

13. Continue to monitor encroachments from properties 17, 19, 25 and 67-83 Neerim Rd and 47 and 57 Headland Rd. Most encroachments consist of lawn areas and some garden areas. Staff to liaise with residents.

14. In association with Aboriginal Heritage Office, continue rock armouring at foreshore to reduce erosion damage to heritage sites from boat wash. Investigate possible long-term solutions to boat wash.

15. Council's Bushfire Management Team to ensure asset protection zones (APZ's) are established and maintained along Willowie Rd and properties that share reserve boundaries.

10. Identify maintenance access to reserve through community land between 69 and 71 Neerim Rd and 41 and 45 Neerim Rd.

11. Install additional seats and rest areas. Locations to be determined.

Refer priorities to Compliance Section where appropriate.

12. Council to monitor drainage lines and construct rock armouring where needed.

- * Data as at 14-07-2007. Please check with Dial Before You Dig prior to any earth works.
- ** No responsibility is taken for the accuracy of this data. Please check with Energy Australia, Dial Before You Dig or any other relevant authorities prior to undertaking any work

References

V:\PROJECTS\MANAGEMENT PLANS\RESERVE ACTION PLANS\ HD ROBB RAP 2018\MAPINFO\Works HD Robb RAP Final wor

RESERVE ACTION PLAN

H.D. ROBB RESERVE

Final

Property number

Action plan activity

Stormwater node Sewer access chamber ** Approximate fire hydrant location

Power pole

5m contours

Stormwater network -Overground / Unknown * Bush track / Path * Sewer mains **

Property boundary

Reserve / bushland

BushCare group

Contractor regeneration site

Proposed prescribed burn area

35

R. O'Brien

N.Prasad

19/02/2019

Stormwater network - Underground *

Energy Australia & internal overhead & underground power lines ** Energy Australia substation

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

HD Robb Reserve Action Plan

Reserve Profile

HD Robb Reserve is a linear reserve covering approximately 20.5 ha. The reserve runs east west and is located in the suburb of Castle Cove. Its setting in the upper reaches of Middle Harbour makes HD Robb a visually attractive reserve with spectacular panoramic views of Middle Harbour. It is bordered on the west by Ku-ring-gai Council and Explosives Reserve to the east.

PLANT COMMUNITY: Vegetation communities within HD Robb Reserve comprise predominantly of Coastal Sandstone Gully Forest (S_DSF09). Here Sydney peppermint (Eucalyptus piperita) and Smooth-barked apple (Angophora costata) form a moderately tall open forest. This type of vegetative community is typically situated on rocky environments with the understorey a diverse mix of heath and shrub species. A small proportion of vegetation, running down a drainage line, at the east end of the reserve is comprised of Coastal Enriched Sandstone Moist Forest (S_WSF02). This is a tall open eucalypt forest with a distinctive mesic shrub and small tree layer. Smooth-barked apple is invariably present with Turpentine (Syncarpia glomulifera) and Blackbutt (Eucalyptus pilularis) also existing in this vegetative community. At the western end of the reserve there is Coastal Sandstone Riparian Forest (S_DSF08). Here a suite of riparian and rainforest species occur. This includes lowgrowing Coachwood (Ceratopetalum apetalum), Water gum (Tristaniopsis laurina) and Tea-tree (Leptospermum spp.). The ground is commonly rocky and covered in small-leaved ferns such as Umbrella fern (Sticherus flabellatus) and Coral fern (Gleichenia spp.).

HABITAT: Coastal Sandstone Gully Forest along the length of the reserve provides a large range of habitat niches. The average height of the tree canopy is 16 m, and can reach up to 25 m, giving rise to a large number of hollows and nesting sites for wildlife. There are areas of dense weed, mainly in drainage areas, that consist mostly of Privet, Lantana and Fishbone Fern. This provides habitat, particularly for small birds. These weeds will incrementally be removed to allow wildlife populations to find habitat in adjacent areas.

Statement of Significance

HD Robb 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.

ABORIGINAL CULTURAL SIGNIFICANCE: Before European occupation HD Robb Reserve was home to the Camaraigal people, a clan of the Guringai nation. The steep topography combined with the sandstone geology protects numerous Aboriginal archaeological sites, making it a reserve with high cultural significance.

NATURAL HERITAGE SIGNIFICANCE: The steep and linear nature of the reserve protects an extensive wildlife linkage with significant local and regional connectivity. Fauna habitat connectivity remains uninterrupted with an exceptional reserve network including the larger Explosives Reserve on its eastern boundary and Ku-ring-gai Council / Garigal National Park on the western boundary. Due in part to HD Robb reserve escaping urban development, it still contains a diverse and complex range of arboreal, terrestrial and aquatic habitats. There is an extensive Rocky Foreshore with small pockets of Mangrove Wetlands. Associated intertidal areas support a wide variety of algal communities with a diverse range of marine invertebrates. Some locally significant wildlife that may be found in this reserve includes the Peregrine Falcon, Whistling Kite, Australian King Parrot, Swamp Wallaby, Bandicoot, Echidna, Sugar Glider and Peron's Tree Frog.

HISTORIC CULTURAL SIGNIFICANCE: HD Robb Reserve was part of Headland Heights Estate, developed by Headland Developments (part of the Hooker-Rex group) in the late 1950s. In 1958 the

Hooker Corporation bought a controlling interest in the Greater Sydney Development Association (formerly Walter Burley Griffin's company) which owned the Castle Cove area. The reserve land was formally transferred to Willoughby Council on 1 January 1962. HD Robb Reserve is named after the former engineer and town planner with Willoughby Council, Hugh Douglas Robb.

HABITAT SIGNIFICANCE: The reserve is designated as a Level 1 Wildlife Protection Area under the Companion Animals Act 1998. No dogs or cats are permitted within its boundaries. There is a range of hollow bearing and stag trees, rock outcrops and bush rock structures on a largely inaccessible slope that provides suitable habitat for a range of animal species. Critical habitat, characterized by wet drainage lines below sandstone ridges, is recognized as potential sites for the threatened Red-crowned Toadlet. The lack of bush tracks also contributes to wildlife habitat values in this contiguous bushland reserve. HD Robb links habitats from Ku-ring-gai and Willoughby's Explosives Reserve and forms part of east/west and north/south habitat links.

Reserve Impacts

Large parts of HD Robb Reserve have remained relatively protected from effects of urbanisation due to its inaccessible nature. Nonetheless, various negative impacts affect the reserve. This includes a former sandstone quarry, illegal dumping of rubbish and illegal pruning and poisoning of trees to increase water views. This has severely degraded parts of the reserve and continues to occur. Dumping of garden vegetation has introduced exotic plant species to the reserve, as well as increasing fire fuel loads adjacent to property boundaries. A sewer line runs through the top of much of the reserve where pollution, nutrients and excess moisture from sewer overflows create ideal environments for weeds to establish. There are numerous stormwater drainage lines that run into Middle Harbour. High velocity flow causes erosion along these drainage lines assisting in the spread of exotic plant species. Residential encroachments continue to impact HD Robb bushland.

ENCROACHMENTS: 17, 19, 25 and 67-83 Neerim Rd. 47 and 57 Headland Rd. Priority actions on encroachments to be referred to Council's Compliance Section.

Wildlife Habitat Issues

HD Robb Reserve's continuity with other natural areas makes it an important wildlife corridor linking east/west and north/south habitat areas. Feral and domestic animals have a significant impact on the reserves endemic fauna population with foxes and other exotic species applying pressure through competition and predation. Councils Bushfire Management Team is currently participating in an integrated pest management plan which includes fox baiting and feral cat trapping. Further, ecological and hazard reduction burns are proposed in this Reserve Action Plan to improve vegetative communities and thus habitat.

Achievements

The condition of bushland within HD Robb Reserve had been severely degraded due to past maltreatment. Today the bushland has been rehabilitated to a better representation of its original condition through land and conservation management. This is a sizable achievement as HD Robb is one of the largest reserves found within the Willoughby City Council area. The construction and maintenance of the walking track from Explosives Reserve to Bampi PI, with additional bush furniture installed along the reserve, has been completed and serves those that use the area for recreation. Controlled burns have successfully encouraged the regrowth of native species, establishment of habitat and aided in the suppression of weed species. The HD Robb Reserve Bushcare group has successfully managed weeds behind Boundary St with minimal maintenance now required.

Bushland Management Goals - HD Robb 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.

<u>Bushland Management – General Principles for all Reserves</u>
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 onsite.
 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

in Engurage the community to report wildlife sightings w

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.

I. 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. Flora and fauna species found in reserves listed under State and Commonwealth legislation as threatened species require the protection of their habitats.

r. The collection of rubbish from bushland is carried out by council contractors and bushland field staff as required.

Native Plant List for HD Robb Reserve

| SELAGINELLACEAE Selaginella uliginosa | Cassuarina glauca Convolvulaceae | Ficus rubiginosa MYRSINACEAE | STERCULIACEAE Lasiopetalum ferruginet |
|---|---------------------------------------|--------------------------------------|--|
| CONIFERS | Dichondra repens | Rapanea variabilis | STYLIDIACEAE |
| CUPRESSACEAE | CUNONIACEAE | MYRTACEAE | Stylidium graminifolium |
| Callitris rhomboidea | Callicoma serratifolia | Acmena smithii | Stylidium laricifolium |
| PODOCARPACEAE | Ceratopetalum gummiferum | Angophora bakeri | Stylidium lineare |
| Podocarpus elatus | DILLENIACEAE | Angophora costata | Stylidium productum |
| Podocarpus spinulosus | Hibbertia empetrifolia | Angophora hispida | THYMELIACEAE |
| FORK FERNS | Hibbertia linearis | Backhousia myrtifolia | Pimelea linifolia |
| PSILOTACEAE | ELAEOCARPACEAE | Eucalyptus gummifera | TREMANDRACEAE |
| Psilotum nudum | Elaeocarpus reticulatus | Eucalyptus haemastoma | Tetratheca ericifolia |
| FERNS | EPACRIDACEAE | Eucalyptus piperita | VERBENACEAE |
| ADIANTACEAE | Epacris longiflora | Eucalyptus punctata | Avicennia marina |
| Adiantum aethiopicum | Epacris microphylla | Eucalyptus resinifera | Chloanthes stoechadi |
| ASPLENIACEAE | Epacris pulchella | Eucalyptus sieberi | Hybanthus vernonii |
| Asplenium australasicum | Leucopogon amplexicaulis | Kunzea ambigua | Viola hederacea |
| Asplenium flabellifolium | Leucopogon ericoides | Leptospermum arachnoides | VITACEAE |
| BLECHNACEAE | Leucopogon microphyllus | L.polygalifolium | Cayratia clematidea |
| Blechnum ambiguum | Monotoca scoparia | Leptospermum trinervium | Cissus hypoglauca |
| Blechnum cartilagineum | Styphelia longifolia | OLACACEAE | MONOCOTS |
| CYATHEACEAE | Styphelia tubiflora | Tristaniopsis laurina | COMMELINACEAE |
| Cyathea australis | Woollsia pungens | OLEACEAE | Commelina cyanea |
| Cyathea cooperi | EUPHORBIACEAE | Notelaea longifolia | CYPERACEAE |
| DAVALLIACEAE | Breynia oblongifolia | Notelaea venosa | Caustis flexuosa |
| Davallia pyxida | Glochidion ferdinandi | OXALIDACEAE | Caustis nexuosa Caustis pentandra |
| Dennstaedtiaceae | Micrantheum ericoides | Oxalis corniculata | Gahnia melanocarpa |
| Histiopteris incisa | | | |
| | Omalanthus populifolius | PITTOSPORACEAE Pillardiora scandons | Lepidosperma elatius |
| Hypolepis muelleri Discridium acculentum | Phyllanthus gastroemii | Billardiera scandens | Lepidosperma laterale |
| Pteridium esculentum | Phyllanthus hirtellus | Pittosporum undulatum | Lepidosperma limicola |
| DICKSONIACEAE | Poranthera microphylla | POLYGALACEAE | Schoenus melanostach |
| Calochlaena dubia | Ricinocarpos pinifolius | Comesperma ericinum | Schoenus turbinatus |
| GLEICHENIACEAE | FABACEAE FABOIDEAE | PRIMULACEAE | IRIDACEAE |
| Gleichenia dicarpa | Bossiaea ensata | Samolus repens | Patersonia glabrata |
| Gleichenia microphylla | Bossiaea heterophylla | PROTEACEAE | Patersonia sericea |
| Gleichenia rupestris | Bossiaea scolopendria | Banksia ericifolia | JUNCACEAE |
| Gleichenia lobatus | Desmodium varians | Banksia integrifolia | Juncus kraussii |
| LINDSAEACEAE | Dillwynia retorta | Banksia marginata | LILIACEAE |
| Lindsaea linearis | Glycine clandestina | Banksia oblongifolia | Blandfordia nobilis |
| Lindsaea microphylla | Gompholobium glabratum | Banksia serrata | Burchardia umbellata |
| POLYPODIACEAE | Gompholobium latifolium | Banksia spinulosa | Dianella caerulea |
| Platycerium bifurcatum | Hardenbergia violacea | Conospermum longifolium | Thysanotus tuberosus |
| Pyrrosia rupestris | Hovea linearis | Grevillea buxifolia | Tricoryne elatior |
| PTERIDACEAE | Ноvea purpurea | Grevillea linearifolia | LOMANDRACEAE |
| Pteris tremula | Kennedia rubicunda | Grevillea sericea | Lomandra glauca |
| SCHIZAEACEAE | Mirbelia rubiifolia | Grevillea speciosa | Lomandra gracilis |
| Schizaea bifida | Phyllota phylicoides | Hakea dactyloides | Lomandra longifolia |
| Schizaea dichotoma | Platylobium formosum | Hakea gibbosa | Lomandra obliqua |
| DICOTS | Pultenaea daphnoides | Hakea sericea | ORCHIDACEAE |
| Aizoaceae | Pultenaea elliptica | Hakea teretifolia | Acianthus fornicatus |
| Pseuderanthemum variabile | Pultenaea flexilis | Isopogon anethifolius | Cryptostylis erecta |
| APIACEAE | Pultenaea polifolia | Lambertia formosa | Dipodium punctatum |
| Alternanthera denticulata | Pultenaea stipularis | Lomatia mycroides | Pterostylis nutans |
| Actinotus helianthi | Viminaria juncea | Lomatia silaifolia | POACEAE |
| Actinotus minor | FABACEAE-MIMOSOIDEAE | Persoonia lanceolata | Aristida vagans |
| Apium graveolens | Acacia ulicifolia | Persoonia levis | Echinopogon caespitos |
| Centella asiatica | Acacia linifolia | Persoonia pinifolia | Entolasia marginata |
| Platysace linearifolia | Acacia longifolia | Petrophile pulchella | Entolasia stricta |
| Xanthosia pilosa | Acacia myrtifolia | Telopea speciosissima | Eragrostis trachycarpa |
| Xanthosia tridentata | Acacia parramattensis | Xylomelum pyriforme | Imperata cylindrica |
| ARALIACEAE | Acacia suaveolens | RANUNICULACEAE | Microlaena stipoides |
| Polyscias sambucifolia | Acacia suaveoieris Acacia terminalis | Clematis aristata | Notodanthonia longifo |
| ASCLEPIADACEAE | GERANIACEAE | RHAMNACEAE | Oplismenus imbecillis |
| Marsdenia suaveolens | Geranium homeanum | Pomaderris ferruginea | Oplisminus aemulus |
| | | | |
| ASTERACEAE Actor subulatus | GOODENIACEAE Dampiora stricta | Pomaderris intermedia | Panicum effusum |
| Aster subulatus | Dampiera stricta | Pomaderris lanigera | Panicum simile |
| Cassinia denticulata | Goodenia bellidifolia | RUBIACEAE Operaularia capara | Paspalum aversum |
| Cotula coronopifolia | Goodenia heterophylla | Opercularia aspera | Sporobolus virginicus |
| Ozothamnus diosmifolium | Scaevola ramosissima | Pomax umbellata | Stipa pubescens |
| BAUERACEAE | HALORAGACEAE | RUTACEAE | Tetrarrhena juncea |
| Bauera rubioides | Gonocarpus teucrioides | Boronia ledifolia | Themeda australis |
| BIGNONIACEAE | Haloragis heterophylla | Boronia pinnata | RESTIONACEAE |
| Pandorea pandorana | LAMIACEAE | Crowea saligna | Empodisma minus |
| CAMPANULACEAE | Hemigenia pupurea | Phebalium dentatum | Lepyrodia scariosa |
| Wahlenbergia gracilis | LOBELIACEAE | Phebalium squamulosum | SMILACACEAE |
| CASSYTHACEAE | Lobelia elata | Zieria pilosa | Smiilax australis |
| Cassytha glabella | Pratia purpurascens | Zieria smithii | Smilax glyciphylla |
| Casuarinaceae | LOGANIACEAE | SAPINDACEAE | XANTHORRHOEACEAE |
| Allocasuarina distyla | Logania albiflora | Dodonaea triquetra | Xanthorrhoea arborea |
| Allocasuarina littoralis | Mitrasacme polymorpha | SCROPHULARIACEAE | Xanthorrhoea media |
| / mocasaama mamana | | | |