate in the Greater Adelaide area.

- ***Longevity***, indicating the typical lifespan of the species in Greater Adelaide. Relatively very short-lived species (e.g. some *Acacia* species) have been scored lower than relatively very long-lived species (e.g. many locally indigenous *Eucalyptus* species, some *Quercus* species). Species lifespan is often (but not always) independent of the Climate Suitability of a species, and appears to be genetically fixed for many species, although the lifespan of a species may vary greatly depending on the environmental conditions in which it is growing.

  Because I consider Longevity is relatively less important in the Risk and Cost Assessment of a species, I have weighted it as 'moderate'. Longevity was therefore scored from 5 (Very long relative longevity) to minus 5 (Very short relative longevity), as such:

  5 – Very long: Species which typically have a lifespan exceeding 100 years in the Greater Adelaide area.

3 – Long: Species which may occasionally live for more than 100 years in the Greater Adelaide area.

0 – Moderate: Species which typically have a moderate lifespan (50 to 100+ years) in the Greater Adelaide area.

-3 – Short: Species which typically live less than 50 years in the Greater Adelaide area.

-5 – Very short: Species which typically have a very short lifespan (<20 years) in the Greater Adelaide area.

2.2.6 *Basis of assessment, findings, and recommendations*

The assessment, findings, and recommendations provided in this report have been made on the basis of:

- The Project Brief, Framework, and Objectives; and
- My knowledge of existing and past regulations and acts relating to the protection of trees in South Australia, and especially the *Planning, Development and Infrastructure (General) Regulations 2017* (the Regulations) and the *Planning, Development and Infrastructure Act 2016* (the *PDI Act 2016*); and
- My selection and assessment of 202 qualifying tree species against the five Value Assessment criteria and the seven Risk / Cost Assessment criteria as detailed above; and
- My understanding of the socio-political environment and other considerations relating to current trends in urban tree canopy cover, community awareness of tree loss and its links with climate resilience, and associated environmental factors; and
- My study, research, experience, and background knowledge on the biology, botany, arboriculture, and ecology of trees (including each of the assessed species) in urban, rural and remote localities in South Australia over the last 30 years (see: https://dn.com.au/dean-nicolle.html); and
- Discussion and input from *TREENET's* director Dr Tim Johnson, based on his study, research, experience, and background knowledge on urban trees and tree-infrastructure interactions in Adelaide over the last 30 years; and
- The references listed in Section 6 of this report.

2.2.7 *Socio-political considerations*

Determining whether any species should be excluded from tree protections under the *PDI Act 2016* requires a focus beyond the characteristics of trees and toward the *intent* of the tree protection provisions. If the intent is to provide good governance, then the prevailing socio-political environment should be a major consideration (which is distinct from the characteristics of the species) and is subject to change over time. To retain relevance, tree protection provisions must not only address prevailing needs but also anticipate likely change in the socio-political environment into the future.

The socio-political environment is changing in relation to urban trees in response to urbanisation and other changes in the physical environment. Communities are becoming better educated about the contributions trees make to urban living, to human health and wellbeing, and to sustainability. Communities are becoming increasingly aware that the loss of trees, and the loss of urban trees in particular, is increasing costs and reducing wellbeing and quality of life. Progressive tree loss further focusses community perspective and so increases the perceived value of remaining tree cover.

It can be reasonably assumed that the trend of increasing community awareness of the benefits of trees is likely to continue in response to widespread reporting of climate-related natural disasters and pro-tree media of research organisations, grass-roots environmental groups, and other sources. This awareness is shifting community perspective. As awareness increases, the values communities attribute to trees will outweigh tree-related impacts such as nuisance and opportunity cost, so communities will require more trees to be protected. In this context, justifying exemption from protection of any species requires consideration of the probability and scale of benefit or cost of that species in typical situations across the areas in which protection measures apply.

2.2.8 *Identification considerations*

Correct species identification of individual trees is a critically important factor when a list of tree species are exempt from protection or are exempt under certain circumstances. The ability to correctly identify a species largely depends on the training and experience of the person identifying the tree. Nevertheless, the potential for the misidentification of a species, due to other closely-related or superficially-similar species, is higher in some species than in others, regardless of the training and experience of the identifier. The potential for the misidentification of a species is also seasonally-dependent in some species, being much higher when not in flower or, in the case of winter-deciduous species, when leaves are not present.

Laypersons who are not botanically-trained are unlikely to be able to reliably identity a tree to the species or genus level. For the ‘average’ person applying to remove, damage, or prune a regulated or significant tree, the likelihood of correctly identifying the species is quite low, even if they presume they can identify the tree to a broad grouping (a ‘gum tree’, ‘fig tree’ or ‘pine tree’ for example). Even for a well-trained and experienced arborist, unless they have specific botanical training or experience, they are unlikely to be able to *correctly* identify many of the more difficult-to-identify species, such as different *Eucalyptus*, *Salix*, or *Pinus* species, or even the genus *Casuarina* (some species which are Declared Plants under the *Landscape South Australia Act 2019*) from the locally indigenous genus *Allocasuarina*.

Because of the specific training and/or experience needed to correctly identify many tree species to the genus or species level, the potential for non-exempt species to be misidentified as exempt species is real and should be considered when contemplating species to be listed as exempt. In the case of the species and species-groups recommended to be either generically excluded from the definition of ‘regulated tree’ and ‘significant tree’ in the *PDI Act 2016***,** or excluded from the definition of ‘regulated tree’ and ‘significant tree’ in the *PDI Act 2016* when <10 m from a

dwelling or pool, the following species/species-groups have a higher likelihood of being misidentified than the others recommended for exclusion:

- *Casuarina* (non-locally indigenous sheoaks) from *Allocasuarina*.
- *Eucalyptus grandis* (Flooded Gum) from some other *Eucalyptus* species.
- *Eucalyptus saligna* (Sydney Blue Gum) from some other *Eucalyptus* species.
- *Melaleuca armillaris* (Bracelet Honey-myrtle) from some other *Melaleuca* species.
- *Ulmus minor* (English Elm) from some other *Ulmus* species.
- *Ulmus* × *hollandica* (Dutch Elm) from some other *Ulmus* species.

These species are nonetheless here recommended for exclusion from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* (either generically or when <10 m from a dwelling or pool) because they are problematic species (generally or in certain circumstances). However, their recommended exclusion from the regulations should address these identification concerns.

The identification concerns regarding these species recommended for exclusion, as well as other species recommended for exclusion, should be further investigated but is beyond the scope of this report. Possible mechanisms to address these identification concerns include a clause in the Regulations requiring for the professional identification of a tree prior to approval of its removal/damage/pruning. Professional identification could be undertaken by agreement with the Botanical Gardens and State Herbarium of South Australia (likely requiring some additional resources by this organisation to undertake the identifications), or by an appropriately qualified and/or experienced consultant (e.g. a botanist) at a financial cost to either the applicant or the approving body.

Alternatively, if the professional identification of the species is not considered viable for any reason, then the application of an exempt species list is likely to result in the removal of valuable trees on the basis of their erroneous identification as exempt species.

2.2.9 *Other considerations*

Whether a tree species is viewed as an asset (benefit) or liability (cost) relates at least as much to its location as to its character. A large shady tree in a front garden may be considered an asset during its youth and at maturity, but may become a liability as it ages and deteriorates. A sapling growing immediately adjacent to a home may present a structural risk in the future, but a mature tree of the same species, which has had a home designed and built around it with consideration of the tree's ongoing requirements, might present negligible risk to infrastructure. A species may be considered an environmental weed in areas of high ecological value, but in inner urban settings it may provide significant environmental and community benefits due to its contributions to stormwater management, carbon sequestration, and urban cooling. In these examples the exemption of the species from protection may result in the loss of relatively high-value and low-risk trees in certain circumstances. The only way to avoid such losses is to assess each tree on its merits, regardless of the species. The cost of such assessments will increasingly be considered justified as the understanding of the value of the benefits provided by trees continues to increase.

Exempting trees from protection on the basis of their species alone may result in unforeseen and undesirable consequences in the nursery industry, although there is little evidence to quantify this impact. Exemption of species from protection has the potential to influence consumer behaviour, with customers choosing to source exempt species only to avoid future controls, while others might avoid buying exempt species to ensure the long-term protection of the trees they plant.

Table 1. Scoring for Assessment Value and Risk / Cost Assessment. *The characters and character states used to score each taxon to determine its Value Assessment (VA) and Risk / Cost Assessment (RCA). High-weighted categories are scored with a maximum value of 10, while medium-weighted categories are scored with a maximum value of 5. The character states for each criterion have been colour-coded according to their benefit/cost, from blue (maximum benefit) to red (maximum cost), and to match the colour-coding provided in the scoring tables provided in* Section 5 Species Profiles.

VA Amenity value	*Very high* **Score: 5**	*High* **Score: 4**	*Moderate to high* **Score: 3**	*Moderate* **Score: 2**	*Low to moderate* **Score: 1**	*Low* **Score: 0**
VA Biodiversity & Conservation Benefit	*High* **Score: 10**	*Moderate* **Score: 5**	*Low* **Score: 2**	*Negligible* **Score: 0**	*Invasive* **Score: -5**	
VA Carbon Storage potential	*High* **Score: 5**	*Moderate* **Score: 3**	*Low* **Score: 1**			
VA Urban Cooling Effect	*Very high* **Score: 10**	*High* **Score: 8**	*Moderate* **Score: 5**	*Low* **Score: 2**		
VA Protection of Native Species	*Locally indigenous* **Score: 10**	*Non-indigenous Aust. Native* **Score: 5**	*Non-Australian* **Score: 0**			
RCA Failure potential	*Very low* **Score: 10**	*Low* **Score: 7**	*Low to mod* **Score: 4**	*Moderate* **Score: 0**	*High* **Score: -10**	
RCA Weed potential	*Nil* **Score: 5**	*Minor* **Score: 0**	*Moderate* **Score: -2**	*Significant* **Score: -5**		
RCA Health issues	*Nil* **Score: 5**	*Minor* **Score: 0**	*Moderate* **Score: -2**	*Significant* **Score: -5**		
RCA Fire potential	*Very low* **Score: 5**	*Low* **Score: 3**	*Moderate* **Score: 0**	*High* **Score: -5**		
RCA Infrastructure Damage	*Low* **Score: 5**	*Moderate* **Score: 0**	*High* **Score: -5**	*Very high* **Score: -10**		
RCA Maintenance Costs	*Very low* **Score: 5**	*Low* **Score: 3**	*Moderate* **Score: 0**	*High* **Score: -5**		
RCA Climate Suitability	*Very high* **Score: 10**	*High* **Score: 5**	*Moderate* **Score: 0**	*Low* **Score: -5**	*Very low* **Score: -10**	
RCA Longevity	*Very long* **Score: 5**	*Long* **Score: 3**	*Moderate* **Score: 0**	*Short* **Score: -3**	*Very short* **Score: -5**	

2.3 Findings

2.3.1 *Tree frequency*

A total of 149 of the 202 species assessed are considered to be 'Very common', 'Common', or 'Occasional' trees (of any size) in the Greater Adelaide area. The remaining 53 species assessed are considered to be only 'Rare' or 'Very Rare' trees in Greater Adelaide (see Table 2 and *Appendix 1 Species Assessed*).

A total of 70 of the 202 species assessed are considered to be 'Very common', 'Common', or 'Occasional' as trees with a trunk circumference (or combined trunk circ.) of 2 metres or greater at one metre above natural ground level in the Greater Adelaide area. The remaining 132 species assessed are trees that are considered to be only 'Rare' or 'Very Rare' with a trunk circ. (or combined trunk circ.) of 2 metres or more at one metre above natural ground level (see Table 2 and *Appendix 1 Species Assessed*).

Table 2. Species Frequency. *The frequency of assessed tree species in Greater Adelaide as trees of any size and as trees with a trunk circ. (or combined trunk circ.) of ≥2 m at 1 m above ground level.*

Frequency:	as a tree of any size in Greater Adelaide	as a tree with trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide
Very common	34 species	6 species
Common	55 species	19 species
Occasional	60 species	45 species
Rare	44 species	85 species
Very Rare	9 species	45 species
None known	0 species	2 species

Of the species that are *currently listed as generically excluded* from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016* (i.e. not including species that are exempt only when within 10 m of dwelling or pool, nor exempt only because they are Declared Plants in the *Landscape South Australia Act 2019*), their frequency as trees with a trunk circ. (or combined trunk circ.) of ≥2 m at 1 m above ground level is (also see Table 3):

- 1 species is very common (*Cupressus macrocarpa* – Monterey Cypress);
- 5 species are common;
- 11 species are occasional;
- 7 species are rare;
- 5 species are very rare;
- 2 species are not known to reach that size at all in Greater Adelaide.

Note that this current list of generically excluded species includes species of *Ficus* (figs) which are grouped together in the existing regulations (except for *Ficus macrophylla* - Moreton Bay Fig) and also separately lists *Fraxinus angustifolia* 'Raywood' (Claret Ash), which is included in *Fraxinus angustifolia* in the current generically excluded species list.

Table 3. Currently excluded tree species. *Frequency of occurrence in Greater Adelaide of species currently listed as generically excluded from tree protection provisions, indicating their frequency as a tree of any size and as a tree with a trunk circumference (or combined trunk circ.) of ≥2 m at 1 m above ground level in Greater Adelaide. Species are colour-coded according to their frequency as trees with a trunk circ. of ≥2 m.*

Scientific name	**Common name**	**Current status *PDI Act 2016***	**Frequency as tree of any size in Greater Adelaide**	**Frequency as tree with trunk circ. ≥2 m in Greater Adelaide**
Acer negundo	Box Elder	Generically excluded	Occasional	Occasional
Acer saccharinum	Silver Maple	Generically excluded	Rare	None
Ailanthus altissima	Tree Of Heaven	Generically excluded	Rare	Very rare
Alnus acuminata	Evergreen Alder	Generically excluded	Rare	Very rare
Celtis australis	European Hackberry	Generically excluded	Occasional	Rare
Celtis sinuensis	Chinese Hackberry	Generically excluded	Occasional	Very rare
Cinnamomum camphora	Camphor Laurel	Generically excluded	Occasional	Occasional
Cupressus macrocarpa	Monterey Cypress	Generically excluded	Very common	Very common
Ficus benjamina	Weeping Fig	Generically excluded	Occasional	Very rare
Ficus desertorum	Rock Fig	Generically excluded	Rare	Rare
Ficus elastica	Rubber Tree	Generically excluded	Rare	Rare
Ficus macrophylla	Moreton Bay Fig	Generically excluded when <15 m dwelling	Common	Common
Ficus microcarpa	Hill's Weeping Fig	Generically excluded	Common	Occasional
Ficus rubiginosa	Rusty Fig	Generically excluded	Common	Occasional
Ficus virens	White Fig	Generically excluded	Very rare	Very rare
Fraxinus angustifolia	Desert Ash	Generically excluded	Very common	Common
Fraxinus angustifolia 'Raywood'	Claret Ash	Generically excluded	Common	Occasional
Lagunaria patersonia	Norfolk Island Hibiscus	Generically exempt from tree-damaging activity under Schedule 4 clause 18	Common	Occasional
Melaleuca styphelioides	Prickly-leaved Paperbark	Generically exempt from tree-damaging activity under Schedule 4 clause 18	Occasional	Rare
Pinus radiata	Radiata/Monterey Pine	Generically excluded	Common	Common
Platanus x *acerifolia*	London Plane	Generically excluded	Very common	Occasional
Populus alba	White Poplar	Generically excluded	Rare	Rare
Populus nigra 'Italica'	Lombardy Poplar	Generically excluded	Occasional	Occasional
Robinia pseudoacacia	Black Locust	Generically excluded	Common	Rare
Salix babylonica	Weeping Willow	Generically excluded	Occasional	Occasional
Salix chilensis 'Fastigata'	Chilean Willow, etc	Generically excluded	Occasional	None
Salix fragilis	Crack Willow	Generically excluded	Common	Common
Salix × *rubens*	Hybrid Crack Willow	Generically excluded	Occasional	Occasional
Salix × *sepulcralis*	White Weeping Willow	Generically excluded	Occasional	Occasional
Schinus molle	Peppercorn	Generically excluded	Very common	Common

Table 4. **Landscape South Australia Act 2019.** *Tree species listed as Declared Plants in Greater Adelaide under* the Landscape South Australia Act 2019, *indicating their frequency as a tree of any size and as a tree with a trunk circumference (or combined trunk circ.) of ≥2 m at 1 m above ground level in Greater Adelaide. Species are colour-coded according to their frequency as trees with a trunk circ. of ≥2 m.*

Scientific name	**Common name**	**Current status *PDI Act 2016***	**Frequency as tree of any size in Greater Adelaide**	**Frequency as tree with trunk circ. ≥2 m in Greater Adelaide**
Acer negundo	Box Elder	Species listed as exempt under Regulation 3F (4)(b) and also excluded under Regulation 3F (4)(c)	Occasional	Occasional
Casuarina glauca	Swamp Sheoak	Excluded under Regulation 3F (4)(c)	Common	Occasional
Casuarina obesa	Western Swamp Sheoak	Excluded under Regulation 3F (4)(c)	Occasional	Rare
Fraxinus angustifolia	Desert Ash	Species listed as exempt under Regulation 3F (4)(b) and also **partly** excluded under Regulation 3F (4)(c)[3]	Very common	Common
Olea europaea	Olive	**Partly** excluded under Regulation 3F (4)(c)[4]	Very common	Common
Pinus halepensis	Aleppo Pine	**Partly** excluded under Regulation 3F (4)(c)[5]	Very common	Common
Pittosporum undulatum	Sweet Pittosporum	Excluded under Regulation 3F (4)(c)	Common	Occasional
Salix chilensis 'Fastigata'	Chilean Willow	Species listed as exempt under Regulation 3F (4)(b) and also excluded under Regulation 3F (4)(c)	Occasional	None
Salix fragilis	Crack Willow	Species listed as exempt under Regulation 3F (4)(b) and also excluded under Regulation 3F (4)(c)	Common	Common, but restricted to watercourses
Salix x *rubens*	Hybrid Crack Willow	Species listed as exempt under Regulation 3F (4)(b) and also excluded under Regulation 3F (4)(c)	Occasional	Occasional, but restricted to watercourses
Tamarix aphylla	Athel Tree	Excluded under Regulation 3F (4)(c)	Common	Occasional

[3] *Excluding the cultivar 'Raywood' (Claret Ash).*

[4] *Only a Declared Plant when 'not planted, used and maintained for domestic, public amenity or commercial purposes' (*Landscape South Australia Act 2019*).*

[5] *Only a Declared Plant when 'not planted and maintained for amenity or commercial purposes' (*Landscape South Australia Act 2019*).*

2.3.2 *Assessment of species*

The 202 tree species were scored using the five weighted Value Assessment (VA) criteria and the seven weighted Risk/Cost Assessment (RCA) criteria, which includes the two additional RCA criteria of Climate Suitability and Longevity. The data for all 202 assessed trees is provided in *Appendix 2 Species Data*.

The summed score for each species ranged from 75 for the 'highest value' species (*Eucalyptus microcarpa* - Grey Box) down to 2 for the 'lowest value' species (*Pinus radiata* – Radiata/Monterey Pine).

Table 5 lists the 25 top-ranked species and Table 6 lists the 25 bottom-ranked species for trees that are 'Very common', 'Common', or 'Occasional' as trees with a trunk circumference (or combined trunk circ.) of ≥2 m at 1 m above ground level in Greater Adelaide (i.e. excluding trees that are 'Rare' or 'Very rare' with a trunk circ. of ≥2 m).

Table 5. Top-scoring species. *The 25 species most worthy of protection that are very common, common, or occasional as trees with a trunk circumference (or combined trunk circ.) of ≥2 m at 1 m above ground level (i.e. excluding species that are rare and very rare as trees with a trunk circ. of ≥2 m) in Greater Adelaide. Species currently listed as generically exempt from the definition of 'regulated tree' and 'significant tree' under regulation 3F (4)(b) of the* PDI Act 2016 *are highlighted orange.*

Rank	Scientific name	Common name	Frequency as tree ≥2 m circ.	Score
1	*Eucalyptus microcarpa*	Grey Box	Common	**75**
2	*Eucalyptus camaldulensis*	River Red Gum	Very common	**73**
3	*Eucalyptus leucoxylon*	SA Blue Gum	Very common	**68**
4	*Eucalyptus porosa*	Mallee Box	Occasional	**65**
=5	*Eucalyptus obliqua*	Messmate Stringybark	Common	**60**
=5	*Acacia salicina*	Willow Wattle	Occasional	**58**
=7	*Eucalyptus salmonophloia*	Salmon Gum	Occasional	**58**
=7	*Corymbia citriodora*	Lemon-Scented Gum	Common	**56**
=7	*Corymbia maculata*	Spotted Gum	Common	**56**
=10	*Angophora costata*	Sydney Red Gum	Occasional	**55**
=10	*Araucaria heterophylla*	Norfolk Island Pine	Common	**55**
=10	*Eucalyptus sideroxylon*	Mugga, Red Ironbark	Common	**55**
=10	*Syzygium australe*	Lilly Pilly	Occasional	**55**
=14	*Corymbia variegata*	Northern Spotted Gum	Common	**54**
=14	*Lophostemon confertus*	Queensland Box	Occasional	**54**
=14	*Schinus molle*	Peppercorn	Common	**54**
17	*Eucalyptus cinerea*	Argyle Apple	Occasional	**53**
18	*Eucalyptus melliodora*	Yellow Box	Occasional	**52**
=19	*Eucalyptus petiolaris*	Eyre Peninsula Blue Gum	Occasional	**51**
=19	*Quercus robur*	European Oak	Occasional	**51**
21	*Ficus rubiginosa*	Rusty Fig	Occasional	**50**
=22	*Cinnamomum camphora*	Camphor Laurel	Occasional	**49**
=22	*Ficus microcarpa*	Hill's Weeping Fig	Occasional	**49**
24	*Pinus canariensis*	Canary Island Pine	Occasional	**48**
=25	*Cedrus deodara*	Deodar Cedar	Occasional	**47**
=25	*Eucalyptus cladocalyx*	Sugar Gum	Very common	**47**

Table 6. Bottom-scoring species. *The 25 bottom-scoring species that are very common, common, or occasional as trees with a trunk circumference (or combined trunk circ.) of ≥2 m at 1 m above ground level (i.e. excluding species that are rare and very rare as trees with a trunk circ. of ≥2 m) in Greater Adelaide. Species currently listed as generically exempt from the definition of 'regulated tree' and 'significant tree' under regulation 3F (4)(b) of the* PDI Act 2016 *are highlighted orange.*

Rank	Scientific name	Common name	Frequency as tree ≥2 m	Score
=45	*Agonis flexuosa*	Willow Myrtle	Common	**37**
=45	*Eucalyptus bicostata*	Southern Blue Gum	Occasional	**37**
47	*Olea europaea* (*in part)	Olive	Common	**35**
=48	*Casuarina glauca* *	Swamp Sheoak	Occasional	**34**
=48	*Tamarix aphylla* *	Athel Tree	Occasional	**34**
50	*Eucalyptus scoparia*	Wallangarra White Gum	Occasional	**33**
51	*Fraxinus angustifolia* 'Raywood'	Claret Ash	Occasional	**31**
=52	*Acer negundo* *	Box Elder	Occasional	**30**
=52	*Eucalyptus grandis*	Flooded Gum	Common	**30**
=52	*Eucalyptus saligna*	Sydney Blue Gum	Common	**30**
55	*Liquidambar styraciflua*	American Sweetgum	Occasional	**29**
=56	*Fraxinus angustifolia* *	Desert Ash	Common	**27**
=56	*Populus nigra* 'Italica'	Lombardy Poplar	Occasional	**27**
=56	*Salix babylonica*	Weeping Willow	Occasional	**27**
59	*Pittosporum undulatum* *	Sweet Pittosporum	Occasional	**25**
=60	*Cupressus macrocarpa*	Monterey Cypress	Very common	**22**
=60	*Pinus halepensis* (*in part)	Aleppo Pine	Common	**22**
=62	*Populus deltoides*	American cottonwood	Occasional	**21**
=62	*Ulmus minor*	English Elm	Occasional	**21**
64	*Phoenix canariensis*	Canary Island Date Palm	Very common	**20**
65	*Ulmus* × *hollandica*	Dutch Elm	Occasional	**19**
=66	*Salix fragilis* *	Crack Willow	Common	**16**
=66	*Salix* × *rubens* *	Hybrid Crack Willow	Occasional	**16**
=66	*Salix* × *sepulcralis*	White Weeping Willow	Occasional	**16**
69	*Eucalyptus globulus*	Tasmanian Blue Gum	Very common	**7**
70	*Pinus radiata*	Radiata/Monterey Pine	Common	**2**

* Listed as a Declared Plant in the Greater Adelaide area in the *Landscape South Australia Act 2019*.

2.4 Recommendations

Species recommended to be excluded (exempt) from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016* are divided into the following two categories:

- **Generically excluded species/species-groups**. Species and species-groups that are excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016*, regardless of their proximity to structures, excepting individually identified significant trees listed in Part 10 of the *Planning and Design Code* (PlanSA 2022), regardless of whether the species/species-group is listed as generically excluded in the *PDI Act 2016*.

  This *category* (but not necessarily the species/species-groups recommended within this category) more-or-less equates to the combination of Regulation 3F (4)(b) (the generically exempt species list), Regulation 3F (4)(c) (Declared Plants under the *Landscape South Australia Act 2019*), and Schedule 4 clause 18(a) (species exempt from tree-damaging activity) in the *PDI Act 2016.*

- **Excluded species/species-groups when <10 m from a dwelling or pool**. Species and species-groups that are excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016* only when they are located <10 m from a residential dwelling or permanent in-ground swimming pool (as measured from the base of the trunk of the tree to the closest part of the structural footings of the dwelling or pool, excepting individually identified significant trees listed in Part 10 of the *Planning and Design Code* (PlanSA 2022), regardless of whether the species/species-group is listed as generically excluded in the *PDI Act 2016.*

  This category mirrors the existing Regulation 3F (4)(a) in the *PDI Act 2016*, where a list of species is provided that are *not* excluded when <10 m from a dwelling or pool (currently only *Agonis flexuosa* and all *Eucalyptus* species are listed here). Because Regulation 3F (4)(a) in the *PDI Act 2016* only lists *Agonis flexuosa* and *Eucalyptus*, many high value trees are excluded from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016* when <10 metres from a residential dwelling or swimming pool. The wording of Regulation 3F (4)(a) in the *PDI Act 2016* is also far from ideal and may result in confusion, due to the listed species (*Agonis flexuosa* and *Eucalyptus*) being '*exceptions to an exclusion*'.

  This wording can be avoided, and the number of qualifying trees that are protected under the *PDI Act 2016* greatly expanded, by instead having an exclusion list of species (that is, a list of excluded species when located <10 m from a dwelling or pool). This also makes redundant the question of whether the genus *Eucalyptus* as referred to in Regulation 3F(4)(a) should be extended to also include the genera *Corymbia* and *Angophora* (also see *Section 3 Should Regulation 3F(4)(a) be extended to include genera* Corymbia *and* Angophora*?).*

2.4.1 *Currently generically excluded species under regulation 3F (4)(b)*

Table 7 provides the recommended excluded status of species that are currently generically excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016* under regulation 3F (4)(b).

Table 7. Recommendations for currently excluded species. *Currently excluded species in the* PDI Act 2016 *under regulation 3F (4)(b), indicating their recommended excluded status from the definition of 'regulated tree' and 'significant tree' under the* PDI Act 2016*, and a summary of the reasoning for this recommendation. Refer to Section 5 Species Profiles for full details.*

Scientific name	Common name	Recommended status	Summary reasoning
Acer negundo	Box Elder	Generically excluded	- Declared Plant (*LSA Act 2019*) - Low Value Assessment scores - Low climate suitability - Short longevity
Acer saccharinum	Silver Maple	**Not excluded**	- Not known as tree with trunk circ. ≥2 m in Greater Adelaide
Ailanthus altissima	Tree Of Heaven	Generically excluded	- Non-Australian species - Low Value Assessment scores - Invasive species in Greater Adelaide - Short longevity
Alnus acuminata **subsp.** ***glabrata***	Evergreen Alder	**Not excluded**	- Not known as tree with trunk circ. ≥2 m in Greater Adelaide
Celtis australis	European Hackberry	**Not excluded**	- Moderate Value and Risk/Cost Assessment scores - Very low Failure Potential - Non-invasive species in Greater Adelaide
Celtis sinuensis	Chinese Hackberry	**Not excluded**	
Cinnamomum camphora	Camphor Laurel	**Not excluded**	- Moderate Value and Risk/Cost Assessment scores - Very low Failure Potential - Non-invasive species in Greater Adelaide
Cupressus macrocarpa	Monterey Cypress	Generically excluded	- Invasive species in Greater Adelaide - High fire potential - Many trees with trunk circ. ≥2m originating from overgrown hedges and weed trees in Greater Adelaide - Can contribute high pollen/allergen load
Ficus **species** (except *F. macrophylla*)	figs	**Not excluded *except* where <10 m from dwelling**	- High Value Assessment scores - Extensive surface roots
Ficus macrophylla (currently only exempt when >15 m from a dwelling)	Moreton Bay Fig	**Not excluded *except* where <10 m from dwelling**	- Very high Value Assessment scores - Extensive surface roots
Fraxinus angustifolia (includes *F. angustifolia* subsp. *oxycarpa* and *F. angustifolia* 'Raywood')	Desert Ash / Narrow-leaved Ash / Claret Ash	**Generically excluded *except* for the grafted cultivar 'Raywood' (Claret Ash)**	- Highly invasive species in Greater Adelaide, especially along watercourses - Declared Plant (*LSA Act 2019*, excluding the cultivar 'Raywood')
Fraxinus angustifolia **'Raywood'** (listed as *F. angustifolia*)	Claret Ash	**Not excluded**	- Cultivar not known to be invasive in Greater Adelaide

Scientific name	Common name	Recommended status	Summary reasoning
Lagunaria patersonia (currently only exempt from tree-damaging activity under Schedule 4 clause 18)	Norfolk Island Hibiscus	**Generically excluded**	- Produces very numerous hairy seeds which are a skin irritant
Melaleuca styphelioides (currently only exempt from tree-damaging activity under Schedule 4 clause 18)	Prickly-leaved Paperbark	**Not excluded**	- Moderate Value Assessment scores - Non-invasive species in Greater Adelaide
Pinus radiata	Radiata/Monterey Pine	Generically excluded	- Invasive species in Greater Adelaide, especially in hills region - Low Risk/Cost scores - High fire potential - Can contribute high pollen/allergen load
Platanus* x *acerifolia	London Plane	**Not excluded**	- High Value Assessment scores - Very low Failure Potential - Non-invasive species in Greater Adelaide
Populus alba	White Poplar	Generically excluded	- Negligible biodiversity & conservation benefit - High infrastructure damage potential due to surface roots - Low climate suitability
***Populus nigra* 'Italica'**	Lombardy Poplar	Generically excluded	
Robinia pseudoacacia	Black Locust	Generically excluded	- Invasive species in Greater Adelaide - Low climate suitability
Salix babylonica	Weeping Willow	Generically excluded	- Negligible biodiversity & conservation benefit - High infrastructure damage potential due to surface roots - Low climate suitability
***Salix chilensis* 'Fastigiata'**	Chilean Pencil Willow	Generically excluded	- Not known as tree with trunk circ. ≥2 m in Greater Adelaide
Salix fragilis	Crack Willow	Generically excluded	- Highly invasive species in Greater Adelaide, especially along watercourses - High infrastructure damage potential due to surface roots - Low climate suitability
Salix* × *rubens	Hybrid Crack Willow	Generically excluded	
Salix* × *sepulcralis* var. *chrysocoma	Golden Weeping Willow	Generically excluded	
Schinus molle (listed as the synonym *S. areira*)	Peppercorn	**Not excluded**	- Moderate Value Assessment scores - Very low Failure Potential - Non-invasive species in Greater Adelaide

2.4.2 *Other species recommended as generically excluded species*

Table 8 provides a list of species recommended to be generically excluded that are not currently generically excluded from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016* under regulation 3F (4)(b).

Table 8. Recommendations for species currently not generically excluded. *Species currently not generically excluded from the definition of 'regulated tree' and 'significant tree' in the* PDI Act 2016 *under regulation 3F (4)(b), but recommended for exclusion, including a summary of the reasoning for the recommendations. Refer to Section 5 Species Profiles for full details.*

Scientific name	Common name	Recommended status	Summary reasoning
Eucalyptus globulus	Tasmanian Blue Gum	**Generically excluded**	- Non-indigenous species - Minor invasive species in Greater Adelaide, especially in hills region - Very common species & very fast-growing (reaching trunk circ. ≥2 m in <20 years) - High failure potential - High fire potential - Very low climate suitability - Short longevity - Ranked 199th of 202 tree species assessed, and 69th of 70 very common, common, or occasional tree species assessed, using Value Assessment and Risk/Cost Assessment scores
Eucalyptus grandis	Flooded Gum	**Generically excluded** (pending species identification concerns)	- Non-indigenous species - Common species & very fast-growing (reaching trunk circ. ≥2 m in <20 years) - Moderate failure potential - Moderate fire potential - Very low climate suitability - Ranked =164th of 202 tree species assessed using Value Assessment and Risk/Cost Assessment scores
Eucalyptus saligna	Sydney Blue Gum	**Generically excluded** (pending species identification concerns)	- Non-indigenous species - Common species & very fast-growing (reaching trunk circ. ≥2 m in <20 years) - Moderate failure potential - Moderate fire potential - Very low climate suitability - Ranked 164th of 202 tree species assessed using Value Assessment and Risk/Cost Assessment scores
Melaleuca armillaris	Bracelet Honey-myrtle	**Generically excluded** (pending species identification concerns)	- All trees with trunk circ. ≥2 m in Greater Adelaide are multi-trunked - Minor invasive species in Greater Adelaide, especially in hills region - Moderate failure potential - High fire potential - Moderate maintenance costs - Short longevity
Olea europaea	Olive	**Generically excluded** (excepting non-fruiting cultivars and individuals)	- Highly invasive species in Greater Adelaide - Listed Declared Plant (under certain circumstances) in Greater Adelaide in the *LSA Act 2019*

Scientific name	Common name	Recommended status	Summary reasoning
Phoenix canariensis	Canary Island Date Palm	**Generically excluded**	- Low Value Assessment scores - Invasive species in Greater Adelaide - High maintenance costs due to falling large leaves - All trees have trunk circ. of ≥2 m from very young age - Ability to translocate trees of any size and age
Pinus halepensis	Aleppo Pine	**Generically excluded**	- Highly invasive species in Greater Adelaide - High fire potential - Listed Declared Plant (under certain circumstances) in Greater Adelaide in the *LSA Act 2019* - Can contribute high pollen/allergen load
Pittosporum undulatum	Sweet Pittosporum	**Generically excluded**	- Major invasive species in Greater Adelaide, especially in hills region - Short longevity - Listed Declared Plant in Greater Adelaide in the *LSA Act 2019*
***Populus* species** (all species)	poplars	**Generically excluded**	- Non-indigenous species - Negligible biodiversity & conservation benefit - High infrastructure damage potential due to surface roots - Extensive root suckering[6] - Low climate suitability
***Prunus* species** (all species)	stone fruits	**Generically excluded**	- Commonly planted urban tree - All qualifying trees are those that are structurally and aesthetically the poorest (being multi-trunked) - Minor invasive species in Greater Adelaide, especially in hills region - Low Value Assessment scores - Short longevity
***Pyrus* species** (all species)	pears	**Generically excluded**	- Very commonly planted urban tree - All qualifying trees are those that are structurally and aesthetically the poorest (being multi-trunked) - Low Value Assessment scores - Short to moderate longevity
***Salix* species** (all species)	willows	**Generically excluded**	- Non-indigenous species - Negligible biodiversity & conservation benefit - High infrastructure damage potential due to surface roots - Low climate suitability - Most species are Listed Declared Plants in Greater Adelaide in the *LSA Act 2019*
Tamarix aphylla	Athel Tree	**Generically excluded**	- Invasive species in Greater Adelaide - Listed Declared Plant in Greater Adelaide in the *LSA Act 2019*
Ulmus minor ***Ulmus* × *hollandica***	English Elm Dutch Elm	**Generically excluded** (pending species identification concerns)	- Invasive species in Greater Adelaide, especially in hills region - Extensive root suckering - Negligible biodiversity & conservation benefit - Low climate suitability

[6] *A 'sucker' is vegetative shoot originating from adventitious buds from the base or roots of a plant.*

2.4.3 *Species currently not excluded even when <10 m from a dwelling / pool*

Table 9 provides the recommended excluded status of species that are currently not generically excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016* when <10 m from a dwelling or pool, under Regulation 3F (4)(a).

It is recommended that Regulation 3F (4)(a) be abolished, and replaced with a list of species to be excluded from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016* when located <10 m from a dwelling or pool (see *Section 2.4.4 Species recommended as excluded when <10 m from a dwelling / pool*).

Abolition of Regulation 3F (4)(a) and implementation of a list of species to be excluded from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016* when located <10 m from a dwelling or pool (see *Section 2.4.4*) would result in no change to the exempt status two taxa (*Agonis flexuosa* and *Eucalyptus* species) currently listed under Regulation 3F (4)(a). However, it would include all species (except a few species-groups recommended for exclusion, see *Section 2.4.4*) and therefore significantly increase the number of qualifying trees that are protected under the *PDI Act 2016*.

Table 9. Recommendations - Species currently not excluded even when <10 m from a dwelling / pool. *Species currently not excluded from the definition of 'regulated tree' and 'significant tree' in the* PDI Act 2016 *under Regulation 3F (4)(a), indicating their recommended excluded status regarding the definition of 'regulated tree' and 'significant tree' in the* PDI Act 2016, *and a summary of the reasoning for this recommendation. Refer to Section 5 Species Profiles for full details.*

Scientific name	Common name	Recommended status	Summary reasoning
Agonis flexuosa	Willow Myrtle	**Not excluded, *even when* <10 m from a dwelling or pool** (no change)	- This is the status quo for this species under the current regulations - However, this species is no more worthy of being excluded when <10 m from a dwelling or pool than other tree species except those recommended to be generically excluded and those recommended to be excluded only when <10 m from a dwelling or pool.
***Eucalyptus* species** (all species)	gums, etc.	**Not excluded, *even when* <10 m from a dwelling or pool** (no change)	- This is the status quo for this species under the current regulations - However, the genus (*Eucalyptus*) is no more worthy of being excluded when <10 m from a dwelling or pool than many other tree species except those recommended to be generically excluded and those recommended to be excluded only when <10 m from a dwelling or pool.

2.4.4 *Species recommended for exclusion when <10 m from a dwelling / pool*

Table 10 provides a list of species recommended for exclusion from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016* when located <10 m from a residential dwelling or swimming pool. Note that apart from species listed in Table 9 (*Agonis flexuosa* and *Eucalyptus* species), all other species are *currently* excluded from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016* when <10 m from a dwelling / pool, under Regulation 3F (4)(a).

Rather than list species that are *not* excluded when <10 m from a dwelling or pool (currently only *Agonis flexuosa* and all *Eucalyptus* species), Table 10 lists species that would be excluded from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016* when located <10 m from a dwelling or pool (i.e. all other species, except those listed in Table 10 here and those that are listed as generically exempt, would not be excluded from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016* when <10 m from a dwelling or pool).

Table 10. Recommendations - Species recommended for exclusion when <10 m from a dwelling / pool. *Species recommended for exclusion from the definition of 'regulated tree' and 'significant tree' under the* PDI Act 2016 *when <10 m from a dwelling or pool, and a summary of the reasoning for this recommendation. Refer to Section 5 Species Profiles for full details.*

Scientific name	Common name	Recommended status	Summary reasoning
***Casuarina* species** (all species, and excluding genus *Allocasuarina*)	Non-locally indigenous sheoaks	**Not excluded *except* when <10 m from a dwelling or pool** (pending genus identification concerns)	- Non-indigenous Australian-native species - Moderate to high Value Assessment scores - Long Longevity - High infrastructure damage potential due to surface roots and suckering potential of some species
***Cupressus* species** (all species except the generically exempt *C. macrocarpa*)	cypresses	**Not excluded *except* when <10 m from a dwelling or pool**	- Non-indigenous but non-invasive species - Moderate Value Assessment scores - Moderate to very long Longevity - Moderate to high fire potential - Can contribute high pollen/allergen load
***Ficus* species** (all species)	figs	**Not excluded *except* when <10 m from a dwelling or pool**	- Non-indigenous but non-invasive species - High to very high Value Assessment scores - Moderate to long Longevity - High to very high infrastructure damage potential due to large tree size and surface roots

2.4.5 *Trunk size triggers*

The current regulations in the *PDI Act 2016* define a 'regulated tree' as having '*a trunk circumference of 2 m or more, or in the case of trees that have multiple trunks, that have trunks with a total circumference of 2 m or more* [presumably the sum of all trunk circumferences] *and an average circumference of 625 mm or more, measured at a point 1 m above natural ground level*'.

This formula results in very small-diameter trunks being included in the calculation of the total (summed) trunk circumference (providing larger trunks increase the average circumference to be 625+ mm). It also means that a multi-trunked tree/shrub with four trunks, each 625 mm in circumference (i.e. each less than 20 cm in diameter) will qualify as a regulated 'tree', having a total trunk circumference of 2.5 m. Even more problematically, the same tree/shrub with *five* trunks, each 625 mm in circumference, would qualify as a *significant* 'tree', having a total trunk circumference of 3.125 m.

The distinction between a tree and a shrub is not clear. Biologically, there is no physiological difference between a tree and a shrub. The general definition of a shrub is: '*a woody plant which is smaller than a tree and has several main stems arising at or near the ground*'. This is not useful in the sense of defining regulated and significant trees under the *PDI Act 2016.* At what trunk/stem diameter (or canopy size) does a shrub become a multi-trunked tree?

The formula used to calculate the total trunk circumference in multi-trunked 'trees', results in many large or overgrown shrubs, and many multi-trunked trees of poor form, qualifying as regulated and/or significant trees under the provisions of the *PDI Act 2016.* Such species commonly qualifying because of this formula include:

- *Callistemon* species (bottlebrushes)
- *Melaleuca* species (honey-myrtles), including *M. armillaris;* see Section 5 - Species Profiles
- *Prunus* species (stone fruits) – see Section 5 - Species Profiles
- *Pyrus* species (pears) – see Section 5 - Species Profiles

Melaleuca armillaris, *Prunus* species, and *Pyrus* species are here recommended for exclusion from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* because they almost universally qualify as multi-trunked trees of poor form or as large or overgrown shrubs. Individuals of many other species also occasionally qualify on the same grounds.

These species and genera need not be excluded if the definition of a regulated and significant tree for multi-trunked trees (and shrubs) is modified. I recommended that for multi-trunked individuals, only trunks that are ≥1 m in circumference be included in the total trunk circumference, with no average trunk circumference required (the average would always be ≥1000 mm, because only trunks ≥1 m in circumference would be included in the total trunk circumference).

2.4.6 *Consistency with the* Landscape South Australia Act 2019

There is currently inconsistency between the species listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* under Regulation 3F (4)(b), and species of trees listed as Declared Plants in the *Landscape South Australia Act 2019*, which are excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* under Regulation 3F (4)(c).

Some of the species currently listed as generically excluded under Regulation 3F (4)(b) are also excluded under Regulation 3F (4)(c) by being Declared Plants (e.g. *Acer negundo*, some *Salix* species, see Table 4). Other species not listed as generically excluded under Regulation 3F (4)(b) are nevertheless excluded under Regulation 3F (4)(c) by being Declared Plants (e.g. *Casuarina glauca*, *C. obesa*, *Pittosporum undulatum*, some *Salix* species, *Tamarix aphylla*, see Table 4). Some species not listed as generically excluded under Regulation 3F (4)(b) are excluded under Regulation 3F (4)(c) on the basis of them being Declared Plants *under certain circumstances* (*Pinus halepensis* and *Olea europaea*, see Table 4). Lastly, *Fraxinus angustifolia* is listed as generically excluded (including all infraspecific taxa) under Regulation 3F (4)(b), while the *Landscape South Australia Act 2019* lists the species as being a Declared Plant *except* for the cultivar 'Raywood'.

The inconsistently between the species listed as generically excluded under Regulation 3F (4)(b) and species of Declared Plants that are excluded under Regulation 3F (4)(c) makes determining which species are excluded from the regulated tree provisions somewhat cumbersome and potentially confusing. Two alternative solutions are possible to rectify this inconsistently:

1. Recommended option: All tree species of Declared Plants in the *Landscape South Australia Act 2019* also be listed as generically excluded species in the *PDI Act 2016*. Regulation 3F (4)(c) of the *PDI Act 2016* could then be removed from the regulations, as it would become redundant. This option will result in a longer list of generically excluded species under Regulation 3F (4)(b) of the *PDI Act 2016*, but would mean that all generically excluded species are listed together in the *PDI Act 2016*, without the need to cross-reference the *Landscape South Australia Act 2019*.
2. Alternative option: No species of Declared Plants in the *Landscape South Australia Act 2019* be listed as generically excluded species in the *PDI Act 2016*, and Regulation 3F (4)(c) of the *PDI Act 2016* is retained (effectively excluding all Declared Plant species). While this option would result in a much shorter list of generically excluded species under Regulation 3F (4)(b) of the *PDI Act 2016*, it is less user-friendly, as it would require anyone enquiring about which species are exempt to consider both Regulation 3F (4)(b) of the *PDI Act 2016* and the numerous classes of Declared Plants in the *Landscape South Australia Act 2019*.

2.4.7 *Species identification concerns*

It is recommended that the identification concerns regarding certain species that are recommended for exclusion be further investigated. Such an investigation is beyond the scope of this report.

Potential mechanisms to address species identification concerns could include a clause in the Regulations requiring for the professional identification of a tree prior to approval of its removal/damage/pruning. Professional identification could be undertaken by agreement with the Botanical Gardens and State Herbarium of South Australia (likely requiring some additional resources by this organisation to undertake the identifications), or by an appropriately qualified and/or experienced consultant (e.g. a botanist) at a financial cost to either the applicant or the approving body.

3.0 SHOULD REGULATION 3F(4)(a) BE EXTENDED TO INCLUDE GENERA *CORYMBIA* AND *ANGOPHORA*?

Provide an opinion on whether the genus Eucalyptus *as referred to in Regulation 3F(4)(a) should be extended to also include trees within the genera* Corymbia *and* Angophora.

3.1 Background

3.1.1 *Recommendation to include all species*

Whether the genus *Eucalyptus* as referred to in Regulation 3F(4)(a) should be extended to also include the genera *Corymbia* and *Angophora* becomes a moot point if the recommendation made here, in relation to excluded species when <10 m from a dwelling or pool, is adopted. This recommendation essentially states that:

All species (and therefore all genera) be <u>included</u> in the definition of 'regulated tree' and 'significant tree' under the PDI Act 2016, even when <10 metres from a residential dwelling or swimming pool, excluding generically excluded species (listed in Section 4.1*) and excluded species when <10 m from a dwelling or pool (listed in* Section 4.2*).*

Adoption of this recommendation would not only significantly extend the list of species included in the definition of 'regulated tree' and 'significant tree' under the PDI Act 2016 when <10 metres from a residential dwelling or swimming pool, it would automatically include all species from the genera *Angophora* and *Corymbia* (because no species from these two genera are recommended to be generically excluded species or excluded species when <10 m from a dwelling or pool).

3.1.2 *Alternative recommendation*

Alternatively, if the recommendation to include all species (excepting excluded species) in the definition of 'regulated tree' and 'significant tree' under the PDI Act 2016 even when <10 metres from a residential dwelling or swimming pool is not adopted, then the question of whether the genus *Eucalyptus* as referred to in Regulation 3F(4)(a) should be extended to also include the genera *Corymbia* and *Angophora* requires consideration. It also brings into question whether the other excluded taxon, *Agonis flexuosa* (Willow Myrtle), should remain included in this exemption.

3.2 The eucalypts

The word 'eucalypt' is a common name applied to any member of the genera *Angophora*, *Corymbia*, and *Eucalyptus*, as well as collectively for this group of three genera ('the eucalypts').

Angophora (10 species), *Corymbia* (97 species), and *Eucalyptus* (740 species), together with four small genera with a tropical distribution (*Allosyncarpia* – 1 species, *Arillastrum* – 1 species, *Eucalyptopsis* – 2 species, and *Stockwellia* – 1 species) comprise a natural group of plants known as tribe Eucalypteae[7]. A 'tribe' is a formal taxonomic rank, above that of genus, but below that of family (in this case, Myrtaceae).

Although the use of the common name 'eucalypt' has mainly been restricted to that of *Angophora*, *Corymbia*, and *Eucalyptus* only, it has also been used in a slightly broader sense, to include all members of tribe Eucalypteae. Because eucalypt is a common name rather than a scientific name, its use is not restricted by scientific interpretation, but rather by common usage.

3.2.1 Angophora *species*

The genus *Angophora* consists of 10 recognised species (Nicolle 2021) which are naturally restricted to the Great Dividing Range and associated plains in Eastern Australia. None of the *Angophora* species are known to occur naturally in South Australia (Nicolle 2013).

Since its naming in 1797, *Angophora* has always been regarded as a separate genus to *Eucalyptus*. Numerous genetic studies over the last 30 years indicate that *Angophora* is most closely related to *Corymbia* (named in 1995), and together *Angophora* and *Corymbia* are more distantly related to *Eucalyptus*. Despite this relationship, *Angophora* can be relatively easily distinguished from both *Corymbia* and *Eucalyptus* when in flower, with Angophora flowers having distinct petals and lacking the opercula (bud caps) present in the flowers of *Corymbia* and *Eucalyptus.* Nonetheless, species of *Angophora* possess many of the other characteristics of *Eucalyptus* and particularly *Corymbia*, and are not easily distinguished by an untrained observer.

Two *Angophora* species are commonly planted in Greater Adelaide and in other regional centres in the State, viz: *A. costata* (Sydney Red Gum) and *A. floribunda* (Rough-barked Apple). Several other species are rarely planted in South Australia, but also have the capability to reach a trunk circumference (or combined trunk circumference) of ≥2 metres at one metre above ground level.

3.2.2 Corymbia *species*

The genus *Corymbia* consists of 97 recognised species (Nicolle 2021) which occur naturally in Australia and some of the islands to the north, most notably New Guinea. The genus is predominantly a group of tropical and subtropical trees, with only a small proportion of species extending into the southern half of the Australian continent (Hill & Johnson 1995).

[7] *In botanical nomenclature, scientific names at and below the taxonomic rank of genus are written in italics, while scientific names above genus rank are not italicised.*

Prior to 1995, all *Corymbia* species were included in a broader concept of *Eucalyptus*. The genus *Corymbia* was named in 1995 to accommodate an evolutionary divergent lineage of eucalypts that is genetically more closely related to (and more morphologically similar to) genus *Angophora* than it is to the remainder of *Eucalyptus* (Hill & Johnson 1995).

Despite its genetic and evolutionary distinction from *Eucalyptus*, *Corymbia* is not easily distinguished from *Eucalyptus* on morphological grounds. Distinguishing characteristics of *Corymbia* include much-branched, terminal inflorescences (condensed inflorescences in *Eucalyptus*), bristle-glands often present (absent in *Eucalyptus*), and oil ducts often present (absent in *Eucalyptus*). The genus *Corymbia* was initially not accepted as a distinct genus by some eucalypt taxonomists, however with subsequent further studies and research (e.g. Steane *et al.* 2002, Para-O *et al.* 2006, Bayly *et al.* 2013, Thornhill *et al.* 2019), the genus is now almost universally accepted.

Three *Corymbia* species are indigenous to South Australia, but all of them are indigenous to the far north of the state, and do not occur naturally in any regional centres outside of indigenous lands (Nicolle 2013). These three South Australian indigenous species, *C. eremaea* (Range Bloodwood), *C. opaca* (Desert Bloodwood), and *C. terminalis* (Plains Bloodwood) are not commonly planted outside of their natural distribution in South Australia.

A number of *Corymbia* species that are not indigenous to South Australia are commonly planted in Greater Adelaide and in other regional centres in the State. The most common planted *Corymbia* species are *C. calophylla* (Marri), *C. citriodora* (Lemon-scented Gum), *C. eximia* (Yellow Bloodwood), *C. ficifolia* (Western Australian Red-flowering Gum), *C. maculata* (Spotted Gum), and *C. variegata* (Northern Spotted Gum), see Nicolle (2016a, 2016b).

3.3 Summary

3.3.1 *Recommendation to include all species*

It is recommended that all species (and therefore all genera) be <u>included</u> in the definition of ‘regulated tree’ and ‘significant tree’ under the *PDI Act 2016*, even when <10 metres from a residential dwelling or swimming pool, excluding generically excluded species (listed in *Section 4.1*) and excluded species when <10 m from a dwelling or pool (listed in *Section 4.2*). This makes redundant the question of whether the genus *Eucalyptus* as referred to in Regulation 3F(4)(a) should be extended to also include the genera *Corymbia* and *Angophora*.

3.3.2 *Alternative recommendation*

In the case that the alternative and non-preferred recommendation is adopted, that all species be excluded from the definition of ‘regulated tree’ and ‘significant tree’ under the *PDI Act 2016* when <10 metres from a residential dwelling or swimming pool, excepting for *Agonis flexuosa* and *Eucalyptus* species (i.e. the current regulations), then the following is recommended:

- *Eucalyptus* (all species) be maintained as an exception to the exclusion from the definition of ‘regulated tree’ and ‘significant tree’ under the *PDI Act 2016* when <10 metres from a residential dwelling or swimming pool.
- *Angophora* (all species) and *Corymbia* (all species) be added as exceptions to the exclusion from the definition of ‘regulated tree’ and ‘significant tree’ under the *PDI Act 2016* when <10 metres from a residential dwelling or swimming pool.
- *Agonis flexuosa* (Willow Myrtle) be removed from the exception to the exclusion from the definition of ‘regulated tree’ and ‘significant tree’ under the *PDI Act 2016* when <10 metres from a residential dwelling or swimming pool.

This alternative recommendation is non-preferred on the basis of:

- Many high value trees would be excluded from the definition of ‘regulated tree’ and ‘significant tree’ under the *PDI Act 2016* when <10 metres from a residential dwelling or swimming pool; and
- The wording of this alternative recommendation (a modification of the status quo) is complex and confusing, due to having ‘*exceptions to an exclusion*’. This wording can be avoided by only having exclusion lists of species (a list of generically excluded species and a list of excluded species when <10 m from a dwelling or pool).

4.0 SUMMARY RECOMMENDATIONS

4.1 Recommended generically excluded species

The following species are recommended to be listed as generically excluded species from the definition of 'regulated tree' and 'significant tree' under the *PDI Act (2016*):

- ***Acer negundo*** **(Box Elder)**[8], including all cultivars.
- ***Ailanthus altissima*** **(Tree Of Heaven)**
- ***Cupressus macrocarpa*** **(Monterey Cypress)**, including all cultivars.
- ***Eucalyptus globulus*** **(Tasmanian Blue Gum)**. Synonym *E. globulus* subsp. *globulus*. Notably excludes *E. bicostata* (syn. *E. globulus* subsp. *bicostata*), *E. maidenii* (syn. *E. globulus* subsp. *maidenii*), and *E. pseudoglobulus* (syn. *E. globulus* subsp. *pseudoglobulus*).
- ***Eucalyptus grandis*** **(Flooded Gum)**[9]
- ***Eucalyptus saligna*** **(Sydney Blue Gum)**[9]
- ***Fraxinus angustifolia***, including all subspecies, varieties, and cultivars, but excepting the grafted cultivar 'Raywood'.
- ***Lagunaria patersonia*** **(Norfolk Island Hibiscus)**
- ***Melaleuca armillaris*** **(Bracelet Honey-myrtle)**[9]
- ***Olea europaea*** **(Olive)**, excepting all fruitless cultivars and individuals.
- ***Phoenix canariensis*** **(Canary Island Date Palm)**
- ***Pinus halepensis*** **(Aleppo Pine)**
- ***Pinus radiata*** **(Monterey/Radiata Pine)**
- ***Pittosporum undulatum*** **(Sweet Pittosporum)**[8]
- ***Populus*** **species (poplars)**, including all species, subspecies, varieties, and cultivars.
- ***Prunus*** **species (stone fruits)**, including all species, subspecies, varieties, and cultivars.
- ***Pyrus*** **species (pears)**, including all species, subspecies, varieties, and cultivars.
- ***Robinia pseudoacacia*** **(Black Locust)**, including all cultivars.
- ***Salix*** **species (willows)**, including all species, subspecies, varieties, and cultivars.
- ***Tamarix aphylla*** **(Athel Tree)**[8]
- ***Ulmus minor*** **(English Elm)**[9]
- ***Ulmus* × *hollandica*** **(Dutch Elm)**[9]

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[8] *Also currently a Declared Plant listed in the Landscape South Australia Act 2019.*

[9] *Potential for misidentification of closely-related or superficially similar non-excluded species as this species. Its excluded status from the regulations should address this identification concern (see* Section 2.2.8 Identification concerns*).*

4.2 Recommended excluded species when <10 m from a dwelling / pool

The following species are recommended to be listed as excluded species from the definition of 'regulated tree' and 'significant tree' under the *PDI Act (2016*) *only when <10 metres from a residential dwelling or swimming pool*:

- ***Casuarina***[10] **(non-locally indigenous sheoaks)**, including all species, subspecies, varieties, and cultivars. This exclusion does not extend to any species of genus *Allocasuarina* (indigenous sheoaks).
- ***Cupressus* (cypresses)**, including all species, subspecies, varieties, and cultivars.
- ***Ficus* (figs)**, including all species, subspecies, varieties, and cultivars.

[10] *Potential for misidentification of closely-related or superficially similar non-excluded genera (e.g.* Allocasuarina*) as this genus. Its excluded status from the regulations should address this identification concern (see* Section 2.2.8 Identification concerns*).*

5.0 SPECIES PROFILES

Species profiles are here provided for 36 species and groups of species (including some genera). This includes all species and groups of species that are:

- Species *currently* listed as generically exempt from the definition of 'regulated tree' and 'significant tree' under regulation 3F (4)(b) of the *PDI Act 2016.*
- Species *currently* listed not exempt under regulation 3F (4)(a) of the *PDI Act 2016* (not exempt even when <10 metres from a dwelling or pool).
- Species *currently* listed as exempt from tree damaging activity under Schedule 4 clause 18 of the Regulations under the *PDI Act 2016*.
- Tree species *currently* listed as Declared Plants in Greater Adelaide under the *Landscape South Australia Act 2019.*
- Species *recommended* for listing as generically exempt from from the definition of 'regulated tree' and 'significant tree' under the *PDI Act 2016.*
- Species *recommended* for listing as exempt from from the definition of 'regulated tree' and 'significant tree' when < 10 metres from a dwelling or pool under the *PDI Act 2016.*

The 36 species and groups of species are numbered 1 to 36 and listed alphabetically (see Table 11). Table 11 provides the list of 36 species and species-groups, and summarises the current and recommended exempt status of each from the definition of 'regulated tree' and 'significant tree' under the regulations of the *PDI Act 2016.*

Table 11. Species Profiles summary. *Species profiles, indicating their current and recommended excluded status from the definition of 'regulated tree' and 'significant tree' under the regulations of the PDI Act 2016. Changes from the current status and the recommended status are indicated in* ***bold type*** *in the Recommended status column.*

Scientific name	**Common name**	**Current status** ***(PDI Act 2016)***	**Recommended status** ***(PDI Act 2016)***
1. *Acer negundo*	Box Elder	Generically excluded. Also excluded as Declared Plant in *LSA Act 2019.*	Generically excluded
2. *Acer saccharinum*	Silver Maple	Generically excluded	**Not excluded**
3. *Agonis flexuosa*	Willow Myrtle	Not excluded	Not excluded
4. *Ailanthus altissima*	Tree Of Heaven	Generically excluded	Generically excluded
5. *Alnus acuminata*	Evergreen Alder	Generically excluded	**Not excluded**
6. *Angophora* species (all)	apple-myrtles	Not excluded *except* when <10 m from a dwelling/pool	**Not excluded**
7. *Casuarina* species (all)	sheoaks (non-indigenous species)	*C. glauca* and *C. obesa* excluded as Declared Plants in *LSA Act 2019.* All other species not excluded *except* when <10 m from a dwelling or pool	Not excluded *except* when <10 m from a dwelling or pool. Reassessment of *C. glauca* and *C. obesa* in *LSA Act 2019*
8. *Celtis* species (all)	hackberries	Two species generically excluded	**Not excluded**
9. *Cinnamomum camphora*	Camphor Laurel	Generically excluded	**Not excluded**

Scientific name	Common name	Current status *(PDI Act 2016)*	Recommended status *(PDI Act 2016)*
10. *Corymbia* species (all)	bloodwoods, etc.	Not excluded *except* when <10 m from a dwelling or pool	**Not excluded**
11. *Cupressus* species (all species except *C. macrocarpa*)	cypresses	Not excluded *except* when <10 m from a dwelling or pool	Not excluded *except* when <10 m from a dwelling or pool
12. *Cupressus macrocarpa*	Monterey Cypress	Generically excluded	Generically excluded
13. *Eucalyptus* species (all species except *E. globulus, E. grandis,* and *E. saligna*)	gums, etc.	Not excluded	Not excluded
14. *Eucalyptus globulus*	Tasmanian Blue Gum	Not excluded	**Generically excluded**
15. *Eucalyptus grandis*	Flooded Gum	Not excluded	**Generically excluded**
16. *Eucalyptus saligna*	Sydney Blue Gum	Not excluded	**Generically excluded**
17. *Ficus* species (all species, including *F. macrophylla*)	figs	Generically excluded, except *Ficus macrophylla* when >15 m from dwelling	**Not excluded *except* when <10 m from dwelling**
18. *Fraxinus angustifolia* (except the grafted cultivar 'Raywood')	Desert Ash	Generically excluded. Also excluded as Declared Plant in *LSA Act 2019.*	Generically excluded
19. *Fraxinus angustifolia* 'Raywood'	Claret Ash	Generically excluded	**Not excluded**
20. *Lagunaria patersonia*	Norfolk Island Hibiscus	Exempt from tree-damaging activity under Schedule 4 clause 18	Generically excluded
21. *Melaleuca armillaris*	Bracelet Honey-myrtle	Not excluded *except* when <10 m from a dwelling/pool	**Generically excluded**
22. *Melaleuca styphelioides*	Prickly-leaved Paperbark	Exempt from tree-damaging activity under Schedule 4 clause 18	**Not excluded**
23. *Olea europaea*	Olive	Not excluded *except* when <10 m from a dwelling/pool. Also partly excluded as Declared Plant in *LSA Act 2019*.	**Generically excluded**
24. *Phoenix canariensis*	Canary Island Date Palm	Not excluded *except* when <10 m from a dwelling/pool	**Generically excluded**
25. *Pinus radiata*	Radiata/Monterey Pine	Generically excluded	Generically excluded
26. *Pinus halepensis*	Aleppo Pine	Not excluded *except* when <10 m from a dwelling/pool. Also partly excluded as Declared Plant in *LSA Act 2019.*	**Generically excluded**
27. *Pittosporum undulatum*	Sweet Pittosporum	Excluded as Declared Plant in *LSA Act 2019.*	**Generically excluded**
28. *Platanus* × *acerifolia*	London Plane	Generically excluded	**Not excluded**
29. *Populus* species (all)	poplars	One species generically excluded	All species generically excluded
30. *Prunus* species (all)	stone fruits	Not excluded *except* when <10 m from a dwelling/pool	**Generically excluded**
31. *Pyrus* species (all)	pears	Not excluded *except* when <10 m from a dwelling/pool	**Generically excluded**
32. *Robinia pseudoacacia*	Black Locust	Generically excluded	Generically excluded

Scientific name	Common name	Current status *(PDI Act 2016)*	Recommended status *(PDI Act 2016)*
33. *Salix* species (all)	willows	Five species generically excluded. Many species also excluded as Declared Plants in *LSA Act 2019*.	All species generically excluded
34. *Schinus molle*	Peppercorn	Generically excluded	**Not excluded**
35. *Tamarix aphylla*	Athel Tree	Excluded as Declared Plant in *LSA Act 2019*.	**Generically excluded**
36. *Ulmus minor* and ***Ulmus* × *hollandica***	English Elm Dutch Elm	Not excluded *except* when <10 m from a dwelling/pool	**Generically excluded**

1. *Acer negundo* (Box Elder)

Figure 1. Mature trees of Acer negundo *(Box Elder) in South Australia. (A) Morphett Vale, City of Onkaparinga LGA. (B) Glenelg East, City of Holdfast Bay LGA.*

Scientific name:	***Acer negundo***
Common names:	**Box Elder**, Box-elder Maple, Ash-leaved Maple
Synonyms:	None in common use.
Current status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b). Also listed as a Class 58 Declared Plant in the *Landscape South Australia Act 2019* for the whole of the State, excluding the cultivar 'Sensation'.
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* (i.e. no change to existing exclusion).
Species origin:	Non-Australian, winter-deciduous species. Indigenous to North America.

Frequency in Greater Adelaide (GA):	Occasional.
Frequency in GA as tree with trunk ≥2 m circ.:	Occasional.

Table 12. **Acer negundo *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Acer negundo *(Box Elder) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate	2/5
VA Biodiversity Conservation Benefit	Negligible	0/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, winter-deciduous species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Low	-5/10
RCA Longevity	Short	-3/5

Total score		**30**
Species rank		**Equal 164th** of 202 species assessed

Notes: Only occasionally seen as a tree with a trunk circumference of ≥2 m in Greater Adelaide, with all such trees being multi-trunked and only qualifying because the sum of trunk circumferences is ≥2 m.

The species is recorded as being naturalised (i.e. an established weed) in the Northern Lofty botanical region of SA (Anon. 2021).

It is recommended that the status quo as a generically excluded species be maintained due to all known trees with a trunk circumference of ≥2 m only qualifying because they are multi-trunked, its non-Australian origin, its low Value Assessment scores, its low climate suitability, and its relatively short lifespan.

A number of cultivars of the species are known, which differ from one another primarily in foliage characteristics. All cultivars of the species are members of the species, and therefore treated in the same manner as the typical variant of the species under the *PDI Act 2016.*

2. *Acer saccharinum* (Silver Maple)

Figure 2. Mature tree of Acer saccharinum *(Silver Maple) in Mylor, Adelaide Hills Council LGA. South Australia. (A) Habit. (B) Summer-phase foliage.*

Scientific name:	***Acer saccharinum***
Common names:	**Silver Maple**, Creek Maple, Silver-leaf Maple, Soft Maple, Water Maple, Swamp Maple, White Maple
Synonyms:	None in common use.
Current status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b).
Recommended status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.
Species origin:	Non-Australian winter-deciduous species. Indigenous to eastern North America.

Frequency in Greater Adelaide (GA): Rare.
Frequency in GA as tree with trunk ≥2 m circ.: None known.

Table 13. **Acer saccharinum *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Acer saccharinum *(Silver Maple) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate	2/5
VA Biodiversity Conservation Benefit	Negligible	0/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, winter-deciduous species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Very low	-10/10
RCA Longevity	Moderate	0/5

Total score		**28**
Species rank		**Equal 173rd** of 202 species assessed

Notes: Not recorded as a tree with a trunk circumference of ≥2 m in Greater Adelaide. It is recommended that the species be omitted from the list of generically excluded species (i.e. be made not excluded) due to no qualifying trees of the species being known in the Greater Adelaide area.

Removal of this species from the list of excluded species both reduces the number of species on the list (making it more user-friendly) and also avoids any identification issues considering that there are closely-related and superficially-similar *Acer* (maple) species also commonly planted in Greater Adelaide.

3. *Agonis flexuosa* (Willow Myrtle)

Figure 3. Mature trees of Agonis flexuosa *(Willow Myrtle) in South Australia. (A) Hazelwood Park, City of Burnside LGA. (B) Novar Gardens, City of West Torrens LGA.*

Scientific name:	***Agonis flexuosa***
Common names:	**Willow Myrtle**, Western Australian Peppermint, Swan River Peppermint, Peppermint
Synonyms:	None in common use.
Current status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* even when <10 m from a dwelling or pool.
Recommended status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* even when <10 m from a dwelling or pool[11].

[11] *Recommended status if the recommendations in this report are adopted and all non-generically-excluded species are not excluded even when <10 m from a dwelling or pool (excepting the recommended list of species exempt even when <10 m from a dwelling or pool, which does not include* Agonis flexuosa*, see Table 10).*

However, if all non-generically-excluded species are excluded when <10 m from a dwelling or pool (as per the current regulations, excepting this species and the genus Eucalyptus*), then* Agonis flexuosa *should also be excluded when <10 m from a dwelling or pool.*

Species origin: Locally non-indigenous Australian-native species.
Indigenous to the south-west coast of Western Australia.

Frequency in Greater Adelaide (GA): Very common.
Frequency in GA as tree with trunk ≥2 m circ.: Common.

Table 14. **Agonis flexuosa** ***scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Agonis flexuosa *(Willow Myrtle) in the Greater Adelaide region.*

Value Assessment category	**Assessment**	**Score**
VA Amenity Value	Low to moderate	1/5
VA Biodiversity Conservation Benefit	Moderate	5/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Locally non-indigenous Australian native	5/10

Risk / Cost Assessment category	**Assessment**	**Score**
RCA Failure potential	Low	7/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Low	3/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Low	-5/10
RCA Longevity	Moderate	0/5

Total score		**37**
Species rank		**Equal 138th** of 202 species assessed

Notes: This species commonly qualifies with a trunk circumference of ≥2 m, despite generally having a relatively small canopy and therefore having limited amenity value, carbon storage potential, and urban cooling effect. The species is also locally non-indigenous, and has a low suitability to the climate in most of Greater Adelaide (the exception being irrigated sites in very coastal localities).

This species is no more worthy of being non-excluded when <10 m from a dwelling or pool than in most other tree species assessed.

4. *Ailanthus altissima* (Tree Of Heaven)

Figure 4. Ailanthus altissima *(Tree Of Heaven) in Adelaide, City of Adelaide LGA, South Australia. (A) Mature tree. (B) Immature tree.*

Scientific name:	***Ailanthus altissima***
Common names:	**Tree Of Heaven**, Ailanthus, Varnish Tree
Synonyms:	None in common use.
Current status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b).
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* (i.e. no change to existing exclusion).
Species origin:	Non-Australian species. Indigenous to north-east and central China, including Taiwan.

Frequency in Greater Adelaide (GA): Rare.
Frequency in GA as tree with trunk ≥2 m circ.: Rare.

Table 15. **Ailanthus altissima *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Ailanthus altissima *(Tree Of Heaven) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Low to moderate	1/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	Low	1/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, winter-deciduous species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Moderate	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Moderate	-5/10
RCA Longevity	Short	-3/5

Total score		**20**
Species rank		**Equal 190th** of 202 species assessed

Notes: Only rarely seen as a tree with a trunk circumference of ≥2 m in Greater Adelaide, with almost all such trees being multi-trunked and only qualifying because the sum of trunk circumferences is ≥2 m.

The species is recorded as being naturalised (i.e. an established weed) in the Northern Lofty and Southern Lofty botanical regions of SA (Anon. 2021).

It is recommended that the status quo as a generically excluded species be maintained due to most known trees with a trunk circumference of ≥2 m only qualifying because they are multi-trunked, its low Value Assessment scores, its invasive status in Greater Adelaide, and its relatively short lifespan.

5. *Alnus acuminata* (Evergreen Alder)

Figure 5. Mature tree of Alnus acuminata *(Evergreen Alder) in Glen Osmond, City of Burnside LGA. South Australia. (A) Habit. (B) Summer-phase foliage and catkins (flowers).*

Scientific name:	***Alnus acuminata***
Common names:	**Evergreen Alder**, Mexican Alder
Synonyms:	*Alnus jorullensis, Alnus glabrata*
Current status:	Subspecies *glabrata* is **generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* under regulation 3F (4)(b).
Recommended status:	The species **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.
Species origin:	Non-Australian semi-winter-deciduous species. Indigenous to the montane forests of Central and South America.

Frequency in Greater Adelaide (GA): Rare.
Frequency in GA as tree with trunk ≥2 m circ.: None known.

Table 16. **Alnus acuminata *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Alnus acuminata *(Evergreen Alder) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate	2/5
VA Biodiversity Conservation Benefit	Negligible	0/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, semi-winter-deciduous species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Low	7/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Very low	-10/10
RCA Longevity	Short	-3/5

Total score		**22**
Species rank		**Equal 183rd** of 202 species assessed

Notes: Not recorded as a tree with a trunk circumference of ≥2 m in Greater Adelaide. It is recommended that the species be omitted from the list of generically exempt species (i.e. be made not exempt) due to no qualifying trees of the species being known in the Greater Adelaide area.

Removal of this species from the list of excluded species both reduces the number of species on the list (making it more user-friendly) and also avoids any misidentification issues that may arise from exempting the species.

6. *Angophora* species (apple-myrtles)

Figure 6. Mature trees of Angophora *species in South Australia. (A)* Angophora costata *(Sydney Red Gum) in College Park, City of Norwood Payneham & St Peters LGA. (B)* Angophora floribunda *(Rough-barked Apple-myrtle) in Parkside, City of Unley LGA.*

Relevant species: **All *Angophora* species (apple-myrtles)**, including the following species known to reach a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide:

Angophora costata (Sydney Red Gum)

Angophora floribunda (Rough-barked Apple-myrtle)

Angophora melanoxylon (Coolabah Apple-myrtle)

Angophora subvelutina (Broad-leaved Apple-myrtle)

Current status: All *Angophora* species **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling/pool.

Recommended status: All *Angophora* species **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool

Table 17. **Angophora *frequency.*** Angophora *species (apple-myrtles) known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

Coryymbia **species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
A. costata	Qld and N.S.W, eastern Australia	Common	Occasional
A. floribunda	Qld, N.S.W & Vic, eastern Australia	Occasional	Rare
A. melanoxylon	Qld and N.S.W, eastern Australia	Very rare	Very rare
A. subvelutina	Qld and N.S.W, eastern Australia	Very rare	Very rare

Table 18. **Angophora *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Angophora *species (apple-myrtles) that are common or occasional (i.e. excluding very rare species) in Greater Adelaide.*

Value Assessment category	***A. costata*** **Assessment & Score**	***A. floribunda*** **Assessment & Score**
VA Amenity Value	High 4/5	High 4/5
VA Biodiversity Conservation Benefit	Moderate 5/10	Moderate 5/10
VA Carbon Storage potential	High 5/5	High 5/5
VA Urban Cooling Effect	High 8/10	High 8/10
VA Protection of Native Species	Locally non-indigenous Australian native 5/10	Locally non-indigenous Australian native 5/10

Risk / Cost Assessment category	***A. costata*** **Assessment & Score**	***A. floribunda*** **Assessment & Score**
RCA Failure potential	Low 7/10	Low 7/10
RCA Weed potential	Nil 5/5	Nil 5/5
RCA Health issues	Nil 5/5	Nil 5/5
RCA Fire potential	Low 3/5	Low 3/5
RCA Infrastructure Damage	Moderate 0/5	Moderate 0/5
RCA Maintenance Costs	Low 3/5	Low 3/5
RCA Climate Suitability	Moderate 0/10	Moderate 0/10
RCA Longevity	Very long 5/5	Long 3/5

Total score	**55**	**53**
Species rank	**Equal 23rd** of 202 species assessed	**Equal 35th** of 202 species assessed

Notes: Small to large evergreen trees that are closely related to, and often misidentified as, *Eucalyptus* species. Together, the genera *Angophora*, *Corymbia* and *Eucalyptus* comprise the plant group known as 'eucalypts'.

It is recommended that the genus *Angophora* be treated in the *PDI Act 2016* in the same way as the genus *Eucalyptus.*

7. *Casuarina* species (locally non-indigenous sheoaks)

Figure 7. Mature trees of Casuarina *species in South Australia. (A)* Casuarina cunninghamiana *(River Sheoak) in Croydon Park, City of Port Adelaide Enfield LGA. (B)* Casuarina glauca *(Swamp Sheoak) in Fulham, City of West Torrens LGA.*

Relevant species: **All *Casuarina* species (locally non-indigenous sheoaks, i.e. <u>excluding</u> the genus *Allocasuarina*)**, including the following species known to reach a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide:

Casuarina cunninghamiana (River Sheoak)

Casuarina glauca (Swamp Sheoak)

Casuarina obesa (Western Swamp Sheoak)

Current status: All *Casuarina* species except *C. glauca* and *C. obesa* are **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, <u>except when</u> <10 m from a dwelling or pool.
Casuarina glauca and *C. obesa* are listed as Class 37 Declared Plants in the *Landscape South Australia Act 2019* for the whole of the State, and therefore **excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* under Regulation 3F (4)(c).

Recommended status: All *Casuarina* species **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.

Table 19.* Casuarina *frequency. Casuarina *species (locally non-indigenous sheoaks) known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

***Casuarina* species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
C. cunninghamiana	Eastern and northern Australia	Common	Occasional
C. glauca	Eastern Australia	Common	Occasional
C. obesa	Western Australia	Occasional	Rare

Table 20.* Casuarina *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Casuarina *species (locally non-indigenous sheoaks) that are known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

Value Assessment category	***C. cunninghamiana* Assessment & Score**	***C. glauca* Assessment & Score**	***C. obesa* Assessment & Score**
VA Amenity Value	High 4/5	Moderate to high 3/5	Low to moderate 1/5
VA Biodiversity Conservation Benefit	Moderate 5/10	Moderate 5/10	Moderate 5/10
VA Carbon Storage potential	High 5/5	High 5/5	Moderate 3/5
VA Urban Cooling Effect	Moderate 5/10	Moderate 5/10	Moderate 5/10
VA Protection of Native Species	Locally non-indigenous Australian native 5/10	Locally non-indigenous Australian native 5/10	Locally non-indigenous Australian native 5/10

Risk / Cost Assessment category	***C. cunninghamiana* Assessment & Score**	***C. glauca* Assessment & Score**	***C. obesa* Assessment & Score**
RCA Failure potential	Very low 10/10	Low 7/10	Low 7/10
RCA Weed potential	Nil 5/5	Minor 0/5	Minor 0/5
RCA Health issues	Nil 5/5	Nil 5/5	Nil 5/5
RCA Fire potential	Low 3/5	Low 3/5	Low 3/5
RCA Infrastructure Damage	High -10/5	High -10/5	High -10/5
RCA Maintenance Costs	Low 3/5	Low 3/5	Low 3/5
RCA Climate Suitability	Low -5/10	Moderate 0/10	Moderate 0/10
RCA Longevity	Long 3/5	Long 3/5	Long 3/5

Total score	**38**	**34**	**30**
Species rank	**Equal 131st** of 202 species assessed	**Equal 152nd** of 202 species assessed	**Equal 164th** of 202 species assessed

Notes: *Casuarina* is a genus of Australian native trees and shrubs. Some species are indigenous to South Australia, but none are indigenous to the Greater Adelaide region. The genus is closely related to genus *Allocasuarina*, which includes a locally indigenous tree species (*A. verticillata* - Drooping Sheoak) that is an important feed tree for black cockatoos.

In addition to the recommendation regarding *Casuarina* under the *PDI Act 2016* (not excluded from the definition of 'regulated tree' and 'significant tree' except when <10 m from a dwelling or pool), I recommend that the status of *C. glauca* and *C. obesa* as Declared Plants in the *Landscape South Australia Act 2019* be reviewed (I suggest that these two species not be listed as Declared Plants).

8. *Celtis* species (hackberries)

Figure 8. Mature trees of Celtis species *(hackberries) in South Australia. (A)* Celtis australis *(European Hackberry) in Heathpool, City of Norwood Payneham & St Peters LGA. (B)* Celtis sinensis *(Chinese Hackberry) in Adelaide, City of Adelaide LGA.*

Relevant species:	**All *Celtis* species (hackberries)**, including the following species known to reach a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide: *Celtis australis* (European Hackberry) *Celtis occidentalis* (Common Hackberry) *Celtis sinuensis* (Chinese Hackberry)
Current status:	*Celtis australis* (European Hackberry) and *C. sinuensis* (Chinese Hackberry) listed as **generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b). All other *Celtis* species **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.
Recommended status:	All *Celtis* species (including *C. australis* and *C. sinuensis*) **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.

Table 21. **Celtis *frequency.*** Celtis *species (hackberries) known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

***Celtis* species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
C. australis	Southern Europe, western Asia, northern Africa	Occasional	Rare
C. occidentalis	Eastern North America	Occasional	Rare
C. sinuensis	Eastern Asia	Occasional	Very rare

Table 22. **Celtis *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Celtis *species (hackberries) that are known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

Value Assessment category	***C. australis* Assessment & Score**	***C. occidentalis* Assessment & Score**	***C. sinuensis* Assessment & Score**
VA Amenity Value	Moderate 2/5	Moderate 2/5	Moderate 2/5
VA Biodiversity Conservation Benefit	Negligible 0/10	Negligible 0/10	Negligible 0/10
VA Carbon Storage potential	Moderate 3/5	Moderate 3/5	Moderate 3/5
VA Urban Cooling Effect	High 8/10	High 8/10	High 8/10
VA Protection of Native Species	Non Australian winter-deciduous species 0/10	Non Australian winter-deciduous species 0/10	Non Australian winter-deciduous species 0/10

Risk / Cost Assessment category	***C. australis* Assessment & Score**	***C. occidentalis* Assessment & Score**	***C. sinuensis* Assessment & Score**
RCA Failure potential	Very low 10/10	Very low 10/10	Very low 10/10
RCA Weed potential	Nil 5/5	Nil 5/5	Nil 5/5
RCA Health issues	Nil 5/5	Nil 5/5	Nil 5/5
RCA Fire potential	Very low 5/5	Very low 5/5	Very low 5/5
RCA Infrastructure Damage	Moderate 0/5	Moderate 0/5	Moderate 0/5
RCA Maintenance Costs	Low 3/5	Low 3/5	Low 3/5
RCA Climate Suitability	Moderate 0/10	Moderate 0/10	Moderate 0/10
RCA Longevity	Moderate 0/5	Moderate 0/5	Moderate 0/5

Total score	**41**	**41**	**41**
Species rank	**Equal 40th** of 202 species assessed	**Equal 40th** of 202 species assessed	**Equal 40th** of 202 species assessed

Notes: Two *Celtis* species (*C. australis* and *C. sinuensis*) are currently listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*. The reasoning for this exclusion is not made clear in the 2007 *Treelogic* report. The genus is not known to be weedy in South Australia (it is recorded as questionably naturalised in the Northern Lofty, Southern Lofty, and South-east botanical region of SA - Anon. 2021).

It is here recommended that *C. australis* and *C. sinuensis* be removed from the list of generically excluded species (i.e. be made not excluded). *Celtis* species have moderate Value Assessment and Risk/Cost assessment scores (including very low Failure Potential), and are not known to be weedy species in the Greater Adelaide region.

9. *Cinnamomum camphora* (Camphor Laurel)

Figure 9. Mature trees of Cinnamomum camphora *(Camphor Laurel) in South Australia. (A) Hove, City of Holdfast Bay LGA. (B) Reynella, City of Onkaparinga LGA.*

Scientific name: ***Cinnamomum camphora***
Common names: **Camphor Laurel**, Camphor Tree, Camphorwood
Synonyms: None in common use.

Current status: **Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* under regulation 3F (4)(b).
Recommended status: **Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* even when <10 m from a dwelling/pool.

Species origin: Non-Australian species.
Indigenous to eastern Asia.

Frequency in Greater Adelaide (GA): Occasional.
Frequency in GA as tree with trunk ≥2 m circ.: Occasional.

Table 23.* Cinnamomum camphora *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Cinnamomum camphora *(Camphor Laurel) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate to high	3/5
VA Biodiversity Conservation Benefit	Negligible	0/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	High	8/10
VA Protection of Native Species	Non-Australian, evergreen species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Moderate	0/10
RCA Longevity	Very long	5/5

Total score		**49**
Species rank		**Equal 63rd** of 202 species assessed

Notes: Currently listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*. The reasoning for this exclusion is not made clear in the 2007 *Treelogic* report, but it may relate to the species being a major environmental weed in the rainforests and wet eucalypt forests of the north coast of New South Wales. The species is not known to be weedy in South Australia (it is recorded as questionably naturalised in the Southern Lofty botanical region of SA - Anon. 2021), presumably due to the much lower rainfall in SA.

It is here recommended that the species be removed from the list of generically excluded species. *Cinnamomum camphora* has moderate Value Assessment and Risk/Cost assessment scores (including very low Failure Potential), and is not known to be a weedy species in the Greater Adelaide region.

10. *Corymbia* species (bloodwoods, etc.)

Figure 10. Mature trees of Corymbia *species in South Australia. (A)* Corymbia citriodora *(Lemon-scented Gum) in Morphett Vale, City of Onkaparinga LGA. (B)* Corymbia maculata *(Spotted Gum) in Hackney, City of Norwood Payneham & St Peters LGA.*

Relevant species: **All *Corymbia* species (bloodwoods, etc.)**, including the following species known to reach a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide:

Corymbia calophylla (Marri)

Corymbia citriodora (Lemon-scented Gum)

Corymbia eximia (Yellow Bloodwood)

Corymbia ficifolia (Western Australian Red-flowering Gum)

Corymbia maculata (Spotted Gum)

Corymbia torelliana (Cadagi)

Corymbia variegata (Northern Spotted Gum)

Current status: All *Corymbia* species **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.

Recommended status: All *Corymbia* species **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.

Table 24.* Corymbia *frequency. Corymbia *species (bloodwoods, etc.) known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

***Corymbia* species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
C. calophylla	South-western Western Australia	Rare	Rare
C. citriodora	Central and northern Queensland	Very common	Common
C. eximia	Eastern Australia	Common	Rare
C. ficifolia	South-western Western Australia	Very common	Rare
C. maculata	Eastern Australia	Very common	Common
C. torelliana	Far north Queensland	Very rare	Very rare
C. variegata	Eastern Australia	Common	Common

Table 25.* Corymbia *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Corymbia *species (bloodwoods, etc.) that commonly attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

Value Assessment category	***C. citriodora* Assessment & Score**	***C. maculata* Assessment & Score**	***C. variegata* Assessment & Score**
VA Amenity Value	Very high 5/5	Very high 5/5	Very high 5/5
VA Biodiversity Conservation Benefit	Moderate 5/10	Moderate 5/10	Moderate 5/10
VA Carbon Storage potential	High 5/5	High 5/5	High 5/5
VA Urban Cooling Effect	High 8/10	High 8/10	High 8/10
VA Protection of Native Species	Locally non-indigenous Australian native 5/10	Locally non-indigenous Australian native 5/10	Locally non-indigenous Australian native 5/10

Risk / Cost Assessment category	***C. citriodora* Assessment & Score**	***C. maculata* Assessment & Score**	***C. variegata* Assessment & Score**
RCA Failure potential	Low to moderate 4/10	Low 7/10	Low 7/10
RCA Weed potential	Nil 5/5	Nil 5/5	Nil 5/5
RCA Health issues	Nil 5/5	Nil 5/5	Nil 5/5
RCA Fire potential	Low 3/5	Low 3/5	Low 3/5
RCA Infrastructure Damage	Moderate 0/5	Moderate 0/5	Moderate 0/5
RCA Maintenance Costs	Low 3/5	Low 3/5	Low 3/5
RCA Climate Suitability	High 5/10	Moderate 0/10	Moderate 0/10
RCA Longevity	Long 3/5	Very long 5/5	Long 3/5

Total score	**56**	**56**	**54**
Species rank	**Equal 19th** of 202 species assessed	**Equal 19th** of 202 species assessed	**Equal 29th** of 202 species assessed

Notes: Small to very large evergreen trees that are closely related to, and often misidentified as, *Eucalyptus* species. A total of 7 of the 202 species assessed were *Corymbia* species. Together, the genera *Angophora*, *Corymbia* and *Eucalyptus* comprise the plant group known as 'eucalypts'.

It is recommended that the genus *Corymbia* be treated in the *PDI Act 2016* in the same way as the genus *Eucalyptus.*

11. *Cupressus* species (cypresses)

All species excluding *Cupressus macrocarpa* (Monterey Cypress)

Figure 11. Mature trees of Cupressus *species in the City of Mitcham LGA, South Australia. (A)* Cupressus arizonica *(Arizona Cypress) in Torrens Park. (B)* Cupressus sempervirens *'Stricta' (Candle Pine) in Belair.*

Relevant species:	**All *Cupressus* species (cypressus), excluding *Cupressus macrocarpa* (Monterey Cypress)**, including the following species known to reach a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide: *Cupressus arizonica* (Arizona Cypress) *Cupressus sempervirens* (Italian Cypress), including all cultivars , including 'Stricta' (Candle Pine). *Cupressus torulosa* (Himalayan Cypress)
Current status:	All *Cupressus* species (excluding *C. macrocarpa* - Monterey Cypress) **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.
Recommended status:	All *Cupressus* species (excluding *C. macrocarpa* - Monterey Cypress) **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool (i.e. no change to existing exclusion).

Table 26. **Cupressus *frequency.*** Cupressus *species (cypresses), excluding* C. macrocarpa, *known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

Cupressus **species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
C. arizonica	Southern North America	Occasional	Rare
C. sempervirens	Southern Europe, western Asia, northern Africa	Common	Rare
C. torulosa	Central Asia	Rare	Rare

Table 27. **Cupressus *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Cupressus *species (cypress), excluding* C. macrocarpa, *that are known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

Value Assessment category	***C. arizonica*** **Assessment & Score**	***C. sempervirens*** **Assessment & Score**	***C. torulosa*** **Assessment & Score**
VA Amenity Value	Moderate 2/5	Moderate to high 3/5	Moderate to high 3/5
VA Biodiversity Conservation Benefit	Negligible 0/10	Negligible 0/10	Negligible 0/10
VA Carbon Storage potential	Moderate 3/5	Moderate 3/5	Moderate 3/5
VA Urban Cooling Effect	Moderate 5/10	Moderate 5/10	Moderate 5/10
VA Protection of Native Species	Non Australian conifer 0/10	Non Australian conifer 0/10	Non Australian conifer 0/10

Risk / Cost Assessment category	***C. arizonica*** **Assessment & Score**	***C. sempervirens*** **Assessment & Score**	***C. torulosa*** **Assessment & Score**
RCA Failure potential	Very low 10/10	Very low 10/10	Very low 10/10
RCA Weed potential	Nil 5/5	Nil 5/5	Nil 5/5
RCA Health issues	Nil 5/5	Nil 5/5	Nil 5/5
RCA Fire potential	Moderate 0/5	High -5/5	Moderate 0/5
RCA Infrastructure Damage	Low 5/5	Low 5/5	Low 5/5
RCA Maintenance Costs	Low 3/5	Low 3/5	Low 3/5
RCA Climate Suitability	Moderate 0/10	Moderate 0/10	Moderate 0/10
RCA Longevity	Moderate 0/5	Very long 5/5	Moderate 0/5

Total score	**38**	**44**	**39**
Species rank	**Equal 131st** of 202 species assessed	**Equal 89th** of 202 species assessed	**Equal 124th** of 202 species assessed

Notes: Medium-sized to large evergreen conifers. The species are all non-Australian.

It is recommended that the status quo for *Cupressus* (excepting *C. macrocarpa*) be maintained, and that it is not excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool. Their exclusion when <10 m from a dwelling or pool is primarily due to the elevated flammability of the genus, associated with its tiny but very numerous leaves, the common build-up of fine dead material in the canopy of trees of the genus, , and the potential to seasonally contribute to pollen allergens.

12. *Cupressus macrocarpa* (Monterey Cypress)

Figure 12. Mature trees of Cupressus macrocarpa *(Monterey Cypress) in the City of Onkaparinga LGA, South Australia. (A) The typical variant in Moana. (B) The cultivar 'Aurea' in Port Noarlunga.*

Scientific name:	***Cupressus macrocarpa***
Common names:	**Monterey Cypress**
Synonyms:	*Hesperocyparis macrocarpa*
Current status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b).
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* (i.e. no change to existing exclusion).
Species origin:	Non-Australian species. Indigenous to the west coast of California in North America.

Frequency in Greater Adelaide (GA): Very common.
Frequency in GA as tree with trunk ≥2 m circ.: Very common.

Table 28. **Cupressus macrocarpa *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Cupressus macrocarpa *(Monterey Cypress) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	High	4/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, evergreen conifer	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Low	7/10
RCA Weed potential	Minor	0/5
RCA Health issues	Nil	5/5
RCA Fire potential	High	-5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Moderate	0/10
RCA Longevity	Long	3/5

Total score		**22**
Species rank		**Equal 183rd** of 202 species assessed

Notes: A very common tree in the Greater Adelaide region, where it commonly attains a trunk circumference of ≥2 m. Commonly planted as a fast-growing hedge in Greater Adelaide, with many trees with a trunk circumference of ≥2 m resulting from overgrown and non-maintained hedges.

The species is somewhat unusual in that younger, smaller trees (i.e. those with a trunk circumference of <2 m) are generally healthy, structurally sound, and have high aesthetic appeal, with increasingly larger trees having increasingly poorer health, structure, and aesthetic appeal. Because of this, regulating only larger trees of this species is nonsensical.

It is recommended that the status quo as a generically excluded species be maintained due to its fast growth rate, its invasive status in Greater Adelaide, its high flammability, and its increasingly poor aesthetic appeal with age. The species is recorded as being naturalised (i.e. an established weed) in the Flinders Ranges, Northern Lofty, Murray, Southern Lofty, and South-east botanical regions of SA (Anon. 2021).

Numerous cultivars of the species are known, which differ from one another subtly in canopy and foliage characteristics. All cultivars of the species are members of the species, and therefore to be treated in the same manner as the typical variant of the species under the *PDI Act 2016.*

13. *Eucalyptus* species (gums, etc.)

All species excluding:
- *Eucalyptus globulus* (Tasmanian Blue Gum)
- *Eucalyptus grandis* (Flooded Gum)
- *Eucalyptus saligna* (Sydney Blue Gum)

Figure 13. Mature trees of Eucalyptus *species in South Australia. (A)* Eucalyptus camaldulensis *(River Red Gum) in Aberfoyle Park, City of Onkaparinga LGA. (B)* Eucalyptus cladocalyx *(Sugar Gum) in Urrbrae, City of Mitcham LGA.*

Relevant species: **All *Eucalyptus* species (gums, etc.), excluding *E. globulus*, *E. grandis*, and *E. saligna*** (which have separate Species Profiles), and including the following species that very commonly or commonly reach a trunk circumference (or combined trunk circ.) of ≥2 m in Greater Adelaide:

Eucalyptus camaldulensis (River Red Gum)

Eucalyptus cladocalyx (Sugar Gum)

Eucalyptus leucoxylon (South Australian Blue Gum)

Eucalyptus microcarpa (Grey Box)

Eucalyptus obliqua (Messmate Stringybark)

Eucalyptus sideroxylon (Mugga, Red Ironbark)

Eucalyptus viminalis (Manna Gum)

Current status: All *Eucalyptus* species are **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling/pool.

Recommended status: All *Eucalyptus* species (except *E. globulus*, *E. grandis*, and *E. saligna*) **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling/pool (i.e. no change to existing exclusion).

Table 29.* Eucalyptus *frequency. Eucalyptus *species (gums, etc.) very commonly or commonly attaining a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

***Eucalyptus* species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
E. camaldulensis	**Locally indigenous**	Very common	Very common
E. cladocalyx	Other regions of South Australia	Very common	Very common
E. leucoxylon	**Locally indigenous**	Very common	Very common
E. microcarpa	**Locally indigenous**	Common	Common
E. obliqua	**Locally indigenous**	Common	Common
E. sideroxylon	Eastern Australia	Very common	Common
E. viminalis	**Locally indigenous**	Common	Common

Table 30.* Eucalyptus *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Eucalyptus *species (gums, etc.) that very commonly attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

Value Assessment category	***E. camaldulensis* Assessment & Score**	***E. cladocalyx* Assessment & Score**	***E. leucoxylon* Assessment & Score**
VA Amenity Value	Very high 5/5	Very high 5/5	Very high 5/5
VA Biodiversity Conservation Benefit	High 10/10	Moderate 5/10	High 10/10
VA Carbon Storage potential	High 5/5	High 5/5	High 5/5
VA Urban Cooling Effect	High 8/10	High 8/10	High 8/10
VA Protection of Native Species	Locally indigenous 10/10	Locally non-indigenous Australian native 5/10	Locally indigenous 10/10

Risk / Cost Assessment category	***E. camaldulensis* Assessment & Score**	***E. cladocalyx* Assessment & Score**	***E. leucoxylon* Assessment & Score**
RCA Failure potential	Low to moderate 4/10	Moderate 0/10	Low to moderate 4/10
RCA Weed potential	Nil 5/5	Minor 0/5	Nil 5/5
RCA Health issues	Nil 5/5	Nil 5/5	Nil 5/5
RCA Fire potential	Low 3/5	Low 3/5	Moderate 0/5
RCA Infrastructure Damage	Moderate 0/5	Moderate 0/5	Moderate 0/5
RCA Maintenance Costs	Low 3/5	Low 3/5	Low 3/5
RCA Climate Suitability	Very high 10/10	High 5/10	Very high 10/10
RCA Longevity	Very long 5/5	Long 3/5	Long 3/5

Total score	**73**	**47**	**68**
Species rank	**2nd** of 202 species assessed	**Equal 72nd** of 202 species assessed	**Equal 4th** of 202 species assessed

Notes: A very large genus of over 850 species of trees, mallees, and shrubs, a number of which are indigenous to the Greater Adelaide area. A total of 52 of the 202 species assessed are *Eucalyptus* species. Together, the genera *Angophora*, *Corymbia* and *Eucalyptus* comprise the plant group known as 'eucalypts'.

It is recommended that the status quo for *Eucalyptus* (excluding *E. globulus*, *E. grandis*, and *E. saligna*) be maintained, and that it is not excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.

Eucalyptus globulus, E. grandis, and *E. saligna* are three locally non-indigenous but commonly planted forest-tree species which are commonly problematic urban trees in the Greater Adelaide region and have been treated with separate Species Profiles.

It is recommended that the genera *Angophora* and *Corymbia* be treated in the *PDI Act 2016* in the same way as the genus *Eucalyptus* (excepting *E. globulus, E. grandis*, and *E. saligna*).

14. *Eucalyptus globulus* (Tasmanian Blue Gum)

Figure 14. Mature trees of Eucalyptus globulus *(Tasmanian Blue Gum) in Morphett Vale, City of Onkaparinga LGA, South Australia.*

Scientific name:	***Eucalyptus globulus***
Common names:	**Tasmanian Blue Gum**, Blue Gum
Synonyms:	*Eucalyptus globulus* subsp. *globulus*
Current status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.
Species origin:	Locally non-indigenous Australian-native species. Indigenous to Tasmania and southern Victoria in south-eastern Australia.

Frequency in Greater Adelaide (GA): Very common.
Frequency in GA as tree with trunk ≥2 m circ.: Very common.

Table 31. **Eucalyptus globulus** ***scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Eucalyptus globulus *(Tasmanian Blue Gum) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	High	4/5
VA Biodiversity Conservation Benefit	Moderate	5/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	High	8/10
VA Protection of Native Species	Locally non-indigenous Australian native	5/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	High	-10/10
RCA Weed potential	Minor	0/5
RCA Health issues	Nil	5/5
RCA Fire potential	High	-5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Very low	-10/10
RCA Longevity	Short	-3/5

Total score		**7**
Species rank		**199th** of 202 species assessed

Notes: A total of 52 of the 202 species assessed are *Eucalyptus* species. It is recommended that all *Eucalyptus* species (but excepting *E. globulus* and two other species) be not excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.

Eucalyptus globulus is a locally non-indigenous species from high-rainfall parts of Tasmania and southern Victoria. The species has also been planted as a fast-growing tree in southern parts of South Australia, with many planted in parts of Adelaide during the 1970s and 80s. A large number of these urban trees have since been removed due to declining health and structural defects associated with their poor suitability to the climate of Greater Adelaide.

It is recommended that the species be listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to its very fast growth rate, its high flammability, its very low climate suitability, and its relatively short lifespan in Greater Adelaide.

Eucalyptus globulus is a distinctive species and easily identified from all related species by its large, warty flower buds and fruits occurring singularly in the leaf axils.

Three closely-related species to *E. globulus*, viz. *E. bicostata*, *E. maidenii*, and *E. pseudoglobulus*, are regarded as subspecies of *E. globulus* by some authorities (e.g. Slee *et al.* 2020), even though most authorities regard these as separate species (e.g. Hill 1991, Boland *et al.* 2006, Brooker & Kleinig 2006, Nicolle 2013, 2014, 2021, Anon. 2021). Because of the disagreement

in the classification of these taxa, the exclusion of *E. globulus* from the definition of ‘regulated tree’ and ‘significant tree’ in *PDI Act 2016* should specifically state that the exclusion does not include *E. bicostata* (syn. *E. globulus* subsp. *bicostata*), *E. maidenii* (syn. *E. globulus* subsp. *maidenii*), and *E. pseudoglobulus* (syn. *E. globulus* subsp. *pseudoglobulus*), to avoid any ambiguity.

15. *Eucalyptus grandis* (Flooded Gum)

Figure 15. Mature trees of Eucalyptus grandis *(Flooded Gum) in the City of Onkaparinga LGA, South Australia. (A) Happy Valley. (B) Willunga.*

Scientific name:	***Eucalyptus grandis***
Common names:	**Flooded Gum**, Rose Gum
Synonyms:	None in common use.
Current status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.
Species origin:	Locally non-indigenous Australian-native species. Indigenous to wet sclerophyll forest and rainforest margins on the east coast of Queensland and northern New South Wales.

Frequency in Greater Adelaide (GA):	Common.
Frequency in GA as tree with trunk ≥2 m circ.:	Common.

Table 32.* Eucalyptus grandis *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Eucalyptus grandis *(Flooded Gum) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	High	4/5
VA Biodiversity Conservation Benefit	Moderate	5/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	High	8/10
VA Protection of Native Species	Locally non-indigenous Australian native	5/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Moderate	0/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Moderate	0/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Very low	-10/10
RCA Longevity	Moderate	0/5

Total score		**30**
Species rank		**Equal 164th** of 202 species assessed

Notes: A total of 52 of the 202 species assessed are *Eucalyptus* species. It is recommended that all *Eucalyptus* species (but excepting *E. grandis* and two other species) be not excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.

Eucalyptus grandis is a locally non-indigenous species from high-rainfall parts of eastern Australia. The species has also been planted as a fast-growing tree in southern parts of South Australia, with many planted in parts of Adelaide during the 1970s and 80s. A large number of these urban trees have since been removed due to declining health and structural defects associated with their poor suitability to the climate of Greater Adelaide.

It is recommended that the species be listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to its very fast growth rate, its amplified failure potential as specimens age, its moderate flammability, and its very low climate suitability to Greater Adelaide.

Eucalyptus grandis is most closely related and superficially very similar to *E. saligna*, which is also recommended to be listed as generically exempt here. Together, these two species can be distinguished from other *Eucalyptus* species by their combination of mostly smooth, shedding bark (some rough, non-shedding back may be present at the base of the tree), their discolorous leaves (the underside being paler than the upper side), and their funnel-shaped fruits with valves protruding beyond the rim. Nevertheless, there is the potential for misidentification of the species, and its exemption from the regulations must consider this.

16. *Eucalyptus saligna* (Sydney Blue Gum)

Figure 16. Mature trees of Eucalyptus saligna *(Sydney Blue Gum) in South Australia. (A) Toorak Gardens, City of Burnside LGA. (B) Malvern, City of Unley LGA.*

Scientific name:	***Eucalyptus saligna***
Common names:	**Sydney Blue Gum**
Synonyms:	None in common use.
Current status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.
Species origin:	Locally non-indigenous Australian-native species. Indigenous to wet sclerophyll forest in south-eastern Queensland and eastern New South Wales.

Frequency in Greater Adelaide (GA): Common.
Frequency in GA as tree with trunk ≥2 m circ.: Common.

Table 33.* Eucalyptus saligna *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Eucalyptus saligna *(Sydney Blue Gum) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	High	4/5
VA Biodiversity Conservation Benefit	Moderate	5/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	High	8/10
VA Protection of Native Species	Locally non-indigenous Australian native	5/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Moderate	0/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Moderate	0/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Very low	-10/10
RCA Longevity	Moderate	0/5

Total score		**30**
Species rank		**Equal 164th** of 202 species assessed

Notes: A total of 52 of the 202 species assessed are *Eucalyptus* species. It is recommended that all *Eucalyptus* species (but excepting *E. saligna* and two other species) be not excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.

Eucalyptus saligna is a locally non-indigenous species from high-rainfall parts of eastern Australia. The species has also been planted as a fast-growing tree in southern parts of South Australia, with many planted in parts of Adelaide during the 1970s and 80s. A large number of these urban trees have since been removed due to declining health and structural defects associated with their poor suitability to the climate of Greater Adelaide.

It is recommended that the species be listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to its very fast growth rate, its amplified failure potential as specimens age, its moderate flammability, and its very low climate suitability to Greater Adelaide.

Eucalyptus saligna is most closely related and superficially very similar to *E. grandis*, which is also recommended to be listed as generically exempt here. Together, these two species can be distinguished from other *Eucalyptus* species by their combination of mostly smooth, shedding bark (some rough, non-shedding back may be present at the base of the tree), their discolorous leaves (the underside being paler than the upper side), and their funnel-shaped fruits with valves protruding beyond the rim. Nevertheless, there is the potential for misidentification of the species, and its exemption from the regulations must consider this.

17. *Ficus* species (figs)

All species, including *Ficus macrophylla* (Moreton Bay Fig)

Figure 17. Mature trees of Ficus *species in South Australia. (A)* Ficus macrophylla *(Moreton Bay Fig) in Glen Osmond, City of Burnside LGA. (B)* Ficus rubiginosa *(Rusty Fig) in Happy Valley, City of Onkaparinga LGA.*

Relevant species: **All *Ficus* species (figs)**, including the following species known to reach a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide:

Ficus benjamina (Weeping Fig)

Ficus desertorum (Rock Fig)

Ficus elastica (Rubber Tree)

Ficus macrophylla (Moreton Bay Fig)

Ficus microcarpa (Hill's Weeping Fig)

Ficus rubiginosa (Rusty Fig)

Ficus virens (White Fig)

Current status: All *Ficus* species (figs) '*other than* Ficus macrophylla *(Moreton Bay Fig) located more than 15 m from a dwelling'* are listed as **generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b).

Recommended status: All *Ficus* species (including *Ficus macrophylla*) to be **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.

Table 34.* Ficus *frequency. Ficus *species (figs) known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

***Ficus* species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
F. benjamina	Asia and northern Australia	Occasional	Very Rare
F. desertorum	Central Australia	Rare	Rare
F. elastica	Southern and south-eastern Asia	Rare	Rare
F. macrophylla	Eastern Australia	Common	Common
F. microcarpa	Asia and northern Australia	Common	Occasional
F. rubiginosa	Eastern Australia	Common	Occasional
F. virens	Asia and northern Australia	Very rare	Very rare

Table 35.* Ficus *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Ficus *species (figs) that occasionally or commonly attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

Value Assessment category	***F. macrophylla* Assessment & Score**	***F. microcarpa* Assessment & Score**	***F. rubiginosa* Assessment & Score**
VA Amenity Value	Very high 5/5	High 4/5	High 4/5
VA Biodiversity Conservation Benefit	Moderate 5/10	Moderate 5/10	Moderate 5/10
VA Carbon Storage potential	High 5/5	High 5/5	High 5/5
VA Urban Cooling Effect	Very high 10/10	Very high 10/10	High 8/10
VA Protection of Native Species	Locally non-indigenous Australian native 5/10	Locally non-indigenous Australian native 5/10	Locally non-indigenous Australian native 5/10

Risk / Cost Assessment category	***F. macrophylla* Assessment & Score**	***F. microcarpa* Assessment & Score**	***F. rubiginosa* Assessment & Score**
RCA Failure potential	Low 7/10	Low 7/10	Low 7/10
RCA Weed potential	Nil 5/5	Nil 5/5	Nil 5/5
RCA Health issues	Nil 5/5	Nil 5/5	Nil 5/5
RCA Fire potential	Very low 5/5	Very low 5/5	Very low 5/5
RCA Infrastructure Damage	Very high -10/5	High -5/5	High -5/5
RCA Maintenance Costs	Low 3/5	Low 3/5	Low 3/5
RCA Climate Suitability	Low -5/10	Moderate 0/10	Moderate 0/10
RCA Longevity	Long 3/5	Moderate 0/5	Long 3/5

Total score	**43**	**49**	**50**
Species rank	**Equal 92nd** of 202 species assessed	**Equal 63rd** of 202 species assessed	**Equal 57th** of 202 species assessed

Notes: *Ficus* is a large genus of small to very large evergreen and deciduous trees with a worldwide distribution, mainly in the tropics. One species is indigenous to South Australia (*F. desertorum*), but none are indigenous to the Greater Adelaide region. A total of 7 of the 202 species assessed were *Ficus* species.

Many *Ficus* species are notable for their large, spreading, leafy canopy, and their extensive surface and near-surface roots.

Previously excluded from the regulations (excepting *Ficus macrophylla* when located more than 15 m from a dwelling), their high Value Assessment scores suggests that the genus should not be excluded, except when close to high-value surface infrastructure such as residential dwellings and swimming pools.

It is recommended that all *Ficus* species (including *Ficus macrophylla*) not be excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool. Their exclusion when <10 m from a dwelling or pool is primarily due to the extensive surface and near-surface roots in many of the species.

18. *Fraxinus angustifolia* (Desert Ash)

Excluding the grafted cultivar *Fraxinus angustifolia* 'Raywood' (Claret Ash)

Figure 18. Mature trees of Fraxinus angustifolia *in South Australia. (A) Dulwich, City of Burnside LGA. (B) Willunga, City of Onkaparinga LGA.*

Scientific name:	***Fraxinus angustifolia***
Common names:	**Desert Ash**, Narrow-leaved Ash, Caucasian Ash
Synonyms:	*Fraxinus oxycarpa*
Current status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* under regulation 3F (4)(b). Also listed as a Class 59 Declared Plant in the *Landscape South Australia Act 2019* for the whole of the State (excepting the cultivar 'Raywood').
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* **but excepting the grafted cultivar 'Raywood (Claret Ash)**.
Species origin:	Non-Australian winter-deciduous species. Indigenous to Europe, western Asia, and northern Africa.

Frequency in Greater Adelaide (GA):	Very common.
Frequency in GA as tree with trunk ≥2 m circ.:	Common.

Table 36.* Fraxinus angustifolia *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Fraxinus angustifolia *(Desert Ash), excepting the grafted cultivar 'Raywood', in Greater Adelaide.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate to high	3/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	High	8/10
VA Protection of Native Species	Non-Australian, winter-deciduous species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Low	7/10
RCA Weed potential	Significant	-5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Moderate	0/10
RCA Longevity	Long	3/5

Total score		**27**
Species rank		**Equal 175th** of 202 species assessed

Notes: Commonly seen as a tree with a trunk circumference of ≥2 m in Greater Adelaide, both as intentionally planted trees and as self-seeded (weed) trees. The species is a highly invasive weed in the Greater Adelaide region, especially along waterways, and is dispersed by the numerous seeds that it produces. The species is recorded as being naturalised (i.e. an established weed) in the Flinders Ranges, Northern Lofty, Southern Lofty, and South-east botanical regions of SA (Anon. 2021).

Due to its significance as an environmental weed in Greater Adelaide, it is recommended that the status quo as a generically excluded species be maintained, but modified to except the grafted cultivar 'Raywood' (Claret Ash – see Species Profile for *Fraxinus angustifolia* 'Raywood').

Regulation 3F (4)(b) in the *PDI Act 2016* lists '*Fraxinus angustifolia* ssp. *oxycarpa'* in addition to listing '*Fraxinus angustifolia'*. However, the listing of *F. angustifolia* subsp. *oxycarpa* is made redundant by the listing of *F. angustifolia*, because all subspecies of *F. angustifolia* (including subsp. *oxycarpa*) are *F. angustifolia.*

19. *Fraxinus angustifolia* 'Raywood' (Claret Ash)

Figure 19. Mature trees of Fraxinus angustifolia *'Raywood' in the City of Burnside LGA, South Australia. (A) Early spring canopy, Burnside. (B) Summer canopy, Beaumont.*

Scientific name:	***Fraxinus angustifolia* 'Raywood'**
Common names:	**Claret Ash**
Synonyms:	*Fraxinus angustifolia* subsp. *oxycarpa* 'Raywood', *Fraxinus oxycarpa* 'Raywood'
Current status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b).
Recommended status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.
Species origin:	Grafted cultivar of a non-Australian winter-deciduous species. Cultivar of garden origin (developed in South Australia) of a species indigenous to Europe, western Asia, and northern Africa.

Frequency in Greater Adelaide (GA): Common.
Frequency in GA as tree with trunk ≥2 m circ.: Occasional.

Table 37.* Fraxinus angustifolia *'Raywood' scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Fraxinus angustifolia *'Raywood' (Claret Ash) in Greater Adelaide.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate to high	3/5
VA Biodiversity Conservation Benefit	Negligible	0/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	High	8/10
VA Protection of Native Species	Non-Australian, winter-deciduous species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Low	7/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Moderate	0/5
RCA Climate Suitability	Low	-5/10
RCA Longevity	Moderate	0/5

Total score		**31**
Species rank		**162nd** of 202 species assessed

Notes: Currently listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016*, where listed as *Fraxinus angustifolia* (without an exception for the cultivar 'Raywood').

It is here recommended that the species be omitted from the list of generically excluded species, by excepting this cultivar from the generically excluded *F. angustifolia*. Unlike the typical variant of *F. angustifolia*, the grafted cultivar 'Raywood' is not known to be weedy in the Greater Adelaide region, possibly because it does not set seeds like the typical variant. *Fraxinus angustifolia* 'Raywood' is a moderately common urban tree in the higher-rainfall parts of the Greater Adelaide region.

20. *Lagunaria patersonia* (Norfolk Island Hibiscus)

Figure 20. Mature trees of Lagunaria patersonia *(Norfolk Island Hibiscus) in South Australia. (A) Hectorville, City of Campbelltown LGA. (B) Osborne, City of Port Adelaide Enfield LGA.*

Scientific name:	***Lagunaria patersonia***
Common names:	**Norfolk Island Hibiscus**, Pyramid Tree, Queensland White Oak, Sally Wood, White Oak, Itchy Bomb Tree, Cow Itch Tree
Synonyms:	None in common use.
Current status:	**Effectively generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to the species being exempt from tree-damaging activity under Schedule 4 clause 18(a).
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.
Species origin:	Locally non-indigenous Australian-native species. Indigenous to Norfolk and Lord Howe islands in the South Pacific Ocean.

Frequency in Greater Adelaide (GA):	Common.
Frequency in GA as tree with trunk ≥2 m circ.:	Occasional.

Table 38. **Lagunaria patersonia *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Lagunaria patersonia *(Norfolk Island Hibiscus) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate to high	3/5
VA Biodiversity Conservation Benefit	Low	2/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Locally non-indigenous Australian native	5/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Nil	5/5
RCA Health issues	Significant	-5/5
RCA Fire potential	Low	3/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	High	5/10
RCA Longevity	Long	3/5

Total score		**42**
Species rank		**Equal 92nd** of 202 species assessed

Notes: Although the species is not generically excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016* under regulation 3F (4)(b), the species is effectively generically excluded due to it being exempt from tree-damaging activity under Schedule 4 clause 18(a). This is a rather odd clause that in practical terms results in the same exclusion from the definition of 'regulated tree' and 'significant tree' as that seen in Regulation 3F (4)(b). I am unaware of the historical reasons why this species and one other (*Melaleuca styphelioides*) are listed as being exempt from tree-damaging activity under Schedule 4 clause 18(a) rather than more simply being listed as an excluded species under Regulation 3F (4)(b).

The species was commonly planted in Greater Adelaide and in SA generally throughout the latter half of the 1800s up until the 1960s, with many of these trees still seen due to its high climate suitability and long lifespan. The species produces large quantities of fruits and seeds, both covered in hairs that cause severe skin irritation upon contact. For this reason alone, it is recommended that the species be listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016.* The species has not been commercially planted in SA for over 50 years because of the health issues associated with its fruits and seeds.

21. *Melaleuca armillaris* (Bracelet Honey-myrtle)

Figure 21. Mature 'trees' of Melaleuca armillaris *(Bracelet Honey-myrtle) in the City of Onkaparinga LGA, South Australia. (A) Aberfoyle Park. (B) Morphett Vale.*

Scientific name:	***Melaleuca armillaris***
Common names:	**Bracelet Honey-myrtle**
Synonyms:	None in common use.
Current status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.
Species origin:	Locally non-indigenous Australian-native species. Indigenous to eastern New South Wales, Victoria and Tasmania (subsp. *armillaris*) and northern Eyre Peninsula in South Australia (subsp. *akineta*).

Frequency in Greater Adelaide (GA): Very common.
Frequency in GA as tree with trunk ≥2 m circ.: Rare.

Table 39.* Melaleuca armillaris *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Melaleuca armillaris *(Bracelet Honey-myrtle) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Low to moderate	1/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	Low	1/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-locally indigenous Australian native	5/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Moderate	0/10
RCA Weed potential	Minor	0/5
RCA Health issues	Nil	5/5
RCA Fire potential	High	-5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Moderate	0/5
RCA Climate Suitability	Moderate	0/10
RCA Longevity	Short	-3/5

Total score		**4**
Species rank		**201st** of 202 species assessed

Notes: A very commonly seen species in Greater Adelaide, where it is planted as a fast-growing large shrub for screening and shelter. Only rarely seen with a trunk circumference of ≥2 m in Greater Adelaide (I have assessed approximately a dozen qualifying plants of the species over the last decade), with all such 'trees' being multi-trunked and only qualifying because the sum of trunk circumferences is ≥2 m.

It is recommended that the species be listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* due to all known trees with a trunk circumference of ≥2 m only qualifying because they are multi-trunked, its invasive status in the Greater Adelaide area, its moderate failure potential and maintenance costs, its high flammability, and its relatively short lifespan.

Two subspecies of *M. armillaris* are recognised, with all planted specimens in Greater Adelaide being the non-South Australian subsp. *armillaris*, which is also recorded as being naturalised (i.e. an established weed) in the Southern Lofty, Kangaroo Island, and South-east botanical regions of SA (Anon. 2021). Subspecies *akineta*, which is indigenous to northern Eyre Peninsula in South Australia, is not known in cultivation.

A number of similar-sized or larger-growing *Melaleuca* species are also seen in Greater Adelaide (e.g. *M. bracteata, M. lanceolata, M. linariifolia, M. quinquenervia, M. styphelioides*). These other species are not problematic and are therefore not recommended for exclusion from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016.* There is the potential for misidentification of other *Melaleuca* species as *M. armillaris* - its exemption from the regulations should consider this.

22. *Melaleuca styphelioides* (Prickly-leaved Paperbark)

Figure 22. Mature trees of Melaleuca styphelioides *(Prickly-leaved Paperbark) in South Australia. (A) Golden Grove, City of Tea Tree Gully LGA. (B) Bedford Park, City of Mitcham LGA.*

Scientific name:	***Melaleuca styphelioides***
Common names:	**Prickly-leaved Paperbark**, Prickly Paperbark
Synonyms:	None in common use.
Current status:	**Effectively generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to the species being exempt from tree-damaging activity under Schedule 4 clause 18(a).
Recommended status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even if <10 m from a dwelling or pool.
Species origin:	Locally non-indigenous Australian-native species. Indigenous to eastern New South Wales and Queensland.

Frequency in Greater Adelaide (GA):	Occasional.
Frequency in GA as tree with trunk ≥2 m circ.:	Rare.

Table 40.* Melaleuca stypelioides *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Melaleuca stypelioides *(Prickly-leaved Paperbark) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate	2/5
VA Biodiversity Conservation Benefit	Moderate	5/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-locally indigenous Australian native	5/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Low	7/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Moderate	0/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Moderate	0/10
RCA Longevity	Moderate	0/5

Total score		**40**
Species rank		**Equal 114th** of 202 species assessed

Notes: Although the species is not generically excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016* under Regulation 3F (4)(b), the species is effectively generically excluded due to it being exempt from tree-damaging activity under Schedule 4 clause 18(a). This is a rather odd clause that in practical terms results in the same exclusion from the definition of 'regulated tree' and 'significant tree' as that seen in Regulation 3F (4)(b). I am unaware of the historical reasons why this species and one other (*Lagunaria patersonia*) are listed as being exempt from tree-damaging activity under Schedule 4 clause 18(a) rather than more simply being listed as an excluded species under Regulation 3F (4)(b).

It is here recommended that the species be removed from Schedule 4 clause 18(a) and *not* excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016* under Regulation 3F (4)(b). The species moderate Value Assessment and Risk/Cost assessment scores (including low Failure Potential), has no significant risks or costs, and is not known to be weedy in the Greater Adelaide region.

A number of closely-related and similar-sized *Melaleuca* species grown in Greater Adelaide (e.g. *M. bracteata, M. lanceolata, M. linariifolia, M. quinquenervia*) are not excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016*, and neither should *M. styphelioides, especially* considering consistency and identification concerns (note however that one *Melaleuca* species – *M. armillaris* – is recommended to be excluded from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016*).

23. *Olea europaea* (Olive)

Figure 23. Mature trees of Olea europaea *(Olive) in South Australia. (A) Morphett Vale, City of Onkaparinga LGA. (B) St Peters, City of Norwood Payneham & St Peters LGA.*

Scientific name:	***Olea europaea***
Common names:	**Olive**
Synonyms:	None in common use.
Current status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool. Listed as a Class 27 Declared Plant in the *Landscape South Australia Act* (2019) when 'not planted, used and maintained for domestic, public amenity or commercial purposes', and therefore excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* under Regulation 3F (4)(c) under those circumstances.
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* **but excepting non-fruiting cultivars and individuals**.
Species origin:	Non-Australian evergreen species. Indigenous to Africa, western Asia, and southern Europe.

Frequency in Greater Adelaide (GA): Very common.
Frequency in GA as tree with trunk ≥2 m circ.: Common.

Table 41. **Olea europaea *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Olea europaea *(Olive) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate	2/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, evergreen species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Significant	-5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Low	3/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Moderate	0/5
RCA Climate Suitability	Very high	10/10
RCA Longevity	Very long	5/5

Total score		**35**
Species rank		**Equal 146th** of 202 species assessed

Notes: Commonly seen as a tree with a trunk circumference of ≥2 m in Greater Adelaide, with almost all such trees being multi-trunked and only qualifying because the sum of trunk circumferences is ≥2 m.

It is recommended that the species be generically excluded (excepting non-fruiting cultivars and individuals), due to almost all known trees with a trunk circumference of ≥2 m only qualifying because they are multi-trunked, its highly invasive status (especially in the Adelaide hills and southern suburbs), and its current listing as a Class 27 Declared Plant in the *Landscape South Australia Act* (2019) when 'not planted, used and maintained for domestic, public amenity or commercial purposes'. The species is recorded as being naturalised (i.e. an established weed) in the Flinders Ranges, Eyre Peninsula, Northern Lofty, Murray, Yorke Peninsula, Southern Lofty, Kangaroo Island, and South-east botanical regions of SA (Anon. 2021).

It is recommended that non-fruiting cultivars and individuals not be excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, as these do not have the potential to disperse seeds and become weedy. Non-fruiting cultivars and individuals (not excluded) can easily be identified from typical fruiting *Olea* (excluded) by their lack of fruits, which are otherwise present at some stage of development in all mature *Olea* trees year-round.

24. *Phoenix canariensis* (Canary Island Date Palm)

Figure 24. Phoenix canariensis *(Canary Island Date Palm) in the City of Onkaparinga LGA, South Australia. (A) As a young tree in Happy Valley. (B) as an older tree in Christies Beach. Note that both trees have a trunk circumference of ≥2 m at 1 m above ground level.*

Scientific name:	***Phoenix canariensis***
Common names:	**Canary Island Date Palm**, Pineapple Palm
Synonyms:	None in common use.
Current status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.
Species origin:	Non-Australian species. Indigenous to the Canary Islands in the northern Atlantic Ocean.

Frequency in Greater Adelaide (GA): Very common.
Frequency in GA as tree with trunk ≥2 m circ.: Very common.

Table 42.* Phoenix canariensis *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Phoenix canariensis *(Canary Island Date Palm) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate	2/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	Low	2/10
VA Protection of Native Species	Non-Australian palm	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Minor	0/5
RCA Health issues	Nil	5/5
RCA Fire potential	Low	3/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	High	-5/5
RCA Climate Suitability	High	5/10
RCA Longevity	Moderate	0/5

Total score		**20**
Species rank		**Equal 190th** of 202 species assessed

Notes: Because palms lack secondary growth, all trees of this species that have formed a trunk (which occurs from an early age in Greater Adelaide) will have a trunk circumference of ≥2 m. As such, this species often qualifies as a regulated tree when it provides almost none of the benefits gained from a tree with a large canopy. Even as a mature tree with a trunk of substantial height, the Value Assessment scores for this species are low to moderate.

Mature individuals of the species are commonly translocated, both within an allotment and over long distances (e.g. interstate). Because the species can be translocated easily, it makes the definition of 'removal' and 'tree damaging activity' under the *PDI Act 2016* problematic – Is translocation to another site outside or its LGA or even interstate (resulting in the net loss of a tree) regarded as removal?

It is recommended that the species be generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to it qualifying as a regulated tree at a very early age (from trunk formation), its invasive status in Greater Adelaide, its low to moderate Value Assessment scores, the high maintenance costs associated with the ongoing pruning of older and dead leaves ('fronds') from the tree before they fall, and the ability to relatively easily translocate mature individuals of the species.

Several other palm species planted in Greater Adelaide typically have a trunk circumference of approximately 2 m (just under or just over 2 m), namely *Jubaea chilensis* (Chilean Wine Palm) and *Washingtonia filifera* (Californian Fan Palm). These species are rarer in Greater Adelaide and as such are not here recommended for exclusion from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016.*

25. *Pinus halepensis* (Aleppo Pine)

Figure 25. Mature trees of Pinus halepensis *(Aleppo Pine) in South Australia. (A) Evanston, Town of Gawler LGA. (B) Torrens Park, City of Mitcham LGA.*

Scientific name:	***Pinus halepensis***
Common names:	**Aleppo Pine**
Synonyms:	None in common use.
Current status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool. Listed as a Class 47 Declared Plant in the *Landscape South Australia Act 2019* when 'not planted and maintained for amenity or commercial purposes', and therefore excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* under Regulation 3F (4)(c) under those circumstances.
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.
Species origin:	Non-Australian evergreen conifer species. Indigenous to southern Europe and northern Africa.

Frequency in Greater Adelaide (GA): Very common.
Frequency in GA as tree with trunk ≥2 m circ.: Common.

Table 43. **Pinus halepensis *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Pinus halepensis *(Aleppo Pine) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	High	4/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, evergreen conifer	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Low	7/10
RCA Weed potential	Significant	-5/5
RCA Health issues	Nil	5/5
RCA Fire potential	High	-5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	High	5/10
RCA Longevity	Long	3/5

Total score		**22**
Species rank		**Equal 183rd** of 202 species assessed

Notes: Commonly seen as a tree with a trunk circumference of ≥2 m in Greater Adelaide, both as intentionally planted trees and increasingly commonly as self-seeded (weed) trees. The species is a significant invasive weed throughout the Greater Adelaide region. The species is recorded as being naturalised (i.e. an established weed) in the Flinders Ranges, Eyre Peninsula, Northern Lofty, Murray, Yorke Peninsula, Southern Lofty, Kangaroo Island, and South-east botanical regions of SA (Anon. 2021).

It is recommended that the species be generically excluded, due to its highly invasive status, its high flammability, and its current listing as a Class 47 Declared Plant in the *Landscape South Australia Act 2019* when 'not planted and maintained for amenity or commercial purposes'.

26. *Pinus radiata* (Monterey/Radiata Pine)

Figure 26. Mature trees of Pinus radiata *(Monterey Pine) in the City of Onkaparinga LGA, South Australia. (A) Older tree in Flagstaff Hill. (B) Younger tree in Coromandel Valley.*

Scientific name: ***Pinus radiata***
Common names: **Monterey Pine**, **Radiata Pine**, Insignis Pine
Synonyms: None in common use.

Current status: **Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b).
Recommended status: **Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* (i.e. no change to existing exclusion).

Species origin: Non-Australian evergreen conifer species.
Indigenous to the west coast of North America.

Frequency in Greater Adelaide (GA): Common.
Frequency in GA as tree with trunk ≥2 m circ.: Common.

Table 44.* Pinus radiata *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Pinus radiata *(Monterey/Radiata Pine) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	High	4/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, evergreen conifer	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Moderate	0/10
RCA Weed potential	Moderate	-2/5
RCA Health issues	Nil	5/5
RCA Fire potential	High	-5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Low	-5/10
RCA Longevity	Short	-3/5

Total score		**2**
Species rank		**202nd** of 202 species assessed

Notes: Commonly seen as a tree with a trunk circumference of ≥2 m in Greater Adelaide, both as intentionally planted trees and as self-seeded (weed) trees. The species is an invasive weed in the Greater Adelaide region, especially in the higher-rainfalls hills region. The species is recorded as being naturalised (i.e. an established weed) in the Northern Lofty, Murray, Southern Lofty, Kangaroo Island, and South-east botanical regions of SA (Anon. 2021).

It is recommended that the status quo as a generically excluded species be maintained, due to its invasive status in Greater Adelaide, its high flammability, its low climate suitability (especially on the Adelaide Plains), and its relatively short lifespan.

Pinus radiata is closely related and superficially similar to a number of other *Pinus* species that are planted in Greater Adelaide, and I am aware of occurrences of the unapproved removal of other regulated *Pinus* species (e.g. *P. canariensis* – Canary Island Pine) due to their misidentification as *P. radiata*. Such identification issues may need to be considered when assessing *P. radiata* as an excluded species in the regulations.

27. *Pittosporum undulatum* (Sweet Pittosporum)

Figure 27. Mature trees of Pittosporum undulatum *(Sweet Pittosporum) in South Australia. (A) Morphett Vale, City of Onkaparinga LGA. (B) Glen Osmond, City of Burnside LGA.*

Scientific name:	***Pittosporum undulatum***
Common names:	**Sweet Pittosporum**, Native Daphne, Australian Cheesewood, Victorian Box, Mock Orange.
Synonyms:	None in common use.
Current status:	Listed as a Class 64 Declared Plant in the *Landscape South Australia Act 2019* for 'the areas of Green Adelaide, Hills and Fleurieu, Kangaroo Island and Limestone Coast regions', and therefore **excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* under Regulation 3F (4)(c).
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.
Species origin:	Locally non-indigenous Australian-native species. Indigenous to east coast of Queensland, New South Wales, and Victoria.

Frequency in Greater Adelaide (GA):	Common.
Frequency in GA as tree with trunk ≥2 m circ.:	Occasional.

Table 45.* Pittosporum undulatum *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Pittosporum undulatum *(Sweet Pittosporum) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Low to moderate	1/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	Low	1/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-locally indigenous Australian native	5/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Moderate	-2/5
RCA Health issues	Nil	5/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Moderate	0/10
RCA Longevity	Short	-3/5

Total score		**25**
Species rank		**181st** of 202 species assessed

Notes: Only occasionally seen as a tree with a trunk circumference of ≥2 m in Greater Adelaide, with all such trees being multi-trunked and only qualifying because the sum of trunk circumferences is ≥2 m.

The species is recorded as being naturalised (i.e. an established weed) in the Southern Lofty and the Kangaroo Island botanical regions of SA (Anon. 2021).

It is recommended that the species be generically excluded, due to all known trees with a trunk circumference of ≥2 m only qualifying because they are multi-trunked, its invasive status in Greater Adelaide (especially in the Adelaide hills), its relatively short lifespan, and its current listing as a Class 64 Declared Plant in the *Landscape South Australia Act 2019* for 'the areas of Green Adelaide, Hills and Fleurieu, Kangaroo Island and Limestone Coast regions'.

28. *Platanus* × *acerifolia* (London Plane)

Figure 28. Mature trees of Platanus *x* acerifolia *(London Plane) in South Australia. (A) Summer leaf in Adelaide, City of Adelaide LGA. (B) Autumn leaf in McLaren Vale, City of Onkaparinga LGA.*

Scientific name:	***Platanus* × *acerifolia***
Common names:	**London Plane**, Hybrid Plane
Synonyms:	*Platanus* × *hispanica*, *Platanus* × *hybrida*
Current status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b).
Recommended status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.
Species origin:	Non-Australian species. A hybrid of garden origin, with the parents being *P. orientalis* (Oriental Plane) from Eurasia and *P. occidentalis* (American Sycamore) from eastern North America.

Frequency in Greater Adelaide (GA): Very common.
Frequency in GA as tree with trunk ≥2 m circ.: Occasional.

Table 46.* Platanus × acerifolia *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Platanus × acerifolia *(London Plane) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Very high	5/5
VA Biodiversity Conservation Benefit	Negligible	0/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	High	8/10
VA Protection of Native Species	Non-Australian, winter-deciduous species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Nil	5/5
RCA Health issues	Minor	0/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Moderate	0/10
RCA Longevity	Long	3/5

Total score		**44**
Species rank		**Equal 89th** of 202 species assessed

Notes: Currently listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*. The reasoning for this exclusion is not made clear in the 2007 *Treelogic* report.

It is here recommended that the species be omitted from the list of generically excluded species. *Platanus* × *acerifolia* is a common urban tree, has high Value Assessment scores, is long-lived, has very low Failure Potential, and is not known to be weedy in the Greater Adelaide region. The species has been scored as a minor health issue based on anecdotal reports of hayfever and asthma based on high seasonal pollen loads. However, peer-reviewed research suggests that the bioaerosols produced by the species are not associated with seasonal symptoms (Sercombe *et al.* 2011).

29. *Populus* species (poplars)

Figure 29. Mature trees of Populus *species in South Australia. (A)* Populus nigra *'Italica' (Lombardy Poplar) in Mitcham, City of Mitcham LGA. (B)* Populus alba *(White Poplar) in Mylor, Adelaide Hills Council LGA.*

Relevant species: **All *Poplar* species (poplars)**, including the following species known to reach a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide:

Populus alba (White Poplar)

Populus deltoides (American cottonwood)

Populus nigra (Black Poplar), including the cultivar 'Italica' (Lombardy Poplar)

Current status: *Populus alba* (White Poplar) and *P. nigra* 'Italica' (Lombardy Poplar) listed as **generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b). All other *Populus* taxa **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool, including *Populus nigra* (Black Poplar) that are not the cultivar 'Italica'.

Recommended status: All *Populus* species **generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.

Table 47.* Populus *frequency. Populus *species (poplars) known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

***Populus* species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
P. alba	Southern Europe, western Asia, northern Africa	Rare	Rare
P. deltoides	Eastern North America	Occasional	Occasional
P. nigra	Southern Europe, western Asia, northern Africa	Rare	Rare
P. nigra 'Italica'	Cultivar of garden origin	Occasional	Occasional

Table 48.* Populus *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Populus *species (poplars) in Greater Adelaide.*

Value Assessment category	***P. alba*** **Assessment & Score**	***P. deltoides*** **Assessment & Score**	***P. nigra*** **Assessment & Score**
VA Amenity Value	High 4/5	High 4/5	High 4/5
VA Biodiversity Conservation Benefit	Invasive -5/10	Negligible 0/10	Negligible 0/10
VA Carbon Storage potential	High 5/5	High 5/5	High 5/5
VA Urban Cooling Effect	High 8/10	High 8/10	High 8/10
VA Protection of Native Species	Non-Australian winter-deciduous species 0/10	Non-Australian winter-deciduous species 0/10	Non-Australian winter-deciduous species 0/10

Risk / Cost Assessment category	***P. alba*** **Assessment & Score**	***P. deltoides*** **Assessment & Score**	***P. nigra*** **Assessment & Score**
RCA Failure potential	Low 7/10	Low to moderate 4/10	Low 7/10
RCA Weed potential	Minor 0/5	Nil 5/5	Nil 5/5
RCA Health issues	Nil 5/5	Nil 5/5	Nil 5/5
RCA Fire potential	Very low 5/5	Very low 5/5	Very low 5/5
RCA Infrastructure Damage	High -10/5	High -10/5	High -10/5
RCA Maintenance Costs	Low 3/5	Low 3/5	Low 3/5
RCA Climate Suitability	Low -5/10	Low -5/10	Low -5/10
RCA Longevity	Short -3/5	Short -3/5	Moderate 0/5

Total score	**14**	**21**	**27**
Species rank	**197th** of 202 species assessed	**Equal 187th** of 202 species assessed	**Equal 175th** of 202 species assessed

Notes: Medium-sized to large winter-deciduous trees from locally wet to waterlogged sites in temperate regions of the Northern Hemisphere. All *Populus* species have an extensive surface rooting distribution, presumably an adaptation to the wet to waterlogged soils in which they naturally grow. The roots of most *Populus* species also sucker prolifically.

Trees of *Populus* species are occasionally seen in Adelaide, but are almost always restricted to wet sites such as along creeks and drains (often as weed trees) and on sites subject to regular irrigation. *Populus alba* and *P. nigra* are recorded as being naturalised (i.e. an established weed) in the Northern Lofty, Southern Lofty, and South-east botanical regions of SA (Anon. 2021).

It is recommended that the genus be generically excluded from the definition of ‘regulated tree’ and ‘significant tree’ in *PDI Act 2016*, due to its non-Australian status, the invasive status of some species in Greater Adelaide (especially along watercourses), its high potential to damage surface and subsurface infrastructure (due to its extensive surface rooting distribution), its propensity to sucker from the roots, its low suitability to the climate of Greater Adelaide, and its short to moderate life-span.

All species, subspecies, varieties, and cultivars of the genus are members of the genus, and therefore would be excluded from the definition of ‘regulated tree’ and ‘significant tree’ in *PDI Act 2016.*

30. *Prunus* species (stone fruits)

Figure 30. Mature trees of Prunus *(stone fruits) species in the City of Onkaparinga LGA, South Australia. (A)* Prunus dulcis *(Almond) in Morphett Vale. (B)* Prunus cerasifera *'Nigra' (Purple-leaved Cherry-plum) in McLaren Vale.*

Relevant species: **All *Prunus* species (stone fruits)**, including the following species known to reach a trunk circ. (always in multi-trunked trees as the sum of trunk circ.) of ≥2 m in Greater Adelaide:

Prunus armeniaca (Apricot)

Prunus avium (Cherry)

Prunus cerasifera (Cherry-plum)

Prunus domestica (Plum)

Prunus dulcis (Almond)

Prunus persica (Peach, Nectarine)

Current status: All *Prunus* species **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.

Recommended status: All *Prunus* species **generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.

Table 49.* Prunus *frequency. Prunus *species (stone fruits) known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

***Prunus* species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
P. armeniaca	Central Asia	Common	Very rare
P. avium	Europe, Asia, northern Africa	Very common	Very rare
P. cerasifera	South-east Europe, western Asia	Very common	Rare
P. domestica	Eastern Europe, western Asia	Very common	Very rare
P. dulcis	Western Asia	Very common	Very rare
P. persica	Asia	Common	Very rare

Table 50.* Prunus cerasifera *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Prunus cerasifera *(Cherry Plum) in Greater Adelaide.*

Value Assessment category	**Assessment**	**Score**
VA Amenity Value	Low to moderate	1/5
VA Biodiversity Conservation Benefit	Negligible	0/10
VA Carbon Storage potential	Low	1/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, winter-deciduous species	0/10

Risk / Cost Assessment category	**Assessment**	**Score**
RCA Failure potential	Very low	10/10
RCA Weed potential	Minor	0/5
RCA Health issues	Nil	5/5
RCA Fire potential	Very low	5/5
RCA Infrastructure Damage	Low	5/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Moderate	0/10
RCA Longevity	Short	-3/5

Total score		**32**
Species rank		**159th** of 202 species assessed

Notes: Very commonly grown species in Greater Adelaide, where they are mainly planted for commercial and non-commercial fruit production and as small ornamental trees. Only rarely seen with a trunk circumference of ≥2 m in Greater Adelaide (I have assessed approximately 20 qualifying plants of the genus over the last decade), with all such trees being multi-trunked and only qualifying because the sum of trunk circumferences is ≥2 m. This means that only trees with poor and structurally unsound form (multi-trunked) will quality as regulated trees, with trees of sound form (single-trunked) never qualifying.

It is recommended that the genus be listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to all known trees with a trunk circumference of ≥2 m only qualifying because they are multi-trunked, their non-Australian origin, their generally low Value Assessment scores, and their relatively short lifespan.

31. *Pyrus* species (pears)

Figure 31. Mature trees of Pyrus *(pear) species in South Australia. (A)* Pyrus calleryana *(Callery Pear) in Golden Grove, City of Tea Tree Gully LGA. (B)* Pyrus ussuriensis *(Manchurian Pear) in Aberfoyle Park, City of Onkaparinga LGA.*

Relevant species: **All *Pyrus* species (pears)**, including the following species known to reach a trunk circ. (always in multi-trunked trees as the sum of trunk circ.) of ≥2 m in Greater Adelaide:

Pyrus calleryana (Callery Pear)

Pyrus communis (European Pear)

Pyrus ussuriensis (Manchurian Pear)

Current status: All *Pyrus* species **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.

Recommended status: All *Pyrus* species **generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.

Table 51.* Pyrus *frequency. Pyrus *species (pears) known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in the Greater Adelaide region.*

***Pyrus* species**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
P. calleryana	Eastern Asia	Very common	Very rare
P. communis	Europe and western Asia	Common	Very rare
P. ussuriensis	Eastern Asia	Very common	Very rare

Table 52.* Pyrus *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Pyrus *species (pears) in Greater Adelaide.*

Value Assessment category	***P. calleryana* Assessment & Score**	***P. communis* Assessment & Score**	***P. ussuriensis* Assessment & Score**
VA Amenity Value	Moderate 2/5	Moderate 2/5	Moderate 2/5
VA Biodiversity Conservation Benefit	Negligible 0/10	Negligible 0/10	Negligible 0/10
VA Carbon Storage potential	Low 1/5	Low 1/5	Low 1/5
VA Urban Cooling Effect	Moderate 5/10	Moderate 5/10	Moderate 5/10
VA Protection of Native Species	Non-Australian winter-deciduous species 0/10	Non-Australian winter-deciduous species 0/10	Non-Australian winter-deciduous species 0/10

Risk / Cost Assessment category	***P. calleryana* Assessment & Score**	***P. communis* Assessment & Score**	***P. ussuriensis* Assessment & Score**
RCA Failure potential	Low 7/10	Low 7/10	Low 7/10
RCA Weed potential	Nil 5/5	Nil 5/5	Nil 5/5
RCA Health issues	Nil 5/5	Nil 5/5	Nil 5/5
RCA Fire potential	Very low 5/5	Very low 5/5	Very low 5/5
RCA Infrastructure Damage	Moderate 0/5	Moderate 0/5	Moderate 0/5
RCA Maintenance Costs	Low 3/5	Low 3/5	Low 3/5
RCA Climate Suitability	Moderate 0/10	Moderate 0/10	Moderate 0/10
RCA Longevity	Short -3/5	Moderate 0/5	Short -3/5

Total score	**30**	**33**	**30**
Species rank	**Equal 163rd** of 202 species assessed	**Equal 156th** of 202 species assessed	**Equal 163rd** of 202 species assessed

Notes: Very commonly grown species in Greater Adelaide, where they are mainly planted as small ornamental trees and for commercial and non-commercial fruit production. Only very rarely seen with a trunk circumference of ≥2 m in Greater Adelaide (I have assessed approximately 10 qualifying plants of the genus over the last decade, but many more will likely qualify over the coming decade), with all such trees being multi-trunked and only qualifying because the sum of trunk circumferences is ≥2 m. This means that small trees with poor form (multi-trunked) will typically qualify as regulated trees, with single-trunked trees very rarely qualifying.

It is recommended that the genus be listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to all known trees with a trunk circumference of ≥2 m only qualifying because they are multi-trunked, their non-Australian origin, their low to moderate Value Assessment scores, and their short to moderate lifespan.

32. *Robinia pseudoacacia* (Black Locust)

Figure 32. Mature trees of Robinia pseudoacacia *(Black Locust) in South Australia. (A) Spring leaf phase in Unley Park, City of Unley LGA. (B) Winter leaf phase at Bedford Park, City of Mitcham LGA.*

Scientific name:	***Robinia pseudoacacia***
Common names:	**Black Locust**, False Acacia
Synonyms:	None in common use.
Current status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b).
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* (i.e. no change to existing exclusion).
Species origin:	Non-Australian species. Indigenous to eastern North America.
Frequency in Greater Adelaide (GA):	Common.
Frequency in GA as tree with trunk ≥2 m circ.:	Rare.

Table 53. **Robinia pseudoacacia *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Robinia pseudoacacia *(*Black Locust*) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate	2/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	Moderate	3/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, winter-deciduous species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Low to moderate	4/10
RCA Weed potential	Moderate	-2/5
RCA Health issues	Minor	0/5
RCA Fire potential	Low	3/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Low	-5/10
RCA Longevity	Short	-3/5

Total score		**5**
Species rank		**200th** of 202 species assessed

Notes: Only rarely seen as a tree with a trunk circumference of ≥2 m in Greater Adelaide, with many such trees being multi-trunked and only qualifying because the sum of trunk circumferences is ≥2 m.

The species is recorded as being naturalised (i.e. an established weed) in the Flinders Ranges, Northern Lofty, Murray, Southern Lofty, and South-east botanical regions of SA (Anon. 2021).

It is recommended that the status quo as a generically excluded species be maintained due to most known trees with a trunk circumference of ≥2 m only qualifying because they are multi-trunked, its invasive status in Greater Adelaide, its moderate Value Assessment scores, its low climate suitability, and its relatively short lifespan.

Various cultivars of the species are known, which differ from one another in canopy and foliage characteristics. All cultivars of the species are members of the species, and therefore to be treated in the same manner as the typical variant of the species under the *PDI Act 2016.*

33. *Salix* species (willows)

Figure 33. Mature trees of Salix *species in South Australia. (A)* Salix babylonica *(Weeping Willow) in Linden Park, City of Burnside LGA. (B)* Salix matsudana *'Tortuosa' (Corkscrew Willow) in Mount Barker, Mount Barker District Council LGA.*

Relevant species: **All *Salix* species (willows)**, including the following species known to reach a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide:

Salix babylonica (Weeping Willow)

Salix fragilis (Crack Willow)

Salix matsudana 'Tortuosa' (Corkscrew Willow)

Salix × *rubens* (Hybrid Crack Willow)

Salix × *sepulcralis* (White Weeping Willow)

Current status: *Salix babylonica*, *S. chilensis* 'Fastigiata', *S. fragilis*, *S.* × *rubens*, and *S.* × *sepulcralis* var. *chrysocoma* listed as **generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b). All other *Salix* taxa **not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool, including *S. chilensis*

that are not the cultivar 'Fastigiata', and other varieties of *S.* × *sepulcralis* other than var. *chrysocoma*.
A complex array of *Salix* taxa is listed as Class 56 and/or Class 69 Declared Plants in the *Landscape South Australia Act 2019* for the whole of the State, and these taxa are **excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* under Regulation 3F (4)(c).

Recommended status: All *Salix* species **generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.

Table 54.* Salix *frequency. Salix *taxa (willows) known to attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

***Salix* taxon**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
Salix babylonica	Northern China, Asia	Occasional	Occasional
Salix chilensis 'Fastigiata'	Cultivar of species from South America	Occasional	None
Salix fragilis	Europe and western Asia	Common	Common
Salix matsudana 'Tortuosa'	Cultivar of species from China, Asia	Rare	Rare
Salix × *rubens*	Hybrid origin; *S. alba* × *S. fragilis*	Occasional	Occasional

Table 55.* Salix *scoring. *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Salix *species that occasionally or commonly attain a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide.*

Value Assessment category	***S. babylonica* Assessment & Score**	***S. fragilis* Assessment & Score**	***S.* × *rubens* Assessment & Score**
VA Amenity Value	High 4/5	Moderate 2/5	Moderate 2/5
VA Biodiversity Conservation Benefit	Negligible 0/10	Invasive -5/10	Invasive -5/10
VA Carbon Storage potential	High 5/5	Moderate 3/5	Moderate 3/5
VA Urban Cooling Effect	High 8/10	High 8/10	High 8/10
VA Protection of Native Species	Non-Australian winter-deciduous species 0/10	Non-Australian winter-deciduous species 0/10	Non-Australian winter-deciduous species 0/10

Risk / Cost Assessment category	***S. babylonica* Assessment & Score**	***S. fragilis* Assessment & Score**	***S.* × *rubens* Assessment & Score**
RCA Failure potential	Low 7/10	Low 7/10	Low 7/10
RCA Weed potential	Minor 0/5	Moderate -2/5	Moderate -2/5
RCA Health issues	Nil 5/5	Nil 5/5	Nil 5/5
RCA Fire potential	Very low 5/5	Very low 5/5	Very low 5/5
RCA Infrastructure Damage	Moderate 0/5	Moderate 0/5	Moderate 0/5
RCA Maintenance Costs	Low 3/5	Low 3/5	Low 3/5
RCA Climate Suitability	Very low -10/10	Very low -10/10	Very low -10/10
RCA Longevity	Moderate 0/5	Moderate 0/5	Moderate 0/5

Total score	**27**	**16**	**16**
Species rank	**Equal 175th** of 202 species assessed	**Equal 194th** of 202 species assessed	**Equal 194th** of 202 species assessed

Notes: Small to large winter-deciduous trees from locally cold and/or wet to waterlogged sites in the colder regions of the Northern Hemisphere. Most *Salix* species have an extensive surface rooting distribution, presumably an adaptation to the wet to waterlogged soils in which they naturally grow. The roots of many *Salix* species also sucker prolifically.

Trees of *Salix* species are commonly seen in Adelaide, but are mostly restricted to locally wet sites such as along creeks and drains (often as weed trees) and on sites subject to regular irrigation. Weed trees of *Salix* species dominate some watercourses such as the mid to upper reaches of the Torrens River, where it is a significant woody weed. A number of Salix species are recorded as being naturalised (i.e. established weeds) in parts of South Australia, particularly in the Southern Lofty and Murray botanical regions of SA (Anon. 2021).

It is recommended that the genus be generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to its variably invasive status in Greater Adelaide (especially along watercourses), their very low suitability to the climate of Greater Adelaide, and the current listing of many *Salix* species as Class 56 and/or Class 69 Declared Plants in the *Landscape South Australia Act 2019* for the whole of the State.

While the identification of the genus *Salix* is relatively straightforward, the identification of species within the genus is very problematic, partly due to the large number of species in the genus (over 500 species) and partly because of hybridisation between species. Generically excluding the whole genus, rather than only individual species, avoids the problems associated with species identification within the genus.

All species, subspecies, varieties, and cultivars of the genus are members of the genus, and therefore would be excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016.*

34. *Schinus molle* (Peppercorn)

Figure 34. Mature trees of Schinus molle *(Peppercorn) in South Australia. (A) Adelaide, City of Adelaide LGA. (B) Huntfield Heights, City of Onkaparinga LGA.*

Scientific name:	***Schinus molle***
Common names:	**Peppercorn**, Peruvian Pepper, American Pepper, Peruvian Peppertree, False Pepper, Pepper Tree, California Pepper Tree, Peruvian Mastic, Pepperina
Synonyms:	*Schinus areira*
Current status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, under regulation 3F (4)(b), where listed as *Schinus areira*.
Recommended status:	**Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, even when <10 m from a dwelling or pool.
Species origin:	Non-Australian species. Indigenous to South America.

Frequency in Greater Adelaide (GA): Very common.
Frequency in GA as tree with trunk ≥2 m circ.: Common.

Table 56. **Schinus molle *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Schinus molle *(Peppercorn) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate to high	3/5
VA Biodiversity Conservation Benefit	Negligible	0/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, evergreen species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Very low	10/10
RCA Weed potential	Nil	5/5
RCA Health issues	Nil	5/5
RCA Fire potential	Low	3/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	Very high	10/10
RCA Longevity	Very long	5/5

Total score		**54**
Species rank		**Equal 29th** of 202 species assessed

Notes: Currently listed as generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*. The reasoning for this exclusion is not made clear in the 2007 *Treelogic* report, but the report does state that the species has the 'potential to be weedy' and erroneously states that the species has a 'surface oriented root system' (the species is actually deep rooted).

Although the species is recorded as being naturalised in the Nullarbor, Gairdner-Torrens, Flinders Ranges, Eastern, Eyre Peninsula, Northern Lofty, Murray, Yorke Peninsula, Southern Lofty, and South-east botanical regions of SA (Anon. 2021), most or all of these records likely represent old, planted trees around abandoned homesteads and limited establishments around such trees.

It is here recommended that the species be omitted from the list of generically excluded species. *Schinus molle* has moderate Value Assessment and Risk/Cost assessment scores (including very low Failure Potential), is very well-suited to the climate, is very long-lived, and is not known to be weedy in the Greater Adelaide region.

35. *Tamarix aphylla* (Athel Tree)

Figure 35. Mature trees of Tamarix aphylla *(Athel Tree) in South Australia. (A) Osborne, City of Port Adelaide Enfield LGA. (B) Port Noarlunga, City of Onkaparinga LGA.*

Scientific name:	***Tamarix aphylla***
Common names:	**Athel Tree**, Athel Pine, Athel Tamarix.
Synonyms:	None in common use.
Current status:	Listed as a Class 50 Declared Plant in the *Landscape South Australia Act 2019* for the whole of the State, and therefore **excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016* under Regulation 3F (4)(c).
Recommended status:	**Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016.*
Species origin:	Non-Australian species. Indigenous to Africa and Asia, including the Middle East.

Frequency in Greater Adelaide (GA):	Common.
Frequency in GA as tree with trunk ≥2 m circ.:	Occasional.

Table 57. **Tamarix aphylla *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for* Tamarix aphylla *(Athel Tree) in the Greater Adelaide region.*

Value Assessment category	Assessment	Score
VA Amenity Value	Moderate to high	3/5
VA Biodiversity Conservation Benefit	Invasive	-5/10
VA Carbon Storage potential	High	5/5
VA Urban Cooling Effect	Moderate	5/10
VA Protection of Native Species	Non-Australian, evergreen species	0/10

Risk / Cost Assessment category	Assessment	Score
RCA Failure potential	Low	7/10
RCA Weed potential	Minor	0/5
RCA Health issues	Nil	5/5
RCA Fire potential	Low	3/5
RCA Infrastructure Damage	Moderate	0/5
RCA Maintenance Costs	Low	3/5
RCA Climate Suitability	High	5/10
RCA Longevity	Long	3/5

Total score		**34**
Species rank		**Equal 152nd** of 202 species assessed

Notes: Only occasionally seen as a tree with a trunk circumference of ≥2 m in Greater Adelaide, with almost all such trees being multi-trunked and only qualifying because the sum of trunk circumferences is ≥2 m.

The species is recorded as being naturalised (i.e. an established weed) in the North-western, Lake Eyre, Gairdner-Torrens, Flinders Ranges, Eastern, and Murray botanical regions of SA (Anon. 2021). Also listed as a 'Weed of National Significance' in all states of Australia (Invasive Plants and Animals Committee 2016).

It is recommended that the species be generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, due to most known trees with a trunk circumference of ≥2 m only qualifying because they are multi-trunked, its invasive status in Greater Adelaide (especially in the northern suburbs), and its current listing as a Class 50 Declared Plant in the *Landscape South Australia Act 2019* for the whole of the State.

36. *Ulmus minor* (English Elm)
and
Ulmus × *hollandica* (Dutch Elm)

Figure 36. Mature trees of Ulmus *species in South Australia. (A)* U. minor *(English Elm) in Hackney, City of Norwood Payneham & St Peters LGA. (B)* Ulmus × hollandica *(Dutch Elm) in Unley, City of Unley LGA.*

Relevant species: ***Ulmus minor* (English Elm) and *U.* × *hollandica* (Dutch Elm) only**.

Other *Ulmus* species, including the following species known to reach a trunk circ. (or combined trunk circ.) of ≥2 m in Greater Adelaide, are not included here:

Ulmus glabra (Scotch Elm), including the grafted cultivar 'Lutescens' (Golden Elm)

Ulmus parvifolia (Chinese Elm)

Current status: **Not excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*, except when <10 m from a dwelling or pool.

Recommended status: **Generically excluded** from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016*.

Table 58. **Ulmus *frequency*** *Frequency of Ulmus minor* (English Elm) and U. × hollandica *(Dutch Elm) in Greater Adelaide.*

***Ulmus* taxon**	**Species origin**	**Frequency in GA**	**Frequency in GA with trunk ≥2 m circ.**
U. minor	Southern Europe, western Asia, northern Africa	Common	Occasional
U. × hollandica	Europe (natural hybrid of *U. glabra* × *U. minor*)	Common	Occasional

Table 59. **Ulmus *scoring.*** *Value Assessment (VA) and Risk / Cost Assessment (RCA) for Ulmus minor* (English Elm) and U. × hollandica *(Dutch Elm) in Greater Adelaide.*

Value Assessment category	***U. minor*** **Assessment & Score**	***U. × hollandica*** **Assessment & Score**
VA Amenity Value	Moderate to high 3/5	Moderate to high 3/5
VA Biodiversity Conservation Benefit	Invasive -5/10	Invasive -5/10
VA Carbon Storage potential	Moderate 3/5	Moderate 3/5
VA Urban Cooling Effect	Moderate 5/10	Moderate 5/10
VA Protection of Native Species	Non-Australian winter-deciduous species 0/10	Non-Australian winter-deciduous species 0/10

Risk / Cost Assessment category	***U. minor*** **Assessment & Score**	***U. × hollandica*** **Assessment & Score**
RCA Failure potential	Low 7/10	Low 7/10
RCA Weed potential	Minor 0/5	Moderate -2/5
RCA Health issues	Nil 5/5	Nil 5/5
RCA Fire potential	Very low 5/5	Very low 5/5
RCA Infrastructure Damage	Moderate 0/5	Moderate 0/5
RCA Maintenance Costs	Low 3/5	Low 3/5
RCA Climate Suitability	Low -5/10	Low -5/10
RCA Longevity	Moderate 0/5	Moderate 0/5

Total score	**21**	**19**
Species rank	**Equal 187th** of 202 species assessed	**193rd** of 202 species assessed

Notes: *Ulmus minor* and *U. × hollandica* are medium-sized to large winter-deciduous trees from the cool-temperate regions with reliable rainfall in the Northern Hemisphere. Both species are common in Greater Adelaide, especially as weed trees along creeks and drains. Both species are recorded as being naturalised (i.e. established weeds) in the Northern Lofty and Southern Lofty botanical regions of SA (Anon. 2021).

It is recommended that *Ulmus minor* and *U. × hollandica* be generically excluded from the definition of 'regulated tree' and 'significant tree' in *PDI Act 2016,* due to their invasive status in Greater Adelaide (especially along watercourses), their propensity to produce extensive suckers from the near-surface roots, and their low suitability to the climate of Greater Adelaide away from watercourses.

A number of similar-sized *Ulmus* species are also seen in Greater Adelaide (e.g. *U. glabra*, including the grafted cultivar 'Lutescens', and *U. parvifolia*). These other species are not considered to be environmental weeds and are therefore not recommended for exclusion from the definition of 'regulated tree' and 'significant tree' in the *PDI Act 2016*. There is some potential for the misidentification of *U. minor* and *U.* × *hollandica* from other *Ulmus* species, especially when they are leafless in winter and due to hybridisation between species. The exemption of *U. minor* and *U.* × *hollandica* from the regulations should consider these identification issues.

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I thank you for the opportunity to provide this arborist review and report.
If you require further information or clarification, please contact me for assistance.

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7.0 APPENDIX 1 – SPECIES ASSESSED

Scientific name	Common name	Freq. as tree of any size in GA	Freq. as tree trunk circ. ≥2 m in GA
Acacia baileyana	Cootamundra Wattle	Common	Very rare
Acacia mearnsii	Green Wattle	Rare	Very rare
Acacia melanoxylon	Blackwood	Occasional	Very rare
Acacia pendula	Weeping Myall	Occasional	Rare
Acacia salicina	Willow Wattle	Occasional	Occasional
Acacia saligna	Western Wreath Wattle	Occasional	Rare
Acer monspessulanum	Montpelier Maple	Rare	Very rare
Acer negundo	Box Elder	Occasional	Occasional
Acer saccharinum	Silver Maple	Rare	None
Aesculus hippocastanum	Horse Chestnut	Rare	Rare
Agathis robusta	Queensland Kauri Pine	Rare	Rare
Agonis flexuosa	Willow Myrtle	Very common	Common
Ailanthus altissima	Tree Of Heaven	Rare	Very rare
Allocasuarina verticillata	Drooping Sheoak	Occasional	Rare
Alnus acuminata	Evergreen Alder	Rare	Very rare
Angophora costata	Sydney Red Gum	Common	Occasional
Angophora floribunda	Rough-barked Apple-myrtle	Occasional	Rare
Angophora melanoxylon	Coolabah Apple-myrtle	Very rare	Very rare
Angophora subvelutina	Broad-leaved Apple-myrtle	Very rare	Very rare
Araucaria bidwillii	Bunya Pine	Rare	Rare
Araucaria columnaris	Cook Pine	Occasional	Rare
Araucaria cunninghamii	Hoop Pine	Rare	Rare
Araucaria heterophylla	Norfolk Island Pine	Common	Common
Arbutus unedo	Irish Strawberry Tree	Occasional	Rare
Brachychiton acerifolius	Illawarra Flame Tree	Occasional	Very rare
Brachychiton discolor	Lacebark	Occasional	Very rare
Brachychiton populneus	Kurrajong	Common	Rare
Brachychiton rupestris	Queensland Bottle Tree	Occasional	Rare
Brachychiton x *roseus*	Pink Kurrajong	Occasional	Rare
Callistemon 'Harkness'	Gawler Hybrid Bottlebrush	Very common	Rare
Callistemon viminalis	Weeping Bottlebrush	Very common	Very rare
Callitris gracilis	native cypress pines	Common	Rare
Carya illinoiensis	Pecan	Rare	Rare
Casuarina cunninghamiana	River Sheoak	Common	Occasional
Casuarina glauca	Swamp Sheoak	Common	Occasional
Casuarina obesa	Western Swamp Sheoak	Occasional	Rare
Cedrus atlantica	Atlas Cedar	Occasional	Rare
Cedrus deodara	Deodar Cedar	Common	Occasional
Cedrus lebani	Lebanon Cedar	Rare	Rare
Celtis australis	European Hackberry	Occasional	Rare
Celtis occidentalis	Common Hackberry	Occasional	Rare
Celtis sinuensis	Chinese Hackberry	Occasional	Very rare
Ceratonia siliqua	Carob Tree	Occasional	Occasional
Cinnamomum camphora	Camphor Laurel	Occasional	Occasional
Citharexylum spinosum	Fiddlewood	Occasional	Rare
Corymbia calophylla	Marri	Rare	Rare
Corymbia citriodora	Lemon-Scented Gum	Very common	Common
Corymbia eximia	Yellow Bloodwood	Common	Rare
Corymbia ficifolia	WA Red-flowering Gum	Very common	Rare
Corymbia maculata	Spotted Gum	Very common	Common
Corymbia torelliana	Cadagi	Very rare	Very rare
Corymbia variegata	Northern Spotted Gum	Common	Common
Cupaniopsis anacardioides	Tuckaroo	Very common	Very rare
Cupressus arizonica	Arizona Cypress	Occasional	Rare
Cupressus macrocarpa	Monterey Cypress	Very common	Very common

Scientific name	Common name	Freq. as tree of any size in GA	Freq. as tree trunk circ. ≥2 m in GA
Cupressus sempervirens	Italian Cypress	Common	Rare
Cupressus torulosa	Himalayan Cypress	Rare	Rare
Dracaena draco	Dragon Tree	Rare	Very rare
Erythrina caffra	African Coral Tree	Rare	Rare
Erythrina x *sykesii*	Common Coral Tree	Occasional	Occasional
Eucalyptus argophloia	Queensland White Gum	Rare	Rare
Eucalyptus astringens	Brown Mallet	Occasional	Rare
Eucalyptus bicostata	Southern Blue Gum	Occasional	Occasional
Eucalyptus botryoides	Bangalay, Southern Mahogany	Common	Occasional
Eucalyptus brockwayi	Dundas Mahogany	Rare	Rare
Eucalyptus camaldulensis	River Red Gum	Very common	Very common
Eucalyptus cinerea	Argyle Apple	Common	Occasional
Eucalyptus cladocalyx	Sugar Gum	Very common	Very common
Eucalyptus conferruminata	Bald Island Marlock	Common	Rare
Eucalyptus coolabah	Coolabah	Rare	Rare
Eucalyptus cornuta	Yate	Occasional	Rare
Eucalyptus dalrympleana	Mountain White Gum	Rare	Rare
Eucalyptus dawsonii	Slaty Box	Rare	Rare
Eucalyptus diversicolor	Karri	Very rare	Very rare
Eucalyptus diversifolia	Coastal Mallee	Rare	Very rare
Eucalyptus dundasii	Dundas Blackbutt	Rare	Very rare
Eucalyptus fasciculosa	Pink Gum	Occasional	Rare
Eucalyptus gardneri	Blue Mallet	Occasional	Rare
Eucalyptus globulus	Tasmanian Blue Gum	Very common	Very common
Eucalyptus gomphocephala	Tuart	Occasional	Occasional
Eucalyptus goniocalyx	Long-leaved Box	Rare	Rare
Eucalyptus grandis	Flooded Gum	Common	Common
Eucalyptus intertexta	Gum-Barked Coolibah	Occasional	Occasional
Eucalyptus kondininensis	Kondinin Blackbutt	Rare	Rare
Eucalyptus leucoxylon	SA Blue Gum	Very common	Very common
Eucalyptus maidenii	Maiden's Gum	Rare	Rare
Eucalyptus mannifera	Red-spotted Gum	Occasional	Occasional
Eucalyptus melliodora	Yellow Box	Occasional	Occasional
Eucalyptus microcarpa	Grey Box	Common	Common
Eucalyptus myriadena	Small-fruited Gum	Rare	Rare
Eucalyptus newbeyi	Newbey's Mallet	Rare	Very rare
Eucalyptus nicholii	Willow Peppermint	Common	Occasional
Eucalyptus obliqua	Messmate Stringybark	Common	Common
Eucalyptus occidentalis	Swamp yate	Common	Occasional
Eucalyptus odorata	Peppermint Box	Rare	Rare
Eucalyptus petiolaris	Eyre Peninsula Blue Gum	Common	Occasional
Eucalyptus polyanthemos	Red Box	Rare	Rare
Eucalyptus porosa	Mallee Box	Common	Occasional
Eucalyptus robusta	Swamp Mahogany	Occasional	Rare
Eucalyptus rubida	Candlebark	Very rare	Very rare
Eucalyptus saligna	Sydney Blue Gum	Common	Common
Eucalyptus salmonophloia	Salmon Gum	Occasional	Occasional
Eucalyptus salubris	Gimlet	Occasional	Rare
Eucalyptus sargentii	Salt River Gum	Occasional	Rare
Eucalyptus scoparia	Wallangarra White Gum	Very common	Occasional
Eucalyptus sideroxylon	Mugga, Red Ironbark	Very common	Common
Eucalyptus spathulata	Swamp mallet	Common	Occasional
Eucalyptus stricklandii	Strickland's Gum	Occasional	Rare
Eucalyptus torquata	Coral Gum	Very common	Rare
Eucalyptus tricarpa	Southern Red Ironbark	Rare	Rare
Eucalyptus utilis	Coastal Moort	Common	Rare
Eucalyptus viminalis	Manna Gum	Common	Common

Scientific name	Common name	Freq. as tree of any size in GA	Freq. as tree trunk circ. ≥2 m in GA
Ficus benjamina	Weeping Fig	Occasional	Very rare
Ficus desertorum	Rock Fig	Rare	Rare
Ficus elastica	Rubber Tree	Rare	Rare
Ficus macrophylla	Moreton Bay Fig	Common	Common
Ficus microcarpa	Hill's Weeping Fig	Common	Occasional
Ficus rubiginosa	Rusty Fig	Common	Occasional
Ficus virens	White Fig	Very rare	Very rare
Fraxinus americana	White Ash	Occasional	Rare
Fraxinus angustifolia	Desert Ash	Very common	Common
Fraxinus angustifolia 'Raywood'	Claret Ash	Common	Occasional
Fraxinus excelsior 'Aurea'	Golden Ash	Common	Rare
Geijera parviflora	Wilga	Occasional	Very rare
Ginkgo biloba	Maidenhair Tree	Occasional	Very rare
Gleditsia triacanthos	Honey Locust	Common	Rare
Grevillea robusta	Silky Oak	Common	Occasional
Hymenosporum flavum	Native Frangipani	Common	Very rare
Jacaranda mimosifolia	Jacaranda	Very common	Rare
Jubaea chilensis	Chilean Wine Palm	Very rare	Very rare
Juglans nigra	Black Walnut	Very rare	Very rare
Juglans regia	Persian Walnut	Very rare	Very rare
Koelreuteria bipinnata	Chinese Golden Raintree	Common	Very rare
Koelreuteria paniculata	Golden Raintree	Occasional	Very rare
Lagunaria patersonia	Norfolk Island Hibiscus	Common	Occasional
Liquidambar styraciflua	American Sweetgum	Common	Occasional
Lophostemon confertus	Queensland Box	Very common	Occasional
Magnolia grandifolia	magnolias	Very common	Very rare
Melaleuca armillaris	Bracelet Honey-myrtle	Very common	Rare
Melaleuca bracteata	Black Tea Tree	Occasional	Rare
Melaleuca lanceolata	Black Tea Tree	Occasional	Rare
Melaleuca linariifolia	Snow In Summer	Common	Rare
Melaleuca quinquenervia	Broad-leaved paperbark	Rare	Rare
Melaleuca styphelioides	Prickly-leaved Paperbark	Occasional	Rare
Melia azedarach	White Cedar	Very common	Occasional
Metasequoia glyptostroboides	Dawn Redwood	Rare	Very rare
Metrosideros exselsa	New Zealand Christmas Tree	Common	Rare
Morus alba	White Mulberry	Occasional	Very rare
Olea europaea	Olive	Very common	Common
Paulownia tomentosa	Princess Tree	Common	Very rare
Phoenix canariensis	Canary Island Date Palm	Very common	Very common
Pinus canariensis	Canary Island Pine	Occasional	Occasional
Pinus halepensis	Aleppo Pine	Very common	Common
Pinus pinaster	Maritime Pine	Rare	Rare
Pinus pinea	Stone Pine	Occasional	Occasional
Pinus radiata	Radiata/Monterey Pine	Common	Common
Pinus roxburghii	Chur Pine	Rare	Rare
Pistacia chinensis	Chinese Pistache	Common	Rare
Pittosporum angustifolium	Weeping Pittosporum	Occasional	Very rare
Pittosporum crassifolium	Karo	Occasional	Very rare
Pittosporum undulatum	Sweet Pittosporum	Common	Occasional
Platanus orientalis	Oriental Plane	Common	Rare
Platanus x *acerifolia*	London Plane	Very common	Occasional
Populus alba	White Poplar	Rare	Rare
Populus deltoides	American cottonwood	Occasional	Occasional
Populus nigra	Black Poplar	Rare	Rare
Populus nigra 'Italica'	Lombardy Poplar	Occasional	Occasional
Prunus armeniaca	Apricot	Common	Very rare
Prunus avium	Cherry	Very common	Very rare

Scientific name	Common name	Freq. as tree of any size in GA	Freq. as tree trunk circ. ≥2 m in GA
Prunus cerasifera	Cherry-plum	Very common	Rare
Prunus domestica	Plum	Very common	Very rare
Prunus dulcis	Almond	Very common	Very rare
Prunus persica	Peach, Nectarine	Common	Very rare
Pyrus calleryana	Callery Pear	Very common	Very rare
Pyrus communis	European Pear	Common	Very rare
Pyrus ussuriensis	Manchurian Pear	Very common	Very rare
Quercus canariensis	Algerian Oak	Rare	Very rare
Quercus ilex	Evergreen Oak	Rare	Rare
Quercus palustris	Pin Oak	Occasional	Rare
Quercus robur	European Oak	Common	Occasional
Quercus suber	Cork Oak	Occasional	Rare
Rhus lancea	Willow Rhus	Rare	Rare
Robinia pseudoacacia	Black Locust	Common	Rare
Salix babylonica	Weeping Willow	Occasional	Occasional
Salix chilensis 'Fastigiata'	Chilean Willow, etc	Occasional	None
Salix fragilis	Crack Willow	Common	Common
Salix matsudana 'Tortuosa'	Corkscrew Willow	Rare	Rare
Salix x *rubens*	Hybrid Crack Willow	Occasional	Occasional
Salix x *sepulcralis*	White Weeping Willow	Occasional	Occasional
Schinus molle	Peppercorn	Very common	Common
Sequoia sempervirens	Californian redwood	Rare	Rare
Sequoiadendron gigantium	giant sequoia	Rare	Rare
Sophora japonica	Japanese Pagoda Tree	Occasional	Rare
Syzygium australe	Lilly Pilly	Very common	Occasional
Tamarix aphylla	Athel Tree	Common	Occasional
Tristaniopsis laurina	Water Gum	Common	Rare
Ulmus glabra	Scotch Elm	Occasional	Rare
Ulmus glabra 'Lutescens'	Golden Elm	Common	Rare
Ulmus minor	English Elm	Common	Occasional
Ulmus parvifolia	Chinese Elm	Very common	Rare
Ulmus x *hollandica*	Dutch Elm	Common	Occasional
Washingtonia filifera	Californian Fan Palm	Common	Common

8.0 APPENDIX 1 – SPECIES DATA

Scientific name	Amenity value	Biodiversity & Conservation value	Carbon Storage	Urban Cooling	Native Species Protection	Failure potential	Weed potential	Health issues	Fire potential	Infrastructure Damage	Maintenance Costs	Climate Suitability	Longevity	Total score
Acacia baileyana	1	-5	1	5	5	7	0	5	0	5	3	5	-5	**27**
Acacia mearnsii	2	2	3	5	5	0	5	5	0	0	3	-5	-3	**22**
Acacia melanoxylon	2	10	3	5	10	10	5	5	3	0	3	5	3	**64**
Acacia pendula	2	2	3	5	5	7	5	5	3	0	3	5	3	**48**
Acacia salicina	2	10	3	5	10	7	5	5	0	0	3	5	3	**58**
Acacia saligna	1	-5	3	5	5	0	-5	5	0	0	3	5	-5	**12**
Acer monspessulanum	2	0	1	5	0	10	5	5	5	0	3	-10	0	**26**
Acer negundo	2	0	3	5	0	10	5	5	5	0	3	-5	-3	**30**
Acer saccharinum	2	0	3	5	0	10	5	5	5	0	3	-10	0	**28**
Aesculus hippocastanum	2	0	3	5	0	10	5	5	5	0	3	-5	3	**36**
Agathis robusta	5	2	5	8	5	10	5	5	5	0	5	0	3	**58**
Agonis flexuosa	1	5	3	5	5	7	5	5	3	0	3	-5	0	**37**
Ailanthus altissima	1	-5	1	5	0	10	-2	5	5	0	3	0	-3	**20**
Allocasuarina verticillata	1	10	3	5	10	7	5	5	0	5	3	10	0	**64**
Alnus acuminata	2	0	3	5	0	7	5	5	5	0	3	-10	-3	**22**
Angophora costata	4	5	5	8	5	7	5	5	3	0	3	0	5	**55**
Angophora floribunda	4	5	5	8	5	7	5	5	3	0	3	0	3	**53**
Angophora melanoxylon	3	5	5	8	5	7	5	5	3	0	3	5	3	**57**
Angophora subvelutina	3	5	5	8	5	7	5	5	3	0	3	0	3	**52**
Araucaria bidwillii	5	2	5	5	5	10	5	0	5	0	0	0	3	**45**
Araucaria columnaris	4	2	5	5	5	10	5	5	5	0	5	0	3	**54**
Araucaria cunninghamii	4	2	5	5	5	10	5	5	5	0	5	0	3	**54**
Araucaria heterophylla	5	2	5	5	5	10	5	5	5	0	5	0	3	**55**
Arbutus unedo	1	2	1	5	0	10	5	5	5	5	5	0	5	**49**
Brachychiton acerifolius	2	5	3	5	5	10	5	5	5	5	3	0	0	**53**
Brachychiton discolor	2	5	3	5	5	10	5	5	5	5	3	0	0	**53**
Brachychiton populneus	2	5	3	5	5	10	5	5	5	5	3	5	0	**58**
Brachychiton rupestris	2	5	3	5	5	10	5	5	5	5	3	5	0	**58**
Brachychiton x *roseus*	2	5	3	5	5	10	5	5	5	5	3	5	0	**58**
Callistemon 'Harkness'	1	5	1	5	5	7	5	5	3	5	3	0	0	**45**
Callistemon viminalis	1	5	1	5	5	7	5	5	3	5	3	0	0	**45**
Callitris gracilis	1	10	3	5	10	7	5	5	0	5	3	5	0	**59**
Carya illinoiensis	2	0	3	8	0	10	5	5	3	0	3	0	3	**42**
Casuarina cunninghamiana	4	5	5	5	5	10	5	5	3	-10	3	-5	3	**38**
Casuarina glauca	3	5	5	5	5	7	0	5	3	-10	3	0	3	**34**
Casuarina obesa	1	5	3	5	5	7	0	5	3	-10	3	0	3	**30**
Cedrus atlantica	3	0	3	5	0	10	5	5	0	5	5	0	5	**46**
Cedrus deodara	4	0	3	5	0	10	5	5	0	5	5	0	5	**47**
Cedrus lebani	4	0	3	5	0	10	5	5	0	5	5	0	5	**47**
Celtis australis	2	0	3	8	0	10	5	5	5	0	3	0	0	**41**
Celtis occidentalis	2	0	3	8	0	10	5	5	5	0	3	0	0	**41**
Celtis sinuensis	2	0	3	8	0	10	5	5	5	0	3	0	0	**41**
Ceratonia siliqua	2	0	3	5	0	10	5	5	3	0	3	5	3	**44**
Cinnamomum camphora	3	0	5	8	0	10	5	5	5	0	3	0	5	**49**
Citharexylum spinosum	0	0	1	5	0	10	5	5	3	5	3	0	3	**40**
Corymbia calophylla	4	5	5	8	5	7	5	5	3	0	3	0	3	**53**
Corymbia citriodora	5	5	5	8	5	4	5	5	3	0	3	5	3	**56**
Corymbia eximia	4	5	3	8	5	7	5	5	3	0	3	0	3	**51**
Corymbia ficifolia	4	5	3	8	5	10	5	5	3	5	3	-5	3	**54**
Corymbia maculata	5	5	5	8	5	7	5	5	3	0	3	0	5	**56**

Scientific name	Amenity value	Biodiversity & Conservation value	Carbon Storage	Urban Cooling	Native Species Protection	Failure potential	Weed potential	Health issues	Fire potential	Infrastructure Damage	Maintenance Costs	Climate Suitability	Longevity	Total score
Corymbia torelliana	2	5	3	8	5	10	5	5	3	0	3	0	3	**52**
Corymbia variegata	5	5	5	8	5	7	5	5	3	0	3	0	3	**54**
Cupaniopsis anacardioides	1	2	1	5	5	10	5	5	3	0	3	5	3	**48**
Cupressus arizonica	2	0	3	5	0	10	5	5	0	5	3	0	0	**38**
Cupressus macrocarpa	4	-5	5	5	0	7	0	5	-5	0	3	0	3	**22**
Cupressus sempervirens	3	0	3	5	0	10	5	5	-5	5	3	5	5	**44**
Cupressus torulosa	3	0	3	5	0	10	5	5	0	5	3	0	0	**39**
Dracaena draco	2	0	1	2	0	10	5	5	5	5	5	5	5	**50**
Erythrina caffra	2	2	3	8	0	10	5	0	5	0	3	0	3	**41**
Erythrina x sykesii	2	2	3	8	0	7	5	5	5	0	3	0	3	**43**
Eucalyptus argophloia	4	5	5	8	5	4	5	5	3	0	3	0	3	**50**
Eucalyptus astringens	3	5	3	5	5	4	0	5	0	0	3	5	0	**38**
Eucalyptus bicostata	4	5	5	8	5	4	5	5	-5	0	3	-5	3	**37**
Eucalyptus botryoides	4	5	5	8	5	4	5	5	0	0	3	-5	3	**42**
Eucalyptus brockwayi	2	5	3	5	5	7	5	5	3	0	3	5	3	**51**
Eucalyptus camaldulensis	5	10	5	8	10	4	5	5	3	0	3	10	5	**73**
Eucalyptus cinerea	4	5	5	8	5	7	5	5	3	0	3	0	3	**53**
Eucalyptus cladocalyx	5	5	5	8	5	0	0	5	3	0	3	5	3	**47**
Eucalyptus conferruminata	1	5	3	5	5	4	0	5	0	0	3	0	-3	**28**
Eucalyptus coolabah	3	5	3	5	5	7	5	5	3	0	3	5	3	**52**
Eucalyptus cornuta	3	5	5	8	5	7	5	5	0	0	3	0	0	**46**
Eucalyptus dalrympleana	4	10	5	8	10	4	5	5	0	0	3	0	3	**57**
Eucalyptus dawsonii	4	5	5	8	5	4	5	5	0	0	3	5	3	**52**
Eucalyptus diversicolor	4	5	5	8	5	4	5	5	0	0	3	-5	3	**42**
Eucalyptus diversifolia	1	5	3	5	5	10	5	5	0	0	3	5	5	**52**
Eucalyptus dundasii	2	5	3	5	5	7	5	5	0	0	3	5	3	**48**
Eucalyptus fasciculosa	3	10	5	5	10	7	5	5	3	0	3	10	5	**71**
Eucalyptus gardneri	2	5	3	5	5	4	5	5	0	0	3	5	-3	**39**
Eucalyptus globulus	4	5	5	8	5	-10	0	5	-5	0	3	-10	-3	**7**
Eucalyptus gomphocephala	4	5	5	8	5	7	5	5	3	0	3	-10	0	**40**
Eucalyptus goniocalyx	3	10	3	5	10	7	5	5	3	0	3	5	3	**62**
Eucalyptus grandis	4	5	5	8	5	0	5	5	0	0	3	-10	0	**30**
Eucalyptus intertexta	3	5	3	5	5	4	5	5	0	0	3	5	3	**46**
Eucalyptus kondininensis	2	5	3	5	5	7	5	5	3	0	3	5	0	**48**
Eucalyptus leucoxylon	5	10	5	8	10	4	5	5	0	0	3	10	3	**68**
Eucalyptus maidenii	3	5	5	8	5	4	5	5	0	0	3	-5	0	**38**
Eucalyptus mannifera	3	5	3	5	5	4	5	5	0	0	3	0	3	**41**
Eucalyptus melliodora	4	5	5	8	5	4	5	5	0	0	3	5	3	**52**
Eucalyptus microcarpa	4	10	5	8	10	7	5	5	3	0	3	10	5	**75**
Eucalyptus myriadena	2	5	3	5	5	7	5	5	3	0	3	5	3	**51**
Eucalyptus newbeyi	2	5	3	5	5	4	5	5	3	0	3	5	-3	**42**
Eucalyptus nicholii	3	5	3	8	5	4	5	5	3	0	3	-5	0	**39**
Eucalyptus obliqua	4	10	5	8	10	7	5	5	0	0	3	0	3	**60**
Eucalyptus occidentalis	4	5	5	8	5	4	0	5	0	0	3	0	0	**39**
Eucalyptus odorata	2	10	3	5	10	7	5	5	0	0	3	10	3	**63**
Eucalyptus petiolaris	3	5	5	8	5	4	5	5	0	0	3	5	3	**51**
Eucalyptus polyanthemos	3	5	5	8	5	4	5	5	0	0	3	5	3	**51**
Eucalyptus porosa	2	10	3	5	10	7	5	5	0	0	3	10	5	**65**
Eucalyptus robusta	2	5	3	5	5	4	5	5	3	0	3	-10	0	**30**
Eucalyptus rubida	2	5	3	5	5	4	5	5	0	0	3	-5	0	**32**
Eucalyptus saligna	4	5	5	8	5	0	5	5	0	0	3	-10	0	**30**
Eucalyptus salmonophloia	4	5	5	8	5	7	5	5	3	0	3	5	3	**58**
Eucalyptus salubris	2	5	3	5	5	7	5	5	3	0	3	5	0	**48**

Scientific name	Amenity value	Biodiversity & Conservation value	Carbon Storage	Urban Cooling	Native Species Protection	Failure potential	Weed potential	Health issues	Fire potential	Infrastructure Damage	Maintenance Costs	Climate Suitability	Longevity	Total score
Eucalyptus sargentii	2	5	3	5	5	7	5	5	0	0	3	5	0	**45**
Eucalyptus scoparia	3	5	3	5	5	4	5	5	0	0	3	-5	0	**33**
Eucalyptus sideroxylon	4	5	5	8	5	4	5	5	3	0	3	5	3	**55**
Eucalyptus spathulata	2	5	3	5	5	0	5	5	3	0	3	5	-3	**38**
Eucalyptus stricklandii	2	5	3	5	5	7	5	5	3	5	3	5	0	**53**
Eucalyptus torquata	2	5	3	5	5	10	5	5	3	5	3	5	0	**56**
Eucalyptus tricarpa	4	5	5	8	5	4	5	5	3	0	3	5	3	**55**
Eucalyptus utilis	1	5	3	5	5	7	5	5	0	0	3	5	-3	**41**
Eucalyptus viminalis	4	10	5	8	10	0	5	5	-5	0	3	0	0	**45**
Ficus benjamina	3	5	5	8	5	7	5	5	5	-5	3	-5	0	**41**
Ficus desertorum	4	5	5	8	0	7	5	5	5	-5	3	5	3	**50**
Ficus elastica	4	5	5	8	0	7	5	5	5	-5	3	-5	3	**40**
Ficus macrophylla	5	5	5	10	5	7	5	5	5	-10	3	-5	3	**43**
Ficus microcarpa	4	5	5	10	5	7	5	5	5	-5	3	0	0	**49**
Ficus rubiginosa	4	5	5	8	5	7	5	5	5	-5	3	0	3	**50**
Ficus virens	4	5	5	8	5	7	5	5	5	-5	3	-5	3	**45**
Fraxinus americana	2	0	3	8	0	10	5	5	5	0	3	0	0	**41**
Fraxinus angustifolia	3	-5	3	8	0	7	-5	5	5	0	3	0	3	**27**
Fraxinus angustifolia 'Raywood'	3	0	3	8	0	7	5	5	5	0	0	-5	0	**31**
Fraxinus excelsior 'Aurea'	2	0	3	8	0	10	5	5	5	0	3	-5	0	**36**
Geijera parviflora	1	5	1	5	5	7	5	5	3	5	3	5	0	**50**
Ginkgo biloba	2	0	3	8	0	10	5	5	5	0	3	-5	5	**41**
Gleditsia triacanthos	2	0	3	8	0	10	5	0	5	0	3	0	0	**36**
Grevillea robusta	2	5	3	5	5	10	5	5	3	0	3	0	0	**46**
Hymenosporum flavum	1	5	1	5	5	10	5	5	5	0	3	-5	0	**40**
Jacaranda mimosifolia	2	2	3	5	0	10	5	5	5	5	3	5	3	**53**
Jubaea chilensis	4	0	3	2	0	10	5	5	5	5	3	5	3	**50**
Juglans nigra	3	0	3	8	0	7	5	5	5	0	3	-5	3	**37**
Juglans regia	3	0	3	8	0	7	5	5	5	0	3	-5	3	**37**
Koelreuteria bipinnata	2	2	3	5	0	7	5	5	3	0	3	0	0	**35**
Koelreuteria paniculata	2	2	3	5	0	7	5	5	3	0	3	0	0	**35**
Lagunaria patersonia	3	2	3	5	5	10	5	-5	3	0	3	5	3	**42**
Liquidambar styraciflua	3	0	3	8	0	7	5	5	5	-10	3	0	0	**29**
Lophostemon confertus	2	5	3	8	5	10	5	5	5	0	3	0	3	**54**
Magnolia grandifolia	1	0	1	5	0	10	5	5	5	5	3	-5	-3	**32**
Melaleuca armillaris	1	-5	1	5	5	0	0	5	-5	0	0	0	-3	**4**
Melaleuca bracteata	1	5	1	5	5	7	5	5	0	0	3	0	0	**37**
Melaleuca lanceolata	2	5	3	5	10	7	5	5	0	0	3	5	3	**53**
Melaleuca linariifolia	1	5	1	5	5	10	5	5	0	0	3	-5	0	**35**
Melaleuca quinquenervia	2	5	3	5	5	10	5	5	3	0	3	0	0	**46**
Melaleuca styphelioides	2	5	3	5	5	7	5	5	0	0	3	0	0	**40**
Melia azedarach	2	2	3	8	5	7	5	5	5	0	3	0	0	**45**
Metasequoia glyptostroboides	2	0	3	5	0	10	5	5	5	0	5	-5	5	**40**
Metrosideros exselsa	1	5	1	5	0	10	5	5	3	0	3	0	5	**43**
Morus alba	2	2	3	8	0	7	5	5	5	0	3	0	0	**40**
Olea europaea	2	-5	5	5	0	10	-5	5	3	0	0	10	5	**35**
Paulownia tomentosa	2	2	3	8	0	7	5	5	5	0	3	-5	0	**35**
Phoenix canariensis	2	-5	3	2	0	10	0	5	3	0	-5	5	0	**20**
Pinus canariensis	5	2	5	5	0	10	5	5	0	0	3	5	3	**48**
Pinus halepensis	4	-5	5	5	0	7	-5	5	-5	0	3	5	3	**22**
Pinus pinaster	4	2	5	5	0	7	5	5	-5	0	3	5	3	**39**
Pinus pinea	4	2	5	5	0	7	5	5	0	0	3	5	0	**41**

Scientific name	Amenity value	Biodiversity & Conservation value	Carbon Storage	Urban Cooling	Native Species Protection	Failure potential	Weed potential	Health issues	Fire potential	Infrastructure Damage	Maintenance Costs	Climate Suitability	Longevity	Total score
Pinus radiata	4	-5	5	5	0	0	-2	5	-5	0	3	-5	-3	**2**
Pinus roxburghii	5	2	5	5	0	10	5	5	0	0	3	0	3	**43**
Pistacia chinensis	2	0	3	5	0	7	5	5	5	0	3	0	3	**38**
Pittosporum angustifolium	1	5	1	5	10	10	5	5	3	5	3	10	3	**66**
Pittosporum crassifolium	0	2	1	5	0	10	5	5	3	5	3	0	0	**39**
Pittosporum undulatum	1	-5	1	5	5	10	-2	5	5	0	3	0	-3	**25**
Platanus orientalis	5	0	5	8	0	10	5	0	5	0	3	5	5	**51**
Platanus x *acerifolia*	5	0	5	8	0	10	5	0	5	0	3	0	3	**44**
Populus alba	4	-5	5	8	0	7	0	5	5	-10	3	-5	-3	**14**
Populus deltoides	4	0	5	8	0	4	5	5	5	-10	3	-5	-3	**21**
Populus nigra	4	0	5	8	0	7	5	5	5	-10	3	-5	0	**27**
Populus nigra 'Italica'	4	0	5	8	0	7	5	5	5	-10	3	-5	0	**27**
Prunus armeniaca	1	0	1	5	0	7	5	5	5	5	3	0	-3	**34**
Prunus avium	1	0	1	5	0	7	5	5	5	5	3	-5	-3	**29**
Prunus cerasifera	1	0	1	5	0	10	0	5	5	5	3	0	-3	**32**
Prunus domestica	1	0	1	5	0	10	5	5	5	5	3	0	0	**40**
Prunus dulcis	1	0	1	5	0	7	5	5	5	5	3	0	0	**37**
Prunus persica	1	0	1	5	0	7	5	5	5	5	3	0	-3	**34**
Pyrus calleryana	2	0	1	5	0	7	5	5	5	0	3	0	-3	**30**
Pyrus communis	2	0	1	5	0	7	5	5	5	0	3	0	0	**33**
Pyrus ussuriensis	2	0	1	5	0	7	5	5	5	0	3	0	-3	**30**
Quercus canariensis	4	0	5	8	0	7	5	5	5	0	3	0	3	**45**
Quercus ilex	4	0	5	8	0	10	5	5	3	0	3	0	3	**46**
Quercus palustris	4	0	5	8	0	7	5	5	5	0	3	-5	3	**40**
Quercus robur	5	0	5	8	0	10	5	5	5	0	3	0	5	**51**
Quercus suber	3	0	3	8	0	10	5	5	5	0	3	5	5	**52**
Rhus lancea	2	0	3	5	0	7	5	5	3	0	3	5	3	**41**
Robinia pseudoacacia	2	-5	3	5	0	4	-2	0	3	0	3	-5	-3	**5**
Salix babylonica	4	0	5	8	0	7	0	5	5	0	3	-10	0	**27**
Salix chilensis 'Fastigiata'	0	0	1	2	0	7	5	5	5	5	3	-10	-3	**20**
Salix fragilis	2	-5	3	8	0	7	-2	5	5	0	3	-10	0	**16**
Salix matsudana 'Tortuosa'	2	0	3	8	0	7	0	5	5	0	3	-10	0	**23**
Salix x *rubens*	2	-5	3	8	0	7	-2	5	5	0	3	-10	0	**16**
Salix x *sepulcralis*	2	-5	3	8	0	7	-2	5	5	0	3	-10	0	**16**
Schinus molle	3	0	5	5	0	10	5	5	3	0	3	10	5	**54**
Sequoia sempervirens	4	0	5	8	0	10	5	5	0	0	3	-10	5	**35**
Sequoiadendron gigantium	4	0	5	8	0	10	5	5	0	0	3	-5	5	**40**
Sophora japonica	2	2	3	5	0	7	5	5	3	0	3	-5	3	**33**
Syzygium australe	3	5	3	8	5	10	5	5	5	0	3	0	3	**55**
Tamarix aphylla	3	-5	5	5	0	7	0	5	3	0	3	5	3	**34**
Tristaniopsis laurina	2	5	3	5	5	7	5	5	3	0	3	0	3	**46**
Ulmus glabra	3	0	3	5	0	7	0	5	5	0	3	-10	0	**21**
Ulmus glabra 'Lutescens'	3	0	3	5	0	10	5	5	5	0	3	0	0	**39**
Ulmus minor	3	-5	3	5	0	7	0	5	5	0	3	-5	0	**21**
Ulmus parvifolia	2	-5	3	8	0	7	0	5	5	0	3	0	0	**28**
Ulmus x *hollandica*	3	-5	3	5	0	7	-2	5	5	0	3	-5	0	**19**
Washingtonia filifera	4	0	3	2	0	10	5	5	0	5	0	5	3	**42**