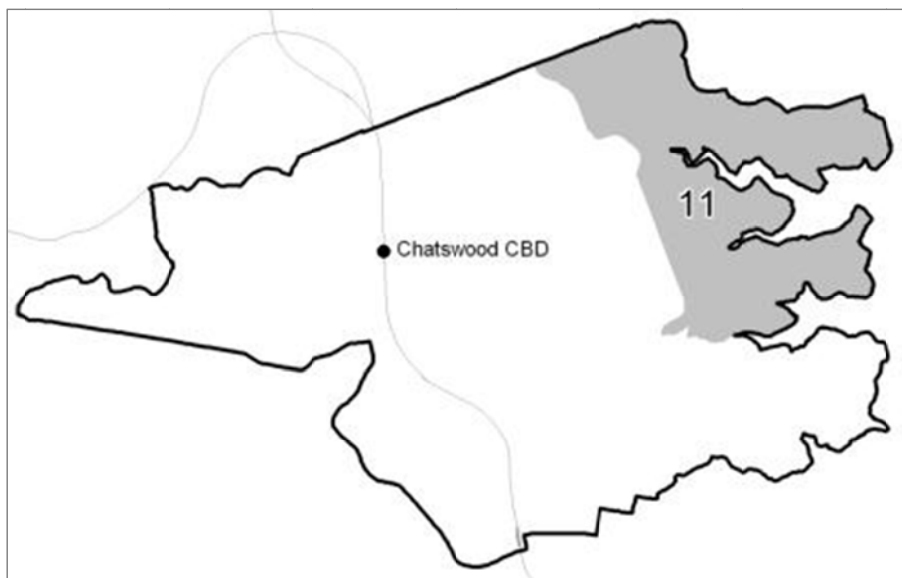


11. Upper Middle Harbour bushland and residential (incl. Conservation Area)



Key landscape features

Geology and soils:

Hawkesbury sandstone with typically fine to coarse grained quartz sandstone with inter-bedded shale lenses; soils are generally shallow, apedal and porous sandy to sandy loams with very low fertility.

Topography, slope and aspect:

Upper plateau and central ridges – undulating to rolling low hills with no rock outcrops grading to localised steep slopes with some sandstone outcropping and benches;

Steep slopes and valleys – moderate to very steep sandstone slopes with rock outcrops, benches and broken scarps (up to 10 metres high); aspect varies.

Natural and cultural landscape:

Low density residential/ environmental living (incl. Griffin Conservation Area); two small commercial areas (neighbourhood centres); significant bushland reserves; parks and golf course; environmental conservation; Middle Harbour foreshores (eastern boundary); Eastern Valley Way (western boundary); Castle Cove, Middle Cove and Castlecrag.

Presence of remnant native vegetation:

Sydney Sandstone Gully Forest (SSGF) – including 10ag(i) Open Forest/ Woodland and 10ag(iii) Closed-forest; Sydney Sandstone Ridgetop Woodland (SSRW) – 10ar(i) including Woodland/ Low Woodland. Ecological communities are in accordance with Benson & Howell (1994). For further details see [Vegetation Communities mapping](#) and *Willoughby Natural Heritage Register*.

Streetscape type/character:

Remnant native forest canopy trees (SSGF communities) and open-woodland trees and shrubs (SSRW);

Cultural plantations including single or mixed species (native and exotic), evergreen or deciduous avenues; no significant Inter-war period plantations.

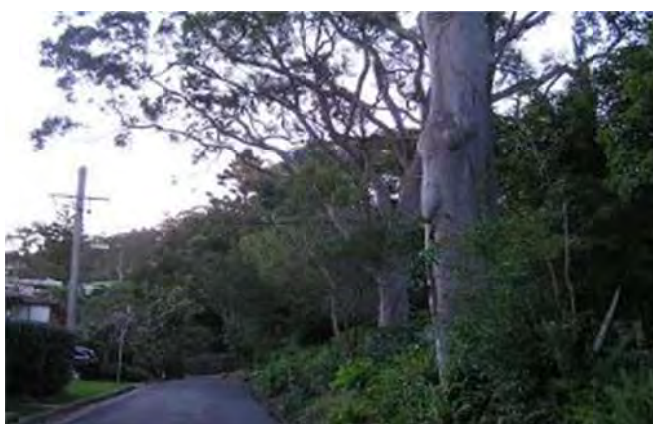


PHOTO 10: The streetscapes in this precinct retain a natural bushland character and aesthetic.

The Scarp, Castlecrag – remnant old growth group of Smooth-barked Apple (*Angophora costata*)

Heritage Conservation Areas:

1. Griffin Heritage Conservation Area: C4 (WDCP 2012 Part H: Heritage Item H3.5).

Historic significance:

The bushland of these rugged sandstone ridges and valleys remained largely undisturbed with minimal development until the Inter-war and Post-war periods;

1904: construction of “Innisfallen Castle”, Castle Cove;

1921-26: Walter Burley Griffin and Marion Mahony Griffin designed the Castlecrag and adjoining Haven Estates (now known as Griffin HCA). The design aimed to protect natural heritage values (i.e. biodiversity and geodiversity) with narrow carriageways along contours, sympathetic housing and set-backs, and large bushland reserves connected via public easements and pathways;

1930s: construction of the Harbour Bridge, Eastern Valley Way and rebuilding of Northbridge Suspension Bridge; housing development along Edinburgh Road and adjacent streets (east of Eastern Valley Way); Post-war residential boom.

HCA-C4 Key period of significance: 1921-1935 (WDCP, 2012, H3-15);

Ecological significance:

This precinct and its streetscapes conserve significant forest and woodland canopy trees (including many old growth specimens) representative of Sydney Sandstone Ridgetop Woodland, Sydney Sandstone Gully Forest and some rare examples of Temperate Rainforest communities. The streetscapes are surrounded by a network of major bushland reserves including H.D. Robb Reserve, Explosives Reserve, North Arm Reserve and Willis Park (Castle Cove), Harold Reid Reserve (Middle Cove) and Castlecrag Reserves.

Significant Inter-war period plantations:

n/a

Age structure of remnant native trees and plantations:

Native canopy: varies; incl. old growth specimens up to 100-150 years
Conservation Area: Retained bushland/ no Inter-war period plantations.
Dominant planting: varies; generic native planting (up to 30-40 years+)

PRECINCT 11: UPPER MIDDLE HARBOUR BUSHLAND & RESIDENTIAL Existing remnant (typical) native canopy species	
Location	Native Tree Species
Castle Cove: Eastern Valley Way	<i>Eucalyptus sieberi</i> (Silver-top Ash) <i>Corymbia gummifera</i> (Red Bloodwood) <i>Angophora costata</i> (Smooth-barked Apple)
Warrane Place/ Kendall Road	<i>Eucalyptus racemosa</i> (Narrow-leaved Scribbly Gum) <i>Eucalyptus camfieldii</i> (Heart-leaved Stringybark) <i>Corymbia gummifera</i> (Red Bloodwood)
Headland Road/ Neerim Road	<i>Eucalyptus punctata</i> (Grey Gum) <i>Corymbia gummifera</i> (Red Bloodwood) <i>Angophora costata</i> (Smooth-barked Apple)
Emerstan Drive/ Willis Road	<i>Angophora costata</i> (Smooth-barked Apple) <i>Eucalyptus piperita</i> (Sydney Peppermint) <i>Allocasuarina littoralis</i> (Black She-oak)
Castlecrag: Edinburgh Road/ Linden Way	<i>Eucalyptus racemosa</i> (Narrow-leaved Scribbly Gum) <i>Angophora costata</i> (Smooth-barked Apple) <i>Corymbia gummifera</i> (Red Bloodwood)
The Bulwark/ The Scarp	<i>Eucalyptus piperita</i> (Sydney Peppermint) <i>Angophora costata</i> (Smooth-barked Apple) <i>Eucalyptus racemosa</i> (Narrow-leaved Scribbly Gum)
The Citadel/ The High Tor	<i>Eucalyptus piperita</i> (Sydney Peppermint) <i>Banksia serrata</i> (Saw-toothed Banksia) <i>Angophora costata</i> (Smooth-barked Apple)
Rockley Street/ The Barbette/ The Bastion	<i>Angophora costata</i> (Smooth-barked Apple) <i>Eucalyptus racemosa</i> (Narrow-leaved Scribbly Gum) <i>Corymbia gummifera</i> (Red Bloodwood)

PRECINCT 11: UPPER MIDDLE HARBOUR BUSHLAND & RESIDENTIAL
Existing typical or dominant planted tree species *

Location	Tree Species (cultivated)
Eastern Valley Way	<i>Eucalyptus/ Corymbia</i> spp. (mixed generic Eucalypts) <i>Lophostemon confertus</i> (Brush Box) <i>Tristanopsis laurina</i> (Water Gum)
Deepwater Road	<i>Leptospermum petersonii</i> (Lemon-scented Teatree) <i>Tristanopsis laurina</i> (Water Gum) <i>Callistemon viminalis</i> (Weeping Bottlebrush)
Neerim Road/ Allambie Road/ Warrawee Avenue	<i>Tristanopsis laurina</i> (Water Gum) <i>Callistemon</i> spp. (Bottlebrush)
Greenfield Avenue/ Rembrandt Drive/ North Arm Road	<i>Eucalyptus/ Corymbia</i> spp. (mixed generic Eucalypts) <i>Callistemon viminalis</i> (Weeping Bottlebrush)
Edinburgh Road/ Charles Street/ Raeburn Avenue	<i>Eucalyptus/ Corymbia</i> spp. (mixed generic Eucalypts) <i>Callistemon viminalis</i> (Weeping Bottlebrush) <i>Jacaranda mimosifolia</i> (Jacaranda)
The Parapet/ The Rampart/ Sortie Port	<i>Eucalyptus/ Corymbia</i> spp. (mixed generic Eucalypts) <i>Nerium oleander</i> (Oleander) <i>Callistemon viminalis</i> (Weeping Bottlebrush)

* NOTE: Street tree planting is dominated by a wide range of exotic and generic native trees and shrubs, including various cultivars.

Key precinct objectives

- Protect and maintain the significant biodiversity and geodiversity values of this precinct, particularly the diversity of ecological communities and native tree species within the street verges (as scheduled in WNHR);
- Protect, maintain and enhance the high visual, aesthetic and environmental values associated with the Griffin Heritage Conservation Area;
- Investigate opportunities for extending current bush regeneration and restoration strategies in consultation with local Bushcare groups;
- Promote opportunities for natural recruitment of canopy trees and community-based restoration strategies in streetscapes and adjoining bushland reserves;
- Selection of native species to be in accordance with mapped geology, soils and ecological communities, noting the highly variable local conditions (e.g. bedrock pavement and often shallow, porous coarse-grained sandy soils);

- Promote strategies to supplement and enhance native tree canopy using provenance-sourced material;
- Avoid the use of generic native species in this precinct (i.e. species native to other geographic areas or of unknown provenance);
- Implement a program to phase-out unsuitable and/ or poorly performing street trees including removal of disparate elements (i.e. varying forms, habit, structure, texture, etc.) and variety of tree species in many streets;
- Protect scenic vistas, particularly along the verges of connector roads traversing ridgelines and upper scarps, promoting in these locations the use of native broadleaf species (under overhead powerlines) and open-canopied local native species (no powerlines);
- Target Eastern Valley Way as a key connector road implementing a planting strategy using single or two (mixed) species within the streetscape (i.e. one species under overhead powerlines/ shop awnings and alternative species with no service restrictions).

PRECINCT 11: UPPER MIDDLE HARBOUR BUSHLAND & RESIDENTIAL
Proposed street tree species

Tree Species	Common Name	evergreen	deciduous	habit/form ¹	verge width ²	power-lines ³
<i>Acmena smithii</i>	Lilly Pilly	E	-	cr	N	N
<i>Acmena smithii</i> var. minor	Lilly Pilly (incl. cv)**	E	-	cr	N	Y
<i>Angophora costata</i> (SGF1/SRW)*	Smooth-barked Apple	E	-	os	M	N
<i>Angophora hispida</i>	Dwarf Apple	E	-	cr	M	Y
<i>Backhousia myrtifolia</i> (SGF1)*	Grey Myrtle	E	-	cr	N	Y
<i>Banksia integrifolia</i>	Coast Banksia	-	D	no cu	M	Y
<i>Banksia serrata</i> (SGF1/SRW)*	Saw-toothed Banksia	E	-	os	M	Y
<i>Callistemon</i> spp.	Bottlebrush	E	-	cn	M	Y
<i>Ceratopetalum gummiferum</i>	NSW Christmas Bush	E	-	cn	N	Y
<i>Corymbia gummifera</i> (SGF1/SRW)*	Red Bloodwood	E	-	os	M	N
<i>Eucalyptus camfieldii</i> (SRW)*	Heart-leaf Stringybark	E	-	os	N	Y
<i>Eucalyptus capitellata</i> (SRW)*	Brown Stringybark	E	-	os	M	N
<i>Eucalyptus crebra</i>	Narrow Leaved Ironbark	E	-	os	M	N
<i>Eucalyptus haemastoma</i>	Scribbly Gum	E	-	os	W	N
<i>Eucalyptus piperita</i> (SGF1/SRW)*	Sydney Peppermint	E	-	os	W	N
<i>Eucalyptus punctata</i>	Grey Gum	E	-	os	W	N
<i>Eucalyptus racemosa</i> (SGF1/SRW)*	Scribbly Gum	E	-	os	M	N
<i>Eucalyptus sieberi</i> (SGF1/SRW)*	Silvertop Ash	E	-	os	M	N
<i>Glochidion ferdinandi</i>	Cheese Tree	E	-	cs	M	Y
# <i>Jacaranda mimosifolia</i>	Jacaranda	-	D	os	M	N
<i>Tristaniopsis laurina</i> spp.	Water Gum	E	-	cr	M	Y

NOTES: Species are shown in alphabetical order and do not denote dominance or ranking.

* SGF1/SRW LOCAL NATIVE SPECIES recommended for most streets in this precinct.

SGF1 = Sydney Sandstone Gully Forest (*Eucalyptus piperita*/ *Angophora costata*);

SRW = Sydney Sandstone Ridgetop Woodland.

** *Acmena smithii* var. *minor* including extremely psyllid-resistant cultivars “Red Head” (burgundy red new foliage) and “Sublime” (lush green new foliage).

Jacaranda mimosifolia to be used only within existing plantations or urban context (e.g. Raeburn Avenue, Castlecrag)

'HABIT/ FORM OF TREE

c = compact/dense foliage; o = open crown/ canopy;

upright = u; r = rounded; s = spreading; n = narrow/columnar or pyramidal.

²MINIMUM VERGE WIDTH (incl. footpath):

N = narrow (<2.5 metres)

M = medium (2.5-4.0 metres)

W = wide (>4.0 metres)

³PLANTING UNDER POWER-LINES (incl. ABC):

Item denotes suitability for planting under overhead power-lines or aerial bundled cabling:

N = NO; Y = YES



Lilly Pilly
Acmena smithii



Smooth-barked Apple
Angophora costata



Outeniqua Yellowwood
Afrocarpus falcatus



Lemon-scented Myrtle
Backhousia citriodora



Tree Waratah
Alloxylon flammeum



Grey Myrtle (immature)
Backhousia myrtifolia



Tuckeroo
Cupaniopsis anacardioides



Red Bloodwood – bark detail
Corymbia gummifera



Eumundi Quandong
Elaeocarpus eumundi



Heart-leaf Stringybark – leaf detail
Eucalyptus camfieldii



Broad-leaved Scribbly Gum
Eucalyptus haemastoma



Sydney Peppermint
Eucalyptus piperita



Narrow-leaved Scribbly Gum
Eucalyptus racemosa



Sydney Blue Gum
Eucalyptus saligna



Australian Teak
Flindersia australis



Bumpy Ash
Flindersia schottiana



Cheese Tree
Glochidion ferdinandi



Gordonia
Gordonia axillaris



Purple-leaf Hibiscus
Hibiscus tiliaceus var. *rubra*



Jacaranda
Jacaranda mimosifolia



Crepe Myrtle cv. Yuma
Lagerstroemia indica x *L. fauriei*



Southern Magnolia cv. Exmouth
Magnolia grandiflora 'Exmouth'



Ornamental Pear – autumn foliage
Pyrus calleryana 'Chanticleer'



Turpentine
Syncarpia glomulifera

Willoughby Street Tree Master Plan

WILLOUGHBY CITY COUNCIL

October 2014

LandArc Pty Limited

Int. Ref: 82741068



Cherry Satinash
Syzygium luehmannii



Weeping Lilly Pilly
Waterhousea floribunda



Water Gum cv. Luscious
Tristaniaopsis laurina 'Luscious'



Golden Penda
Xanthostemon chrysanthus