

8. WCC Bushland Team to continue with weed removal behind properties at 13-17 and 17a Coolaroo Road and monitor stormwater line between along 15, 17 and 17a Coolaroo Road.

9. Bushland Regeneration Contractor to continue with follow up works along the west end of the riparian zone, removing Broad-leaf Privet (*Ligustrum lucidum*), Camphor Laurel (*Cinnamomum camphora*), and Madeira Vine (*Anredera cordifolia*).

10. Monitor Coolaroo Creek for improving water flow movement and reduce the capability of weeds establishing in the riparian zone.

11. Bushland Regeneration Contractors to continue with targeting Madeira vine (*Anredera cordifolia*) and to investigate options to rock armour eroded section of stormwater line.

12. Bushland Regeneration Contractor to continue with works around locally rare Crabapple (*Schizomeria ovata*) along creekline to assist with regeneration in gully.

13. Investigate WSUD options with the Golf Club to improve water quality and biodiversity of Coolaroo Creek.

14. Enhance the visual amenity and public access to the reserve by removing Cotoneasters (*Cotoneaster glaucophyllus*) and other garden escapes and replace with indigenous grasses, sedges and shrubs.

15. Install a reserve name sign and interpretive signage.

16. Bushland Regeneration Contractor to continue target removal of woody weeds and Pellitory (*Parietaria judaica*) behind properties at 21-29 Cramer Crescent. Investigation options to flame weed to stimulate native regeneration.

17. WCC Bushland Team to monitor 12 Greville Street and the easement next to 15 Cramer Crescent for encroachments.

18. WCC Bushland Team to remove landscaping encroachments from 43 Coolaroo Road and 19 Cramer Crescent.

19. WCC Bushland Team to conduct maintenance weeding of all weeds in the drainage channel that runs between 15, 17 and 17a Coolaroo Road and to re-armour the channel.

20. WCC Bushland Team to maintain drainage line behind 21 Cramer Crescent.

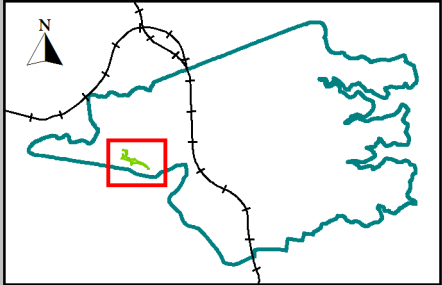
Coolaroo Reserve Actions

Priorities will be given to programs for long term benefit to the reserve. Natural assets at greatest risk will be given priority to avert irreversible deterioration. All measures cannot be implemented simultaneously - resources may not be available or it may not be appropriate.

1. Coolaroo Bushcare group to continue working in accordance with the Coolaroo Bushcare Action Plan, targeting Trad (*Tradescantia fluminensis*). Where possible, group to work in higher quality areas to add value to contractor work zones. Promote Bushcare program to local residents to identify new members.
2. Bushland Regeneration Contractor to continue works in the riparian zone (6-8 metres wide) along Coolaroo Creek, extending from Dalrymple Avenue to the Chatswood Golf Course. Target the removal of woody weeds and then re-establish the mid-storey and canopy by replanting in appropriate areas with appropriate indigenous species such as Christmas Bush (*Ceratopetalum gummiferum*), Black Wattle (*Callicoma serratifolia*), Lillypilly (*Acmena smithii*).
3. Bushland Regeneration Contractor to continue primary work along riparian zone to property boundaries. Target removal of Broad-leaf Privet (*Ligustrum lucidum*), Camphor Laurel (*Cinnamomum camphora*), Madeira Vine (*Anredera cordifolia*) and Elephant Ears (*Alocasia brisbanensis*). Revegetate along riparian zone to property boundary with local indigenous plant species.
4. Contractors to do follow-up weeding, targeting the Camphor laurel (*Cinnamomum camphora*) and Lantana (*Lantana camara*) opposite 3 and 11 Moola Parade respectively, as well as groundcover weeds.
5. Continue to Monitor weed grasses area opposite 7 Moola Parade to ensure it does not increase. Roadside edge to be mulched and planted local indigenous ground species.
6. Bushland Regeneration Contractor to continue works along the embankment outside the riparian zone extending to reserve boundaries and investigate additional erosion control options for Moola Parade. Target the removal of Fruit Salad Plant (*Monstera deliciosa*). Extra attention required in stormwater lines that run into the reserve, opposite 19, 23, 27 and 39 Moola Parade and behind 15, 17 and 17a Coolaroo Road.
7. Bushland Regeneration Contractor to continue establishing buffer between Moola Parade and reserve using indigenous plantings. Work will be in the first 2-3 metres of reserve on road edge and will commence with woody weed removal starting from 5 Moola Parade extending to 43 Moola, followed by planting appropriate indigenous species in areas at appropriate locations such as Blue flax-lilly (*Dianella caerulea*), Spiny-headed Mat-rush (*Lomandra longifolia*), Blady Grass (*Imperata cylindrica*). Plantings require guards and/or temporary fencing for protection.



**RESERVE ACTION PLAN
COOLAROO RESERVE**

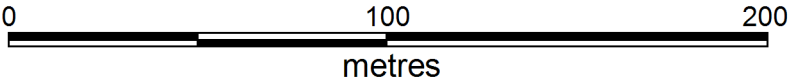


Plan details

Status: Final
Prepared by: N. Yu
Drawn by: N. Prasad
Date printed: 30/07/2020
Approximate Scale: 1:2000 on A3

Legend

- 16 Property number
- 12 Action plan activity
- Stormwater node
- ▼ Approximate fire hydrant location
- 35 5m contours
- Stormwater network - Underground *
- Stormwater network - Overground / Unknown *
- Bush track / Path *
- Property boundary
- Reserve / bushland
- ▨ Council staff regeneration site
- ▨ Council bush regeneration contractors
- ▨ BushCare group



* The accuracy of this data is not guaranteed and must be verified prior to use.

References

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Coolaroo Reserve Action Plan

Reserve Profile

Coolaroo Reserve is a long and relatively narrow, sheltered area of bushland approximately 2.7ha in size, located within the Lane Cove River catchment. The eastern half of the reserve from Greenlands Road is in the suburb of Lane Cove North and the western half extending to Chatswood Golf Course is located in Chatswood. The entire southern boundary is bordered by the back gardens of houses and the northern boundary also consists of back gardens and Moola Parade. The western boundary connects with Chatswood Golf Course and the east with Dalrymple Avenue.

Coolaroo Creek runs through the entire reserve starting at Dalrymple Avenue, continuing through the reserve to Chatswood Golf Course. Then within the golf course it drains to Swaines Creek and finally into the Lane Cove River. Bushland within Coolaroo is significant because it filters pollutants that enter the reserve from stormwater.

PLANT COMMUNITY: The majority of Coolaroo Reserve is classified as Coastal Enriched Sandstone Moist Forest (S_WSF02) consisting of tall open eucalypt forest canopy species dominated by Blackbutt (*Eucalyptus pilularis*), Turpentine (*Syncarpia glomulifera*) and Smooth-barked Apple (*Angophora costata*). There is a small area in the northern corner of the reserve, near Cramer Crescent, that is classified as Hornsby Enriched Sandstone Exposed Woodland (S_DSF10) consisting Blackbutt (*Eucalyptus pilularis*), Dwarf Apple (*Angophora hispida*, Scribbly Gum (*Eucalyptus haemastoma*), Red Bloodwood (*Corymbia gummifera*) and Sydney Peppermint (*Eucalyptus piperita*).

HABITAT: Coolaroo's large trees provide habitat for micro bats, parrots, and owls. In riparian areas small birds, frogs and reptiles are found. With limited entry points and lack of tracks, Coolaroo provides refuge for wildlife. However it is very narrow and close to residential properties so is suitable for more urbanised and non-terrestrial wildlife.

Statement of Significance

Coolaroo Reserve is classified as bushland as defined in State Environmental Planning Policy No 19 (*Vol 1, 1.4), and is protected under State and Commonwealth Legislation (*Vol 1, 1.5.2). It is zoned E2 Environmental Conservation in the Willoughby Local Environment Plan (WLEP) 2012. Coolaroo is a bushland reserve allowing dogs to enter, if restrained by a leash.

ABORIGINAL CULTURAL SIGNIFICANCE: The Gamaraygal people are the original custodians of this area. There are no Aboriginal heritage sites recorded in Coolaroo but the reserve is in close proximity to Mowbray Park which does contain significant rock ledges and midden sites.

NATURAL HERITAGE SIGNIFICANCE: Despite being a relatively small and narrow reserve, Coolaroo acts as a significant green corridor for species to migrate via Chatswood Golf Course to larger reserves such as Ferndale Park, Mowbray Park, Blue Gum Park and Lane Cove National Park. The reserve is also home to a variety of native flora and fauna species such as the Pacific Baza, Powerful Owl, Satin-bower Bird, Australian Wood Duck, Butcher Bird, Red-bellied Black Snake and Peron's Tree Frog.

HISTORIC CULTURAL SIGNIFICANCE: There is no significant historical information specific to Coolaroo Reserve. However the broad area of Chatswood, west of the Pacific Highway, in the nineteenth century had hardwood timbers felled, for example Blue Gums. Timber was then carried down the Lane Cove River by boat for construction in Sydney. After these areas were cleared, farms, orchards and dairies began to appear. These remained until the mid-1900s when the increase in population required that more residential properties were built in the Chatswood area.

HABITAT SIGNIFICANCE: Even though Coolaroo Reserve is small in size compared to other bushland reserves in the immediate area, Coolaroo Reserve provides valuable refuge for wildlife and more importantly acts as a green corridor for species to move east and west between larger bushland areas. Coolaroo is in close proximity to larger bushland spaces like Ferndale Park, Mowbray Park, Blue Gum Park and the Lane Cove National Park and the linkage functionality of this reserve is quite significant and valuable.

Some important wildlife species that have been identified within the reserve include the Pacific Baza (*Aviceda subcristata*), Powerful Owl (*Ninox strenua*), Satin-bower Bird (*Ptilonorhynchus violaceus*), Australian Wood Duck (*Chenonetta jubata*), Butcher Bird (*Cracticus torquatus*), Red-bellied Black Snake (*Pseudechis porphyriacus*) and the Peron's Tree Frog (*Litoria peronei*).

Reserve Impacts

ENCROACHMENTS: There are recorded reserve encroachments at 12 Dalrymple Avenue, 1 and 49 Coolaroo Road, 19 and 21 Cramer Crescent and 12A and 22X Greville Street. All reserve encroachments will be requested to be removed at an appropriate time.

Wildlife Habitat Issues

Residential properties are adjacent to most boundaries of the reserve and these may produce excess noise, light and vegetation disturbances that are not ideal for wildlife.

The scarce availability of natural tree hollows in the reserve presents an issue in providing shelter and breeding habitat for native arboreal fauna. Similarly, the lack of dense grasses and sedges as well as the removal of Lantana, has meant a loss of potential nesting and foraging habitat for small birds such as the Fairy-wrens and Finches.

There is also the issue of lighting along the streets and pedestrian path that dissects the reserve at the end of Moola Parade. These lights shine deep into the reserves which has an impact on the foraging activity of nocturnal fauna.

An ongoing issue in the reserve that affects wildlife habitat is the accumulation of sediment in Coolaroo Creek via stormwater flows. Despite ongoing sediment removal, stormwater runs from the streets and properties into drainage lines and then into Coolaroo Creek, bringing with it rubbish, weed seed, excess nutrients, chemicals and sediment. Excess sediment is particularly bad as it reduces the capability of ponding to occur, reducing suitable habitat for aquatic species.

Chatswood Golf Course is adjacent to the reserve and the wide open grass areas of the course encourage pest animals like foxes and rabbits. Foxes have been recorded entering the reserve and are a known major impact on native animal populations.

Achievements

A major achievement within Coolaroo Reserve was the restoration of severely degraded bushland at the Greenlands Road entrance adjacent to 39 Coolaroo Road. This area was a large patch of Lantana and Privet with a vegetation condition rating of Very Poor. Weed material was removed by machinery and then the site was sandstone capped and indigenous plants planted to encourage native plant regeneration, provide habitat for reptiles and other wildlife, and to improve water movement. This area now requires little maintenance weed removal work and has a vegetation condition rating of Good.

Several stormwater drainage lines have been rock armoured to reduce erosion and to improve the movement of water within the reserve and into Coolaroo Creek.

The Coolaroo Reserve Bushcare group has continued to work in the reserve for more than 10 years with a member from the original group still an active member.

Public access into and through Coolaroo has been upgraded over time including the restoration of the pedestrian bridge through the middle of the reserve over the creek and at reserve entrances.

There has been significant reduction in woody weeds and vines along the western side of the reserve. Combined with revegetation works, will help improve the overall condition of the reserve.

Bushland Management Goals – Coolaroo Reserve

This bushland Reserve Action Plan has identified the following management aims from the Urban Bushland Plan of Management 2014 as priority objectives:

- 5.3b: To create and or maintain conditions in which creek and drainage lines are protected from increased erosion and/or sedimentation due to urban impacts.
- 5.4b: To maintain the integrity of bushland reserves through the reduction of encroachments and other boundary impacts.
- 6.2f: To preserve and increase ecological links across the LGA and regionally to assist the movement of fauna.
- 6.2g: Maintain natural habitat formations and supplement with manufactured structures where natural habitat has been depleted.
- 6.3b: To implement weed control programs which are based on regeneration and restoration principles and which increase bushland resilience to further weed infestation.
- 7.1g: To manage fire such that the fire regime and implementation of the burn is beneficial to flora and fauna diversity and habitat.
- 10.1b: To ensure that leases and licences for activities undertaken in, or adjoining, or impacting on, bushland areas are compatible with the sustainable management of bushland.

Bushland Management – General Principles for all Reserves

- a. Bushland regeneration is a long term process requiring staged weed removal to ensure establishment of native plant communities. Work will proceed from good bush to degraded areas with techniques that encourage regeneration.
- b. If possible, weed refuse and natural debris composted on-site.
- c. If natural regeneration is deemed inadequate, supplementary plantings to mimic local plant communities and landscapes will be used with local provenance species.
- d. Standing dead trees and forest litter (including logs/branches) to be kept for wildlife habitat unless deemed a risk to safety.
- e. Monitor, maintain and enhance vegetation connectivity for wildlife habitat within the reserve and reserve networks.
- f. *Phytophthora cinnamomi* (a root rot pathogen) is listed as a key threatening process in NSW. Bushland workers are to use hygiene protocols to minimise risk.
- g. Report and record all reserve encroachments. Monitor for tree vandalism and/or removal and report to Council Compliance for appropriate action.
- h. Monitor wildlife habitat and supplement where necessary.
- i. Monitor feral animal activity and implement appropriate management actions where necessary.
- j. Encourage the community to report wildlife sightings via the Wildlife Watch Program.
- k. Bushfire management will be achieved through implementation of a strategic hazard reduction program consistent with the Bushfire Risk Management Plan.
- l. Species diversity will be maintained by an ecological burn program in a mosaic pattern.
- m. Monitor and protect Aboriginal cultural heritage sites. Bushland staff to notify Aboriginal Heritage Office prior to a burn to identify sites and implement protection measures.

- n. Preserve natural features for educational purposes and continue to inform the community of bushland issues through on-site activities and signage. Maintain appropriate signage.
- o. Formal tracks to be maintained and unwanted tracks to be closed to prevent damage to habitat and to impede access of feral animals, unless used for access by bushland workers.
- p. Establish photo points to monitor work and review annually.
- q. Protection of habitat is required for flora and fauna species found in reserves listed under State and Commonwealth legislation as threatened species.
- r. The collection of rubbish from bushland is carried out by Council contractors and bushland field staff as required.

Native Animal Species List for Coolaroo Reserve

Coolaroo Reserve provides habitat for a number native animals. A list of these species can be found at <http://edocs.willoughby.nsw.gov.au/DocumentViewer.ashx?dsi=5835430>

Native Plant Species List for Coolaroo Reserve

FERNs	<i>Hibbertia dentata</i>	<i>Pittosporum undulatum</i>
ASPLENIACEAE	ELAEOCARPACEAE	PLANTAGINACEAE
<i>Asplenium australasicum</i>	<i>Elaeocarpus reticulatus</i>	<i>Veronica plebeia</i>
<i>Asplenium flabellifolium</i>	ERICACEAE	PROTEACEAE
BLECHNACEAE	<i>Leucopogon juniperinus</i>	<i>Banksia serrata</i>
<i>Blechnum cartilagineum</i>	EUPHORBIACEAE	<i>Grevillea linearifolia</i>
<i>Doodia aspera</i>	<i>Omalanthus populifolius</i>	<i>Persoonia levis</i>
CYATHEACEAE	FABACEAE	RANUNCULACEAE
<i>Cyathea australis</i>	<i>Acacia decurrens</i>	<i>Clematis aristata</i>
<i>Cyathea cooperi</i>	<i>Acacia linifolia</i>	RUBIACEAE
DENNSTAEDTIACEAE	<i>Acacia longifolia</i>	<i>Morinda jasminoides</i>
<i>Pteridium esculentum</i>	<i>Acacia suaveolens</i>	<i>Opercularia aspera</i>
DICKSONIACEAE	<i>Acacia ulicifolia</i>	<i>Pomax umbellata</i>
<i>Calochlaena dubia</i>	<i>Glycine clandestina</i>	RUTACEAE
GLEICHENIACEAE	<i>Hardenbergia violacea</i>	<i>Zieria smithii</i>
<i>Gleichenia dicarpa</i>	<i>Pultenaea flexilis</i>	SAPINDACEAE
LINDSAEACEAE	GERANIACEAE	<i>Cupaniopsis anacardiodes</i>
<i>Lindsaea linearis</i>	<i>Geranium solanderi</i>	<i>Dodonaea triquetra</i>
POLYPODIACEAE	LAMIACEAE	SOLANACEAE
	<i>Clerodendrum tomentosum</i>	<i>Solanum aviculare</i>
<i>Platycerium bifurcatum</i>	<i>Plectranthus parvifolius</i>	ULMACEAE
<i>Pyrrosia rupestris</i>		<i>Trema aspera</i>
PTERIDACEAE	LOBELIACEAE	MONOCOTS
<i>Adiantum aethiopicum</i>	<i>Pratia purpurascens</i>	
<i>Adiantum hispidulum</i>	MORACEAE	ARACEAE
<i>Adiantum formosum</i>	<i>Ficus rubiginosa</i>	<i>Livistona australis</i>
THELYPTERIDACEAE	MYRSINACEAE	COMMELINACEAE
<i>Cyclosorus dentatus</i>	<i>Rapanea variabilis</i>	<i>Commelina cyanea</i>
DICOTS	MYRTACEAE	CYPERACEAE
ACANTHACEAE	<i>Acmena smithii</i>	<i>Lepidosperma laterale</i>
<i>Pseuderanthemum variable</i>	<i>Darwinia fascicularis</i>	JUNCACEAE
APIACEAE	<i>Angophora bakeri</i>	<i>Juncus usitatus</i>
<i>Centella asiatica</i>	<i>Angophora costata</i>	LOMANDRACEAE
<i>Hydrocotyle peduncularis</i>	<i>Angophora hispida</i>	<i>Lomandra longifolia</i>
<i>Xanthosia pilosa</i>	<i>Corymbia gummifera</i>	LUZURIAGACEAE
ARALIACEAE	<i>Eucalyptus crassifolia</i>	<i>Eustrephus latifolius</i>
<i>Polyscias sambucifolia</i>	<i>Eucalyptus haemastoma</i>	PHORMIACEAE
APOCYNACEAE	<i>Eucalyptus pilularis</i>	<i>Dianella caerulea</i> var. <i>caerulea</i>
		<i>Dianella caerulea</i> var. <i>producta</i>
<i>Tylophora barbata</i>	<i>Eucalyptus piperita</i>	<i>Dianella revoluta</i>
ASTERACEAE	<i>Eucalyptus saligna</i>	
<i>Ozothamnus diosmifolium</i>	<i>Kunzea ambigua</i>	POACEAE
BIGNONIACEAE	<i>Melaleuca linarifolia</i>	<i>Echinopogon caespitosus</i>
<i>Pandorea pandorana</i>	<i>Syncarpia glomulifera</i>	<i>Entolasia stricta</i>
CASUARINACEAE	OLEACEAE	<i>Imperata cylindrica</i>
<i>Allocasuarina littoralis</i>	<i>Notelaea longifolia</i>	<i>Microlaena stipoides</i>
CONVOLVULACEAE	PHYLLANTHACEAE	<i>Opilisminus imbecillis</i>
<i>Dichondra repens</i>	<i>Breynia oblongifolia</i>	<i>Poa affinis</i>
CUNONIACEAE	<i>Glochidion ferdinandi</i>	<i>Themeda triandra</i>
<i>Bauera rubioides</i>	PICRODENDRACEAE	SMILACACEAE
<i>Callicoma serratifolia</i>	<i>Micrantheum ericoides</i>	<i>Smilax glycyphylla</i>
<i>Ceratopetalum apetalum</i>	PITTOSPORACEAE	UVULARIACEAE
<i>Ceratopetalum gummiferum</i>		
<i>Schizomeria ovata</i>	<i>Billardiera scandens</i>	<i>Schelhammera undulata</i>
DILLENIACEAE	<i>Bursaria spinosa</i>	
	<i>Pittosporum revolutum</i>	