



# Improving Biodiversity outcomes for Urban Forest Strategies through incorporating Native Trees Species

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A NatureLink Perth Intern Project



## Executive Summary

Perth is in a global biodiversity hotspot in south-western Western Australia. The city of Perth is one of the most biodiverse areas in the south west, with a high diversity of locally endemic species under threat. The city is facing multiple pressures from population growth, climate change, invasive species, disease and increased nutrients. Urban Forest Strategies (UFS) are one strategy being developed by local governments to address multiple pressures to improve the city's liveability for our present and future population.

The aim of this study is to aid local governments to increase the value of their UFS by incorporating biodiversity outcomes through selection of local native trees species and their associated biodiversity values. A critique of the current UFS within Perth was undertaken and found that no UFS had biodiversity as the rationale for choice of tree species planted and while two had goals to increase biodiversity, none contained strategies to assess biodiversity improvements (for example through KPIs (key performance indicators)).

A desk-top study identified appropriate tree species and characteristics that can be used to improve biodiversity outcomes for Perth's UFS. It also identified critical information for use in urban areas such as fire, salinity and drought resistance and separation from buildings and utilities. Native trees were found to have multiple economic, environmental, and social benefits over exotic species. This report provides a framework to incorporate native trees in UFS and monitor improved biodiversity outcomes. This will add value to existing UFS and enable local governments to achieve greater multiple benefits than current UFS allow.



*This project was done in collaboration with Trillion Trees and we would particularly like to thank Jill Holland for contributing a significant portion of the information found in the Native tree species and attribute tables.*



*NatureLink Perth is a community of practice of diverse stakeholders working together to integrate nature into our city, to conserve and enhance our internationally-recognised biodiversity and provide a healthy, liveable city benefiting the economy, the environment and people.*



*This project was undertaken by Christina Chambers as an internship in Environmental and Conservation Sciences at Murdoch University through NatureLink Perth and was supervised by Jane Chambers.*

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Table 1: Suggested native tree species and their attributes for the Coastal soil types (see Figure 1).

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attracting	Mammal attracting	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Drought	Frost	Meters from sewage pipe	Salt tolerant
	WA																	
<i>Agonis flexuosa</i>	Peppermint tree	12 to 15	white	Aug-Sep	Perth	X	X	X	XF	X		28	33.6	22.4			6	
<i>Allocasuarina fraseriana</i>	Common Sheoak	15	Brown	May-Oct	Perth	X	X	X				30	36	24			6	
<i>Banksia attenuata</i>	Candle Banksia	5 to 8	Yellow	Sep-Oct	Perth	X	X	X	XF	X		16	19.2	12.8	X		4	
	Rottnest																	
<i>Callitris preissii</i>	Island Pine	4 to 6	Brown	Jan- Dec	Perth	X	Y	Y	XF	X		20	24	16	X		X	
<i>Eucalyptus decipiens</i>	Redheart Moit	15	white	Aug-Jan	Perth	X	X	X				18	21.6	14.4	X	X		
	Narrow-leaved Red Mallee																	
<i>Eucalyptus foecunda</i>	Mallee	5	Cream	Jan-Feb	Perth	X	X	X				10	12	8			4	
<i>Eucalyptus gomphocephala</i>	Tuart	30	White	Jan-April	Perth	X	X	X	X F/N/R	X		80	96	64	X	X		
	White-Cream/Pink																	
<i>Eucalyptus marginata</i>	Jarrah	30	Pink	Jun-Dec	Perth	X	X	X	X F/R			90	108	72				
<i>Eucalyptus todiana</i>	Coastal Blackbutt	9 to 16	Creamy White	Feb	Perth	X	X	X	XF			30	36	24	X	X		
<i>Melaleuca cuticularis</i>	Saltwater Paperbark	7	White-Cream	Aug-Nov	Perth	X		X				14	16.8	11.2			X	
	Rottnest																	
<i>Melaleuca lanceolata</i>	Island Tea Tree	5	White	Oct-Mar	Perth	X						20	24	16			X	
<i>Pittosporum phylliracoides</i>	Weeping Pittosporum	8	White/Yellow	Jun-Oct	Perth	X		X									6	
<i>Melaleuca huegellii</i>	Chenille Honey-myrtle	5	Pink/White	Sep-Jan	Perth	X	X	X				6	7.2	4.8			X	
	Orange																	
<i>Banksia ashbyi</i>	Orange Banksia	1 to 8	Orange	Dec-Feb	WA			X	XF			8	9.6	6.4	X		4	
<i>Banksia praemorsa</i>	Cut-leaf Banksia	4	Gold	Jul-Oct	WA			X	XF								4	
	Cream-Yellow																	
<i>Banksia sessilis</i>	Parrot Bush	6	Yellow	April-Nov	WA		X	X	XF			8	9.6	6.4	X		4	

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attracting	Mammal attracting	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Banksia speciosa</i>	Showy Banksia	6	Yellow	May-Jun	WA	X	X	X	XF	X		14	16.8	11.2	X	X	4	
<i>Banksia tricuspis</i>	Pine Banksia	4	Orange	Mar-Jul	WA	X	X	X	XF						X	X	4	
<i>Conyobia calophylla</i>	Marri	20	White/Pink	Dec-May	WA	X	X	X	X F/N/R			70	84	56			20	X
<i>Eucalyptus caesia</i>	Caesia	12 to 15	Pink and Red	May-Sep	WA	X		X	XF			10	12	8			6	
<i>Eucalyptus diversicolor</i>	Karri	80	White	Feb-Apr	WA	X	X	X	XN									
<i>Eucalyptus erythrocorys</i>	Red Cap Gum	7	Yellow	Feb-Apr	WA	X	X	X							X	X	6	
<i>Eucalyptus lehmannii</i>	Bushy Yate	2 to 4	Green, Yellow	All year	WA													
<i>Eucalyptus macrocarpa</i>	Bell-fruited mallee	5	Red, Pink	All year	WA	X	X	X							X	X	4	
<i>Eucalyptus preissiana</i>	Coastal Moort	3	Yellow	May-Aug	WA	X	X	X	XF									
<i>Eucalyptus utilis</i>	Olive-leaf Moort	8	Creamy- Yellow	Sep-Jan	WA	X	X	X							X	X	X	
<i>Hakea oleifolia</i>	Hakea	10	White	Aug-Oct	WA	X	X	X	XF									
<i>Araucaria heterophylla</i>	Norfolk Island Pine	60	Green	Non-flowering	E				XF								X	
<i>Pinus canariensis</i>	Canary Island Pine	30	Brown	Nov-Dec	E	X	X	X	XF						X	X	X	

F/N/R next to 'Attract Carnaby's' means it supports feeding/nesting/roosting

<sup>1</sup>Drought- Drought tolerant

<sup>2</sup>Frost –Frost tolerant

<sup>3</sup>Aus- Australia

<sup>4</sup>E- Exotic

<sup>5</sup>Building protection zone – an area adjacent to a building<sup>15</sup> (see figure 2)

<sup>6</sup>Hazard separation zone- The area of land between the building protection zone and bush usually up to 100 meters<sup>15</sup>. (see figure 2)

Table 2: Suggested native tree species and their attributes for the Western Coastal Plain soil types (see Figure 1).

Tree	Common name	Height (m)	Flower	Flower time	Origin	Attracts insects	Attracts bees	Attracts birds	Attracts Carnaby's	Attracts Mammals	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Acacia saligna</i>	WA Golden Wattle	6	Yellow	Jul-Nov	Perth	X		X				12	14.4	9.6				
	WA Peppermint tree	12 to 15	White	Aug-Sep	Perth	X	X	X	XF	X		28	33.6	22.4			6	
<i>Allocasuarina fraseriana</i>	Common Sheoak	15	Brown	May-Oct	Perth	X	X	X				30	36	24			6	
<i>Banksia attenuata</i>	Candle <i>Banksia</i>	5 to 8	Yellow	Sep-Oct	Perth	X	X	X	XF	X		16	19.2	12.8	X		4	
<i>Banksia grandis</i>	Bull <i>Banksia</i>	10	Yellow	Sep-Dec	Perth	X	X	X	XF	X		16	19.2	12.8	X	X	4	
<i>Banksia menziesii</i>	Firewood <i>Banksia</i>	10	Pink and Red	Feb-Aug	Perth	X	X	X	XF	X		16	19.2	12.8	X		4	
<i>Banksia prionotes</i>	Acorn <i>Banksia</i>	10	Cream & Orange	Feb-Aug	Perth	X	X	X	XF	X		16	19.2	12.8	X	X	4	
	Rottnest Island Pine	4 to 6	Brown	Jan-Dec	Perth	X	X	X	XF	X		20	24	16	X			X
<i>Callitris preissii</i>	Red Heart Moit	15	White	Aug-Jan	Perth	X	X	X				18	21.6	14.4	X	X		
<i>Eucalyptus foecunda</i>	Narrow-leaved Red Mallee	5	Cream	Jan-Feb	Perth	X	X	X				10	12	8			4	
<i>Eucalyptus gomphocephala</i>	Tuart	30	White	Jan-April	Perth	X	X	X	X F/N/R	X		80	96	64	X	X		
<i>Eucalyptus marginata</i>	Jarra	30	White-Cream/Pink	Jun-Dec	Perth	X	X	X	X F/R			90	108	72				
<i>Eucalyptus totiana</i>	Coastal Blackbutt	9 to 16	Creamy White	Feb	Perth	X	X	X	XF			30	36	24	X	X		
<i>Melaleuca cuticularis</i>	Saltwater Paperbark	7	white-Cream	Aug-Nov	Perth	X		X				14	16.8	11.2			X	
<i>Melaleuca lanceolata</i>	Rottnest Island Tea Tree	5	White	Oct-Mar	Perth	X						20	24	16			6	X

Tree	Common name	Height (m)	Flower	Flower time	Origin	Attracts insects	Attracts bees	Attracts birds	Attracts Carnaby's	Attracts Mammals	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Melaleuca raphiophylla</i>	Swamp Paperbark	10	white-cream	Jul-Sep	Perth			X				16	19.2	12.8			6	X
<i>Nuytsia floribunda</i>	WA Christmas Tree	8	Orange	Oct-Jan	Perth	X	X	X				16	19.2	12.8				
<i>Paraserianthes lophantha</i>	Albizia	10	Greenish Yellow	Aug-Sep	Perth			X										
<i>Pittosporum phylliraoides</i>	Weeping Pittosporum	8	White Yellow	Jun-Oct	Perth	X		X									6	
<i>Melaleuca huegelii</i>	Chenille Honey-myrtle	5	Pink/White	Sep-Jan	Perth	X	X	X				6	7.2	4.8			6	X
<i>Melaleuca preissiana</i>	Stout Paperbark	15	Yellow-Cream-White	Nov-Feb	Perth	X		X				20	2	16	X		6	
<i>Acacia acuminata</i>	Jam Wattle	5	Yellow	Aug-Nov	WA		X	X				24	28.8	19.2	X	X		
<i>Banksia coccinea</i>	Scarlet Banksia	8	Red	May-Dec	WA			X	XF			4	4.8	3.2			4	
<i>Banksia littoralis</i>	Swamp Banksia	15	Red/Yellow	Jan-Aug	WA	X	X	X	XF	X		20	24	16		X		
<i>Banksia speciosa</i>	Showy Pine	6	Yellow	May-Jun	WA	X	X	X	XF	X		14	16.8	11.2		X	4	
<i>Banksia tricuspis</i>	Banksia	4	Orange	Mar-Jul	WA	X	X	X	XF						X	X	4	
<i>Corymbia calophylla</i>	Marri	20	White/Pink	Dec-may	WA	X	X	X	XF/N/R			70	84	56			20	X
<i>Dadonea hackettiana</i>	Hop Bushes	4	Red	Jul-Oct	WA	X						9	10.8	7.2				
<i>Eucalyptus caesia</i>	Caesia	12 to 15	Pink and Red	May-Sep	WA			X	XF			10	12	8			6	
<i>Eucalyptus diversicolor</i>	Karri	80	White	Feb-Apr	WA	X	X	X	XN									
<i>Eucalyptus erythracorys</i>	Red Cap Gum	7	Yellow	Feb-Apr	WA		X	X							X	X	6	
<i>Eucalyptus preissiana</i>	Bell-fruited mallee	3	Yellow	May-Aug	WA		X	X	XF									

Tree	Common name	Height (m)	Flower Red/White	Flower time	Origin	Attracts insects	Attracts bees	Attracts birds	Attracts Carnaby's	Attracts Mammals	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Eucalyptus pyriformis</i>	Pear Fruited Mallee	5	White	May-Oct	WA	X	X	X							X	X		
<i>Eucalyptus spathulata</i>	Swamp Mallet	8	White	Oct-Dec	WA			X							X	X		X
<i>Eucalyptus utilis</i>	Coastal Moort	8	Creamy-Yellow	Sep-Jan	WA		X	X							X	X		X
<i>Eucalyptus victrix</i>	Smooth-barked coolibah	7	Cream	Nov-Mar	WA	X		X							X			
<i>Hakea laurina</i>	Kodjet	5	Red	Apr-Aug	WA	X		X	XF			12	14.4	9.6	X	X		2
<i>Hakea oleifolia</i>	Olive-leaf Hakea	10	White	Aug-Oct	WA			X	XF									
<i>Xylomelum angustifolium</i>	Sandplain Woody Pear	7	Creamy White	Dec-Feb	WA			X										
<i>Conyobia maculata</i>	Spotted gum	30	White	Mar-Sep	Aus		X	X	XF									
<i>Eucalyptus viminalis</i>	Ribbon Gum	40	White	Jan-April	Aus	X		X							X	X		
<i>Macadamia integrifolia</i>	Macadamia Nut	12	White	Jan-Jun	Aus	X	X		XF						X	X		
<i>Araucaria heterophylla</i>	Norfolk Island Pine	60	Green	non-flowering	E				XF						X	X		
<i>Carya illinoensis</i>	Pecan	30	Yellow	Spring	E				XF									
<i>Jacaranda mimosifolia</i>	Blue Jacaranda	10	Blue/Purple	Nov-Dec	E			X	XF			24	28.8	19.2	X	X		6
<i>Liquidambar styraciflua</i>	American Sweet Gum	20	Green	Apr-May	E			X	XF						X	X		
<i>Pinus canariensis</i>	Canary Island Pine	30	Brown	Nov-Dec	E	X		X	XF						X	X		
<i>Prunus amygdalus</i>	The Almond	7	White-Pink	Aug-Nov	E	X		X	XF						X	X		

F/N/R next to 'Attract Carnaby's' means it supports feeding/nesting/roosting

<sup>1</sup>Drought- Drought tolerant

<sup>2</sup>Frost –Frost tolerant

<sup>3</sup>Aus- Australia

<sup>4</sup>E- Exotic

<sup>5</sup>Building protection zone – an area adjacent to a building<sup>15</sup> (see figure 2)

<sup>6</sup>Hazard separation zone- The area of land between the building protection zone and bush usually up to 100 meters<sup>15</sup>. (see figure

**Table 3: Suggested native tree species and their attributes for the Central Coastal Plain soil types (see Figure 1).**

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attracting	Mammal attracting	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Meters from sewer pipe	Salt tolerant
<i>Acacia saligna</i>	WA Golden Wattle	6	Yellow	Jul-Nov	Perth	X		X				12	14.4	9.6		
<i>Allocasuarina fraseriana</i>	Common Sheoak	15	Brown	May-Oct	Perth	X	X	X				30	36	24		6
<i>Banksia attenuata</i>	Candle Banksia	5 to 8	Yellow	Sep-Oct	Perth	X	X	X	XF	X	X	16	19.2	12.8	X	4
<i>Banksia grandis</i>	Bull Banksia	10	Yellow	Sep-Dec	Perth			X	XF	X	X	16	19.2	12.8	X	4
<i>Banksia ilicifolia</i>	Holly-Leaved Banksia	10	Pink and Cream	Mar-Jan	Perth	X	X	X	XF			16	19.2	12.8		4
<i>Banksia menziesii</i>	Firewood Banksia	10	Pink and Red	Feb-Aug	Perth	X	X	X	XF	X	X	16	19.2	12.8	X	4
<i>Corymbia calophylla</i>	Marri	20	White/Pink	Dec-May	Perth	X	X	X	X F/N/R			70	84	56		20 X
<i>Eucalyptus accedens</i>	Smooth Bark Wandoo	30	White-Cream	Dec-Jan	Perth					X		40	8	32		
<i>Eucalyptus marginata</i>	Jarraah Swamp Gum	30	White-Cream/Pink	Jun-Dec	Perth	X	X	X	X F/R			90	108	72		
<i>Eucalyptus rudis</i>	Coastal Blackbutt	20	White-Creamy	Jul-Sep	Perth	X	X	X	XF	X	X	40	48	32		X
<i>Eucalyptus todtiana</i>	Saltwater Paperbark	9 to 16	White-Cream	Feb	Perth	X	X	X	XF			30	36	24	X	X
<i>Melaleuca cuticularis</i>	Swamp Paperbark	7	White-Cream	Aug-Nov	Perth	X		X				14	16.8	11.2		X
<i>Melaleuca rhaphiophylla</i>	Swamp Paperbark	10	White-Cream	Jul-Sep	Perth			X				16	19.2	12.8		6 X



Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attracting	Mammal attracting	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Drought	Frost	Meters from sewer pipe	Salt tolerant
	WA Christmas Tree	8	Orange	Oct-Jan	Perth	X	X	X				16	19.2	12.8				
	Stout Paperbark	15	Yellow-Cream-White	Nov-Feb	Perth	X	X	X				20	2	16	X		6	
	Jam Wattle	5	Yellow	Aug-Nov	WA	X	X	X				24	28.8	19.2	X	X		
	Red Flowering Gum	8	Red	Dec-May	WA	X	X	X	XF						X		X	
	Hop Bushes	4	Yellow/Red	Jul-Oct	WA	X						9	10.8	7.2				
	Karri	80	White	Feb-Apr	WA	X	X	X	XN							X		
	Fuchsia Gum	6	Yellow	Jan-Mar	WA			X							X	X		
	Bell-fruited mallee	3	Yellow	May-Aug	WA		X	X	XF									
	Pear Fruited Mallee	5	Red/White	May-Oct	WA		X	X							X	X		
	Swamp Mallet	8	White	Oct-Dec	WA			X							X	X	X	
	Coolgardie Gum	4 to 11	Pink, Red	Aug-Dec	WA	X		X							X	X	4	
	Coastal Moort	8	Creamy-Yellow	Sep-Jan	WA		X	X							X	X	X	
	Coastal Moort	8	Creamy-Yellow	Sep-Jan	WA		X	X							X	X	X	
	Smooth-barked coolibah	7	Cream	Nov-Mar	WA	X		X							X			
	Silver Oak	30	Orange	Sep-Nov	WA	X	X	X	XF			20	24	16				
	Kodjet Black Tea-tree	5	Red	Apr-Aug	WA	X		X	XF			12	14.4	9.6	X	X	2	
	Melaleuca bracteata	4	White	May-Jan	WA		X	X				6	7.2	4.8		X		

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attracting	Mammal attracting	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Drought	Frost	Meters from sewer pipe	Salt tolerant
<i>Xylomelum angustifolium</i>	Sandplain Woody Pear	7	Creamy White	Dec-Feb	WA	X		X										
<i>Corymbia maculata</i>	Spotted gum	30	White	Mar-Sep	Aus		X	X	XF									
<i>Eucalyptus salubris</i>	Gimlet	15	White	Se-Mar	Aus		X	X	XF/R					X	X	X		X
<i>Eucalyptus viminalis</i>	Ribbon Gum	40	White	Jan-Apr	Aus	X		X						X	X			
<i>Lophostemon confertus</i>	Queensland Brush Box	25	White	Oct-Feb	Aus	X	X	X								X		
<i>Carya illinoensis</i>	Pecan	30	Yellow	Oct-Nov	E				XF									
<i>Jacaranda mimosifolia</i>	Blue Jacaranda	10	Blue/Purple	Nov-Dec	E			X	XF			24	28.8	19.2	X			6
<i>Liquidambar styraciflua</i>	American Sweet Gum	20	Green	Apr-May	E			X	XF		X				X	X		
<i>Melia azedarach</i>	Cape Lilac	10	Purple	Sep-Nov	E			X	XF						X			
<i>Pinus canariensis</i>	Canary Island Pine	30	Brown	Nov-Dec	E	X		X	XF						X	X		
<i>Prunus amygdalus</i>	The Almond	7	White-Pink	Aug-Nov	E	X		X	XF		X				X	X		

F/N/R next to 'Attract Carnaby's' means it supports feeding/nesting/roosting

<sup>1</sup>Drought- Drought tolerant

<sup>2</sup>Frost –Frost tolerant

<sup>3</sup>Aus- Australia

<sup>4</sup>E- Exotic

<sup>5</sup>Building protection zone – an area adjacent to a building<sup>15</sup>. (see figure 2)

<sup>6</sup>Hazard separation zone- The area of land between the building protection zone and bush usually up to 100 meters<sup>15</sup>. (see figure 2)

Table 4: Suggested native tree species and their attributes for the Eastern Coastal Plain soil types (see Figure 1).

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attractin g	Mammal attracting	Fire resistant	Min distance from building	Min spacing in building protection zone	Min spacing in hazard separation zone	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Acacia saligna</i>	WA Golden Wattle	6	Yellow	Jul-Nov	Perth	X	X					12	14.4	9.6				
<i>Actinostrobus pyramidalis</i>	Cypress Pine	4	Cone	Jan-Dec	Perth	X		X	XF			7	8.4	5.6		X		X
<i>Allocasuarina fraseriana</i>	Common Sheoak	15	Brown	May-Oct	Perth	X	X					30	36	24		X		6
<i>Banksia attenuata</i>	Candle <i>Banksia</i>	5 to 8	Yellow	Sep-Oct	Perth	X	X	X	XF		X	16	19.2	12.8	X	X		4
<i>Banksia grandis</i>	Bull <i>Banksia</i>	10	Yellow	Sep-Dec	Perth	X		X	XF	X	X	16	19.2	12.8	X	X		4
<i>Banksia ilicifolia</i>	Holly-Leaved <i>Banksia</i>	10	Pink and Cream	Mar-Jan	Perth	X	X		XF			16	19.2	12.8				4
<i>Banksia menziesii</i>	Firewood <i>Banksia</i>	10	Pink and Red	Feb-Aug	Perth	X	X	X	XF		X	16	19.2	12.8	X			4
<i>Casuarina obesa</i>	Swamp She-oak	10	Brown	All year	Perth	X		X										X
<i>Eucalyptus lane-poolei</i>	Salmon White Gum	12 to 15	Creamy White	Jan-Sep	Perth	X	X					30	36	24				6
<i>Eucalyptus marginata</i>	Jarra	30	Pink	Jun-Dec	Perth	X	X	X	XF/R			90	108	72				
<i>Eucalyptus patens</i>	Yarri	25	White	Aug-Jan	Perth	X	X	X	XF/R			90	108	72	X	X		
<i>Eucalyptus rudis</i>	Swamp Gum	20	White	Jul-Sep	Perth	X	X	X	XF	X	X	40	48	32				X
<i>Eucalyptus tottiana</i>	Coastal Blackbutt	9 to 16	Creamy White	Feb	Perth	X	X	X	XF			30	36	24	X	X		
<i>Eucalyptus wandoo</i>	White Gum	18	Cream	Dec-May	Perth	X	X	X	XF/R	X		60	72	48		X		X
<i>Melaleuca cuticularis</i>	Saltwater Paperbark	7	white-cream	Aug-Nov	Perth	X		X				14	16.8	11.2				X
<i>Melaleuca raphiophylla</i>	Swamp Paperbark	10	White-Cream	Jul-Sep	Perth			X				16	19.2	12.8				6 X

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attractin g	Mammal attracting	Fire resistant	Min distance from building	Min spacing in building protection zone	Min spacing in hazard separation zone	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Nuytsia floribunda</i>	WA Christmas Tree	8	Orange	Oct-Jan	Perth	X	X	X				16	19.2	12.8				
<i>Paraserianthes lophantha</i>	Albizia	10	Greenish Yellow	Aug-Sep	Perth	X												
<i>Melaleuca preissiana</i>	Stout Paperbark	15	Yellow-cream-white	Nov-Feb	Perth	X	X	X				20	2	16	X		6	
<i>Acacia acuminata</i>	Jam Wattle	5	Yellow	Aug-Nov	WA		X	X				24	28.8	19.2	X	X		
<i>Acacia pentadenia</i>	Karri Wattle	5	Cream	Jul-Sep	WA		X	X	XF									
<i>Banksia littoralis</i>	Swamp Banksia	15	Red/Yellow	Mar-Aug	WA	X	X	X	XF		X	20	24	16	X	X	4	
<i>Corymbia ficifolia</i>	Red Flowering Gum	8	Red	Dec-May	WA	X	X	X	XF								X	
<i>Eucalyptus camaldulensis</i>	River Red Gum	20	White	Jul-Dec	WA		X	X	XR			30	36	24	X	X	X	
<i>Eucalyptus cornuta</i>	Yate	25	Yellow-Green	Jan-May	WA		X							X	X			
<i>Eucalyptus drummondii</i>	Drummond's Mallee	5	White-Cream	Jan-Feb	WA			X				16	19.2	12.8	X	X		
<i>Eucalyptus forrestiana</i>	Fuchsia Gum	6	Yellow	Jan-Mar	WA		X	X						X	X			
<i>Eucalyptus longicornis</i>	Red Morrel	24	White	Dec-Feb	WA				XN									
<i>Eucalyptus loxophleba</i>	York Gum	15	White	Jul-Dec	WA		X	X	XF/N		X	20	24	16	X	X	X	
<i>Eucalyptus occidentalis</i>	Flat Top Yate	20	White	Jun-Dec	WA			X	XN					X				
<i>Eucalyptus preissiana</i>	Bell-fruited mallee	3	Yellow	May-Aug	WA		X	X	XF									
<i>Eucalyptus salmonophloia</i>	Salmon Gum	25	White	Aug-Dec	WA		X	X	XF/N					X	X			
<i>Eucalyptus salubris</i>	Gimlet	15	White	Sep-Mar	WA		X	X	XF/R					X	X	X	X	
<i>Eucalyptus sargentii</i>	Salt River Gum	12	White	Aug-Sep	WA		X	X						X	X	X	X	

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attractin g	Mammal attracting	Fire resistant	Min distance from building	Min spacing in building protection zone	Min spacing in hazard separation zone	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Eucalyptus spathulata</i>	Swamp Mallet	8	White	Oct-Dec	WA			X							X	X		X
<i>Eucalyptus torquata</i>	Coolgardie Gum	4 to 11	Pink, Red Creamy-	Aug-Dec	WA			X							X	X		4
<i>Eucalyptus utilis</i>	Coastal Moort	8	Yellow	Sep-Jan	WA		X	X							X	X		X
<i>Eucalyptus victrix</i>	Smooth-barked coolibah	7	Cream	Nov-Mar	WA	X		X							X			
<i>Eucalyptus x tetragona</i>	Mealy Gum	8	White, Cream	Sep-Mar	WA													2
<i>Grevillea robusta</i>	Silver Oak	30	Orange	Sep-Nov	WA	X	X	X	XF			20	24	16				
<i>Hakea laurina</i>	Kodjet	5	Red	Apr-Aug	WA	X		X	XF			12	14.4	9.6		X		2
<i>Lambertia inermis</i>	Chittick	6	Red, Orange, Yellow	Sep-Jun	WA			X	XF									
<i>Acacia baileyana</i>	Cootamundra Wattle	8	Yellow	Jun-Sep	Aus		X	X	XF							X		
<i>Casuarina cunninghamiana</i>	River She-oak	15	Red	Mar-Oct	Aus				XF						X			
<i>Eucalyptus globulus</i>	Blue Gum	50	White	Sep-Dec	Aus		X	X	XR							X		4
<i>Eucalyptus robusta</i>	Swamp Mahogany	30	White	Mar-Sep	Aus		X	X	XF/R							X		
<i>Eucalyptus tereticornis</i>	Red Gum	50	White	Jun-Nov	Aus		X	X							X	X		
<i>Macadamia integrifolia</i>	Macadamia Nut	12	White	Jan-Jun	Aus	X			XF							X		
<i>Carya illinoensis</i>	Pecan	30	Yellow	Spring	E				XF									
<i>Jacaranda mimosifolia</i>	Blue Jacaranda	10	Blue/Purple	Nov-Dec	E			X	XF			24	28.8	19.2	X			6
<i>Liquidambar styraciflua</i>	American Sweet Gum	20	Green	Apr-May	E			X	XF						X	X		
<i>Malus domestica</i>	Orchard Apple	8	White	Oct-Mar	E			X	XF								X	

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attractin g	Mammal attracting	Fire resistant	Min distance from building	Min spacing in building protection zone	Min spacing in hazard separation zone	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Pinus canariensis</i>	Canary Island Pine	30	Brown	Nov-Dec	E	X		X	XF						X	X		
<i>Prunus amygdalus</i>	The Almond	7	White- Pink	Aug-Nov	E	X		X	XF		X				X	X		

F/N/R next to 'Attract Carnaby's' means it supports feeding/nesting/roosting

<sup>1</sup>Drought- Drought tolerant

<sup>2</sup>Frost –Frost tolerant

<sup>3</sup>Aus- Australia

<sup>4</sup>E- Exotic

<sup>5</sup>Building protection zone – an area adjacent to a building<sup>15</sup> (see figure 2)

<sup>6</sup>Hazard separation zone- The area of land between the building protection zone and bush usually up to 100 meters<sup>15</sup>. (see figure 2)

Table 5: Suggested native tree species and their attributes for the Scarp soil types (see Figure 1).

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attracting	mammal attracting	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Actinostrobus pyramidalis</i>	Cypress Pine	4	Cone	Jan-Dec	Perth	X	X	X	X	F	X	7	8.4	5.6	X	X	X	X
<i>Allocasuarina fraseriana</i>	Common Sheoak	15	Brown	May-Oct	Perth	X	X	X	X	X	X	30	36	24	X	X	X	6
<i>Allocasuarina huegeliana</i>	Rock Sheoak	4 to 10	Brown	May-Jan	Perth	X	X	X	X	X	X	16	19.2	12.8	X	X	X	X
<i>Banksia grandis</i>	Bull Banksia	10	Yellow	Sep-Dec	Perth	X	X	X	X	F	X	16	19.2	12.8	X	X	X	4
<i>Corymbia haematoxylon</i>	Mountain Marri	10	White	Oct-Mar	Perth	X	X	X	X	F	X	24	28.8	19.2	X	X	X	X
<i>Eucalyptus accedens</i>	Smooth Bark Wandoo	30	White-Cream	Dec-Jan	Perth	X	X	X	X	X	X	40	8	32	X	X	X	X
<i>Eucalyptus laellae</i>	Daring Range Ghost Gum	20	White	Dec-Jan	Perth	X	X	X	X	X	X	40	48	32	X	X	X	X
<i>Eucalyptus lane-poolei</i>	Eucalyptus lane-poolei	12 to 15	White/Cream	Jan-Sep	Perth	X	X	X	X	X	X	30	36	24	X	X	X	6
<i>Eucalyptus marginata</i>	Jarra	30	White-Cream/Pink	Jun-Dec	Perth	X	X	X	X	F/R	X	90	108	72	X	X	X	X
<i>Eucalyptus patens</i>	Yarri	25	White/Cream	Aug-Jan	Perth	X	X	X	X	F/R	X	90	108	72	X	X	X	X
<i>Eucalyptus wandoo</i>	White Gum WA	18	Cream	Dec-May	Perth	X	X	X	X	F/R	X	60	72	48	X	X	X	X
<i>Nuytsia floribunda</i>	Christmas Tree	8	Orange	Oct-Jan	Perth	X	X	X	X	X	X	16	19.2	12.8	X	X	X	X
<i>Paraserianthes lophantha</i>	Albizia	10	Greenish Yellow	Aug-Dec	Perth	X	X	X	X	X	X	16	19.2	12.8	X	X	X	X
<i>Acacia acuminata</i>	Jam Wattle	5	Yellow	Aug-Nov	WA	X	X	X	X	X	X	24	28.8	19.2	X	X	X	X
<i>Banksia littoralis</i>	Swamp Banksia	15	Red/Yellow w	Mar-Aug	WA	X	X	X	X	F	X	20	24	16	X	X	X	X
<i>Banksia sessilis</i>	Parrot Bush	6	Cream-Yellow	April-Nov	WA	X	X	X	X	F	X	8	9.6	6.4	X	X	X	4
<i>Banksia verticillata</i>	Granite Banksia	6	Yellow	Jan-Apr	WA	X	X	X	X	F	X	12	14.4	9.6	X	X	X	4

Tree	Common name	Height (m)	Flower	Flower time	Origin	Insect attracting	Bee attracting	Bird attracting	Carnaby attracting	mammal attracting	Fire resistant	Min distance from building (m)	Min spacing in building protection zone (m)	Min spacing in hazard separation zone (m)	Drought	Frost	Meters from sewage pipe	Salt tolerant
<i>Calothamnus rupestris</i>	Granite Net-bush	3	Pink/Red	Jul-Dec	WA	X	X	X				8	9.6	6.4				
<i>Corymbia calophylla</i>	Marri Red	20	Pink/White	Dec-May	WA	X	X	X	XF/N/R			70	84	56			20	X
<i>Corymbia ficifolia</i>	Flowering Gum	8	Red	Dec-May	WA	X	X	X	XF									X
<i>Eucalyptus camaldulensis</i>	River Red Gum	20	White	Jul-Dec	WA	X	X	X	XR			30	36	24	X	X		X
<i>Eucalyptus cornuta</i>	Yate	25	Yellow-Green	Jan-May	WA	X	X								X	X		
<i>Eucalyptus drummondii</i>	Drummond's Mallee	5	White-Cream	Jan-Feb	WA			X				16	19.2	12.8		X		
<i>Eucalyptus longicornis</i>		24	White	Dec-Feb	WA				XN									
<i>Eucalyptus loxophleba</i>	York Gum	15	White	Jul-Dec	WA	X	X	X	XF/N			20	24	16	X	X		X
<i>Eucalyptus preissiana</i>	Bell-fruited mallee	3	Yellow	May-Aug	WA	X	X	X	XF									
<i>Eucalyptus sargentii</i>	Salt River Gum	12	White	Aug-Sep	WA	X		X							X	X		
<i>Eucalyptus torquata</i>	Coolgardie Gum	4 to 11	Pink, Red	Aug-Dec	WA			X							X	X		6
<i>Eucalyptus utilis</i>	Coastal Moort	8	Creamy-Yellow	Sep-Jan	WA	X	X	X							X	X		X
<i>Eucalyptus x tetragona</i>	Mealy Gum	8	White/Cream	Sep-Mar	WA													2
<i>Hakea oleifolia</i>	Olive-leaf Hakea	10	White/Red, Orange, Yellow	Aug-Oct	WA			X	XF									
<i>Lambertia inermis</i>	Chittick	6	Yellow	Sep-Jun	WA			X	XF									
<i>Acacia baileyana</i>	Cootamundra Wattle	8	Yellow	Jun-Sep	Aus		X	X	XF							X		

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<sup>5</sup>Building protection zone – an area adjacent to a building<sup>15</sup> (see figure 2)

<sup>6</sup>Hazard separation zone- The area of land between the building protection zone and bush usually up to 100 meters<sup>15</sup>. (see figure 2)

Table 6: Weeds all information in this table was retrieved from Nursery and Garden Industry Western Australia <http://www.growmeinstead.com.au/public/GMI-brochure-Western-Australia.pdf>

Weed	Alternatives
<i>Pinus radiata</i>	<i>Allocasuarina fraseriana</i> , <i>Callitris endlicheri</i> , <i>Casuarina obesa</i>
<i>Cinnamomum camphora</i>	<i>Eucalyptus sideroxylon</i> 'Rosea', <i>Tristaniopsis laurina</i> , <i>Cupaniopsis anacardioides</i>
<i>Corymbia citriodora</i>	<i>Eucalyptus torquata</i> , <i>Eucalyptus forrestiana</i> , <i>Eucalyptus sideroxylon</i> 'Rosea'
<i>Olea europaea</i> ssp. <i>Cuspidata</i>	<i>Grevillea olivacea</i> , <i>Photinia x fraseri</i> ,