The Native Vegetation of North-west Wollemi National Park and Surrounds

Including Nullo Mountain, Coricudgy and Cudgegong Areas

Volume 2: Vegetation Community Profiles

NSW GOVERNMENT
Office of Environment & Heritage
NSW National Parks & Wildlife Service

THE NATIVE VEGETATION OF NORTH-WEST WOLLEMI NATIONAL PARK AND SURROUNDS

INCLUDING NULLO MOUNTAIN, CORICUDGY AND CUDGEGONG AREAS

VOLUME 2: VEGETATION COMMUNITY PROFILES

Version 1

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THREATENED ECOLOGICAL COMMUNITIES

Communities listed under the NSW *Threatened Species Conservation Act 1995*

Communities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

OVERVIEW OF VEGETATION COMMUNITY PROFILES

This volume contains the vegetation community profiles which describe each of the communities occurring within north-west Wollemi National Park (NP) in the Mudgee Area of operations.

The methods used to derive these vegetation communities are outlined in detail in *Volume 1: Technical Report*. The interpretation of vegetation communities as set out in this *Volume 2* document requires an understanding of the methods of data capture and classification. Please refer to *Volume 1 Section 4.5 Field Identification of Vegetation Communities*, which is particularly relevant to the understanding and use of Diagnostic Species lists.

References cited in this document are listed in *Volume 1*.

USING THE VEGETATION COMMUNITY PROFILES

The following three pages provide a summary explanation of the content of the vegetation community profiles presented in this report.

COMMUNITY NAME (IN SYDNEY BASIN) MAP UNIT CODE

Statewide Class
Plant Community Type:

Derived from Keith (2004)
Plant Community Type and ID Number taken from the Statewide Vegetation Classification units currently under development. Will replace current Biometric Types.

A photo from one of the sample sites is included as a means of illustrating the structural characteristics of the community.

Description

The first paragraph of this section provides a description of the major floristic, structural and environmental characteristics of the unit across the Sydney basin region. This includes soil, elevation and mean annual rainfall characteristics. Common names are used to help simplify the discussion. The final paragraph summarises the distribution of the unit within the current study area.

Floristic Summary*

Vegetation community structure data has been compiled from the systematic sample sites which define each map unit. The floristic sites used in the analysis come from a wide variety of sources and not all sites had structural data recorded. Where structural data has been recorded, summary statistics have been compiled in the floristic summary table. It is assumed that all surveys recorded per cent cover in the same way. The data in these tables should be used with caution, paying particular note to how many samples were used to derive the summary figures.

Floristic summary tables contain the following data for each stratum:

- average height with standard deviation
- recorded minimum, maximum, upper heights (metres)
- average percentage projected foliage cover with standard deviation
- recorded minimum and maximum percentage projected foliage cover
- typical species.

	Average Height & Height Range (metres ±sd)	Average Cover &Cover Range (per cent ±sd)	Typical Species
Trees	30 m ±4 25-35	61% ±17 40-85	**Example Species:** *Ficus obliqua* var. *obliqua, Toona ciliata, Ceratopetalum apetalum, Doryphora sassafras, Dendrocnide excelsa, Livistona australis*
Smaller Trees	15 m ±5 10-20	50% ±31 15-75	**Example Species:** *Polyosma cunninghamii, Clerodendrum tomentosum, Pittosporum undulatum, Claoxylon australe, Ficus coronata, Livistona australis*
Ground Covers	1.0 m ±0.0 1.0-1.0	55% ±30 35-90	**Example Species:** *Adiantum formosum, Microsorum scandens, Calochlaena dubia, Gymnostachys anceps, Arthropteris tenella, Pteris umbrosa, Doodia aspera*
Vines & Climbers	N/A	N/A	**Example Species:** *Pandorea pandorana, Smilax australis*

*This note below the table identifies the number of sample sites that had structural data recorded as a proportion of total number of sites used.

Large variations in the recording of structural stratum have been noted in some vegetation types. This may be due in part to modified structural complexity as a result of past disturbance in some sample sites. It is also the result of differences in methods of recording strata complexity, with some observers recording simple strata, and others a more complex set of strata. To simplify structural data in vegetation types where multiple components were recorded within a stratum (e.g. two shrub layers), the figures used for the stratum are:

- recorded minimum and maximum upper heights (metres) across all component layers
- recorded minimum and maximum percentage projected foliage cover of the component layers
- average cover, average height and associated standard.

Within some vegetation types there was considerable overlap in height between strata, particularly between the shrub and small tree layers. Where separation between the strata could not be resolved, the two layers were combined into one shrub/small tree layer and summary figures provided for the combined layer.

Threats

Key threats that have been identified as impacting upon the vegetation community are outlined. These threats have been compiled from: determinations made under the NSW *Threatened Species Conservation Act 1995* (TSC Act) or under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act); aerial photograph interpretation (API); field observations; other vegetation mapping reports; floristic sample sites; and relevant references.

Conservation Status

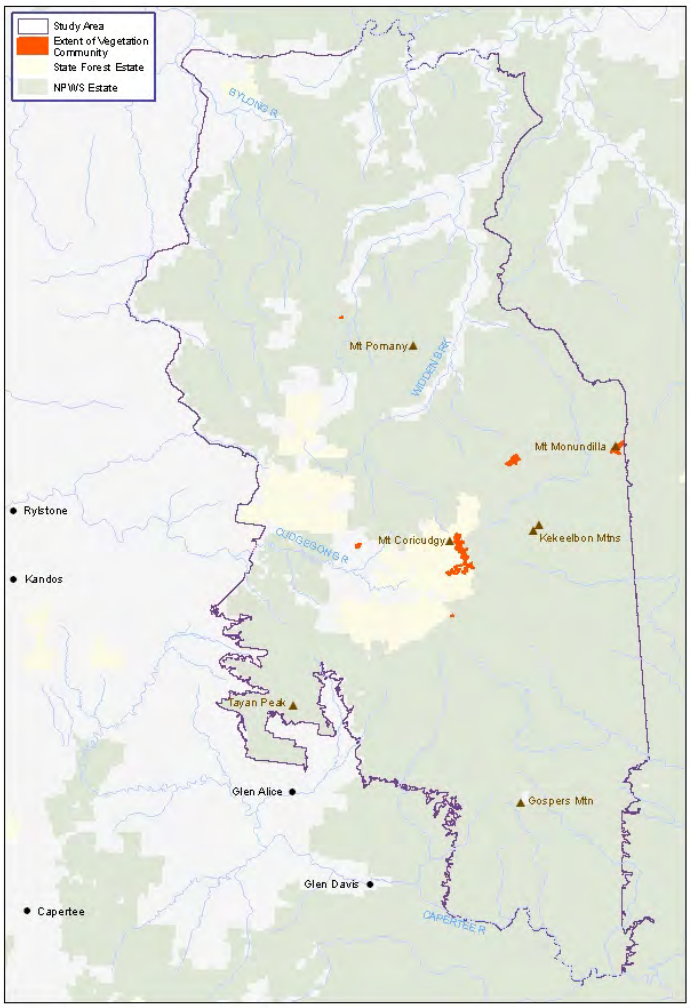
This section describes whether the community is a Threatened Ecological Community (TEC) or component of a TEC that is listed under the TSC Act and/or the EPBC Act. It also outlines where the community is protected in formal reserves in the Sydney basin.

Preliminary reservation status figures for the region are derived from a number of sources including Tozer et al. (2010), NPWS (2000), DEC (2006), Bell (1998) and DECCW (2009a). Where no published figures are available estimations have been made based on qualitative knowledge of the distribution patterns in the Sydney basin. Percentage clearing rates have been taken from Tozer et al. (2010) and NPWS (2000). Where no other information is available clearing estimates have been made based on the extent of depletion described for the relevant statewide class (Keith 2004) then modified using local qualitative knowledge.

	Within Study Area	**Within Sydney Basin**
Estimate of pre-clearing area	Not available	6701-8200 ha
Estimated percentage cleared	Not available	35-50%
Area in formal conservation reserves	34 ha	440 ha (the sum of the extant area known to occur in reserves in the Sydney basin) 11% of extant area (proportion of the total extant area in the Sydney basin that occurs in reserves)
Area in state forests	1 ha	Not available
Area in other tenures	59 ha	Not available
Total extant area	117 ha	4100 ha (the sum of the total extant area likely to occur in the Sydney basin)

Example Locations

o Occurrences of the community are presented here, especially for recognisable or accessible localities.



Species Richness

Number of plots count of sample plots located within the study area

Total species total number of taxa recorded from sample plots located in the study area

Average species per plot mean number of taxa per plot (±standard deviation) located within the study area

Known Variations

Any floristic or structural variations recognised in this vegetation community are outlined. Methods which may be used to separate these variations are also described.

Relationship to Other Communities

The relationship of this community to other vegetation communities in similar habitats in the study area and region is outlined. Features that may be used to separate these vegetation types are also described.

In addition, any vegetation types the community may grade into with changes in environmental variables (e.g. rainfall or increased shale enrichment) are identified.

Accuracy

This section provides a qualitative assessment of the robustness of the classification, based on the number of sample sites used from both the study area and region. Confidence in the mapping of the unit is discussed. Future work will complete a quantitative accuracy assessment of each map unit.

Diagnostic species provide one method of quantitatively reviewing the performance of plant species within a given community as compared to all other communities found in the study area. Site data has been used to understand the median cover abundance (using a 1-6 cover scale) and frequency of occurrence of all species within the community. Species that occur frequently and at higher cover scores have been highlighted as diagnostic species to help with the field identification of the community.

The fidelity class of the species has been classified as positive if it is unique to this community or it occurs more frequently and with higher median cover than all other communities found in the study area. It is negative if it is less abundant and less frequent in this community compared to other communities. It is constant if the species occurs as frequently and abundantly in all communities. It is uninformative if it is neither frequently recorded nor abundant in sites.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Abrophyllum ornans	1	33%	1	0%	uninformative
Acmena smithii	**3**	**83%**	**2**	**7%**	**positive**
Adiantum formosum	**2**	**67%**	**2**	**1%**	**positive**
Adiantum hispidulum	1	17%	1	1%	uninformative
Alectryon subcinereus	1	17%	1	1%	uninformative
Aphanopetalum resinosum	3	33%	2	0%	uninformative
Arthropteris beckleri	2	17%	2	0%	uninformative

The group score is the **median cover score** recorded for the species within sites used to classify **this** community. In this case, a median score of 3 = greater than five and less than 20 per cent cover

Group frequency indicates **how often** the species occurred within the sites which were used to classify the community. In **this** case the species has been found at 83 per cent of sites

The non-group score provides the **median cover score** for this species across all **other** communities in the study area. In this case a score of 2 = common and less than five per cent cover)

Non-group frequency tells you **how often** the species has been recorded in **other** vegetation types. In this case, other communities feature this species in seven per cent of sites

The fidelity class of each species has been classified as **positive** if it is unique to this community or it occurs more frequently and with higher median cover than all other communities found in the study area.
It is **negative** if it is less abundant and less frequent in this community when compared to other communities.
It is **constant** if the species occurs as frequently and abundantly in all communities.
It is **uninformative** if it is neither frequently recorded nor abundant in sites.

RAINFORESTS

Statewide Class Subtropical Rainforests

Plant Community Type: Not described

Description

Blue Mountains Gorge Subtropical-Dry Rainforest is a closed forest found on basalt-enriched alluvial soils in isolated montane gorges of the Sydney basin. The combination of cool elevated environments, modest rainfall and rich soils encourages a rainforest that covers alternate classifications of Floyd (1990) and Keith (2004). The canopy and mid stratum has a prominent cover of sassafras (*Doryphora sassafras*) but also includes a strong element of subtropical species including giant stinging tree (*Dendrocnide excelsa*), red cedar (*Toona ciliata)* and lilly pilly (*Acmena smithii*). The composition of the mid strata can be variable and reflects the cool and moderately dry climates. As a result species including sandpaper fig (*Ficus coronata*), native quince (*Alectryon subcinereus)*, native mulberry (*Hedycarya angustifolia*) and brittle wood (*Claoxylon australe)* are found amongst the mid stratum. Epiphytes and climbers are present and include birds nest fern (*Asplenium australasicum*), rock felt fern (*Pyrrosia rupestris*) and wonga wonga vine (*Pandorea pandorana*). The clay-rich soils support a very diverse number of ferns amongst the ground and shrub layers although together they provide only a sparse to moderate cover. They vary from larger conspicuous species such as the soft tree fern (*Dicksonia antarctica*) to the small maiden hair fern (*Adiantum aethiopicum*).

This rainforest is restricted to isolated deep protected gully systems receiving between 700 and 900 millimetres of mean annual rainfall. These are generally downslope of extensive basalt capping. Within the study area this rainforest occurs at elevations between 650 and 750 metres above sea level within the narrow Emu Creek gorge in northern Wollemi NP. Elsewhere in the Sydney basin this rainforest is found in deep gorges below the Boyd Plateau in the narrow tributaries of the Kowmung River, where elevation falls below 200 metres above sea level. Beyond the region it has some allegiances with subtropical rainforest on the sheltered slopes beneath the Liverpool Range. The transitional nature of the rainforest is reflected in an alternative rainforest classification for these stands. In the Sydney basin stands are included within the Subtropical Rainforest classification *Dendrocnide-Ficus* Alliance of Floyd (1990) and aligns with his suballiance 14: *Doryphora-Daphnandra micrantha-Dendrocnide-Ficus-Toona*. Tozer et al. (2010) include the stands within the Kowmung valley (map code number RFp116) as part of the southern warm temperate rainforests class of Keith (2004).

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	29 m ±7 22-35	27% ±14 10-35	*Doryphora sassafras, Toona ciliata, Dendrocnide excelsa, Myrsine howittiana, Acmena smithii, Emmenosperma alphitonioides*
Small Trees and Shrubs	4.7 m ±1.5 3.0-6.0	40% ±30 10-70	*Doryphora sassafras, Dicksonia antarctica, Hymenanthera dentata, Eupomatia laurina, Ficus coronata, Cyathea australis, Claoxylon australe*
Ground Covers	0.7 m ±0.3 0.5-1.0	63% ±39 19-95	*Doodia aspera, Adiantum formosum, Dennstaedtia davallioides, Microsorum scandens Pellaea falcata, Stellaria flaccida, Blechnum cartilegeneum, Urtica incisa*
Vines & Climbers	N/A	N/A	*Marsdenia rostrata, Cayratia clematidea, Clematis aristata, Cissus hypoglauca, Geitonoplesium cymosum, Morinda jasminoides, Pandorea pandorana*

*Compiled from 2 of 2 sites with structural data recorded.

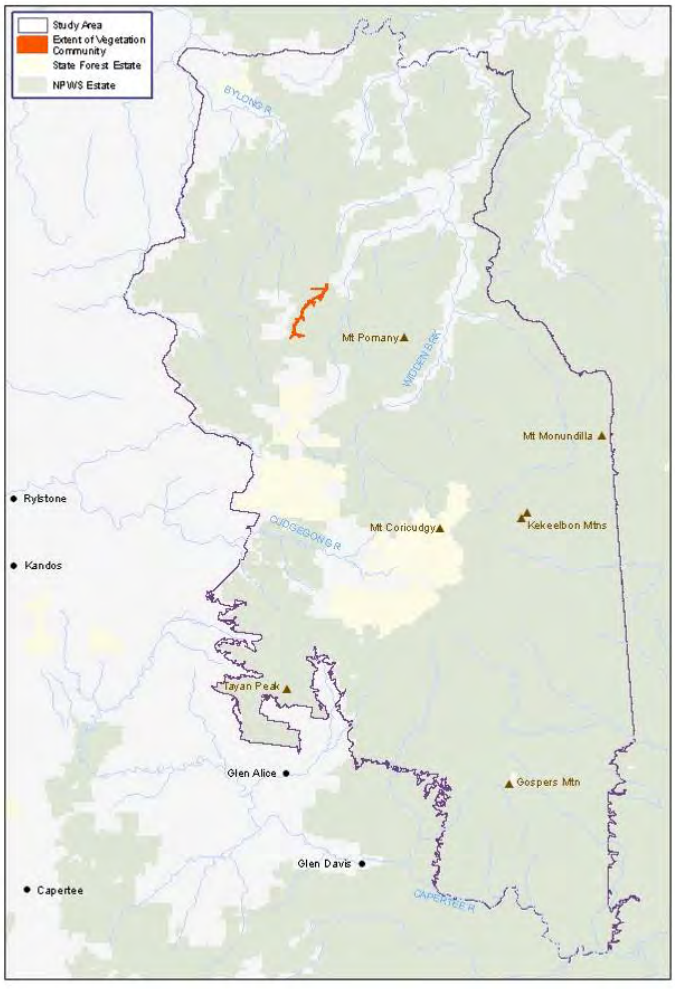
Threats

Wildfire represents a persistent threat, although stands are protected by their position in deep gorges or sheltered aspects.

Conservation Status

The community is naturally rare in the Sydney basin region. Stands are protected within the reserve system.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	836-1003 ha
Estimated percentage cleared	Not available	10-25%
Area in formal conservation reserves	52.0 ha	652 ha 87% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	52.0 ha	752 ha



Example Locations

- Emu Creek, Nullo Mountain (formerly Simpson State Forest (SF))

Species Richness

Number of plots	2
Total species	55
Average species per plot	32.5 ±6.4

Known Variations

Emergent eucalypts may be present at some sites and can comprise up to 25 per cent canopy cover within a sample plot. Eurabbie (*Eucalyptus bicostata*) is present in the stand within the study area.

Relationship to Other Communities

Floristically this rainforest is related to complex dry rainforests of the Sydney basin. Within the study area it shares some species with montane basalt warm temperate rainforest (S_RF14) owing to the cool environment and rich basalt soils. However, the rainforest is readily discernable from other rainforest types by the presence of *Dendrocnide excelsa* and *Toona australis* as well as large epiphytes in the canopy.

Accuracy

Sample density is high. The stand present in Emu Creek has been traversed and sampled by previous authors (Floyd 1990, Bell 1998). Predictors for the occurrence of this community are not easily identified from available physical data or by aerial photograph pattern. While the visited stand has been mapped, other areas supporting this rainforest may have been overlooked. Small stands may be included in the mapped boundaries of S_RF12.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Adiantum formosum	**5**	**100%**	**2**	**1%**	**positive**
Asplenium polyodon	**3**	**50%**	**0**	**0%**	**positive**
Australina pusilla	**1**	**50%**	**0**	**0%**	**positive**
Blechnum cartilagineum	1	50%	3	10%	uninformative
Blechnum patersonii	**2**	**50%**	**0**	**0%**	**positive**
Calochlaena dubia	1	50%	3	8%	uninformative
Cayratia clematidea	**2**	**50%**	**1**	**0%**	**positive**
Cephalaralia cephalobotrys	1	50%	1	0%	uninformative
Cissus hypoglauca	1	50%	2	4%	uninformative
Claoxylon australe	1	50%	1	0%	uninformative
Clematis aristata	1	50%	1	27%	uninformative
Cyathea australis	1	50%	1	2%	uninformative
Cyathea cooperi	**1**	**50%**	**0**	**0%**	**positive**
Dendrocnide excelsa	**3**	**50%**	**0**	**0%**	**positive**
Dennstaedtia davallioides	**2**	**50%**	**0**	**0%**	**positive**
Dicksonia antarctica	**5**	**50%**	**3**	**1%**	**positive**
Doodia aspera	**4**	**100%**	**2**	**4%**	**positive**
Doryphora sassafras	**4**	**100%**	**4**	**3%**	**positive**
Eupomatia laurina	**2**	**100%**	**1**	**1%**	**positive**
Ficus coronata	**2**	**100%**	**1**	**1%**	**positive**
Geitonoplesium cymosum	1	50%	1	7%	uninformative
Grammitis billardierei	1	50%	2	0%	uninformative
Hedycarya angustifolia	1	50%	1	1%	uninformative
Homalanthus populifolius	1	50%	2	0%	uninformative
Hydrocotyle laxiflora	1	50%	2	19%	uninformative
Hymenophyllum cupressiforme	**2**	**50%**	**2**	**1%**	**positive**
Isolepis hookeriana	**1**	**50%**	**0**	**0%**	**positive**
Lachnagrostis filiformis	1	50%	2	1%	uninformative
Lagenophora gracilis	1	50%	1	2%	uninformative
Lastreopsis microsora* subsp. *microsora	**3**	**50%**	**4**	**0%**	**positive**
Marsdenia rostrata	**2**	**100%**	**2**	**2%**	**positive**
Melicytus dentatus	1	50%	1	5%	uninformative
Microlaena stipoides	1	50%	2	28%	uninformative
Microsorum pustulatum* subsp. *pustulatum	**5**	**50%**	**1**	**1%**	**positive**
Microsorum scandens	**2**	**100%**	**3**	**0%**	**positive**
Morinda jasminoides	1	50%	1	3%	uninformative
Myrsine howittiana	1	50%	1	2%	uninformative
Oplismenus aemulus	**2**	**50%**	**1**	**2%**	**positive**
Pandorea pandorana	**2**	**50%**	**1**	**8%**	**positive**
Parsonsia straminea	1	50%	1	1%	uninformative
Pellaea falcata	**2**	**50%**	**2**	**6%**	**positive**
Pellaea nana	**3**	**50%**	**1**	**1%**	**positive**
Pittosporum revolutum	1	50%	1	1%	uninformative
Polystichum australiense	**2**	**50%**	**2**	**2%**	**positive**
Pyrrosia rupestris	**2**	**50%**	**2**	**4%**	**positive**
Rubus parvifolius	1	50%	1	6%	uninformative
Rubus rosifolius	1	50%	1	0%	uninformative
Sambucus australasica	1	50%	1	1%	uninformative
Stellaria flaccida	**2**	**100%**	**2**	**7%**	**positive**
Sticherus flabellatus var. *flabellatus*	1	50%	2	1%	uninformative
Tmesipteris parva	**2**	**50%**	**0**	**0%**	**positive**
Toona ciliata	**4**	**100%**	**0**	**0%**	**positive**
Trophis scandens* subsp. *scandens	**1**	**50%**	**0**	**0%**	**positive**
Urtica incisa	**2**	**100%**	**2**	**7%**	**positive**

Statewide Class
Dry Rainforests

Plant Community Type:
Grey Myrtle dry rainforest of the Sydney Basin and South East Corner

Description

Sydney Hinterland Grey Myrtle Dry Rainforest is a low closed forest with a sparse ground cover of ferns and vines that is found in hinterland valleys and gorges of the Sydney basin. The canopy is dominated by grey myrtle (*Backhousia myrtifolia*) with lilly pilly (*Acmena smithii*) and the occasional localised occurrence of blackwood (*Callicoma serratifolia*) on rocky scarps. The understorey is sparse, with scattered individuals of *Pittosporum* spp., *Notelaea longifolia* and coffee bush (*Breynia oblongifolia*) often present. Characteristic of this rainforest is the presence of woody vines and small twiners found on tree trunks and rocks. These include wonga wonga vine (*Pandorea pandorana*) and water vines (*Cissus* spp.). Small-leaved ferns and hardy herbs are patchily distributed across the forest floor.

This rainforest occurs across the north-south extent of the Sydney Basin Bioregion from the Ettrema Gorge near Nowra to the sandstone plateaux north of the Hunter Range. It occurs at elevations between 10 and 600 metres above sea level in areas receiving between 700 and 900 millimetres of average annual rainfall. It is commonly associated with soils sourced from fine-grained sediments including Permian, Devonian and Triassic substrates. It is likely to extend south of the Bioregion into the Tuross and Clyde hinterland (Tozer et al. 2010). This rainforest corresponds with Suballiance 30 *Backhousia myrtifolia-Acmena smithii* of Floyd (1990).

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Emergents	50 m 50-50	5% 5-5	*Eucalyptus cypellocarpa, Angophora floribunda, Casuarina cunninghamiana* subsp. *cunninghamiana*
Trees	23 m ±3 20-25	35% ±26 20-65	*Backhousia myrtifolia, Ceratopetalum apetalum, Acmena smithii, Acacia filicifolia, Doryphora sassafras*
Small Trees and Shrubs	12 m ±4 8-15	42% ±38 5-80	*Backhousia myrtifolia, Acmena smithii, Callicoma serratifolia, Dicksonia antarctica, Ficus coronata, Pittosporum undulatum, Eupomatia laurina*
Ground Covers	0.6 m ±0.4 0.3-1.0	12% ±12 2-25	*Doodia aspera, Adiantum aethiopicum, Hydrocotyle laxiflora, Lomandra longifolia, Pellaea falcata, Dianella caerulea* var. *assera, Stellaria flaccida, Adiantum formosum, Asplenium flabellifolium, Dichondra repens*
Vines & Climbers	N/A	N/A	*Morinda jasminoides, Pandorea pandorana, Cissus hypoglauca, Geitonoplesium cymosum*

*Compiled from 5 of 5 sites with structural data recorded.

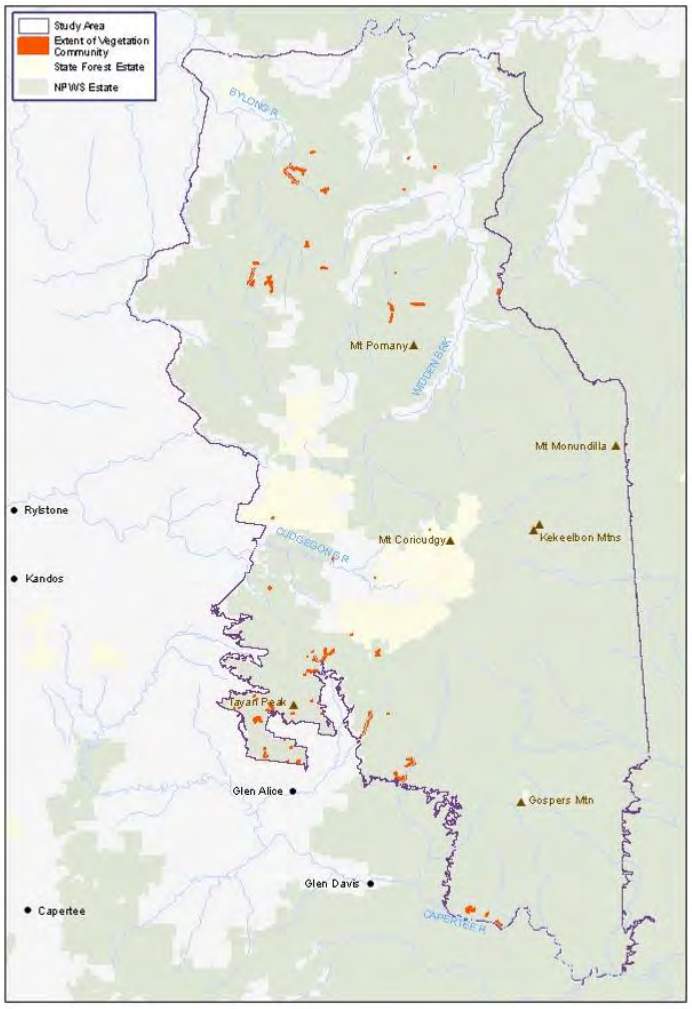
Threats

Few threatening processes appear to confront this community as its preferred habitat occupies remote infertile and dry environments. Too-frequent fire may result in a gradual transition to sclerophyllous vegetation.

Conservation Status

The original extent of this community is unlikely to have significantly altered since European settlement given the association with inaccessible and infertile environments. The community is known to be extensively distributed across Wollemi and Yengo national parks, Goulburn River NP and Manobalai NR, with smaller stands in the Blue Mountains and Nattai national parks in the Kedumba and Burragorang valleys.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	7648-9178 ha
Estimated percentage cleared	Not available	10-25%
Area in formal conservation reserves	178.7 ha	5779 ha 84% of extant area
Area in state forests	0.9 ha	Not available
Area in other tenures	3.6 ha	Not available
Total extant area	183.2 ha	6883 ha



Example Locations

- Bylong Labyrinth north of Mount Pomany and Nullo Mountain

Species Richness

Number of plots	5
Total species	89
Average species per plot	30.2 ±6.1

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically the rainforest shares some similarities with other grey myrtle dominated rainforests in the study area. S_RF13 is found in drier environments of the western Hunter Range on rocky sandstone soils of low fertility. That is a very simple rainforest that does not exhibit the diversity of vines and climbers found in other rainforests and has far fewer mesic shrubs and small trees.

Spatially this rainforest grades into adjoining forests associated with riverflats (S_FoW19) and dry sheltered forests such as S_DSF63.

Accuracy

This community has a moderate number of samples located within the study area. Within the Bioregion it is well sampled across the geographic and environmental range of occurrence. The distinctive signature of grey myrtle in stereoscopic digital aerial photography makes the dry rainforest mappable to a high degree of accuracy. Greater height and complexity of the canopy layer was used to discriminate S_RF11 from S_RF13.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia falciformis	1	20%	2	5%	uninformative
Acacia filicifolia	3	20%	2	6%	uninformative
Acmena smithii	**4**	**40%**	**2**	**2%**	**positive**
Adiantum aethiopicum	**2**	**40%**	**2**	**6%**	**positive**
Adiantum formosum	**2**	**40%**	**3**	**2%**	**positive**
Angophora floribunda	**3**	**40%**	**2**	**16%**	**positive**
Arthropodium milleflorum	2	20%	2	3%	uninformative
Asplenium flabellifolium	**2**	**80%**	**1**	**11%**	**positive**
Austrodanthonia racemosa var. *racemosa*	2	20%	2	5%	uninformative
Backhousia myrtifolia	**5**	**100%**	**4**	**3%**	**positive**
Blechnum cartilagineum	1	20%	3	10%	uninformative
Brachychiton populneus subsp. *populneus*	1	20%	1	6%	uninformative
Breynia oblongifolia	**2**	**40%**	**1**	**3%**	**positive**
Bursaria spinosa subsp. *spinosa*	1	20%	2	25%	uninformative
Callicoma serratifolia	2	20%	3	3%	uninformative
Calochlaena dubia	1	20%	3	9%	uninformative
Cassinia cunninghamii	1	20%	2	7%	uninformative
Casuarina cunninghamiana subsp. *cunninghamiana*	3	20%	4	1%	uninformative
Ceratopetalum apetalum	1	60%	4	3%	uninformative
Cissus hypoglauca	**2**	**60%**	**2**	**4%**	**positive**
Cissus opaca	**1**	**20%**	**0**	**0%**	**positive**
Clematis aristata	**2**	**60%**	**1**	**27%**	**positive**
Coprosma quadrifida	1	20%	2	4%	uninformative
Cynoglossum suaveolens	1	20%	2	1%	uninformative
Desmodium varians	**2**	**40%**	**2**	**19%**	**positive**
Dianella caerulea	1	80%	1	31%	uninformative
Dichondra repens	**2**	**60%**	**2**	**27%**	**positive**
Dicksonia antarctica	3	20%	3	2%	uninformative
Doodia aspera	**2**	**80%**	**2**	**4%**	**positive**
Doryphora sassafras	3	20%	4	3%	uninformative
Elaeocarpus reticulatus	1	40%	1	8%	uninformative
Eucalyptus bicostata	1	20%	4	2%	uninformative
Eucalyptus cypellocarpa	**2**	**60%**	**3**	**10%**	**positive**
Eucalyptus tereticornis	1	20%	3	1%	uninformative
Eupomatia laurina	1	20%	2	1%	uninformative
Ficus coronata	**2**	**40%**	**1**	**2%**	**positive**
Gahnia sieberiana	1	40%	2	3%	uninformative
Galium binifolium	2	20%	2	4%	uninformative
Galium propinquum	2	20%	2	16%	uninformative
Geitonoplesium cymosum	**2**	**80%**	**1**	**7%**	**positive**
Geranium homeanum	2	20%	2	5%	uninformative
Hydrocotyle laxiflora	**2**	**40%**	**2**	**19%**	**positive**
Hymenophyllum australe	**1**	**20%**	**0**	**0%**	**positive**
Lagenophora stipitata	2	20%	1	10%	uninformative
Lepidosperma elatius	**2**	**40%**	**2**	**1%**	**positive**
Lepidosperma urophorum	1	20%	1	4%	uninformative
Lomandra longifolia	1	40%	1	28%	uninformative
Luzula flaccida	1	20%	1	2%	uninformative
Marsdenia rostrata	**3**	**40%**	**1**	**2%**	**positive**
Maytenus silvestris	1	20%	1	5%	uninformative
Melaleuca styphelioides	**3**	**40%**	**2**	**1%**	**positive**
Melicytus dentatus	1	20%	1	6%	uninformative
Microlaena stipoides	2	20%	2	28%	uninformative
Morinda jasminoides	1	60%	1	2%	uninformative
Myrsine variabilis	**2**	**40%**	**1**	**0%**	**positive**
Notelaea longifolia	**2**	**40%**	**1**	**9%**	**positive**
Notodanthonia longifolia	**3**	**40%**	**2**	**4%**	**positive**
Oplismenus aemulus	2	20%	1	2%	uninformative
Oplismenus imbecillis	1	40%	2	4%	uninformative
Pandorea pandorana	1	100%	1	8%	uninformative
Parsonsia lanceolata	1	20%	1	1%	uninformative
Pellaea falcata	**2**	**80%**	**2**	**6%**	**positive**
Pimelea latifolia	1	20%	2	4%	uninformative
Pittosporum undulatum	**3**	**80%**	**1**	**4%**	**positive**
Plantago hispida	2	20%	1	0%	uninformative
Plectranthus parviflorus	1	60%	1	4%	uninformative
Poa affinis	1	20%	2	14%	uninformative
Pteridium esculentum	1	20%	2	32%	uninformative
Pyrrosia rupestris	**2**	**80%**	**1**	**4%**	**positive**
Quintinia sieberi	1	20%	1	1%	uninformative
Rubus moluccanus	1	20%	1	1%	uninformative
Rubus parvifolius	1	20%	1	6%	uninformative
Sambucus australasica	1	20%	1	1%	uninformative
Solanum prinophyllum	1	40%	1	11%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Stellaria flaccida	2	20%	2	8%	uninformative
Stephania japonica var. *discolor*	1	20%	1	2%	uninformative
Tylophora barbata	1	20%	2	3%	uninformative
Urtica incisa	1	40%	2	7%	uninformative
Veronica plebeia	2	20%	2	15%	uninformative
Viola hederacea	2	20%	2	10%	uninformative
Viola sieberiana	**2**	**20%**	**0**	**0%**	**positive**

Statewide Class
Northern Warm Temperate Rainforests

Plant Community Type: Coachwood-Lilly Pilly warm temperate rainforest in moist sandstone gullies, Sydney Basin

Description

Sydney Hinterland Warm Temperate Rainforest is a tall closed forest found in protected gullies and gorges across the Sydney sandstone plateaux. Three rainforest tree species dominate the canopy, with the white banded stems of coachwood (*Ceratopetalum apetalum*) most conspicuous. The others, sassafras (*Doryphora sassafras*) and lilly pilly (*Acmena smithii*), are equally frequent though less abundant. Grey myrtle (*Backhousia myrtifolia*) often occurs in less sheltered sites, or where fire more frequently penetrates the rainforest edge (Floyd 1990). Cedar wattle (*Acacia elata*) and black wattle (*Callicoma serratifolia*) may also be present amongst the canopy or just below it. Large vines such as kangaroo vine (*Cissus antarctica*) occasionally drape from the tallest trees. Other climbers such as lawyer vine (*Smilax australis*) and wombat berry (*Eustrephus latifolius*) are more common amongst the ground covers and low-growing shrubs. Creek beds support the larger king fern (*Todea barbara*), while banks and lower slopes are mix of smaller ferns including soft water fern (*Blechnum cartilagineum*), umbrella fern (*Sticherus flabellatus*) and prickly rasp fern (*Doodia aspera*).

This community primarily occurs on the Narrabeen sandstone series, although some sites are situated on shale-rich Hawkesbury sediments. It occupies cool environments that receive an average of between 750 and 1200 millimetres of rain per annum, however in drier areas (below 800 millimetres per annum) the rainforest is restricted to deeply incised slot canyons. It spans elevations between 150 and 870 metres above sea level. It is the most extensive rainforest found in the study area, where it occurs as narrow ribbons along gullies of central Wollemi. Outside of the study area the rainforest is common throughout Blue Mountains plateaux and extends south to the Morton and Budderoo plateaux on the NSW south coast (Tozer et al. 2010). It aligns with Suballiance No.37 *Ceratopetalum/Schizomeria-Acmena-Doryphora* of Floyd (1990).

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Emergent	30-40 m est.	1-15% est.	*Eucalyptus deanei, Eucalyptus oreades*
Trees	37 m ±8 25-45	69% ±30 40-80	*Doryphora sassafras, Ceratopetalum apetalum, Acmena smithii, Callicoma serratifolia, Acacia elata, Backhousia myrtifolia*
Shrubs	5.4 m ±3.0 2.5-8.0	21% ±20 5-50	*Ceratopetalum apetalum, Cyathea australis, Doryphora sassafras, Dicksonia antarctica, Tasmannia insipida, Rapanea howittiana, Todea barbara Notelaea longifolia*
Ground Covers	1.2 m ±0.7 0.5-2.8	22% ±24 5-75	*Blechnum cartilagineum, Polystichum australiense, Blechnum nudum, Sticherus flabellatus, Asplenium flabellifolium, Calochlaena dubia, Doodia aspera, Hymenophyllum cupressiforme*
Vines & Climbers	N/A	N/A	*Pandorea pandorana, Morinda jasminoides, Cissus hypoglauca, Marsdenia rostrata, Smilax glyciphylla, Clematis aristata*

*Compiled from 6 of 6 sites with structural data recorded.

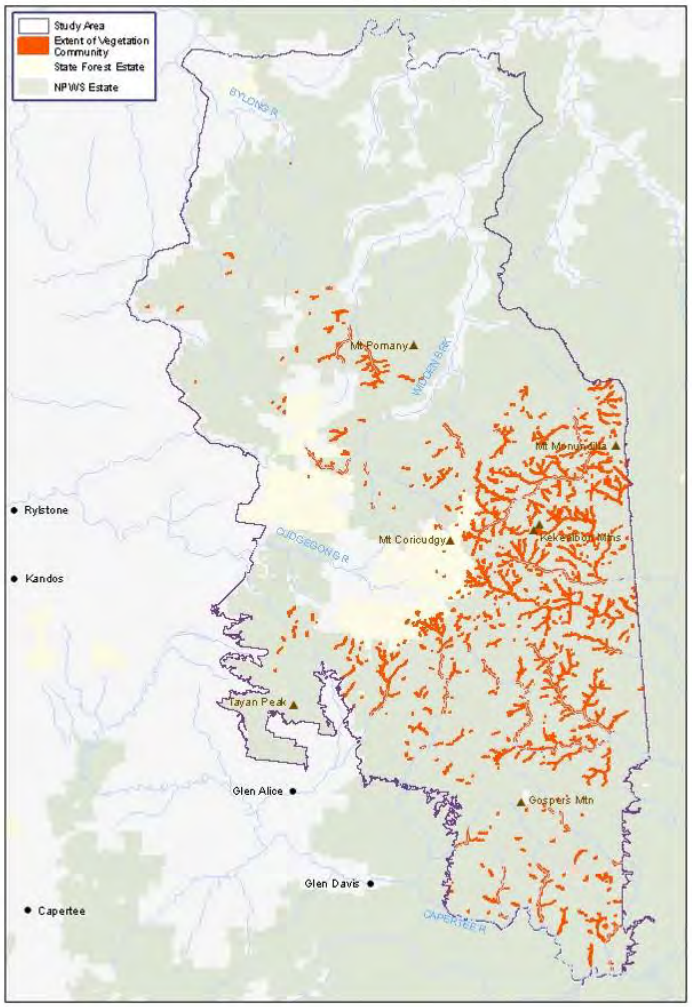
Threats

Frequent high-intensity fires can kill the smooth-barked rainforest trees (Floyd 1990). Within the study area disturbance impacts are very low.

Conservation Status

The original extent of this community across the greater Sydney region is unlikely to have significantly altered since European settlement given the association with inaccessible and infertile environments. The community is naturally restricted. Stands within the study area provide some excellent examples of this type of rainforest.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	9936-10488 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	2158.8 ha	8059 ha 85% of extant area
Area in state forests	75.3 ha	Not available
Area in other tenures	4.7 ha	Not available
Total extant area	2238.8 ha	9439 ha



Example Locations

- Koondah Creek gorge
- The gully beneath Mount Darcy
- On Hunter Main Trail, southern Kekeelbon Mountains

Species Richness

Number of plots	6
Total species	71
Average species per plot	21.8 ±6.7

Known Variations

The composition of the canopy is stable across the range of the community. Sites at higher altitudes may include rainforest species such as *Quintinia sieberi* and *Coprosma quadrifida.*

Relationship to Other Communities

Floristically, the community shares several species with S_RF14 Montane Basalt Warm Temperate Rainforest. However in that community *Ceratopetalum apetalum* is generally absent. That community is also separable using the environmental features of substrate and elevation.

Typically this rainforest grades into the surrounding moist eucalypt forests (S_WSF23, S_WSF10).

Accuracy

This community has been described in the rainforest study by Floyd (1984). Sampling effort of the community in the study area is high and it is well sampled throughout the region. Mapping accuracy is high as the rainforest is clearly observable in aerial photography, although some difficulty in distinguishing the community may be observable near the boundary of S_RF14. Small areas may also be overlooked in narrow gully lines where the scale of mapping precludes delineation.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia elata	1	33%	1	4%	uninformative
Acmena smithii	**2**	**100%**	**2**	**1%**	**positive**
Adiantum aethiopicum	2	17%	2	6%	uninformative
Asplenium flabellifolium	**2**	**50%**	**1**	**11%**	**positive**
Blechnum cartilagineum	**3**	**100%**	**2**	**9%**	**positive**
Blechnum minus	2	17%	1	0%	uninformative
Blechnum nudum	1	50%	3	2%	uninformative
Callicoma serratifolia	3	33%	2	3%	uninformative
Calochlaena dubia	3	33%	3	8%	uninformative
Cephalaralia cephalobotrys	1	17%	1	0%	uninformative
Ceratopetalum apetalum	**4**	**100%**	**2**	**2%**	**positive**
Cissus hypoglauca	**2**	**50%**	**2**	**4%**	**positive**
Clematis aristata	1	17%	1	27%	uninformative
Coprosma quadrifida	1	17%	2	4%	uninformative
Cyathea australis	1	67%	1	2%	uninformative
Cyclophyllum longipetalum	**2**	**17%**	**0**	**0%**	**positive**
Dicksonia antarctica	3	33%	3	1%	uninformative
Dictymia brownii	**1**	**17%**	**0**	**0%**	**positive**
Doodia aspera	**2**	**50%**	**2**	**4%**	**positive**
Doryphora sassafras	**4**	**100%**	**3**	**2%**	**positive**
Ehretia acuminata* var. *acuminata	**1**	**17%**	**0**	**0%**	**positive**
Elaeocarpus reticulatus	1	17%	1	8%	uninformative
Eucalyptus agglomerata	1	17%	2	5%	uninformative
Eucalyptus blaxlandii	3	17%	3	5%	uninformative
Eucalyptus deanei	1	17%	4	2%	uninformative
Eucalyptus oreades	4	17%	4	2%	uninformative
Eustrephus latifolius	1	17%	1	9%	uninformative
Ficus coronata	2	17%	1	2%	uninformative
Geranium solanderi var. *solanderi*	1	17%	2	11%	uninformative
Gonocarpus teucrioides	1	17%	2	15%	uninformative
Grammitis billardierei	2	17%	1	0%	uninformative
Hibbertia saligna	1	17%	1	1%	uninformative
Hymenophyllum cupressiforme	**2**	**50%**	**2**	**1%**	**positive**
Hymenosporum flavum	**2**	**17%**	**0**	**0%**	**positive**
Lastreopsis acuminata	**2**	**17%**	**0**	**0%**	**positive**
Lastreopsis microsora subsp. *microsora*	3	17%	4	1%	uninformative
Lomandra longifolia	1	17%	1	28%	uninformative
Marsdenia rostrata	1	50%	2	2%	uninformative
Microsorum pustulatum subsp. *pustulatum*	2	33%	5	1%	uninformative
Microsorum scandens	3	17%	2	1%	uninformative
Morinda jasminoides	**2**	**83%**	**1**	**2%**	**positive**
Myrsine howittiana	1	33%	1	2%	uninformative
Notelaea longifolia	1	17%	1	9%	uninformative
Opercularia aspera	1	17%	1	4%	uninformative
Pandorea pandorana	**2**	**100%**	**1**	**7%**	**positive**
Parsonsia purpurascens	**1**	**17%**	**0**	**0%**	**positive**
Parsonsia straminea	1	17%	1	1%	uninformative
Pellaea falcata	2	33%	2	6%	uninformative
Pellaea nana	2	17%	1	1%	uninformative
Pittosporum multiflorum	2	17%	1	1%	uninformative
Plectranthus parviflorus	1	33%	2	4%	uninformative
Polyscias sambucifolia	1	17%	2	12%	uninformative
Polystichum australiense	**2**	**67%**	**2**	**2%**	**positive**
Polystichum formosum	**1**	**17%**	**0**	**0%**	**positive**
Pyrrosia rupestris	2	33%	2	4%	uninformative
Rubus moluccanus	1	17%	1	1%	uninformative
Rubus nebulosus	**1**	**17%**	**0**	**0%**	**positive**
Schizomeria ovata	2	17%	1	0%	uninformative
Smilax australis	1	17%	2	4%	uninformative
Smilax glyciphylla	1	33%	1	8%	uninformative
Stellaria flaccida	2	17%	2	8%	uninformative
Stenocarpus salignus	2	17%	2	2%	uninformative
Sticherus flabellatus var. *flabellatus*	3	33%	1	1%	uninformative
Tasmannia insipida	**2**	**67%**	**2**	**0%**	**positive**
Todea barbara	3	17%	1	1%	uninformative
Tristaniopsis laurina	2	17%	3	1%	uninformative
Tylophora barbata	2	17%	2	3%	uninformative
Urtica incisa	1	17%	2	8%	uninformative
Viola hederacea	2	17%	2	10%	uninformative

Statewide Class Dry Rainforests
Plant Community Type: Not described

Description

Hunter Range Grey Myrtle Layered Forest describes a low closed forest or a dry eucalypt forest with a very dense sub-canopy of small rainforest trees. It occurs in narrow rocky gullies across the north-west sandstone plateaux and escarpments of the Sydney basin. Characteristic are dense stands of small-diameter stems of grey myrtle (*Backhousia myrtifolia*) trees, which may be pierced by taller emergent eucalypts such as grey gum (*Eucalyptus punctata*). At times the grey myrtle forms a continuous sprawling shrub layer that creates thickets beneath the eucalypt cover. The harsh, dry fire-prone environments limit the diversity and abundance of other waxy-leaved species. However scrub beefwood (*Stenocarpus salignus*) and sweet pittosporum (*Pittosporum undulatum*) are examples of other mesic small trees that are commonly encountered. Hardy shrubs include (*Myrsine variabilis*), blackthorn (*Bursaria spinosa*), (*Notelaea longifolia*) and coffee bush (*Breynia oblongifolia*). The ground layer includes a sparse cover of small ferns, grasses and herbs.

In the Sydney basin this rainforest is prominent in the Narrabeen sandstone gorges and sheltered slopes north of the Hunter Range, although outlying sites are found on rocky Permian sandstones in the dry Burragorang valley in the southern Blue Mountains. It forms narrow ribbons along rocky slopes and creek lines that receive between 600 and 750 millimetres of mean annual rainfall at elevations of 140-450 metres above sea level. Within the study area it is restricted to protected sites north of Nullo Mountain, and is most extensive on lower slopes and gullies of the northern escarpment and plateaux between Bylong and Baerami.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Emergents			*Eucalyptus punctata, Angophora floribunda, Eucalyptus hypostomatica, Eucalyptus fibrosa*
Trees	15 m ±2 14-18	38% ±15 25-55	*Eucalyptus punctata, Angophora floribunda, Backhousia myrtifolia, Stenocarpus salignus*
Small Trees	9 m ±1 8-10	92% ±6 85-95	*Backhousia myrtifolia, Acacia prominens, Leptospermum polygalifolium, Pittosporum undulatum*
Shrubs	2.5 m ±0.9 1.5-3.0	18% ±15 5-35	*Backhousia myrtifolia, Clerodendrum tomentosum, Pittosporum undulatum, Bursaria spinosa, Clerodendrum tomentosum, Stenocarpus salignus*
Ground Covers	0.5 m ±0.3 0.3-0.7	5% ±0 5-5	*Poa affinis, Adiantum hispidulum, Lepidosperma laterale, Entolasia marginata, Lomandra longifolia, Asplenium flabellifolium, Pellaea falcata, Pyrrosia rupestris*
Vines & Climbers	N/A	N/A	*Clematis aristata, Pandorea pandorana*

*Compiled from 4 of 4 sites with structural data recorded.

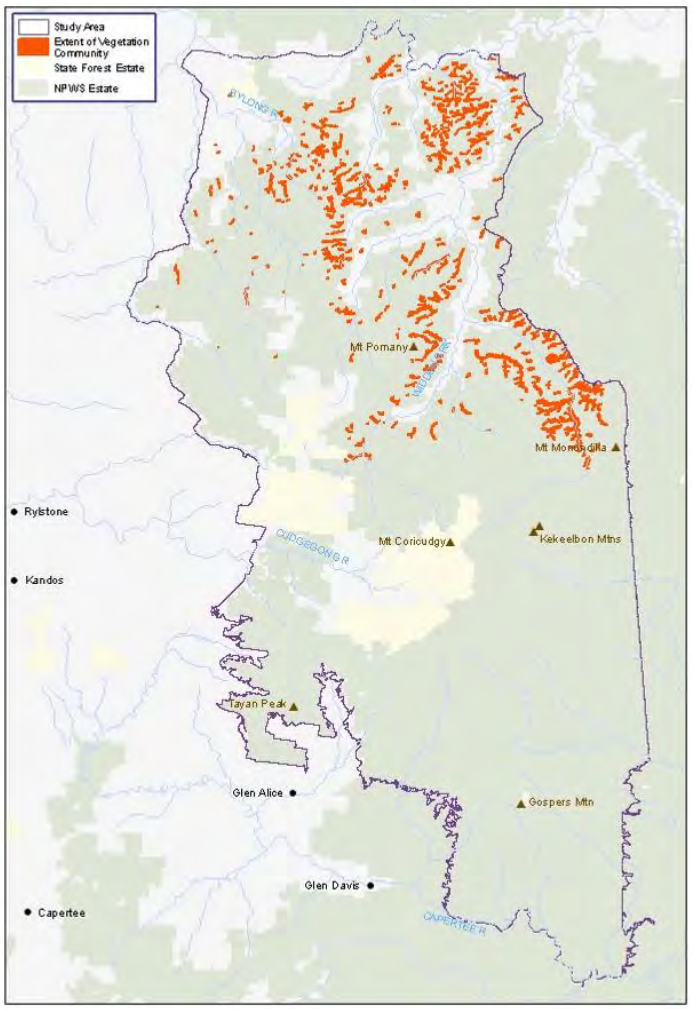
Threats

Few threatening processes appear to confront this community owing to the remote, infertile and dry environments in which it occurs. Too-frequent fire may result in a gradual transition to sclerophyllous vegetation.

Conservation Status

The original extent of this community is unlikely to have altered since European arrival. The community is known to be extensively distributed across northern Wollemi and Yengo national parks, Goulburn River NP and Manobalai Nature Reserve (NR), with smaller stands in the Blue Mountains and Nattai national parks in the Kedumba and Burragorang valleys.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	6700-7072 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	1839.2 ha	5839 ha 92% of extant area
Area in state forests	1.9 ha	Not available
Area in other tenures	24.0 ha	Not available
Total extant area	1865.1 ha	6365 ha



Example Locations

- Headwaters of Spring Creek, Bylong Trail
- Glen Gallic Trail, headwaters of Hungerford Creek

Species Richness

Number of plots	4
Total species	71
Average Species per plot	23.3 ±6.1

Known Variations

A eucalypt canopy is present at some sites and can comprise 30 per cent canopy cover within a sample plot. Areas conforming to a eucalypt forest form are separable using the API feature code in the digital data layer.

Relationship to Other Communities

Superficially, this community can be confused with other rainforest vegetation types that include a prominent layer of grey myrtle. In the study area this includes S_RF11. That rainforest is associated with more fertile soils often found on alluviums or on sheltered slopes enriched by basalt or shale material. As a result the diversity of rainforest shrubs and trees is greater and there is a much more noticeable presence of woody vines and lianes. In this current community (S_RF13) dry sclerophyll shrubs are common.

Spatially this community grades into a range of dry sclerophyll forests typical of the dry western slopes of NSW. These include (S_DSF59, S_DSF60 and S_DSF63).

Accuracy

The community has a moderate level of sampling intensity within the study area, which is supplemented from sites located in adjoining parts of Wollemi NP to the east and other reserves to the north. Mapped boundary accuracy is considered high as dense stands of grey myrtle have distinctive green foliage which is readily interpreted using stereoscopic aerial photography. Small areas of more complex dry rainforest (S_RF11) may be included within this map unit.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia prominens	**3**	**25%**	**0**	**0%**	**positive**
Acacia saliciformis	1	25%	1	7%	uninformative
Acrotriche rigida	1	25%	1	9%	uninformative
Adiantum hispidulum	**2**	**50%**	**0**	**0%**	**positive**
Alphitonia excelsa	**1**	**25%**	**0**	**0%**	**positive**
Angophora floribunda	**2**	**50%**	**2**	**16%**	**positive**
Asplenium flabellifolium	1	50%	1	11%	uninformative
Backhousia myrtifolia	**6**	**100%**	**3**	**3%**	**positive**
Brachyscome multifida	1	25%	1	2%	uninformative
Bursaria spinosa subsp. *spinosa*	1	75%	2	25%	uninformative
Callistemon salignus	3	25%	1	1%	uninformative
Callitris gracilis subsp. *gracilis*	2	25%	3	1%	uninformative
Calochlaena dubia	1	25%	3	8%	uninformative
Calytrix tetragona	1	25%	2	10%	uninformative
Cassinia quinquefaria	1	25%	2	9%	uninformative
Cheilanthes sieberi subsp. *sieberi*	1	25%	1	19%	uninformative
Clematis aristata	1	75%	1	26%	uninformative
Clerodendrum tomentosum	2	25%	1	0%	uninformative
Correa reflexa	2	25%	1	8%	uninformative
Dillwynia floribunda	1	25%	2	2%	uninformative
Diospyros australis	**2**	**25%**	**0**	**0%**	**positive**
Elaeocarpus reticulatus	2	25%	1	8%	uninformative
Entolasia marginata	2	25%	2	2%	uninformative
Eucalyptus fibrosa	4	25%	3	8%	uninformative
Eucalyptus hypostomatica	**3**	**25%**	**0**	**0%**	**positive**
Eucalyptus punctata	**2**	**100%**	**3**	**32%**	**positive**
Eucalyptus sideroxylon	3	25%	3	2%	uninformative
Eucalyptus sparsifolia	1	25%	3	28%	uninformative
Ficus rubiginosa	1	25%	1	1%	uninformative
Galium binifolium	1	25%	2	4%	uninformative
Galium propinquum	1	25%	2	16%	uninformative
Geitonoplesium cymosum	1	25%	1	7%	uninformative
Goodenia heterophylla	1	25%	2	11%	uninformative
Goodenia ovata	1	25%	1	6%	uninformative
Isopogon dawsonii	2	25%	1	8%	uninformative
Lepidosperma gunnii	2	25%	2	13%	uninformative
Lepidosperma laterale	**2**	**100%**	**1**	**23%**	**positive**
Lepidosperma urophorum	1	25%	1	4%	uninformative
Leptospermum polygalifolium	1	25%	3	0%	uninformative
Leptospermum trinervium	3	25%	2	14%	uninformative
Lomandra confertifolia	2	25%	2	33%	uninformative
Lomandra glauca	1	25%	2	30%	uninformative
Lomandra longifolia	1	25%	1	28%	uninformative
Notelaea longifolia	1	25%	1	9%	uninformative
Oplismenus aemulus	2	25%	1	2%	uninformative
Oplismenus imbecillis	1	25%	2	4%	uninformative
Oxalis chnoodes	1	25%	2	3%	uninformative
Pandorea pandorana	1	25%	1	8%	uninformative
Parsonsia eucalyptophylla	**1**	**25%**	**0**	**0%**	**positive**
Pellaea falcata	**2**	**50%**	**2**	**6%**	**positive**
Persoonia linearis	1	50%	1	55%	uninformative
Phebalium glandulosum	1	25%	1	1%	uninformative
Phebalium squamulosum	1	50%	3	10%	uninformative
Philotheca trachyphylla	1	25%	1	0%	uninformative
Pittosporum multiflorum	1	25%	2	0%	uninformative
Pittosporum undulatum	1	25%	1	4%	uninformative
Platysace ericoides	1	25%	2	22%	uninformative
Poa affinis	1	100%	2	13%	uninformative
Podolobium ilicifolium	1	25%	2	30%	uninformative
Pomaderris intermedia	1	25%	1	0%	uninformative
Pteridium esculentum	1	25%	2	32%	uninformative
Pyrrosia rupestris	1	50%	2	4%	uninformative
Sarcopetalum harveyanum	1	25%	1	1%	uninformative
Stellaria flaccida	1	25%	2	7%	uninformative
Stenocarpus salignus	**4**	**50%**	**2**	**1%**	**positive**
Trema tomentosa var. *aspera*	1	25%	1	1%	uninformative
Zieria cytisoides	1	25%	1	1%	uninformative

Statewide Class Southern Warm Temperate Rainforest

Plant Community Type: Not described

Description

Montane Basalt Warm Temperate Rainforest occurs on rich basaltic soils associated with high peaks and plateaux of the Sydney basin. It is recognised as a warm temperate rainforest (Floyd 1990, Keith 2004) although it occurs in cool, elevated environments. Stands are dominated by sassafras (*Doryphora sassafras),* blackwood *(Acacia melanoxylon)* and possumwood (*Quintinia sieberi)* and are rarely taller than 20 metres in height except where a sparse emergent eucalypt cover occurs. The shrub layer comprises tree ferns such as (*Dicksonia antarctica*) and smaller trees including native mulberry (*Hedycarya angustifolia*), muttonwood (*Myrsine howittiana*) and prickly current bush (*Coprosma quadrifida*). Tree limbs are commonly draped in hanging moss (*Papillaria* spp.). A diverse, though sparse, cover of ferns and nettles covers the ground. Vines, climbers and lianes are also present including fieldia (*Fieldia australis*). The floristic composition of this rainforest marks a grade between the cool temperate rainforests and southern warm temperate rainforests described by Keith (2004). It corresponds with Sub-Alliance 40: *Doryphora-Quintinia sieberi* (Floyd 1990).

The locations where this rainforest occurs are restricted to protected sites on the high basalt capped peaks of the Blue Mountains and Wollemi where elevation spans 1000-1200 metres above sea level. Mean annual rainfall generally exceeds 1000 millimetres but may be as low as 900 millimetres near Mount Coriaday and Mount Monundilla. However additional moisture is provided by the heavy mountain mists that shroud these high peaks during the winter months. The species present are similar to those found in the rainforests associated with the extensive basalt plateau at Robertson on the Southern Highlands. There the rainfall is considerably higher and can reach 1500 millimetres per annum, however the elevation is much lower at 650-800 metres above sea level. Relationships between these basalt rainforests are worthy of further investigation.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Emergents	35 m	35%	*Eucalyptus viminalis, Eucalyptus nobilis, Eucalyptus laevopinea*
Trees	24 m ±9 15-35	41% ±45 2-80	*Acacia melanoxylon, Doryphora sassafras, Doryphora sassafras, Polyosma cunninghamii, Schizomeria ovata, Quintinia sieberi*
Shrubs	4.0 m ±1.4 3.0-5.0	4% ±2 2-5	*Hymenanthera dentata, Cyathea australis, Hedycarya angustifolia, Coprosma quadrifida, Notelaea longifolia, Myrsine howittiana, Polyscias sambucifolia, Melicytus dentata, Dicksonia antarctica*
Ground Covers	1.0 m ±0.0 1.0-1.0	25% ±7 20-30	*Urtica incisa, Lastreopsis decomposita, Microsorum scandens, Pellaea falcata, Pyrrosia rupestris, Polystichum australiense, Stellaria flaccida, Blechnum cartilagineum, Asplenium flabellifolium*
Vines & Climbers	N/A	N/A	*Clematis glycinoides, Pandorea pandorana* subsp. *pandorana, Parsonsia lanceolata, Smilax australis, Rubus rosifolius* var. *rosifolius, Smilax glyciphylla*

*Compiled from 2 of 2 sites with structural data recorded.

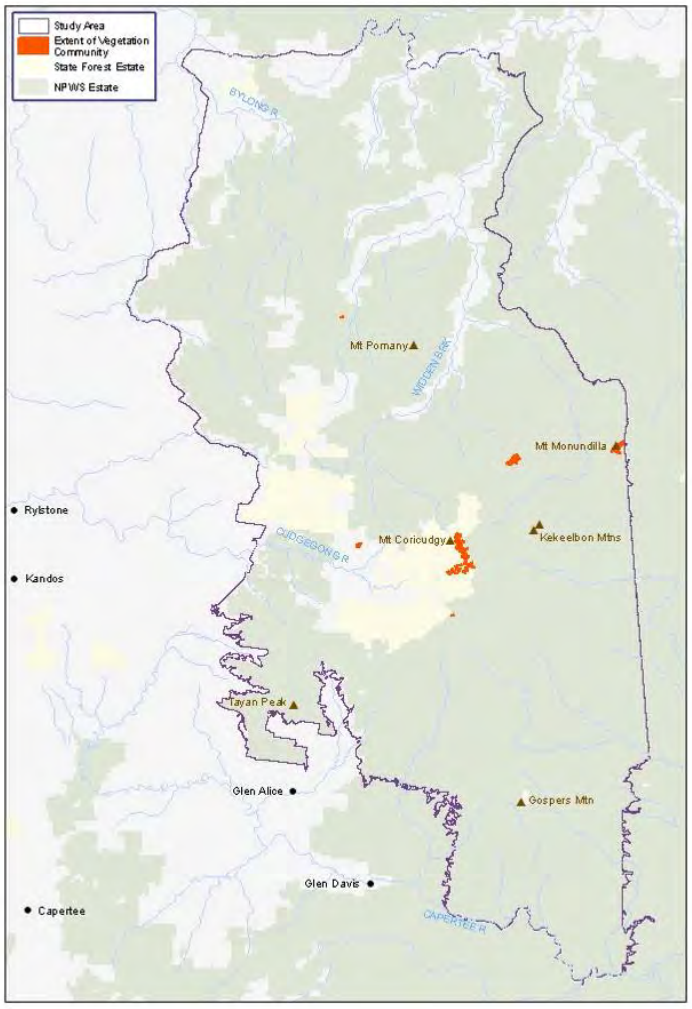
Threats

Human-related disturbance is widespread across the distribution of this community. Clearing for agriculture has depleted significant areas on the Robertson plateau (Tozer et al. 2010) and in the Blue Mountains. Less accessible stands have been heavily logged, such as at Mount Coricudgy, or are threatened by high intensity wildfire (Floyd 1990). Stands are isolated and fragmented and, in combination with the fertile soils, are vulnerable to infestations by exotic species (Floyd 1990).

Conservation Status

This community is not currently listed as a TEC under State or Commonwealth legislation. However the floristic composition and habitat are closely related Robertson Rainforest in the Sydney Basin Bioregion, a TEC listed under the TSC Act. This determination is currently geographically restricted and does not apply to sites located in the Blue Mountains region.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	1715-2264 ha
Estimated percentage cleared	Not available	1-25%
Area in formal conservation reserves	84.0 ha	384 ha 23% of extant area
Area in state forests	106.7 ha	Not available
Area in other tenures	7.4 ha	Not available
Total extant area	198.1 ha	1698 ha



Example Locations

- Mount Coricudgy
- Mount Coriaday

Species Richness

Number of plots	2
Total species	24
Average species per plot	18.0 ±1.4

Known Variations

Stands that are regularly affected by fire may exhibit a dominance of *Acacia melanoxylon* (Floyd 1990). Emergent eucalypts are present at some sites and can comprise up to 25 per cent canopy over within a sample plot. The eucalypts are cool-climate species such as ribbon gum (*E. viminalis*), brown barrel (*E. fastigata*) and silver-top stringybark (*E. laevopinea*).

Relationship to Other Communities

This rainforest can be distinguished from others by its distinctive basalt habitat, in combination with the dominance of sassafras (*Doryphora sassafras*) in the canopy. Some species are shared with warm temperate rainforest (S_RF12), however that community features a prominent canopy of coachwood (*Ceratopetalum apetalum*), a species that is not found on the elevated basalt peaks of the study area.

Accuracy

Systematic sampling in the study area is restricted to the Coricudgy area, although detailed floristic notes of patches of this rainforest have been made elsewhere in the study area (Floyd 1984). Rainforest dominated canopies on basalt caps of the study area are readily identifiable using stereoscopic aerial photography. As a result boundaries are considered accurate, although some gradation may be expected where basalt enrichment occurs in surrounding sandstone gullies.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia melanoxylon	**2**	**100%**	**2**	**8%**	**positive**
Clematis aristata	1	100%	1	27%	uninformative
Coprosma quadrifida	**3**	**50%**	**2**	**4%**	**positive**
Doryphora sassafras	**4**	**100%**	**4**	**3%**	**positive**
Eucalyptus viminalis	1	50%	3	8%	uninformative
Hedycarya angustifolia	1	100%	1	0%	uninformative
Lastreopsis decomposita	**4**	**100%**	**0**	**0%**	**positive**
Melicytus dentatus	**4**	**100%**	**1**	**5%**	**positive**
Microsorum scandens	1	50%	2	1%	uninformative
Myrsine howittiana	1	50%	1	2%	uninformative
Notelaea longifolia	1	50%	1	9%	uninformative
Pandorea pandorana	**3**	**100%**	**1**	**8%**	**positive**
Parsonsia lanceolata	**3**	**100%**	**1**	**0%**	**positive**
Pellaea falcata	**3**	**50%**	**2**	**6%**	**positive**
Polyosma cunninghamii	**1**	**50%**	**0**	**0%**	**positive**
Polyscias sambucifolia	1	50%	2	12%	uninformative
Polystichum fallax	**5**	**100%**	**1**	**1%**	**positive**
Pyrrosia rupestris	1	50%	2	4%	uninformative
Rubus rosifolius	1	50%	1	0%	uninformative
Schizomeria ovata	1	50%	2	0%	uninformative
Smilax australis	1	100%	2	3%	uninformative
Smilax glyciphylla	1	50%	1	8%	uninformative
Urtica incisa	**3**	**100%**	**2**	**7%**	**positive**

Statewide Class Dry Rainforests
Plant Community Type: Not described

Description

Dry Ranges Rusty Fig Rainforest Scrub is a low closed forest with a patchy mesic shrub layer and a ground cover of ferns and vines. It is situated in the dry and warm environments of the central and northern Sydney basin where it primarily occurs on exposed broken rocky scree associated with isolated volcanic intrusions. It does also occur on other substrates that are moderately fertile, such as limestone and shale, though is less common. The most distinctive feature is the low sprawling canopy of rusty fig (*Ficus rubiginosa*) sometimes with red ash (*Alphitonia excelsa*). Beneath the canopy is a viney scrub comprising a variety of small vines and climbers that snake along the rocky ground. These include water vines (*Cissus* spp.), wonga vine (*Pandorea pandorana*), staff climber (*Celastrus australis*) and native grape (*Cayratia clematidea*). A sparse cover of hardy small-leaved ferns, such as sickle fern (*Pellaea falcata*), is also present.

This community is naturally rare in the Sydney basin as it has a specialised habitat that is not extensive. It extends from the Kowmung gorges to the upper Hunter valley and is associated with several prominent basalt peaks in the latter region including Mount Dangar, Mount Wareng and Mount Yengo. It occurs on very exposed limestone slopes in the Kowmung and Capertee Valley and on shale in western Sydney. All occurrences are characterised by low to moderate rainfall generally less than 700 millimetres per annum and an elevation range between 180 and 500 metres above sea level. In the study area it is restricted to a small basalt flow on the northern side of the Capertee River gorge. It extends north from the Sydney basin region into the Hunter on the south-western footslopes of the Barrington Ranges (Sommerville 2009).

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Emergent	12-20 m est.	1-15% est.	*Eucalyptus moluccana*
Trees	7 m ±8 5-10	49% ±30 30-80	*Ficus rubiginosa, Alectryon subcinereus*
Shrubs	0.8 m ±0.5 0.5-1.1	21% ±20 5-50	*Notelaea microcarpa, Breynia oblongifolia, Clerodendrum tomentosum*
Ground Covers	0.2 m ±0.3 0.1-0.5	22% ±24 5-75	*Pellaea falcata, Urtica incisa, Nyssanthes diffusa*
Vines & Climbers	N/A	N/A	*Cayratia clematidea, Pandorea pandorana, Cissus opaca, Cissus hypoglauca, Eustrephus latifolius*

*Taken from DECC (2008). Compiled from 2 of 4 sites with structural data recorded in that study.

Threats

Threats from clearing are ameliorated by the precipitous landscape in which it occurs. However, invasive weed species are recorded in the community. These are likely to be sourced from wandering cattle that are associated with rough-grazing activities on adjoining accessible basalt soils. Prickly pear (*Opuntia stricta*) is one of the more commonly recorded species. High-intensity fires can kill the fig trees and encourage a profuse cover of regenerating wattle.

Conservation Status

While small in area in the region a large proportion of scrub in the Sydney basin occurs within reserves, including Blue Mountains, Wollemi, Goulburn River and Yengo national parks.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	218 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	6.9 ha	207 ha 100% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	6.9 ha	207 ha

Example Locations

o Capertee River gorge

Species Richness

Number of plots	0
Total species	N/A
Average species per plot	N/A

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically, the community forms part of the dry viney scrub assemblages that occur in gorges and scree of north-west New South Wales. In the study area this rainforest scrub shares most species with the dry rainforests of the Hunter Range (S_RF13). That rainforest is dominated by *Backhousia myrtifolia* and is restricted to sandstone gully systems.

Spatially there is an abrupt change between this scrub and surrounding sandstone sclerophyll forests and woodlands.

Accuracy

Not sampled in the study area. The community has been described in the rainforest studies by Floyd (1984, 1990) and the site in the Capertee River gorge has been visited. Samples of similar vegetation have been taken from the Capertee Valley (DEC 2006).

No diagnostic species generated for this profile. Not sampled in the study area.

WET SCLEROPHYLL FORESTS

Statewide Class North Coast Wet Sclerophyll Forests
Plant Community Type:

Description

Sydney Hinterland Blue Gum-Turpentine Gully Forest is a tall eucalypt forest with an open moist shrub layer and ferny ground cover, found in gullies on the mid-elevation sandstone plateaux of the Sydney basin. It is dominated by blue gums (*Eucalyptus deanei* and infrequently *Eucalyptus saligna*), turpentine (*Syncarpia glomulifera* subsp. *glomulifera*) and rough-barked apple (*Angophora floribunda*). The understorey composition exhibits a strong mesic influence, often with several layers of small rainforest trees and shrubs. These tend to only form a sparse to moderate cover, however. Larger species include black wattle (*Callicoma serratifolia*), coachwood (*Ceratopetalum apetalum*), blueberry ash (*Elaeocarpus reticulatus*) and cedar wattle (*Acacia elata*). A prominent cover of ferns, including rainbow fern (*Calochlaena dubia*), is found on the forest floor with a diverse combination of vines and twiners.

This community is found in the most incised Narrabeen sandstone gullies and is evident below prominent clifflines and benches along sandstone escarpments. Its distribution ranges between 80 and 600 metres above sea level in zones receiving an average of between 850 and 1200 millimetres of rain per annum. In the study area the community mostly occurs east of the old Army Road and south of the Hunter Main Trail. It is the primary gully forest of the lower central gorges of the Wollemi plateaux. Elsewhere, the forest is distributed throughout the Blue Mountains in the Hawkesbury River gorges, Nattai Tableland, and central and eastern Wollemi NP.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	45 m	30%	*Eucalyptus deanei, Angophora costata, Syncarpia glomulifera* subsp. *glomulifera, Eucalyptus piperita*
Small Trees	20 m	15%	*Acacia filicifolia, Acacia parramattensis, Elaeocarpus reticulatus, Acacia elata, Callicoma serratifolia, Pittosporum revolutum*
Shrubs	4.0 m	25%	*Indigofera australis, Acacia saliciformis, Cassinia uncata, Leptospermum polygalifolium* subsp. *polygalifolium, Polyscias sambucifolia, Pultenaea flexilis*
Ground Covers	1.0 m	80%	*Calochlaena dubia, Pteridium esculentum, Blechnum cartilagineum, Poa affinis, Microlaena stipoides* var. *stipoides, Blechnum nudum, Dianella caerulea, Dichondra repens, Doodia aspera, Opercularia aspera*
Vines & Climbers	N/A	N/A	*Billardiera scandens, Glycine clandestina, Kennedia rubicunda, Smilax glyciphylla*

*Compiled from 1 of 1 site with structural data recorded.

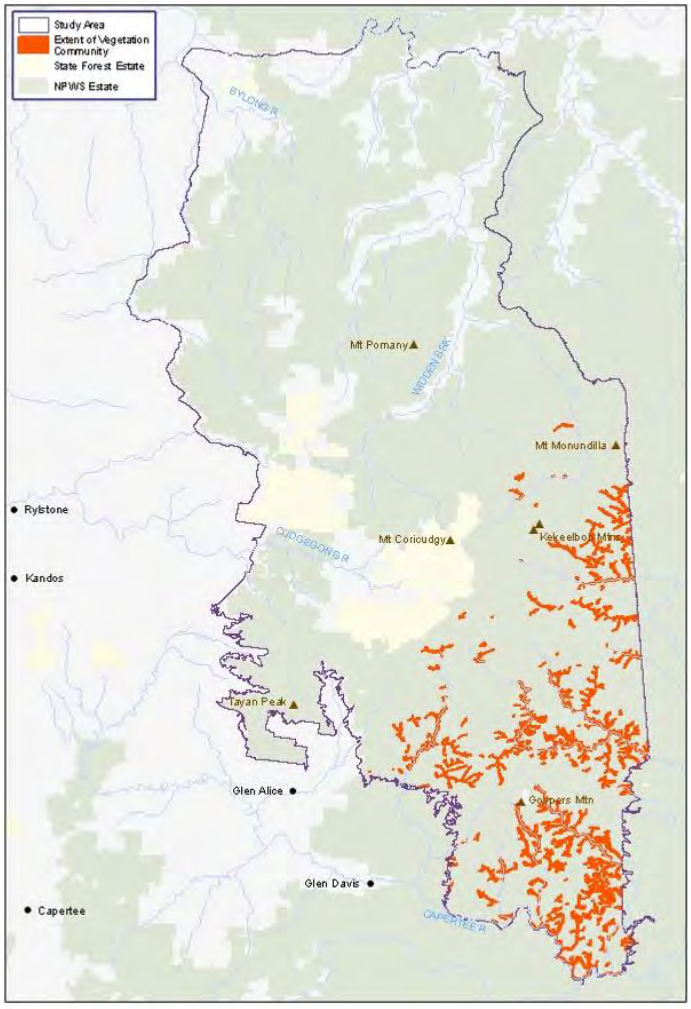
Threats

Threats impacting on the forest have been restricted by the remoteness of the location. Clearing has resulted in small areas of loss in the fringes of urban-rural areas. Logging roads have penetrated into some gullies in the far south-east of the study area and adjoining regions, resulting in canopy disturbance and the introduction of some weed species, although these appear to be highly localised.

Conservation Status

This community is protected in the sandstone reserves of the Sydney region, including in Blue Mountains, Nattai and Wollemi national parks and Burragorang and Parr state conservation areas.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	16,089 ha
Estimated percentage cleared	Not available	10%
Area in formal conservation reserves	3079.9 ha	13,080 ha 90% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	3079.9 ha	14,480 ha



Example Locations

- Ovens Creek and Koondah Creek
- Coorongooba Creek

Species Richness

Number of plots	1
Total species	40
Average species per plot	40

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this forest is related to other wet sclerophyll forests found in protected sandstone gullies of the Wollemi plateaux (S_WSF20 and S_WSF22). Elevation is the primary variable that explains the differences between them, with S_WSF10 rarely recorded more than 550 metres above sea level. The dominance of blue gums (*E. deanei* and *E. saligna*) helps make this unit readily distinguishable from the other gully forests in the field. Greater difficulty may be experienced in separating moist blue gum forest in diatremes (S_WSF23) using floristic features alone. Instead landscape features and substrate are more easy to use.

Accuracy

Sample effort is low in the study area. A number of samples located in adjoining environments were used to assist with the development of the map domains for this unit. Map boundaries were drawn from the interpretation of wet sclerophyll forests dominated by mountain blue gum and/or turpentine on sandstone.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia filicifolia	**3**	**100%**	**2**	**6%**	**positive**
Acacia floribunda	1	100%	2	0%	uninformative
Acacia parramattensis	**3**	**100%**	**2**	**3%**	**positive**
Angophora costata	**2**	**100%**	**3**	**3%**	**positive**
Billardiera scandens	**2**	**100%**	**1**	**24%**	**positive**
Blechnum cartilagineum	**4**	**100%**	**2**	**10%**	**positive**
Callicoma serratifolia	**2**	**100%**	**3**	**3%**	**positive**
Calochlaena dubia	**4**	**100%**	**3**	**8%**	**positive**
Clematis aristata	**2**	**100%**	**1**	**27%**	**positive**
Desmodium varians	1	100%	2	19%	uninformative
Dianella caerulea	1	100%	1	31%	uninformative
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Doodia aspera	**2**	**100%**	**2**	**5%**	**positive**
Elaeocarpus reticulatus	1	100%	1	8%	uninformative
Eucalyptus deanei	**4**	**100%**	**4**	**1%**	**positive**
Eupomatia laurina	1	100%	2	1%	uninformative
Eustrephus latifolius	1	100%	1	8%	uninformative
Galium propinquum	**2**	**100%**	**2**	**16%**	**positive**
Geranium homeanum	**2**	**100%**	**2**	**5%**	**positive**
Glycine clandestina	**2**	**100%**	**2**	**17%**	**positive**
Gompholobium latifolium	1	100%	2	3%	uninformative
Gonocarpus teucrioides	**2**	**100%**	**2**	**14%**	**positive**
Hardenbergia violacea	**2**	**100%**	**1**	**25%**	**positive**
Indigofera australis	1	100%	2	14%	uninformative
Kennedia rubicunda	**2**	**100%**	**2**	**1%**	**positive**
Lomandra longifolia	1	100%	1	28%	uninformative
Microlaena stipoides	1	100%	2	27%	uninformative
Oplismenus imbecillis	**2**	**100%**	**2**	**4%**	**positive**
Pittosporum revolutum	1	100%	1	1%	uninformative
Plectranthus parviflorus	**2**	**100%**	**1**	**4%**	**positive**
Poa affinis	**2**	**100%**	**2**	**14%**	**positive**
Polyscias sambucifolia	**2**	**100%**	**1**	**12%**	**positive**
Pratia purpurascens	**2**	**100%**	**2**	**1%**	**positive**
Pteridium esculentum	1	100%	2	31%	uninformative
Sarcopetalum harveyanum	1	100%	1	1%	uninformative
Smilax glyciphylla	**2**	**100%**	**1**	**8%**	**positive**
Syncarpia glomulifera* subsp. *glomulifera	**3**	**100%**	**3**	**0%**	**positive**
Tristaniopsis collina	**4**	**100%**	**4**	**0%**	**positive**
Tylophora barbata	**2**	**100%**	**2**	**3%**	**positive**
Viola hederacea	**2**	**100%**	**2**	**10%**	**positive**

Statewide Class: Southern Escarpment Wet Sclerophyll Forests
Plant Community Type: Not described

Description

Blue Mountains Ash Moist Forest is a tall eucalypt forest with a moderately dense mid stratum of mesic shrubs and small trees, and a ferny ground cover. It occupies cool, shady and wet sandstone environments in the upper Blue Mountains. The canopy is dominated by Blue Mountains ash (*Eucalyptus oreades*) but may include a number of other eucalypts such as Sydney peppermint (*Eucalyptus piperita*), monkey gum (*Eucalyptus cypellocarpa*) and Blaxland's stringybark (*Eucalyptus blaxlandii*). A tall mid stratum features cedar wattle (*Acacia elata*) and black wattle (*Callicoma serratifolia*), with coachwood (*Ceratopetalum apetalum*) sometimes present at wetter sites. The lower shrub layer is denser and, while dominated by soft-leaved species, can also include some drier shrubs. Geebungs (*Persoonia* spp.) and tea-tree (*Leptospermum* spp.) can be found alongside blueberry ash (*Elaeocarpus reticulatus*), mountain water gum (*Tristaniopsis collina*) and *Pittosporum revolutum*. The ground layer is made up of a continuous cover of ferns with rainbow fern (*Calochlaena dubia)*, bracken (*Pteridium esculentum*) and gristle fern (*Blechnum cartilagineum*) all commonly recorded.

This forest occurs on soils derived from Narrabeen sandstone at elevations between 650 and 1200 metres above sea level and within a mean annual rainfall band between 850 and 1400 millimetres per annum. Typically it can be found around gully heads on steep south-facing slopes. These sites can often be rocky and marked by minor cliff lines and benches. It is most extensive on the escarpment fringes between Leura and Mount Victoria in the upper Blue Mountains, but has a patchy cover on residual elevated sandstone mesas between Mittagong and the Hunter Range. In the study area it is restricted to elevations greater than 800 metres above sea level along the Hunter Range beneath the high peaks found between Mount Monundilla and Mount Coricudgy.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	41 m ±15 15-55	35% ±25 5-80	*Eucalyptus oreades, Eucalyptus cypellocarpa, Eucalyptus, blaxlandii, Eucalyptus radiata, Eucalyptus piperita*
Small Trees	10 m ±10 4-25	6% ±3 2-10	*Acacia elata, Callicoma serratifolia, Elaeocarpus reticulatus, Acacia obtusifolia*
Shrubs	2.5 m ±1.0 1.6-3.5	27% ±15 10-40	*Polyscias sambucifolia, Pultenaea daphnoides, Lomatia silaifolia, Leucopogon lanceolatus, Persoonia linearis, Banksia spinulosa*
Ground Covers	1.3 m ±0.5 0.7-1.9	80% ±22 40-90	*Blechnum cartilagineum, Calochlaena dubia, Gonocarpus tetragynus, Opercularia aspera, Pteridium esculentum, Poa affinis, Amperea xiphoclada* var. *xiphoclada, Dianella caerulea, Viola hederacea, Lomandra longifolia*
Vines & Climbers	N/A	N/A	*Smilax glyciphylla, Billardiera scandens, Clematis aristata*

*Compiled from 5 of 5 sites with structural data recorded.

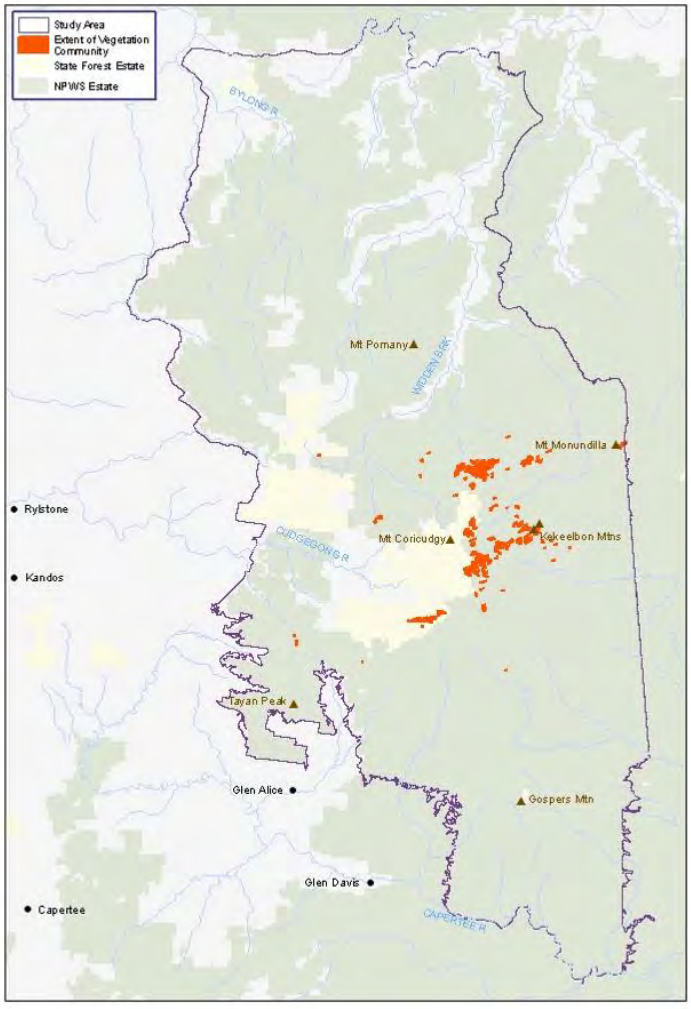
Threats

Clearing is unlikely to have extensively impacted on the original distribution in the region, as most occurs on the edges of the upper Blue Mountains plateaux. However this community is positioned downslope of the urban interface and can be vulnerable to localised weed infestation resulting from urban runoff. Too-frequent intense fire can inhibit the regeneration of *Eucalyptus oreades* by killing young trees before they mature (Glasby et al. 1988). Over two-thirds of this forest in the study area was subjected to severe burn in the 2006-2007 fires and a large number of *Eucalyptus oreades* were killed.

Conservation Status

This community is known to occur in Blue Mountains NP, with localised stands in Wollemi and Nattai national parks.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	4908-6660 ha
Estimated percentage cleared	Not available	5-30%
Area in formal conservation reserves	553.6 ha	1554 ha 33% of extant area
Area in state forests	108.7 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	662.3 ha	4662 ha



Example Locations

- South-facing slopes below Mount Coricudgy
- Gully headwaters near Hunter Main Range Trail west of Kekeelbon Mountains
- Southern slopes of Kerry Mountain

Species Richness

Number of plots	5
Total species	80
Average species per plot	27.8 ±6.1

Known Variations

The density of the mesic shrub stratum may vary between sites. Sites proximate to drainage channels and beneath cliffflines tend to present a higher abundance of mesic small trees than those on more open sheltered slopes.

Relationship to Other Communities

Floristically this forest is closely related to other montane sheltered sandstone forests (e.g. S_WSF22). These other forests, however, do not include the diversity of higher elevation eucalypts such as *E. oreades*, *E. blaxlandii* and *E. radiata* and are less likely to include cool climate mesic shrubs such as *Quintinia sieberi*.

Within the study area the forest may grade into S_WSF22 as elevations fall below 800 metres above sea level on sheltered aspects. The forest grades into dry sclerophyll forest S_DSF55 as aspects become more exposed. High points in the sandstone plateaux adjoin basalt peaks and as a result the forest may grade into herbaceous and grassy basalt forest (S_WSF27) where elevations exceed 1000 metres.

Accuracy

Sample effort is high relative to the mapped area. Mapped extent relied on the interpretation of tall forests dominated by *E. oreades* with a mesic understorey found on Narrabeen sandstone occurring above 800 metres above sea level.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia elata	1	100%	1	3%	uninformative
Acacia obtusifolia	**3**	**40%**	**2**	**14%**	**positive**
Acmena smithii	1	20%	2	2%	uninformative
Allocasuarina torulosa	1	20%	1	2%	uninformative
Amperea xiphoclada	1	80%	2	13%	uninformative
Arrhenechthites mixta	1	20%	1	4%	uninformative
Asplenium flabellifolium	1	20%	1	12%	uninformative
Banksia spinulosa	1	20%	2	6%	uninformative
Baumea planifolia	2	20%	1	0%	uninformative
Billardiera scandens	**2**	**60%**	**1**	**23%**	**positive**
Blechnum cartilagineum	**3**	**100%**	**2**	**9%**	**positive**
Blechnum nudum	6	20%	2	2%	uninformative
Callicoma serratifolia	**3**	**100%**	**3**	**2%**	**positive**
Calochlaena dubia	**5**	**80%**	**2**	**8%**	**positive**
Cassinia cunninghamii	1	20%	2	7%	uninformative
Ceratopetalum apetalum	2	20%	4	3%	uninformative
Clematis aristata	1	60%	1	27%	uninformative
Cyathea australis	1	40%	1	2%	uninformative
Dianella caerulea	**2**	**80%**	**1**	**31%**	**positive**
Doryphora sassafras	1	20%	4	3%	uninformative
Elaeocarpus reticulatus	**2**	**40%**	**1**	**8%**	**positive**
Eucalyptus blaxlandii	3	20%	3	5%	uninformative
Eucalyptus cypellocarpa	**4**	**40%**	**3**	**10%**	**positive**
Eucalyptus oreades	**4**	**60%**	**4**	**1%**	**positive**
Eucalyptus piperita	2	20%	3	16%	uninformative
Eucalyptus radiata	3	20%	2	1%	uninformative
Gahnia sieberiana	1	20%	1	3%	uninformative
Galium propinquum	1	40%	2	16%	uninformative
Geranium solanderi var. *solanderi*	1	20%	2	11%	uninformative
Glycine clandestina	2	20%	2	17%	uninformative
Gonocarpus tetragynus	**3**	**80%**	**2**	**13%**	**positive**
Goodenia heterophylla	**2**	**40%**	**2**	**11%**	**positive**
Goodenia ovata	2	20%	1	6%	uninformative
Hakea salicifolia	2	20%	2	2%	uninformative
Hardenbergia violacea	2	20%	1	26%	uninformative
Hydrocotyle laxiflora	1	20%	2	20%	uninformative
Hypolepis glandulifera	**3**	**20%**	**0**	**0%**	**positive**
Indigofera australis	2	20%	2	15%	uninformative
Kennedia rubicunda	2	20%	2	2%	uninformative
Lagenophora stipitata	2	20%	1	10%	uninformative
Leucopogon lanceolatus	1	20%	1	12%	uninformative
Lomandra longifolia	1	20%	1	28%	uninformative
Lomatia silaifolia	**2**	**60%**	**2**	**21%**	**positive**
Marsdenia rostrata	2	20%	2	2%	uninformative
Microlaena stipoides	**2**	**40%**	**2**	**28%**	**positive**
Notelaea longifolia	1	60%	1	8%	uninformative
Olearia tomentosa	1	20%	2	1%	uninformative
Opercularia aspera	**3**	**80%**	**1**	**4%**	**positive**
Persoonia levis	1	20%	1	10%	uninformative
Persoonia linearis	1	40%	1	55%	uninformative
Platysace lanceolata	2	20%	2	17%	uninformative
Poa affinis	**2**	**80%**	**2**	**13%**	**positive**
Podolobium ilicifolium	1	40%	2	30%	uninformative
Polyscias sambucifolia	**2**	**100%**	**1**	**11%**	**positive**
Polystichum australiense	1	20%	2	2%	uninformative
Poranthera microphylla	1	20%	1	13%	uninformative
Pteridium esculentum	**2**	**80%**	**2**	**31%**	**positive**
Pultenaea daphnoides	**2**	**60%**	**1**	**0%**	**positive**
Quintinia sieberi	**2**	**40%**	**1**	**1%**	**positive**
Schoenus melanostachys	1	20%	1	1%	uninformative
Senecio vagus	2	20%	2	2%	uninformative
Senecio velleioides	1	20%	1	1%	uninformative
Smilax glyciphylla	**2**	**100%**	**1**	**8%**	**positive**
Stellaria flaccida	2	20%	2	8%	uninformative
Sticherus flabellatus var. *flabellatus*	2	20%	1	1%	uninformative
Sticherus lobatus	**4**	**20%**	**0**	**0%**	**positive**
Stylidium productum	1	20%	2	8%	uninformative
Tylophora barbata	2	20%	2	3%	uninformative
Veronica plebeia	2	20%	2	15%	uninformative
Viola hederacea	**2**	**40%**	**2**	**10%**	**positive**
Xerochrysum bracteatum	1	20%	1	1%	uninformative

Statewide Class
Plant Community Type: Southern Escarpment Wet Sclerophyll Forests
includes Brown Barrel - Mountain Grey Gum tall moist forest on basalts of the Southern Highlands, Sydney Basin

Description

Sydney Montane Basalt Monkey Gum Forest is a tall moist shrubby eucalypt forest that occurs on smaller eroded basalt peaks or on the fringes of the larger basalt mesas of the montane environments of the Sydney basin. The soils here are rich in clay material and as a result support tall stands of eucalypts. Monkey gum (*Eucalyptus cypellocarpa*) is commonly encountered, though stands may be dominated by brown barrel (*Eucalyptus fastigata*), Blaxland's stringybark (*Eucalyptus blaxlandii*) and peppermints (*Eucalyptus radiata* and *E. piperita*). One unusual eucalypt species, eurabbie (*Eucalyptus bicostata*), is also recorded within this community on and around Nullo Mountain. It is a tree with a series of small isolated populations across the New South Wales tablelands. The forest understorey tends to comprise an open shrub cover with a mix of taller sclerophyllous species and smaller mesic species. Tall wattles such as blackwood (*Acacia melanoxylon*) are sparse, while lance-leaved beard heath (*Leucopogon lanceolatus*) and prickly current bush (*Coprosma quadrifida*) are more common. The ground cover is indicative of the fertile soils with an abundant cover of grasses, herbs and ferns that mix with small vines and climbers.

This montane forest is found across the Sydney Basin Bioregion from the Southern Highlands at Mount Gibraltar to Mount Shivering near Oberon. It occurs on peaks across the upper Blue Mountains and approaches a northern limit near Nullo Mountain and Mount Monundilla in Wollemi NP. While geographically varied, it is restricted to elevations between 750 and 1100 metres above sea level with mean annual rainfall exceeding 900 millimetres per annum. In the study area the forest is common on shallow basalt soils on the margins of the major basalt caps such as Mount Coricudgy, Kerry Mountain, Mount Coriaday and Mount Duran Duran as well as the smaller Kekeelbon Mountains.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	29 m ±5 22-40	31% ±9 15-40	*Eucalyptus cypellocarpa, Eucalyptus blaxlandii, Eucalyptus bicostata*
Small Trees	8 m ±5 2-15	17% ±10 5-35	*Acacia falciformis, Acacia implexa, Acacia obtusifolia, Acacia melanoxylon*
Shrubs	2.1 m ±1.0 0.8-4.0	22% ±15 5-50	*Indigofera australis, Bursaria spinosa, Coprosma quadrifida, Helichrysum elatum, Leucopogon lanceolatus*
Ground Covers	0.7 m ±0.4 0.2-1.4	44% ±33 5-95	*Calochlaena dubia, Pteridium esculentum, Hydrocotyle laxiflora, Poa affinis, Blechnum cartilagineum, Dichondra repens, Hydrocotyle laxiflora, Lomandra longifolia Desmodium spp. Geranium solanderi, Veronica plebeia, Microlaena stipoides* var. *stipoides*
Vines & Climbers	N/A	N/A	*Clematis glycinoides* var. *glycinoides, Glycine clandestina, Smilax australis*

*Compiled from 11 of 13 sites with structural data recorded.

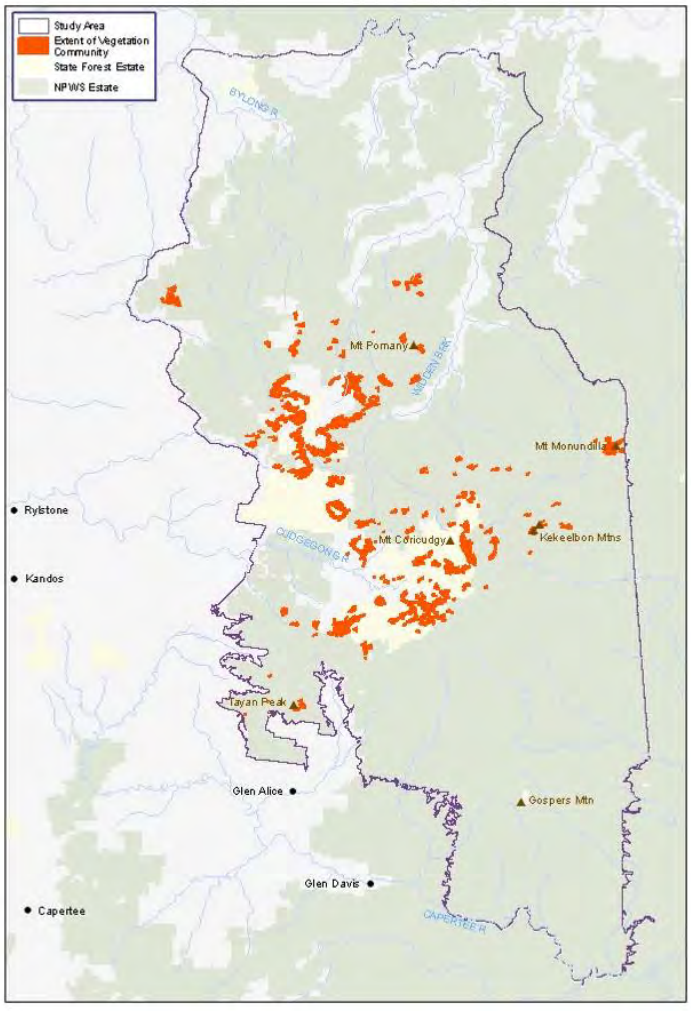
Threats

Clearing has resulted in the loss of about one fifth of the original distribution of this community (Tozer et al. 2010). This has been most extensive in the upper Blue Mountains where clearing for agriculture and urban development is prevalent. The ruggedness of the terrain has otherwise limited the extent to which these forests have been modified, although evidence of rough grazing and logging is widespread throughout its distribution. In the study area stands are vulnerable to the incursion of weeds.

Conservation Status

This forest forms a component of Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion a TEC listed under the EPBC Act. The forest is represented in the reserve system with examples found in Nattai, Blue Mountains, Wollemi and Kanangra-Boyd national parks.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	15,116-26,452 ha
Estimated percentage cleared	Not available	65-80%
Area in formal conservation reserves	1423.1 ha	2113 ha 40% of extant area
Area in state forests	1236.7 ha	Not available
Area in other tenures	630.6 ha	Not available
Total extant area	3290.5 ha	5290 ha



Example Locations

- Southern side of Mount Durambang
- 700 metres south-east of Racecourse Point Nullo Mountain

Species Richness

Number of plots	13
Total species	179
Average species per plot	39.5 ±5.7

Known Variations

Variation in the dominance of canopy species may be found throughout the extent of the community in the Sydney Basin Bioregion. In the study area however, stands of eurabbie mark a forest of botanical interest. Other stands may include ribbon gums (*Eucalyptus viminalis/ nobilis*) and rough-barked apple (*Angophora floribunda*). The composition of stands on Nullo Mountain has a greater component of dry shrubs owing to the lower mean annual rainfall.

Relationship to Other Communities

Floristically this forest is related to other tall forests associated with basalt soils at mid to high elevations in the Sydney Basin Bioregion. Spatially the community grades into S_WSF28 as elevation rises on Mount Coricudgy, and similarly into S_WSF29 on Nullo Mountain.

Accuracy

Sampling effort is high. Map domains were extracted from site data although relationships between field geology and existing geological maps were poor. Map boundaries were drawn from the interpretation of transitional basalt soils that carry *E. cypellocarpa, E. blaxlandii* and *E. bicostata*.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia falciformis	**3**	**64%**	**2**	**4%**	**positive**
Acacia melanoxylon	**2**	**45%**	**2**	**7%**	**positive**
Acacia paradoxa	4	18%	2	4%	uninformative
Acaena novae-zelandiae	1	18%	2	5%	uninformative
Adiantum aethiopicum	1	18%	2	6%	uninformative
Arrhenechthites mixta	2	18%	1	3%	uninformative
Asperula conferta	2	27%	2	8%	uninformative
Asplenium flabellifolium	1	18%	1	11%	uninformative
Astroloma humifusum	2	18%	1	9%	uninformative
Austrostipa verticillata	2	27%	2	3%	uninformative
Billardiera scandens	**2**	**36%**	**1**	**23%**	**positive**
Blechnum cartilagineum	**2**	**45%**	**3**	**9%**	**positive**
Bursaria spinosa* subsp. *spinosa	**4**	**45%**	**2**	**25%**	**positive**
Calochlaena dubia	4	27%	2	8%	uninformative
Clematis aristata	**2**	**91%**	**1**	**25%**	**positive**
Coprosma quadrifida	**2**	**55%**	**1**	**3%**	**positive**
Coronidium elatum	**2**	**36%**	**1**	**1%**	**positive**
Coronidium scorpioides	2	18%	1	1%	uninformative
Cyathea australis	1	18%	1	2%	uninformative
Cymbonotus lawsonianus	2	18%	1	3%	uninformative
Daucus glochidiatus	2	18%	2	8%	uninformative
Desmodium varians	1	91%	2	17%	uninformative
Dianella caerulea	1	91%	1	30%	uninformative
Dichelachne inaequiglumis	**1**	**9%**	**0**	**0%**	**positive**
Dichelachne sieberiana	**3**	**9%**	**0**	**0%**	**positive**
Dichondra repens	**2**	**73%**	**2**	**26%**	**positive**
Echinopogon intermedius	2	18%	2	1%	uninformative
Echinopogon ovatus	1	64%	2	15%	uninformative
Eucalyptus bicostata	4	18%	2	1%	uninformative
Eucalyptus blaxlandii	**3**	**64%**	**3**	**3%**	**positive**
Eucalyptus cypellocarpa	**3**	**64%**	**3**	**9%**	**positive**
Eucalyptus fastigata	**3**	**9%**	**0**	**0%**	**positive**
Eucalyptus laevopinea	2	18%	3	6%	uninformative
Eucalyptus radiata	4	18%	2	1%	uninformative
Euchiton involucratus	1	27%	1	3%	uninformative
Eustrephus latifolius	1	27%	1	8%	uninformative
Exocarpos strictus	1	27%	1	16%	uninformative
Galium propinquum	**2**	**64%**	**2**	**15%**	**positive**
Geitonoplesium cymosum	1	27%	1	7%	uninformative
Geranium solanderi* var. *solanderi	**2**	**64%**	**2**	**9%**	**positive**
Glycine clandestina	1	55%	2	16%	uninformative
Glycine tabacina	**2**	**45%**	**2**	**9%**	**positive**
Gonocarpus tetragynus	**2**	**36%**	**2**	**13%**	**positive**
Goodenia ovata	1	18%	1	6%	uninformative
Hakea salicifolia	3	18%	2	2%	uninformative
Hydrocotyle laxiflora	**2**	**91%**	**2**	**18%**	**positive**
Hypericum gramineum	1	27%	2	6%	uninformative
Indigofera australis	**2**	**55%**	**2**	**13%**	**positive**
Leucopogon lanceolatus	1	36%	1	11%	uninformative
Libertia paniculata	2	18%	2	1%	uninformative
Lomandra longifolia	1	91%	1	26%	uninformative
Lomatia silaifolia	2	18%	2	22%	uninformative
Luzula meridionalis	1	18%	1	0%	uninformative
Microlaena stipoides	**2**	**91%**	**2**	**26%**	**positive**
Notelaea longifolia	1	55%	1	8%	uninformative
Notelaea venosa	1	18%	1	1%	uninformative
Oxalis perennans	1	27%	1	9%	uninformative
Ozothamnus rufescens	**2**	**18%**	**0**	**0%**	**positive**
Persoonia linearis	2	18%	1	56%	uninformative
Plantago debilis	**2**	**45%**	**2**	**12%**	**positive**
Plantago gaudichaudii	3	18%	2	3%	uninformative
Poa affinis	**2**	**55%**	**2**	**13%**	**positive**
Poa labillardierei var. *labillardierei*	1	18%	2	7%	uninformative
Polyscias sambucifolia	1	36%	2	12%	uninformative
Poranthera microphylla	1	18%	1	13%	uninformative
Pteridium esculentum	**2**	**91%**	**2**	**30%**	**positive**
Ranunculus lappaceus	2	18%	2	7%	uninformative
Rubus parvifolius	1	27%	1	5%	uninformative
Scutellaria mollis	**2**	**9%**	**0**	**0%**	**positive**
Senecio linearifolius	2	27%	1	2%	uninformative
Senecio minimus	2	18%	1	2%	uninformative
Sigesbeckia orientalis subsp. *orientalis*	1	27%	2	4%	uninformative
Smilax australis	**2**	**45%**	**2**	**3%**	**positive**
Solanum prinophyllum	1	27%	1	10%	uninformative
Stellaria flaccida	**2**	**36%**	**2**	**7%**	**positive**

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Stellaria pungens	**2**	**64%**	**2**	**16%**	**positive**
Tylophora barbata	2	18%	2	3%	uninformative
Urtica incisa	1	18%	2	7%	uninformative
Veronica plebeia	**2**	**73%**	**2**	**13%**	**positive**
Viola betonicifolia* subsp. *betonicifolia	**2**	**36%**	**2**	**7%**	**positive**
Viola hederacea	**2**	**82%**	**2**	**8%**	**positive**
Wahlenbergia gracilis	1	18%	1	5%	uninformative
Xerochrysum bracteatum	2	18%	1	1%	uninformative

Statewide Class
Southern Escarpment Wet Sclerophyll Forests

Plant Community Type: Not described

Description

Wollemi Monkey Gum-Peppermint Gully Forest is a tall eucalypt forest with a fern dominated ground cover and an open to dense mid stratum of mixed mesic and sclerophyll shrubs. It occurs in gullies and protected sandstone slopes across the elevated plateaux of the northern Blue Mountains. The canopy is dominated by monkey gum (*Eucalyptus cypellocarpa*) and Sydney peppermint (*Eucalyptus piperita*), with mountain blue gum (*Eucalyptus deanei*) found at lower elevations. An open layer of small trees can include mountain cedar wattle (*Acacia elata*), black wattle (*Callicoma serratifolia*) and blueberry ash (*Elaeocarpus reticulatus*). The lower shrub layer can comprise a greater number of dry shrubs such as tea-tree (*Leptospermum* spp.), geebung (*Persoonia* spp.) and banksia (*Banksia* spp.). Ferns form an almost continuous ground cover with rainbow fern (*Calochlaena dubia)*, bracken (*Pteridium esculentum*) and gristle fern (*Blechnum cartilagineum*) all commonly recorded.

This forest occurs on deeper Narrabeen sandstone-derived soil between 600 and 850 metres above sea level and within a mean annual rainfall band of 800 to 1000 millimetres per annum. Well developed stands of the forest are found on gently sloping deep colluvial soils situated on the gully floor. In the study area the community is widespread across the southern, central and western gully systems of the sandstone ranges. Elsewhere, the forest is distributed south toward the Grose valley in the Blue Mountains.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	30 m ±12 16-50	46% ±16 25-65	*Eucalyptus piperita, Eucalyptus cypellocarpa, Angophora floribund*
Small Trees	9 m ±3 5-15	23% ±21 2-65	*Acacia elata, Elaeocarpus reticulatus*
Shrubs	3.2 m ±0.9 2.0-4.5	54% ±21 15-75	*Persoonia linearis, Leucopogon lanceolatus, Acacia saliciformis, Podolobium ilicifolium, Acacia longifolia, Lomatia silaifolia, Polyscias sambucifolia, Leptospermum polygalifolium, Pultenaea scabra, Gompholobium latifolium, Bursaria spinosa*
Ground Covers	0.9 m ±1.0 0.1-4.0	47% ±36 5-95	*Pteridium esculentum, Calochlaena dubia, Blechnum cartilagineum, Poa affinis, Microlaena stipoides var. stipoides, Dianella caerulea, Lomandra longifolia, Dichondra repens, Viola hederacea*
Vines & Climbers	N/A	N/A	*Smilax glyciphylla, Hardenbergia violacea, Cassytha pubescens, Clematis aristata, Billardiera scandens*

*Compiled from 11 of 11 sites with structural data recorded.

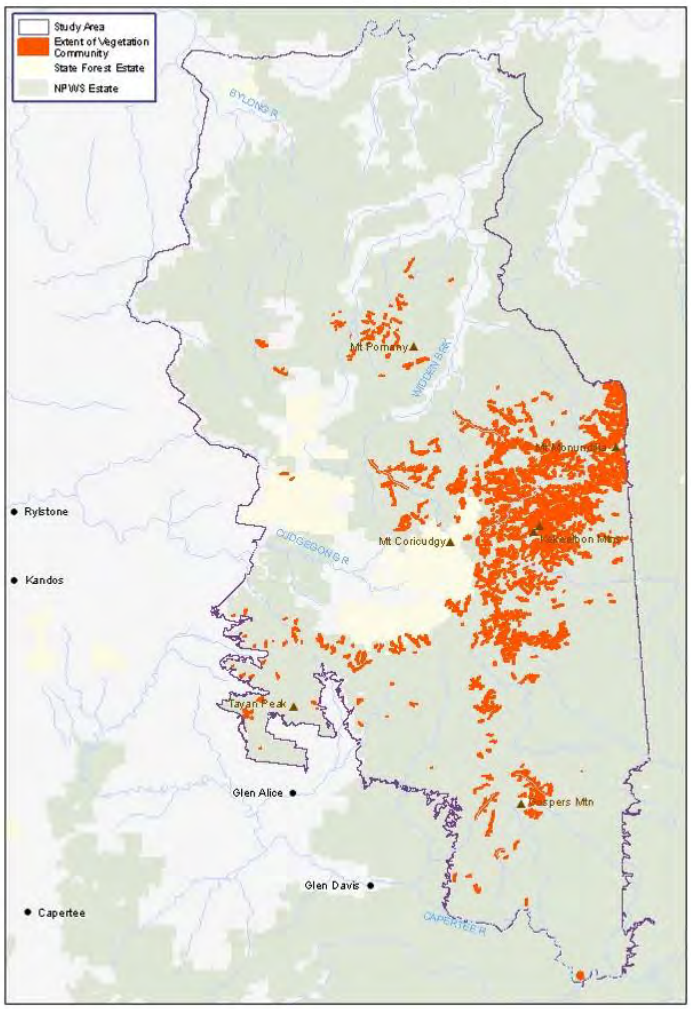
Threats

Clearing has not extensively impacted on the original distribution of this community in the region, as most is encompassed within the rugged dissected sandstone ranges of the Blue Mountains. As a result threats are limited to impacts associated with frequent high-intensity wildfires.

Conservation Status

This community is widespread within Wollemi NP and northern Blue Mountains NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	11,454-12,090 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	5808.0 ha	10,308 ha 95% of extant area
Area in state forests	61.2 ha	
Area in other tenures	12.1 ha	
Total extant area	5881.3 ha	10,881 ha



Example Locations

- Gullies near Gospers airstrip and old Army Road
- Sandstone gullies below Nullo Mountain plateau

Species Richness

Number of plots	11
Total species	190
Average species per plot	36.1 ±9.1

Known Variations

At lower elevations (550-650 metres above sea level) *Eucalyptus deanei* may be the prominent canopy species.

Relationship to Other Communities

Floristically this forest is closely related to sandstone sheltered forests across the mid elevations of the Blue Mountains sandstone plateaux. It shares many species with S_WSF20, into which it grades around 850 metres above sea level. The canopy of S_WSF20 contains montane eucalypts such as *Eucalyptus oreades* and *Eucalyptus blaxlandii*. Below 600 metres above sea level, the forest grades into *Eucalyptus deanei* forest (S_WSF10) found in deep protected canyons of the Wollemi plateau where a higher proportion of mesic species are encountered in the shrub and small tree layer.

It is also shares canopy species and several sclerophyllous shrubs with the dry sclerophyll sheltered forests (S_DSF52 and S_DSF55), into which it grades on more exposed slopes. However the mesic elements of S_WSF22 are not prominent in the dry sclerophyll forests, nor is the lush ferny ground cover.

Accuracy

Sample effort is moderate relative to the mapped area. Mapped extent relied on the interpretation of tall gully forests with a moist ferny ground cover which were dominated by *E. cypellocarpa* and/or *E. piperita* on Narrabeen sandstone. Stands dominated by *E. deanei* and situated above 600 metres above sea level were included in this map unit.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia elata	**2**	**36%**	**1**	**3%**	**positive**
Acacia filicifolia	**2**	**36%**	**2**	**5%**	**positive**
Acacia longifolia subsp. *longifolia*	3	18%	2	5%	uninformative
Acacia obtusifolia	2	18%	2	14%	uninformative
Acacia saliciformis	**3**	**55%**	**1**	**6%**	**positive**
Acacia ulicifolia	2	18%	1	11%	uninformative
Adiantum aethiopicum	2	18%	2	6%	uninformative
Amperea xiphoclada	1	27%	2	13%	uninformative
Angophora floribunda	**3**	**36%**	**2**	**16%**	**positive**
Asplenium flabellifolium	2	18%	1	11%	uninformative
Banksia spinulosa	2	18%	2	6%	uninformative
Billardiera scandens	1	45%	1	23%	uninformative
Blechnum cartilagineum	**3**	**73%**	**2**	**8%**	**positive**
Bursaria spinosa* subsp. *spinosa	**3**	**36%**	**2**	**25%**	**positive**
Calochlaena dubia	**4**	**82%**	**2**	**7%**	**positive**
Cassinia aculeata	2	18%	1	2%	uninformative
Cassinia uncata	1	18%	1	5%	uninformative
Cassytha pubescens	2	27%	1	5%	uninformative
Cissus hypoglauca	1	27%	2	4%	uninformative
Clematis aristata	**2**	**64%**	**1**	**26%**	**positive**
Comesperma volubile	**1**	**9%**	**0**	**0%**	**positive**
Dianella caerulea	1	100%	1	29%	uninformative
Dichondra repens	2	27%	2	27%	uninformative
Dicranopteris linearis* var. *linearis	**4**	**9%**	**0**	**0%**	**positive**
Doodia aspera	2	18%	2	5%	uninformative
Elaeocarpus reticulatus	1	36%	1	7%	uninformative
Entolasia stricta	2	18%	2	33%	uninformative
Eucalyptus cypellocarpa	**3**	**64%**	**3**	**9%**	**positive**
Eucalyptus deanei	4	27%	4	1%	uninformative
Eucalyptus piperita	**4**	**73%**	**3**	**14%**	**positive**
Eustrephus latifolius	1	18%	1	8%	uninformative
Gahnia sieberiana	1	36%	2	2%	uninformative
Galium propinquum	2	27%	2	16%	uninformative
Geitonoplesium cymosum	2	18%	1	7%	uninformative
Geranium potentilloides	2	18%	2	3%	uninformative
Glycine clandestina	2	18%	2	17%	uninformative
Glycine microphylla	2	18%	2	3%	uninformative
Gompholobium latifolium	2	27%	2	3%	uninformative
Gonocarpus oreophilus	**5**	**9%**	**0**	**0%**	**positive**
Gonocarpus tetragynus	**2**	**45%**	**2**	**12%**	**positive**
Gonocarpus teucrioides	**2**	**36%**	**2**	**14%**	**positive**
Hardenbergia violacea	1	36%	1	25%	uninformative
Hydrocotyle laxiflora	**2**	**36%**	**2**	**19%**	**positive**
Indigofera australis	**2**	**36%**	**2**	**14%**	**positive**
Juncus pauciflorus	**1**	**9%**	**0**	**0%**	**positive**
Kennedia rubicunda	2	27%	2	1%	uninformative
Lagenophora stipitata	2	18%	1	10%	uninformative
Leptospermum polygalifolium* subsp. *polygalifolium	**2**	**55%**	**2**	**5%**	**positive**
Leucopogon lanceolatus	1	82%	1	10%	uninformative
Lomandra confertifolia	2	18%	2	33%	uninformative
Lomandra longifolia	1	64%	1	27%	uninformative
Lomatia silaifolia	1	55%	2	21%	uninformative
Microlaena stipoides	**2**	**45%**	**2**	**27%**	**positive**
Notelaea longifolia	1	36%	1	8%	uninformative
Olearia erubescens	**1**	**9%**	**0**	**0%**	**positive**
Opercularia aspera	**2**	**36%**	**1**	**4%**	**positive**
Oplismenus aemulus	1	18%	2	2%	uninformative
Pandorea pandorana	2	18%	1	8%	uninformative
Persoonia levis	1	18%	1	9%	uninformative
Persoonia linearis	1	73%	1	54%	uninformative
Pimelea linifolia	2	27%	2	12%	uninformative
Platysace lanceolata	1	27%	2	17%	uninformative
Poa affinis	**2**	**73%**	**2**	**12%**	**positive**
Podolobium ilicifolium	**2**	**55%**	**2**	**29%**	**positive**
Polyscias sambucifolia	**2**	**73%**	**1**	**11%**	**positive**
Pteridium esculentum	**2**	**100%**	**2**	**30%**	**positive**
Pultenaea scabra	**2**	**36%**	**2**	**6%**	**positive**
Rubus moluccanus	1	18%	1	1%	uninformative
Smilax glyciphylla	1	45%	1	8%	uninformative
Solanum prinophyllum	1	27%	1	10%	uninformative
Stellaria flaccida	2	18%	2	7%	uninformative
Veronica plebeia	2	27%	2	14%	uninformative
Viola hederacea	1	45%	2	9%	uninformative

Statewide Class North Coast Wet Sclerophyll Forests

PVP Biometric Type: Not described

Description

Blue Mountains Diatreme Moist Forest is a tall eucalypt forest with an herbaceous, ferny and viney understorey found on distinctive sunken volcanic landforms dotted across the Blue Mountains plateaux. These landforms are variously known as diatremes, holes or craters and form small open amphitheatre-like features in the headwaters of sandstone gullies. They are remnants of old volcanic vents that comprise a mix of basalt and sandstone rocks that erode to produce a fertile clay soil. The canopy is usually dominated by one of two blue gums (*Eucalyptus deanei* or *Eucalyptus saligna*). At higher elevations some cool-climate eucalypts such as monkey gum (*Eucalyptus cypellocarpa*) and ribbon gum (*Eucalyptus viminalis*) may also be recorded. The understorey can be variable in density, though is commonly a waist-high tangle of small mesic shrubs, ferns and vines. The shrub layer can include species such as *Coprosma quadrifida* and *Myrsine variabilis.* More consistent is a high diversity of ferns ranging from bracken (*Pteridium esculentum*) to smaller sickle ferns such as *Pellaea* spp. Small herbs, grasses and climbers provide a dense ground cover.

Diatremes are relatively common, though are small and isolated in distribution, throughout the Blue Mountains. Variation in floristic composition in diatremes occurs in response to elevation and climatic variables. This particular diatreme forest is restricted to elevations between 250 and 600 metres above sea level where rainfall lies between an average of 850 and 1200 millimetres per annum. In the study area the forest is scattered patchily across the Wollemi Creek and upper Blackwattle Creek catchment. Elsewhere, it is found further to the east in Wollemi NP and south in Blue Mountains NP.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	42 m ±8 35-50	43% ±16 25-55	*Eucalyptus deanei, Angophora floribunda*
Small Trees and Shrubs	7 m ±5 2-10	33% ±25 10-60	*Acacia elata, Acacia saliciformis, Bursaria spinosa, Coprosma quadrifida, Notelaea longifolia, Pittosporum revolutum*
Ground Covers	1.0 m ±0.5 0.6-1.5	95% ±5 90-100	*Pteridium esculentum, Stellaria flaccida, Echinopogon ovatus, Geranium homeanum, Hydrocotyle laxiflora, Adiantum formosum, Blechnum cartilagineum, Oplismenus imbecillis, Adiantum aethiopicum*
Vines & Climbers	N/A	N/A	*Clematis aristata, Rubus parvifolius, Tylophora barbata, Billardiera scandens, Geitonoplesium cymosum*

*Compiled from 3 of 3 sites with structural data recorded.

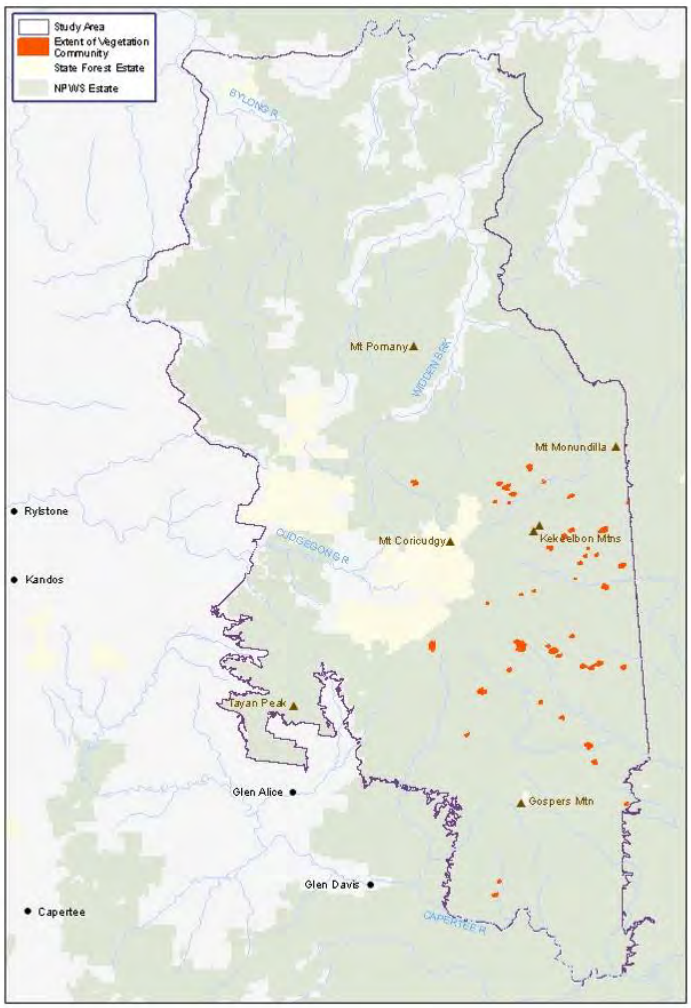
Threats

Despite the relative isolation of many of the diatremes many show evidence of past rough grazing, with regrowth stands and partially cleared areas clearly visible on aerial photography. These diatremes afforded palatable grasses and a ready supply of freshwater to stockmen driving mustering cattle. Visitation to a selection of these forests suggests that dieback is prevalent amongst stands of blue gum (Macqueen 2005).

Conservation Status

These forests are included within the Blue Mountains and Wollemi national parks.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	Not available
Estimated percentage cleared	Not available	Not available
Area in formal conservation reserves	320.2 ha	Not available
Area in state forests	0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	320.2 ha	346 ha



Example Locations

- Old Wirraba Trail
- Diatremes below Hunter Main Trail south of Kekeelbon Mountains

Species Richness

Number of plots	3
Total species	82
Average species per plot	35.3 ±11.0

Known Variations

No variations recognised.

Relationship to Other Communities

The classification of this forest community draws on the unique landform in sandstone environments more than its floristic distinctiveness. Floristically this forest is closely related to other wet sclerophyll forests of the Blue Mountains-Wollemi area (e.g. S_WSF22, S_WSF10). Those forests typically support a more diverse and dense mesic shrub layer and include trees such as *Syncarpia glomulifera* and *Eucalyptus piperita* in the canopy. They are also distinguished by far fewer herbs and grasses amongst the ground cover.

Spatially this tall diatreme forest may grade into Sydney Hinterland Warm Temperate Rainforest (S_RF12) as gullies narrow downstream of diatremes. Sheltered sandstone forest (S_DSF52) occurs above diatremes.

Accuracy

Sampling effort is moderate. Map unit boundaries relied on interpretation of the distinctive amphitheatre land forms that typify diatremes. Larger diatremes present a distinctive photo pattern and can be identified using stereoscopic aerial photography. Some smaller diatremes may be overlooked and subsumed with the sandstone gully forest (S_WSF10). Crown signatures of *E. deanei*, together with elevation of less than 600 metres above sea level, were used to separate the forests found on diatremes.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia elata	**3**	**67%**	**2**	**4%**	**positive**
Acacia parramattensis	5	33%	2	26%	uninformative
Acmena smithii	3	33%	3	6%	uninformative
Adiantum aethiopicum	**3**	**67%**	**2**	**15%**	**positive**
Adiantum formosum	1	33%	2	1%	uninformative
Allocasuarina torulosa	2	33%	2	16%	uninformative
Angophora costata	2	33%	2	45%	negative
Billardiera scandens	1	33%	1	44%	uninformative
Blechnum cartilagineum	**5**	**67%**	**2**	**11%**	**positive**
Blechnum nudum	2	33%	2	1%	uninformative
Breynia oblongifolia	1	67%	1	8%	uninformative
Callicoma serratifolia	**4**	**67%**	**2**	**5%**	**positive**
Calochlaena dubia	**3**	**67%**	**2**	**9%**	**positive**
Carex appressa	1	33%	2	3%	uninformative
Ceratopetalum apetalum	2	33%	4	5%	uninformative
Cissus hypoglauca	**3**	**100%**	**1**	**8%**	**positive**
Claoxylon australe	1	33%	2	1%	uninformative
Clematis aristata	2	33%	1	13%	uninformative
Clematis glycinoides var. *glycinoides*	2	33%	2	8%	uninformative
Clerodendrum tomentosum	1	33%	1	4%	uninformative
Coprosma quadrifida	**1**	**33%**	**0**	**0%**	**positive**
Cyathea australis	2	33%	1	2%	uninformative
Cyathea leichhardtiana	1	33%	1	0%	uninformative
Desmodium varians	**2**	**67%**	**2**	**3%**	**positive**
Dianella caerulea	**2**	**67%**	**1**	**48%**	**positive**
Doodia aspera	**3**	**67%**	**2**	**10%**	**positive**
Doryphora sassafras	1	33%	4	3%	uninformative
Elaeocarpus reticulatus	**2**	**100%**	**1**	**9%**	**positive**
Entolasia marginata	2	33%	2	13%	uninformative
Eucalyptus deanei	**3**	**100%**	**3**	**8%**	**positive**
Eucalyptus piperita	4	33%	2	37%	negative
Eustrephus latifolius	**2**	**100%**	**1**	**18%**	**positive**
Exocarpos strictus	1	33%	1	25%	uninformative
Gahnia clarkei	1	33%	2	3%	uninformative
Gahnia melanocarpa	1	33%	1	2%	uninformative
Galium binifolium	2	33%	2	12%	uninformative
Geitonoplesium cymosum	**2**	**67%**	**1**	**9%**	**positive**
Geranium potentilloides var. *potentilloides*	1	33%	2	0%	uninformative
Geranium solanderi var. *solanderi*	1	33%	2	1%	uninformative
Gonocarpus teucrioides	1	33%	1	11%	uninformative
Goodenia ovata	1	67%	2	10%	uninformative
Gymnostachys anceps	1	33%	1	3%	uninformative
Hibbertia dentata	**2**	**67%**	**2**	**4%**	**positive**
Hydrocotyle laxiflora	2	33%	2	14%	uninformative
Hydrocotyle peduncularis	2	33%	2	5%	uninformative
Hymenophyllum cupressiforme	2	33%	2	3%	uninformative
Imperata cylindrica	1	33%	2	11%	uninformative
Indigofera australis	1	67%	2	13%	uninformative
Lagenophora stipitata	**2**	**67%**	**2**	**15%**	**positive**
Lepidosperma laterale	1	33%	1	40%	uninformative
Leucopogon lanceolatus	1	33%	1	22%	uninformative
Libertia paniculata	1	67%	2	2%	uninformative
Lomandra longifolia	1	33%	1	46%	uninformative
Lomatia silaifolia	1	33%	1	39%	uninformative
Maytenus silvestris	1	33%	1	11%	uninformative
Myrsine variabilis	2	33%	2	11%	uninformative
Notelaea longifolia	1	100%	1	12%	uninformative
Oplismenus aemulus	**2**	**67%**	**2**	**1%**	**positive**
Oplismenus imbecillis	2	33%	2	20%	uninformative
Pandorea pandorana	**2**	**67%**	**1**	**8%**	**positive**
Panicum effusum	2	33%	3	1%	uninformative
Pittosporum revolutum	1	67%	1	9%	uninformative
Pittosporum undulatum	1	33%	2	6%	uninformative
Plectranthus parviflorus	1	67%	2	5%	uninformative
Poa affinis	2	33%	2	15%	uninformative
Polyscias sambucifolia	**2**	**67%**	**1**	**23%**	**positive**
Polystichum australiense	1	33%	2	3%	uninformative
Pratia purpurascens	2	67%	2	37%	constant
Pseuderanthemum variabile	2	33%	2	7%	uninformative
Pteridium esculentum	1	33%	2	42%	negative
Pultenaea flexilis	1	33%	2	19%	uninformative
Rubus moluccanus var. *trilobus*	1	67%	1	4%	uninformative
Rubus parvifolius	1	33%	2	4%	uninformative
Sarcopetalum harveyanum	1	67%	1	4%	uninformative
Scutellaria mollis	**1**	**33%**	**0**	**0%**	**positive**

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Senecio amygdalifolius	**1**	**33%**	**0**	**0%**	**positive**
Senecio linearifolius	1	33%	1	1%	uninformative
Sigesbeckia orientalis subsp. *orientalis*	1	33%	1	9%	uninformative
Smilax australis	**3**	**100%**	**2**	**19%**	**positive**
Smilax glyciphylla	1	33%	1	12%	uninformative
Solanum prinophyllum	1	33%	1	14%	uninformative
Stephania japonica var. *discolor*	1	67%	1	3%	uninformative
Sticherus flabellatus var. *flabellatus*	3	33%	2	3%	uninformative
Syncarpia glomulifera subsp. *glomulifera*	3	67%	2	44%	constant
Todea barbara	**2**	**67%**	**1**	**2%**	**positive**
Tristaniopsis collina	1	33%	1	5%	uninformative
Tristaniopsis laurina	**3**	**67%**	**2**	**3%**	**positive**
Tylophora barbata	**2**	**67%**	**2**	**11%**	**positive**
Viola hederacea	**2**	**100%**	**2**	**19%**	**positive**
Zieria cytisoides	1	33%	1	0%	uninformative

Statewide Class
Southern Tableland Wet Sclerophyll Forests

Plant Community Type: Ribbon Gum - Snow Gum grassy forest on damp flats, eastern South Eastern Highlands

Description

Central Tableland Flats Snow Gum-Ribbon Gum Forest is a moderately tall open eucalypt forest with a very grassy and herbaceous ground cover. It is found on clayey loams associated with open depressions and flats within wide tableland valleys. These form frost hollows that drain cold air along the valley. As a result the community is characterised by cold-climate eucalypt species, many of which can tolerate intermittent waterlogging and freezing. The structure of the canopy may be multi-layered with taller ribbon gums (*Eucalyptus viminalis*), mountain gum (*Eucalyptus dalrympleana*) and candlebark (*Eucalyptus rubida*) overshadowing shorter snow gum (*Eucalyptus pauciflora*), black sally (*Eucalyptus stellulata*) or broad-leaved peppermint (*Eucalyptus dives*). The shrub layer is mostly sparse to absent with scattered wattles and regenerating eucalypts occasionally found. Tussock grasses (*Poa* spp.) form the prominent ground cover above lower-growing weeping grass (*Microlaena stipoides*) and a diverse combination of moisture-loving herbs.

In the Sydney Basin Bioregion this community is most extensive above 900 metres above sea level on the western side of the Blue Mountains, although it does extend into the southern highlands and southern tablelands (Tozer et al. 2010). It is recorded at lower elevations down to 700 metres above sea level where cool air rests in deeper valleys. It is distributed within a rainfall gradient between an average of 750 and 900 millimetres per annum. It is found on a wide range of fine-grained sediments sourced from Permian, Devonian and Ordovician-aged rocks. In the study area it is restricted to low-lying flats around Dunns Swamp in the Cudgegong valley.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	23 m ±6 18-27	30% ±7 25-35	*Eucalyptus pauciflora, Eucalyptus rubida, Eucalyptus viminalis*
Shrubs	2.7 m ±1.8 1.4-4.0	5% ±0 5-5	*Eucalyptus stellulata, Leptospermum juniperinum, Persoonia myrtilloides*
Ground Covers	0.5 m ±0.4 0.1-0.9	35% ±24 15-70	*Microlaena stipoides* var. *stipoides, Dichondra repens, Hydrocotyle laxiflora, Imperata cylindrica var. major, Poa labillardierei* var. *labillardierei, Cyperus lucidus, Pteridium esculentum, Veronica plebeia*
Vines & Climbers	N/A	N/A	*Glycine clandestina*

*Compiled from 2 of 2 sites with structural data recorded.

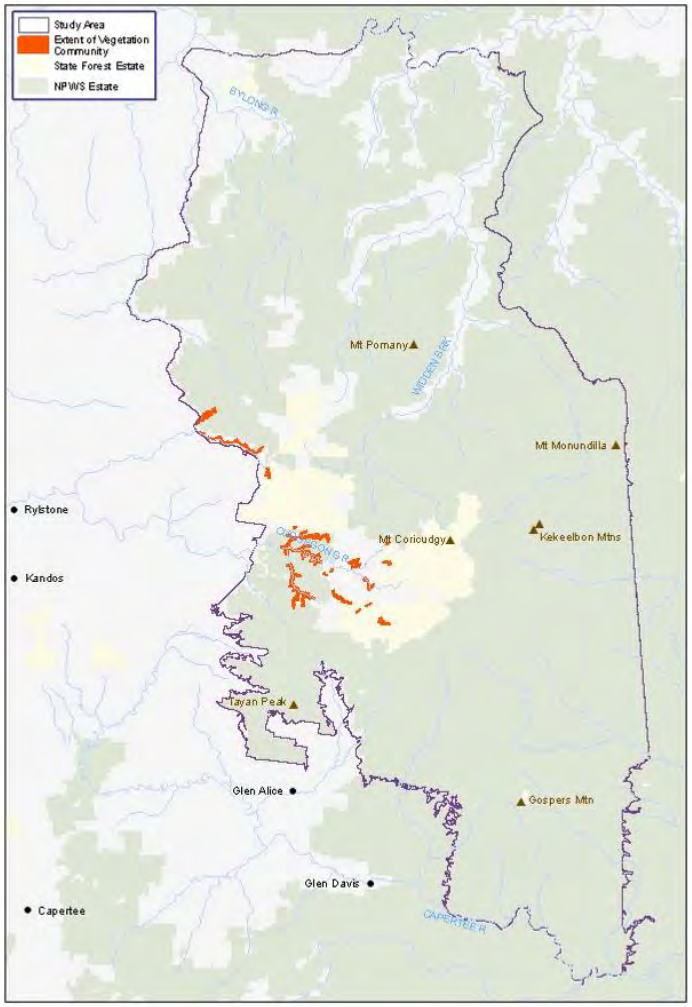
Threats

Threats to this community are severe. Past clearing has diminished a large proportion of the pre-European cover and remnants are disturbed and fragmented. Tozer et al. (2010) suggest that over 70 per cent of this forest is likely to have been cleared across southern New South Wales. Remaining stands are often fragmented, isolated and subject to continued agricultural land use pressures. This can result in weed invasion and small-scale clearing.

Conservation Status

This forest is a component of Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions – a TEC listed under the TSC Act. It is poorly represented in the reserve system with small areas found in Marrangaroo NP and small areas here mapped in Wollemi NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	5493-9612 ha
Estimated percentage cleared	Not available	65-80%
Area in formal conservation reserves	165.2 ha	323 ha 17% of extant area
Area in state forests	36.8 ha	Not available
Area in other tenures	134.3 ha	Not available
Total extant area	336.4 ha	1922 ha



Example Locations

- Rollen Creek, Cudgegong valley

Species Richness

Number of plots	2
Total species	57
Average species per plot	33.5 ±6.4

Known Variations

Floristic composition of the understorey is consistent across the range of the community, though some stands will have a greater shrub cover than others. Variation in canopy species occurs outside of the study area; black sallee (*Eucalyptus stellulata*) is more common across the southern tablelands.

Relationship to Other Communities

Floristically this community is related to the grassy eucalypt forests of the southern tablelands of New South Wales. Within the study area it shares many grass and herb species with the sheltered basalt forest on the high part of Nullo Mountain (S_WSF29). These are easily separable using landform (that unit (S_WSF29) occurs on a high basalt plateau while this unit (S_WSF24) is a valley flat forest) as well as canopy species. S_WSF29 includes silver-top stringybark (*E. laevopinea*) which is not found in S_WSF24.

Spatially this forest grades into tableland swamps (S_FrW16 and S_FrW17) as soils become less well drained.

Accuracy

The community is described by a two sites although the community is highly restricted in the study area. Map boundaries were drawn from the identification of open grassy woodlands found on depressions in the Cudgegong valley. No other valleys in the study area expose Permian sediments at elevations above 600 metres above sea level.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia lunata	**1**	**50%**	**0**	**0%**	**positive**
Aristida ramosa	**3**	**50%**	**2**	**11%**	**positive**
Aristida vagans	1	50%	2	7%	uninformative
Austrostipa verticillata	1	50%	2	3%	uninformative
Brachyloma daphnoides	1	50%	1	13%	uninformative
Carex inversa	**2**	**50%**	**1**	**3%**	**positive**
Cyperus lucidus	**2**	**50%**	**0**	**0%**	**positive**
Daucus glochidiatus	1	50%	2	8%	uninformative
Desmodium varians	1	100%	2	18%	uninformative
Dichelachne micrantha	1	50%	1	8%	uninformative
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Dillwynia rudis	1	50%	2	3%	uninformative
Echinopogon caespitosus	**2**	**50%**	**2**	**3%**	**positive**
Echinopogon ovatus	**2**	**50%**	**2**	**16%**	**positive**
Entolasia stricta	1	50%	2	32%	uninformative
Eucalyptus pauciflora	**3**	**100%**	**3**	**1%**	**positive**
Eucalyptus rubida* subsp. *rubida	**4**	**100%**	**1**	**0%**	**positive**
Eucalyptus stellulata	**2**	**50%**	**0**	**0%**	**positive**
Eucalyptus viminalis	**4**	**100%**	**3**	**8%**	**positive**
Galium propinquum	1	50%	2	16%	uninformative
Geranium solanderi* var. *solanderi	**2**	**50%**	**2**	**11%**	**positive**
Glycine clandestina	1	50%	2	17%	uninformative
Gonocarpus tetragynus	**2**	**50%**	**2**	**13%**	**positive**
Goodenia hederacea* subsp. *hederacea	**2**	**50%**	**2**	**8%**	**positive**
Hardenbergia violacea	1	50%	1	25%	uninformative
Hibbertia circumdans	1	50%	1	13%	uninformative
Hibbertia pedunculata	1	50%	1	0%	uninformative
Hovea linearis	1	50%	1	8%	uninformative
Hydrocotyle laxiflora	**2**	**100%**	**2**	**19%**	**positive**
Hypericum gramineum	**2**	**50%**	**2**	**6%**	**positive**
Imperata cylindrica	**2**	**100%**	**1**	**2%**	**positive**
Isachne globosa	1	50%	3	0%	uninformative
Juncus australis	1	50%	4	0%	uninformative
Juncus continuus	**2**	**100%**	**1**	**0%**	**positive**
Leptospermum juniperinum	**2**	**50%**	**0**	**0%**	**positive**
Lomandra confertifolia	**2**	**50%**	**2**	**33%**	**positive**
Lomandra longifolia	**2**	**50%**	**1**	**28%**	**positive**
Lomandra multiflora subsp. *multiflora*	1	50%	1	25%	uninformative
Melicytus dentatus	1	50%	1	5%	uninformative
Microlaena stipoides	**3**	**100%**	**2**	**27%**	**positive**
Oxalis perennans	1	50%	1	10%	uninformative
Persoonia myrtilloides	1	50%	1	6%	uninformative
Poa labillardierei* var. *labillardierei	**5**	**50%**	**1**	**7%**	**positive**
Pratia purpurascens	1	50%	2	1%	uninformative
Pteridium esculentum	**2**	**50%**	**2**	**32%**	**positive**
Rubus parvifolius	1	50%	1	6%	uninformative
Stellaria pungens	**2**	**50%**	**2**	**17%**	**positive**
Stylidium graminifolium	**2**	**50%**	**1**	**3%**	**positive**
Themeda australis	**2**	**50%**	**1**	**6%**	**positive**
Veronica plebeia	**2**	**100%**	**2**	**14%**	**positive**
Viola betonicifolia subsp. *betonicifolia*	1	50%	2	7%	uninformative
Viola hederacea	1	50%	2	10%	uninformative
Wahlenbergia gracilis	1	50%	1	5%	uninformative

Statewide Class Southern Tableland Wet Sclerophyll Forests

Plant Community Type: Not described

Description

Central Tableland Ribbon Gum-Apple Gully Forest is a tall eucalypt forest with a moderate cover of shrubs and a generous moist ground layer. It is found on narrow alluvial deposits situated at the base of major gorges and valleys below the plateaux of the western Blue Mountains. Tall ribbon gums (*Eucalyptus viminalis*) dominate the canopy, often with lower-growing rough-barked apple (*Angophora floribunda*) and grey gum (*Eucalyptus punctata*). Many other eucalypts are recorded less frequently. Heavier clay soils carry Blakely's red gum (*Eucalyptus blakelyi*) and yellow box (*Eucalyptus melliodora*). Sandier deposits on minor terraces feature Sydney peppermint (*Eucalyptus piperita*) and stringybarks such as *Eucalyptus cannonii*. A patchy cover of taller species such as wattles (*Acacia* spp.) and she-oaks (*Allocasuarina* spp.) sit well below the height of the eucalypts. Shrubs such as blackthorn (*Bursaria spinosa*) and coffee bush (*Breynia oblongifolia*), together with typical riverbank species such as tea-trees (*Leptospermum* spp.) and tree violet (*Melicytus dentatus*), form an open waist-high cover. The ground layer comprises a mix of bracken (*Pteridium esculentum*), weeping grass (*Microlaena stipoides*), small herbs and twiners.

This forest is associated with the major riparian systems that drain the major elevated sandstone plateaux between the Wolgan Valley and Bylong. It spans an elevation range of between 490 and 800 metres above sea level in areas receiving between 650 and 800 millimetres of rainfall per annum on average. These relatively dry and cool environments are found along the western boundary of Wollemi NP on the drainage lines that flow westwards onto surrounding private land. The Cudgegong valley and northern Nullo Mountain support the most extensive patches in the study area.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	30 m ±8 20-40	37% ±22 15-65	*Angophora floribunda, Eucalyptus viminalis, Eucalyptus cypellocarpa, Eucalyptus punctata, Eucalyptus piperita*
Small Trees	7 m ±3 5-12	30% ±25 3-55	*Acacia filicifolia, Acacia parramattensis, Allocasuarina torulosa, Acacia parvipinnula, Acacia implexa*
Shrubs	2. 1m ±0.8 1.5 – 3.0	27% ±30 2-65	*Solanum brownii, Breynia oblongifolia, Bursaria spinosa, Hymenanthera dentata, Indigofera australis*
Ground Covers	0.7 m ±0.4 0.2-1.3	49% ±34 15-95	*Pteridium esculentum, Dichondra repens, Galium propinquum, Lomandra longifolia, Microlaena stipoides, Stellaria flaccida, Urtica incisa, Adiantum formosum, Calochlaena dubia, Echinopogon ovatus, Geranium homeanum, Hydrocotyle laxiflora, Oxalis perennans, Solanum prinophyllum*
Vines & Climbers	N/A	N/A	*Glycine clandestina, Clematis* spp., *Billardiera scandens*

*Compiled from 9 of 9 sites with structural data recorded.

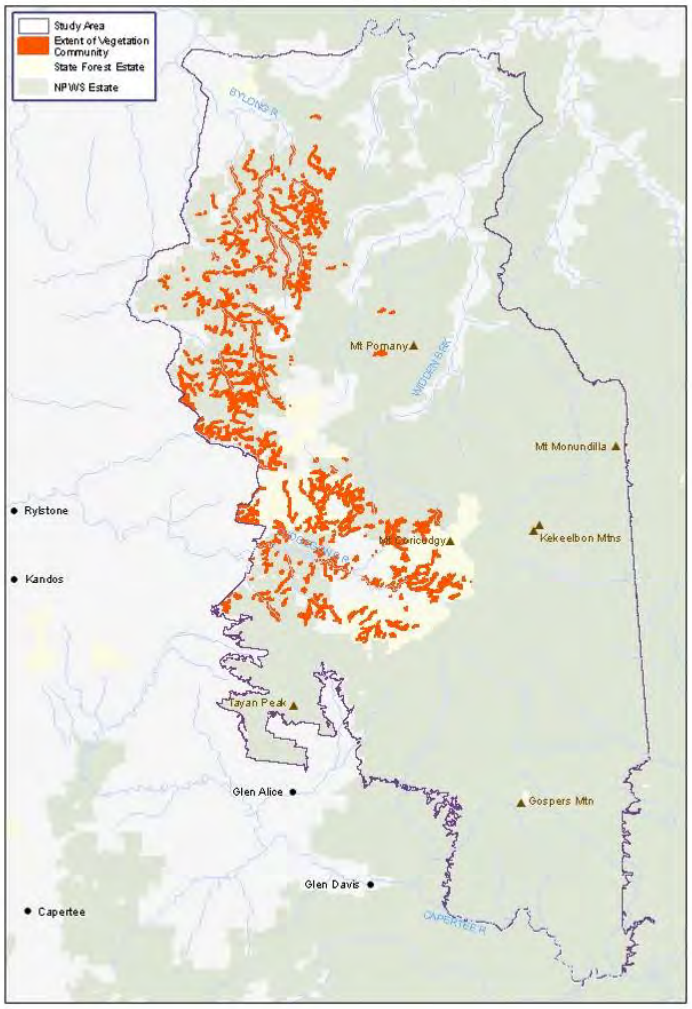
Threats

Proximity to freshwater, level ground and palatable grasses has seen large areas of this forest cleared from the major riparian systems of the Wolgan, Cudgegong and Rylstone valleys. The major elevated valleys and gorges that penetrate the sandstone plateau have been used for rough grazing despite the remoteness. Localised infestations of exotic flora species are found within old yards and along stream banks.

Conservation Status

This community occurs in Wollemi NP and Gardens of Stone NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	8126-18961 ha
Estimated percentage cleared	Not available	30-70%
Area in formal conservation reserves	2953.5 ha	3103 ha 55% of extant area
Area in state forests	952.5 ha	Not available
Area in other tenures	640.4	Not available
Total extant area	4546.4 ha	5688 ha



Example Locations

- Upper Bylong River
- Cudgegong valley

Species Richness

Number of plots	9
Total species	187
Average species per plot	35.3 ±9.1

Known Variations

The forest spans a range of landscapes from open valley flats to alluviums at the base of narrow gorges. This results in variation in the dominance of eucalypt species and in understorey characteristics. *Eucalyptus viminalis* is very common near river banks with *Angophora floribunda* common though not dominant. Wider flats can include *Eucalyptus melliodora* and *Eucalyptus blakelyi,* sometimes with trees more commonly associated with sandstone habitats such as *Eucalyptus punctata*. Stands in narrow gorges can feature a greater proportion of mesic shrubs as a result of the shelter provided by the clifflines. Less sandy soils feature a grassier ground cover.

Relationship to Other Communities

The forest is part of the complex of alluvium forests found in the dry and cool environments of the Sydney basin. However, floristically it has a close relationship with tall forests found on transitional basalt soils (S_WSF21) owing to the mixed ferny and herbaceous ground covers. These types are easily separable based on habitat. Spatially the forest can grade into stands of *Casuarina cunninghamiana* (S_FoW13) on the riverbanks of larger creek systems. On elevated wide valley floors cold air sinks form along the riparian strips. These areas carry S_WSF24 a lower open forest with a distinctive cover of tussock grass (*Poa* spp.) and few shrubs. With decreasing altitude the forest grades into S_FoW19 as elevation falls below 450 metres above sea level. There the prominence of tableland eucalypts such as *Eucalyptus viminalis* diminishes and the forest becomes a lower, grassier woodland with dry shrubs.

Accuracy

Sample density is high, though localised and not evenly spread across the study area. Further sampling on private lands is required. Map domains are based on the elevation and rainfall parameters of sample data. Map unit boundaries are drawn from the interpretation of tall forests on alluvium dominated by *Eucalyptus viminalis* and associated tableland species.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia buxifolia subsp. *buxifolia*	1	11%	1	12%	uninformative
Acacia dawsonii	**2**	**11%**	**0**	**0%**	**positive**
Acacia filicifolia	**3**	**44%**	**2**	**5%**	**positive**
Acacia implexa	1	11%	1	5%	uninformative
Acacia obliquinervia	2	11%	1	5%	uninformative
Acacia paradoxa	2	11%	2	4%	uninformative
Acacia parramattensis	4	22%	2	3%	uninformative
Acacia parvipinnula	4	11%	2	1%	uninformative
Adiantum aethiopicum	2	11%	2	6%	uninformative
Adiantum formosum	2	33%	3	1%	uninformative
Ajuga australis	1	22%	1	8%	uninformative
Allocasuarina torulosa	3	22%	1	2%	uninformative
Amperea xiphoclada	2	11%	1	13%	uninformative
Angophora floribunda	**3**	**78%**	**2**	**15%**	**positive**
Austrodanthonia racemosa var. *racemosa*	2	11%	2	5%	uninformative
Banksia marginata	2	22%	1	2%	uninformative
Billardiera scandens	1	22%	1	24%	uninformative
Brachychiton populneus subsp. *populneus*	1	11%	1	6%	uninformative
Brachyloma daphnoides	2	22%	1	13%	uninformative
Brachyscome gracilis	**2**	**11%**	**0**	**0%**	**positive**
Brachyscome multifida	1	11%	1	2%	uninformative
Brachyscome spathulata	2	11%	2	0%	uninformative
Breynia oblongifolia	2	22%	1	3%	uninformative
Bursaria spinosa subsp. *spinosa*	2	33%	2	25%	uninformative
Callistemon citrinus	1	11%	2	3%	uninformative
Calochlaena dubia	2	33%	3	8%	uninformative
Carex incomitata	1	11%	2	1%	uninformative
Carex inversa	1	33%	2	2%	uninformative
Cassinia aculeata	2	11%	1	3%	uninformative
Casuarina cunninghamiana subsp. *cunninghamiana*	1	11%	4	1%	uninformative
Celastrus australis	**1**	**11%**	**0**	**0%**	**positive**
Centella asiatica	1	11%	2	1%	uninformative
Cheilanthes sieberi subsp. *sieberi*	1	11%	1	19%	uninformative
Choretrum sp. *A*	1	11%	1	7%	uninformative
Claoxylon australe	1	11%	1	0%	uninformative
Clematis aristata	1	56%	1	26%	uninformative
Correa reflexa	1	11%	1	8%	uninformative
Crassula sieberiana	1	22%	1	6%	uninformative
Cymbonotus lawsonianus	1	11%	2	4%	uninformative
Cynoglossum australe	2	22%	2	4%	uninformative
Cynoglossum suaveolens	2	11%	1	1%	uninformative
Daucus glochidiatus	2	11%	2	8%	uninformative
Desmodium varians	**2**	**67%**	**2**	**18%**	**positive**
Dianella caerulea	1	11%	1	32%	uninformative
Dianella revoluta var. *revoluta*	1	11%	1	28%	uninformative
Dichondra repens	**2**	**89%**	**2**	**26%**	**positive**
Digitaria diffusa	2	11%	2	1%	uninformative
Dodonaea triquetra	1	11%	2	4%	uninformative
Echinopogon caespitosus	2	22%	2	3%	uninformative
Echinopogon ovatus	**2**	**67%**	**2**	**15%**	**positive**
Einadia hastata	1	11%	2	3%	uninformative
Elaeocarpus reticulatus	1	11%	1	8%	uninformative
Entolasia marginata	2	11%	2	2%	uninformative
Entolasia stricta	2	22%	2	33%	uninformative
Eucalyptus blakelyi	3	11%	3	2%	uninformative
Eucalyptus bridgesiana	3	11%	2	0%	uninformative
Eucalyptus cypellocarpa	4	22%	3	10%	uninformative
Eucalyptus dalrympleana subsp. *dalrympleana*	3	11%	2	0%	uninformative
Eucalyptus laevopinea	2	11%	3	6%	uninformative
Eucalyptus piperita	3	22%	3	15%	uninformative
Eucalyptus praecox	1	11%	3	1%	uninformative
Eucalyptus punctata	1	11%	3	33%	uninformative
Eucalyptus viminalis	**3**	**89%**	**3**	**7%**	**positive**
Euchiton gymnocephalus	2	11%	2	2%	uninformative
Euchiton involucratus	2	11%	1	3%	uninformative
Euchiton sphaericus	1	22%	1	2%	uninformative
Eustrephus latifolius	1	22%	1	8%	uninformative
Exocarpos cupressiformis	1	11%	1	6%	uninformative
Exocarpos strictus	2	11%	1	17%	uninformative
Ficus coronata	1	11%	1	2%	uninformative
Galium propinquum	**2**	**78%**	**2**	**15%**	**positive**
Geitonoplesium cymosum	1	11%	1	7%	uninformative
Geranium homeanum	2	22%	2	5%	uninformative
Geranium potentilloides	2	22%	2	3%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Glycine clandestina	**2**	**44%**	**2**	**17%**	**positive**
Glycine microphylla	2	11%	2	4%	uninformative
Glycine tabacina	2	22%	2	10%	uninformative
Gonocarpus tetragynus	1	11%	2	13%	uninformative
Gonocarpus teucrioides	2	11%	2	15%	uninformative
Goodenia ovata	1	11%	1	6%	uninformative
Hakea microcarpa	2	11%	1	0%	uninformative
Hardenbergia violacea	1	22%	1	26%	uninformative
Hibbertia circumdans	1	11%	1	14%	uninformative
Hibbertia monogyna	2	11%	1	3%	uninformative
Hydrocotyle laxiflora	2	33%	2	19%	uninformative
Hydrocotyle sibthorpioides	2	11%	2	2%	uninformative
Hypericum gramineum	2	33%	2	6%	uninformative
Imperata cylindrica	1	11%	1	3%	uninformative
Indigofera australis	2	22%	2	14%	uninformative
Lagenophora gracilis	2	11%	1	2%	uninformative
Lagenophora stipitata	1	33%	1	9%	uninformative
Leptospermum continentale	2	11%	2	3%	uninformative
Leptospermum polyanthum	3	11%	3	1%	uninformative
Leptospermum polygalifolium subsp. *polygalifolium*	1	11%	2	6%	uninformative
Leucopogon muticus	1	22%	2	24%	uninformative
Leucopogon virgatus	1	11%	2	1%	uninformative
Lomandra confertifolia	2	11%	2	33%	uninformative
Lomandra filiformis	1	22%	2	18%	uninformative
Lomandra glauca	1	11%	2	30%	uninformative
Lomandra longifolia	**2**	**67%**	**1**	**27%**	**positive**
Lomandra multiflora subsp. *multiflora*	1	22%	1	25%	uninformative
Lomatia silaifolia	1	11%	2	22%	uninformative
Luzula flaccida	1	11%	1	2%	uninformative
Marsdenia flavescens	**1**	**11%**	**0**	**0%**	**positive**
Melichrus urceolatus	2	11%	1	14%	uninformative
Melicytus dentatus	3	22%	1	5%	uninformative
Mentha satureioides	2	11%	2	1%	uninformative
Microlaena stipoides	**3**	**67%**	**2**	**27%**	**positive**
Monotoca scoparia	4	22%	2	24%	uninformative
Myrsine howittiana	1	11%	1	2%	uninformative
Notelaea longifolia	1	33%	1	8%	uninformative
Notelaea venosa	1	11%	1	1%	uninformative
Opercularia aspera	1	11%	1	4%	uninformative
Opercularia diphylla	1	11%	1	3%	uninformative
Oplismenus aemulus	1	11%	2	2%	uninformative
Oplismenus imbecillis	2	22%	2	4%	uninformative
Oxalis perennans	**2**	**44%**	**1**	**9%**	**positive**
Pandorea pandorana	1	11%	1	9%	uninformative
Parsonsia straminea	1	11%	1	1%	uninformative
Passiflora cinnabarina	1	11%	1	1%	uninformative
Patersonia sericea	1	11%	2	20%	uninformative
Pellaea falcata	4	22%	2	6%	uninformative
Persoonia linearis	1	44%	1	55%	uninformative
Persoonia myrtilloides	3	11%	1	6%	uninformative
Pittosporum undulatum	1	11%	1	4%	uninformative
Plantago debilis	2	11%	2	13%	uninformative
Plantago gaudichaudii	2	11%	2	3%	uninformative
Poa affinis	1	11%	2	14%	uninformative
Podolobium ilicifolium	1	11%	2	30%	uninformative
Polyscias sambucifolia	1	11%	2	12%	uninformative
Pomaderris brunnea	**2**	**11%**	**0**	**0%**	**positive**
Pomaderris ferruginea	1	11%	1	1%	uninformative
Pomax umbellata	1	11%	2	34%	uninformative
Poranthera microphylla	**2**	**67%**	**1**	**12%**	**positive**
Pteridium esculentum	**3**	**78%**	**2**	**31%**	**positive**
Ranunculus lappaceus	2	33%	2	6%	uninformative
Rubus parvifolius	1	11%	1	6%	uninformative
Sambucus gaudichaudiana	1	11%	1	0%	uninformative
Senecio linearifolius	1	11%	2	3%	uninformative
Senecio microbasis	**2**	**11%**	**0**	**0%**	**positive**
Senecio prenanthoides	1	11%	2	4%	uninformative
Sigesbeckia orientalis subsp. *orientalis*	2	22%	2	5%	uninformative
Solanum brownii	1	33%	1	6%	uninformative
Solanum prinophyllum	1	44%	1	10%	uninformative
Stackhousia monogyna	1	11%	1	2%	uninformative
Stellaria flaccida	4	22%	2	7%	uninformative
Stellaria pungens	2	33%	2	17%	uninformative
Stephania japonica var. *discolor*	1	33%	1	2%	uninformative
Trachymene composita	1	11%	2	2%	uninformative
Trema tomentosa var. *aspera*	1	11%	1	2%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Urtica incisa	2	33%	2	7%	uninformative
Vernonia cinerea var. *cinerea*	2	11%	1	1%	uninformative
Veronica plebeia	**2**	**67%**	**2**	**14%**	**positive**
Viola betonicifolia subsp. *betonicifolia*	1	33%	2	7%	uninformative
Viola hederacea	2	33%	2	9%	uninformative
Wahlenbergia communis	1	22%	1	7%	uninformative
Wahlenbergia multicaulis	**1**	**11%**	**0**	**0%**	**positive**

Statewide Class Northern Tableland Wet Sclerophyll Forests

Plant Community Type: Not described

Description

Montane Basalt Ribbon Gum Moist Forest is a tall to very tall eucalypt forest found on deep basalt soils associated with the highest peaks of the north-west Sydney basin. Three canopy species dominate: silver-top stringybark (*Eucalyptus laevopinea*) and the ribbon gums (*Eucalyptus viminalis* and *Eucalyptus nobilis*). There is considerable difficulty in discriminating the latter two species in the region. Characteristic of this community is the continuous cover of herbs on the forest floor with violets (*Viola* spp.), buttercups (*Ranunculus* spp.), starworts (*Stellaria* spp.) and pennyworts (*Hydrocotyle* spp.) all abundant. Sites on gentle crests support an open cover of mesic shrubs and ferns. On sheltered slopes and near drainage lines the mid stratum increases in density and at times may have a very pronounced cover of tree ferns.

This community is very restricted in the Sydney region, occurring only in the Mount Coricudgy area near Rylstone. This includes smaller mountains such as Mount Duran Duran, Mount Coriaday and Kerry Mountain. All rise above 900 metres above sea level and receive well over 1000 millimetres of rainfall per annum on average. Together these factors form fertile, cool and wet environments similar to the eastern Liverpool Ranges. The study area is likely to represent the outlying southern limit of this northern tableland moist forest. Elsewhere, the forest occurs along the eastern extent of the Liverpool Range near Mount Crawney and Ben Halls Gap NR.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	29 m ±10 20-45	33% ±17 10-50	*Eucalyptus viminalis, Eucalyptus laevopinea, Eucalyptus nobilis*
Small Trees	8 m ±5 2-15	15% ±17 2-50	*Acacia melanoxylon, Dicksonia antarctica*
Shrubs	3.8 m ±1.8 2.0-6.0	35% ±33 10-80	*Cassinia longifolia, Coprosma quadrifida, Dicksonia antarctica, Hymenanthera dentata, Pimelea ligustrina, Hedycarya angustifolia, Lomatia arborescens, Rubus ulmifolius, Senecio linearifolius*
Ground Covers	0.8 m ±0.4 0.2-1.4	73% ±22 40-100	*Hydrocotyle laxiflora, Stellaria pungens, Pteridium esculentum, Blechnum indicum, Geranium potentilloides, Stellaria flaccida, Ranunculus lappaceus, Veronica plebeia, Dichondra repens*
Vines & Climbers	N/A	N/A	*Smilax australis, Clematis glycinoides* var. *glycinoides, Glycine clandestina*

*Compiled from 7 of 7 sites with structural data recorded.

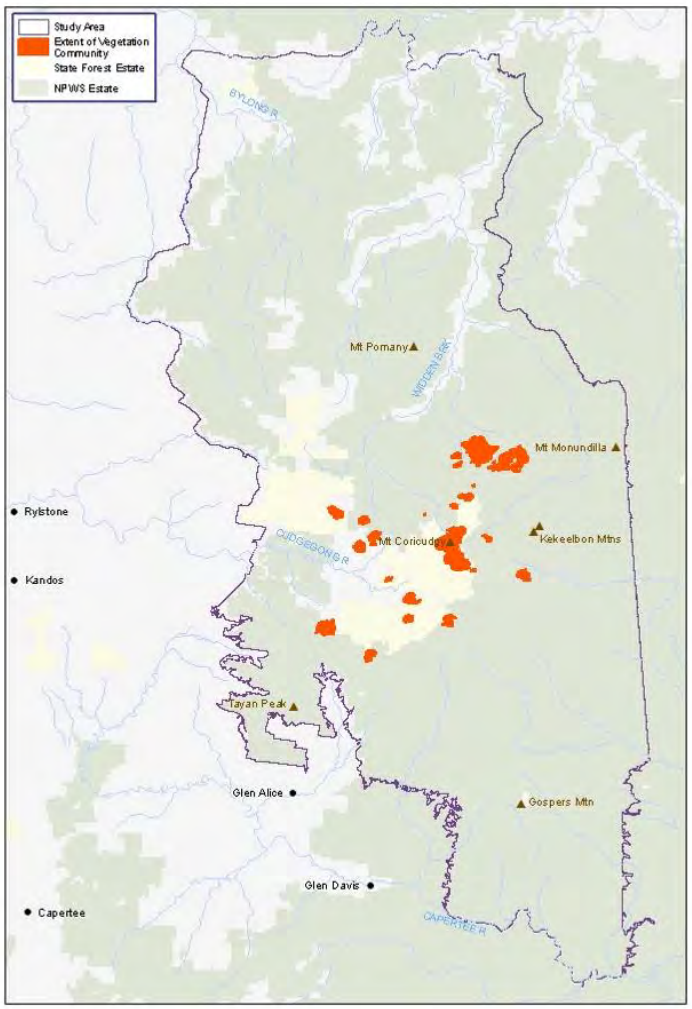
Threats

This community has been extensively harvested for eucalypt timbers and as a result stands are often even-aged regrowth with a patchy shrub layer. Coricudgy SF continues to be managed for timber production. Less accessible stands occurring within Wollemi NP were used for rough grazing in the past. Stands are vulnerable to intense blackberry (*Rubus fruticosus*) infestations amongst a variety of other weed species. Remote stands are subject to frequent intense wildfires.

Conservation Status

This forest forms a component of Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion, a TEC listed under the EPBC Act.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	2310-2438 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	1133.8 ha	1135 ha 52% of extant area
Area in state forests	691.5 ha	Not available
Area in other tenures	368.7 ha	Not available
Total extant area	2194.0 ha	2194 ha



Example Locations

- Mount Coricudgy
- Mount Coriaday
- Kerry Mountain

Species Richness

Number of plots	7
Total species	92
Average species per plot	30.3 ±8.0

Known Variations

Variations in overall floristic composition are small between sites. Little change occurs in canopy species although dominance of individual species may vary. The understorey may present a visually distinct variation, particularly where tree ferns (*Dicksonia antarctica*) are profuse on sheltered slopes. This tends to reduce diversity of the understorey with the abundance of the herb layer somewhat reduced.

Relationship to Other Communities

Floristically the forest is closely related to elevated basalt forests throughout the north-west Sydney region. This includes S_WSF29 found on the adjoining drier more elevated basalt peaks such as Nullo Mountain, and S_WSF31 on drier or more exposed basalt locations. Both of the latter communities may share similar canopy species with S_WSF28, but they feature a distinctive ground cover of tussock grass (*Poa* spp.) which is not characteristic of S_WSF28.

Typically this tall forest has a relatively abrupt transition into surrounding sandstone forests and woodlands. On the fringe of large basalt plateaux the clay soil thins and the forest grades into one with a shrubby mid strata (S_WSF21) that has a greater diversity of sclerophyllous species.

Accuracy

Sampling effort in the study area is high. Map domains are based on elevation, substrate and rainfall data derived from sample sites. Map boundaries are drawn from the interpretation of tall eucalypt forest on basalt soils that support a moist understorey. Mapped extent is considered to be reliable as the forest is associated with landforms that are readily identified using stereoscopic digital aerial photography. A high proportion of mapped stands have been visited.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia melanoxylon	1	100%	2	7%	uninformative
Acaena novae-zelandiae	**4**	**43%**	**2**	**5%**	**positive**
Adiantum aethiopicum	2	14%	2	6%	uninformative
Arrhenechthites mixta	1	14%	1	4%	uninformative
Arthropodium minus	1	14%	2	2%	uninformative
Asperula conferta	1	43%	2	8%	uninformative
Asperula scoparia	2	14%	2	1%	uninformative
Asplenium flabellifolium	2	29%	1	11%	uninformative
Austrocynoglossum latifolium	1	14%	2	1%	uninformative
Blechnum cartilagineum	2	14%	3	10%	uninformative
Blechnum indicum	5	14%	2	1%	uninformative
Bulbine bulbosa	1	14%	1	1%	uninformative
Bursaria spinosa subsp. *spinosa*	3	14%	2	25%	uninformative
Cardamine paucijuga	**2**	**29%**	**0**	**0%**	**positive**
Carex appressa	1	57%	1	1%	uninformative
Cassinia cunninghamii	1	14%	2	7%	uninformative
Cassinia longifolia	3	29%	1	0%	uninformative
Clematis aristata	1	71%	1	26%	uninformative
Coprosma quadrifida	**2**	**71%**	**2**	**3%**	**positive**
Daucus glochidiatus	2	14%	2	8%	uninformative
Desmodium varians	3	14%	2	19%	uninformative
Dichondra repens	**2**	**71%**	**2**	**27%**	**positive**
Dicksonia antarctica	1	43%	3	1%	uninformative
Doodia aspera	2	14%	2	5%	uninformative
Doryphora sassafras	2	14%	4	3%	uninformative
Echinopogon cheelii	**2**	**43%**	**1**	**0%**	**positive**
Echinopogon ovatus	3	29%	2	16%	uninformative
Eucalyptus laevopinea	**3**	**71%**	**3**	**5%**	**positive**
Eucalyptus nobilis	4	14%	3	1%	uninformative
Eucalyptus viminalis	**4**	**86%**	**3**	**7%**	**positive**
Eustrephus latifolius	1	14%	1	9%	uninformative
Galium propinquum	2	14%	2	16%	uninformative
Geranium potentilloides	5	29%	2	3%	uninformative
Geranium solanderi* var. *solanderi	**2**	**71%**	**2**	**10%**	**positive**
Glycine clandestina	**2**	**57%**	**2**	**17%**	**positive**
Glycine tabacina	2	29%	2	10%	uninformative
Gonocarpus tetragynus	1	14%	2	13%	uninformative
Hedycarya angustifolia	1	14%	1	1%	uninformative
Hydrocotyle laxiflora	**3**	**100%**	**2**	**18%**	**positive**
Hymenophyllum cupressiforme	2	29%	2	1%	uninformative
Hypericum gramineum	1	14%	2	6%	uninformative
Lachnagrostis filiformis	2	14%	1	1%	uninformative
Lagenophora gracilis	**2**	**43%**	**1**	**2%**	**positive**
Lagenophora stipitata	1	29%	1	10%	uninformative
Libertia paniculata	2	29%	2	1%	uninformative
Lomandra longifolia	**2**	**43%**	**1**	**28%**	**positive**
Lomatia arborescens	**2**	**14%**	**0**	**0%**	**positive**
Luzula flaccida	1	14%	1	2%	uninformative
Melicytus dentatus	**2**	**57%**	**1**	**5%**	**positive**
Microlaena stipoides	**2**	**43%**	**2**	**27%**	**positive**
Microsorum pustulatum subsp. *pustulatum*	1	14%	2	1%	uninformative
Pellaea falcata	2	29%	2	6%	uninformative
Pimelea ligustrina	2	29%	1	1%	uninformative
Plantago debilis	1	14%	2	13%	uninformative
Plantago gaudichaudii	3	14%	2	3%	uninformative
Poa affinis	**2**	**43%**	**2**	**13%**	**positive**
Polyscias sambucifolia	2	29%	2	12%	uninformative
Polystichum australiense	1	14%	2	2%	uninformative
Polystichum fallax	**3**	**57%**	**4**	**1%**	**positive**
Polystichum proliferum	5	29%	2	0%	uninformative
Pteridium esculentum	**2**	**86%**	**2**	**31%**	**positive**
Pyrrosia rupestris	1	14%	2	4%	uninformative
Ranunculus lappaceus	**5**	**71%**	**2**	**6%**	**positive**
Rubus parvifolius	1	43%	1	5%	uninformative
Rumex brownii	2	29%	1	3%	uninformative
Senecio hispidulus	**2**	**43%**	**1**	**4%**	**positive**
Senecio linearifolius	**3**	**57%**	**2**	**2%**	**positive**
Senecio prenanthoides	1	14%	2	4%	uninformative
Smilax australis	**2**	**100%**	**2**	**2%**	**positive**
Solanum brownii	2	14%	1	6%	uninformative
Stellaria flaccida	**3**	**86%**	**2**	**6%**	**positive**
Stellaria pungens	**4**	**86%**	**2**	**16%**	**positive**
Tylophora barbata	2	14%	2	3%	uninformative
Urtica incisa	**2**	**43%**	**2**	**7%**	**positive**
Vachellia farnesiana	**1**	**14%**	**0**	**0%**	**positive**

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Veronica plebeia	**2**	**71%**	**2**	**14%**	**positive**
Viola betonicifolia subsp. *betonicifolia*	5	14%	2	8%	uninformative
Viola hederacea	**5**	**43%**	**2**	**9%**	**positive**

Statewide Class Northern Tableland Wet Sclerophyll Forests

Plant Community Type: Not described

Description

Montane Basalt Ribbon Gum-Snow Gum Forest is a tall eucalypt forest with a ground cover of tussock grasses on drier high altitude basalt soils in the north-west of the Sydney basin. The canopy is dominated by one or both of the ribbon gums (*Eucalyptus viminalis* and *Eucalyptus nobilis*) often with tall silver-top stringybark (*Eucalyptus laevopinea*) and snow gum (*Eucalyptus pauciflora*). The shrub layer tends to be very open with an open cover of small trees such as blackwood (*Acacia melanoxylon*) and the spiny shrub tree violet (*Melicytus dentatus*). More characteristic is the abundance of the distinctive tussock grass (*Poa labillardierei* var*. labillardierei)* and the diversity of small succulent herbs and nettles thriving on the fertile soil.

This forest is highly restricted within the Sydney basin but is more extensive across the Liverpool Range and northern tablelands. These sub-alpine environments receive frosts and snow during cold winter months and are often shrouded in mist for much of this time. In the Sydney Basin Bioregion stands are found above 1050 metres above sea level on gently sloping basalt soils that receive moderate levels of mean annual rainfall (between 800 and 950 millimetres). In the study area the forest is limited to the Nullo Mountain plateau. These stands represent the outlying southern limit of these northern tableland forests.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	24 m ±6 18-32	32% ±9 20-40	*Eucalyptus pauciflora, Eucalyptus viminalis, Eucalyptus nobilis, Eucalyptus dalrympleana* subsp*. heptantha, Eucalyptus laevopinea*
Small Trees	9 m ±3 6-12	11% ±8 5-20	*Acacia melanoxylon*
Shrubs	2.0 m ±0.0 2.0-2.0	18% ±18 5-30	*Cassinia aculeata, Cassinia quinquefaria*
Ground Covers	0.7 m ±0.4 0.2-1.3	29% ±25 5-70	*Pteridium esculentum, Dichondra repens, Stellaria pungens, Acaena novae-zelandiae, Asperula conferta, Hydrocotyle laxiflora, Lomandra longifolia, Galium propinquum, Poa labillardierei* var*. labillardierei, Poa sieberiana*
Vines & Climbers	N/A	N/A	*Glycine clandestina, Rubus parvifolius*

*Compiled from 5 of 5 sites with structural data recorded.

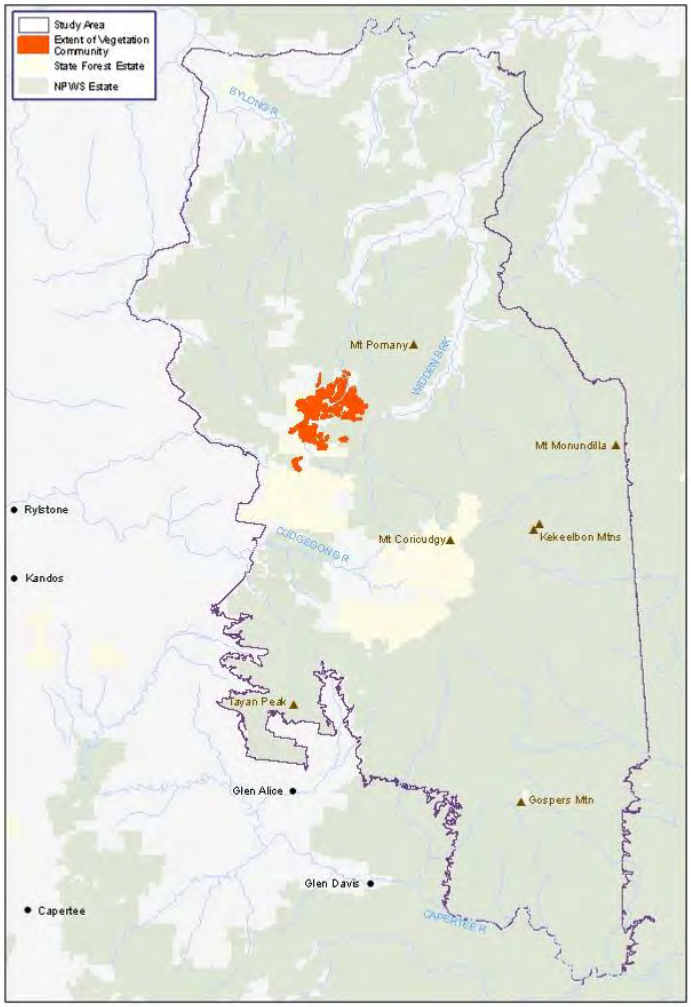
Threats

Clearing is likely to have resulted in the loss of this community, though the extent is reduction is not known. Evidence of past clearing is present on Nullo Mountain and impacts of grazing and logging disturbance are visible across visited stands. This included regrowth-aged eucalypts, tracks and the presence of exotic flora species. Blackberry (*Rubus fruticosus*) may form local infestations.

Conservation Status

Small areas of this community are present in reserves in the region in north-west Wollemi NP near Nullo Mountain.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	1487-1983 ha
Estimated percentage cleared	Not available	20-40%
Area in formal conservation reserves	223.8 ha	225 ha 19% of extant area
Area in state forests	486.8 ha	Not available
Area in other tenures	479.0 ha	Not available
Total extant area	1189.6 ha	1190 ha



Example Locations

o Nullo Mountain SF

Species Richness

Number of plots	5
Total species	101
Average species per plot	35.8 ±8.9

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this forest shares species with basalt and gully forests of the central tablelands as well as tall basalt forests of the northern tablelands. It shares some canopy species and ground covers with S_WSF31 although that community occupies less-elevated basalt locations. Canopy species are also shared with S_WSF28, although that community has an herbaceous ground cover and mesic shrub layer without the distinctive tussock grass cover of S_WSF29.

Despite their relative proximity, the two largest basalt mountains of the study area, Mount Coricudgy and Nullo Mountain, support different montane eucalypt forests. This appears to arise from differences in annual rainfall, with the latter likely to receive 200-300 millimetres less on average.

Spatially, this community grades into Montane Basalt Stringybark-Brittle Gum Forest (S_GW07) on shallower basalt soils and exposed aspects.

Accuracy

Sample density is moderate. Map unit domains are derived from the elevation, rainfall and substrate parameters of sample sites. Map boundaries are drawn from the interpretation of tall eucalypt forests dominated by *E. viminalis* with an open grassy understorey situated on Nullo Mountain.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia melanoxylon	**3**	**80%**	**2**	**8%**	**positive**
Acaena novae-zelandiae	**2**	**80%**	**2**	**5%**	**positive**
Ajuga australis	1	60%	1	7%	uninformative
Arrhenechthites mixta	1	40%	1	3%	uninformative
Asperula conferta	**2**	**80%**	**2**	**8%**	**positive**
Asplenium flabellifolium	**2**	**40%**	**1**	**11%**	**positive**
Astroloma humifusum	1	40%	1	9%	uninformative
Austrodanthonia racemosa* var. *racemosa	**2**	**60%**	**2**	**4%**	**positive**
Austrostipa rudis	1	20%	2	1%	uninformative
Blechnum cartilagineum	1	20%	3	10%	uninformative
Brachyscome aculeata	**2**	**20%**	**0**	**0%**	**positive**
Bulbine bulbosa	2	20%	1	1%	uninformative
Bursaria spinosa subsp. *spinosa*	4	20%	2	25%	uninformative
Carex breviculmis	1	20%	1	0%	uninformative
Carex incomitata	2	20%	2	1%	uninformative
Cassinia aculeata	2	20%	1	3%	uninformative
Cassinia quinquefaria	3	20%	2	9%	uninformative
Centella asiatica	1	20%	2	1%	uninformative
Chaerophyllum eriopodum	1	40%	2	1%	uninformative
Clematis aristata	1	20%	1	27%	uninformative
Coronidium scorpioides	1	20%	1	2%	uninformative
Cymbonotus lawsonianus	**2**	**60%**	**1**	**3%**	**positive**
Cymbonotus preissianus	1	20%	1	1%	uninformative
Daucus glochidiatus	**2**	**40%**	**2**	**8%**	**positive**
Daviesia genistifolia	1	20%	1	5%	uninformative
Desmodium varians	**2**	**60%**	**2**	**18%**	**positive**
Dianella caerulea	1	20%	1	32%	uninformative
Dianella revoluta* var. *revoluta	**2**	**40%**	**1**	**28%**	**positive**
Dichelachne micrantha	1	20%	1	9%	uninformative
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Echinopogon caespitosus	2	20%	2	3%	uninformative
Echinopogon cheelii	1	20%	2	1%	uninformative
Echinopogon intermedius	1	20%	2	1%	uninformative
Echinopogon ovatus	1	20%	2	16%	uninformative
Epilobium billardierianum	1	20%	1	0%	uninformative
Eucalyptus blaxlandii	4	20%	3	5%	uninformative
Eucalyptus dalrympleana subsp. *heptantha*	4	20%	1	0%	uninformative
Eucalyptus laevopinea	3	20%	3	6%	uninformative
Eucalyptus nobilis	**4**	**40%**	**4**	**1%**	**positive**
Eucalyptus pauciflora	**3**	**60%**	**3**	**1%**	**positive**
Eucalyptus viminalis	**3**	**60%**	**3**	**8%**	**positive**
Euchiton gymnocephalus	**2**	**60%**	**2**	**1%**	**positive**
Eustrephus latifolius	1	20%	1	9%	uninformative
Galium ciliare	**2**	**20%**	**0**	**0%**	**positive**
Galium gaudichaudii	2	20%	2	4%	uninformative
Galium propinquum	**2**	**80%**	**2**	**15%**	**positive**
Geitonoplesium cymosum	1	20%	1	7%	uninformative
Geranium potentilloides	**2**	**40%**	**2**	**3%**	**positive**
Geranium solanderi* var. *solanderi	**2**	**60%**	**2**	**10%**	**positive**
Glycine clandestina	**2**	**100%**	**2**	**16%**	**positive**
Glycine microphylla	1	20%	2	4%	uninformative
Gonocarpus teucrioides	1	20%	2	15%	uninformative
Hardenbergia violacea	1	40%	1	25%	uninformative
Hydrocotyle laxiflora	**2**	**80%**	**2**	**19%**	**positive**
Hypericum gramineum	2	20%	2	6%	uninformative
Indigofera australis	2	20%	2	15%	uninformative
Lagenophora stipitata	1	20%	1	10%	uninformative
Lepidosperma laterale	2	20%	1	24%	uninformative
Lomandra longifolia	**2**	**60%**	**1**	**28%**	**positive**
Lomandra multiflora subsp. *multiflora*	2	20%	1	25%	uninformative
Luzula flaccida	1	20%	1	2%	uninformative
Luzula meridionalis	1	20%	1	1%	uninformative
Microlaena stipoides	**2**	**40%**	**2**	**28%**	**positive**
Oxalis perennans	**2**	**40%**	**1**	**10%**	**positive**
Plantago debilis	**2**	**80%**	**2**	**12%**	**positive**
Poa affinis	1	20%	2	14%	uninformative
Poa labillardierei* var. *labillardierei	**5**	**60%**	**1**	**6%**	**positive**
Poa sieberiana	**4**	**40%**	**3**	**3%**	**positive**
Polystichum fallax	1	20%	3	2%	uninformative
Poranthera microphylla	1	20%	1	13%	uninformative
Pteridium esculentum	**2**	**100%**	**2**	**31%**	**positive**
Ranunculus lappaceus	**2**	**80%**	**2**	**6%**	**positive**
Rubus parvifolius	1	60%	1	5%	uninformative
Senecio hispidulus	2	20%	1	4%	uninformative
Senecio lautus	2	20%	2	3%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Senecio prenanthoides	1	60%	2	4%	uninformative
Senecio quadridentatus	2	20%	1	4%	uninformative
Smilax australis	2	20%	2	4%	uninformative
Stellaria pungens	**2**	**80%**	**2**	**16%**	**positive**
Trachymene composita	1	20%	2	2%	uninformative
Trachymene incisa	**2**	**40%**	**1**	**2%**	**positive**
Urtica incisa	1	20%	2	8%	uninformative
Veronica calycina	2	20%	2	4%	uninformative
Veronica plebeia	1	60%	2	14%	uninformative
Viola betonicifolia* subsp. *betonicifolia	**2**	**80%**	**1**	**7%**	**positive**
Viola hederacea	1	20%	2	10%	uninformative

Statewide Class Northern Hinterland Wet Sclerophyll Forests
Plant Community Type: Not described

Description

Hunter Range Basalt Paperbark Thicket is a community formed of low closed stands of paperbark (*Melaleuca styphelioides*) occurring on minor depressions, seepages and drainage lines associated with basalt caps and diatremes. The community occupies sites at the transition of geological boundaries, typically between basalt and sandstone. The map unit covers a wide environmental gradient between lower elevation gully sites and the higher basalt caps. It is not sampled in the study area and is poorly surveyed elsewhere in the region. The overall composition of the community is likely to resemble the eucalypt forests that grow on the adjoining basalt soils where there is an open cover of herbs and grasses. Some stands may include emergent eucalypts.

Further work is required to provide a summary of the floristic composition of these distinctive thickets. Similar patterns in vegetation are found in Yengo NP from which the floristic summary below has been drawn (DECC 2008).

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	30 m	37%	*Eucalyptus tereticornis*
Small Trees	7 m	30%	*Melaleuca styphelioides, Allocasuarina torulosa*
Shrubs	2.1 m	27%	*Breynia oblongifolia, Rapanea variabilis, Bursaria spinosa, Acacia fulva, A. implexa, Polyscias sambucifolia*
Ground Covers	0.7 m	49%	*Pellaea falcata, Desmodium gunnii, Dichondra repens, Doodia aspera, Adiantum aethiopicum*
Vines & Climbers	N/A	N/A	*Clematis aristata, Eustrephus latifolius, Pandorea pandorana, Stephania japonica* var. *discolor*

*Taken from DECC (2008). Compiled from 1 of 1 sites with structural data recorded in that study.

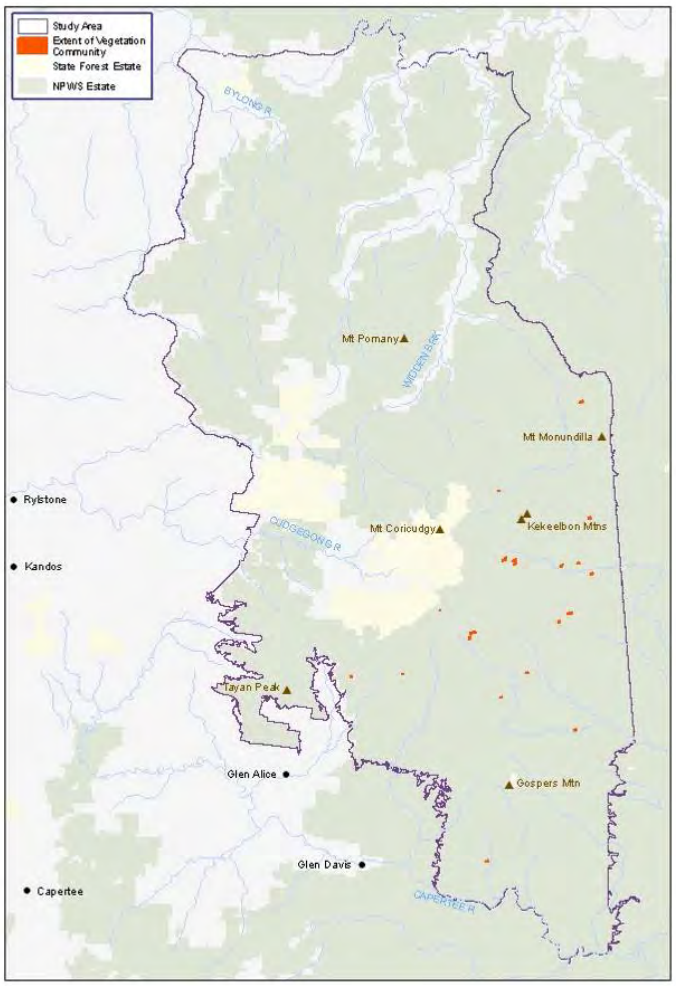
Threats

Threats are moderated by the remote nature of many of the locations. However, despite the remoteness, many of the basalt caps and diatremes have been used for rough grazing in the past. This landuse has introduced some exotic flora species including blackberry (*Rubus fruticosus*). Paperbark thickets are vulnerable to weed infestations because they occupy periodically waterlogged sites which assist the proliferation of exotic species.

Conservation Status

Small areas of this community are present throughout Wollemi NP and Yengo NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	Not available
Estimated percentage cleared	Not available	Not available
Area in formal conservation reserves	29.6 ha	31 ha 100% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	29.6 ha	31 ha



Example Locations

- Grassy Mountain, Glen Alice Trail

Species Richness

Number of plots	0
Total species	N/A
Average species per plot	N/A

Known Variations

Variations in floristic assemblage are likely to occur across the elevation gradient of the map unit.

Relationship to Other Communities

Not assessed.

Accuracy

Not sampled in the study area. The definition of this map unit is incomplete. The paperbark thickets, however, are readily discerned during field traverse and from aerial photography. Map unit boundaries relied on the identification of low paperbark thickets and forests found on or adjoining basalt soils.

No diagnostic species generated for this profile. Not sampled in the study area.

Statewide Class Northern Tableland Wet Sclerophyll Forest
Plant Community Type: Not described

Description

Montane Basalt Ribbon Gum-Box Forest is a tall open eucalypt forest with a sparse shrub layer and grassy, herbaceous ground cover found on elevated basalt soils in the north-west of the Sydney basin. It features a wide range of cool-climate eucalypts although ribbon gums (*Eucalyptus viminalis* and/or *E. nobilis*) are most commonly encountered and regularly dominate stands. It is found in association with silver-top stringybark (*Eucalyptus laevopinea*) on the highest peaks, and elsewhere with yellow box (*Eucalyptus melliodora*), rough-barked apple (*Angophora floribunda*), red gums (*Eucalyptus blakelyi*/ or *Eucalyptus tereticornis)* and apple box (*Eucalyptus bridgesiana*). A sparse to moderate cover of taller wattles including silver wattle (*Acacia filicifolia*) and blackwood (*Acacia melanoxylon*) can be found, although this varies in response to disturbance. The lower shrub layer is generally very sparse with blackthorn (*Bursaria spinosa*) the most commonly recorded species. Much of the species diversity of this community lies in the ground cover. Grasses feature prominently with tussock grass (*Poa* spp.), weeping grass (*Microlaena stipoides*), wallaby grass (*Austrodanthonia* spp.) and wheat grass (*Elymus* spp.) all common. Herbs are also particularly diverse, with kidney weed (*Dichondra* spp.), geraniums (*Geranium* spp.) and starworts (*Stellaria* spp.) all common.

This forest occupies crests and upper slopes on rich soils associated with basalt caps and diatremes along the ranges of the western Blue Mountains between Lithgow and Rylstone. Elevation may reach 1000 metres above sea level on the high narrow conical basalt peaks along the Great Dividing Range and fall to 600 metres above sea level in embedded diatremes on the sandstone plateaux. The community occurs in the rainshadow of the eastern ranges and as a result receives a moderate mean annual rainfall of between 700 and 800 millimetres per annum. In the study area the forest is dotted across the central and western plateaux. The form on diatremes is more common than that found on the peaks.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	24 m ±14 4-55	39% ±20 10-65	*Eucalyptus viminalis, Eucalyptus melliodora, Eucalyptus cypellocarpa, Angophora floribunda, Eucalyptus blakelyi, Eucalyptus bridgesiana, Eucalyptus tereticornis*
Small Trees	7 m ±4 1-15	16% ±15 5-40	*Acacia parramattensis Acacia melanoxylon, Melaleuca styphelioides, Acacia filicifolia*
Shrubs	2.6 m ±1.0 1.4-4.5	23% ±14 5-40	*Indigofera australis, Bursaria spinosa, Goodenia ovata*
Ground Covers	0.5 m ±0.4 0.2-1.3	60% ±30 30-100	*Dichondra repens, Stellaria pungens , Galium propinquum, Ajuga australis, Lomandra longifolia, Plantago debilis, Desmodium varians, Echinopogon ovatus, Hydrocotyle laxiflora, Microlaena stipoides* var. *stipoides, Poa sieberiana, Ranunculus lappaceus, Adiantum aethiopicum, Geranium homeanum, Poa labillardierei*
Vines & Climbers	N/A	N/A	

*Compiled from 8 of 12 sites with structural data recorded.

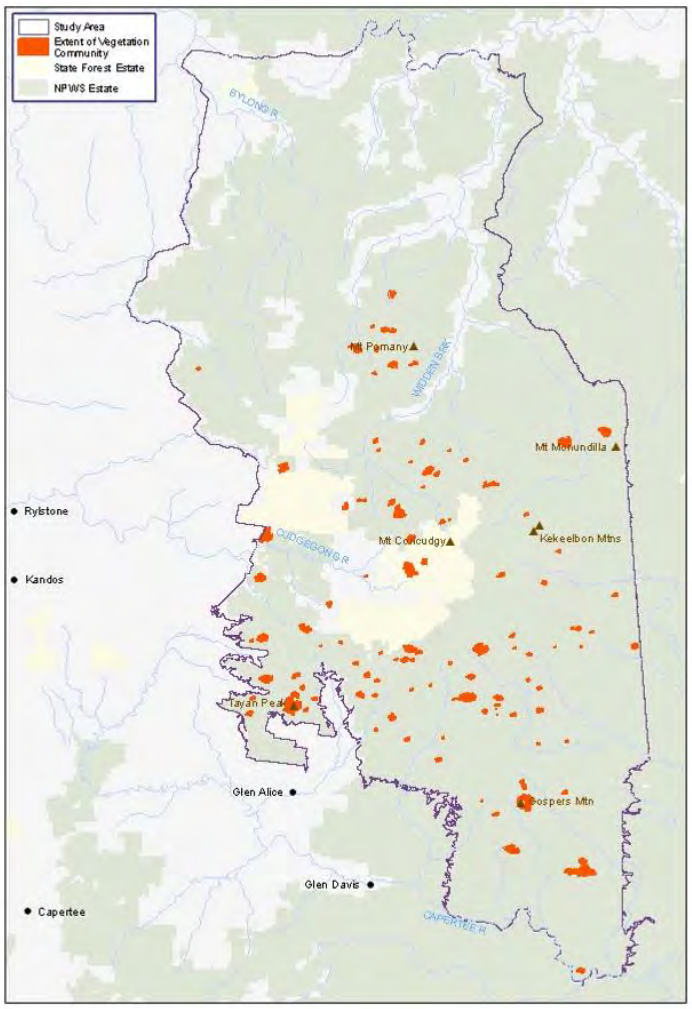
Threats

Past clearing has diminished a large proportion of the original distribution of this community across its range. Today remnants are often isolated, disturbed and fragmented. Grazing by livestock and rabbits (*Oryctolagus cuniculus*) inhibit the persistence of palatable native species (NSW Scientific Committee 2008a). Weed invasion is also pervasive with exotic ground covers capable of smothering native shrubs and ground covers (NSW Scientific Committee 2008a). Stands within Wollemi NP have also been modified for rough grazing despite their relative isolation from surrounding rural landuses.

Conservation Status

This forest forms a component of Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion, a TEC listed under the EPBC Act. However, the listing does not apply to stands of this forest situated on diatremes or side slopes. The forest has limited occurrence in the reserves of the Sydney basin. This community also forms a component of Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions, a TEC listed under the TSC Act.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	2259-2541 ha
Estimated percentage cleared	Not available	10-20%
Area in formal conservation reserves	1458.3 ha	1459 hectares 72% of extant area
Area in state forests	66.0 ha	Not available
Area in other tenures	178.7 ha	Not available
Total extant area	1703.0 ha	2033 ha



Example Locations

- Box Hole Clearing
- Mount Towinhingy

Species Richness

Number of plots	12
Total species	153
Average species per plot	30.7 ±8.4

Known Variations

On high basalt peaks stands may have a more pronounced ground cover of herbs and tussock grasses. In diatremes, soils tend to be a mix of volcanic material and coarse-grained sediments derived from sandstone bedrock. These soils appear marginally less fertile and the understorey may thus be shrubbier with a less continuous cover. Disturbance impacts can be widespread resulting in profuse regeneration of pioneering species such as wattles (*Acacia* spp.). Monkey gum (*Eucalyptus cypellocarpa*) may replace *Eucalyptus viminalis* on shallow basalt soils.

Relationship to Other Communities

Floristically this community is related to other montane basalt forests. Similar canopy species are found across these forests though the understorey varies. S_WSF28 does not support a grassy ground cover and instead a distinctive layer of moist shrubs and herbs is present. S_WSF29 is restricted to the highest peaks (above 1050 metres) and as a result includes subalpine species such as snow gum (*E. pauciflora*) amongst the canopy. Conversely, some tree species found in S_WSF31, such as yellow box (*Eucalyptus melliodora*), are not found in those other basalt forests. Spatially S_WSF31 may grade into S_WSF21 as basalt soils thin toward the surrounding sandstone plateaux.

Accuracy

Sample effort is moderate. Mapped distribution relied on the environmental domains obtained from site data including elevation and rainfall. Existing geological mapping underestimates the distribution of volcanic outcrops in the study area. Map unit boundaries were derived from the interpretation of stereoscopic aerial photography to identify basalt soils dominated by stands of *Eucalyptus viminalis* and *E. laevopinea*.

Diagnostic Species

S_WSF31

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia falciformis	2	17%	2	5%	uninformative
Acacia filicifolia	3	25%	2	5%	uninformative
Acacia melanoxylon	3	33%	2	8%	uninformative
Acacia parramattensis	4	33%	2	2%	uninformative
Acaena agnipila	2	17%	2	1%	uninformative
Acaena novae-zelandiae	2	25%	2	5%	uninformative
Adiantum aethiopicum	**2**	**50%**	**2**	**5%**	**positive**
Ajuga australis	1	58%	1	6%	uninformative
Angophora floribunda	3	17%	2	17%	uninformative
Arthropodium milleflorum	3	17%	2	3%	uninformative
Asperula conferta	2	33%	2	8%	uninformative
Asplenium flabellifolium	1	25%	1	11%	uninformative
Austrodanthonia bipartita	**2**	**17%**	**0**	**0%**	**positive**
Austrodanthonia racemosa var. *racemosa*	2	17%	2	4%	uninformative
Brachychiton populneus subsp. *populneus*	2	33%	1	6%	uninformative
Bulbine bulbosa	1	17%	1	1%	uninformative
Bursaria spinosa subsp. *spinosa*	2	25%	2	25%	uninformative
Caesia parviflora	**2**	**8%**	**0**	**0%**	**positive**
Cheilanthes sieberi subsp. *sieberi*	2	25%	1	19%	uninformative
Clematis aristata	**2**	**50%**	**1**	**26%**	**positive**
Convolvulus erubescens	**1**	**8%**	**0**	**0%**	**positive**
Crassula sieberiana	2	25%	1	6%	uninformative
Cynoglossum australe	1	33%	2	3%	uninformative
Daucus glochidiatus	2	33%	2	7%	uninformative
Desmodium varians	**2**	**75%**	**2**	**17%**	**positive**
Dianella caerulea	1	25%	1	32%	uninformative
Dichondra repens	**2**	**100%**	**2**	**25%**	**positive**
Echinopogon ovatus	**2**	**58%**	**2**	**15%**	**positive**
Einadia hastata	2	17%	2	3%	uninformative
Eucalyptus cypellocarpa	4	17%	3	10%	uninformative
Eucalyptus laevopinea	4	25%	3	5%	uninformative
Eucalyptus melliodora	3	25%	3	4%	uninformative
Eucalyptus viminalis	**4**	**50%**	**3**	**7%**	**positive**
Eustrephus latifolius	1	25%	1	8%	uninformative
Exocarpos strictus	2	33%	1	16%	uninformative
Galium binifolium	2	25%	2	4%	uninformative
Galium propinquum	**2**	**67%**	**2**	**15%**	**positive**
Geitonoplesium cymosum	1	42%	1	6%	uninformative
Geranium homeanum	**2**	**50%**	**2**	**4%**	**positive**
Geranium solanderi var. *solanderi*	2	25%	2	10%	uninformative
Glycine clandestina	2	33%	2	17%	uninformative
Glycine tabacina	**2**	**50%**	**2**	**9%**	**positive**
Gonocarpus tetragynus	3	17%	2	13%	uninformative
Goodenia ovata	4	17%	1	6%	uninformative
Hydrocotyle acutiloba	**2**	**8%**	**0**	**0%**	**positive**
Hydrocotyle laxiflora	**2**	**58%**	**2**	**18%**	**positive**
Hydrocotyle pedicellosa	**2**	**8%**	**0**	**0%**	**positive**
Indigofera australis	**3**	**50%**	**2**	**13%**	**positive**
Lagenophora stipitata	2	17%	1	10%	uninformative
Lepidosperma laterale	2	17%	1	24%	uninformative
Lomandra longifolia	**3**	**50%**	**1**	**27%**	**positive**
Melaleuca styphelioides	2	17%	3	1%	uninformative
Melicytus dentatus	3	25%	1	5%	uninformative
Microlaena stipoides	**2**	**50%**	**2**	**27%**	**positive**
Notelaea longifolia	3	17%	1	9%	uninformative
Oxalis perennans	2	17%	1	10%	uninformative
Oxalis radicosa	**2**	**17%**	**0**	**0%**	**positive**
Pellaea falcata	2	25%	2	6%	uninformative
Plantago debilis	**2**	**58%**	**2**	**11%**	**positive**
Plectranthus parviflorus	2	25%	1	4%	uninformative
Poa labillardierei var. *labillardierei*	2	17%	2	7%	uninformative
Poa sieberiana	4	33%	3	3%	uninformative
Poa tenera	**4**	**8%**	**0**	**0%**	**positive**
Pteridium esculentum	2	33%	2	32%	uninformative
Ranunculus lappaceus	**2**	**58%**	**2**	**5%**	**positive**
Rubus parvifolius	1	25%	1	5%	uninformative
Rumex brownii	1	25%	1	2%	uninformative
Scutellaria humilis	2	17%	2	1%	uninformative
Senecio hispidulus	2	25%	1	4%	uninformative
Senecio quadridentatus	4	17%	1	3%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Sigesbeckia orientalis subsp. *orientalis*	2	33%	2	4%	uninformative
Solanum amblymerum	3	25%	2	1%	uninformative
Solanum prinophyllum	**2**	**42%**	**1**	**10%**	**positive**
Stellaria flaccida	2	17%	2	7%	uninformative
Stellaria pungens	**2**	**83%**	**2**	**15%**	**positive**
Urtica incisa	2	33%	2	7%	uninformative
Veronica plebeia	**2**	**50%**	**2**	**14%**	**positive**
Viola betonicifolia subsp. *betonicifolia*	1	25%	2	7%	uninformative
Viola silicestris	2	17%	2	1%	uninformative
Wahlenbergia communis	**2**	**42%**	**1**	**6%**	**positive**
Wahlenbergia gracilis	1	17%	1	5%	uninformative

WESTERN HUNTER FOOTSLOPES BOX WOODLAND S_GW05

Statewide Class Western Slopes Grassy Woodlands
Plant Community Type:

Description

Western Hunter Footslopes Box Woodland is a eucalypt woodland or forest community with a variable cover of dry shrubs and grasses. It occurs in the far north-west of the Sydney Basin Bioregion on lower escarpment footslopes and benches of the western Hunter valley. The canopy features a variety of box trees of which the white/grey box complex (*Eucalyptus albens* X *moluccana*) is most frequent. Yellow box (*Eucalyptus melliodora*) and red gums (*Eucalyptus tereticornis/E. blakelyi*) are included within the canopy on occasion and may dominate near alluvial terraces and minor drainage lines. Rough-barked apple (*Angophora floribunda*) is a common associate species and slaty gum (*Eucalyptus dawsonii*) may occasionally be present. A sparser cover of small trees may include kurrajong (*Brachychiton populneus*) and taller wattles (*Acacia* spp.). The characteristics of the understorey can range from a dense regenerating shrub layer to an open grassy ground cover. In the case of the former blackthorn (*Bursaria spinosa*), hop bush (*Dodonaea viscosa*) and/or *Olearia elliptica* may be prominent. The ground supports a diverse number of graminoid species that together vary from a continuous cover to a sparse though even distribution. The primary species among the ground layer include the wire grasses (*Aristida* spp.), weeping grass (*Microlaena stipoides*), saw-sedge (*Gahnia aspera*) and kidney weed (*Dichondra* spp.)

This woodland occurs on the fine-grained Permian sediments that are exposed on lower escarpment slopes and benches fringing the major incised valleys of the western Hunter region and extending south to the Capertee Valley. It occupies an elevation range between 190 and 480 metres above sea level and a relatively dry climate with mean annual rainfall ranging between 550 and 650 millimetres per annum. In the study area the community occurs near the northern boundary of the reserve, where it fringes the open agricultural areas of the Widden, Bylong and Goulburn River valleys, and along the western boundary of the reserve to Gardens of Stone NP.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	25 m ±0 25-25	3% ±3 1-5	*Angophora floribunda, Eucalyptus albens, Eucalyptus blakelyi, Eucalyptus dawsonii, Eucalyptus melliodora, Eucalyptus albens* X *moluccana*
Small Trees (n=1)	8 m 8	5% 5	*Acacia linearifolia, Acacia filicifolia, Brachychiton populneus*
Shrubs	0.9±0.5	23% ±25	*Bursaria spinosa, Cassinia quinquefaria, Einadia hastata, Dodonaea viscosa, Olearia elliptica*
Ground Covers	0.5 m ±0.5 0.1-1.0	22% ±25 1-50	*Austrostipa ramosissima, Cyperus gracilis, Aristida vagans, Austrodanthonia racemosa , Carex inversa , Dianella tasmanica, Dichondra repens, Lomandra longifolia, Microlaena stipoides* var. *stipoides, Sida corrugata, Solanum prinophyllum, Themeda australis*
Vines & Climbers	N/A	N/A	*Clematis glycinoides Glycine microphylla*

*Compiled from 4 of 5 sites with structural data recorded.

Threats

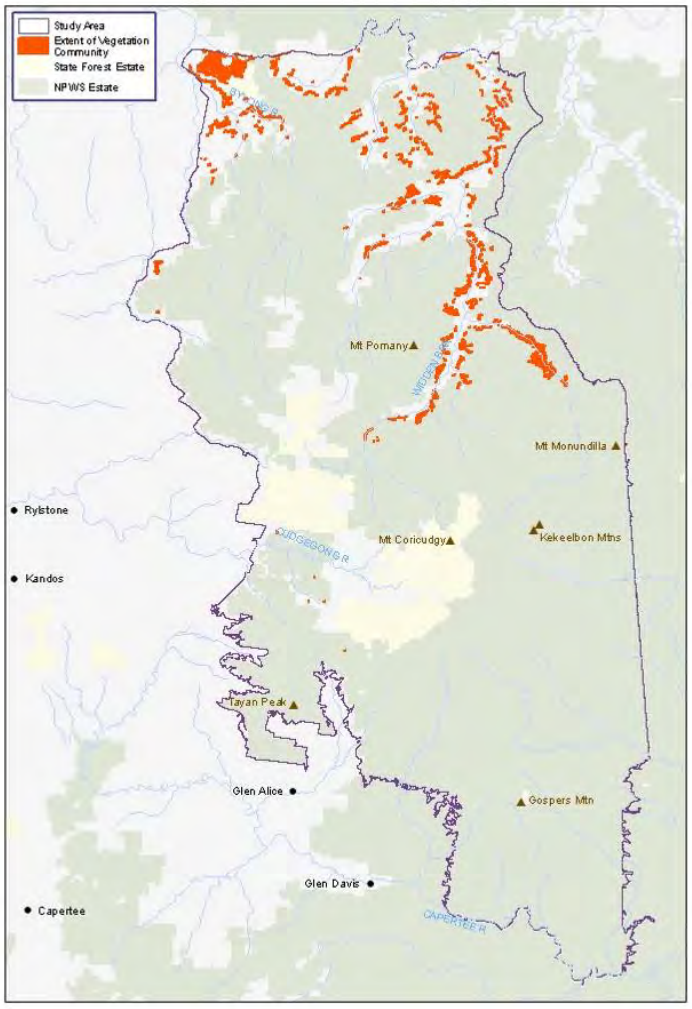
Threats to this community are severe. Past clearing has removed a large proportion of the original pre-European cover of this woodland throughout the major valleys in the western Hunter. Remnants are characterised by high levels of disturbance and continuing agricultural land use pressures. Many stands are dominated by even-aged eucalypts and open or disturbed canopy. Weeds are found near the interface with open agricultural land. Threats of further loss persist with the continued expansion of resource extraction throughout the western coalfields.

Conservation Status

This community forms a component of White Box-Yellow Box-Blakely's Red Gum Woodland, a TEC under TSC Act. It also forms a component of White Box-Yellow Box-Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands, a TEC listed under the EPBC Act.

This vegetation community is poorly represented in the Sydney basin protected area network with only small areas found on the fringes of Wollemi and Goulburn River national parks.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	21,476-32,214 ha
Estimated percentage cleared	Not available	40-60%
Area in formal conservation reserves	691.2 ha	941 ha 7% of extant area
Area in state forests	21.2 ha	Not available
Area in other tenures	1173.1 ha	Not available
Total extant area	1885.5 ha	12,885 ha



Example Locations

- Bylong River valley
- Widden valley

Species Richness

Number of plots	5
Total species	114
Average species per plot	40.5 ±11.3

Known Variations

The floristic composition and diversity of this community varies greatly in response to disturbance history and seasonal climatic conditions. Both can result in a severely depleted or altered ground cover, where coarser and resilient species will tend to dominate.

Relationship to Other Communities

Floristically this community relates to the open grassy and shrub/grass box woodlands that occur on fertile soils in the drier areas of the Sydney Basin Bioregion including the Cumberland Plain, Hunter valley and Burragorang valley. Within the study area it grades into S_GW06 on open alluvial terraces. There fuzzy box assumes increased dominance, but there are many floristic similarities between the two communities. The woodland also grades into a shrubby slaty gum dominated forest (S_DSF41) with increased exposure and elevation on the steeper Permian slopes along the Hunter escarpment.

Accuracy

Sample density is moderate. Map domains are drawn from environmental characteristics of site data. Map unit boundaries were defined from the interpretation of lower Permian escarpment slopes dominated by a range of box eucalypts. The accuracy of the line that demarcates S_DSF41 and this community is an approximation and may over or underestimate the extent of either unit on the escarpment slopes.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia decora	5	25%	2	3%	uninformative
Acacia doratoxylon	1	25%	2	7%	uninformative
Acacia falcata	**2**	**25%**	**0**	**0%**	**positive**
Acacia ixiophylla	4	25%	2	1%	uninformative
Acacia linearifolia	**3**	**50%**	**2**	**7%**	**positive**
Acacia muelleriana	2	25%	1	0%	uninformative
Acacia paradoxa	1	25%	2	4%	uninformative
Acacia penninervis var. *penninervis*	3	25%	1	6%	uninformative
Acaena agnipila	1	25%	2	1%	uninformative
Acrotriche rigida	1	25%	1	9%	uninformative
Angophora floribunda	**3**	**50%**	**2**	**16%**	**positive**
Aristida ramosa	**2**	**50%**	**2**	**11%**	**positive**
Aristida vagans	**2**	**50%**	**2**	**6%**	**positive**
Asperula conferta	**2**	**50%**	**2**	**8%**	**positive**
Austrodanthonia racemosa var. *obtusata*	3	25%	2	0%	uninformative
Austrostipa ramosissima	**2**	**75%**	**1**	**1%**	**positive**
Austrostipa scabra	**2**	**50%**	**2**	**3%**	**positive**
Billardiera scandens	1	25%	1	24%	uninformative
Brachychiton populneus subsp. *populneus*	2	25%	1	6%	uninformative
Brachyscome angustifolia	**2**	**50%**	**1**	**1%**	**positive**
Bursaria spinosa subsp. *spinosa*	1	75%	2	25%	uninformative
Calotis lappulacea	2	25%	2	2%	uninformative
Carex inversa	**2**	**50%**	**1**	**2%**	**positive**
Cassinia sp. *D*	2	25%	3	3%	uninformative
Cheilanthes austrotenuifolia	2	25%	2	3%	uninformative
Cheilanthes sieberi* subsp. *sieberi	**2**	**50%**	**1**	**19%**	**positive**
Chloris truncata	1	25%	3	0%	uninformative
Choretrum* sp. *A	**2**	**50%**	**1**	**7%**	**positive**
Clematis aristata	1	100%	1	26%	uninformative
Cymbopogon refractus	2	25%	1	3%	uninformative
Cynoglossum australe	**2**	**50%**	**2**	**3%**	**positive**
Cyperus gracilis	**3**	**50%**	**2**	**0%**	**positive**
Daucus glochidiatus	2	25%	2	8%	uninformative
Desmodium brachypodum	**2**	**50%**	**2**	**1%**	**positive**
Desmodium varians	**2**	**50%**	**2**	**18%**	**positive**
Dianella caerulea	1	25%	1	31%	uninformative
Dianella revoluta var. *revoluta*	1	25%	1	28%	uninformative
Dianella tasmanica	1	100%	1	2%	uninformative
Dichelachne micrantha	**2**	**50%**	**1**	**8%**	**positive**
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Dodonaea viscosa	3	25%	2	11%	uninformative
Echinopogon ovatus	**2**	**50%**	**2**	**16%**	**positive**
Einadia hastata	2	25%	2	3%	uninformative
Einadia nutans	2	25%	2	0%	uninformative
Einadia trigonos	2	25%	1	1%	uninformative
Entolasia marginata	2	25%	2	2%	uninformative
Eremophila debilis	**1**	**25%**	**0**	**0%**	**positive**
Eucalyptus albens	3	25%	3	5%	uninformative
Eucalyptus blakelyi	**4**	**50%**	**3**	**2%**	**positive**
Eucalyptus melliodora	**4**	**50%**	**3**	**4%**	**positive**
Eucalyptus moluccana	3	25%	3	5%	uninformative
Euchiton involucratus	**2**	**50%**	**1**	**3%**	**positive**
Eustrephus latifolius	1	25%	1	8%	uninformative
Exocarpos cupressiformis	2	25%	1	5%	uninformative
Gahnia aspera	**2**	**75%**	**1**	**6%**	**positive**
Galium gaudichaudii	2	25%	2	4%	uninformative
Geranium solanderi var. *solanderi*	1	25%	2	11%	uninformative
Glycine clandestina	1	25%	2	17%	uninformative
Glycine microphylla	2	25%	2	3%	uninformative
Glycine tabacina	**2**	**75%**	**2**	**10%**	**positive**
Goodenia hederacea subsp. *hederacea*	2	25%	2	8%	uninformative
Haloragis serra	1	25%	1	3%	uninformative
Hypericum gramineum	1	25%	2	6%	uninformative
Indigofera adesmiifolia	1	25%	2	1%	uninformative
Indigofera coronillifolia	2	25%	2	1%	uninformative
Lagenophora stipitata	2	25%	1	10%	uninformative
Lissanthe strigosa	1	25%	1	1%	uninformative
Lomandra confertifolia	**2**	**50%**	**2**	**33%**	**positive**
Lomandra longifolia	1	25%	1	28%	uninformative
Lomandra multiflora subsp. *multiflora*	1	25%	1	25%	uninformative
Macrozamia reducta	1	25%	1	10%	uninformative
Maireana enchylaenoides	**1**	**25%**	**0**	**0%**	**positive**
Maytenus silvestris	1	25%	1	5%	uninformative
Melichrus urceolatus	1	50%	1	13%	uninformative
Melicytus dentatus	1	25%	1	5%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Microlaena stipoides	6	25%	2	28%	uninformative
Notelaea microcarpa var. *microcarpa*	1	25%	1	1%	uninformative
Notodanthonia longifolia	**4**	**50%**	**2**	**4%**	**positive**
Olearia elliptica subsp. *elliptica*	2	25%	2	3%	uninformative
Oxalis chnoodes	**2**	**50%**	**1**	**3%**	**positive**
Panicum effusum	1	25%	1	1%	uninformative
Pimelea latifolia	**2**	**75%**	**2**	**3%**	**positive**
Plantago debilis	**2**	**50%**	**2**	**12%**	**positive**
Pomax umbellata	1	25%	2	33%	uninformative
Santalum lanceolatum	2	25%	1	0%	uninformative
Scutellaria humilis	**2**	**50%**	**2**	**1%**	**positive**
Senecio quadridentatus	1	25%	2	3%	uninformative
Sida corrugata	**2**	**75%**	**1**	**1%**	**positive**
Sigesbeckia australiensis	**2**	**50%**	**2**	**3%**	**positive**
Sigesbeckia orientalis subsp. *orientalis*	2	25%	2	5%	uninformative
Solanum brownii	1	75%	1	5%	uninformative
Solanum prinophyllum	1	50%	1	10%	uninformative
Solanum pungetium	**2**	**50%**	**0**	**0%**	**positive**
Solanum vescum	**1**	**25%**	**0**	**0%**	**positive**
Sporobolus creber	**2**	**25%**	**0**	**0%**	**positive**
Stackhousia viminea	2	25%	1	2%	uninformative
Themeda australis	2	25%	1	6%	uninformative
Urtica incisa	2	25%	2	7%	uninformative
Veronica plebeia	1	25%	2	15%	uninformative
Vittadinia cervicularis	2	25%	1	0%	uninformative
Vittadinia sulcata	**2**	**50%**	**1**	**2%**	**positive**
Wahlenbergia communis	**2**	**50%**	**1**	**7%**	**positive**
Wahlenbergia gracilis	1	25%	1	5%	uninformative

Statewide Class
Western Slopes Grassy Woodlands

Plant Community Type:
Fuzzy Box - Inland Grey Box on alluvial brown loam soils of the NSW South Western Slopes Bioregion and southern BBS Bioregion (Benson 201)

Description

Western Hunter Flats Fuzzy Box Woodland occurs on the dry north-west fringes of the Sydney Basin Bioregion on clay-rich alluvial soils. The woodland is dominated by fuzzy box (*Eucalyptus conica*) sometimes in combination with Blakely's red gum (*Eucalyptus blakelyi*) and yellow box (*Eucalyptus melliodora*). This woodland is rare in the Bioregion and severely disturbed, often with little more than scattered trees remaining above a highly modified agricultural understorey. Less disturbed sites include an open cover of small trees and shrubs including wattles, hopbush and blackthorn. The composition and cover abundance of the ground layer is highly variable depending on disturbance history and prevailing climatic conditions. At sample sites weeping grass (*Microlaena stipoides*) was most abundant, with hardy wire grass (*Aristida ramosa*) and sida (*Sida corrugata*) sparsely distributed.

This woodland occurs in the driest zones of the Bioregion where mean rainfall levels fall between 550 and 700 millimetres per annum. It occurs on broad alluvial terraces above the riverbanks that drain the open and undulating Permian valleys. These lower-lying Permian valleys sit at elevations between 90 and 220 metres above sea level. The broader valleys carry a heavier clay soil and at times are enriched by clays from basalt intrusions penetrating the Permian bedrocks. This can be seen in the northern extent of the study area between Bylong and Murrumbo Gap. Elsewhere in the Bioregion the community is found between Bylong and Denman in the western Hunter valley. It is likely that this woodland is extensively distributed throughout the drier bioregions that occur to the north and west of the Sydney basin; it is known around Dubbo (Kerr and Jowett 2003).

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	19 m ±6 15-23	20% ±21 5-35	*Eucalyptus conica, Eucalyptus tereticornis, Eucalyptus blakelyi*
Small Trees	6 m ±3 4-8	5% ±0 5-5	*Acacia decora, Acacia linearifolia, Bursaria spinosa*
Shrubs (n=1)	1.5 m 1.5	10% 10	*Bursaria spinosa, Cassinia quinquefaria, Choretrum* sp. A
Ground Covers	0.4 m ±0.5 0.1-1.0	37% ±6 30-40	*Microlaena stipoides* var. *stipoides, Einadia hastata, Cymbopogon refractus, Dichondra sp. , Gahnia aspera, Lepidosperma laterale, Desmodium gunnii, Oxalis perennans*
Vines & Climbers	N/A	N/A	*Glycine clandestina, Glycine microphylla*

*Compiled from 2 of 2 sites with structural data recorded.

Threats

Threats to this community are severe. Past clearing has diminished a large proportion of the original pre-European cover, and remnants are characterised by high levels of disturbance and continuing agricultural land use pressures.

Conservation Status

This community is likely to form a component of Fuzzy Box Woodland on Alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions, a TEC under the TSC Act. However the listing does not currently include the Sydney Basin Bioregion and the paucity of sample sites within this Bioregion means caution is required when drawing conclusions as to whether it meets the legal definition. More definitively it forms a component of White Box-Yellow Box-Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands, a TEC listed under the EPBC Act. Small areas are known to occur in Wollemi NP and Goulburn River NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	6099-12,198 ha
Estimated percentage cleared	Not available	80-90%
Area in formal conservation reserves	15.6 ha	36 ha 3% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	204.2 ha	Not available
Total extant area	219.8 ha	1220 ha

Example Locations

- Murrumbo Gap

Species Richness

Number of plots	2
Total species	68
Average species per plot	36.5 ±34.6

Known Variations

The floristic composition and diversity of this community varies greatly in response to disturbance history and seasonal climatic conditions. Both can result in severely depleted or altered ground covers, where coarser and resilient species will tend to dominate. The dominance of overstorey species may also vary from the species described in this profile.

Relationship to Other Communities

Floristically this community relates to the open grassy and grassy box woodlands that occur on fertile soils in the drier areas of the Sydney Basin Bioregion including the Cumberland Plain, Hunter valley and Burragorang valley. Within the study area it grades toward S_GW05 as valleys narrow onto Permian escarpment footslopes and white box and yellow box assume increased dominance. The woodland may also grade onto riparian forests dominated by river oak (*Casuarina cunninghamiana* subsp. *cunninghamiana*) on riverbanks and *Angophora floribunda* forests on alluvial sand deposits.

Accuracy

Classification of this community is based on two sample sites; one of the sites is highly disturbed with few species and the other occurs in an area which is transitional with surrounding Permian sediments. Few remnants of this community remain, with most stands comprising scattered trees above an agricultural understorey. As a result, classification confidence is low. Stands of fuzzy box dominated woodlands on alluvial soils have been mapped using API and supported by field reconnaissance on accessible public roads across private lands.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia decora	**3**	**50%**	**2**	**3%**	**positive**
Acacia doratoxylon	1	50%	2	7%	uninformative
Acacia linearifolia	**4**	**50%**	**2**	**7%**	**positive**
Acrotriche rigida	1	50%	1	9%	uninformative
Allocasuarina verticillata	1	50%	1	1%	uninformative
Aristida ramosa	**2**	**50%**	**2**	**11%**	**positive**
Aristida vagans	1	50%	2	7%	uninformative
Austrodanthonia racemosa* var. *obtusata	**2**	**50%**	**3**	**0%**	**positive**
Austrostipa ramosissima	**2**	**50%**	**1**	**1%**	**positive**
Austrostipa verticillata	**2**	**50%**	**2**	**3%**	**positive**
Brunoniella australis	1	50%	1	1%	uninformative
Bursaria spinosa* subsp. *spinosa	**2**	**100%**	**2**	**25%**	**positive**
Callistemon salignus	1	50%	1	1%	uninformative
Calotis lappulacea	**2**	**50%**	**2**	**2%**	**positive**
Carex inversa	1	50%	1	3%	uninformative
Cassinia quinquefaria	**2**	**50%**	**2**	**9%**	**positive**
Cheilanthes sieberi* subsp. *sieberi	**2**	**50%**	**1**	**19%**	**positive**
Chloris truncata	**2**	**50%**	**3**	**0%**	**positive**
Choretrum* sp. *A	**2**	**50%**	**1**	**7%**	**positive**
Clematis aristata	**2**	**50%**	**1**	**27%**	**positive**
Commelina cyanea	**1**	**50%**	**0**	**0%**	**positive**
Correa reflexa	1	50%	1	8%	uninformative
Cymbopogon refractus	**3**	**50%**	**1**	**3%**	**positive**
Cyperus gracilis	**2**	**50%**	**2**	**1%**	**positive**
Daucus glochidiatus	**2**	**50%**	**2**	**8%**	**positive**
Desmodium varians	1	50%	2	19%	uninformative
Dianella tasmanica	**2**	**50%**	**1**	**3%**	**positive**
Dichondra repens	**3**	**50%**	**2**	**27%**	**positive**
Echinopogon ovatus	**2**	**50%**	**2**	**16%**	**positive**
Einadia hastata	**2**	**100%**	**2**	**3%**	**positive**
Eucalyptus conica	**4**	**100%**	**0**	**0%**	**positive**
Eucalyptus tereticornis	1	50%	3	1%	uninformative
Euchiton sphaericus	1	50%	1	2%	uninformative
Gahnia aspera	**3**	**50%**	**1**	**6%**	**positive**
Galium propinquum	1	50%	2	16%	uninformative
Glycine clandestina	**2**	**50%**	**2**	**17%**	**positive**
Glycine microphylla	**2**	**50%**	**2**	**3%**	**positive**
Glycine tabacina	1	50%	2	10%	uninformative
Hybanthus monopetalus	1	50%	1	3%	uninformative
Indigofera australis	1	50%	2	14%	uninformative
Isopogon dawsonii	1	50%	1	8%	uninformative
Lepidosperma laterale	**2**	**100%**	**1**	**23%**	**positive**
Lomandra longifolia	1	50%	1	28%	uninformative
Lomandra multiflora subsp. *multiflora*	1	50%	1	25%	uninformative
Microlaena stipoides	**5**	**100%**	**2**	**27%**	**positive**
Notelaea microcarpa var. *microcarpa*	1	50%	1	1%	uninformative
Oplismenus aemulus	1	50%	2	2%	uninformative
Oxalis perennans	**2**	**50%**	**1**	**10%**	**positive**
Panicum effusum	1	50%	1	1%	uninformative
Paspalidium criniforme	**2**	**50%**	**1**	**1%**	**positive**
Paspalidium distans	1	50%	1	0%	uninformative
Paspalidium gracile	1	50%	2	1%	uninformative
Phebalium squamulosum	1	50%	2	10%	uninformative
Pimelea curviflora	1	50%	2	2%	uninformative
Platysace ericoides	1	50%	2	22%	uninformative
Poa labillardierei var. *labillardierei*	1	50%	2	7%	uninformative
Poranthera microphylla	1	50%	1	13%	uninformative
Rumex brownii	**2**	**50%**	**1**	**3%**	**positive**
Scaevola ramosissima	1	50%	1	2%	uninformative
Sida corrugata	1	50%	2	1%	uninformative
Sigesbeckia australiensis	**2**	**50%**	**2**	**3%**	**positive**
Solanum parvifolium subsp. *parvifolium*	1	50%	1	1%	uninformative
Stellaria pungens	1	50%	2	17%	uninformative
Themeda australis	1	50%	1	6%	uninformative
Vittadinia sulcata	**2**	**50%**	**2**	**2%**	**positive**
Wahlenbergia gracilis	**2**	**50%**	**1**	**5%**	**positive**
Wahlenbergia stricta	**2**	**50%**	**1**	**3%**	**positive**

MONTANE BASALT STRINGYBARK-BRITTLE GUM FOREST S_GW07

Statewide Class New England Grassy Woodlands

Plant Community Type: Not described

Description

West Montane Basalt Stringybark-Brittle Gum Forest is a moderately tall eucalypt forest with a dry shrub layer and grassy ground cover, found on high elevation basalt plateaux in the north-west of the Sydney basin. The forest is dominated by silver-top stringybark (*Eucalyptus laevopinea*) and brittle gums (*Eucalyptus praecox/Eucalyptus mannifera*) sometimes in association with lower-growing scribbly gums (*Eucalyptus rossii*), yellow box (*Eucalyptus melliodora*) and mountain gum (*Eucalyptus dalrympleana*). The shrub layer is sparse to moderately dense and includes blackthorn (*Bursaria spinosa*), native cranberry (*Astroloma humifusum*) as well as *Cassinia* spp., wattles (Acacia *spp.*) and peas (Fabaceae family). The ground layer features an open cover of grasses, herbs and rushes. Wallaby grass (*Austrodanthonia racemosa*) and kangaroo grass (*Themeda australis*) are the most common and abundant. Unlike high altitude forests on basalt elsewhere, tussock grasses are uncommon.

This forest has a naturally restricted distribution in the region, known only from Nullo Mountain near Rylstone and residual basalt on Airly Mountain. It is associated with the thinner basalt soils that cover ridges and exposed slopes near the interface between basalt and sandstone. It is most extensive at elevations greater than 1000 metres above sea level above sea level although may be found down to 900 metres. It occupies a zone of moderate average annual rainfall of around 850 millimetres. It is a feature of Nullo Mountain SF and private land, with small fringing areas occurring in Wollemi NP. This forest has close affinities with the dry shrub/grass forests found on residual basalt peaks of the North West Slopes including the Warrumbungles and Mount Kaputar.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	25 m ±6 18-35	22% ±14 10-50	*Eucalyptus laevopinea, Eucalyptus praecox, Eucalyptus melliodora, Eucalyptus mannifera, Eucalyptus rossii*
Small Trees	6 m ±4 2-15	16% ±21 5-70	*Acacia melanoxylon*
Shrubs	2.5 m ±0.9 2.0-4.0	10% ±7 2-20	*Bursaria spinosa, Cassinia quinquefaria, Daviesia genistifolia, Indigofera australis, Melichrus urceolatus*
Ground Covers	0.7 m ±0.4 0.2-1.5	27% ±16 5-60	*Acaena novae-zelandiae, Astroloma humifusum, Lepidosperma laterale, Poa labillardierei* var. *labillardierei, Themeda australis, Echinopogon ovatus, Stellaria pungens, Austrodanthonia racemosa var. racemosa, Lomandra confertifolia* subsp. *pallida, Lomandra longifolia, Plantago gaudichaudii, Viola betonicifolia, Asperula conferta, Desmodium gunnii*
Vines & Climbers	N/A	N/A	*Glycine clandestina*

*Compiled from 10 of 10 sites with structural data recorded.

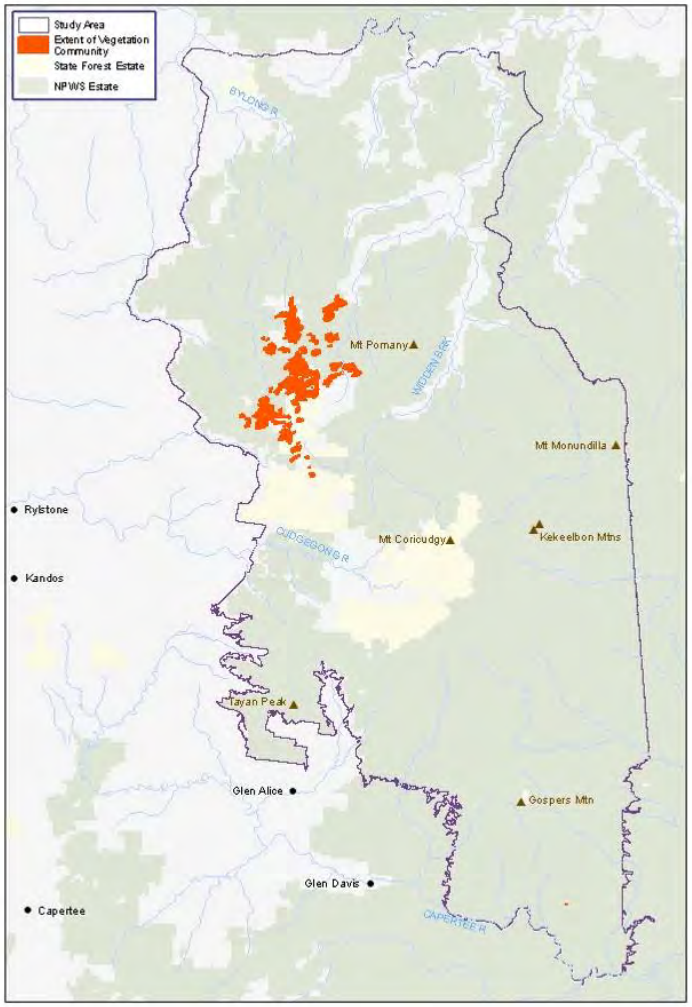
Threats

There are significant past and present threats to this community. Clearing for agriculture is likely to have depleted extensive areas of this forest from private land on Nullo Mountain. Currently, stands within Nullo Mountain SF are managed for timber production and hence are subject to grazing activities. Invasion of the ground layer by exotic species occurs in, and proximate to, cleared areas and areas subjected to grazing activity.

Conservation Status

Within reserve the forest is restricted to small areas of north-west Wollemi NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	2934-4401 ha
Estimated percentage cleared	Not available	40-60%
Area in formal conservation reserves	856.7 ha	858 ha 49% of extant area
Area in state forests	208.6 ha	Not available
Area in other tenures	694.9 ha	Not available
Total extant area	1760.2 ha	1760 ha



Example Locations

- Nullo Mountain SF

Species Richness

Number of plots	10
Total species	134
Average species per plot	31.3 ±7.1

Known Variations

Variation in floristic composition is relatively minor across Nullo Mountain. Some stands have a higher cover of shrubs which may derive from the absence of fire and/or grazing pressures.

Relationship to Other Communities

Floristically this forest is unique within the Sydney basin region. It has greater affinities with other dry shrub/grass forests on basalt peaks in north-west New South Wales than it does with any other community in the Sydney region.

Spatially this forest grades into a grassy tall *Eucalyptus viminalis/E. nobilis* dominated forest (S_WSF29) as basalt soils deepen and elevation increases. At lower elevations the basalt soils carry woodland dominated by *Eucalyptus albens* (S_GW11).

Accuracy

Sample effort is high. Map domains are derived from site data. Map unit boundaries were identified by delineating dry shrub/grass forests and woodlands on exposed shallow basalt soils. The crown signature of *Eucalyptus laevopinea-Eucalyptus praecox* and low canopy height were used resolve the boundaries of this community from others found on, or proximate to, basalt soils.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia deanei	2	10%	1	2%	uninformative
Acacia implexa	2	10%	1	5%	uninformative
Acacia melanoxylon	**2**	**60%**	**2**	**7%**	**positive**
Acacia obtusifolia	1	20%	2	14%	uninformative
Acacia parramattensis	1	10%	3	3%	uninformative
Acaena novae-zelandiae	**2**	**70%**	**2**	**4%**	**positive**
Acrotriche serrulata	1	10%	1	1%	uninformative
Ajuga australis	1	30%	1	7%	uninformative
Asperula conferta	**2**	**50%**	**2**	**8%**	**positive**
Asperula scoparia	2	30%	2	1%	uninformative
Asplenium flabellifolium	1	40%	1	11%	uninformative
Astroloma humifusum	**2**	**90%**	**1**	**7%**	**positive**
Austrodanthonia laevis	**2**	**10%**	**0**	**0%**	**positive**
Austrodanthonia penicillata	**4**	**20%**	**0**	**0%**	**positive**
Austrodanthonia racemosa* var. *racemosa	**4**	**50%**	**2**	**4%**	**positive**
Austrostipa scabra	1	10%	2	4%	uninformative
Blechnum cartilagineum	1	10%	3	10%	uninformative
Bossiaea lenticularis	**2**	**10%**	**0**	**0%**	**positive**
Bossiaea prostrata	2	10%	1	1%	uninformative
Bothriochloa decipiens var. *decipiens*	1	10%	1	0%	uninformative
Bursaria spinosa* subsp. *spinosa	**3**	**70%**	**2**	**24%**	**positive**
Calotis hispidula	**2**	**10%**	**0**	**0%**	**positive**
Carex incomitata	2	20%	2	1%	uninformative
Cassinia quinquefaria	**2**	**50%**	**2**	**8%**	**positive**
Cassinia uncata	1	20%	1	5%	uninformative
Chaerophyllum eriopodum	2	10%	1	1%	uninformative
Cheilanthes sieberi subsp. *sieberi*	2	20%	1	19%	uninformative
Choretrum candollei	1	10%	1	1%	uninformative
Clematis aristata	1	40%	1	27%	uninformative
Cymbonotus lawsonianus	**2**	**40%**	**1**	**3%**	**positive**
Cynoglossum australe	1	10%	2	4%	uninformative
Daucus glochidiatus	2	10%	2	8%	uninformative
Daviesia genistifolia	1	60%	1	4%	uninformative
Dendrophthoe vitellina	1	10%	1	0%	uninformative
Derwentia perfoliata	**1**	**10%**	**0**	**0%**	**positive**
Desmodium brachypodum	2	20%	2	2%	uninformative
Desmodium varians	**2**	**50%**	**2**	**18%**	**positive**
Dianella longifolia	1	10%	1	3%	uninformative
Dianella revoluta var. *revoluta*	1	40%	1	27%	uninformative
Dianella tasmanica	1	10%	1	3%	uninformative
Dichelachne hirtella	**2**	**10%**	**0**	**0%**	**positive**
Dichelachne micrantha	1	10%	1	9%	uninformative
Dichondra repens	2	30%	2	27%	uninformative
Dodonaea viscosa	1	10%	2	11%	uninformative
Echinopogon intermedius	2	10%	2	1%	uninformative
Echinopogon ovatus	1	70%	2	15%	uninformative
Elymus scaber	2	30%	2	1%	uninformative
Eucalyptus blaxlandii	4	10%	3	5%	uninformative
Eucalyptus cypellocarpa	1	10%	3	10%	uninformative
Eucalyptus dalrympleana subsp. *heptantha*	1	10%	4	0%	uninformative
Eucalyptus laevopinea	**4**	**90%**	**2**	**4%**	**positive**
Eucalyptus mannifera subsp. *mannifera*	1	20%	2	1%	uninformative
Eucalyptus melliodora	2	30%	3	4%	uninformative
Eucalyptus moluccana	1	10%	3	3%	uninformative
Eucalyptus praecox	**3**	**40%**	**1**	**0%**	**positive**
Eucalyptus punctata	4	10%	3	33%	uninformative
Eucalyptus rossii	4	20%	3	14%	uninformative
Eucalyptus viminalis	1	10%	3	8%	uninformative
Euchiton involucratus	1	10%	1	3%	uninformative
Eustrephus latifolius	2	30%	1	8%	uninformative
Galium migrans	**2**	**40%**	**3**	**0%**	**positive**
Geranium retrorsum	**2**	**10%**	**0**	**0%**	**positive**
Geranium solanderi* var. *solanderi	**2**	**40%**	**2**	**10%**	**positive**
Glossocardia bidens	1	10%	2	0%	uninformative
Glycine clandestina	**2**	**60%**	**2**	**16%**	**positive**
Glycine microphylla	1	10%	2	4%	uninformative
Glycine tabacina	2	30%	2	10%	uninformative
Hardenbergia violacea	1	40%	1	25%	uninformative
Hydrocotyle laxiflora	1	20%	2	19%	uninformative
Hydrocotyle sibthorpioides	1	10%	2	2%	uninformative
Hypericum gramineum	2	20%	2	6%	uninformative
Indigofera australis	**2**	**40%**	**2**	**14%**	**positive**
Lachnagrostis filiformis	1	10%	2	1%	uninformative
Lagenophora stipitata	1	20%	1	10%	uninformative
Lepidosperma elatius	2	10%	2	1%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Lepidosperma laterale	**2**	**60%**	**1**	**23%**	**positive**
Lespedeza juncea* subsp. *sericea	**1**	**10%**	**0**	**0%**	**positive**
Lomandra confertifolia	**4**	**40%**	**2**	**33%**	**positive**
Lomandra filiformis	2	20%	2	18%	uninformative
Lomandra longifolia	1	50%	1	27%	uninformative
Lomandra multiflora subsp. *multiflora*	1	30%	1	25%	uninformative
Melichrus erubescens	2	20%	1	3%	uninformative
Melichrus urceolatus	1	50%	1	13%	uninformative
Microlaena stipoides	2	30%	2	28%	uninformative
Monotoca scoparia	1	10%	2	25%	uninformative
Picris angustifolia	**2**	**10%**	**0**	**0%**	**positive**
Pimelea linifolia	2	10%	2	12%	uninformative
Plantago debilis	2	20%	2	13%	uninformative
Plantago gaudichaudii	**2**	**50%**	**2**	**2%**	**positive**
Poa labillardierei var. *labillardierei*	2	20%	1	7%	uninformative
Polystichum fallax	1	10%	3	2%	uninformative
Pteridium esculentum	2	20%	2	32%	uninformative
Ranunculus lappaceus	2	20%	2	7%	uninformative
Rhodanthe anthemoides	2	10%	1	0%	uninformative
Schoenus apogon	1	10%	2	1%	uninformative
Senecio bathurstianus	1	10%	1	1%	uninformative
Senecio hispidulus	2	10%	1	4%	uninformative
Senecio lautus	2	30%	2	2%	uninformative
Senecio prenanthoides	**2**	**40%**	**1**	**3%**	**positive**
Senecio quadridentatus	1	20%	2	3%	uninformative
Smilax glyciphylla	2	20%	1	8%	uninformative
Solenogyne dominii	**1**	**10%**	**0**	**0%**	**positive**
Stellaria pungens	**2**	**70%**	**2**	**16%**	**positive**
Styphelia triflora	1	10%	1	13%	uninformative
Themeda australis	**2**	**60%**	**1**	**5%**	**positive**
Veronica calycina	2	30%	2	3%	uninformative
Viola betonicifolia* subsp. *betonicifolia	**2**	**50%**	**2**	**7%**	**positive**
Viola hederacea	2	30%	2	9%	uninformative
Wahlenbergia communis	1	10%	1	7%	uninformative

Statewide Class Southern Tableland Grassy Woodlands

Plant Community Type: Not described

Description

Cudgegong Footslopes Yellow Box Forest is an open eucalypt forest with an open cover of dry shrubs and grasses found on Permian soils along the escarpment footslopes of the north-west Blue Mountains. It is dominated by yellow box (*Eucalyptus melliodora*), with rough-barked apple (*Angophora floribunda*) also common. Dry shrubs such as blackthorn (*Bursaria spinosa*), *Cassinia quinquefaria*, wattles (*Acacia* spp.) and geebung (*Persoonia linearis*) provide a low open shrub layer. The ground layer has a pronounced cover of grasses notably kangaroo grass (*Themeda australis*), *Austrostipa* spp. and weeping grass (*Microlaena stipoides*). Small herb species are also common and diverse.

This forest occurs on the footslopes of the western escarpment of the Blue Mountains and Wollemi plateaux. It is associated with Permian soils that are exposed beneath Narrabeen cliffs and talus slopes, on the margins of the major perched valleys. This includes the elevated Cudgegong and Rylstone valleys that lie between 650 and 720 metres above sea level. These are relatively cool valley systems that receive around 675-700 millimetres of mean annual rainfall.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	23 m ±6 18-27	30% ±7 25-35	*Eucalyptus melliodora, Angophora floribunda, Eucalyptus blakelyi, Eucalyptus cannonii*
Shrubs	2.7 m ±1.8 1.4-4.0	5% ±0 5-5	*Acacia filicifolia, Bursaria spinosa* subsp. *spinosa, Hibbertia circumdans, Indigofera australis, Melichrus urceolatus, Persoonia linearis, Podolobium ilicifolium*
Ground Covers	0.5 m ±0.4 0.1-0.9	35% ±24 15-70	*Austrodanthonia racemosa* var. *racemosa, Cheilanthes sieberi* subsp. *sieberi, Desmodium varians, Dianella revoluta* var. *revoluta, Dichelachne micrantha, Dichondra repens, Echinopogon ovatus, Galium propinquum, Hydrocotyle laxiflora, Lomandra longifolia, Microlaena stipoides, Solanum prinophyllum, Themeda australis, Wahlenbergia communis*
Vines & Climbers	N/A	N/A	*Billardiera scandens, Glycine tabacina*

*Compiled from 3 of 3 sites with structural data recorded.

Threats

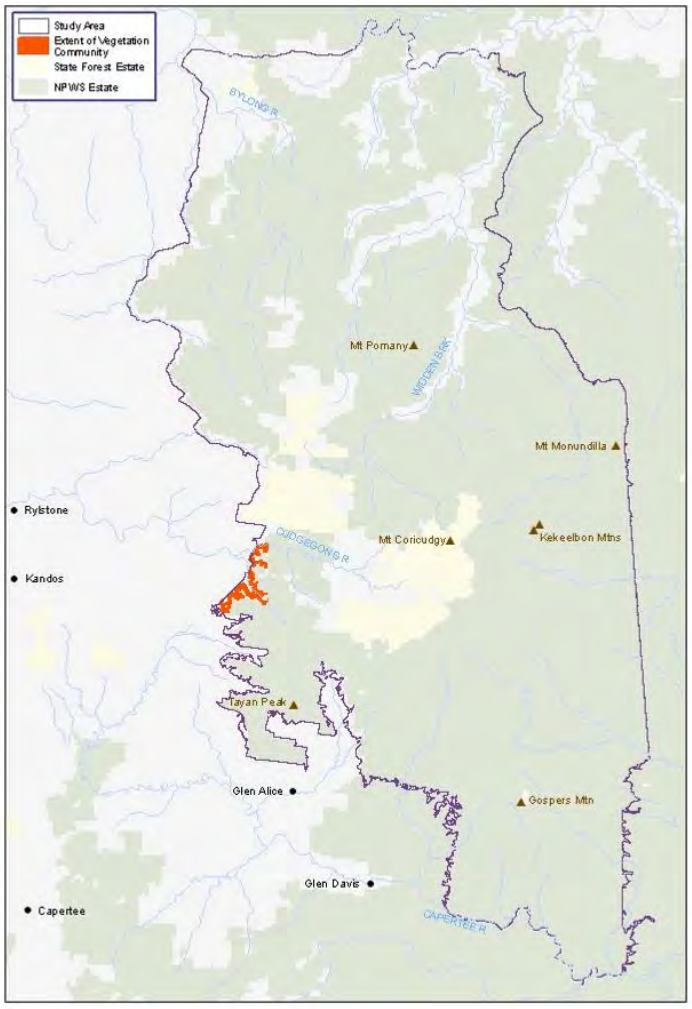
This community occurs on the margins of several large valleys that have been cleared for agricultural purposes. Some patches on marginal grazing land have themselves been cleared in the past and since regenerated following cessation of intense grazing. Grazing livestock are still regularly seen within this community, making use of the forest for shelter and feed. The stands within Wollemi NP abut private holdings, where agricultural practices such as livestock grazing and frequent low-intensity burning remain in practice. Weeds are likely to be recorded within the forest owing to these past and present land uses.

Conservation Status

This community is likely to form a component of White Box-Yellow Box-Blakely's Red Gum Woodland, a TEC listed under the TSC Act. It is also likely to form a component of White Box-Yellow Box-Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands, a TEC listed under the EPBC Act.

Small areas of the community occur in Wollemi NP. It is not represented elsewhere in the reserve system.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	2146-3755 ha
Estimated percentage cleared	Not available	30-60%
Area in formal conservation reserves	128.4 ha	129 hectares 9% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	73.5 ha	Not available
Total extant area	201.9 ha	1502 ha



Example Locations

- Towinhingy Creek valley
- Below Rylstone Dam area

Species Richness

Number of plots	3
Total species	103
Average species per plot	48.0 ±20.5

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this forest is very closely related to the taller forests found on transitional basalt soils that fringe the major basalt peaks of the study area (S_WSF21). It also shares species with the taller ribbon gum forest (S_WSF25) that occupies the adjoining gully flats.

Spatially the forest grades into S_WSF25 as the escarpment slopes drop down to the alluvial terraces. The Narrabeen sediments that occur above the community carry a shrubby dry sclerophyll forest dominated by *Eucalyptus piperita* (S_DSF56).

Accuracy

Sample density is high within the study area but is low across the extent of the community outside the study area. Further sampling is required on adjoining private lands. Map domains are based on elevation and substrate parameters of site data. Map unit boundaries are drawn from the interpretation of Permian sediments on lower escarpment footslopes dominated by yellow box.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia filicifolia	2	33%	2	6%	uninformative
Acacia implexa	1	33%	1	5%	uninformative
Acacia parvipinnula	2	33%	2	1%	uninformative
Angophora floribunda	**3**	**100%**	**2**	**16%**	**positive**
Aristida ramosa	2	33%	2	11%	uninformative
Asperula conferta	1	33%	2	9%	uninformative
Astroloma humifusum	2	33%	1	9%	uninformative
Austrodanthonia racemosa* var. *racemosa	**2**	**67%**	**2**	**4%**	**positive**
Austrostipa densiflora	**4**	**33%**	**0**	**0%**	**positive**
Austrostipa verticillata	2	33%	2	3%	uninformative
Billardiera scandens	1	100%	1	23%	uninformative
Bossiaea buxifolia	1	33%	1	1%	uninformative
Bulbine bulbosa	1	33%	1	1%	uninformative
Bursaria spinosa* subsp. *spinosa	**2**	**100%**	**2**	**25%**	**positive**
Carex inversa	2	33%	1	3%	uninformative
Cassinia quinquefaria	1	33%	2	9%	uninformative
Cheilanthes distans	1	33%	1	5%	uninformative
Cheilanthes sieberi* subsp. *sieberi	**2**	**67%**	**1**	**19%**	**positive**
Clematis aristata	2	33%	1	27%	uninformative
Crassula sieberiana	1	67%	1	6%	uninformative
Cryptandra amara	1	33%	1	0%	uninformative
Cymbopogon refractus	1	33%	2	3%	uninformative
Cynoglossum suaveolens	1	33%	2	0%	uninformative
Desmodium rhytidophyllum	1	33%	2	0%	uninformative
Desmodium varians	**2**	**67%**	**2**	**18%**	**positive**
Dianella revoluta* var. *revoluta	**2**	**67%**	**1**	**27%**	**positive**
Dichelachne micrantha	**2**	**67%**	**1**	**8%**	**positive**
Dichondra repens	**2**	**67%**	**2**	**27%**	**positive**
Digitaria ramularis	1	33%	1	5%	uninformative
Echinopogon ovatus	**2**	**67%**	**2**	**16%**	**positive**
Einadia hastata	**2**	**67%**	**2**	**3%**	**positive**
Entolasia stricta	2	33%	2	32%	uninformative
Eragrostis leptostachya	2	33%	1	0%	uninformative
Eucalyptus blakelyi	3	33%	3	2%	uninformative
Eucalyptus cannonii	2	33%	1	2%	uninformative
Eucalyptus melliodora	**3**	**100%**	**3**	**4%**	**positive**
Euchiton sphaericus	1	33%	1	2%	uninformative
Eustrephus latifolius	1	33%	1	8%	uninformative
Exocarpos strictus	1	33%	1	16%	uninformative
Gahnia aspera	2	33%	1	6%	uninformative
Galium gaudichaudii	1	33%	2	4%	uninformative
Galium propinquum	**2**	**67%**	**2**	**16%**	**positive**
Geitonoplesium cymosum	1	33%	1	7%	uninformative
Geranium homeanum	1	33%	2	5%	uninformative
Geranium solanderi var. *solanderi*	1	33%	2	11%	uninformative
Glycine clandestina	1	67%	2	17%	uninformative
Glycine microphylla	1	33%	2	3%	uninformative
Glycine tabacina	**2**	**67%**	**2**	**10%**	**positive**
Gonocarpus tetragynus	2	33%	2	13%	uninformative
Goodenia hederacea subsp. *hederacea*	1	33%	2	8%	uninformative
Hardenbergia violacea	1	67%	1	25%	uninformative
Hibbertia circumdans	1	67%	1	13%	uninformative
Hibbertia obtusifolia	1	33%	1	5%	uninformative
Hydrocotyle laxiflora	**2**	**100%**	**2**	**19%**	**positive**
Hypericum japonicum	**1**	**33%**	**0**	**0%**	**positive**
Imperata cylindrica	1	33%	1	2%	uninformative
Indigofera australis	**2**	**67%**	**2**	**14%**	**positive**
Lachnagrostis filiformis	2	33%	1	1%	uninformative
Lagenophora stipitata	**2**	**67%**	**1**	**9%**	**positive**
Lepidosperma laterale	1	33%	1	24%	uninformative
Leptomeria acida	1	33%	1	8%	uninformative
Lomandra confertifolia	1	67%	2	33%	uninformative
Lomandra longifolia	1	100%	1	27%	uninformative
Lomandra multiflora subsp. *multiflora*	1	67%	1	25%	uninformative
Melichrus urceolatus	1	100%	1	13%	uninformative
Mentha diemenica	2	33%	2	0%	uninformative
Microlaena stipoides	**2**	**67%**	**2**	**27%**	**positive**
Opercularia diphylla	1	33%	1	2%	uninformative
Oxalis perennans	**2**	**67%**	**1**	**9%**	**positive**
Persoonia linearis	1	67%	1	55%	uninformative
Phyllanthus hirtellus	2	33%	2	22%	uninformative
Pimelea latifolia	1	33%	2	4%	uninformative
Plantago debilis	2	33%	2	13%	uninformative
Poa labillardierei var. *labillardierei*	1	33%	2	7%	uninformative
Podolobium ilicifolium	1	67%	2	30%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Pomax umbellata	**2**	**67%**	**2**	**33%**	**positive**
Poranthera microphylla	**2**	**67%**	**1**	**13%**	**positive**
Pteridium esculentum	1	67%	2	31%	uninformative
Rubus parvifolius	1	33%	1	6%	uninformative
Rumex brownii	1	33%	1	3%	uninformative
Scutellaria humilis	2	33%	2	1%	uninformative
Senecio bipinnatisectus	1	33%	1	0%	uninformative
Sigesbeckia australiensis	1	33%	2	3%	uninformative
Sigesbeckia orientalis subsp. *orientalis*	1	33%	2	5%	uninformative
Solanum campanulatum	1	33%	1	4%	uninformative
Solanum prinophyllum	**2**	**67%**	**1**	**10%**	**positive**
Sorghum leiocladum	1	33%	1	0%	uninformative
Stackhousia monogyna	1	33%	1	2%	uninformative
Styphelia triflora	1	33%	1	13%	uninformative
Themeda australis	**4**	**67%**	**1**	**6%**	**positive**
Urtica incisa	1	33%	2	7%	uninformative
Vernonia cinerea var. *cinerea*	1	67%	1	1%	uninformative
Veronica plebeia	2	33%	2	15%	uninformative
Viola betonicifolia subsp. *betonicifolia*	1	33%	2	7%	uninformative
Viola hederacea	1	33%	2	10%	uninformative
Vittadinia cuneata	1	33%	1	2%	uninformative
Wahlenbergia communis	**2**	**67%**	**1**	**7%**	**positive**
Zieria cytisoides	1	33%	1	1%	uninformative

HUNTER RANGE BASALT GREY BOX WOODLAND S_GW10

Statewide Class Western Slopes Grassy Woodlands
Plant Community Type:

Description

Hunter Range Basalt Grey Box Woodland is an open eucalypt woodland with a sparse to moderate shrub cover and grassy ground layer. It is found on residual basalt caps and flows situated on top of the sandstone ranges that overlook the Hunter valley in the north of the Sydney basin region. The canopy may be dominated by grey box (*Eucalyptus moluccana*) or its intergrade with white box (*Eucalyptus moluccana* X *albens*). A sparse cover of smaller trees such as black cypress pine (*Callitris endlicheri*) and kurrajong (*Brachychiton populneus* subsp. *populneus*) may be present. The mid stratum comprises dry softer-leaved shrubs with varying percentage cover. Typical species include coffee bush (*Breynia oblongifolia*), blackthorn (*Bursaria spinosa*), *Olearia elliptica* subsp *elliptica*, hopbush (*Dodonaea* spp.), wattles (*Acacia* spp.) and native olive (*Notelaea microcarpa*). The ground layer has a distinctive grassy appearance, particularly when the shrub cover is sparse. A diverse combination of grasses may be encountered including those from the genera *Cymbopogon*, *Aristida*, *Eragrostis* and *Austrostipa*. Combinations of these genera form a moderate cover together with graminoids such as mat rush (*Lomandra* spp.) and saw sedge (*Gahnia aspera*) and forbs such as kidney weed (*Dichondra repens*) and tick trefoils (*Desmodium* spp.). The ground surface may include a shallow and patchy cover of scree and a dry litter layer.

This woodland occupies the shallow to moderately-deep clay loams that are associated with isolated basalt caps found on the lower elevation sandstone ranges of the western Hunter region. It occupies an elevation range of between 150 and 400 metres above sea level and receives a mean annual rainfall of between 620 and 750 millimetres. These relatively warm and dry environments are characteristic of the Goulburn River and upper Hunter valleys. The study area includes the southern limit of this woodland around Kerrabee and the adjoining valleys.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	10 m 10	55% 55	*Eucalyptus moluccana, Eucalyptus albens* X *moluccana, Brachychiton populneus* subsp. *populneus*
Shrubs	3 m 3	35% 35	*Dodonaea viscosa, Notelaea microcarpa* var. *microcarpa, Acacia decora, Allocasuarina verticillata, Cassinia quinquefaria*
Ground Covers	0.5 m 0.5	95% 95	*Aristida ramosa, Aristida vagans, Chloris truncata, Cymbopogon refractus, Bothriochloa decipiens, Brunoniella australis, Calotis lappulacea, Cheilanthes sieberi* subsp*. sieberi, Cynoglossum australe, Desmodium brachypodum, Dichondra repens, Eragrostis lacunaria, Fimbristylis dichotoma, Gahnia aspera, Lomandra multiflora* subsp*. multiflora, Plantago debilis, Solanum brownii, Solanum stelligerum, Vittadinia dissecta* var. *hirta*

*Compiled from 1 of 1 sites with structural data recorded.

Threats

Threatening processes associated with clearing and associated land use activities are prevalent across the extent of this community. Evidence of rough grazing remains at many stands despite the remoteness of locations. This community is characterised by fragmented tree cover, even-aged eucalypts, tracks and trails, presence of exotic species, artificial water holes, canopy gaps and a profuse cover of monospecific woody shrubs. The woodlands may be subject to frequent fire for both fuel reduction and grazing management.

Conservation Status

This community is likely to form a component of White Box-Yellow Box-Blakely's Red Gum Woodland, a TEC listed under the TSC Act. It is also likely to form a component of White Box-Yellow Box-Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands, a TEC listed under the EPBC Act.

The community has an isolated and patchy distribution that is naturally restricted. It is recorded within Wollemi, Yengo, Goulburn River and Towarri national parks with small areas present in Manobalai NR.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	894-1788 ha
Estimated percentage cleared	Not available	40-70%
Area in formal conservation reserves	24.9 ha	275 ha 51% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	161.6 ha	Not available
Total extant area	186.5 ha	536 ha

Example Locations

- Basalt caps above Kerrabee
- Murrumbo Gap

Species Richness

Number of plots	1
Total species	35
Average species per plot	35

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically the community is very closely related to the dry shrub/grass box-ironbark eucalypt woodlands found on clay loams derived from Permian sediments on the Hunter valley floor. These are found outside the study area. Within the study area there are woodlands of similar appearance on basalt soils at higher elevations (S_GW11). However S_GW11 is dominated by *Eucalyptus albens* and features an herbaceous rather than dry grassy understorey.

Spatially the woodland can change abruptly into dry sandstone ridgetop woodland or forest (S_DSF59, S_DSF61).

Accuracy

Sample density is moderate in the study area and moderate across the range of the community. Map domains are based on the climatic, topographic and geological characteristics of sample sites. Map unit boundaries are based on the interpretation of exposed box woodlands on lower elevation basalt caps. These are distinctive photo patterns interpreted with a high degree of confidence.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia decora	1	100%	2	3%	uninformative
Ajuga australis	**2**	**100%**	**1**	**8%**	**positive**
Allocasuarina verticillata	1	100%	1	1%	uninformative
Aristida ramosa	**4**	**100%**	**2**	**11%**	**positive**
Aristida vagans	**3**	**100%**	**2**	**7%**	**positive**
Bothriochloa decipiens var. *decipiens*	1	100%	1	0%	uninformative
Brunoniella australis	1	100%	1	1%	uninformative
Callitris endlicheri	1	100%	1	12%	uninformative
Calotis lappulacea	**2**	**100%**	**2**	**2%**	**positive**
Cassinia quinquefaria	1	100%	2	9%	uninformative
Cheilanthes sieberi* subsp. *sieberi	**2**	**100%**	**1**	**19%**	**positive**
Chloris truncata	**3**	**100%**	**2**	**0%**	**positive**
Cymbopogon refractus	**4**	**100%**	**1**	**3%**	**positive**
Cynoglossum australe	**2**	**100%**	**2**	**4%**	**positive**
Desmodium brachypodum	**2**	**100%**	**1**	**2%**	**positive**
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Dodonaea viscosa	**3**	**100%**	**2**	**11%**	**positive**
Enneapogon gracilis	1	100%	5	0%	uninformative
Eragrostis lacunaria	**2**	**100%**	**2**	**0%**	**positive**
Eucalyptus moluccana	**4**	**100%**	**2**	**3%**	**positive**
Fimbristylis dichotoma	1	100%	2	1%	uninformative
Gahnia aspera	1	100%	1	6%	uninformative
Galium propinquum	1	100%	2	16%	uninformative
Hibiscus sturtii* var. *sturtii	**2**	**100%**	**2**	**1%**	**positive**
Indigofera adesmiifolia	1	100%	2	1%	uninformative
Lomandra multiflora subsp. *multiflora*	1	100%	1	25%	uninformative
Notelaea microcarpa* var. *microcarpa	**3**	**100%**	**1**	**1%**	**positive**
Pandorea pandorana	1	100%	1	8%	uninformative
Plantago debilis	**2**	**100%**	**2**	**13%**	**positive**
Solanum brownii	1	100%	1	6%	uninformative
Solanum stelligerum	1	100%	2	0%	uninformative
Vittadinia dissecta	**2**	**100%**	**2**	**0%**	**positive**
Vittadinia sulcata	**3**	**100%**	**2**	**2%**	**positive**
Wahlenbergia luteola	1	100%	1	0%	uninformative

Statewide Class Western Slopes Grassy Woodlands
Plant Community Type:

Description

Central Tableland Clay White Box Woodland is an open eucalypt woodland with an herbaceous and grassy understorey found on clay soils on the elevated ranges of the north-west Sydney basin. The woodland is dominated by an open cover of white box (*Eucalyptus albens* and *E. albens* X *moluccana*), with rough-barked apple (*Angophora floribunda*), yellow box (*Eucalyptus melliodora*) and tableland stringybarks (*Eucalyptus macrorhyncha* or *Eucalyptus laevopinea*) found occasionally. A sparse cover of small trees including hickory wattle (*Acacia implexa*) may be present. A moderate to sparse cover of low shrubs may also be found. This layer can include Australian indigo (*Indigofera* spp.), blackthorn (*Bursaria spinosa*) and sclerophyllous species such as geebung (*Persoonia linearis*). A continuous ground cover of small herbs such as kidney weed (*Dichondra repens*), pennyworts (*Hydrocotyle* spp.), geraniums (*Geranium* spp.) and starworts (*Stellaria* spp.) are topped by clumps of tussock grass (*Poa* spp.) and weeping grass (*Microlaena stipoides*).

This box woodland has a limited distribution in the Sydney basin region as it closely associated with isolated basalt caps and flows that lie above the sandstone ranges and plateaux. It is largely restricted to altitudes between 500 and 900 metres above sea level between Nullo Mountain and the Merriwa plateau where there is a modest average annual rainfall of between 650 and 850 millimetres. On occasion the woodland can be found at lower elevations, where it occupies sheltered lower slopes and gullies on sediments enriched by eroded basalt or other fine-grained material. The study area encompasses the largest extent of the community in the Sydney region, on the ranges north of Nullo Mountain. The woodland is also found nearby but outside of the study area, near the escarpment footslopes behind Mudgee and on the Merriwa plateau.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	18 m ±9 12-28	40% ±31 5-65	*Eucalyptus albens, Eucalyptus laevopinea, Eucalyptus melliodora, Angophora floribunda, Eucalyptus macrorhyncha, Callitris endlicheri, Eucalyptus albens* X *moluccana*
Small Trees and Shrubs	4.2 m ±2.4 1.5-6.0	15% ±17 5-35	*Acacia implexa, Indigofera coronillifolia, Persoonia linearis, Solanum brownii, Bursaria spinosa, Dodonaea viscosa, Indigofera australis, Acacia uncinata*
Ground Covers	0.6 m ±0.4 0.3-1.0	65% ±44 15-95	*Dichondra repens, Hydrocotyle laxiflora, Stellaria pungens, Galium propinquum, Lomandra multiflora subsp. multiflora, Plantago debilis Ajuga australis Crassula sieberiana Desmodium varians, Arthropodium milleflorum, Arthropodium minus, Cheilanthes sieberi* subsp. *sieberi, Daucus glochidiatus, Microlaena stipoides, Poa sieberiana*
Vines & Climbers	N/A	N/A	*Glycine clandestina, Clematis aristata/glycinoides*

*Compiled from 2 of 20 sites with structural data recorded.

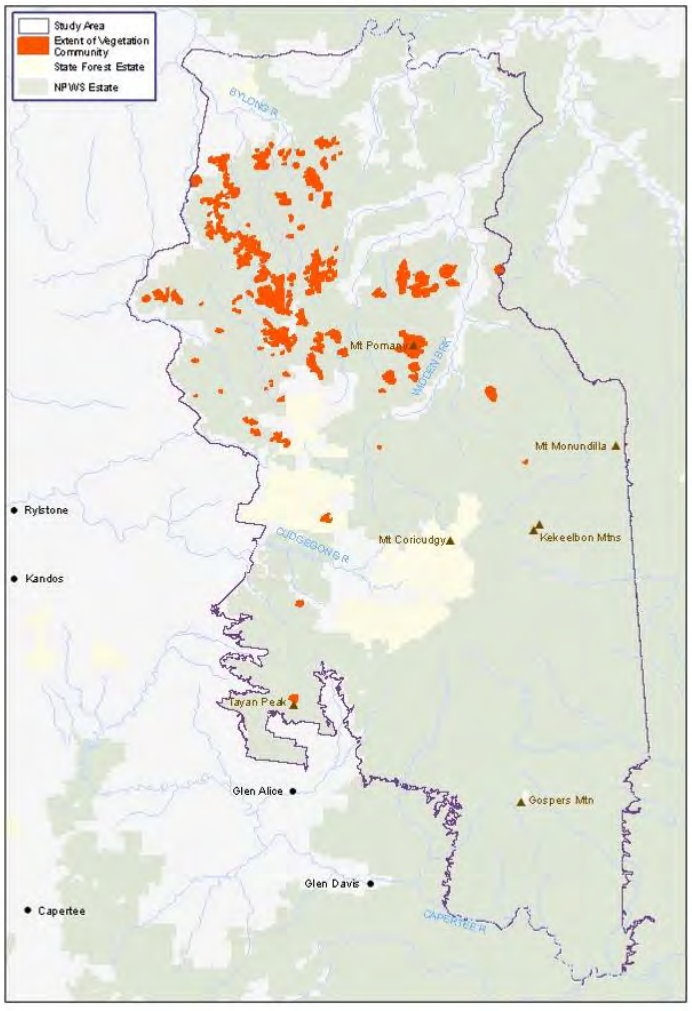
Threats

Stands of this community in the Sydney Basin Bioregion are remote in nature, thus limiting the broad-acre clearing that has occurred across the community in more accessible regions. Nevertheless, despite the distance from human settlement the fertile soils and palatable ground covers of this community have attracted a long history of rough grazing, demonstrated by the presence of old tracks and trails, low levels of exotic species and an even-aged cover of eucalypts. The expansion of weeds such as prickly pear (*Opuntia stricta*) presents a local threat, as does the persistence of feral animals such as rabbits (*Oryctolagus cuniculus*) which are attracted to the deep soils and palatable ground covers.

Conservation Status

This community is likely to form a component of White Box-Yellow Box-Blakely's Red Gum Woodland, a TEC listed under the TSC Act. It is also likely to form a component of White Box-Yellow Box-Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands, a TEC listed under the EPBC Act. This vegetation community is represented in Wollemi NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	10,349-20,698 ha
Estimated percentage cleared	Not available	40-70%
Area in formal conservation reserves	3194.0 ha	3394 ha 55% of extant area
Area in state forests	44.8 ha	Not available
Area in other tenures	670.8 ha	Not available
Total extant area	3909.5 ha	6210 ha



Example Locations

- Myrtle Creek Trail near Sandy Hut
- Cousins Creek area near Growee Hut Trail

Species Richness

Number of plots	20
Total species	138
Average species per plot	42.0 ±6.1

Known Variations

Some deeply weathered basalt caps and diatremes expose the underlying Narrabeen sandstone; here the shallower soils support a higher percentage cover of shrubs and a less continuous ground cover.

Relationship to Other Communities

Floristically the community forms part of a complex of higher elevation box woodlands on clay soils of dry north-west New South Wales. Within the study area, it shares a similar combination of canopy species with the dry woodland found on Permian sediments on lower escarpment footslopes (S_GW05). However that community has a higher abundance of sclerophyllous shrub species and a less herbaceous ground cover.

Spatially this woodland grades into *Callitris endlicheri* dominated low forest (S_DSF44) as the basalt soils thin and grade onto the Narrabeen sandstone. It grades into S_GW07 with increasing elevation which is particularly noticeable around the northern margins of Nullo Mountain. That community is characterised by cold-climate eucalypts such as *Eucalyptus laevopinea* and *Eucalyptus mannifera.*

Accuracy

Sampling density is moderate. Map unit domains relied on geology and elevation data derived from sample sites. Map unit boundaries were initially delineated using the interpretation of basalt caps and flows. These are highly interpretable from stereoscopic aerial photography. The dominance of *E. albens* on the basalt areas was then used to discriminate candidate stands.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia parvipinnula	2	17%	2	1%	uninformative
Acacia uncinata	**2**	**50%**	**2**	**9%**	**positive**
Acaena agnipila	2	17%	2	1%	uninformative
Ajuga australis	**2**	**67%**	**1**	**7%**	**positive**
Angophora floribunda	**4**	**50%**	**2**	**16%**	**positive**
Arthropodium milleflorum	2	33%	2	3%	uninformative
Arthropodium minus	**2**	**67%**	**1**	**1%**	**positive**
Asperula conferta	2	17%	2	9%	uninformative
Asplenium flabellifolium	**2**	**50%**	**1**	**11%**	**positive**
Astroloma humifusum	1	33%	1	9%	uninformative
Billardiera scandens	1	17%	1	24%	uninformative
Brachychiton populneus subsp. *populneus*	1	17%	1	6%	uninformative
Bursaria spinosa* subsp. *spinosa	**2**	**50%**	**2**	**25%**	**positive**
Callitris endlicheri	1	33%	1	12%	uninformative
Callitris glaucophylla	3	17%	4	0%	uninformative
Calotis lappulacea	2	33%	2	2%	uninformative
Carex inversa	1	17%	1	3%	uninformative
Cassinia compacta	2	33%	2	1%	uninformative
Cassinia laevis	2	17%	1	0%	uninformative
Cassinia sp. *D*	1	17%	3	3%	uninformative
Cassinia uncata	2	17%	1	5%	uninformative
Cheilanthes austrotenuifolia	1	17%	2	3%	uninformative
Cheilanthes sieberi* subsp. *sieberi	**2**	**67%**	**1**	**19%**	**positive**
Choretrum sp. *A*	1	17%	1	7%	uninformative
Clematis aristata	**2**	**67%**	**1**	**26%**	**positive**
Craspedia variabilis	1	17%	1	0%	uninformative
Crassula sieberiana	**2**	**67%**	**1**	**6%**	**positive**
Cryptandra spinescens	2	33%	1	2%	uninformative
Cymbonotus lawsonianus	2	33%	1	3%	uninformative
Daucus glochidiatus	**2**	**67%**	**2**	**7%**	**positive**
Desmodium varians	**2**	**67%**	**2**	**18%**	**positive**
Dianella caerulea	1	50%	1	31%	uninformative
Dichelachne micrantha	2	33%	1	8%	uninformative
Dichondra repens	**2**	**83%**	**2**	**27%**	**positive**
Dodonaea viscosa	3	17%	2	11%	uninformative
Echinopogon ovatus	3	33%	2	16%	uninformative
Einadia hastata	2	17%	2	3%	uninformative
Einadia nutans	2	17%	2	0%	uninformative
Eucalyptus albens	**3**	**83%**	**3**	**4%**	**positive**
Eucalyptus blakelyi	2	17%	3	2%	uninformative
Eucalyptus laevopinea	2	17%	3	6%	uninformative
Eucalyptus macrorhyncha	3	17%	2	2%	uninformative
Eucalyptus melliodora	3	33%	3	4%	uninformative
Eucalyptus punctata	2	17%	3	33%	uninformative
Euchiton gymnocephalus	2	33%	2	1%	uninformative
Euchiton sphaericus	2	17%	1	2%	uninformative
Eustrephus latifolius	2	17%	1	9%	uninformative
Galium gaudichaudii	3	17%	2	4%	uninformative
Galium propinquum	**2**	**100%**	**2**	**15%**	**positive**
Geitonoplesium cymosum	1	17%	1	7%	uninformative
Geranium solanderi var. *solanderi*	2	33%	2	11%	uninformative
Glycine clandestina	**2**	**50%**	**2**	**17%**	**positive**
Glycine tabacina	2	33%	2	10%	uninformative
Gonocarpus tetragynus	1	17%	2	13%	uninformative
Goodenia ovata	1	17%	1	6%	uninformative
Haloragis serra	1	33%	2	3%	uninformative
Hardenbergia violacea	1	50%	1	25%	uninformative
Hibbertia acicularis	2	33%	1	7%	uninformative
Hibbertia obtusifolia	1	17%	1	6%	uninformative
Hydrocotyle laxiflora	**2**	**67%**	**2**	**19%**	**positive**
Hydrocotyle tripartita	2	33%	2	1%	uninformative
Hypericum gramineum	**2**	**50%**	**2**	**6%**	**positive**
Indigofera adesmiifolia	2	33%	2	1%	uninformative
Indigofera coronillifolia	**2**	**67%**	**2**	**1%**	**positive**
Jacksonia scoparia	**2**	**17%**	**0**	**0%**	**positive**
Joycea pallida	2	17%	2	15%	uninformative
Lagenophora gracilis	2	17%	1	2%	uninformative
Lomandra confertifolia	2	17%	2	33%	uninformative
Lomandra filiformis	1	17%	2	18%	uninformative
Lomandra glauca	1	17%	2	30%	uninformative
Lomandra longifolia	1	50%	1	28%	uninformative
Lomandra multiflora subsp. *multiflora*	1	67%	1	25%	uninformative
Luzula flaccida	1	33%	1	2%	uninformative
Macrozamia reducta	**2**	**67%**	**1**	**9%**	**positive**
Macrozamia spiralis	1	17%	1	0%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Melichrus urceolatus	2	17%	1	14%	uninformative
Melicytus dentatus	2	17%	1	6%	uninformative
Microlaena stipoides	**2**	**67%**	**2**	**27%**	**positive**
Myoporum montanum	1	17%	1	3%	uninformative
Oplismenus imbecillis	**2**	**50%**	**2**	**4%**	**positive**
Oxalis exilis	**2**	**17%**	**0**	**0%**	**positive**
Oxalis perennans	**2**	**50%**	**1**	**9%**	**positive**
Pellaea falcata	2	17%	2	7%	uninformative
Persoonia linearis	1	50%	1	55%	uninformative
Pittosporum undulatum	1	17%	1	4%	uninformative
Plantago debilis	**2**	**100%**	**2**	**12%**	**positive**
Poa sieberiana	1	17%	3	3%	uninformative
Pomaderris angustifolia	**2**	**17%**	**0**	**0%**	**positive**
Prostanthera discolor	3	17%	2	1%	uninformative
Pyrrosia rupestris	1	17%	2	4%	uninformative
Ranunculus lappaceus	2	33%	2	7%	uninformative
Rubus parvifolius	2	33%	1	6%	uninformative
Rumex brownii	**2**	**50%**	**1**	**2%**	**positive**
Scaevola humilis	**1**	**17%**	**0**	**0%**	**positive**
Senecio hispidulus	2	33%	1	4%	uninformative
Senecio lautus	2	17%	2	3%	uninformative
Senecio linearifolius	2	17%	2	3%	uninformative
Senecio prenanthoides	2	17%	2	4%	uninformative
Senecio velleioides	1	17%	1	1%	uninformative
Sigesbeckia australiensis	2	33%	2	3%	uninformative
Sigesbeckia orientalis* subsp. *orientalis	**2**	**50%**	**2**	**4%**	**positive**
Solanum brownii	**2**	**50%**	**1**	**6%**	**positive**
Solanum campanulatum	2	17%	1	4%	uninformative
Stackhousia monogyna	2	17%	1	2%	uninformative
Stellaria angustifolia	**2**	**33%**	**0**	**0%**	**positive**
Stellaria flaccida	3	33%	2	7%	uninformative
Stellaria pungens	**2**	**83%**	**2**	**16%**	**positive**
Styphelia triflora	1	17%	1	13%	uninformative
Styphelia tubiflora	1	17%	2	1%	uninformative
Themeda australis	1	17%	1	6%	uninformative
Trachymene composita	2	33%	1	1%	uninformative
Urtica incisa	**2**	**50%**	**2**	**7%**	**positive**
Veronica brownii	**1**	**17%**	**0**	**0%**	**positive**
Veronica plebeia	3	33%	2	15%	uninformative
Viola betonicifolia* subsp. *betonicifolia	**2**	**50%**	**2**	**7%**	**positive**
Vittadinia dissecta	1	17%	2	1%	uninformative
Vittadinia pustulata	**1**	**17%**	**0**	**0%**	**positive**
Vittadinia sulcata	1	17%	2	3%	uninformative
Wahlenbergia communis	1	17%	1	7%	uninformative

Statewide Class

Plant Community Type: Sydney Hinterland Dry Sclerophyll Forest

a component of Smooth - barked Apple - Red Bloodwood - Sydney Peppermint heathy open forest on slopes of dry sandstone gullies of western and southern Sydney, Sydney Basin

Description

Sydney Hinterland Peppermint-Apple Forest is a dry shrubby eucalypt forest with a patchy cover of graminoids and ferns found between outcropping sandstone rocks and benches. It occurs on semi-sheltered Hawkesbury sandstone slopes across the gully systems of the Sydney hinterland including the lower Blue Mountains. It is a forest of moderate height and is characterised by smooth-barked apple (*Angophora costata*), turpentine (*Syncarpia glomulifera* subsp. *glomulifera*), Sydney peppermint (*Eucalyptus piperita*) and red bloodwood (*Corymbia gummifera*). The understorey is composed of a diverse combination of dry shrub species that include wattles (*Acacia* spp.), geebungs (*Persoonia* spp.), banksias (*Banksias* spp.), peas (*Dillwynia* spp., *Gompholobium* spp.) and tea-tree (*Leptospermum* spp.). The ground layer includes crinkle bush (*Lomatia silaifolia*), bracken (*Pteridium esculentum*), wiry panic (*Entolasia stricta*) and blue flax lily (*Dianella caerulea*).

This forest is found on shallow sandy and often rocky soils associated with sheltered upper Hawkesbury sandstone slopes on the Hornsby plateau and lower Blue Mountains. It is also found on crests and ridgelines on the same substrate, where the soil is deep rather than rocky and where it may be marginally enriched by long-ago weathered shale capping. It occurs between 150 and 600 metres above sea level in an arc that extends from Penrith north across the lower Blue Mountains and across the Central Coast hinterland to the Kulnura area. These areas receive between 850 and 1000 millimetres average annual rainfall. The study area includes the northern limits of this community in the far south-east near the Colo-Wollemi Creek areas.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	15 m ±6 10-24	48% ±12 25-65	*Eucalyptus piperita, Syncarpia glomulifera* subsp*. glomulifera, Angophora costata, Corymbia gummifera, Eucalyptus punctata*
Small Trees	8 m ±4 4-15	40% ±25 7-70	*Allocasuarina torulosa, Xylomelum pyriforme, Ceratopetalum gummiferum*
Shrubs	2.5 m ±1.8 1.2-8	44% ±21 15-85	*Gompholobium latifolium, Persoonia linearis, Persoonia levis, Monotoca scoparia, Phyllanthus hirtellus Pimelea linifolia, Banksia spinulosa, Hovea linearis, Podolobium ilicifolium, Leptospermum trinervium, Pultenaea scabra*
Ground Covers	0.7 m ±0.4 0.3-1.5	23% ±23 5-75	*Entolasia stricta, Lomandra obliqua, Lomatia silaifolia, Platysace linearifolia, Lomandra glauca, Pomax umbellata, Dampiera stricta, Lomandra gracilis, Dianella revoluta* var. *revoluta, Dianella caerulea, Patersonia glabrata, Pteridium esculentum Lomandra cylindrica*
Vines & Climbers	N/A	N/A	*Hardenbergia violacea, Cassytha pubescens*

*Taken from DECCW (2009a). Compiled from 12 of 23 sites with structural data recorded in that study.

Threats

Threatening processes are low across the extent of the community as a large proportion occurs on the infertile sandstone soils within reserves. Small areas within the study area are located in inaccessible terrain.

Conservation Status

A high proportion of the extant distribution of this community occurs in the protected area network. It is represented in Blue Mountains, Wollemi, Yengo, Parr, Brisbane Water and Dharug reserves.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	63,207-75,058 ha
Estimated percentage cleared	Not available	5-20%
Area in formal conservation reserves	46.6 ha	50,047 ha 83% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	46.6 ha	60,047 ha

Example Locations

- Only small areas occur in the far south-east of the study area near the Colo River.

Species Richness

Number of plots	0
Total species	N/A
Average species per plot	N/A

Known Variations

No variations recognised.

Relationship to Other Communities

This forest is one of several dry shrub communities associated with exposed Hawkesbury sandstone geology in the hinterland of Sydney. Within the study area the forest appears superficially similar to *Eucalyptus piperita* dominated forest found on Narrabeen sandstone (S_DSF52). That forest, however, has fewer sclerophyllous sandstone shrubs and generally is characterised by a more mesic shrub and ground layer.

Hawkesbury sandstone occurs as a relatively shallow layer above Narrabeen sandstone in the study area. As a result the forest grades quickly into Narrabeen sandstone vegetation types with decreasing elevation. S_DSF52 lies directly below this forest on sheltered aspects, while S_DSF65 occupies the Narrabeen strata on exposed sites.

Accuracy

Not sampled in the study area. Sample effort is high in areas to the east and south. Map unit boundaries were based on the interpretation of semi-sheltered eucalypt forests and woodlands found on Hawkesbury sandstone.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia echinula	1	43%	2	5%	uninformative
Acacia linifolia	**2**	**48%**	**1**	**20%**	**positive**
Acacia longifolia	1	13%	1	9%	uninformative
Acacia obtusifolia	**2**	**13%**	**0**	**0%**	**positive**
Acacia saliciformis	2	30%	1	9%	uninformative
Acacia suaveolens	2	17%	1	15%	uninformative
Acacia terminalis	**2**	**48%**	**1**	**13%**	**positive**
Acacia ulicifolia	**2**	**43%**	**1**	**24%**	**positive**
Amperea xiphoclada	**2**	**48%**	**2**	**11%**	**positive**
Angophora costata	**2**	**83%**	**2**	**40%**	**constant**
Anisopogon avenaceus	2	26%	2	24%	uninformative
Aristida vagans	2	17%	2	14%	uninformative
Arthropodium milleflorum	1	13%	1	3%	uninformative
Austrostipa pubescens	2	13%	2	6%	uninformative
Banksia serrata	1	48%	2	20%	uninformative
Banksia spinulosa	**2**	**70%**	**2**	**31%**	**positive**
Billardiera scandens	1	39%	1	45%	uninformative
Boronia ledifolia	1	17%	1	8%	uninformative
Bossiaea heterophylla	2	30%	1	13%	uninformative
Bossiaea lenticularis	2	17%	2	5%	uninformative
Brachyloma daphnoides subsp. *daphnoides*	1	17%	2	11%	uninformative
Cassytha glabella f. *glabella*	1	30%	1	22%	uninformative
Cassytha pubescens	**2**	**52%**	**1**	**14%**	**positive**
Caustis flexuosa	**2**	**39%**	**2**	**14%**	**positive**
Ceratopetalum gummiferum	1	30%	1	14%	uninformative
Comesperma ericinum	1	30%	1	5%	uninformative
Conospermum longifolium	2	17%	1	7%	uninformative
Corymbia eximia	2	22%	2	18%	uninformative
Corymbia gummifera	**2**	**74%**	**3**	**28%**	**positive**
Cyathochaeta diandra	**2**	**39%**	**2**	**18%**	**positive**
Dampiera stricta	**2**	**70%**	**2**	**21%**	**positive**
Daviesia corymbosa	2	26%	2	7%	uninformative
Daviesia ulicifolia	1	13%	2	14%	uninformative
Dendrophthoe vitellina	1	13%	1	2%	uninformative
Dianella caerulea	1	61%	1	47%	uninformative
Dianella revoluta var. *revoluta*	1	65%	1	27%	uninformative
Dillwynia elegans	2	22%	2	13%	uninformative
Dillwynia retorta species complex	3	35%	2	9%	uninformative
Entolasia stricta	2	96%	2	64%	constant
Epacris pulchella	1	26%	2	11%	uninformative
Eucalyptus consideniana	2	13%	5	2%	uninformative
Eucalyptus piperita	**2**	**91%**	**3**	**30%**	**positive**
Eucalyptus punctata	1	13%	2	30%	uninformative
Eucalyptus sparsifolia	**2**	**43%**	**2**	**25%**	**positive**
Exocarpos strictus	1	17%	1	26%	uninformative
Gompholobium latifolium	**2**	**91%**	**1**	**20%**	**positive**
Gonocarpus teucrioides	2	26%	1	10%	uninformative
Goodenia heterophylla	**2**	**43%**	**2**	**16%**	**positive**
Grevillea mucronulata	**2**	**48%**	**1**	**16%**	**positive**
Grevillea phylicoides	2	13%	2	3%	uninformative
Grevillea speciosa	**2**	**9%**	**0**	**0%**	**positive**
Haemodorum planifolium	2	30%	1	3%	uninformative
Hardenbergia violacea	**2**	**78%**	**1**	**23%**	**positive**
Hibbertia acicularis	**2**	**43%**	**1**	**3%**	**positive**
Hibbertia empetrifolia subsp. *empetrifolia*	1	17%	1	7%	uninformative
Hibbertia obtusifolia	1	13%	1	6%	uninformative
Hovea linearis	**2**	**61%**	**1**	**20%**	**positive**
Hybanthus monopetalus	1	13%	1	9%	uninformative
Lambertia formosa	2	22%	2	22%	uninformative
Lepidosperma laterale	1	22%	1	42%	uninformative
Leptospermum trinervium	**2**	**57%**	**2**	**22%**	**positive**
Leucopogon lanceolatus	1	30%	1	21%	uninformative
Leucopogon muticus	2	26%	1	7%	uninformative
Lindsaea linearis	2	17%	2	12%	uninformative
Lindsaea microphylla	1	26%	1	15%	uninformative
Logania pusilla	1	13%	1	3%	uninformative
Lomandra confertifolia subsp. *pallida*	1	22%	2	18%	uninformative
Lomandra cylindrica	**2**	**57%**	**2**	**16%**	**positive**
Lomandra filiformis* subsp. *filiformis	**2**	**43%**	**2**	**18%**	**positive**
Lomandra glauca	**2**	**74%**	**2**	**24%**	**positive**
Lomandra gracilis	**2**	**70%**	**2**	**17%**	**positive**
Lomandra longifolia	1	30%	1	48%	uninformative
Lomandra multiflora* subsp. *multiflora	**2**	**43%**	**2**	**26%**	**positive**
Lomandra obliqua	**2**	**96%**	**2**	**24%**	**positive**
Lomatia silaifolia	**2**	**96%**	**1**	**32%**	**positive**

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Microlaena stipoides var. *stipoides*	2	9%	2	42%	negative
Mitrasacme polymorpha	1	13%	2	4%	uninformative
Monotoca scoparia	**2**	**78%**	**1**	**23%**	**positive**
Omphacomeria acerba	**2**	**9%**	**0**	**0%**	**positive**
Panicum simile	2	13%	2	21%	uninformative
Patersonia glabrata	**2**	**61%**	**2**	**13%**	**positive**
Patersonia sericea	1	52%	2	14%	uninformative
Persoonia laurina	1	30%	1	3%	uninformative
Persoonia levis	1	87%	1	29%	uninformative
Persoonia linearis	**2**	**91%**	**1**	**53%**	**positive**
Petrophile pulchella	2	13%	2	14%	uninformative
Philotheca hispidula	2	13%	1	3%	uninformative
Phyllanthus hirtellus	2	78%	2	42%	constant
Phyllota phylicoides	1	30%	2	7%	uninformative
Pimelea linifolia	**2**	**78%**	**1**	**26%**	**positive**
Platylobium formosum	1	13%	2	1%	uninformative
Platysace ericoides	1	22%	2	10%	uninformative
Platysace linearifolia	**2**	**87%**	**2**	**31%**	**positive**
Podolobium ilicifolium	**2**	**61%**	**2**	**20%**	**positive**
Pomax umbellata	**2**	**74%**	**2**	**29%**	**positive**
Poranthera ericifolia	2	35%	1	5%	uninformative
Pteridium esculentum	2	61%	2	40%	constant
Pultenaea ferruginea	1	13%	2	8%	uninformative
Pultenaea flexilis	2	22%	2	18%	uninformative
Pultenaea scabra	**2**	**52%**	**2**	**14%**	**positive**
Scaevola ramosissima	**2**	**52%**	**1**	**9%**	**positive**
Schizaea bifida	2	35%	1	4%	uninformative
Smilax glyciphylla	1	13%	1	13%	uninformative
Stylidium productum	**2**	**52%**	**2**	**14%**	**positive**
Syncarpia glomulifera subsp. *glomulifera*	2	87%	3	39%	constant
Tetrarrhena juncea	2	17%	1	5%	uninformative
Tetratheca thymifolia	**2**	**43%**	**2**	**16%**	**positive**
Themeda australis	1	13%	3	22%	uninformative
Thysanotus tuberosus subsp. *tuberosus*	1	13%	2	1%	uninformative
Xanthorrhoea arborea	2	22%	2	9%	uninformative
Xanthosia pilosa	2	22%	1	13%	uninformative
Xylomelum pyriforme	1	48%	1	7%	uninformative

Statewide Class
Plant Community Type: Sydney Hinterland Dry Sclerophyll Forest
Yellow Bloodwood-Ironbark shrubby woodland of the dry hinterland of the Central Coast Sydney Basin

Description

Hunter Range Ironbark Forest is a dry shrub and grass community found on Narrabeen series sediments associated with the northern plateaux of the Sydney basin. It forms an open forest or woodland dominated by one or more ironbark species such as narrow-leaved ironbarks (*Eucalyptus crebra/Eucalyptus beyeriana*) and broad-leaved ironbarks (*Eucalyptus fibrosa/Eucalyptus fergusonii* subsp. *dorsiventralis*). Other tree species, such as yellow bloodwood (*Corymbia eximia*), smooth-barked apple (*Angophora costata*) and grey gum (*Eucalyptus punctata*) are less frequently recorded. Sparse stands of forest oak (*Allocasuarina torulosa*) may be included in the lower canopy. An open cover of wattles (*Acacia* spp.), peas (Fabaceae) and geebungs (*Persoonia* spp.) typifies the shrub layer. Grasses are prominent amongst the ground layer, but vary in cover relative to other flora such as small herbs and rushes.

This forest is a transitional shale-sandstone forest community, as the parent material on which it grows derives from the mix of shale and sandstone sediments found in the Narrabeen stratum. At times the forest occurs on exposed shale caps on higher ridgelines, but it is more commonly found on steep dissected slopes and gorges where shale layers are exposed. It occurs in areas of low to moderate average annual rainfall (700-900 millimetres) and spans an elevation gradient between 100 and 500 metres above sea level. The forest extends from Pokolbin SF near Wollombi to the Colo River near Kurrajong. In the northern part of its distribution the forest forms extensive stands across large areas of Yengo NP and north-east Wollemi NP. The distribution becomes increasingly restricted toward the Hawkesbury River as here the Narrabeen sandstones are only exposed at the base of the deeply dissected sandstone plateau. In the study area the forest is most prominent between the Colo River and Wollemi Creek gorges and adjoining tributaries.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	22 m ±5 12-28	30% ±14 10-65	*Eucalyptus fibrosa, Angophora costata, Corymbia eximia, Eucalyptus crebra, Eucalyptus punctata, Syncarpia glomulifera* subsp. *glomulifera, Eucalyptus fergusonii* subsp. *dorsiventralis*
Small Trees	7 m ±4 2-12	20% ±16 6-55	*Exocarpos strictus, Acacia implexa, Bursaria spinosa, Allocasuarina torulosa*
Shrubs	2.3 m ±2.2 1.0-8.0	35% ±25 8-75	*Persoonia linearis, Daviesia ulicifolia, Podolobium ilicifolium, Grevillea mucronulata, Lissanthe strigosa, Acacia falcata, Pultenaea scabra, Acacia parvipinnula*
Ground Covers	0.5 m ±0.2 0.2-1.0	30% ±26 5-85	*Dianella revoluta* var. *revoluta, Entolasia stricta, Lepidosperma laterale, Panicum simile, Phyllanthus hirtellus, Aristida vagans, Pomax umbellata, Microlaena stipoides* var. *stipoides, Cheilanthes sieberi* subsp. *sieberi, Themeda australis*
Vines & Climbers	N/A	N/A	*Hardenbergia violacea, Billardiera scandens*

*Taken from DECCW (2009a). Compiled from 14 of 14 sites with structural data recorded.

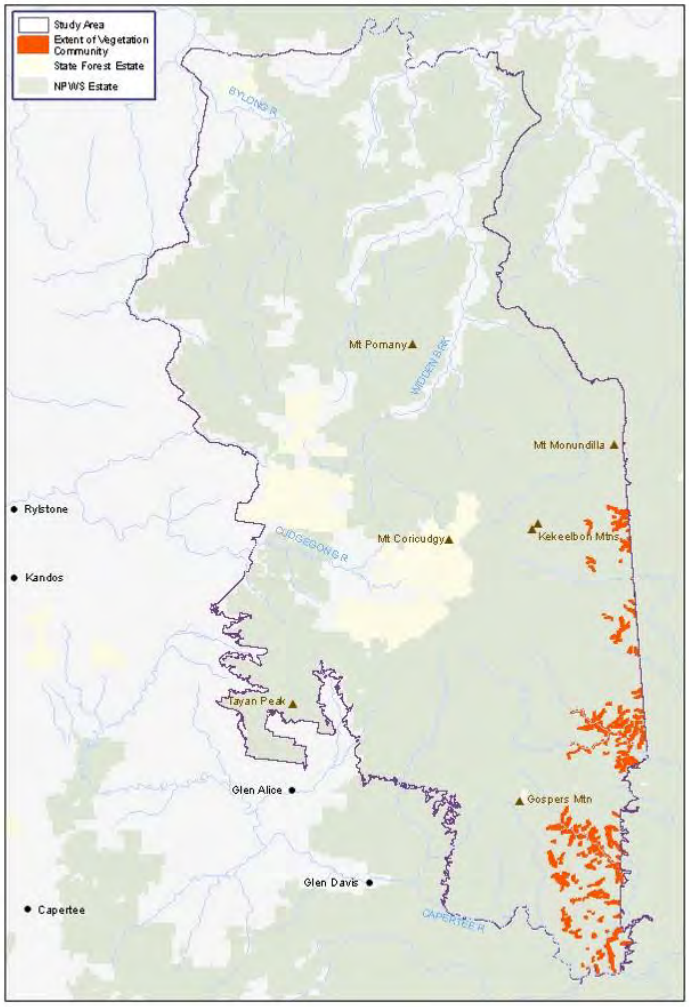
Threats

Selective timber harvesting has targeted taller stands of this forest across its range (Sanders et al. 1988, Binns 1996). Within then study area, stands are situated in rugged and remote locations and threats arising from weeds and urban encroachment are low. Almost 90 per cent of the forest in the study area shows no signs of human-related disturbance.

Conservation Status

A high proportion of the extant distribution of this community lies in the protected area network. This forest is represented in Yengo, Wollemi and Parr reserves.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	50,890-53,717 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	1345.1 ha	44,345 ha 92% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	1345.1 ha	48,345 ha



Example Locations

- Slopes above Putty Creek
- Lower elevation western tributaries of Colo River and Wollemi Creek

Species Richness

Number of plots	0
Total species	N/A
Average species per plot	N/A

Known Variations

Local variations in the composition of this community occur in response to the degree of shale in the soil. Deeper soils tend to be grassier and these most often occur on ridgelines or gently sloping benches. Steeper slopes are rockier and feature a more prominent shrub layer.

Relationship to Other Communities

In the Sydney Basin Bioregion the forest is related to other dry shrub/grass ironbark forests found on Permian sediments of the Burragorang and Hunter valleys as well as at the margins of the Cumberland Plain. In the study area it grades into sheltered Narrabeen sandstone forest (S_DSF52) dominated by *Eucalyptus piperita*. On exposed aspects it grades into S_DSF33, a dry sandstone woodland that is characterised by *Eucalyptus punctata, E. sparsifolia* and *Angophora costata.*

Accuracy

Sample density is low in the study area but moderate in adjoining areas on similar elevations and substrates. Map unit boundaries were based on the interpretation of ironbark dominated forests situated on exposed aspects on Narrabeen sediments.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia implexa	**2**	**43%**	**1**	**6%**	**positive**
Acacia linifolia	1	21%	2	23%	uninformative
Acacia parramattensis	2	29%	2	26%	uninformative
Acacia parvipinnula	1	14%	2	3%	uninformative
Acacia ulicifolia	1	29%	1	26%	uninformative
Acacia undulifolia	**2**	**21%**	**0**	**0%**	**positive**
Acrotriche aggregata	1	14%	1	7%	uninformative
Allocasuarina littoralis	2	29%	1	10%	uninformative
Allocasuarina torulosa	3	21%	2	16%	uninformative
Angophora bakeri	3	14%	3	8%	uninformative
Angophora costata	1	50%	2	44%	negative
Angophora floribunda	2	14%	2	17%	uninformative
Anisopogon avenaceus	1	29%	2	24%	uninformative
Aristida vagans	**2**	**79%**	**2**	**9%**	**positive**
Austrostipa pubescens	1	21%	2	6%	uninformative
Billardiera scandens	1	57%	1	43%	uninformative
Breynia oblongifolia	1	21%	1	8%	uninformative
Brunoniella australis	2	21%	2	4%	uninformative
Bursaria spinosa	1	43%	2	17%	uninformative
Cassinia uncata	2	21%	1	7%	uninformative
Cassytha glabella f. *glabella*	1	21%	1	23%	uninformative
Cassytha pubescens	1	14%	1	18%	uninformative
Cheilanthes distans	**2**	**7%**	**0**	**0%**	**positive**
Cheilanthes sieberi* subsp. *sieberi	**2**	**64%**	**2**	**11%**	**positive**
Chrysocephalum apiculatum	**1**	**7%**	**0**	**0%**	**positive**
Corymbia eximia	1	50%	2	17%	uninformative
Corymbia gummifera	1	7%	3	35%	negative
Cymbopogon refractus	2	29%	1	2%	uninformative
Daviesia squarrosa	**2**	**36%**	**4**	**1%**	**positive**
Daviesia ulicifolia	**2**	**71%**	**1**	**9%**	**positive**
Desmodium rhytidophyllum	2	29%	1	3%	uninformative
Dianella caerulea	1	36%	1	49%	uninformative
Dianella revoluta* var. *revoluta	**2**	**100%**	**1**	**26%**	**positive**
Dichelachne micrantha	2	29%	1	3%	uninformative
Digitaria ramularis	**2**	**50%**	**2**	**5%**	**positive**
Dodonaea boroniifolia	2	14%	2	1%	uninformative
Dodonaea pinnata	1	14%	1	1%	uninformative
Dodonaea triquetra	1	21%	1	9%	uninformative
Echinopogon caespitosus var. *caespitosus*	1	21%	2	4%	uninformative
Echinopogon ovatus	2	14%	2	10%	uninformative
Entolasia stricta	2	100%	2	65%	constant
Eragrostis benthamii	**2**	**14%**	**0**	**0%**	**positive**
Eragrostis brownii	1	14%	2	10%	uninformative
Eucalyptus crebra	**3**	**43%**	**2**	**9%**	**positive**
Eucalyptus fibrosa	**4**	**71%**	**2**	**4%**	**positive**
Eucalyptus prominula	3	21%	2	2%	uninformative
Eucalyptus punctata	**2**	**43%**	**2**	**27%**	**positive**
Eucalyptus sparsifolia	**3**	**36%**	**2**	**26%**	**positive**
Exocarpos strictus	1	57%	1	22%	uninformative
Gahnia aspera	2	14%	1	2%	uninformative
Glycine clandestina	2	29%	2	26%	uninformative
Gonocarpus tetragynus	**2**	**50%**	**2**	**24%**	**positive**
Goodenia bellidifolia	2	21%	1	7%	uninformative
Goodenia hederacea* subsp. *hederacea	**2**	**64%**	**1**	**6%**	**positive**
Goodenia heterophylla	**2**	**36%**	**2**	**18%**	**positive**
Grevillea mucronulata	1	50%	2	18%	uninformative
Hardenbergia violacea	1	64%	1	27%	uninformative
Hibbertia pedunculata	**2**	**7%**	**0**	**0%**	**positive**
Hovea linearis	2	14%	1	25%	uninformative
Imperata cylindrica	1	14%	2	11%	uninformative
Jacksonia scoparia	2	29%	1	1%	uninformative
Joycea pallida	4	21%	2	2%	uninformative
Lepidosperma laterale	**2**	**100%**	**1**	**35%**	**positive**
Lepidosperma urophorum	2	14%	2	3%	uninformative
Leucopogon muticus	2	14%	2	9%	uninformative
Lissanthe strigosa	**2**	**50%**	**1**	**2%**	**positive**
Lomandra confertifolia* subsp. *pallida	**2**	**64%**	**2**	**15%**	**positive**
Lomandra cylindrica	2	29%	2	20%	uninformative
Lomandra filiformis subsp. *coriacea*	2	29%	1	9%	uninformative
Lomandra glauca	**2**	**43%**	**2**	**29%**	**positive**
Lomandra longifolia	1	21%	1	48%	uninformative
Lomandra multiflora* subsp. *multiflora	**2**	**57%**	**1**	**26%**	**positive**
Lomandra obliqua	**2**	**43%**	**2**	**31%**	**positive**
Macrozamia communis	**2**	**7%**	**0**	**0%**	**positive**
Macrozamia reducta	1	29%	2	3%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Microlaena stipoides var. *stipoides*	2	71%	2	36%	constant
Monotoca scoparia	1	14%	1	31%	uninformative
Myrsine variabilis	2	21%	2	10%	uninformative
Notelaea ovata	**2**	**14%**	**0**	**0%**	**positive**
Olearia ramulosa	**2**	**14%**	**0**	**0%**	**positive**
Opercularia diphylla	**2**	**50%**	**1**	**9%**	**positive**
Oxalis perennans	2	14%	2	13%	uninformative
Oxylobium pulteneae	**2**	**36%**	**1**	**1%**	**positive**
Panicum effusum	3	14%	2	1%	uninformative
Panicum simile	**2**	**86%**	**2**	**16%**	**positive**
Persoonia levis	1	21%	1	36%	uninformative
Persoonia linearis	2	86%	2	55%	constant
Phyllanthus hirtellus	2	86%	2	44%	constant
Pimelea linifolia	2	29%	2	32%	uninformative
Platysace ericoides	2	29%	2	10%	uninformative
Platysace linearifolia	1	14%	2	39%	negative
Podolobium ilicifolium	**2**	**57%**	**2**	**22%**	**positive**
Pomax umbellata	**2**	**79%**	**2**	**31%**	**positive**
Pratia purpurascens	2	50%	2	37%	constant
Pseuderanthemum variabile	2	14%	2	7%	uninformative
Pteridium esculentum	1	7%	2	45%	negative
Pultenaea ferruginea	1	21%	2	8%	uninformative
Pultenaea scabra	**4**	**36%**	**2**	**17%**	**positive**
Pultenaea spinosa	3	14%	2	1%	uninformative
Rulingia dasyphylla	**1**	**7%**	**0**	**0%**	**positive**
Scaevola ramosissima	1	14%	1	14%	uninformative
Setaria distans	**2**	**36%**	**2**	**3%**	**positive**
Solanum prinophyllum	1	29%	1	13%	uninformative
Stylidium graminifolium	2	14%	2	7%	uninformative
Syncarpia glomulifera subsp. *glomulifera*	3	36%	2	45%	constant
Themeda australis	**2**	**64%**	**3**	**18%**	**positive**
Vernonia cinerea var. *cinerea*	1	29%	1	7%	uninformative
Xanthorrhoea minor* subsp. *minor	**1**	**7%**	**0**	**0%**	**positive**

Statewide Class Sydney Hinterland Dry Sclerophyll Forest

Plant Community Type: Not described

Description

Hunter Range Stringybark-Apple-Peppermint Forest is a tall open eucalypt forest with a dry shrubby understorey and sparse ground cover. It is found on Narrabeen sandstone ridgetops at mid elevations of the central Wollemi plateaux. The canopy is taller than is common for sandstone ridgetops and has a diverse composition. Narrow-leaved stringybark (*Eucalyptus sparsifolia*) and grey gum (*Eucalyptus punctata*) are most frequently recorded, though they do not often dominate stands. Instead Sydney peppermint (*Eucalyptus piperita*) and smooth-barked apple (*Angophora costata*) can be locally abundant, sometimes with red bloodwood (*Corymbia gummifera*), and ironbarks (*Eucalyptus crebra/E. fibrosa*) are conspicuous on minor terraces and benches. The understorey comprises an open cover of dry sclerophyllous shrubs including wattles (*Acacia* spp.), geebungs (*Persoonia* spp.) and peas (including *Pultenaea* spp.). The most consistently recorded shrubs include narrow-leaved geebung (*Persoonia linearis*), prickly shaggy pea (*Podolobium ilicifolium*), sunshine wattle (*Acacia terminalis*) and dwarf cherry (*Exocarpos strictus)*. The forest floor is characterised by a sparse cover of vegetation, scattered leaf litter and bare earth. The ground layer of vegetation includes hardy grasses such as wire grass (*Entolasia stricta*), small herbs such as *Pomax umbellata* and small rushes (*Lomandra* spp.) and flax lilies (*Dianella* spp.).

This forest is widespread across Narrabeen sandstone ridges of the Hunter Range and northern Blue Mountains plateaux. It is associated with broader ridges and exposed slopes that have a slightly deeper soil profile and are typically free of major rock outcropping. It occupies an elevation range between 500 and 900 metres above sea level and receives a mean annual rainfall between 750 and 900 millimetres. In the study area the forest is common between Gospers Mountain and the Hunter Range. It is extensive elsewhere in Wollemi NP where it continues along the higher ranges to the east of the Hunter Range and along the Tollagong, Doyles and Wirraba ranges.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	23 m ±7 12-35	36% ±15 15-65	*Eucalyptus sparsifolia, Eucalyptus punctata, Eucalyptus beyeriana/crebra, Corymbia gummifera, Eucalyptus piperita, Eucalyptus consideniana, Angophora costata*
Small Trees	5 m ±3 1-10	18% ±13 5-45	*Persoonia linearis, Exocarpos strictus, Acacia saliciformis, Xylomelum pyriforme*
Shrubs	1.8 m ±0.6 1.0-3.0	40% ±19 10-70	*Podolobium ilicifolium, Lomatia silaifolia, Acacia ulicifolia, Platysace ericoides, Pimelea linifolia* subsp. *linifolia, Pultenaea scabra, Bursaria spinosa, Pultenaea flexilis, Monotoca scoparia, Grevillea buxifolia* subsp. *buxifolia, Acacia linifolia*
Ground Covers	0.5 m ±0.3 0.3-1.0	16% ±17 5-70	*Entolasia stricta, Patersonia glabrata, Pomax umbellata, Lomandra obliqua, Lomandra glauca, Xanthosia atkinsoniana, Dianella revoluta* var. *revoluta, Lomandra confertifolia subsp. rubiginosa, Phyllanthus hirtellus, Patersonia sericea*
Vines & Climbers	N/A	N/A	*Hardenbergia violacea*

*Compiled from 26 of 29 sites with structural data recorded.

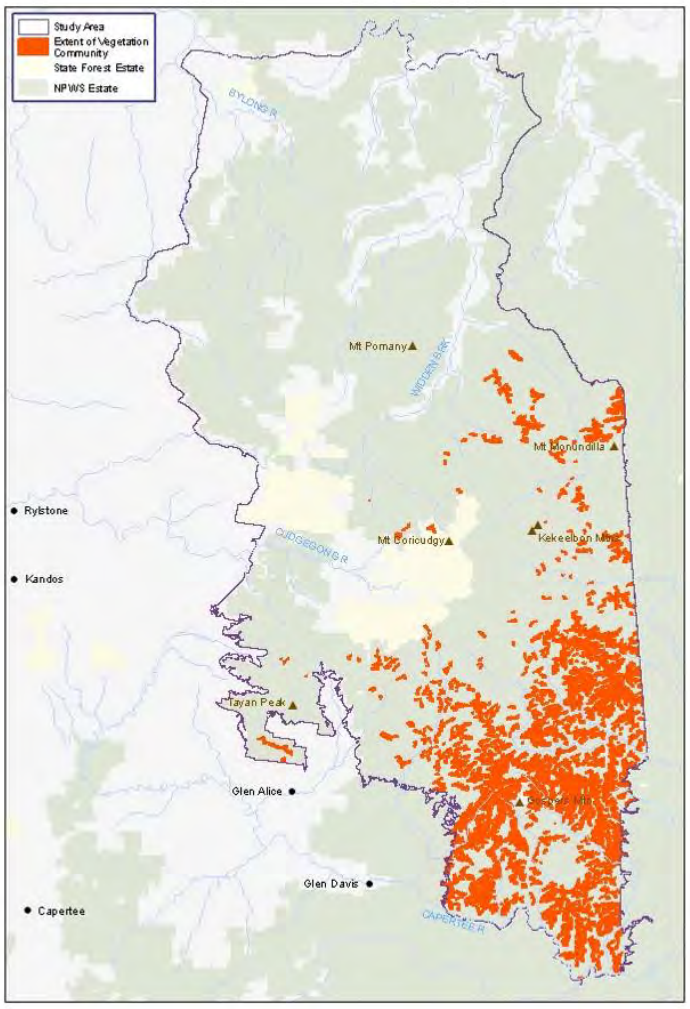
Threats

Threats arising from human-related disturbance are low as much of the distribution of this community occurs in rugged and inaccessible areas of Wollemi NP. Frequent fire is prevalent throughout the distribution of the community.

Conservation Status

A high proportion of the extant distribution of this community lies in the protected area network. The vegetation community is extensively distributed in Wollemi NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	22,876-24,147 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	11,714.0 ha	20,714 ha 95% of extant area
Area in state forests	14.4 ha	Not available
Area in other tenures	4.0 ha	Not available
Total extant area	11,732.4 ha	21,732 ha



Example Locations

- Old Army Road near Gospers Mountain

Species Richness

Number of plots	29
Total species	246
Average species per plot	40.3 ±8.7

Known Variations

Variation in dominant canopy species occurs across the range of this community. Lower elevations tend to include a greater frequency of *Angophora costata* and *Eucalyptus crebra/beyeriana* while higher elevations exclude these species and have a greater prominence of *Eucalyptus consideniana*.

Relationship to Other Communities

Floristically, this community is most closely related to other dry shrubby forests found on Narrabeen sandstone across the Hunter Range. This includes those occurring outside the study area but in the north-east parts of Wollemi NP and the adjoining Yengo NP. Within the study area this forest shares many shrub species with ridgetop woodland in the western Wollemi area (S_DSF65). That woodland occupies similar climatic gradients and geology, but the habitat is rockier with shallow soils. S_DSF65 has a lower canopy dominated by *Eucalyptus consideniana*.

Spatially this forest grades into semi-sheltered forest dominated by *Eucalyptus piperita* (S_DSF52) with increased shelter. As rainfall decreases west across the sandstone plateau the forest is replaced by S_DSF49.

Accuracy

Sampling effort is moderate relative to mapped area in the study area, but high across the full extent of this community. Map domains are drawn from sample sites. Map unit boundaries are based on the interpretation of a number of exposed forest and woodland API patterns associated with Narrabeen substrates. These are characterised by a taller canopy, less rock outcropping and presence of *E. piperita, E. crebra, A. costata* and/or *E. punctata.*

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia buxifolia subsp. *buxifolia*	1	14%	2	12%	uninformative
Acacia linifolia	2	24%	1	4%	uninformative
Acacia penninervis var. *penninervis*	2	10%	1	6%	uninformative
Acacia saliciformis	1	45%	2	4%	uninformative
Acacia terminalis	1	55%	1	10%	uninformative
Acacia ulicifolia	1	62%	1	7%	uninformative
Allocasuarina littoralis	2	10%	1	12%	uninformative
Amperea xiphoclada	1	14%	2	13%	uninformative
Angophora costata	3	24%	3	2%	uninformative
Angophora floribunda	2	21%	2	16%	uninformative
Anisopogon avenaceus	1	31%	2	7%	uninformative
Apatophyllum constablei	1	10%	2	0%	uninformative
Austrostipa pubescens	1	31%	2	4%	uninformative
Banksia spinulosa	**2**	**41%**	**1**	**3%**	**positive**
Billardiera scandens	1	48%	1	22%	uninformative
Bossiaea heterophylla	1	10%	2	8%	uninformative
Bossiaea rhombifolia	**2**	**38%**	**1**	**1%**	**positive**
Brachyloma daphnoides	1	21%	1	13%	uninformative
Bursaria spinosa subsp. *spinosa*	2	21%	2	26%	uninformative
Cassytha glabella f. *glabella*	1	10%	1	8%	uninformative
Cassytha pubescens	1	28%	2	4%	uninformative
Caustis flexuosa	1	48%	1	10%	uninformative
Comesperma ericinum	1	17%	1	2%	uninformative
Coopernookia barbata	2	21%	1	2%	uninformative
Corymbia gummifera	3	17%	3	2%	uninformative
Dampiera stricta	**2**	**38%**	**2**	**7%**	**positive**
Daviesia ulicifolia	**2**	**38%**	**1**	**1%**	**positive**
Dianella caerulea	**2**	**55%**	**1**	**30%**	**positive**
Dianella revoluta var. *revoluta*	1	45%	1	26%	uninformative
Dillwynia acicularis	1	10%	2	1%	uninformative
Dillwynia floribunda	1	10%	2	2%	uninformative
Dillwynia rudis	2	10%	2	3%	uninformative
Dodonaea triquetra	2	10%	1	3%	uninformative
Entolasia stricta	**2**	**93%**	**2**	**28%**	**positive**
Epacris pulchella	2	14%	1	5%	uninformative
Eucalyptus consideniana	**3**	**18%**	**4**	**5%**	**positive**
Eucalyptus crebra	3	34%	3	5%	uninformative
Eucalyptus piperita	**3**	**38%**	**3**	**14%**	**positive**
Eucalyptus punctata	**2**	**76%**	**3**	**30%**	**positive**
Eucalyptus rossii	3	14%	3	14%	uninformative
Eucalyptus sparsifolia	**3**	**86%**	**3**	**23%**	**positive**
Exocarpos strictus	2	31%	1	15%	uninformative
Gompholobium latifolium	2	17%	2	3%	uninformative
Gompholobium virgatum	2	17%	2	3%	uninformative
Gonocarpus tetragynus	1	10%	2	14%	uninformative
Gonocarpus teucrioides	1	31%	2	13%	uninformative
Goodenia bellidifolia	1	31%	2	3%	uninformative
Goodenia heterophylla	**2**	**48%**	**2**	**8%**	**positive**
Grevillea buxifolia	1	10%	2	2%	uninformative
Grevillea mucronulata	2	14%	1	7%	uninformative
Grevillea sericea	1	38%	1	1%	uninformative
Hakea dactyloides	1	41%	1	17%	uninformative
Hakea sericea	1	10%	1	3%	uninformative
Hardenbergia violacea	1	48%	1	24%	uninformative
Hibbertia acicularis	**2**	**45%**	**1**	**4%**	**positive**
Hibbertia aspera	2	17%	2	1%	uninformative
Hibbertia empetrifolia subsp. *empetrifolia*	1	10%	1	2%	uninformative
Hovea linearis	1	38%	1	6%	uninformative
Hybanthus vernonii	2	10%	2	1%	uninformative
Isopogon anemonifolius	1	34%	2	6%	uninformative
Kunzea ambigua	2	10%	2	1%	uninformative
Lagenophora stipitata	1	10%	1	10%	uninformative
Lepidosperma gunnii	1	31%	2	12%	uninformative
Lepidosperma laterale	1	14%	1	24%	uninformative
Leptospermum sphaerocarpum	**2**	**45%**	**2**	**12%**	**positive**
Leptospermum trinervium	2	14%	2	14%	uninformative
Leucopogon lanceolatus	1	17%	1	12%	uninformative
Leucopogon muticus	1	10%	2	25%	uninformative
Logania albiflora	1	10%	1	3%	uninformative
Logania pusilla	**1**	**10%**	**0**	**0%**	**positive**
Lomandra confertifolia	2	34%	2	33%	uninformative
Lomandra filiformis	**2**	**38%**	**2**	**16%**	**positive**
Lomandra glauca	**2**	**59%**	**2**	**28%**	**positive**
Lomandra longifolia	1	28%	1	28%	uninformative
Lomandra multiflora subsp. *multiflora*	1	41%	1	24%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Lomandra obliqua	**2**	**62%**	**2**	**13%**	**positive**
Lomatia silaifolia	**2**	**69%**	**2**	**18%**	**positive**
Microlaena stipoides	1	24%	2	28%	uninformative
Monotoca scoparia	1	55%	2	22%	uninformative
Olax stricta	1	17%	1	2%	uninformative
Omphacomeria acerba	1	17%	1	1%	uninformative
Ozothamnus diosmifolius	1	10%	1	2%	uninformative
Patersonia glabrata	**2**	**83%**	**2**	**6%**	**positive**
Patersonia sericea	1	41%	2	19%	uninformative
Persoonia levis	1	34%	1	8%	uninformative
Persoonia linearis	**2**	**93%**	**1**	**52%**	**positive**
Petrophile pulchella	2	10%	1	5%	uninformative
Philotheca hispidula	2	28%	2	1%	uninformative
Phyllanthus hirtellus	**2**	**41%**	**2**	**20%**	**positive**
Phyllanthus occidentalis	2	10%	2	1%	uninformative
Phyllota phylicoides	2	21%	2	3%	uninformative
Phyllota squarrosa	2	17%	2	1%	uninformative
Pimelea linifolia	**2**	**79%**	**2**	**7%**	**positive**
Platysace ericoides	**2**	**76%**	**2**	**18%**	**positive**
Platysace lanceolata	1	28%	2	16%	uninformative
Poa affinis	1	10%	2	14%	uninformative
Podolobium ilicifolium	**2**	**83%**	**2**	**26%**	**positive**
Polyscias sambucifolia	1	17%	2	12%	uninformative
Pomax umbellata	**2**	**76%**	**2**	**30%**	**positive**
Poranthera ericifolia	2	34%	1	1%	uninformative
Poranthera microphylla	1	10%	1	13%	uninformative
Pteridium esculentum	2	28%	2	32%	uninformative
Pultenaea flexilis	3	14%	2	3%	uninformative
Pultenaea scabra	**2**	**38%**	**2**	**5%**	**positive**
Scaevola ramosissima	1	14%	1	1%	uninformative
Schoenus ericetorum	2	10%	1	3%	uninformative
Smilax glyciphylla	1	10%	1	9%	uninformative
Stackhousia viminea	1	10%	2	2%	uninformative
Stylidium productum	2	14%	2	7%	uninformative
Stypandra glauca	2	14%	1	7%	uninformative
Xanthosia atkinsoniana	**2**	**66%**	**2**	**8%**	**positive**
Xanthosia pilosa	1	14%	2	8%	uninformative
Xylomelum pyriforme	2	28%	2	3%	uninformative

Statewide Class
North-west Slopes Dry Sclerophyll Woodlands

Plant Community Type:
Narrow-leaved Ironbark - Grey Gum shrubby woodland on footslopes on the upper Hunter Valley, Sydney Basin

Description

Western Hunter Flats Ironbark Forest is a tall eucalypt forest with a dry shrubby and grassy understorey that is found on clay-enriched sandy soils associated with minor creekflats and terraces in the north-west of the Sydney basin. These accumulated deposits occur around the lower-lying fringes of the major Narrabeen sandstone plateaux of the western Hunter valley. The moderately fertile soils support narrow-leaved ironbark (*Eucalyptus crebra*), with grey gum (*Eucalyptus punctata*) occurring less frequently. Blakely's red gum (*Eucalyptus blakelyi*) and rough-barked apple (*Angophora floribunda*) may occur near creek banks. The shrub layer is open to moderately dense and comprises a mix of sclerophyllous and non-sclerophyllous species. Several of the shrub species that are commonly recorded are typical of the north-west slopes of New South Wales, including native olive (*Notelaea microcarpa*), daisy bush (*Olearia elliptica*) and blunt beard-heath (*Leucopogon muticus*). Wattles (*Acacia* spp.), blackthorn (*Bursaria spinosa)* and coffee bush (*Breynia oblongifolia*) are also common. The clayey soils offer greater moisture-retention capacity than the surrounding rocky sandstone slopes and ridges and as a result the ground layer has a moderately diverse cover of small herbs such as kidney weed (*Dichondra repens*) and grasses such as weeping grass (*Microlaena stipoides*).

This community occurs on colluvial fans, minor streams, narrow valley flats and shale-rich sandstone escarpment benches across the Goulburn River valley between Bylong and Denman. The alluvial material on which this forest occurs is found within undulating, low-lying landscapes underlain by Permian or Narrabeen geology. Though the elevation range spans 160-400 metres above sea level, most alluvial stands are found in areas less than 250 metres above sea level. The woodland is situated within an area that receives between 600 and 700 millimetres of mean annual rainfall. In the study area there are only small remnants of this forest; these occur beneath the Hunter escarpment near the northern boundary of the study area.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	14 m 14	65% 65	*Eucalyptus crebra, Eucalyptus punctata, Callitris endlicheri, Angophora floribunda, Eucalyptus moluccana, Eucalyptus blakelyi*
Small Trees	6 m 6	55% 55	*Acacia decora, Acacia doratoxylon*
Shrubs	1.5 m 1.5	35% 35	*Acrotriche rigida, Calotis lappulacea, Notelaea microcarpa* var. *microcarpa, Persoonia linearis, Leucopogon muticus, Breynia oblongifolia, Bursaria spinosa* subsp. *spinosa, Indigofera australis, Olearia elliptica* subsp. *elliptica*
Ground Covers	0.2 m 0.2	95% 95	*Cheilanthes austrotenuifolia, Cheilanthes sieberi* subsp. *sieberi, Aristida ramosa* var. *speciosa, Microlaena stipoides, Dichondra repens, Gahnia aspera, Desmodium varians, Einadia hastata, Cyperus gracilis, Cymbopogon refractus*
Vines & Climbers	N/A	N/A	*Clematis glycinoides*

*Compiled from 1 of 1 sites with structural data recorded.

Threats

This community is situated on undulating topography with moderately fertile soils and as a result exhibits widespread evidence of clearing and modification for agricultural landuse. The original extent of the community across the Goulburn River valley is likely to have been heavily depleted, with remnants persisting in small fragmented patches. Stands are often characterised by even-aged regrowth eucalypts as result of post clearing regeneration or persistent logging, particularly for fence post timbers. Evidence of exotic species is present at most sites. Remnants are subject to ongoing rough grazing and are divided by small tracks and trails.

Conservation Status

This community occurs in small areas on the perimeter of Wollemi NP and Goulburn River NP and in Manobalai NR. More extensive areas occur on private tenures of the western Hunter region.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	3745-5617 ha
Estimated percentage cleared	Not available	40-60%
Area in formal conservation reserves	195.2 ha	985 ha 44% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	51.7 ha	Not available
Total extant area	246.9 ha	2247 ha

Example Locations

- Opposite Stevens Flat, Kerrabee

Species Richness

Number of plots	1
Total species	27
Average species per plot	27

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically the forest is related to other shrub/grass forests and woodlands found on clay-enriched sandy soils of the region. This includes *Eucalyptus crebra* dominated woodlands on Permian hills of the upper Hunter valley and alluvial flats of *Angophora floribunda* and *Eucalyptus blakelyi* in the Central West. In the study area this forest occupies similar topographic positions as S_GW06 and S_FoW19. However those forests occur on deeper clay soils and as a result are characterised by a greater diversity of box trees (*Eucalyptus melliodora*, *Eucalyptus moluccana*), red gums (*E. blakelyi*/ *E. tereticornis*) and rough-barked apple (*Angophora floribunda*). The understorey in those communities features a more abundant and diverse cover of grasses.

Spatially this forest grades into S_GW04 or S_FoW19 as alluvial flats widen out into broad valleys exposing underlying Permian clay soils. It grades into a number of dry shrubby sandstone forests and woodlands (S_DSF41, S_DSF59) at the interface with the sandstone escarpment.

Accuracy

Sample effort is low in the study area, but there are a higher number of sample sites from adjoining areas. Mapped distribution is based on the elevation and rainfall parameters of site data from the surrounding region. Map unit boundaries are based on the interpretation of colluvial and alluvial flats dominated by *Eucalyptus crebra*.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia decora	**4**	**100%**	**2**	**3%**	**positive**
Acacia doratoxylon	**2**	**100%**	**2**	**7%**	**positive**
Acrotriche rigida	**3**	**100%**	**1**	**9%**	**positive**
Aristida ramosa	1	100%	2	11%	uninformative
Brunoniella australis	1	100%	1	1%	uninformative
Calotis lappulacea	**2**	**100%**	**2**	**2%**	**positive**
Cheilanthes austrotenuifolia	1	100%	2	3%	uninformative
Cheilanthes sieberi* subsp. *sieberi	**2**	**100%**	**1**	**19%**	**positive**
Clematis aristata	1	100%	1	27%	uninformative
Daucus glochidiatus	1	100%	2	8%	uninformative
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Digitaria ramularis	**2**	**100%**	**1**	**5%**	**positive**
Dodonaea viscosa	1	100%	2	11%	uninformative
Eucalyptus crebra	**4**	**100%**	**3**	**7%**	**positive**
Fimbristylis dichotoma	**2**	**100%**	**1**	**1%**	**positive**
Gahnia aspera	1	100%	1	6%	uninformative
Goodenia rotundifolia	**2**	**100%**	**1**	**4%**	**positive**
Hibiscus sturtii* var. *sturtii	**2**	**100%**	**2**	**1%**	**positive**
Lagenophora gracilis	1	100%	1	2%	uninformative
Lomandra multiflora subsp. *multiflora*	1	100%	1	25%	uninformative
Microlaena stipoides	**3**	**100%**	**2**	**27%**	**positive**
Notelaea microcarpa var. *microcarpa*	1	100%	1	1%	uninformative
Oxalis perennans	1	100%	1	10%	uninformative
Persoonia linearis	1	100%	1	55%	uninformative
Pimelea latifolia	**2**	**100%**	**2**	**4%**	**positive**
Vittadinia cuneata	1	100%	1	2%	uninformative

BLUE MOUNTAINS GORGES GREY GUM SHELTERED FOREST S_DSF40

Statewide Class
Central Gorge Dry Sclerophyll Forests

Plant Community Type:
Grey Gum - Thin-leaved Stringybark grassy woodland of the southern Blue Mountains gorges, Sydney Basin

Description

Blue Mountains Gorges Grey Gum Sheltered Forest is a tall semi-moist eucalypt forest found on steep protected slopes in the major gorges, valleys and escarpments of the dry western Blue Mountains and Southern Highlands. It forms localised stands underneath major clifflines and along escarpment water courses. The canopy includes tall grey gum (*Eucalyptus punctata*) in association with narrow-leaved stringybark (*Eucalyptus sparsifolia*), rough-barked apple (*Angophora floribunda*) and box species (including *Eucalyptus dawsonii* and *Eucalyptus melliodora*). Monkey gum (*Eucalyptus cypellocarpa*) can be found at higher elevations. Smaller trees such as forest oak (*Allocasuarina torulosa*) and broad-leaved hickory (*Acacia falciformis*) regularly occur. The understorey occasionally includes dry rainforest species, though these are not abundant. There can be a sparse cover of grey myrtle (*Backhousia myrtifolia*) and sweet pittosporum (*Pittosporum undulatum*) amongst boulders on talus slopes. More frequently, the forest has an open layer of soft-leaved shrubs with a patchy ground cover of herbs, grasses and small ferns. In addition there is a diversity of vines and climbers amongst the ground and shrub layers.

In the study area the forest is restricted to steep and incised Permian escarpment slopes and benches. Elsewhere in the Sydney basin it is also known from Devonian substrates in gorges and slopes of the southern Blue Mountains. It is situated in the central and southern gorges of the Bioregion at elevations between 400 and 850 metres above sea level where mean annual rainfall is relatively low at between 650 and 850 millimetres. The elevated parts of the escarpment between Glen Davis and the Widden valley form the core of the distribution in the study area. Elsewhere it is more extensive in the Kowmung, Wollondilly and Megalong valleys (Tozer et al. 2010).

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	33 m ±14 18-50	27% ±24 3-70	*Eucalyptus cypellocarpa,Eucalyptus punctata, Angophora floribunda, Eucalyptus dawsonii*
Small Trees	10 m ±5 4-15	19% ±33 10-30	*Pittosporum undulatum, Acacia falciformis, Backhousia myrtifolia, Melaleuca styphelioides, Elaeocarpus reticulatus, Allocasuarina torulosa*
Shrubs	2.3 m ±0.8 1.5-3.0	22% ±10 10-30	*Bursaria spinosa, Goodenia ovata, Indigofera australis, Notelaea longifolia, Breynia oblongifolia*
Ground Covers	0.8 m ±0.4 0.5-1.5	28% ±14 5-40	*Dichondra repens, Notodanthonia longifolia, Asplenium flabellifolium, Pteridium esculentum, Adiantum aethiopicum, Doodia aspera, Lomandra longifolia, Microlaena stipoides* var. *stipoides, Pellaea falcata, Pyrrosia rupestris, Viola hederacea, Solanum prinophyllum*
Vines & Climbers	N/A	N/A	*Cissus hypoglauca, Geitonoplesium cymosum, Clematis aristata*

*Compiled from 4 of 5 sites with structural data recorded.

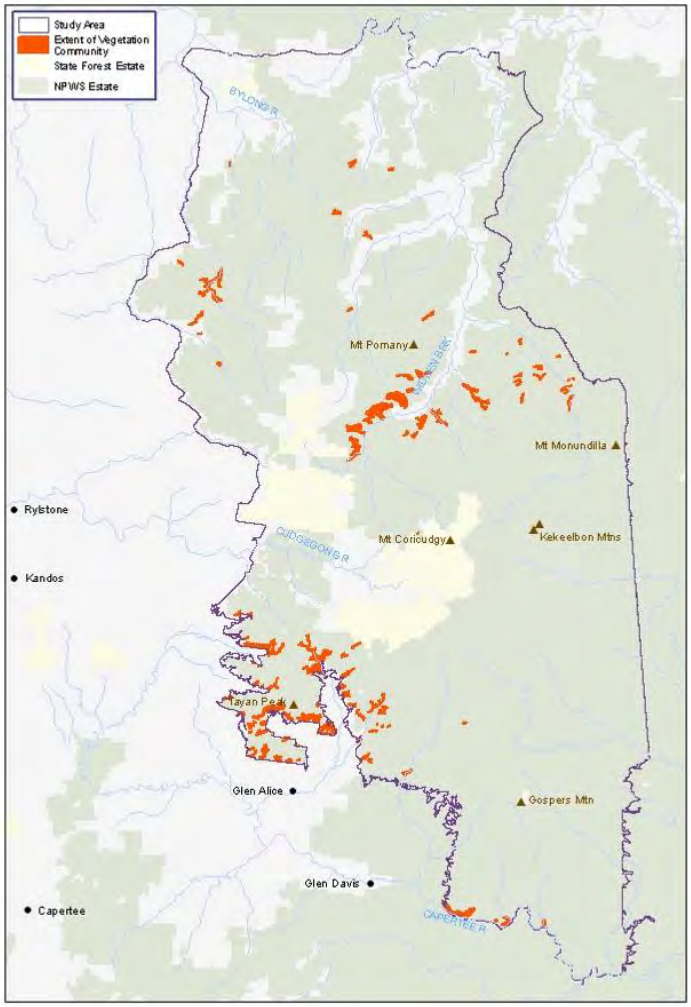
Threats

Clearing is unlikely to have impacted on the original pre-European extent of this community owing to the steep terrain on which it grows. Stands appear free of threatening processes except where highly localised impacts have arisen through shale oil mining and coal extraction.

Conservation Status

The community is protected within Wollemi NP, Gardens of Stone NP and Towarri NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	40,616-42,872 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	1418.4 ha	33,118 ha 86% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	66.7 ha	Not available
Total extant area	1485.1 ha	38,585 ha



Example Locations

- Widden valley escarpment
- Glen Alice Trail, Capertee escarpment

Species Richness

Number of plots	5
Total species	125
Average species per plot	42.0 ±7.7

Known Variations

No variations recognised.

Relationship to Other Communities

Some mesic species occurring in the shrub layer of this community are also found in dry rainforest (S_RF11). The eucalypt canopy includes species that also occur on sheltered Narrabeen sandstone forest (S_WSF22).

This community grades into dry sclerophyll shrub-grass forests with increasing exposure on Permian escarpment slopes.

Accuracy

Sample effort is moderate. Community definition will improve with additional sampling effort. Map unit domains are based on elevation and substrate characteristics of sample sites from both within and outside the study area. Map unit boundaries are drawn from the interpretation of tall sheltered forests found on steep Permian escarpment slopes dominated by *E. punctata,* box trees (*E. dawsonii* and *E. melliodora*) and *E. cypellocarpa.*

Diagnostic Species

S_DSF40

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia falciformis	**2**	**80%**	**2**	**4%**	**positive**
Acacia filicifolia	2	20%	2	6%	uninformative
Acacia melanoxylon	1	20%	2	8%	uninformative
Acacia obtusifolia	2	20%	2	14%	uninformative
Acacia verniciflua	3	20%	2	0%	uninformative
Acaena novae-zelandiae	2	20%	2	6%	uninformative
Adiantum aethiopicum	**2**	**80%**	**2**	**5%**	**positive**
Ajuga australis	1	20%	1	8%	uninformative
Allocasuarina littoralis	2	20%	1	12%	uninformative
Allocasuarina torulosa	3	20%	1	2%	uninformative
Amyema pendulum	**2**	**20%**	**0**	**0%**	**positive**
Angophora floribunda	**3**	**60%**	**2**	**16%**	**positive**
Arrhenechthites mixta	2	20%	1	4%	uninformative
Asplenium flabellifolium	1	80%	1	11%	uninformative
Astrotricha latifolia	3	20%	2	0%	uninformative
Austrodanthonia racemosa var. *racemosa*	2	20%	2	5%	uninformative
Backhousia myrtifolia	1	20%	4	4%	uninformative
Blechnum cartilagineum	1	20%	3	10%	uninformative
Brachychiton populneus subsp. *populneus*	2	20%	1	6%	uninformative
Brachyscome multifida	1	20%	1	2%	uninformative
Breynia oblongifolia	1	20%	1	3%	uninformative
Bursaria spinosa* subsp. *spinosa	**2**	**60%**	**2**	**25%**	**positive**
Cassinia arcuata	**2**	**20%**	**0**	**0%**	**positive**
Cheilanthes sieberi subsp. *sieberi*	1	40%	1	19%	uninformative
Cissus hypoglauca	**3**	**60%**	**2**	**4%**	**positive**
Clematis aristata	**2**	**80%**	**1**	**26%**	**positive**
Correa reflexa	**2**	**80%**	**1**	**7%**	**positive**
Crassula helmsii	**1**	**20%**	**0**	**0%**	**positive**
Crassula sieberiana	2	20%	1	6%	uninformative
Daucus glochidiatus	1	40%	2	8%	uninformative
Desmodium varians	**2**	**80%**	**2**	**18%**	**positive**
Dianella caerulea	1	100%	1	31%	uninformative
Dianella tasmanica	1	20%	1	3%	uninformative
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Dodonaea viscosa	2	20%	2	11%	uninformative
Doodia aspera	**2**	**80%**	**2**	**4%**	**positive**
Elaeocarpus reticulatus	**3**	**40%**	**1**	**8%**	**positive**
Eucalyptus bicostata	1	20%	4	2%	uninformative
Eucalyptus crebra	3	20%	3	7%	uninformative
Eucalyptus cypellocarpa	**4**	**60%**	**3**	**10%**	**positive**
Eucalyptus dawsonii	**4**	**40%**	**4**	**2%**	**positive**
Eucalyptus punctata	**3**	**80%**	**3**	**32%**	**positive**
Euchiton sphaericus	1	20%	1	2%	uninformative
Eupomatia laurina	3	20%	1	1%	uninformative
Eustrephus latifolius	**2**	**40%**	**1**	**8%**	**positive**
Exocarpos strictus	1	40%	1	16%	uninformative
Ficus rubiginosa	2	20%	1	1%	uninformative
Gahnia sieberiana	3	20%	1	3%	uninformative
Galium propinquum	**2**	**60%**	**2**	**16%**	**positive**
Geitonoplesium cymosum	1	60%	1	7%	uninformative
Geranium homeanum	1	20%	2	5%	uninformative
Geranium potentilloides	1	20%	2	4%	uninformative
Geranium solanderi var. *solanderi*	2	20%	2	11%	uninformative
Glycine clandestina	**2**	**40%**	**2**	**17%**	**positive**
Gonocarpus longifolius	2	20%	2	2%	uninformative
Goodenia ovata	1	60%	1	6%	uninformative
Hydrocotyle sibthorpioides	2	20%	2	2%	uninformative
Indigofera australis	**2**	**60%**	**2**	**14%**	**positive**
Lepidosperma elatius	3	20%	2	1%	uninformative
Leptomeria acida	2	20%	1	8%	uninformative
Leucopogon lanceolatus	2	20%	1	12%	uninformative
Libertia paniculata	2	20%	2	2%	uninformative
Lomandra longifolia	**2**	**80%**	**1**	**27%**	**positive**
Marsdenia rostrata	1	20%	2	2%	uninformative
Maytenus silvestris	2	20%	1	5%	uninformative
Melaleuca styphelioides	4	20%	2	1%	uninformative
Melicytus dentatus	1	20%	1	6%	uninformative
Microlaena stipoides	**2**	**60%**	**2**	**27%**	**positive**
Myrsine variabilis	1	20%	2	1%	uninformative
Notelaea longifolia	2	20%	1	9%	uninformative
Notodanthonia longifolia	**2**	**60%**	**2**	**4%**	**positive**
Opercularia hispida	2	20%	1	2%	uninformative
Oplismenus aemulus	2	20%	1	2%	uninformative
Oplismenus imbecillis	1	20%	2	5%	uninformative
Oxalis perennans	1	20%	1	10%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Pandorea pandorana	**2**	**40%**	**1**	**8%**	**positive**
Pellaea falcata	**2**	**40%**	**2**	**6%**	**positive**
Pimelea latifolia	**2**	**80%**	**2**	**3%**	**positive**
Pittosporum revolutum	**3**	**40%**	**1**	**1%**	**positive**
Pittosporum undulatum	**2**	**80%**	**1**	**4%**	**positive**
Plantago debilis	2	20%	2	13%	uninformative
Plantago hispida	1	20%	2	0%	uninformative
Plectranthus parviflorus	**2**	**60%**	**1**	**4%**	**positive**
Poa affinis	3	20%	2	14%	uninformative
Poa sieberiana	3	20%	3	3%	uninformative
Polystichum proliferum	2	20%	5	1%	uninformative
Pomax umbellata	1	20%	2	33%	uninformative
Poranthera microphylla	**2**	**60%**	**1**	**13%**	**positive**
Pteridium esculentum	**2**	**60%**	**2**	**31%**	**positive**
Pteris tremula	**2**	**20%**	**0**	**0%**	**positive**
Pyrrosia rupestris	**2**	**60%**	**2**	**4%**	**positive**
Rubus parvifolius	**2**	**40%**	**1**	**6%**	**positive**
Sambucus australasica	1	20%	1	1%	uninformative
Scutellaria humilis	1	20%	2	2%	uninformative
Senecio hispidulus	1	20%	2	4%	uninformative
Senecio tenuiflorus	**1**	**20%**	**0**	**0%**	**positive**
Senecio vagus	**2**	**60%**	**2**	**1%**	**positive**
Sigesbeckia australiensis	2	20%	2	3%	uninformative
Smilax glyciphylla	1	20%	1	9%	uninformative
Solanum brownii	2	20%	1	6%	uninformative
Solanum prinophyllum	1	60%	1	10%	uninformative
Solanum stelligerum	2	20%	1	0%	uninformative
Stellaria pungens	**2**	**80%**	**2**	**16%**	**positive**
Stenocarpus salignus	3	20%	2	2%	uninformative
Stypandra glauca	1	20%	1	7%	uninformative
Trema tomentosa var. *aspera*	1	20%	1	2%	uninformative
Tylophora barbata	**2**	**40%**	**2**	**3%**	**positive**
Veronica notabilis	**2**	**20%**	**0**	**0%**	**positive**
Veronica plebeia	2	20%	2	15%	uninformative
Viola hederacea	**3**	**40%**	**2**	**10%**	**positive**
Viola silicestris	**2**	**40%**	**2**	**1%**	**positive**
Wahlenbergia gracilis	**2**	**40%**	**1**	**5%**	**positive**

Statewide Class
Plant Community Type: North-west Slopes Dry Sclerophyll Woodlands
Slaty Box - Grey Gum shrubby woodland on footslopes of the upper Hunter Valley, Sydney Basin

Description

Hunter Escarpment Slaty Gum-Box Forest is a moderately tall eucalypt forest with a dry open shrubby understorey and a sparse ground cover of grasses and herbs. It occurs on the dry and rocky mid to lower escarpment slopes that fringe the southern and western Hunter valley floor in the north-west of the Sydney Basin Bioregion. Slaty gum (*Eucalyptus dawsonii*), a tree species endemic to the western Hunter region, is a consistent member of the canopy layer. A number of other tree species may co-occur, though are less frequently recorded. This includes grey box (*Eucalyptus moluccana*), grey gum (*Eucalyptus punctata*), black cypress pine (*Callitris endlicheri)* and occasionally ironbarks (*E. sideroxylon* and *E. fibrosa*). The shrub layer is variable in cover, with some sites retaining a moderately dense cover of sour bush (*Choretrum* spp.), wattles (*Acacia* spp.), hop-bush, *Cassinia* spp., daisy bush (*Olearia elliptica*) and blackthorn (*Bursaria spinosa*) and other sites very sparse, particularly on disturbed lower footslopes. The ground layer comprises an open and patchy cover of grasses and forbs amongst colluvial boulders and surface rocks. At times the ground layer appears bare of vegetation with little more than dry leaf litter and exposed earth.

This shrub/grass dry sclerophyll forest covers the exposed lower slopes of the western Hunter escarpment at elevations between 150 and 400 metres above sea level. The area experiences a relatively dry climate with average rainfall ranging between just 650 and 750 millimetres per annum. Soils are moderately fertile sandy loams derived from Permian-aged sediments and sandstone talus. The forest has a highly restricted distribution and is endemic to the Sydney Basin Bioregion. It occurs between Bylong and Denman in the western Hunter valley. Stands of this forest are widespread across the northern perimeter of Wollemi NP.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	14 m ±2 12-15	42% ±32 5-65	*Eucalyptus dawsonii, Eucalyptus moluccana, Eucalyptus fibrosa, Callitris endlicheri*
Small Trees and Shrubs	3.3 m ±1.0 2.0-4.0	31% ±19 10-55	*Acacia ixiophylla, Choretrum* sp. A*, Cassinia quinquefaria, Daviesia genistifolia, Dodonaea viscosa* subsp*. cuneata, Acacia paradoxa, Acacia uncinata , Bursaria spinosa, Olearia elliptica, Oxylobium ilicifolium*
Ground Covers	0.4 m ±0.2 0.3-0.6	7% ±3 5-10	*Cleistochloa rigida, Aristida vagans, Dianella revoluta var. revoluta, Lomandra filiformis* subsp*. coriacea, Lomandra glauca, Einadia hastata, Lepidosperma gunnii, Lomandra confertifolia, Gahnia aspera*
Vines & Climbers	N/A	N/A	*Hardenbergia violacea*

*Compiled from 5 of 10 sites with structural data recorded.

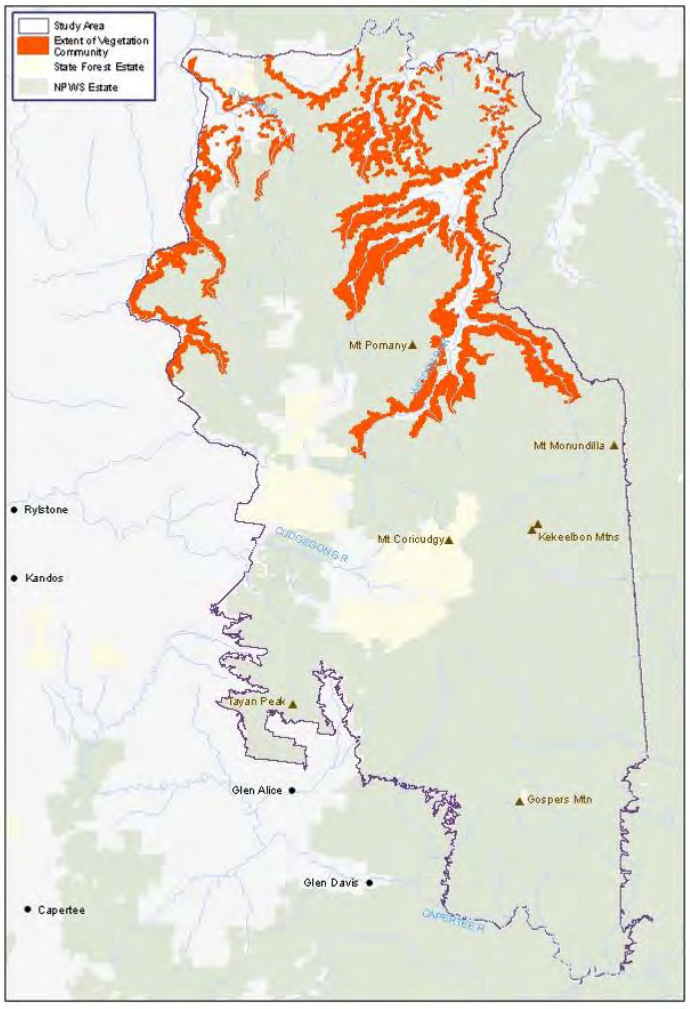
Threats

Stands of this community on lower escarpment slopes and benches have been used as marginal grazing lands across the extent of the Hunter escarpment, resulting in clearing and fragmentation. Disturbed sites have noticeable even-aged eucalypt cover and often feature a very sparse and open understorey. In some instances black cypress stands are prolific. The proximity of these forests to adjoining rural landuse means they are also subject to more frequent fire. Evidence of exotic species does not appear to be widespread based on the frequency of records within sample sites.

Conservation Status

This community forms a component of Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion, a TEC listed under the TSC Act. The forest has a naturally restricted distribution in the Sydney Basin Bioregion and there is no available evidence to suggest that it occurs elsewhere in New South Wales. A significant proportion of its extant distribution is situated within the NPWS protected area network.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	23,008-24,286 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	7641.6 ha	8642 ha 40% of extant area
Area in state forests	7.3 ha	Not available
Area in other tenures	4208.5 ha	Not available
Total extant area	11857.4 ha	21,857 ha



Example Locations

- Widden valley lower hill slopes
- Coxs Gap footslopes

Species Richness

Number of plots	10
Total species	118
Average species per plot	34.6 ±8.5

Known Variations

E. dawsonii may be absent from the canopy though the characteristic shrub and ground cover remain. Variation in the density of the shrub cover occurs between sites and in some areas the understorey may be very sparse. With decreasing rainfall some variation occurs in the composition of the dominant shrubs.

Relationship to Other Communities

This forest is closely related to other shrub/grass forests found on the Permian slopes of the Hunter escarpment (S_GW05). It grades into S_GW05 on heavier clay soils on lower escarpment slopes and benches. The increased soil fertility on the clay soils supports a higher diversity and cover of grasses and herbs than occur in S_DSF41. *Eucalyptus dawsonii* is mostly absent from S_GW05 except near the intergrade with this community. S_GW05 more frequently includes a range of box trees such as *E. albens* X *moluccana* and/or *E. melliodora* with red gums *E. tereticornis/E. blakelyi*. An *E. dawsonii* forest similar to S_DSF41 occurs along the western margins of the reserve (S_DSF68), though this is distinguishable by the presence of several shrub and grass species (see profile for S_DSF68).

Accuracy

Sample density is moderate. Map domains were identified from site data. Map unit boundaries relied on the interpretation of exposed dry eucalypt forests and woodlands found on Permian sediments along the Hunter escarpment. This forest was separated from other forests using the exposed dry and rocky characteristics of the habitat and the distinctive crown signature of *Eucalyptus dawsonii*.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia decora	1	20%	2	4%	uninformative
Acacia implexa	2	20%	1	5%	uninformative
Acacia ixiophylla	**4**	**40%**	**2**	**1%**	**positive**
Acacia linearifolia	**4**	**40%**	**2**	**7%**	**positive**
Acacia paradoxa	**2**	**40%**	**2**	**4%**	**positive**
Acacia penninervis var. *penninervis*	1	20%	1	6%	uninformative
Acacia uncinata	**3**	**40%**	**2**	**9%**	**positive**
Acrotriche rigida	1	60%	1	8%	uninformative
Ajuga australis	1	20%	1	8%	uninformative
Allocasuarina luehmannii	1	20%	1	0%	uninformative
Amyema miquelii	1	40%	1	1%	uninformative
Aristida ramosa	1	20%	2	11%	uninformative
Aristida vagans	**2**	**40%**	**2**	**7%**	**positive**
Aristida warburgii	**1**	**20%**	**0**	**0%**	**positive**
Arthropodium minus	2	20%	2	2%	uninformative
Asperula conferta	2	20%	2	9%	uninformative
Asplenium flabellifolium	2	20%	1	12%	uninformative
Austrodanthonia tenuior	2	20%	1	1%	uninformative
Backhousia myrtifolia	4	20%	4	4%	uninformative
Brachychiton populneus subsp. *populneus*	1	40%	1	6%	uninformative
Brachyscome angustifolia	2	20%	1	2%	uninformative
Brachyscome multifida	1	20%	1	2%	uninformative
Bursaria spinosa subsp. *spinosa*	1	60%	2	25%	uninformative
Callitris endlicheri	**2**	**80%**	**1**	**11%**	**positive**
Calotis lappulacea	2	20%	2	2%	uninformative
Cassinia cunninghamii	1	20%	2	7%	uninformative
Cassinia decipiens	1	40%	1	1%	uninformative
Cassinia quinquefaria	**2**	**60%**	**2**	**9%**	**positive**
Cassinia sp. D	1	20%	3	3%	uninformative
Cheilanthes distans	2	20%	1	5%	uninformative
Cheilanthes sieberi subsp. *sieberi*	2	20%	1	19%	uninformative
***Choretrum* sp. A**	**2**	**100%**	**1**	**6%**	**positive**
Cleistochloa rigida	**2**	**40%**	**2**	**10%**	**positive**
Clematis aristata	**2**	**40%**	**1**	**27%**	**positive**
Correa reflexa	2	20%	1	8%	uninformative
Cymbonotus lawsonianus	1	20%	2	4%	uninformative
Daucus glochidiatus	2	20%	2	8%	uninformative
Daviesia genistifolia	**2**	**40%**	**1**	**5%**	**positive**
Dianella revoluta var. *revoluta*	1	60%	1	27%	uninformative
Dianella tasmanica	1	20%	1	3%	uninformative
Dichelachne micrantha	1	20%	1	9%	uninformative
Dichondra repens	**2**	**40%**	**2**	**27%**	**positive**
Dodonaea viscosa	1	60%	2	11%	uninformative
Einadia hastata	**2**	**40%**	**2**	**3%**	**positive**
Eucalyptus dawsonii	**4**	**100%**	**4**	**1%**	**positive**
Eucalyptus fibrosa	2	20%	3	8%	uninformative
Eucalyptus moluccana	**2**	**100%**	**3**	**2%**	**positive**
Eustrephus latifolius	**2**	**40%**	**1**	**8%**	**positive**
Ficus rubiginosa	1	20%	1	1%	uninformative
Gahnia aspera	1	60%	2	6%	uninformative
Geranium homeanum	2	20%	2	5%	uninformative
Glycine clandestina	2	20%	2	17%	uninformative
Glycine tabacina	1	20%	2	10%	uninformative
Goodenia ovata	2	20%	1	6%	uninformative
Goodenia rotundifolia	2	20%	1	4%	uninformative
Goodenia stephensonii	2	20%	2	2%	uninformative
Haloragis serra	2	20%	1	3%	uninformative
Hardenbergia violacea	1	60%	1	25%	uninformative
Hibbertia acicularis	1	20%	1	7%	uninformative
Hibiscus sturtii var. *sturtii*	1	20%	2	2%	uninformative
Hovea lanceolata	1	20%	1	7%	uninformative
Hydrocotyle laxiflora	2	20%	2	20%	uninformative
Indigofera australis	2	20%	2	15%	uninformative
Lepidosperma gunnii	1	40%	2	13%	uninformative
Lepidosperma laterale	1	40%	1	24%	uninformative
Linum marginale	2	20%	1	0%	uninformative
Lomandra confertifolia	1	60%	2	33%	uninformative
Lomandra filiformis	**2**	**60%**	**2**	**17%**	**positive**
Lomandra glauca	**2**	**40%**	**2**	**30%**	**positive**
Lomandra longifolia	1	20%	1	28%	uninformative
Lomandra multiflora* subsp. *multiflora	**2**	**40%**	**1**	**25%**	**positive**
Luzula flaccida	2	20%	1	2%	uninformative
Macrozamia reducta	1	60%	1	10%	uninformative
Maytenus silvestris	1	20%	1	5%	uninformative
Microlaena stipoides	2	20%	2	28%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Muellerina bidwillii	1	20%	1	1%	uninformative
Myoporum montanum	1	20%	1	3%	uninformative
Notodanthonia longifolia	**2**	**40%**	**2**	**4%**	**positive**
Olearia elliptica* subsp. *elliptica	**2**	**80%**	**2**	**2%**	**positive**
Opercularia hispida	1	20%	2	2%	uninformative
Persoonia linearis	1	40%	1	55%	uninformative
Phebalium glandulosum	1	20%	1	1%	uninformative
Phyllanthus occidentalis	2	20%	2	2%	uninformative
Pimelea curviflora	2	20%	1	2%	uninformative
Plantago debilis	**2**	**40%**	**2**	**13%**	**positive**
Plantago varia	2	20%	2	1%	uninformative
Poa labillardierei var. *labillardierei*	1	20%	2	7%	uninformative
Podolobium ilicifolium	4	20%	2	30%	uninformative
Pomax umbellata	1	20%	2	33%	uninformative
Prostanthera discolor	2	20%	3	1%	uninformative
Rhytidosporum procumbens	1	20%	1	2%	uninformative
Scaevola albida	1	20%	1	1%	uninformative
Senecio bathurstianus	1	20%	1	1%	uninformative
Sida corrugata	1	20%	2	2%	uninformative
Solanum brownii	1	20%	1	6%	uninformative
Solanum campanulatum	1	20%	1	4%	uninformative
Solanum parvifolium subsp. *parvifolium*	1	20%	1	1%	uninformative
Solanum prinophyllum	1	20%	1	11%	uninformative
Stackhousia monogyna	1	20%	1	2%	uninformative
Stellaria pungens	2	20%	2	17%	uninformative
Swainsona galegifolia	**1**	**20%**	**0**	**0%**	**positive**
Templetonia stenophylla	1	40%	1	1%	uninformative
Teucrium corymbosum	1	20%	1	0%	uninformative
Veronica plebeia	1	20%	2	15%	uninformative
Vittadinia cuneata	1	20%	1	2%	uninformative
Vittadinia sulcata	**2**	**40%**	**2**	**2%**	**positive**
Wahlenbergia communis	1	20%	1	7%	uninformative
Xanthorrhoea johnsonii	1	20%	1	2%	uninformative

Statewide Class North-west Slopes Dry Sclerophyll Woodlands

Plant Community Type: Not described

Description

Western Hunter Residual Basalt Low Forest is a low-growing scrubby community with dry, sparse shrub and ground strata that is found on residual rocky basalt in the far north-west of the Sydney basin. The canopy is distinguished by a prominent component of black cypress pine (*Callitris endlicheri*), though it regularly includes isolated individuals of drooping she-oak (*Allocasuarina verticillata*) and low-growing eucalypts such as grey box (*Eucalyptus moluccana*). It is a community with low floristic diversity and a notably low percentage cover of shrub and ground cover species. The species that do occur are typical of basalt substrates, but their abundance is restricted by the limited area of soil that gathers between broken surface rock. Isolated shrubs such as *Cassinia* spp. are occasionally recorded above a scattering of grasses, herbs and small rushes.

This low forest is typically encountered at the interface between basalt outcropping and sandstone substrates along the elevated ranges of the western Hunter valley including the north-west Wollemi plateaux. It occurs between 450 and 750 metres above sea level in areas that receive less than 750 millimetres of rainfall per annum on average. It occupies crests and gentle upper slopes associated with basalt caps and flows. The study area encompasses a large proportion of the known distribution of this community between Nullo Mountain and Kerrabee. Elsewhere, small isolated stands are found on the northern sandstone plateau of the Goulburn River ranges.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	12 m 12	20% 20	*Allocasuarina verticillata, Eucalyptus moluccana, Callitris endlicheri, Brachychiton populneus* subsp. *populneus*
Small Trees and Shrubs	5 m 5	10% 10	*Exocarpos cupressiformis, Cassinia uncata*
Ground Covers	0.4 m 0.4	5% 5	*Cheilanthes sieberi* subsp. *sieberi, Lomandra confertifolia* subsp. *pallida, Aristida vagans, Astroloma humifusum, Crassula sieberiana* subsp. *sieberiana, Cymbopogon refractus, Dianella revoluta, Dichondra repens, Lomandra confertifolia*
Vines & Climbers	N/A	N/A	

*Compiled from 1 of 1 sites with structural data recorded.

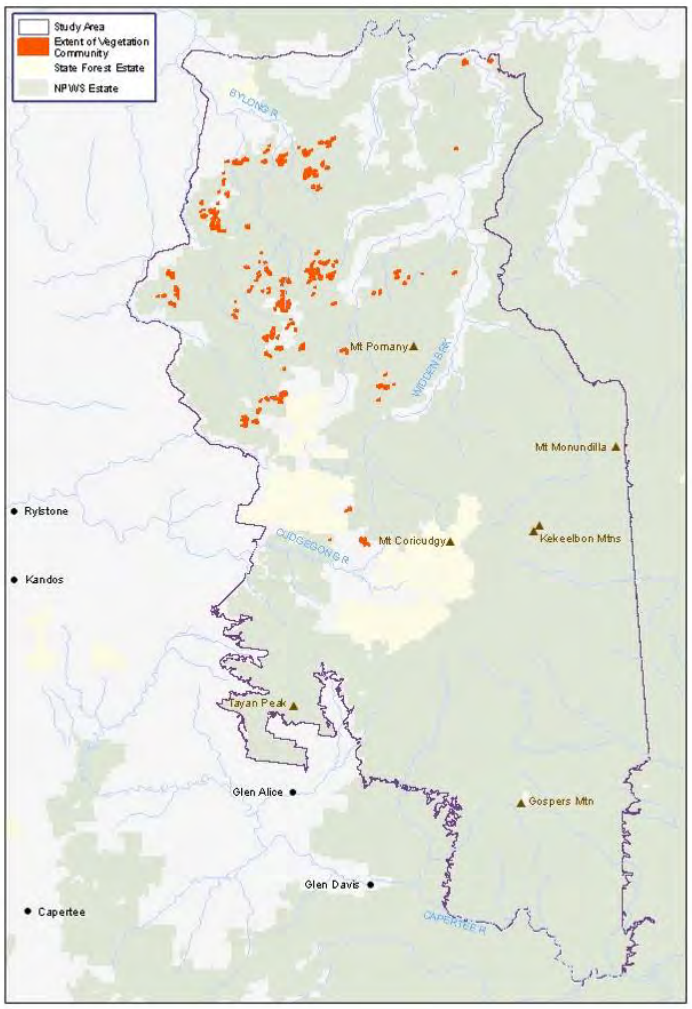
Threats

Threats arising from clearing and other landuse activities are considered low as result of the rocky habitat and absence of palatable grasses. Some stands may have been impacted by rough grazing and trampling associated with the grassy woodlands found on adjoining basalt soils. Frequent intense wildfire can result in the death of black cypress pine.

Conservation Status

This community is extensively distributed across northern Wollemi NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	1279-1333 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	590.4 ha	680 ha 54% of extant area
Area in state forests	2.1 ha	Not available
Area in other tenures	173.9	Not available
Total extant area	766.3 ha	1266 ha



Example Locations

o Myrtle Creek Trail, north Nullo Mountain

Species Richness

Number of plots	1
Total species	20
Average species per plot	20

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this community shares some species with the dry shrub/grass communities found on Permian soils across the western Hunter valley. Like those communities (e.g. S_DSF41) it has box trees such as *E. moluccana* and grasses such as *Aristida* spp. and *Cymbopogon refractus*. This community however is distinguished by its substrate, low scrubby appearance and dominance of black cypress pine, and casuarinas.

Spatially this community grades into S_GW11 as the basalt soil deepens and a more continuous cover of grasses, shrubs and eucalypt trees are recorded. It grades into surrounding sandstone woodlands (S_DSF49, S_DSF61) with decreasing basalt influence. Those sandstone woodlands feature a greater diversity and abundance of sclerophyllous shrubs and a less prominent grass and herb layer.

Accuracy

Sample density is low. Map unit boundaries were identified by stereoscopic API; dense stands of *Callitris endlicheri* on the margins of basalt caps and flows are a very distinctive landscape feature and can be mapped with a high degree of certainty. The distribution of the community relied on data obtained from rapid observation points surveyed across the study area.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Allocasuarina verticillata	**3**	**100%**	**1**	**1%**	**positive**
Aristida vagans	**2**	**100%**	**2**	**7%**	**positive**
Astroloma humifusum	1	100%	1	9%	uninformative
Brachychiton populneus subsp. *populneus*	1	100%	1	6%	uninformative
Callitris endlicheri	**4**	**100%**	**1**	**12%**	**positive**
Cassinia uncata	1	100%	1	5%	uninformative
Cheilanthes sieberi* subsp. *sieberi	**2**	**100%**	**1**	**19%**	**positive**
Crassula sieberiana	1	100%	1	6%	uninformative
Cymbopogon refractus	1	100%	2	3%	uninformative
Cyperus fulvus	**2**	**100%**	**0**	**0%**	**positive**
Dianella revoluta var. *revoluta*	1	100%	1	27%	uninformative
Dichelachne micrantha	1	100%	1	8%	uninformative
Dichondra repens	1	100%	2	27%	uninformative
Elymus scaber	1	100%	2	1%	uninformative
Eucalyptus moluccana	**3**	**100%**	**2**	**3%**	**positive**
Exocarpos cupressiformis	**2**	**100%**	**1**	**5%**	**positive**
Galium propinquum	1	100%	2	16%	uninformative
Lomandra confertifolia	**3**	**100%**	**2**	**33%**	**positive**
Lomandra multiflora* subsp. *multiflora	**2**	**100%**	**1**	**25%**	**positive**
Vittadinia cervicularis	1	100%	2	0%	uninformative

Statewide Class: Sydney Sand Flats Dry Sclerophyll Forests
Plant Community Type: Not described

Description

Blue Mountains Sands Scribbly Gum Woodland is a low to moderately tall shrubby eucalypt woodland found on loose sandy soils that form a perched depositional 'in-fill' on mid to high altitude sandstone plateaux of the Sydney basin. This woodland is one of several different woodlands associated with poorly drained sandy deposits in the region. Large scribbly gums (*Eucalyptus sclerophylla/Eucalyptus racemosa*) dominate the canopy. Other eucalypt species occur very infrequently but can include brittle gum (*Eucalyptus mannifera*) and Parramatta red gum (*Eucalyptus parramattensis* subsp*. parramattensis*). A low heath layer comprises banksias, hakeas, drumsticks, peas and tea-trees. This woodland occupies sites that are less well drained than the surrounding rockier sandstone substrates. As a result a thin layer of peaty material may form above the sandy soils; this encourages a ground cover of small sedges including scale-rush (*Lepyrodia scariosa*) and *Ptilothrix deusta*. These water-loving plants mix with a diverse range of grasses and small ferns.

This community is exclusively found on sandy deposits, perhaps sourced from long-ago eroded Hawkesbury sandstone (D. Connolly pers. obs.), that have filled small plateau water channels and valleys. These deposits tend to be very patchy and are often small in area. The woodland occurs between 500 and 800 metres above sea level and experiences between 850 and 1200 millimetres of rainfall per annum on average. In the study area it is restricted to several small areas on the flat plateaux near Gospers Mountain airstrip. Elsewhere it is found in small areas of the Blue Mountains at Knotts Swamp and at the highest elevations of the Woronora Plateau at the Racecourse near Robertson in the Southern Highlands.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	18 m ±4 15-20	15% ±7 10-20	*Eucalyptus racemosa, Eucalyptus parramattensis* subsp*. parramattensis, Eucalyptus mannifera*
Shrubs	1.8 m ±0.9 1.0-3.0	38% ±32 10-70	*Hakea laevipes* subsp. *laevipes, Melaleuca thymifolia, Banksia spinulosa, Persoonia linearis, Pimelea linifolia, Acacia brownii, Bossiaea heterophylla, Callistemon linearis, Dillwynia phylicoides, Grevillea sericea* subsp*. sericea, Leptospermum continentale, Leptospermum polygalifolium, Persoonia oblongata, Isopogon anemonifolius, Platysace ericoides, Monotoca scoparia*
Ground Covers	0.4 m ±0.0 0.4-0.4	65% ±7 60-70	*Dampiera stricta, Ptilothrix deusta, Hypericum gramineum, Lepyrodia scariosa, Anisopogon avenaceus, Dianella revoluta* var*. revoluta, Entolasia stricta, Goodenia bellidifolia* subsp*. bellidifolia, Poa labillardierei* var*. labillardierei, Pteridium esculentum*
Vines & Climbers	N/A	N/A	*Cassytha glabella* f*. glabella*

*Compiled from 2 of 2 sites with structural data recorded.

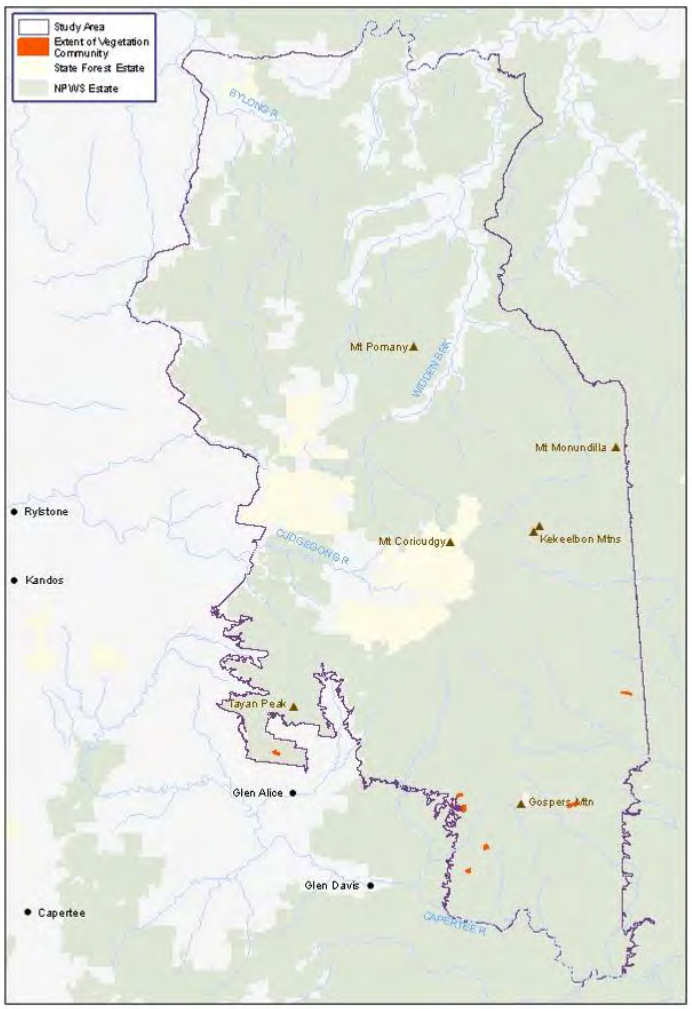
Threats

Threatening processes such as clearing and fragmentation are unlikely to have substantially altered the original pre-European extent of this community in the region. Small areas may have been cleared for urban development in the mid to upper Blue Mountains, although the extent of this loss is difficult to quantify. Stands present in NPWS estate and in water catchment areas may be subject to frequent fire events, particularly those sites proximate to private tenures.

Conservation Status

The total area of this community is likely to be small. It has a patchy and isolated distribution pattern from Wollemi NP to Blue Mountains NP and is found in the Upper Nepean SCA.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	1896-2001 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	51.1 ha	451 ha 25% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	51.1 ha	1801 ha



Example Locations

o South-west of Gospers Mountain airstrip

Species Richness

Number of plots	2
Total species	56
Average species per plot	39.0 ±1.4

Known Variations

Minor drainage lines are characterised by a very open eucalypt canopy with a moderately dense shrub layer.

Relationship to Other Communities

Within the region this community represents a higher elevation expression of other heathy woodlands found on deep sand deposits, such as those at Mellong Swamps near Putty, Castlereagh Swamps near Penrith and Kurri Swamps near Cessnock. Within the study area this community has an assemblage of plants that are very distinctive making it compositionally and visually dissimilar to other swamp communities or sandstone woodlands.

Spatially it grades into dry sandstone shrubby and heathy woodlands (S_DSF64) as the sand deposit thins onto the underlying bedrock.

Accuracy

Sample density is high. Map unit boundaries are based on the interpretation of perched sand deposits on gentle slopes found on sandstone plateaux. These are a localised landform pattern that presents a high visual contrast to surrounding sandstone landscapes.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia brownii	1	100%	1	2%	uninformative
Acacia buxifolia subsp. *buxifolia*	1	50%	1	12%	uninformative
Amperea xiphoclada	1	50%	1	13%	uninformative
Anisopogon avenaceus	**2**	**100%**	**2**	**8%**	**positive**
Aristida ramosa	1	50%	2	11%	uninformative
Austrostipa pubescens	**2**	**50%**	**2**	**5%**	**positive**
Banksia spinulosa	**3**	**100%**	**1**	**5%**	**positive**
Boronia microphylla	1	50%	2	2%	uninformative
Bossiaea ensata	1	50%	2	0%	uninformative
Bossiaea heterophylla	**2**	**100%**	**1**	**7%**	**positive**
Callistemon linearis	**3**	**50%**	**3**	**0%**	**positive**
Cassinia cunninghamii	1	50%	2	7%	uninformative
Cassinia uncata	1	50%	1	5%	uninformative
Cassytha glabella* f. *glabella	**2**	**100%**	**1**	**8%**	**positive**
Dampiera stricta	**3**	**100%**	**2**	**9%**	**positive**
Dianella revoluta* var. *revoluta	**2**	**100%**	**1**	**27%**	**positive**
Dillwynia phylicoides	**4**	**50%**	**2**	**3%**	**positive**
Drosera peltata	**2**	**50%**	**1**	**0%**	**positive**
Entolasia stricta	**2**	**100%**	**2**	**32%**	**positive**
Epacris pulchella	**2**	**50%**	**1**	**5%**	**positive**
Eucalyptus mannifera* subsp. *mannifera	**2**	**50%**	**1**	**1%**	**positive**
Eucalyptus parramattensis* subsp. *parramattensis	**3**	**50%**	**2**	**0%**	**positive**
Eucalyptus racemosa	**4**	**100%**	**0**	**0%**	**positive**
Gompholobium inconspicuum	**1**	**50%**	**0**	**0%**	**positive**
Gonocarpus tetragynus	1	50%	2	13%	uninformative
Gonocarpus teucrioides	1	50%	2	14%	uninformative
Goodenia bellidifolia	**2**	**100%**	**2**	**5%**	**positive**
Goodenia paniculata	**2**	**50%**	**1**	**1%**	**positive**
Grevillea sericea	**2**	**100%**	**1**	**3%**	**positive**
Hakea dactyloides	**3**	**100%**	**1**	**18%**	**positive**
Hibbertia empetrifolia* subsp. *empetrifolia	**2**	**50%**	**1**	**3%**	**positive**
Hypericum gramineum	**2**	**100%**	**2**	**6%**	**positive**
Isopogon anemonifolius	1	50%	1	8%	uninformative
Lagenophora stipitata	1	50%	1	10%	uninformative
Lepidosperma laterale	**2**	**50%**	**1**	**24%**	**positive**
Leptospermum continentale	**2**	**100%**	**2**	**2%**	**positive**
Leptospermum polygalifolium* subsp. *polygalifolium	**2**	**100%**	**2**	**5%**	**positive**
Lepyrodia scariosa	**2**	**100%**	**3**	**1%**	**positive**
Leucopogon lanceolatus	1	50%	1	12%	uninformative
Lomandra longifolia	1	50%	1	28%	uninformative
Melaleuca thymifolia	**4**	**100%**	**2**	**0%**	**positive**
Microlaena stipoides	1	50%	2	28%	uninformative
Mirbelia platylobioides	**2**	**50%**	**1**	**2%**	**positive**
Monotoca scoparia	**2**	**50%**	**2**	**24%**	**positive**
Panicum simile	1	50%	2	2%	uninformative
Persoonia linearis	**2**	**100%**	**1**	**55%**	**positive**
Persoonia oblongata	1	100%	1	2%	uninformative
Phyllota phylicoides	1	50%	2	4%	uninformative
Pimelea linifolia	**2**	**100%**	**2**	**12%**	**positive**
Platysace ericoides	**2**	**50%**	**2**	**22%**	**positive**
Poa labillardierei var. *labillardierei*	1	100%	2	6%	uninformative
Pteridium esculentum	1	50%	2	32%	uninformative
Ptilothrix deusta	**3**	**100%**	**2**	**1%**	**positive**
Schoenus brevifolius	1	50%	2	1%	uninformative
Sphaerolobium minus	**2**	**50%**	**0**	**0%**	**positive**

Statewide Class: Southern Tableland Dry Sclerophyll Forests
Plant Community Type: Not described

Description

Central Tableland Sand-slope Scribbly Gum Woodland is an open eucalypt woodland with a sparse to open shrub layer and patchy cover of grasses. It has a restricted distribution, occurring on gently sloping perched sand deposits that lie below the sandstone escarpments and rises of the Great Dividing Range. Inland scribbly gum (*Eucalyptus rossii*) dominates the canopy with stringybarks (*Eucalyptus sparsifolia/Eucalyptus macrorhyncha* X *cannonii*) and Sydney peppermint (*Eucalyptus piperita*) occasional associate trees. Other cool-climate eucalypts such as brittle gum (*Eucalyptus mannifera*) and broad-leaved peppermint (*Eucalyptus dives*) are far less common. Stands may include Creswick apple box (*Eucalyptus corticosa*) a species restricted to the Cudgegong valley and listed under the TSC Act. The shrub layer is open and low-growing and comprises a number of different species of peas, wattles, hakeas, banksia and geebung. This includes parrot pea (*Dillwynia phylicoides*), geebung (*Persoonia myrtilloides*), conesticks (*Petrophile canescens*) and daphne heath (*Brachyloma daphnoides*). The ground cover comprises a mix of grasses, small herbs and graminoids.

This woodland grows on shallow sand deposits that fan across the Cudgegong valley and adjoining tributaries. These deposits rest on or just above Permian bedrock with much of the sandy material likely to be sourced from the eroding Narrabeen sandstone escarpment. Sand deposits can be shallow and loose or highly indurate on lower slopes. It occurs in a narrow elevation range between 720 and 850 metres above sea level and receives a moderate to low average annual rainfall of between 700 and 800 millimetres. The study area encompasses much of the distribution of this woodland between Cudgegong valley and Heffrons Gap. Small areas are found outside the study area to the west. It occurs across national park, state forest and private land tenures.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	18 m ±6 10-35	40% ±15 20-65	*Eucalyptus rossii, Eucalyptus piperita, Eucalyptus corticosa, Eucalyptus sparsifolia, Eucalyptus cannonii, Eucalyptus dives*
Small Trees	3 m ±2 2-6	22% ±18 5-65	*Persoonia linearis, Hakea dactyloides, Acacia buxifolia*
Shrubs	1.4 m ±0.5 0.8-2.0	39% ±12 25-55	*Brachyloma daphnoides, Monotoca scoparia, Dillwynia phylicoides, Leucopogon muticus, Lomatia silaifolia, Hibbertia circumdans, Petrophile canescens, Hovea linearis, Persoonia myrtilloides*
Ground Covers	0.5 m ±0.2 0.3-1.0	28% ±24 5-90	*Patersonia sericea, Lomandra glauca, Pteridium esculentum, Caustis flexuosa, Entolasia stricta, Lomandra multiflora* subsp*. multiflora, Aristida ramosa, Dianella caerulea, Dianella revoluta* var*. revoluta, Joycea pallida, Poranthera microphylla, Pomax umbellata, Goodenia hederacea* subsp*. hederacea*
Vines & Climbers	N/A	N/A	*Hardenbergia violacea, Billardiera scandens*

*Compiled from 13 of 18 sites with structural data recorded.

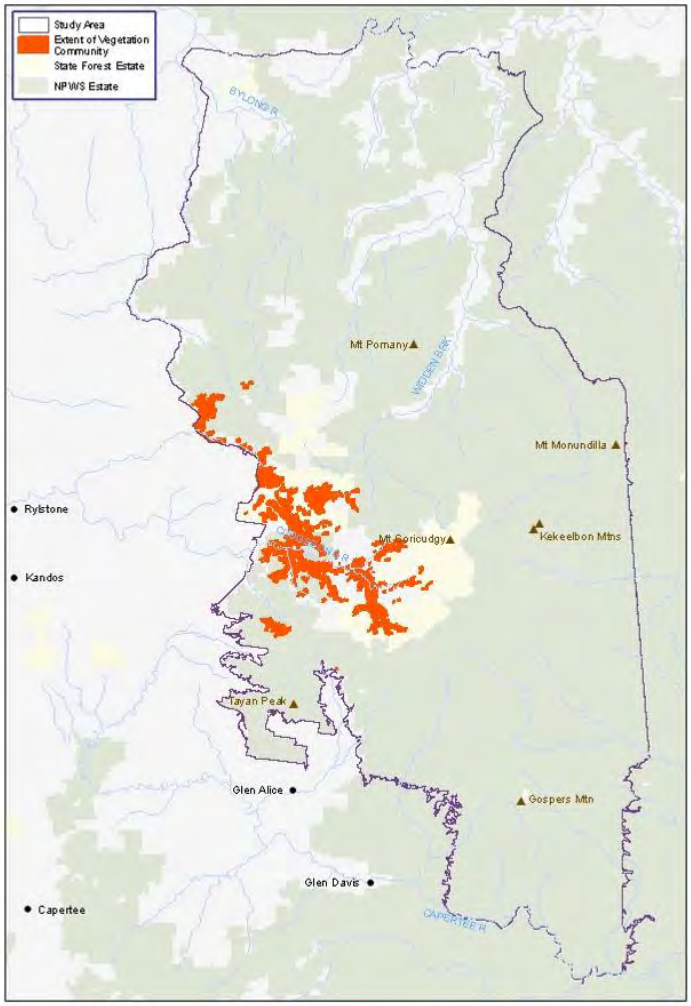
Threats

Clearing is likely to have reduced the original pre-European extent of this woodland in the Cudgegong valley. This has resulted in the fragmentation and isolation of some stands. Proximity to agricultural land uses on private lands means that low-intensity grazing and frequent fires occur within the woodland. Tracks and trails also dissect remnant patches.

Conservation Status

This community has a very restricted distribution in the Sydney Basin Bioregion and across New South Wales. Almost 37 per cent occurs within Wollemi NP, with a further 39 per cent in Nullo Mountain and Coricudgy state forests. The remainder is found on private lands and small Crown land holdings.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	8228-12,343 ha
Estimated percentage cleared	Not available	55-70%
Area in formal conservation reserves	1360.7 ha	1362 ha 37% of extant area
Area in state forests	1436.0 ha	Not available
Area in other tenures	906.1 ha	Not available
Total extant area	3702.8 ha	3703 ha



Example Locations

- Cudgegong valley, Dunns Swamp area
- Upper Towinhingy Creek, Wollemi NP
- Heffrons Gap

Species Richness

Number of plots	18
Total species	200
Average species per plot	33.1 ±6.7

Known Variations

Variation within the unit occurs in response to substrate. Loose sands carry shrubbier woodland that includes a conspicuous cover of *Banksia* spp. sometimes with *Eucalyptus piperita* in the canopy. Bracken fern can be more prominent. Typically this variant is not far from pagoda-like outcrops within the valley. Harder compacted soils result in a less shrubby variant with a grassy appearance; *Eucalyptus corticosa* is restricted to these sites.

Relationship to Other Communities

Floristically this woodland shares close association with other exposed woodlands found on infertile sedimentary soils along the spine of the Great Dividing Range between Lithgow and the Capertee Valley. Those occur outside the study area but illustrate that the cool, dry tablelands environments occupy small valleys along the western margins of the study area. Within the study area, however, the community is most similar to the sandstone ridgetop woodlands of the Growee ranges (S_DSF49).

Spatially this woodland grades into S_DSF47 as elevation increases on escarpment footslopes of the Cudgegong valley. It grades into forests (S_WSF24, S_WSF25) as the valley slopes descend into the shallow drainage lines. Montane bogs and fens (S_FrW16, S_FrW17) are often nearby.

Accuracy

Sample effort is high relative to the mapped area. Map unit boundaries are based on the interpretation of the distinctive sand-slope landforms of the Cudgegong and Heffrons Gap area. These are readily interpretable using stereoscopic aerial photography. Crown signatures of *Eucalyptus rossii* and relative tree height were used to separate this community from other eucalypt forests and woodlands occurring on these landforms.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia brownii	1	22%	1	1%	uninformative
Acacia buxifolia* subsp. *buxifolia	**2**	**56%**	**1**	**10%**	**positive**
Acacia lanigera	**2**	**6%**	**0**	**0%**	**positive**
Acacia longifolia subsp. *longifolia*	1	11%	2	5%	uninformative
Allocasuarina littoralis	1	11%	1	12%	uninformative
Amperea xiphoclada	2	11%	1	13%	uninformative
Angophora floribunda	1	11%	2	17%	uninformative
Anisopogon avenaceus	2	22%	2	8%	uninformative
Aristida ramosa	**2**	**50%**	**2**	**10%**	**positive**
Billardiera scandens	1	22%	1	24%	uninformative
Boronia microphylla	2	22%	2	2%	uninformative
Bossiaea heterophylla	2	22%	1	7%	uninformative
Bossiaea obcordata	3	17%	3	2%	uninformative
Brachyloma daphnoides	**2**	**78%**	**1**	**11%**	**positive**
Callitris endlicheri	2	11%	1	12%	uninformative
Cassinia uncata	1	11%	1	5%	uninformative
Caustis flexuosa	1	61%	1	10%	uninformative
Caustis pentandra	2	11%	2	3%	uninformative
Caustis recurvata	**1**	**6%**	**0**	**0%**	**positive**
Conospermum tenuifolium	**2**	**6%**	**0**	**0%**	**positive**
Coronidium oxylepis	2	11%	1	1%	uninformative
Coronidium scorpioides	1	17%	1	1%	uninformative
Dampiera stricta	2	17%	2	9%	uninformative
Daviesia latifolia	**1**	**6%**	**0**	**0%**	**positive**
Daviesia pubigera	**2**	**6%**	**0**	**0%**	**positive**
Dianella caerulea	1	44%	1	31%	uninformative
Dianella prunina	2	11%	1	2%	uninformative
Dianella revoluta var. *revoluta*	1	50%	1	27%	uninformative
Dichelachne micrantha	2	17%	1	8%	uninformative
Digitaria parviflora	**2**	**6%**	**0**	**0%**	**positive**
Digitaria ramularis	1	17%	1	5%	uninformative
Dillwynia phylicoides	**2**	**61%**	**4**	**1%**	**positive**
Dodonaea viscosa	2	11%	2	11%	uninformative
Echinopogon ovatus	1	22%	2	16%	uninformative
Entolasia stricta	**2**	**56%**	**2**	**31%**	**positive**
Eucalyptus cannonii	1	17%	2	2%	uninformative
Eucalyptus corticosa	**3**	**17%**	**0**	**0%**	**positive**
Eucalyptus dives	1	17%	3	1%	uninformative
Eucalyptus piperita	4	17%	3	16%	uninformative
Eucalyptus punctata	1	17%	3	34%	uninformative
Eucalyptus rossii	**4**	**89%**	**3**	**10%**	**positive**
Eucalyptus sparsifolia	2	17%	3	28%	uninformative
Gompholobium uncinatum	2	33%	1	0%	uninformative
Gonocarpus tetragynus	**2**	**39%**	**2**	**12%**	**positive**
Gonocarpus teucrioides	2	22%	2	14%	uninformative
Goodenia bellidifolia	2	28%	2	4%	uninformative
Goodenia hederacea* subsp. *hederacea	**2**	**44%**	**2**	**7%**	**positive**
Grevillea laurifolia	**1**	**6%**	**0**	**0%**	**positive**
Hakea dactyloides	1	67%	1	17%	uninformative
Hardenbergia violacea	2	33%	1	25%	uninformative
Hibbertia acicularis	1	17%	1	7%	uninformative
Hibbertia circumdans	**2**	**61%**	**1**	**11%**	**positive**
Hibbertia obtusifolia	2	22%	1	5%	uninformative
Hovea linearis	1	44%	1	6%	uninformative
Hypericum gramineum	1	11%	2	6%	uninformative
Joycea pallida	2	28%	2	14%	uninformative
Lagenophora stipitata	1	11%	1	10%	uninformative
Leptomeria acida	2	28%	1	7%	uninformative
Leptospermum arachnoides	2	11%	2	7%	uninformative
Leptospermum parvifolium	1	17%	2	12%	uninformative
Leptospermum sphaerocarpum	1	17%	2	14%	uninformative
Leucochrysum albicans* subsp. *albicans	**1**	**6%**	**0**	**0%**	**positive**
Leucopogon attenuatus	**1**	**6%**	**0**	**0%**	**positive**
Leucopogon lanceolatus	1	17%	1	12%	uninformative
Leucopogon microphyllus	1	11%	2	5%	uninformative
Leucopogon muticus	**2**	**44%**	**2**	**23%**	**positive**
Leucopogon virgatus	3	11%	2	1%	uninformative
Lomandra confertifolia	2	22%	2	33%	uninformative
Lomandra filiformis	2	11%	2	18%	uninformative
Lomandra glauca	**2**	**83%**	**2**	**27%**	**positive**
Lomandra longifolia	1	22%	1	28%	uninformative
Lomandra multiflora subsp. *multiflora*	1	56%	1	24%	uninformative
Lomatia silaifolia	**2**	**61%**	**2**	**20%**	**positive**
Macrozamia secunda	**2**	**6%**	**0**	**0%**	**positive**
Melichrus urceolatus	1	17%	1	13%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Microlaena stipoides	1	28%	2	28%	uninformative
Mirbelia platylobioides	2	33%	1	1%	uninformative
Mitrasacme paludosa	**1**	**6%**	**0**	**0%**	**positive**
Mitrasacme polymorpha	2	11%	1	0%	uninformative
Monotoca scoparia	**2**	**72%**	**1**	**22%**	**positive**
Opercularia diphylla	1	22%	1	2%	uninformative
Ozothamnus diosmifolius	1	17%	1	2%	uninformative
Patersonia sericea	**2**	**94%**	**1**	**17%**	**positive**
Persoonia linearis	1	72%	1	54%	uninformative
Persoonia myrtilloides	**2**	**61%**	**1**	**4%**	**positive**
Petrophile canescens	**2**	**50%**	**1**	**1%**	**positive**
Petrophile pulchella	2	11%	1	5%	uninformative
Phyllanthus hirtellus	1	22%	2	22%	uninformative
Phyllota phylicoides	2	17%	2	4%	uninformative
Pimelea linifolia	1	22%	2	12%	uninformative
Platylobium formosum	**1**	**6%**	**0**	**0%**	**positive**
Platysace ericoides	1	33%	2	21%	uninformative
Platysace lanceolata	2	22%	2	17%	uninformative
Podolobium ilicifolium	2	17%	2	30%	uninformative
Pomax umbellata	2	33%	2	33%	uninformative
Poranthera microphylla	**2**	**50%**	**1**	**11%**	**positive**
Pteridium esculentum	**3**	**50%**	**2**	**31%**	**positive**
Pultenaea microphylla	2	17%	1	1%	uninformative
Pultenaea procumbens	**2**	**11%**	**0**	**0%**	**positive**
Rhytidosporum procumbens	2	22%	1	1%	uninformative
Schoenus ericetorum	1	17%	1	3%	uninformative
Stylidium graminifolium	1	28%	2	3%	uninformative
Styphelia triflora	1	17%	1	13%	uninformative
Themeda australis	1	17%	1	6%	uninformative
Trachymene incisa	1	11%	2	2%	uninformative
Triodia scariosa* subsp. *scariosa	**2**	**6%**	**0**	**0%**	**positive**
Xanthosia atkinsoniana	1	28%	2	11%	uninformative

Statewide Class Southern Tableland Dry Sclerophyll Forests
Plant Community Type: Not described

Description

Cudgegong Footslopes Forest is a dry shrubby eucalypt forest associated with gentle sandstone slopes and benches situated in two small valleys near Rylstone in the north-west of the Sydney basin. The forest comprises a mixed combination of eucalypts although the presence of stringybarks (*Eucalyptus sparsifolia/Eucalyptus cannonii*) and grey gum (*Eucalyptus punctata*) is common. These species may not dominate at individual stands and instead there may be a local abundance of rough-barked apple (*Angophora floribunda*), scribbly gum (*Eucalyptus rossii*) or Sydney peppermint (*Eucalyptus piperita*) on rises or ribbon gum (*Eucalyptus viminalis*) and Blakely's red gum (*Eucalyptus blakelyi*) in the dry open drainage lines. Tall shrubs and small trees provide a sparse to moderate cover often including wattles such as *Acacia filicifolia* and a patchy cover of banksia (*Banksia marginata*). The lower shrub layer is comprised of a range of other sclerophyllous species including geebung (*Persoonia* spp.), urn heath (*Melichrus urceolatus*) and *Monotoca scoparia* as well as the vibrant flowered native indigo (*Indigofera australis*). The ground layer has a prominent cover of bracken fern (*Pteridium esculentum*), widely spaced tussocks of rushes (*Lomandra* spp.) and cool-climate grasses and herbs.

This forest is unusual as it mixes species typical of central tableland flats and hollows with sclerophyllous shrub species more commonly encountered in sandy soils of the surrounding forests and woodlands. It has a restricted distribution in the Sydney Basin Bioregion, known only from two valleys that adjoin the western boundary of Wollemi NP. It occupies a landscape that has little outcropping or surface rock, making it readily discernable from sandstone ridgetop forests and woodlands. It occurs in a narrow elevation range between 650 and 820 metres above sea level in the Cudgegong and Heffrons Gap area. These valleys receive around 750 millimetres of rainfall per annum.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	23 m ±5 16-30	44% ±17 10-65	*Eucalyptus piperita, Angophora floribunda, Eucalyptus viminalis, Eucalyptus sparsifolia, Eucalyptus cannonii, Eucalyptus punctata*
Small Trees	7 m ±5 3-20	19% ±16 5-45	*Acacia filicifolia, Acacia falciformis, Banksia marginata*
Shrubs	2.3 m ±0.7 1.3-3.5	16% ±11 5-35	*Persoonia linearis, Melichrus urceolatus, Monotoca scoparia, Indigofera australis, Podolobium ilicifolium, Hibbertia circumdans, Brachyloma daphnoides, Persoonia myrtilloides*
Ground Covers	0.5 m ±0.4 0.1-1.0	29% ±25 5-90	*Pteridium esculentum, Microlaena stipoides, Lomandra longifolia, Poranthera microphylla, Echinopogon ovatus, Entolasia stricta, Veronica plebeia, Viola betonicifolia, Hydrocotyle laxiflora, Stellaria pungens, Echinopogon caespitosus, Imperata cylindrica*
Vines & Climbers	N/A	N/A	*Glycine clandestina*

*Compiled from 7 of 8 sites with structural data recorded.

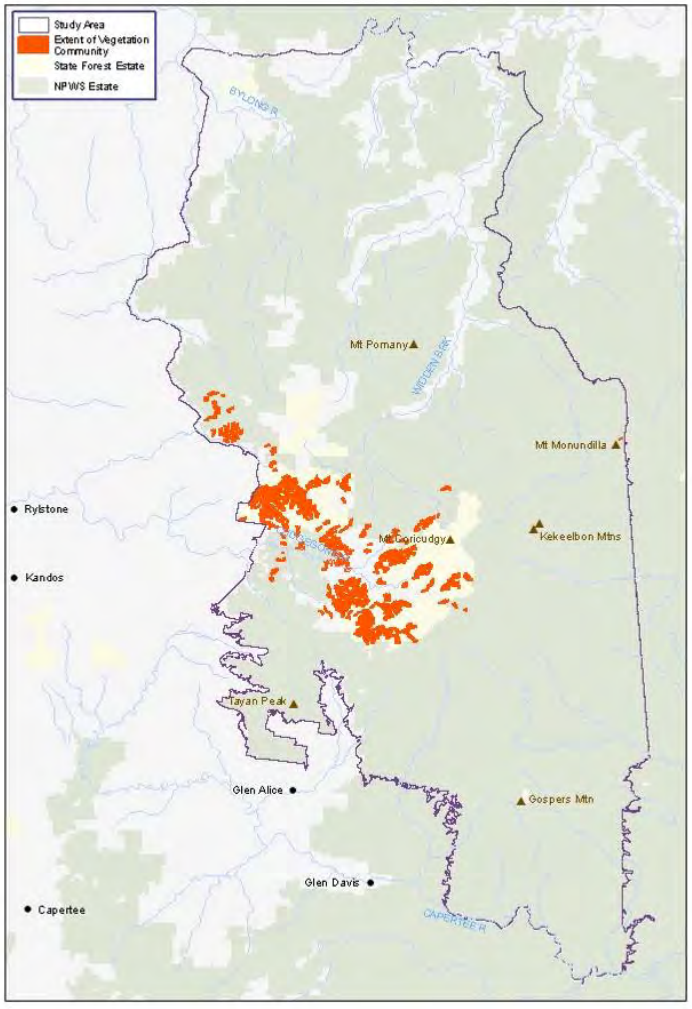
Threats

Clearing for agriculture has depleted some stands of this forest within the valleys. Grazing pressures persist on private lands and state forests, where small patchy areas of exotic ground covers are often recorded. Frequent burning regimes are also likely to persist in the valley to reduce the cover of woody shrubs and litter and to favour palatable grasses.

Conservation Status

This community has a restricted distribution within the Sydney basin. Small areas are included within Wollemi NP, with larger areas present in the adjoining Coricudgy and Nullo Mountain state forests.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	3105-3687 ha
Estimated percentage cleared	Not available	5-20%
Area in formal conservation reserves	376.3 ha	377 ha 13% of extant area
Area in state forests	1922.6 ha	Not available
Area in other tenures	650.8 ha	Not available
Total extant area	2949.6 ha	2950 ha



Example Locations

- Cudgegong valley
- Heffrons Gap area
- Near Olinda, Nullo Mountain SF

Species Richness

Number of plots	8
Total species	180
Average species per plot	41.1 ±11.3

Known Variations

Variation in the dominance of individual eucalypt species occurs within and between these sandy infill valleys. Gentle depressions include a higher proportion of taller gums such as ribbon gum and red gum.

Relationship to Other Communities

Floristically this forest has an unusual combination of species. It is related to Central Tableland Ribbon Gum-Apple Gully Forest (S_WSF25) into which it grades as the sandy soil thins and exposes the underlying Permian sediments. Away from the drainage lines the forest grades into Central Tableland Sand-slope Scribbly Gum Woodland (S_DSF46). That community is an open forest or woodland dominated by scribbly gum *Eucalyptus rossii*.

Together with S_DSF46 this community has some affinities with vegetation on other infill sandy deposits in the Sydney basin. The largest such deposit is on the Mellong Range, about 20 kilometres directly east of the Cudgegong valley on the eastern margin of the Wollemi plateaux. This is a warmer, lower-lying environment and contains a different suite of sclerophyllous species.

Accuracy

Sample effort is low and further sampling is required. The unique landscape on which this forest occurs is readily discernable using stereoscopic aerial photography.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia caesiella	2	25%	1	2%	uninformative
Acacia falciformis	2	25%	2	5%	uninformative
Acacia filicifolia	3	25%	2	6%	uninformative
Acacia melanoxylon	3	13%	2	8%	uninformative
Acacia obliquinervia	4	25%	1	5%	uninformative
Acaena novae-zelandiae	1	25%	2	5%	uninformative
Angophora floribunda	**3**	**38%**	**2**	**16%**	**positive**
Aristida ramosa	2	13%	2	11%	uninformative
Banksia marginata	4	13%	1	2%	uninformative
Billardiera scandens	1	38%	1	23%	uninformative
Brachyloma daphnoides	1	38%	1	13%	uninformative
Brachyscome angustifolia	1	25%	2	1%	uninformative
Bursaria spinosa subsp. spinosa	2	13%	2	26%	uninformative
Cassinia sp. D	3	13%	3	3%	uninformative
Cassinia uncata	2	25%	1	5%	uninformative
Cheilanthes sieberi subsp. sieberi	1	50%	2	19%	uninformative
Chrysocephalum apiculatum	2	13%	1	1%	uninformative
Clematis aristata	1	50%	1	26%	uninformative
Desmodium varians	**2**	**38%**	**2**	**19%**	**positive**
Dianella caerulea	1	25%	1	31%	uninformative
Dianella revoluta var. revoluta	1	38%	1	27%	uninformative
Dichelachne micrantha	2	38%	1	8%	positive
Echinopogon caespitosus	**2**	**50%**	**2**	**3%**	**positive**
Echinopogon ovatus	**2**	**50%**	**2**	**16%**	**positive**
Entolasia stricta	**2**	**50%**	**2**	**32%**	**positive**
Eucalyptus piperita	**4**	**50%**	**3**	**15%**	**positive**
Eucalyptus punctata	3	25%	3	33%	uninformative
Eucalyptus radiata	2	13%	3	1%	uninformative
Eucalyptus rossii	2	13%	3	14%	uninformative
Eucalyptus sparsifolia	4	25%	3	28%	uninformative
Eucalyptus viminalis	**2**	**50%**	**3**	**8%**	**positive**
Eustrephus latifolius	2	25%	1	9%	uninformative
Exocarpos cupressiformis	1	13%	1	6%	uninformative
Exocarpos strictus	**2**	**38%**	**1**	**16%**	**positive**
Galium binifolium	2	25%	2	4%	uninformative
Galium gaudichaudii	2	25%	2	4%	uninformative
Galium propinquum	2	13%	2	16%	uninformative
Geranium solanderi var. solanderi	**2**	**38%**	**2**	**10%**	**positive**
Glycine clandestina	1	75%	2	16%	uninformative
Gonocarpus tetragynus	**2**	**38%**	**2**	**13%**	**positive**
Goodenia hederacea subsp. hederacea	1	25%	2	8%	uninformative
Hardenbergia violacea	2	25%	1	26%	uninformative
Hibbertia circumdans	**2**	**50%**	**1**	**13%**	**positive**
Hovea linearis	1	25%	1	8%	uninformative
Hydrocotyle laxiflora	**2**	**50%**	**2**	**19%**	**positive**
Hypericum gramineum	2	25%	2	6%	uninformative
Imperata cylindrica	2	25%	1	2%	uninformative
Indigofera australis	**2**	**50%**	**2**	**14%**	**positive**
Joycea pallida	**2**	**38%**	**2**	**14%**	**positive**
Lagenophora stipitata	**2**	**50%**	**1**	**9%**	**positive**
Lepidosperma laterale	1	25%	1	24%	uninformative
Leptomeria acida	1	25%	1	8%	uninformative
Leucopogon lanceolatus	1	38%	1	12%	uninformative
Lomandra confertifolia	2	25%	2	33%	uninformative
Lomandra filiformis	1	50%	2	17%	uninformative
Lomandra glauca	**2**	**50%**	**2**	**29%**	**positive**
Lomandra longifolia	1	50%	1	28%	uninformative
Lomandra multiflora subsp. multiflora	**2**	**50%**	**1**	**25%**	**positive**
Lomatia silaifolia	2	25%	2	21%	uninformative
Luzula ovata	**2**	**13%**	**0**	**0%**	**positive**
Melichrus urceolatus	1	88%	1	12%	uninformative
Microlaena stipoides	**2**	**75%**	**2**	**27%**	**positive**
Monotoca scoparia	1	63%	2	24%	uninformative
Notodanthonia longifolia	2	13%	2	4%	uninformative
Opercularia diphylla	2	25%	1	2%	uninformative
Oxalis perennans	1	38%	1	9%	uninformative
Patersonia sericea	**2**	**50%**	**2**	**20%**	**positive**
Persoonia linearis	**2**	**63%**	**1**	**55%**	**positive**
Persoonia myrtilloides	2	25%	1	6%	uninformative
Persoonia rigida	**1**	**13%**	**0**	**0%**	**positive**
Phyllanthus hirtellus	**2**	**50%**	**2**	**21%**	**positive**
Plantago debilis	2	25%	2	13%	uninformative
Poa labillardierei var. labillardierei	**2**	**50%**	**1**	**6%**	**positive**
Podolobium ilicifolium	**2**	**38%**	**2**	**30%**	**positive**
Pomax umbellata	2	25%	2	33%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Poranthera microphylla	1	63%	1	12%	uninformative
Pteridium esculentum	**3**	**75%**	**2**	**31%**	**positive**
Senecio prenanthoides	2	25%	2	4%	uninformative
Stellaria pungens	**2**	**50%**	**2**	**17%**	**positive**
Styphelia triflora	2	25%	1	13%	uninformative
Themeda australis	1	38%	1	6%	uninformative
Veronica plebeia	**2**	**50%**	**2**	**14%**	**positive**
Viola betonicifolia subsp. betonicifolia	**2**	**63%**	**2**	**7%**	**positive**
Wahlenbergia gracilis	1	38%	1	5%	uninformative

Statewide Class
Western Slopes Dry Sclerophyll Forests

Plant Community Type: Ironbark - Grey Gum shrubby woodland of sandy gullies in the upper Hunter Valley, Sydney Basin

Description

Goulburn River Ranges Cypress-Ironbark Forest is a low dense forest dominated by cypress pine and scattered eucalypts, found on a variety of sandstone and sandy deposits in the dry north-west of the Sydney basin. Stands are characterised by densely stocked regrowth black cypress pine (*Callitris endlicheri*) with emergent older-aged eucalypts. Ironbarks (including *Eucalyptus fibrosa*) and brown bloodwood (*Corymbia trachyphloia*) are the most common eucalypts. The shrub and ground covers appear inhibited by the dense canopy and as a result the floristic diversity of the community tends to be very low compared to surrounding forests and woodlands. The shrub layer is sparse, carrying only scattered blunt beard heath (*Leucopogon muticus*), native cranberry (*Astroloma humifusum*) or *Acrotriche rigida*. The sparsity of vegetation on the ground is notable, with only isolated small grasses and herbs found amongst a dense cover of pine leaves and rocks (Hill 2000).

This forest may well be considered a derived vegetation community because the proliferation of black cypress pine may derive from disturbance such as clearing, grazing and logging (Keith 2004). Nevertheless the simplified composition of the community means that stands appear similar across a number of substrates and topographic positions. In the region the community occurs on sandy colluvial flats, sandstone ridges and escarpment footslopes between Ulan and Denman. All occurrences are on relatively infertile siliceous soils in dry environments that receive an average of between 550 and 650 millimetres of rain per annum. Elevations span 200-450 metres above sea level. The study area has scattered and isolated stands present on the far north-west boundary near the former Bylong SF; logging and other rural landuse are in close proximity.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	15 m ±0 15-15	8% ±4 5-10	*Callitris endlicheri, Eucalyptus fibrosa, Eucalyptus punctata, Corymbia trachyphloia*
Small Trees & Shrubs	5 m ±5 2-10	5% ±4 2-10	*Choretrum* sp. A*, Acrotriche rigida, Dodonaea viscosa* subsp. *cuneata, Persoonia linearis, Brachyloma daphnoides, Leucopogon muticus*
Ground Covers	0.6 m ±0.1 0.5-0.6	2% ±1 1-2	*Cheilanthes sieberi* subsp*. sieberi, Astroloma humifusum, Gahnia aspera, Lepidosperma gunnii, Lomandra confertifolia subsp. pallida, Macrozamia reducta, Pomax umbellata, Stylidium graminifolium, Cyathochaeta diandra, Dampiera stricta, Entolasia stricta, Dianella caerulea, Gonocarpus tetragynus, Themeda australis, Eragrostis brownii, Goodenia bellidifolia, Patersonia longifolia, Pteridium esculentum, Leptocarpus tenax, Lepyrodia scariosa*
Vines & Climbers	N/A	N/A	

*Compiled from 2 of 2 sites with structural data recorded.

Threats

Frequent intense wildfire occurs across the dry sandstone environments of the north-west Sydney basin. Localised impacts may occur on private lands where forests adjoin rural land use.

Conservation Status

Outside of the study area this community is distributed across eastern Goulburn River NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	5642-6700 ha
Estimated percentage cleared	Not available	5-20%
Area in formal conservation reserves	175.0 ha	2175 ha 41% of extant area
Area in state forests	153.1 ha	Not available
Area in other tenures	31.9 ha	Not available
Total extant area	359.9 ha	5360 ha

Example Locations

o Near boundary of Bylong SF

Species Richness

Number of plots	2
Total species	33
Average species per plot	21.5 ±3.5

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this low forest shares species with other ironbark shrubby forests found on infertile sandstone in the north-west of the Sydney basin. It has most in common with the exposed woodlands that occur across the ridges of central Goulburn River NP to the north of the study area.

Within the study area it is related to ironbark and cypress woodlands found on rocky sites (S_DSF61, S_DSF57). Those woodlands support a diverse heathy shrub layer, where the shrub layer in this community is very sparse and depauperate. While *Callitris endlicheri* is present in S_DSF61 and S_DSF 57 it does not form a continuous cover like it does in this community.

Accuracy

Sample effort is moderate relative to the mapped area. Dense stands of *Callitris endlicheri* are easily interpretable using stereoscopic aerial photography. These are limited to the far north-west of the study area and have been mapped with a high degree of accuracy.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia amblygona	**1**	**50%**	**0**	**0%**	**positive**
Acacia buxifolia subsp. *buxifolia*	1	50%	1	12%	uninformative
Acacia linearifolia	1	50%	2	7%	uninformative
Acacia uncinata	1	50%	2	9%	uninformative
Acrotriche rigida	**2**	**100%**	**1**	**8%**	**positive**
Aristida ramosa	**2**	**100%**	**2**	**11%**	**positive**
Astroloma humifusum	1	100%	1	8%	uninformative
Brachyloma daphnoides	**2**	**50%**	**1**	**13%**	**positive**
Callitris endlicheri	**4**	**100%**	**1**	**12%**	**positive**
Cheilanthes sieberi* subsp. *sieberi	**2**	**100%**	**1**	**19%**	**positive**
Choretrum sp. *A*	1	100%	1	7%	uninformative
Dianella revoluta var. *revoluta*	1	50%	1	28%	uninformative
Dichelachne micrantha	1	50%	1	8%	uninformative
Dodonaea viscosa	**2**	**100%**	**2**	**11%**	**positive**
Eucalyptus fibrosa	**4**	**100%**	**3**	**8%**	**positive**
Eucalyptus punctata	**2**	**50%**	**3**	**33%**	**positive**
Exocarpos strictus	1	50%	1	16%	uninformative
Gahnia aspera	**2**	**50%**	**1**	**6%**	**positive**
Laxmannia gracilis	1	50%	1	3%	uninformative
Lepidosperma gunnii	**2**	**50%**	**2**	**13%**	**positive**
Leucopogon muticus	1	50%	2	24%	uninformative
Lomandra confertifolia	1	100%	2	33%	uninformative
Macrozamia reducta	1	100%	1	10%	uninformative
Melichrus erubescens	1	50%	1	3%	uninformative
Persoonia linearis	1	100%	1	55%	uninformative
Pomax umbellata	**2**	**100%**	**2**	**33%**	**positive**
Sannantha cunninghamii	1	50%	1	0%	uninformative
Styphelia triflora	1	50%	1	13%	uninformative
Wahlenbergia gracilis	1	50%	1	5%	uninformative

Statewide Class: Southern Tableland Dry Sclerophyll Forests
Plant Community Type: Not described

Description

Growee Ranges Grey Gum-Scribbly Gum Forest is an open eucalypt forest or woodland with a dry open shrub layer and sparse ground cover. It occurs along the spine of the Great Dividing Range on the dry elevated sandstone ranges in the north-west of the Sydney basin. The canopy invariably includes grey gum (*Eucalyptus punctata*), one or more species of stringybark (commonly *Eucalyptus sparsifolia*) and inland scribbly gum (*Eucalyptus rossii*). The latter tends to dominate on rocky sites and may be absent from deeper soils on crests. Black cypress pine (*Callitris endlicheri*) is also a feature of the canopy in rockier and drier situations. A sparse to open cover of dry shrubs is characteristic, including blunt beard heath (*Leucopogon muticus*), narrow-leaved geebung (*Persoonia linearis*), box-leaved wattle (*Acacia buxifolia* subsp. *buxifolia*) and mountain holly (*Podolobium ilicifolium*). The ground layer supports only a sparse cover of vegetation with leaf litter, exposed earth and rocks more prominent. Species present are mostly graminoids, including *Lomandra* spp. and *Patersonia sericea*, plus grasses and small herbs.

This exposed forest occurs on shallow Narrabeen sandstone-derived soils that lie between 650 and 1000 metres above sea level and receive a moderate average annual rainfall of between 650 and 800 millimetres. It also has a number of localised occurrences on different substrates including sandy colluvial rises around Heffrons Gap, exposed sandy escarpment benches on Permian slopes, and deeply weathered basalt soils on the margins of Nullo Mountain. It is most widespread on exposed slopes and ridges between the Cudgegong valley and Bylong. Elsewhere it extends north-west along the Great Dividing Range into Munghorn Gap NR.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	20 m ±5 12-30	39% ±17 5-65	*Eucalyptus punctata, Eucalyptus sparsifolia, Eucalyptus rossii, Eucalyptus agglomerata*
Small Trees	5 m ±2 2-10	22% ±21 5-75	*Persoonia linearis, Acacia buxifolia* subsp. *buxifolia, Callitris endlicheri*
Shrubs	2.1 m ±0.7 1.1-3.0	22% ±15 5-55	*Podolobium ilicifolium, Platysace ericoides, Leucopogon muticus, Monotoca scoparia, Exocarpos strictus, Styphelia triflora, Hibbertia circumdans, Melichrus urceolatus, Leptomeria acida, Bursaria spinosa*
Ground Covers	0.6 m ±0.4 0.2-1.5	22% ±14 5-50	*Pomax umbellata, Lomandra glauca, Lomandra confertifolia* subsp. *rubiginosa, Phyllanthus hirtellus, Joycea pallida, Patersonia sericea, Entolasia stricta, Dianella revoluta* var. *revoluta, Lomandra multiflora* subsp. *multiflora*
Vines & Climbers	N/A	N/A	*Billardiera scandens, Hardenbergia violacea*

*Compiled from 20 of 23 sites with structural data recorded.

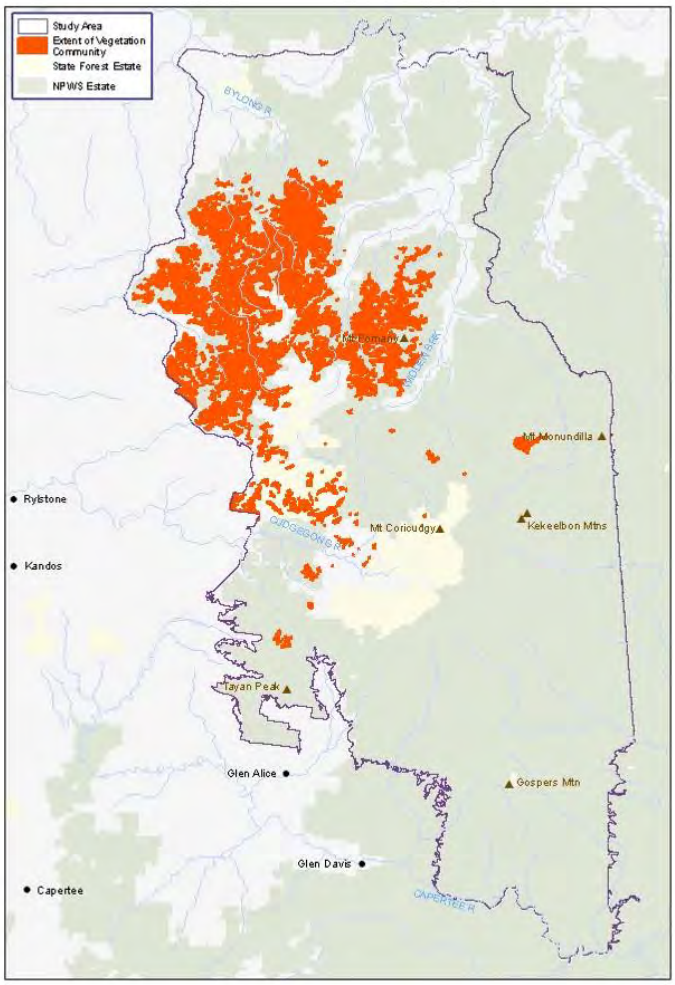
Threats

Threats to this community are few as it occupies extensive areas on remote, infertile and inaccessible environments. The areas it occupies are not frequently burnt.

Conservation Status

This community is extensively distributed across north-west Wollemi NP and Munghorn Gap NR and the adjoining Mount Stormy Crown Lands.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	24,709-26,082 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	14304.5 ha	17,304 hectares 74% of extant area
Area in state forests	548.2 ha	Not available
Area in other tenures	621.2 ha	Not available
Total extant area	15473.8 ha	23,474 hectares



Example Locations

- Lees Creek Trail

Species Richness

Number of plots	23
Total species	229
Average species per plot	31.5 ±6.3

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this forest shares many species with both the dry exposed shrub forests found on elevated Narrabeen sandstone in the north-west of the Sydney basin (S_DSF60) and those on sandy substrates (S_DSF46).

It also shares many species with S_DSF54 into which it grades as rocky outcropping becomes more prominent. With increased shelter the forest grades into S_DSF50 on steep gully slopes.

Accuracy

Sample density is high. Map domains are based on the elevation, substrate, aspect and rainfall characteristics of sample sites. Map unit boundaries are drawn from the interpretation of ridgetop eucalypt woodlands on elevated low rock Narrabeen sandstone ranges dominated by grey gum, scribbly gum and stringybarks.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia buxifolia* subsp. *buxifolia	**2**	**65%**	**1**	**9%**	**positive**
Acacia decora	2	13%	2	3%	uninformative
Acacia longifolia subsp. *longifolia*	1	13%	2	4%	uninformative
Acacia obtusifolia	2	13%	2	14%	uninformative
Acacia uncinata	2	26%	2	8%	uninformative
Allocasuarina littoralis	1	13%	1	12%	uninformative
Angophora floribunda	2	17%	2	16%	uninformative
Austrostipa scabra	2	13%	1	3%	uninformative
Billardiera scandens	1	48%	1	22%	uninformative
Bossiaea obcordata	3	13%	3	2%	uninformative
Brachyloma daphnoides	**2**	**39%**	**1**	**12%**	**positive**
Bursaria spinosa subsp. *spinosa*	3	22%	2	25%	uninformative
Callitris endlicheri	2	17%	1	12%	uninformative
Cassinia uncata	1	17%	1	4%	uninformative
Cheilanthes sieberi subsp. *sieberi*	1	13%	1	20%	uninformative
Dianella caerulea	1	17%	1	32%	uninformative
Dianella prunina	1	17%	1	2%	uninformative
Dianella revoluta* var. *revoluta	**2**	**48%**	**1**	**26%**	**positive**
Dichelachne micrantha	2	17%	1	8%	uninformative
Entolasia stricta	1	52%	2	31%	uninformative
Eucalyptus agglomerata	2	17%	2	4%	uninformative
Eucalyptus macrorhyncha	2	17%	3	1%	uninformative
Eucalyptus punctata	**3**	**91%**	**2**	**29%**	**positive**
Eucalyptus rossii	**3**	**70%**	**3**	**10%**	**positive**
Eucalyptus sparsifolia	**3**	**61%**	**3**	**26%**	**positive**
Exocarpos strictus	1	65%	1	14%	uninformative
Gonocarpus tetragynus	2	13%	2	13%	uninformative
Gonocarpus teucrioides	2	17%	2	14%	uninformative
Goodenia hederacea* subsp. *hederacea	**2**	**57%**	**1**	**5%**	**positive**
Goodenia heterophylla	2	17%	2	11%	uninformative
Grevillea mucronulata	1	22%	1	6%	uninformative
Hakea dactyloides	1	22%	1	19%	uninformative
Hardenbergia violacea	1	35%	1	25%	uninformative
Hibbertia circumdans	**2**	**48%**	**1**	**12%**	**positive**
Indigofera australis	1	13%	2	15%	uninformative
Joycea pallida	**2**	**52%**	**2**	**12%**	**positive**
Lepidosperma gunnii	2	13%	2	13%	uninformative
Lepidosperma laterale	1	13%	1	24%	uninformative
Leptomeria acida	2	35%	1	7%	uninformative
Leptospermum sphaerocarpum	1	17%	2	14%	uninformative
Leucopogon lanceolatus	1	13%	1	12%	uninformative
Leucopogon muticus	**2**	**61%**	**2**	**22%**	**positive**
Lomandra confertifolia	**2**	**78%**	**2**	**30%**	**positive**
Lomandra filiformis	**2**	**48%**	**2**	**16%**	**positive**
Lomandra glauca	**2**	**57%**	**2**	**28%**	**positive**
Lomandra multiflora* subsp. *multiflora	**2**	**43%**	**1**	**24%**	**positive**
Lomatia silaifolia	2	13%	2	22%	uninformative
Macrozamia reducta	1	22%	1	9%	uninformative
Melichrus urceolatus	1	48%	1	12%	uninformative
Microlaena stipoides	2	22%	2	28%	uninformative
Monotoca scoparia	**2**	**74%**	**1**	**21%**	**positive**
Patersonia sericea	**2**	**65%**	**2**	**18%**	**positive**
Persoonia linearis	**2**	**96%**	**1**	**52%**	**positive**
Phyllanthus hirtellus	**2**	**70%**	**2**	**19%**	**positive**
Platysace ericoides	**2**	**70%**	**2**	**19%**	**positive**
Podolobium ilicifolium	**2**	**83%**	**2**	**27%**	**positive**
Pomax umbellata	**2**	**78%**	**2**	**30%**	**positive**
Poranthera corymbosa	1	13%	1	5%	uninformative
Poranthera microphylla	2	26%	1	12%	uninformative
Pteridium esculentum	2	13%	2	33%	uninformative
Stypandra glauca	1	30%	1	6%	uninformative
Styphelia triflora	1	57%	1	10%	uninformative

Statewide Class: Southern Tablelands Dry Sclerophyll Forests
Plant Community Type: Not described

Growee Ranges Grey Gum Sheltered Forest is moderately tall shrubby eucalypt forest with a sparse ground cover. It is distributed on sheltered sandstone slopes along the dry ranges that follow the spine of the Great Dividing Range in the north-west of the Sydney basin region. The forest is dominated by grey gum (*Eucalyptus punctata*) and stringybarks (*Eucalyptus sparsifolia* and *Eucalyptus agglomerata*). Several other species may also occur although these rarely dominate. This includes rough-barked apple (*Angophora floribunda*), inland scribbly gum (*Eucalyptus rossii*) and ironbarks (*Eucalyptus fibrosa*/*Eucalyptus crebra*). There is a patchy cover of dry shrubs, however it is the distinctive cycad burrawang (*Macrozamia communis)* that is most conspicuous. The diverse shrub layer includes geebung (*Persoonia linearis*), blackthorn (*Bursaria spinosa*), mountain holly (*Podolobium ilicifolium*) and *Poranthera corymbosa*. There is also a range of wattles (*Acacia* spp.) and cough bush (*Cassinia* spp.). Plants found on the ground tend to be sparsely distributed across the shallow, sometimes rocky, soils. A range of small grasses are found such as *Microlaena stipoides* and *Entolasia stricta,* with herbs including pomax (*Pomax umbellata*) and tussocks of small mat rush (*Lomandra* spp.). One or two small vines are also common including false sarsaparilla (*Hardenbergia violacea*).

This forest is associated with dry sandy loams that form on steep sheltered slopes of the sandstone ranges between Nullo Mountain and Munghorn Gap. Stands occur on Narrabeen sediments but can be found on the upper stratum of the Permian sediments where these are overlain by sandstone talus sourced from the clifflines above. The forest is distributed across an elevation range of 500 to 750 meters above sea level and receives between 650 and 800 millimetres mean annual rainfall.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	21 m ±9 14-35	35% ±19 15-65	*Eucalyptus punctata, Eucalyptus sparsifolia, Eucalyptus agglomerata, Eucalyptus fibrosa, Eucalyptus rossii*
Shrubs	6 m ±6 1-18	21% ±20 5-55	*Persoonia linearis, Indigofera australis, Leptomeria acida, Xylomelum pyriforme, Callitris endlicheri, Exocarpos strictus*
Ground Covers	0.8 m ±0.7 0.3-2.0	20% ±30 1-80	*Pomax umbellata, Lomandra filiformis, Macrozamia communis/reducta, Dianella revoluta* var. *revoluta, Lomandra glauca, Poranthera corymbosa, Entolasia stricta, Goodenia hederacea* subsp. *hederacea, Hibbertia obtusifolia, Aristida vagans, Cheilanthes sieberi* subsp. *sieberi, Lomandra confertifolia, Phyllanthus hirtellus*
Vines & Climbers	N/A	N/A	*Hardenbergia violacea*

*Compiled from 4 of 4 sites with structural data recorded.

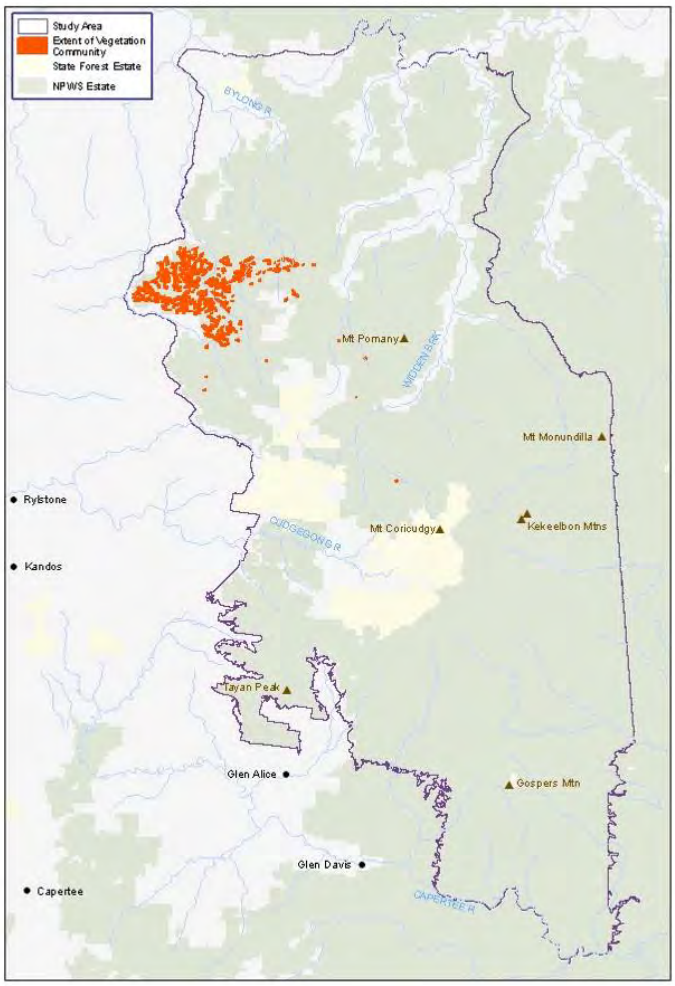
Threats

Threats are considered to be low as large areas of this forest are situated in infertile dissected terrain on national park or Crown land estate. Localised low-intensity tree harvesting occurs for fencing timbers and firewood collection.

Conservation Status

This community is found across the western margins of Wollemi NP, Munghorn Gap NR and some examples within Goulburn River NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	3722-3928 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	1029.9 ha	2030 ha 57% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	5.6 ha	Not available
Total extant area	1035.5 ha	3535 ha



Example Locations

- Lees Creek Trail

Species Richness

Number of plots	4
Total species	88
Average species per plot	31.3 ±6.1

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this forest shares species with the dry shrub forest found on neighbouring sandstone ridgetops (S_DSF49). That community supports a shrubbier understorey and more frequently includes *Eucalyptus rossii* as a dominant species in the canopy. S_DSF50 also shares a close relationship with sheltered forest (S_DSF63) and taller ridgetop forest (S_DSF60), featuring some similar canopy species. However the dry heathy shrubs of those forests are not found in S_DSF50. Those forests occupy drier and less elevated situations in the northern parts of Wollemi NP.

With decreasing elevation the community grades into a series of shrub/grass forests and woodlands as more fertile Permian sediments are exposed beneath the Narrabeen sandstone. These typically comprise a range of grey box, white box and slaty gum forests and woodlands including S_DSF41 and S_DSF59.

Accuracy

Sample density is low and further sampling is required to examine the relationship between this community and similar forests S_DSF60 and S_DSF63 found in the drier less elevated sandstone of northern Wollemi NP. Map domains are taken from sites primarily situated outside of the study area. Elevation and rainfall domains were used to discriminate this forest from S_DSF63. Map unit boundaries have drawn on the interpretation of *Eucalyptus punctata* and *Eucalyptus sparsifolia/Eucalyptus agglomerata* dominant forests on sheltered Narrabeen slopes.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia implexa	2	25%	1	5%	uninformative
Acacia leiocalyx* subsp. *leiocalyx	**2**	**25%**	**0**	**0%**	**positive**
Acacia ulicifolia	2	25%	1	11%	uninformative
Acacia uncinata	2	25%	2	9%	uninformative
Ajuga australis	1	25%	1	8%	uninformative
Angophora floribunda	1	25%	2	16%	uninformative
Aristida jerichoensis	**2**	**25%**	**0**	**0%**	**positive**
Aristida ramosa	2	25%	2	11%	uninformative
Aristida vagans	**2**	**50%**	**2**	**6%**	**positive**
Austrostipa scabra	1	25%	2	3%	uninformative
Billardiera scandens	1	25%	1	24%	uninformative
Brachychiton populneus subsp. *populneus*	1	25%	1	6%	uninformative
Brachyloma daphnoides	1	25%	1	13%	uninformative
Brachyscome multifida	1	25%	1	2%	uninformative
Bursaria spinosa subsp. *lasiophylla*	2	25%	2	0%	uninformative
Cassinia cunninghamii	1	25%	2	7%	uninformative
Cassinia quinquefaria	1	25%	2	9%	uninformative
Cheilanthes austrotenuifolia	2	25%	2	3%	uninformative
Cheilanthes distans	1	50%	1	4%	uninformative
Cheilanthes sieberi subsp. *sieberi*	1	25%	1	19%	uninformative
Crassula sieberiana	1	25%	1	6%	uninformative
Cymbopogon refractus	1	25%	2	3%	uninformative
Daviesia ulicifolia	1	25%	2	4%	uninformative
Dianella caerulea	**2**	**50%**	**1**	**31%**	**positive**
Dianella revoluta* var. *revoluta	**2**	**100%**	**1**	**27%**	**positive**
Dichelachne micrantha	1	25%	1	8%	uninformative
Digitaria ramularis	3	25%	1	5%	uninformative
Entolasia stricta	**3**	**50%**	**2**	**32%**	**positive**
Eragrostis benthamii	**3**	**25%**	**0**	**0%**	**positive**
Eucalyptus cannonii	2	25%	1	2%	uninformative
Eucalyptus fibrosa	4	25%	3	8%	uninformative
Eucalyptus punctata	**4**	**100%**	**3**	**32%**	**positive**
Eucalyptus rossii	**3**	**50%**	**3**	**13%**	**positive**
Exocarpos strictus	**2**	**75%**	**1**	**16%**	**positive**
Galium gaudichaudii	1	25%	2	4%	uninformative
Gompholobium huegelii	**1**	**25%**	**0**	**0%**	**positive**
Goodenia hederacea* subsp. *hederacea	**2**	**50%**	**2**	**8%**	**positive**
Haemodorum corymbosum	1	25%	1	0%	uninformative
Haemodorum planifolium	2	25%	1	0%	uninformative
Hardenbergia violacea	**2**	**100%**	**1**	**25%**	**positive**
Hibbertia circumdans	1	25%	1	13%	uninformative
Hibbertia monogyna	1	25%	2	3%	uninformative
Hibbertia obtusifolia	1	75%	1	5%	uninformative
Indigofera australis	**2**	**75%**	**2**	**14%**	**positive**
Lagenophora stipitata	1	25%	1	10%	uninformative
Lepidosperma laterale	1	25%	1	24%	uninformative
Leptomeria acida	3	25%	1	8%	uninformative
Leucopogon virgatus	2	25%	1	1%	uninformative
Lomandra confertifolia	4	25%	2	33%	uninformative
Lomandra cylindrica	3	25%	1	1%	uninformative
Lomandra filiformis	1	75%	2	17%	uninformative
Lomandra glauca	1	75%	2	29%	uninformative
Lomandra longifolia	1	25%	1	28%	uninformative
Lomandra multiflora subsp. *multiflora*	1	25%	1	25%	uninformative
Macrozamia reducta	**3**	**100%**	**1**	**9%**	**positive**
Myoporum montanum	1	25%	1	3%	uninformative
Panicum effusum	**2**	**50%**	**1**	**1%**	**positive**
Patersonia sericea	1	25%	2	20%	uninformative
Persoonia linearis	**2**	**100%**	**1**	**54%**	**positive**
Phyllanthus hirtellus	1	75%	2	21%	uninformative
Pimelea linifolia	2	25%	2	12%	uninformative
Platysace lanceolata	2	25%	2	17%	uninformative
Podolobium ilicifolium	**2**	**50%**	**2**	**30%**	**positive**
Pomax umbellata	**3**	**100%**	**2**	**32%**	**positive**
Poranthera corymbosa	**2**	**75%**	**1**	**5%**	**positive**
Prostanthera ovalifolia	**1**	**25%**	**0**	**0%**	**positive**
Pultenaea microphylla	1	25%	2	1%	uninformative
Schoenus apogon	2	25%	2	1%	uninformative
Schoenus ericetorum	1	25%	1	3%	uninformative
Solanum campanulatum	2	25%	1	4%	uninformative
Vernonia cinerea var. *cinerea*	1	25%	1	1%	uninformative
Wahlenbergia communis	2	25%	1	7%	uninformative
Wahlenbergia gracilis	1	25%	1	5%	uninformative
Wahlenbergia stricta	2	25%	1	3%	uninformative
Xylomelum pyriforme	**2**	**50%**	**1**	**4%**	**positive**

Statewide Class Western Slopes Dry Sclerophyll Forests
Plant Community Type: Not described

Description

Growee Ranges Rocky Stringybark Woodland is a low open eucalypt woodland with a heathy understorey situated on rocky crests, exposed slopes and amongst sandstone pagodas. It occurs along the dry elevated sandstone ranges that follow the spine of the Great Dividing Range in the north-west of the Sydney basin. The woodland, which can present a scrub like formation, is dominated by narrow-leaved stringybark (*Eucalyptus sparsifolia*) and may include other eucalypts such as grey gum (*Eucalyptus punctata*) and the mallee Dwyer's red gum (*Eucalyptus dwyeri*). Scattered occurrences of Port Jackson pine (*Callitris rhomboidea*) may also be found. A distinctive heath layer is always present but may vary in density. It usually comprises combinations of tea-trees (*Leptospermum* spp.), wattles (*Acacia* spp.), conebush (*Isopogon* spp.), common fringe myrtle (*Calytrix tetragona*), wax flower (*Philotheca salsolifolia*), phebalium (*Phebalium squamulosum*) and low-growing she-oaks (*Allocasuarina* spp.). The lower mid stratum may also include the rare *Homoranthus cernuus*. The ground cover comprises an open cover of broken sandstone between which small clumps of mat rush (*Lomandra* spp.) and the rush *Caustis pentandra* cling to skeletal soils.

This woodland occurs on exposed rocky Narrabeen sandstone on the elevated ranges between Mount Pomany, Growee, Barrigan and Munghorn Gap. It occupies a relatively narrow altitudinal range between 580 and 800 metres above sea level and receives between 650 and 750 millimetres of rainfall per annum on average. The study area encompasses a large proportion of the known distribution of this community, between Nullo Mountain, Bylong and the upper Widden area.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	14 m ±7 6-20	22% ±14 5-30	*Eucalyptus sparsifolia, Eucalyptus punctata, Callitris rhomboidea, Eucalyptus dwyeri*
Small Trees	5 m ±2 3-6	22% ±17 7-40	*Acacia obliquinervia, Allocasuarina littoralis, Persoonia linearis*
Shrubs	2.0 m ±6.0 1.4-2.5	38% ±28 10-65	*Hakea dactyloides, Homoranthus cernuus, Leptospermum arachnoides, Isopogon dawsonii, Philotheca salsolifolia, Calytrix tetragona, Hibbertia riparia, Leptospermum sphaerocarpum, Leucopogon muticus, Allocasuarina gymnanthera, Babingtonia densifolia, Phebalium squamulosum, Platysace lanceolata, Pseudanthus pimeleoides, Leptospermum parvifolium, Styphelia triflora, Boronia anethifolia*
Ground Covers	0.8 m ±0.2 0.6-1.0	19% ±18 7-40	*Caustis pentandra, Lepidosperma laterale, Dampiera lanceolata* var. *lanceolata, Lomandra glauca, Pomax umbellata*
Vines & Climbers	N/A	N/A	*Cassytha glabella* f. *glabella*

*Compiled from 3 of 6 sites with structural data recorded.

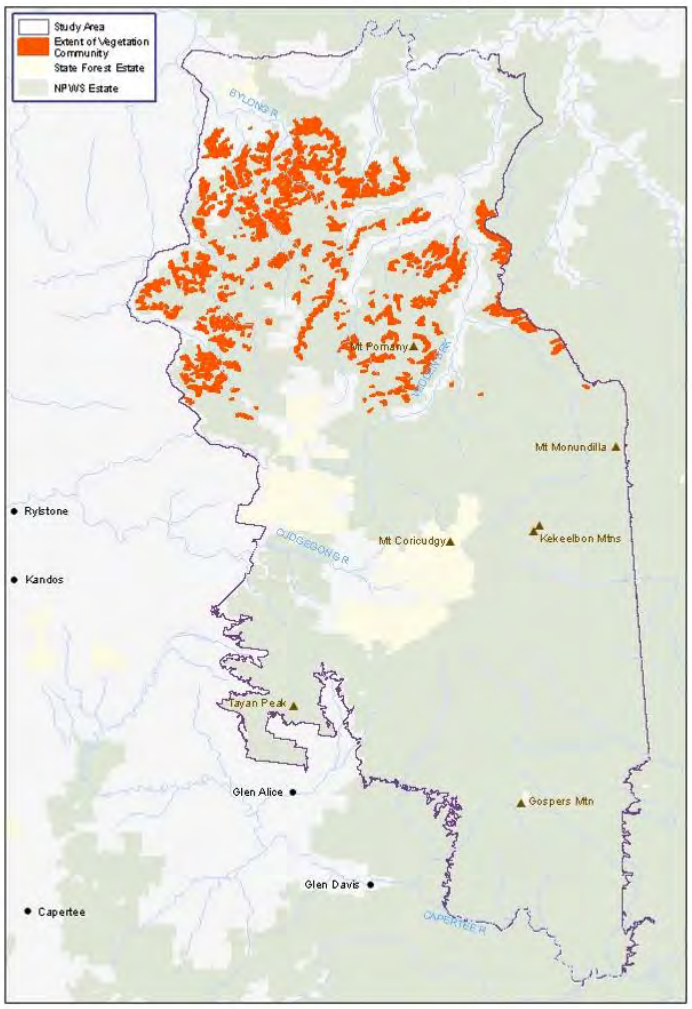
Threats

The rugged and infertile environments in which this woodland occurs has protected stands from clearing and associated landuse activities. Frequent intense wildfire may result in the simplification of the heath layer and threaten the lifecycle of rare species such as *Homoranthus cernuus.*

Conservation Status

This community is extensively distributed in north-west Wollemi NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	10,993-11,456 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	5589.9 ha	5590 ha 51% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	293.3 ha	Not available
Total extant area	5883.2 ha	10,883 ha



Example Locations

o Rocky sites in the Puzzle Mountain area

Species Richness

Number of plots	6
Total species	73
Average species per plot	26.0 ±6.0

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically, this community is related to shrubby ridgetop woodlands (S_DSF61) and heaths associated with massive rock outcropping (S_HL13) in the western Blue Mountains and western Wollemi area. It grades into the latter as rock outcropping becomes more prevalent and results in a skeletal soil layer that supports a dense heath with few eucalypts. As the surface rock diminishes and soil deepens the woodland grades into a taller eucalypt woodland (S_DSF60) with a less dense and diverse shrub/heath layer.

This heathy woodland is also related to S_DSF54 which occurs at higher elevations on the escarpment of the western Blue Mountains south of Nullo Mountain. S_DSF54 comprises a number of tableland eucalypts such as *Eucalyptus rossii* and *Eucalyptus cannonii* and a less diverse suite of heath species.

Accuracy

Sample effort is moderate. Map domains are based on the substrate, elevation and climate of sample sites. Map unit boundaries are drawn on the interpretation of eucalypt woodlands situated on and amongst rocky outcrops in elevations between 550 and 800 metres above sea level.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia doratoxylon	2	17%	2	7%	uninformative
Acacia obliquinervia	1	83%	2	4%	uninformative
Acacia obtusifolia	1	17%	2	14%	uninformative
Acacia penninervis var. *penninervis*	1	17%	1	6%	uninformative
Acrotriche aggregata	2	33%	1	1%	uninformative
Allocasuarina distyla	3	17%	2	1%	uninformative
Allocasuarina gymnanthera	**2**	**50%**	**1**	**3%**	**positive**
Allocasuarina littoralis	**4**	**50%**	**1**	**12%**	**positive**
Amperea xiphoclada	2	33%	1	13%	uninformative
Banksia penicillata	2	17%	2	2%	uninformative
Boronia anethifolia	1	17%	1	4%	uninformative
Boronia rigens	1	17%	2	1%	uninformative
Callitris endlicheri	2	17%	1	12%	uninformative
Callitris rhomboidea	1	50%	2	2%	uninformative
Calytrix tetragona	**2**	**67%**	**2**	**9%**	**positive**
Cassytha glabella f. *glabella*	1	67%	1	8%	uninformative
Caustis pentandra	**2**	**83%**	**2**	**2%**	**positive**
Cheilanthes sieberi subsp. *sieberi*	1	17%	1	19%	uninformative
Cleistochloa rigida	1	17%	2	10%	uninformative
Coopernookia barbata	1	17%	2	3%	uninformative
Dampiera adpressa	1	17%	1	1%	uninformative
Dampiera lanceolata var. *lanceolata*	1	50%	2	2%	uninformative
Dillwynia retorta	2	17%	1	5%	uninformative
Dillwynia sericea	3	33%	1	3%	uninformative
Eriostemon australasius	**1**	**17%**	**0**	**0%**	**positive**
Eucalyptus dwyeri	**2**	**50%**	**2**	**3%**	**positive**
Eucalyptus punctata	3	33%	3	33%	uninformative
Eucalyptus sparsifolia	**4**	**100%**	**3**	**27%**	**positive**
Exocarpos cupressiformis	2	33%	1	5%	uninformative
Exocarpos strictus	1	17%	1	17%	uninformative
Gompholobium virgatum	2	17%	2	4%	uninformative
Gonocarpus teucrioides	1	17%	2	15%	uninformative
Grevillea mucronulata	2	33%	1	7%	uninformative
Hakea dactyloides	1	83%	1	18%	uninformative
Harmogia densifolia	1	50%	2	4%	uninformative
Hibbertia monogyna	1	33%	2	3%	uninformative
Hibbertia riparia	4	33%	2	3%	uninformative
Hibbertia serpyllifolia	**1**	**50%**	**0**	**0%**	**positive**
Homoranthus cernuus	**2**	**83%**	**2**	**1%**	**positive**
Isopogon dawsonii	1	83%	1	7%	uninformative
Lepidosperma laterale	**2**	**67%**	**1**	**23%**	**positive**
Lepidosperma urophorum	2	17%	1	4%	uninformative
Lepidosperma viscidum	2	33%	2	2%	uninformative
Leptospermum arachnoides	**2**	**67%**	**2**	**6%**	**positive**
Leptospermum parvifolium	3	33%	2	12%	uninformative
Leptospermum sphaerocarpum	**3**	**67%**	**2**	**14%**	**positive**
Leucopogon microphyllus	1	33%	2	5%	uninformative
Leucopogon muticus	**2**	**50%**	**2**	**24%**	**positive**
Logania albiflora	1	17%	1	3%	uninformative
Lomandra confertifolia	1	17%	2	33%	uninformative
Lomandra filiformis	2	17%	2	18%	uninformative
Lomandra glauca	1	50%	2	30%	uninformative
Melichrus urceolatus	1	33%	1	13%	uninformative
Monotoca scoparia	1	17%	2	25%	uninformative
Ochrosperma oligomerum	3	17%	2	1%	uninformative
Omphacomeria acerba	1	17%	1	2%	uninformative
Oxylobium pulteneae	2	17%	1	2%	uninformative
Persoonia linearis	1	67%	1	55%	uninformative
Phebalium squamulosum	**2**	**50%**	**2**	**10%**	**positive**
Philotheca salsolifolia	**2**	**100%**	**1**	**4%**	**positive**
Platysace lanceolata	1	50%	2	17%	uninformative
Pomax umbellata	1	33%	2	33%	uninformative
Prostanthera hindii	1	17%	2	1%	uninformative
Prostanthera linearis	**1**	**17%**	**0**	**0%**	**positive**
Prostanthera nivea	1	17%	2	0%	uninformative
Pseudanthus pimeleoides	**2**	**50%**	**1**	**1%**	**positive**
Styphelia triflora	2	33%	1	13%	uninformative
Zieria aspalathoides subsp. *aspalathoides*	1	17%	2	1%	uninformative

Statewide Class Sydney Hinterland Dry Sclerophyll Forests
Plant Community Type: Not described

Description

Hunter Range Peppermint Sheltered Forest is a tall eucalypt forest with a shrubby understorey and ferny ground cover. It occurs on protected Narrabeen sandstone slopes along the Hunter Range in the northern sandstone plateaux of the Sydney Basin Bioregion. The forest is dominated by Sydney peppermint (*Eucalyptus piperita*) and often includes turpentine (*Syncarpia glomulifera* subsp. *glomulifera*) with smooth-barked apple (*Angophora costata*) and stringybarks (*Eucalyptus sparsifolia*/*Eucalyptus agglomerata*) less common. A sparse to open cover of forest oak (*Allocasuarina torulosa*) occurs just below the eucalypt canopy. The shrub layer features small trees and shrubs that comprise a mix of mesic and sclerophyllous species. Taller shrubs include Christmas bush (*Ceratopetalum gummiferum*) and blueberry ash (*Elaeocarpus reticulatus*) while lower species such as geebung (*Persoonia linearis*), prickly shaggy pea (*Podolobium ilicifolium*), and *Gompholobium latifolium* tend to be more abundant. The ground cover presents a broken cover of ferns, such as rainbow fern (*Calochlaena dubia*) and bracken (*Pteridium esculentum*), with smaller vines and climbers such as *Smilax glyciphylla* and *Billardiera scandens*.

This forest is found on sheltered Narrabeen sandstone slopes and benches on the higher central plateaux of the Hunter Range. It is common between 450 and 740 metres above sea level within areas that receive an average of between 750 and 900 millimetres of rainfall per annum. This encompasses the higher ranges that separate the lower sandstone plateaux of Yengo NP from those of east Wollemi NP, including the Tollagong, Wirraba, Monundilla and Doyles ranges west of the Putty valley. The study area includes a good representation of this community; more extensive stands are present in east Wollemi NP and Putty SF.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	31 m ±5 22-35	37% ±5 30-45	*Eucalyptus piperita, Angophora floribunda, Eucalyptus agglomerata, Eucalyptus punctata, Syncarpia glomulifera* subsp. *glomulifera*
Small Trees	9 m ±3 4-12	10% ±6 2-20	*Acacia obtusifolia, Persoonia linearis, Elaeocarpus reticulatus, Acacia saliciformis, Ceratopetalum gummiferum*
Shrubs	1.8 m ±0.7 0.8-3.0	38% ±17 15-60	*Lomatia silaifolia, Podolobium ilicifolium, Polyscias sambucifolia, Leucopogon lanceolatus, Acacia terminalis*
Ground Covers	0.6 m ±0.3 0.3-1.0	26% ±9 15-45	*Pteridium esculentum, Entolasia stricta, Stylidium productum, Gonocarpus teucrioides, Poa affinis, Blechnum cartilagineum, Dianella caerulea, Xanthosia pilosa, Calochlaena dubia, Patersonia glabrata, Pomax umbellata, Lomandra longifolia, Lomandra obliqua*
Vines & Climbers	N/A	N/A	*Smilax glyciphylla, Billardiera scandens*

*Compiled from 6 of 6 sites with structural data recorded.

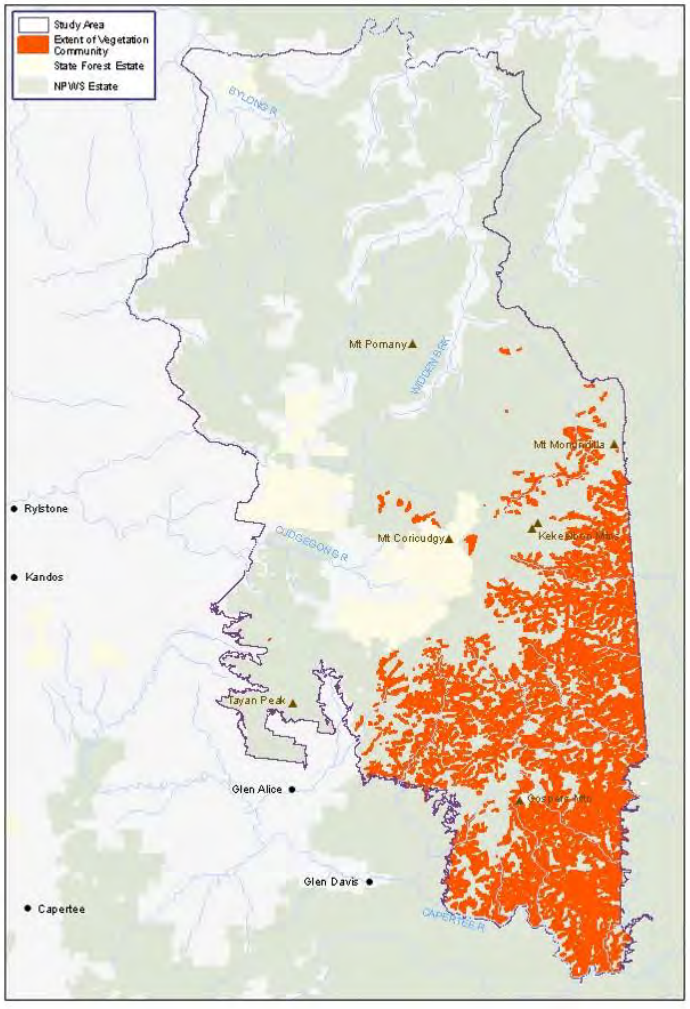
Threats

Localised impacts associated with timber harvesting are found on state forest and private lands in the Putty valley. Regrowth stands and trails that demarcate former harvesting areas remain visible within Wollemi NP around the Tollagong Range.

Conservation Status

This community is extensively distributed across Wollemi NP. Small areas are present within Putty SF and adjoining Crown lands.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	31,558-33,312 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	17,164.2 ha	28,164 ha 94% of extant area
Area in state forests	5.5 ha	Not available
Area in other tenures	10.9 ha	Not available
Total extant area	17,180.5 ha	29,980 ha



Example Locations

- Lower sheltered gorge slopes of upper Wollemi Creek
- Sheltered lower slopes east of Gospers Mountain

Species Richness

Number of plots	6
Total species	116
Average species per plot	40.5 ±4.8

Known Variations

Variations in canopy dominants are known to occur. Stands may include monkey gum (*Eucalyptus cypellocarpa*) at the higher elevations of this community and mountain blue gum (*Eucalyptus deanei*) at lower elevations. Red bloodwood (*Corymbia gummifera*) and grey gum (*Eucalyptus punctata*) occur patchily and infrequently throughout the community.

Relationship to Other Communities

Floristically this forest shares many species with semi-moist gully forests found across the lower Blue Mountains and Sydney hinterland. In the study area the forest may grade rapidly into warm temperate rainforest (S_RF12) in narrow gorges or into wet sclerophyll forests (S_WSF10 or S_WSF22) in wider gully systems. Typically it grades into S_DSF65 on more exposed aspects.

Accuracy

Sample density is moderate and the community is also sampled in adjoining areas to the east. Map domains were based on sample sites. Map unit boundaries are based on the interpretation of sheltered to semi-sheltered Narrabeen sandstone environments dominated by *E. piperita*. These forests were distinguished by an understorey of dry to intermediate shrubs.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia elata	2	17%	1	4%	uninformative
Acacia linifolia	3	17%	1	6%	uninformative
Acacia obliquinervia	2	17%	1	5%	uninformative
Acacia obtusifolia	**2**	**100%**	**2**	**13%**	**positive**
Acacia saliciformis	3	33%	1	7%	uninformative
Acacia schinoides	1	17%	1	1%	uninformative
Acacia terminalis	2	33%	1	13%	uninformative
Acacia ulicifolia	2	17%	1	11%	uninformative
Acmena smithii	1	17%	2	2%	uninformative
Acrotriche divaricata	**1**	**50%**	**0**	**0%**	**positive**
Actinotus helianthi	1	17%	1	4%	uninformative
Allocasuarina littoralis	3	17%	1	12%	uninformative
Amperea xiphoclada	**2**	**67%**	**1**	**13%**	**positive**
Angophora costata	3	17%	3	4%	uninformative
Angophora floribunda	**3**	**83%**	**2**	**16%**	**positive**
Anisopogon avenaceus	1	33%	2	8%	uninformative
Asplenium flabellifolium	2	33%	1	11%	uninformative
Astrotricha longifolia	2	33%	1	3%	uninformative
Astrotricha obovata	**1**	**17%**	**0**	**0%**	**positive**
Backhousia myrtifolia	3	17%	4	4%	uninformative
Banksia spinulosa	1	17%	2	6%	uninformative
Billardiera scandens	1	67%	1	23%	uninformative
Blechnum cartilagineum	**2**	**67%**	**3**	**9%**	**positive**
Boronia anemonifolia subsp. *anemonifolia*	1	17%	4	1%	uninformative
Bursaria spinosa subsp. *spinosa*	2	17%	2	25%	uninformative
Callicoma serratifolia	3	17%	3	3%	uninformative
Calochlaena dubia	4	33%	2	8%	uninformative
Cassinia aureonitens	1	17%	1	1%	uninformative
Cassinia cunninghamii	2	17%	1	7%	uninformative
Cassytha glabella* f. *glabella	**2**	**50%**	**1**	**8%**	**positive**
Ceratopetalum apetalum	2	17%	4	3%	uninformative
Ceratopetalum gummiferum	**4**	**17%**	**0**	**0%**	**positive**
Chloanthes stoechadis	2	17%	2	2%	uninformative
Clematis aristata	1	17%	1	27%	uninformative
Comesperma ericinum	2	33%	1	3%	uninformative
Crassula sieberiana	1	17%	1	6%	uninformative
Dianella caerulea	**2**	**100%**	**1**	**30%**	**positive**
Dianella revoluta var. *revoluta*	2	17%	1	28%	uninformative
Dillwynia retorta	1	50%	2	4%	uninformative
Dodonaea multijuga	2	17%	1	1%	uninformative
Dodonaea triquetra	4	33%	1	4%	uninformative
Elaeocarpus reticulatus	**2**	**67%**	**1**	**7%**	**positive**
Entolasia stricta	**2**	**83%**	**2**	**32%**	**positive**
Epacris longiflora	2	17%	1	0%	uninformative
Epacris pulchella	2	33%	1	5%	uninformative
Eucalyptus agglomerata	**3**	**50%**	**2**	**4%**	**positive**
Eucalyptus piperita	**4**	**100%**	**3**	**14%**	**positive**
Eucalyptus punctata	3	33%	3	33%	uninformative
Exocarpos strictus	2	17%	1	17%	uninformative
Galium binifolium	1	17%	2	4%	uninformative
Gompholobium latifolium	3	33%	2	3%	uninformative
Gonocarpus tetragynus	1	17%	2	13%	uninformative
Gonocarpus teucrioides	**2**	**83%**	**1**	**14%**	**positive**
Goodenia decurrens	**2**	**50%**	**2**	**4%**	**positive**
Goodenia heterophylla	2	17%	2	11%	uninformative
Hakea dactyloides	1	17%	1	19%	uninformative
Hardenbergia violacea	1	17%	1	26%	uninformative
Hibbertia empetrifolia subsp. *empetrifolia*	1	33%	1	3%	uninformative
Hibbertia obtusifolia	1	17%	1	6%	uninformative
Hibbertia saligna	2	33%	1	1%	uninformative
Hovea speciosa	2	17%	1	0%	uninformative
Hymenophyllum cupressiforme	1	17%	2	2%	uninformative
Lepidosperma gunnii	2	33%	2	13%	uninformative
Lepidosperma urophorum	**2**	**50%**	**1**	**4%**	**positive**
Leptospermum polygalifolium subsp. *polygalifolium*	1	33%	2	6%	uninformative
Leptospermum sphaerocarpum	2	17%	2	14%	uninformative
Leucopogon lanceolatus	1	67%	1	11%	uninformative
Lindsaea microphylla	2	33%	1	2%	uninformative
Logania albiflora	2	17%	1	3%	uninformative
Lomandra confertifolia	2	33%	2	33%	uninformative
Lomandra longifolia	1	17%	1	28%	uninformative
Lomandra obliqua	2	17%	2	16%	uninformative
Lomatia silaifolia	**2**	**83%**	**2**	**21%**	**positive**
Microlaena stipoides	1	17%	2	28%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Notelaea longifolia	1	17%	1	9%	uninformative
Olearia tomentosa	2	33%	1	0%	uninformative
Opercularia aspera	1	17%	1	4%	uninformative
Pandorea pandorana	1	50%	1	8%	uninformative
Patersonia glabrata	**2**	**67%**	**2**	**11%**	**positive**
Persoonia levis	1	50%	1	9%	uninformative
Persoonia linearis	**2**	**83%**	**1**	**54%**	**positive**
Philotheca trachyphylla	1	17%	1	0%	uninformative
Phyllanthus hirtellus	1	17%	2	22%	uninformative
Pimelea linifolia	**2**	**50%**	**2**	**12%**	**positive**
Platysace ericoides	2	33%	2	22%	uninformative
Platysace lanceolata	3	33%	2	17%	uninformative
Poa affinis	**2**	**83%**	**2**	**13%**	**positive**
Podolobium ilicifolium	**2**	**83%**	**2**	**29%**	**positive**
Polyscias sambucifolia	1	83%	2	11%	uninformative
Pomaderris andromedifolia	2	17%	1	1%	uninformative
Pomax umbellata	2	33%	2	33%	uninformative
Pteridium esculentum	**3**	**67%**	**2**	**31%**	**positive**
Pultenaea flexilis	3	33%	3	3%	uninformative
Pultenaea glabra	**4**	**17%**	**0**	**0%**	**positive**
Pultenaea scabra	2	33%	2	7%	uninformative
Quintinia sieberi	1	17%	1	1%	uninformative
Senecio pinnatifolius* var. *lanceolatus	**2**	**17%**	**0**	**0%**	**positive**
Senecio vagus	1	17%	2	2%	uninformative
Smilax glyciphylla	1	83%	1	8%	uninformative
Stylidium productum	**2**	**100%**	**2**	**6%**	**positive**
Stypandra glauca	3	33%	1	7%	uninformative
Telopea speciosissima	3	33%	1	1%	uninformative
Tristaniopsis collina	4	33%	4	0%	uninformative
Tylophora paniculata	**1**	**17%**	**0**	**0%**	**positive**
Xanthosia atkinsoniana	1	33%	2	12%	uninformative
Xanthosia pilosa	**2**	**83%**	**1**	**8%**	**positive**
Zieria smithii	2	17%	1	0%	uninformative

Statewide Class
Southern Tableland Dry Sclerophyll Forests

Plant Community Type: Not described

Description

Western Blue Mountains Pagoda Woodland is an open eucalypt and cypress woodland with a dry shrub layer and sparse ground cover. It is situated amongst residual rock outcrops along the elevated sandstone ranges in the north-west of the Sydney Basin Bioregion. These outcrops are residual iron-rich bands in the sandstone stratum and are less erodible than the siliceous materials. They leave distinctive pagoda-like formations on sandstone benches and escarpment cliffs. Found in a mosaic with a range of open scrubs and dense heath, this woodland occupies the slightly deeper soils that gather between pagodas. An open cover of scribbly gum (*Eucalyptus rossii*) and stringybarks (such as *Eucalyptus sparsifolia*, *Eucalyptus agglomerata* or *Eucalyptus cannonii*) are regularly found as is Port Jackson pine (*Callitris rhomboidea*) and tall wattle (*Acacia obtusifolia*). Occasionally mallee eucalypts are present, including whipstick mallee ash (*Eucalyptus multicaulis*). Dry shrubs and heath species are dense in patches. This includes species such as *Monotoca scoparia*, blunt beard heath (*Leucopogon muticus*), geebung (*Persoonia* spp.), daphne heath (*Brachyloma daphnoides*), as well as tea-trees (*Leptospermum* spp.), wattles (*Acacia* spp.) and banksias (*Banksia* spp.). Small herbs and mat rush (*Lomandra* spp.) are very sparsely scattered but form clumps in rock crevices and depressions.

This rocky woodland occurs between 700 and 950 metres above sea level along the spine of the Great Dividing Range between the Capertee Valley and Wollar, near Munghorn Gap NR. It occurs exclusively on outcropping Narrabeen sandstone and receives between 650 and 850 millimetres of rainfall on average per annum. The study area comprises a significant portion of the known distribution of this community, although stands are also common near the Newnes Plateau, Gardens of Stone NP and Crown lands that lie between Mudgee and Bylong.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	17 m ±5 8-20	17% ±13 5-40	*Eucalyptus agglomerata, Eucalyptus rossii, Eucalyptus punctata, Eucalyptus cannonii, Eucalyptus piperita, Eucalyptus sparsifolia*
Small Trees	7 m ±4 2-12	15% ±14 5-40	*Callitris rhomboidea, Acacia obtusifolia*
Shrubs	2.6 m ±0.6 2.0-3.2	28% ±24 10-60	*Persoonia linearis, Leucopogon muticus, Brachyloma daphnoides, Leptospermum sphaerocarpum, Monotoca scoparia, Phebalium squamulosum, Podolobium ilicifolium, Styphelia triflora, Dillwynia retorta, Hovea lanceolata*
Ground Covers	1.0 m ±1.3 0.2-4.5	9% ±8 3-30	*Pomax umbellata, Joycea pallida, Lomandra confertifolia, Cleistochloa rigida, Gonocarpus elatus, Joycea pallida*
Vines & Climbers	N/A	N/A	

*Compiled from 6 of 6 sites with structural data recorded.

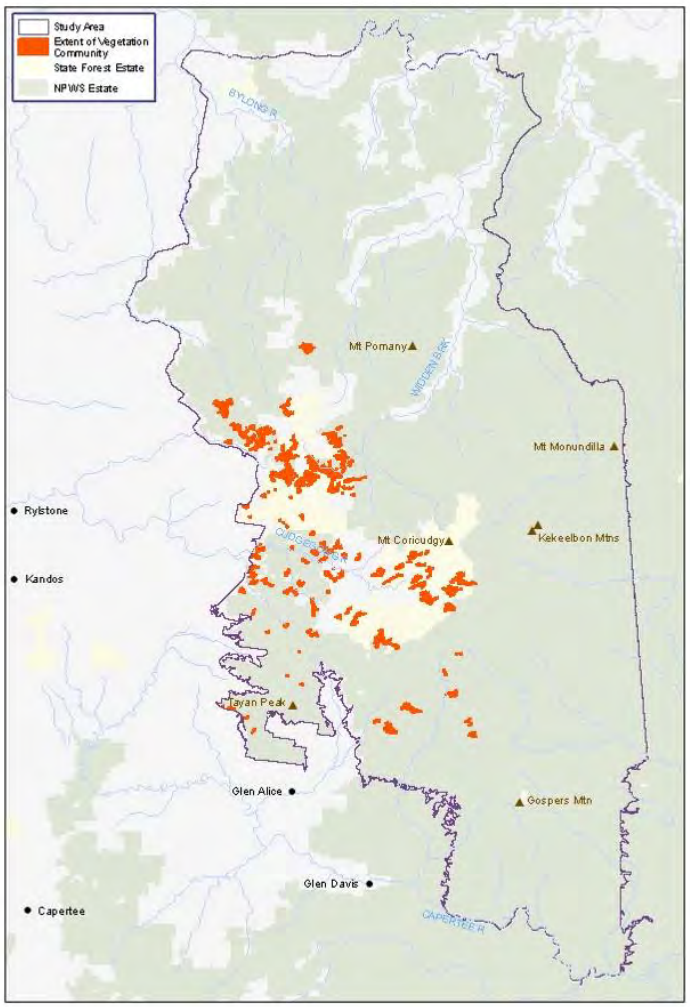
Threats

The rugged and infertile environment in which this woodland occurs has restricted potential human impacts. Small areas have been dissected by trails and roads.

Conservation Status

This community is patchily distributed across the ranges of western Wollemi NP and Gardens of Stone NP. It is also known from Nullo Mountain SF.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	3104-3234 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	1065.7 ha	1566 ha 51% of extant area
Area in state forests	821.6 ha	Not available
Area in other tenures	185.2 ha	Not available
Total extant area	2072.6 ha	3073 ha



Example Locations

- Nullo Mountain SF 700 metres east of Lugan Park

Species Richness

Number of plots	6
Total species	75
Average species per plot	21.8 ±5.3

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this community is related to a ridgetop woodland found on less rocky Narrabeen sandstone at similar elevations (S_DSF49). That unit is characterised by a sparser shrub layer and a taller canopy layer that more frequently includes grey gum (*Eucalyptus punctata*). S_DSF54 shares similar rocky habitat features with S_DSF51, but that latter woodland is found on drier, less elevated locations on more northerly Wollemi plateau. That community includes species such as *Eucalyptus dwyeri* amongst the canopy.

Spatially this woodland grades into S_DSF49 as soils deepen. In contrast, as the proportion of exposed rock increases and soils become skeletal the community may grade into heath and scrub communities on the pagodas themselves (S_HL13, S_HL12).

Accuracy

Sample density is moderate. Map domains are sourced from sample data. Map unit boundaries are drawn from the interpretation of eucalypt woodlands with a rock cover of more than 50 per cent at elevations between 700 and 900 metres above sea level.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia hamiltoniana	1	17%	2	2%	uninformative
Acacia leucolobia	**2**	**17%**	**0**	**0%**	**positive**
Acacia obliquinervia	1	17%	2	5%	uninformative
Acacia obtusifolia	**3**	**100%**	**2**	**13%**	**positive**
Acacia terminalis	**2**	**50%**	**1**	**13%**	**positive**
Allocasuarina gymnanthera	1	17%	2	3%	uninformative
Amperea xiphoclada	2	17%	1	13%	uninformative
Bossiaea heterophylla	2	17%	1	8%	uninformative
Brachyloma daphnoides	2	33%	1	13%	uninformative
Callitris rhomboidea	**2**	**50%**	**1**	**2%**	**positive**
Choretrum sp. A	1	17%	1	7%	uninformative
Cleistochloa rigida	1	17%	2	10%	uninformative
Comesperma ericinum	1	17%	1	3%	uninformative
Coopernookia barbata	1	33%	2	3%	uninformative
Dianella caerulea	2	17%	1	32%	uninformative
Dianella revoluta var. *revoluta*	1	33%	1	28%	uninformative
Dillwynia retorta	2	17%	1	5%	uninformative
Dodonaea multijuga	1	17%	2	1%	uninformative
Entolasia stricta	1	17%	2	33%	uninformative
Eucalyptus agglomerata	**2**	**83%**	**2**	**4%**	**positive**
Eucalyptus cannonii	3	17%	1	2%	uninformative
Eucalyptus melliodora	4	17%	3	5%	uninformative
Eucalyptus piperita	1	17%	3	16%	uninformative
Eucalyptus punctata	3	33%	3	33%	uninformative
Eucalyptus rossii	**3**	**50%**	**3**	**13%**	**positive**
Eucalyptus sparsifolia	1	17%	3	28%	uninformative
Exocarpos strictus	1	17%	1	17%	uninformative
Goodenia heterophylla	2	17%	2	11%	uninformative
Haloragis serra	2	17%	1	3%	uninformative
Hardenbergia violacea	1	17%	1	26%	uninformative
Hibbertia circumdans	1	17%	1	14%	uninformative
Hovea lanceolata	**2**	**50%**	**1**	**6%**	**positive**
Hovea linearis	2	33%	1	8%	uninformative
Isopogon dawsonii	2	17%	1	8%	uninformative
Joycea pallida	**2**	**50%**	**2**	**14%**	**positive**
Lepidosperma laterale	2	17%	1	24%	uninformative
Leptomeria acida	1	17%	1	8%	uninformative
Leptospermum parvifolium	1	17%	2	12%	uninformative
Leptospermum sphaerocarpum	**2**	**50%**	**2**	**14%**	**positive**
Leptospermum trinervium	2	17%	2	14%	uninformative
Leucopogon muticus	**4**	**67%**	**2**	**23%**	**positive**
Leucopogon setiger	2	17%	2	4%	uninformative
Lomandra confertifolia	**2**	**67%**	**2**	**32%**	**positive**
Lomandra filiformis	2	17%	2	18%	uninformative
Lomandra glauca	1	17%	2	30%	uninformative
Lomandra multiflora subsp. *multiflora*	1	17%	1	25%	uninformative
Lomatia silaifolia	1	17%	2	22%	uninformative
Monotoca scoparia	**2**	**67%**	**2**	**24%**	**positive**
Patersonia sericea	1	17%	2	20%	uninformative
Persoonia linearis	1	100%	1	54%	uninformative
Phebalium squamulosum	**2**	**50%**	**2**	**10%**	**positive**
Philotheca myoporoides	3	17%	1	1%	uninformative
Phyllanthus hirtellus	2	33%	2	22%	uninformative
Platysace lanceolata	3	17%	2	17%	uninformative
Platysace linearifolia	3	17%	2	1%	uninformative
Poa affinis	1	17%	2	14%	uninformative
Podolobium ilicifolium	**2**	**67%**	**2**	**29%**	**positive**
Pomax umbellata	**2**	**83%**	**2**	**32%**	**positive**
Stylidium graminifolium	2	33%	1	3%	uninformative
Stypandra glauca	2	17%	1	7%	uninformative
Styphelia triflora	1	67%	1	12%	uninformative
Thelionema caespitosum	**3**	**17%**	**0**	**0%**	**positive**
Xanthosia atkinsoniana	2	33%	2	12%	uninformative
Xanthosia pilosa	1	17%	2	9%	uninformative

Statewide Class
Sydney Montane Dry Sclerophyll Forests

Plant Community Type:
Narrow-leaved Peppermint - Silvertop Ash - Mountain Grey Gum shrubby open forest of the upper Blue Mountains, Sydney Basin

Description

Upper Blue Mountains Peppermint Sheltered Forest is a tall eucalypt forest with a dry shrubby understorey and broken ferny ground cover. It occurs on sheltered sandstone slopes in the cooler elevated climates of the western Blue Mountains plateaux and mesas. The forest is dominated by peppermints, with Sydney peppermint (*Eucalyptus piperita*) ever present and narrow-leaved peppermint (*Eucalyptus radiata*) scattered at the highest elevations. Monkey gum (*Eucalyptus cypellocarpa*) is an occasional associate species throughout, while Blaxland's stringybark (*Eucalyptus blaxlandii*) is restricted to the highest elevations. An open layer of dry shrubs is characterised by the presence of the tall wattle *Acacia obtusifolia* which may be profuse following fire. A lower open shrub layer comprises dry shrubs such as geebung (*Persoonia* spp.) prickly shaggy pea (*Podolobium ilicifolium*), *Monotoca scoparia*, *Amperea xiphoclada* and tea-trees (*Leptospermum* spp.). It may also include species that are reflective of the sheltered positions including the lance-leaved beard heath (*Leucopogon lanceolatus*). The ground layer often has a patchy cover of bracken (*Pteridium esculentum*) which grows between sandstone boulders and benches.

This forest is extensively distributed on sheltered Narrabeen sandstone in cool, dry environments at elevations that span 700-950 metres above sea level. It occurs between Newnes and Nullo Mountain and the outlying sandstone mesas along the Great Dividing Range between Ben Bullen and Airly Mountain. Outlying stands are found on talus slopes in gorges below Kanangra Tops as well as colluvial sand deposits in the Cudgegong valley. Small areas are also present on deep soils on ridgetops along the high points of the Hunter Range. Together these areas lie in the rain shadow of the upper Blue Mountains and receive between 750 and 1200 millimetres of average annual rainfall. The study area encompasses a large proportion of the total extent of this community, on the mid to upper sheltered slopes of south-west and central Wollemi NP.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	23 m ±6 14-30	38% ±18 5-65	*Eucalyptus piperita, Eucalyptus cypellocarpa, Eucalyptus punctata, Eucalyptus agglomerata, Eucalyptus blaxlandii, Eucalyptus sparsifolia, Angophora floribunda*
Small Trees	8 m ±4 3-15	29% ±19 5-65	*Persoonia linearis, Acacia obtusifolia, Acacia terminalis, Hakea dactyloides, Acacia longifolia*
Shrubs	3.3 m ±2.3 1.2-8.0	27% ±21 5-75	*Lomatia silaifolia, Podolobium ilicifolium, Amperea xiphoclada, Gonocarpus teucrioides, Leucopogon lanceolatus, Monotoca scoparia, Polyscias sambucifolia, Leptospermum trinervium*
Ground Covers	0.9 m ±0.4 0.3-2.0	19% ±16 1-60	*Pteridium esculentum, Entolasia stricta, Lomandra longifolia, Pomax umbellata, Lomandra obliqua, Lepidosperma laterale, Dianella caerulea, Patersonia sericea, Phyllanthus hirtellus*
Vines & Climbers	N/A	N/A	*Billardiera scandens*

*Compiled from 17 of 17 sites with structural data recorded.

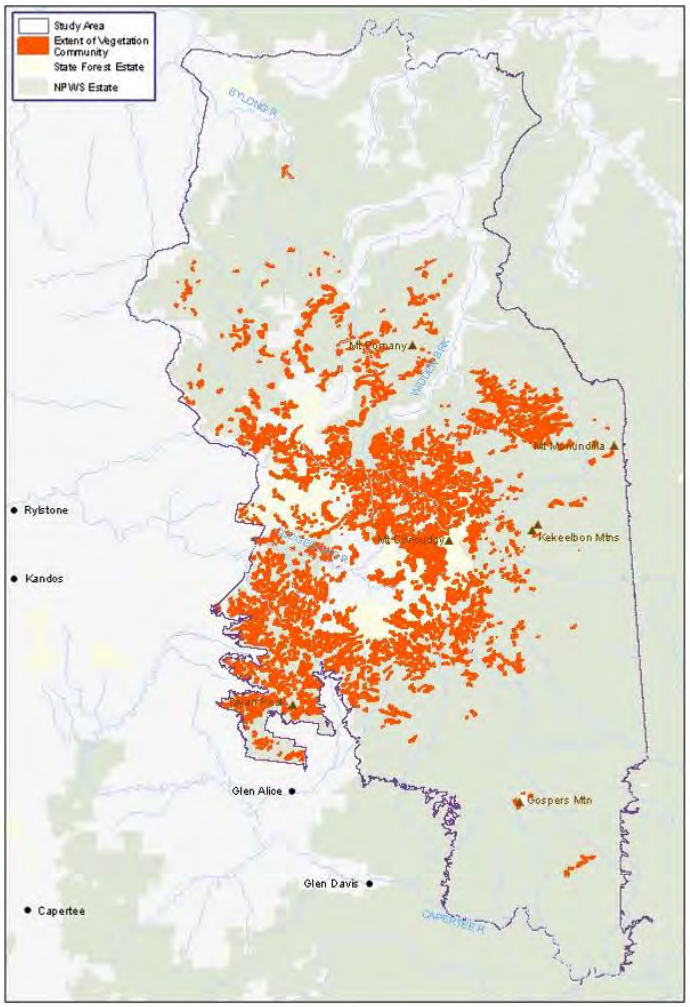
Threats

Threats to this community are few. Repeated high-intensity wildfire may impact on local stands by simplifying floristic composition. Frequent fire associated with lower intensity hazard reduction burning may also cause similar impacts in local sites fringing private land and state forest boundaries. Access tracks dissect stands in the Dunns Swamp and Cudgegong valley area, with some localised weeds observed near cleared land (Bell 1998).

Conservation Status

This community is extensively distributed across Wollemi NP and Gardens of Stone NP and is found on Airly Mountain in Mugii Murum-ban SCA. Small areas are present within Coricudgy and Nullo Mountain state forests.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	16,043-16,719 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	8744.8 ha	12,945 ha 82% of extant area
Area in state forests	1972.5 ha	Not available
Area in other tenures	365.7 ha	Not available
Total extant area	11083.0 ha	15,883 ha



Example Locations

- Gullies running below the Coricudgy Trail, Coricudgy SF
- Glen Alice Trail area

Species Richness

Number of plots	17
Total species	229
Average species per plot	32.9 ±6.6

Known Variations

Minor variations in canopy dominants occur. Stands surrounded by the distinctive sandstone pagodas in the Dunns Swamp and Cudgegong areas commonly include rough-barked apple (*Angophora floribunda*) as an associate canopy species. Soils here are deeper sands and the ground cover is ferny. Stands on high parts of the ranges may include Blaxland's stringybark (*Eucalyptus blaxlandii*) and Blue Mountains ash (*Eucalyptus oreades*).

Relationship to Other Communities

Floristically this forest forms one of several montane dry sclerophyll forests found on the high parts of sandstone plateaux in the Sydney basin. It shares species with wetter forests that occupy more sheltered positions (S_WSF22, S_WSF20). It also resembles S_DSF56 in both canopy species and habitat. That forest, however, has a noticeably drier understorey with fewer shrub and ground cover species, probably as a result of the rockier terrain and shallower soils.

Superficially this community bears some similarity to the *Eucalyptus piperita* dominated forest S_DSF52, however that is found at lower elevations that receive more rainfall and as a result has a higher proportion of coastal shrub species such as *Ceratopetalum gummiferum*. Similarly, the coastal tree species *Corymbia gummifera* and *Angophora costata* occur in S_DSF52 but are rarely recorded from S_DSF55.

Accuracy

Sample density is moderate. Map domains are based on sample site data using elevation, substrate and aspect. Map unit boundaries are based on the interpretation of sheltered to semi-sheltered Narrabeen sandstone environments dominated by *E. piperita*. Elevation (+/-700 metres above sea level) was used as a primary variable to discriminate from S_DSF52. S_DSF56 was separated using lower canopy height, proportion of rock outcrop and understorey characteristics.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia longifolia subsp. *longifolia*	4	12%	2	5%	uninformative
Acacia obliquinervia	2	12%	1	5%	uninformative
Acacia obtusifolia	**3**	**71%**	**2**	**11%**	**positive**
Acacia suaveolens	3	12%	1	2%	uninformative
Acacia terminalis	1	41%	1	12%	uninformative
Acacia ulicifolia	1	18%	1	11%	uninformative
Allocasuarina torulosa	1	18%	1	1%	uninformative
Amperea xiphoclada	**2**	**76%**	**1**	**11%**	**positive**
Angophora floribunda	2	12%	2	17%	uninformative
Arrhenechthites mixta	2	24%	1	3%	uninformative
Asplenium flabellifolium	1	18%	1	11%	uninformative
Banksia serrata	1	18%	1	3%	uninformative
Billardiera scandens	1	41%	1	23%	uninformative
Blechnum cartilagineum	3	18%	2	10%	uninformative
Bossiaea obcordata	2	18%	3	2%	uninformative
Burchardia umbellata	**4**	**18%**	**0**	**0%**	**positive**
Bursaria spinosa subsp. *spinosa*	5	12%	2	26%	uninformative
Callicoma serratifolia	2	12%	3	3%	uninformative
Calochlaena dubia	3	12%	3	9%	uninformative
Cassinia trinerva	3	12%	1	1%	uninformative
Cassytha pubescens	2	12%	2	6%	uninformative
Clematis aristata	1	12%	1	28%	uninformative
Conospermum ellipticum	**3**	**6%**	**0**	**0%**	**positive**
Corymbia gummifera	3	12%	3	3%	uninformative
Dianella brevipedunculata	**1**	**6%**	**0**	**0%**	**positive**
Dianella caerulea	1	71%	1	30%	uninformative
Dianella longifolia	1	24%	1	2%	uninformative
Dianella revoluta var. *revoluta*	2	12%	1	28%	uninformative
Dillwynia retorta	2	24%	1	4%	uninformative
Echinopogon ovatus	1	12%	2	16%	uninformative
Elaeocarpus reticulatus	2	24%	1	7%	uninformative
Entolasia stricta	1	71%	2	31%	uninformative
Epacris reclinata	1	12%	1	1%	uninformative
Eucalyptus agglomerata	2	18%	2	4%	uninformative
Eucalyptus blaxlandii	3	12%	3	5%	uninformative
Eucalyptus cypellocarpa	3	18%	3	10%	uninformative
Eucalyptus piperita	**3**	**100%**	**3**	**12%**	**positive**
Eucalyptus punctata	1	29%	3	33%	uninformative
Eucalyptus radiata	1	12%	3	1%	uninformative
Eucalyptus sparsifolia	2	18%	3	28%	uninformative
Exocarpos strictus	1	12%	1	17%	uninformative
Gahnia erythrocarpa	**2**	**6%**	**0**	**0%**	**positive**
Galium binifolium	2	12%	2	4%	uninformative
Gleichenia rupestris	**1**	**6%**	**0**	**0%**	**positive**
Gonocarpus tetragynus	3	12%	2	13%	uninformative
Gonocarpus teucrioides	**2**	**53%**	**2**	**13%**	**positive**
Goodenia heterophylla	2	29%	2	10%	uninformative
Goodenia ovata	1	12%	1	6%	uninformative
Hakea dactyloides	2	29%	1	18%	uninformative
Hardenbergia violacea	1	29%	1	25%	uninformative
Hibbertia circumdans	2	12%	1	14%	uninformative
Hibbertia empetrifolia subsp. *empetrifolia*	2	24%	1	2%	uninformative
Histiopteris incisa	**1**	**6%**	**0**	**0%**	**positive**
Hovea pannosa	**1**	**6%**	**0**	**0%**	**positive**
Hybanthus monopetalus	1	18%	1	3%	uninformative
Hydrocotyle laxiflora	3	12%	2	20%	uninformative
Hypolepis rugosula	**1**	**6%**	**0**	**0%**	**positive**
Isopogon anemonifolius	3	12%	1	8%	uninformative
Leiocarpa semicalva* subsp. *semicalva	**1**	**6%**	**0**	**0%**	**positive**
Lepidosperma laterale	1	41%	1	23%	uninformative
Leptomeria acida	1	29%	1	7%	uninformative
Leptospermum polyanthum	3	12%	3	1%	uninformative
Leptospermum polygalifolium subsp. *polygalifolium*	3	12%	2	6%	uninformative
Leptospermum sphaerocarpum	1	18%	2	14%	uninformative
Leptospermum trinervium	3	29%	2	13%	uninformative
Leucopogon ericoides	**1**	**18%**	**0**	**0%**	**positive**
Leucopogon lanceolatus	1	65%	1	10%	uninformative
Leucopogon muticus	1	18%	2	24%	uninformative
Lindsaea microphylla	2	12%	1	2%	uninformative
Lissanthe sapida	**1**	**6%**	**0**	**0%**	**positive**
Lomandra confertifolia	1	29%	2	33%	uninformative
Lomandra longifolia	1	59%	1	27%	uninformative
Lomandra multiflora subsp. *multiflora*	2	12%	1	26%	uninformative
Lomandra obliqua	**2**	**59%**	**2**	**14%**	**positive**

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Lomatia silaifolia	**2**	**82%**	**2**	**19%**	**positive**
Microlaena stipoides	2	18%	2	28%	uninformative
Monotoca scoparia	1	41%	2	24%	uninformative
Notelaea longifolia	1	18%	1	9%	uninformative
Patersonia glabrata	2	12%	2	12%	uninformative
Patersonia sericea	**2**	**41%**	**2**	**19%**	**positive**
Persoonia levis	1	12%	1	10%	uninformative
Persoonia linearis	**2**	**94%**	**1**	**53%**	**positive**
Persoonia myrtilloides	2	24%	1	5%	uninformative
Phyllanthus hirtellus	1	41%	2	21%	uninformative
Platysace ericoides	1	29%	2	22%	uninformative
Platysace lanceolata	2	29%	2	16%	uninformative
Poa affinis	2	18%	2	14%	uninformative
Podolobium ilicifolium	**2**	**76%**	**2**	**28%**	**positive**
Polyscias sambucifolia	**2**	**53%**	**1**	**11%**	**positive**
Pomaderris elliptica* subsp. *elliptica	**4**	**6%**	**0**	**0%**	**positive**
Pomax umbellata	1	59%	2	32%	uninformative
Poranthera ericifolia	1	12%	2	3%	uninformative
Pteridium esculentum	**2**	**88%**	**2**	**29%**	**positive**
Pultenaea scabra	1	24%	2	6%	uninformative
Pyrrosia rupestris	1	18%	2	4%	uninformative
Rhytidosporum prostratum	**1**	**6%**	**0**	**0%**	**positive**
Schoenus brevifolius	1	12%	2	1%	uninformative
Senecio linearifolius	1	12%	2	2%	uninformative
Smilax glyciphylla	1	29%	1	8%	uninformative
Solanum prinophyllum	2	12%	1	11%	uninformative
Stackhousia viminea	3	12%	1	2%	uninformative
Stellaria pungens	2	12%	2	17%	uninformative
Stylidium productum	1	29%	2	7%	uninformative
Xanthosia pilosa	2	29%	1	8%	uninformative
Zieria fraseri	**1**	**6%**	**0**	**0%**	**positive**

Statewide Class: Sydney Montane Dry Sclerophyll Forests
Plant Community Type: Sydney Peppermint-Grey Gum shrubby open forest of the western Blue Mountains

Description

Western Blue Mountains Peppermint Forest is an open eucalypt forest of variable height with a dry open shrubby understorey and sparse rocky ground cover. It occurs on sheltered escarpment talus, dry slopes and gorges along the elevated sandstone plateaux and mesas of the western Blue Mountains. The canopy is dominated by Sydney peppermint (*Eucalyptus piperita*) with one or more stringybarks (*Eucalyptus sparsifolia*, *Eucalyptus blaxlandii* and *Eucalyptus tenella*) and grey gum (*Eucalyptus punctata*) is often frequent at lower elevations. A dry shrub layer of wattles (*Acacia* spp.), tea-tree (*Leptospermum* spp.), geebungs (*Persoonia* spp.) and beard-heath (*Leucopogon* spp.) form a variable cover. The ground cover is distinguished by a very open layer of vegetation with a prominent layer of litter and rock outcropping. Isolated patches of bracken (*Pteridium esculentum*) and *Pomax umbellata* may be present.

This forest is found on Narrabeen sandstone in cool, dry environments at elevations between 600 and 1050 metres above sea level. It occurs between Newnes and Nullo Mountain and the outlying sandstone mesas along the Great Dividing Range between Ben Bullen and Airly Mountain. Stands occur between massive pagodas and beneath major clifflines of the escarpments where eroding clifflines deposit a layer of sandy material and broken rock. This forest is distributed in the rain shadow of the upper Blue Mountains and receives a relatively low average annual rainfall of between 750 and 900 millimetres. The study area encompasses a large proportion of the total extent of this community on the mid to upper sheltered slopes of south-west and central Wollemi NP.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	21 m ±4 15-25	35% ±18 10-50	*Eucalyptus piperita, Eucalyptus punctata, Eucalyptus sparsifolia, Angophora floribunda, Corymbia gummifera, Eucalyptus multicaulis, Eucalyptus agglomerata, Eucalyptus cypellocarpa, Eucalyptus blaxlandii*
Small Trees	10 m ±2 8-12	43% ±25 10-65	*Acacia longifolia, Acacia terminalis, Allocasuarina littoralis, Callitris glaucophylla, Hakea dactyloides, Xylomelum pyriforme*
Shrubs	2.7 m ±0.6 2.0- 3.0	28% ±3 25-30	*Persoonia linearis, Acacia obtusifolia, Leptospermum polygalifolium, Exocarpos strictus, Leptospermum trinervium, Lomatia silaifolia, Monotoca scoparia, Phyllota squarrosa, Platysace lanceolata, Amperea xiphoclada, Bossiaea heterophylla, Dodonaea triquetra, Hibbertia monogyna, Leucopogon lanceolatus, Podolobium ilicifolium, Polyscias sambucifolia*
Ground Covers	1.5 m ±1.1 0.3-3.0	14% ±11 5-30	*Pteridium esculentum, Lepidosperma laterale, Lomandra filiformis, Pomax umbellata, Lomandra obliqua, Dianella caerulea, Lepidosperma urophorum, Lomandra confertifolia, Entolasia stricta*
Vines & Climbers	N/A	N/A	

*Compiled from 4 of 5 sites with structural data recorded.

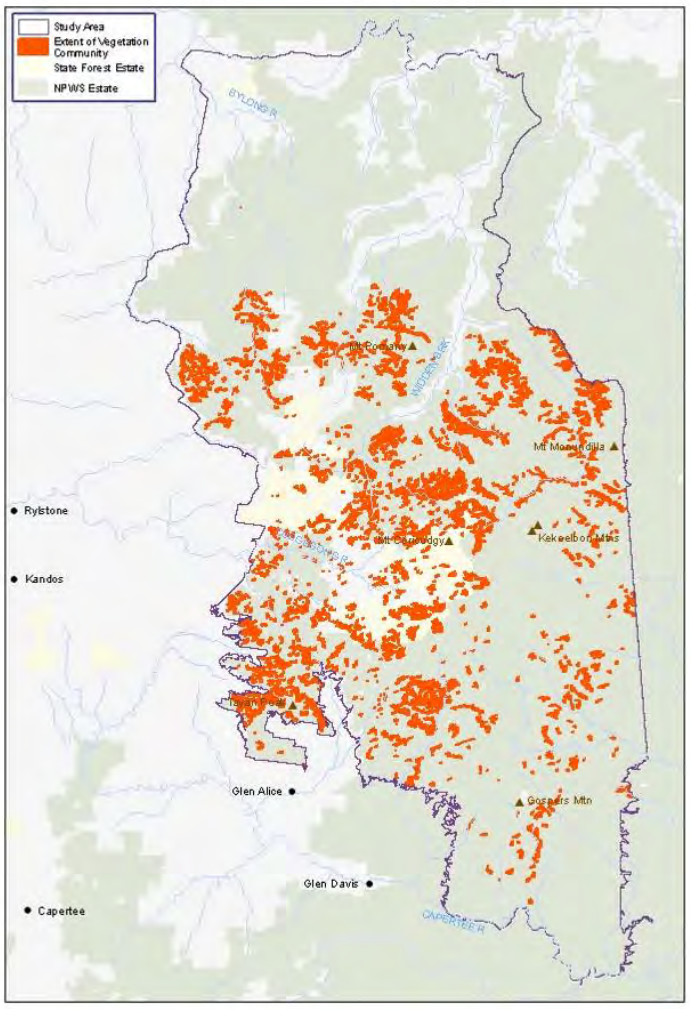
Threats

Threats to this community are few. Repeated high-intensity wildfire may impact on local stands by simplifying floristic composition.

Conservation Status

This community is extensively distributed across Wollemi NP and Gardens of Stone NP and is found on Airly Mountain in Mugii Murum-ban SCA. Small areas are present within Coricudgy SF and Nullo Mountain SF.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	10,868-11,326 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	8527.9 ha	9028 ha 84% of extant area
Area in state forests	965.0 ha	Not available
Area in other tenures	225.5 ha	Not available
Total extant area	9718.5 ha	10,759 hectares



Example Locations

- Gullies running below the Coricudgy Trail, Coricudgy SF
- Glen Alice Trail area

Species Richness

Number of plots	5
Total species	104
Average species per plot	30.2 ±9.5

Known Variations

Minor variations in canopy dominants are known to occur. Stands on the highest parts of the ranges may include Blaxland's stringybark (*Eucalyptus blaxlandii*) and Blue Mountains ash (*Eucalyptus oreades*).

Relationship to Other Communities

Floristically this forest shares many species with other eucalypt forests found in the higher elevation Narrabeen sandstone environments of the Sydney basin. It is closely related to S_DSF55 into which it grades with increasing elevation, soil depth, rainfall and shelter. Many of the canopy species are shared between the two communities, but S_DSF55 has a denser shrub layer and a higher cover of ferns and small twiners amongst the ground layer.

Accuracy

Sample effort is moderate in both the study area and region. Map domains are derived from characteristics of sample sites using elevation, rainfall, aspect and substrate. Map unit boundaries are drawn from the interpretation of dry Narrabeen sandstone slopes dominated by *E. piperita*. These forests were distinguished from S_DSF55 by an understorey of dry shrubs.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia obtusifolia	**3**	**80%**	**2**	**13%**	**positive**
Acacia saliciformis	1	20%	1	7%	uninformative
Acacia suaveolens	1	20%	1	2%	uninformative
Acacia terminalis	1	60%	1	13%	uninformative
Acacia trinervata	1	20%	1	0%	uninformative
Actinotus helianthi	2	20%	1	4%	uninformative
Allocasuarina distyla	1	20%	2	1%	uninformative
Allocasuarina littoralis	3	20%	1	12%	uninformative
Amperea xiphoclada	1	40%	2	13%	uninformative
Angophora floribunda	**2**	**40%**	**2**	**16%**	**positive**
Asplenium flabellifolium	2	20%	1	12%	uninformative
Banksia marginata	1	20%	1	2%	uninformative
Banksia serrata	1	20%	1	3%	uninformative
Banksia spinulosa	1	20%	2	6%	uninformative
Boronia anemonifolia	1	20%	1	1%	uninformative
Boronia ledifolia	1	20%	3	1%	uninformative
Boronia rubiginosa	2	20%	1	1%	uninformative
Bossiaea heterophylla	1	40%	2	8%	uninformative
Callitris glaucophylla	4	20%	3	0%	uninformative
Carex appressa	1	20%	1	2%	uninformative
Cassytha glabella f. *glabella*	2	20%	1	8%	uninformative
Cassytha pubescens	2	20%	2	6%	uninformative
Corymbia gummifera	4	20%	3	3%	uninformative
Dampiera stricta	1	20%	2	10%	uninformative
Dianella caerulea	**2**	**80%**	**1**	**31%**	**positive**
Dianella revoluta var. *revoluta*	3	20%	1	28%	uninformative
Dillwynia retorta	1	20%	2	5%	uninformative
Dodonaea triquetra	1	40%	2	4%	uninformative
Entolasia marginata	1	20%	2	2%	uninformative
Entolasia stricta	1	20%	2	33%	uninformative
Epacris pulchella	1	20%	2	5%	uninformative
Epacris reclinata	2	20%	1	1%	uninformative
Eucalyptus multicaulis	1	40%	3	3%	uninformative
Eucalyptus piperita	**3**	**100%**	**3**	**15%**	**positive**
Eucalyptus punctata	**2**	**80%**	**3**	**32%**	**positive**
Eucalyptus sparsifolia	**3**	**80%**	**3**	**27%**	**positive**
Exocarpos strictus	1	60%	1	16%	uninformative
Gompholobium latifolium	1	20%	2	4%	uninformative
Gonocarpus longifolius	2	20%	2	2%	uninformative
Gonocarpus tetragynus	2	20%	2	13%	uninformative
Gonocarpus teucrioides	1	20%	2	15%	uninformative
Hakea dactyloides	2	20%	1	19%	uninformative
Hibbertia monogyna	**2**	**40%**	**2**	**3%**	**positive**
Isopogon dawsonii	1	20%	1	8%	uninformative
Lepidosperma filiforme	2	20%	2	1%	uninformative
Lepidosperma gunnii	2	20%	2	13%	uninformative
Lepidosperma laterale	**2**	**60%**	**1**	**23%**	**positive**
Lepidosperma urophorum	2	20%	1	4%	uninformative
Leptospermum morrisonii	**4**	**20%**	**0**	**0%**	**positive**
Leptospermum polygalifolium* subsp. *polygalifolium	**3**	**60%**	**2**	**5%**	**positive**
Leptospermum trinervium	**3**	**40%**	**2**	**14%**	**positive**
Leucopogon lanceolatus	**2**	**40%**	**1**	**12%**	**positive**
Leucopogon muticus	3	20%	2	24%	uninformative
Logania albiflora	2	20%	1	3%	uninformative
Lomandra confertifolia	**2**	**60%**	**2**	**33%**	**positive**
Lomandra filiformis	**2**	**40%**	**2**	**18%**	**positive**
Lomandra glauca	2	20%	2	30%	uninformative
Lomandra obliqua	1	60%	2	16%	uninformative
Lomatia silaifolia	**2**	**60%**	**2**	**21%**	**positive**
Melichrus procumbens	1	20%	1	0%	uninformative
Monotoca scoparia	**2**	**40%**	**2**	**24%**	**positive**
Oxylobium arborescens	2	20%	2	1%	uninformative
Persoonia levis	1	20%	1	10%	uninformative
Persoonia linearis	**2**	**100%**	**1**	**54%**	**positive**
Persoonia oblongata	1	20%	1	2%	uninformative
Petrophile canescens	1	20%	2	3%	uninformative
Phyllota squarrosa	1	20%	2	2%	uninformative
Platysace clelandii	1	20%	1	0%	uninformative
Platysace lanceolata	**2**	**40%**	**2**	**17%**	**positive**
Poa affinis	2	20%	2	14%	uninformative
Poa sieberiana	1	20%	3	3%	uninformative
Podolobium ilicifolium	**2**	**40%**	**2**	**30%**	**positive**
Polyscias sambucifolia	1	20%	2	12%	uninformative
Pomaderris ledifolia	2	20%	1	0%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Pomax umbellata	1	60%	2	33%	uninformative
Poranthera microphylla	1	20%	1	13%	uninformative
Prostanthera prunelloides	3	20%	4	2%	uninformative
Pteridium esculentum	**2**	**80%**	**2**	**31%**	**positive**
Schoenus melanostachys	1	20%	1	1%	uninformative
Stylidium graminifolium	1	20%	2	4%	uninformative
Stylidium productum	2	20%	2	8%	uninformative
Stypandra glauca	2	20%	1	7%	uninformative
Styphelia viridis* subsp. *viridis	**1**	**20%**	**0**	**0%**	**positive**
Xanthorrhoea arborea	3	20%	1	1%	uninformative
Xanthosia atkinsoniana	1	20%	2	12%	uninformative
Xanthosia pilosa	1	20%	2	9%	uninformative
Xylomelum pyriforme	2	20%	1	4%	uninformative

Statewide Class Western Slopes Dry Sclerophyll Forests
Plant Community Type: Not described

Description

Western Hunter Caley's Ironbark Low Forest is a dry scrubby community dominated by a mix of eucalypts, tall wattles and cypress pines. It is restricted to exposed rocky sandstone plateaux and slopes in the Goulburn River catchment in the north-west of the Sydney basin region. The canopy features low-growing Caley's ironbark (*Eucalyptus caleyi* subsp. *caleyi*), a distinctive ironbark with small silver-blue leaves. Wattles such as currawang (*Acacia doratoxylon*), she-oaks (*Allocasuarina* spp.) and cypress pines (including *Callitris endlicheri*) may co-occur in the canopy layer or just beneath it. The dry rocky infertile soils support a moderate cover of dry shrub species such as geebung (*Persoonia linearis*) and hop bushes (*Dodonaea* spp.), and patches of low-growing spiky leaved shrubs including *Acrotriche rigida* and native cranberry (*Astroloma humifusum*). A sparse to open ground layer comprises hardy grasses, herbs and grass-like plants. These include the grass *Cleistochloa rigida*, mat-rushes (*Lomandra* spp.) and mulga fern (*Cheilanthes sieberi*).

This dry woodland occurs on dry, skeletal rocky soils associated with Narrabeen sandstone ridges in the ranges above the Goulburn River valley between Ulan and Denman. Its distribution spans an elevation of 260 to 600 metres above sea level and occurs in some of the driest areas of the Sydney Basin Bioregion where rainfall falls to 550-700 millimetres per annum. It can be found across the range of aspects, but sites are invariably very dry and rocky. Small outlying stands occur on basalt scree and rocky sandstone talus on Permian slopes. The study area encompasses a large area of this community on the exposed ranges of northern Wollemi NP between Bylong and Widden valley. It extends east into the adjoining parts of Wollemi NP and north into Goulburn River NP. It is likely to occur outside of the Sydney basin in the dry ranges to the north-west between Dunnedoo and Dubbo.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	15 m ±5 10-25	33% ±19 15-65	*Eucalyptus caleyi, Callitris endlicheri, Eucalyptus sparsifolia, Eucalyptus dwyeri, Eucalyptus punctata, Eucalyptus fibrosa, Corymbia trachyphloia, Eucalyptus crebra, Eucalyptus sideroxylon*
Small Trees	4 m ±1 2-6	23% ±13 2-40	*Acacia doratoxylon, Allocasuarina littoralis*
Shrubs	2.3 m ±0.4 2.0-2.5	30% ±35 5-55	*Persoonia linearis, Dodonaea viscosa, Choretrum* sp. A*, Leptospermum parvifolium, Leucopogon muticus, Acrotriche rigida, Hovea lanceolata, Melichrus erubescens, Phebalium squamulosum, Styphelia triflora, Hovea lanceolata*
Ground Covers	0.5 m ±0.2 0.3-0.8	7% ±4 5-15	*Cleistochloa rigida, Cheilanthes sieberi* subsp*. sieberi, Lomandra confertifolia* subsp*. rubiginosa, Lomandra glauca, Dianella revoluta* var*. revoluta, Pomax umbellata, Lepidosperma laterale*
Vines & Climbers	N/A	N/A	*Cassytha melantha, Cassytha pubescens*

*Compiled from 6 of 6 sites with structural data recorded.

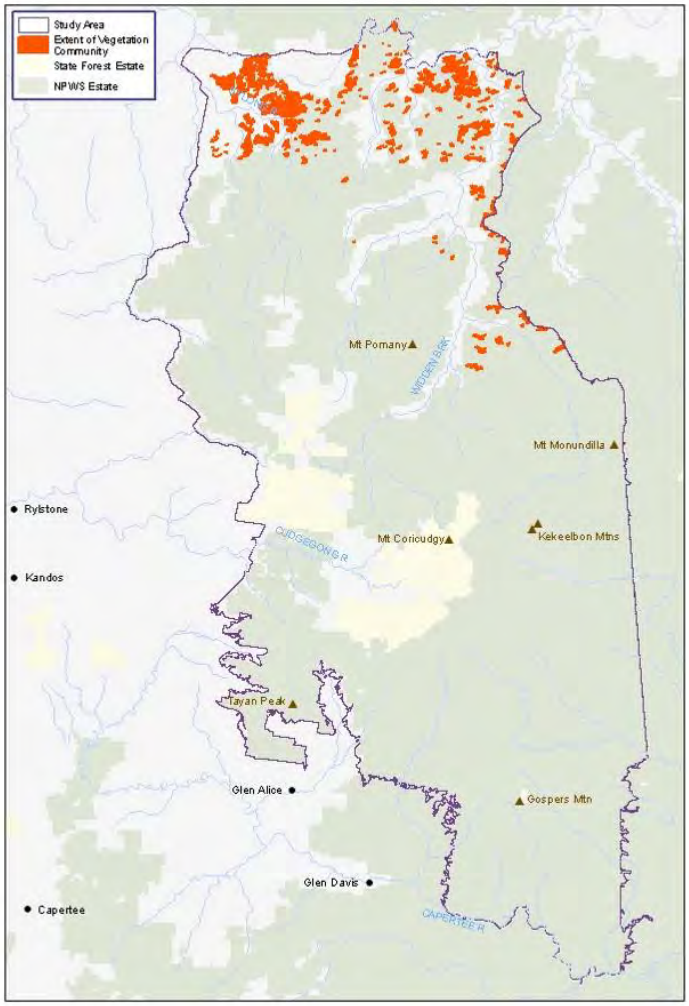
Threats

Threats are considered to be low as the primary distribution of this community is associated with the infertile sandstone plateaux of the north-west Sydney basin.

Conservation Status

This community is extensively distributed across northern Wollemi NP, Manobalai NR and eastern Goulburn River NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	7118-7513 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	2159.5 ha	3160 ha 47% of extant area
Area in state forests	264.6 ha	Not available
Area in other tenures	338.1 ha	Not available
Total extant area	2762.1 ha	6762 ha



Example Locations

- Ridges above Coxs Gap Tunnel, northern Wollemi NP
- Ridges above Phipps Cutting picnic area, northern Wollemi NP

Species Richness

Number of plots	6
Total species	93
Average species per plot	28.7 ±6.2

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this low forest forms one of several dry shrubby eucalypt-cypress-wattle communities found on dry rocky sandstone in north-west of the Sydney Basin Bioregion. It shares many species with the rocky woodlands S_DSF58 and S_DSF61. The former has a low closed canopy of currawang and eucalypts are usually absent; it may be a derived community that establishes following disturbance such as severe wildfire. S_DSF61 occurs on a distinctive rocky band in the Narrabeen stratum that is exposed at slightly higher elevations. No *Eucalyptus caleyi* is present in S_DSF61 and instead there is a mixed canopy of *Eucalyptus dwyeri*, *Corymbia trachyphloia* and *Callitris endlicheri*.

Accuracy

Sample effort is moderate. Map domains are based on sample site data using elevation, substrate, aspect and rainfall. Map unit boundaries are drawn from the interpretation of *E. caleyi-Acacia doratoxylon* dominated stands situated on Narrabeen sandstone or skeletal soils on basalt scree. Small areas of S_DSF62 may be included within this map unit.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia buxifolia subsp. *buxifolia*	1	33%	2	12%	uninformative
Acacia doratoxylon	**3**	**100%**	**2**	**6%**	**positive**
Acacia obliquinervia	1	17%	2	5%	uninformative
Acacia obtusifolia	1	17%	2	14%	uninformative
Acacia uncinata	1	33%	2	9%	uninformative
Acrotriche rigida	1	50%	1	8%	uninformative
Allocasuarina gymnanthera	4	17%	1	3%	uninformative
Allocasuarina littoralis	**2**	**50%**	**1**	**12%**	**positive**
Angophora floribunda	1	17%	2	17%	uninformative
Aristida ramosa	2	33%	2	11%	uninformative
Aristida vagans	1	17%	2	7%	uninformative
Astroloma humifusum	1	33%	1	9%	uninformative
Austrodanthonia racemosa var. *racemosa*	2	17%	2	5%	uninformative
Austrodanthonia tenuior	1	17%	2	1%	uninformative
Austrostipa scabra	2	17%	2	4%	uninformative
Boronia anethifolia	2	33%	1	4%	uninformative
Brachychiton populneus subsp. *populneus*	1	17%	1	6%	uninformative
Brachyloma daphnoides	1	17%	1	14%	uninformative
Bursaria spinosa subsp. *spinosa*	2	17%	2	25%	uninformative
Callitris endlicheri	1	67%	1	11%	uninformative
Calytrix tetragona	2	17%	2	10%	uninformative
Cassinia cunninghamii	1	17%	2	7%	uninformative
Cassinia quinquefaria	1	17%	2	9%	uninformative
Cassinia uncata	2	33%	1	5%	uninformative
Cassytha melantha	1	17%	1	0%	uninformative
Cassytha pubescens	2	17%	2	6%	uninformative
Cheilanthes distans	1	17%	1	5%	uninformative
Cheilanthes sieberi* subsp. *sieberi	**2**	**67%**	**1**	**19%**	**positive**
Choretrum sp. A	1	67%	1	6%	uninformative
Cleistochloa rigida	**2**	**67%**	**2**	**10%**	**positive**
Cryptandra spinescens	1	33%	2	2%	uninformative
Dampiera adpressa	2	33%	1	1%	uninformative
Dianella revoluta var. *revoluta*	1	50%	1	27%	uninformative
Dodonaea triangularis	2	17%	1	2%	uninformative
Dodonaea viscosa	**3**	**67%**	**2**	**11%**	**positive**
Entolasia stricta	1	17%	2	33%	uninformative
Eucalyptus caleyi* subsp. *caleyi	**4**	**100%**	**2**	**1%**	**positive**
Eucalyptus dwyeri	3	17%	2	3%	uninformative
Eucalyptus fibrosa* subsp. *nubilis	**3**	**17%**	**0**	**0%**	**positive**
Eucalyptus moluccana	2	17%	3	3%	uninformative
Eucalyptus punctata	1	17%	3	33%	uninformative
Eucalyptus sparsifolia	3	33%	3	28%	uninformative
Exocarpos cupressiformis	1	17%	1	6%	uninformative
Gahnia aspera	1	17%	1	7%	uninformative
Galium gaudichaudii	1	17%	2	4%	uninformative
Glycine clandestina	1	17%	2	17%	uninformative
Goodenia hederacea subsp. *hederacea*	2	17%	2	8%	uninformative
Goodenia ovata	1	17%	1	6%	uninformative
Goodenia rotundifolia	1	17%	2	4%	uninformative
Goodenia stephensonii	2	17%	2	2%	uninformative
Grevillea mucronulata	1	17%	1	7%	uninformative
Grevillea triternata	1	17%	2	1%	uninformative
Hakea dactyloides	2	17%	1	19%	uninformative
Harmogia densifolia	2	33%	2	4%	uninformative
Hibbertia circumdans	1	33%	1	13%	uninformative
Hibbertia riparia	1	17%	2	3%	uninformative
Hovea lanceolata	1	50%	1	6%	uninformative
Isopogon dawsonii	2	17%	1	8%	uninformative
Joycea pallida	2	33%	2	14%	uninformative
Lagenophora stipitata	1	33%	1	10%	uninformative
Lepidosperma concavum	3	17%	2	2%	uninformative
Lepidosperma gunnii	1	17%	2	13%	uninformative
Lepidosperma laterale	1	33%	1	24%	uninformative
Lepidosperma viscidum	2	33%	2	2%	uninformative
Leptospermum parvifolium	**3**	**67%**	**2**	**11%**	**positive**
Leucopogon muticus	1	67%	2	23%	uninformative
Lomandra confertifolia	1	83%	2	32%	uninformative
Lomandra filiformis	2	33%	2	18%	uninformative
Lomandra glauca	1	67%	2	29%	uninformative
Lomandra multiflora subsp. *multiflora*	1	17%	1	25%	uninformative
Macrozamia reducta	2	17%	1	10%	uninformative
Melichrus erubescens	1	50%	1	3%	uninformative
Microlaena stipoides	1	17%	2	28%	uninformative
Olearia ramulosa	1	17%	1	2%	uninformative
Patersonia sericea	1	17%	2	20%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Persoonia linearis	**2**	**100%**	**1**	**54%**	**positive**
Phebalium squamulosum	**2**	**50%**	**2**	**10%**	**positive**
Phyllanthus hirtellus	1	33%	2	22%	uninformative
Platysace ericoides	2	33%	2	22%	uninformative
Podolobium ilicifolium	1	17%	2	30%	uninformative
Pomax umbellata	**2**	**67%**	**2**	**33%**	**positive**
Poranthera corymbosa	1	17%	1	5%	uninformative
Rhytidosporum procumbens	1	17%	1	2%	uninformative
Solanum prinophyllum	1	33%	1	11%	uninformative
Stypandra glauca	1	33%	1	7%	uninformative
Styphelia triflora	1	50%	1	13%	uninformative

Statewide Class Western Slopes Dry Sclerophyll Forests
Plant Community Type: Not described

Description

Western Hunter Currawang Low Forest is a dense low forest dominated by tall wattles with a very sparse shrub layer and ground layer, found on dry sandstone ranges in the north-west of the Sydney basin region. A low even-aged canopy of wattles is dominated by currawang (*Acacia doratoxylon*) and occasionally *Acacia crassa* subsp *crassa*. Emergent eucalypts are occasionally present, with ironbarks (*Eucalyptus caleyi* subsp. *caleyi*, *Eucalyptus crebra*) and brown bloodwood (*Corymbia trachyphloia*) the most frequently recorded. The understorey comprises only a sparse scattering of dry shrubs including geebung (*Persoonia linearis*), boronia (*Boronia anethifolia*) and blackthorn (*Bursaria spinosa*). The ground layer is equally sparse, though there is a consistently occurring combination of hardy grasses (including *Cleistochloa rigida* and *Paspalidium criniforme*), herbs (*Pomax umbellata*) and small ferns (*Cheilanthes* spp.).

At times this forest presents a closed canopy as a result of the profuse post-fire recolonising habit of *Acacia doratoxylon*. It is a floristically simple community as diversity is suppressed by the absence of light penetrating to the ground layer. It has a patchy distribution that may reflect the history of intense wildfires; such wildfires appear to have resulted in the death of eucalypts and mass germination of soil stored seeds (Bell 1998). In the Sydney basin it occurs on Triassic and, less frequently, Permian sediments between Ulan and Denman, an area that experiences a low mean annual rainfall of 550-650 millimetres. It is most common on low-gradient escarpment benches and broad sandstone ridges that have low levels of rock outcropping and some clay enrichment in the soil. Most sites lie between 200 and 300 metres above sea level. In the study area it occurs in small areas on the escarpment of the northern boundary of the reserve between Bylong and Widden valley. It extends north-west across Goulburn River NP, Manobalai NR and Myambat defence lands. Outside the Sydney Basin region it extends north-west on the dry ranges between Ulan, Dunnedoo and Dubbo.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Small Trees	8 m 8	65% 65	*Acacia doratoxylon, Eucalyptus caleyi, Corymbia trachyphloia, Eucalyptus crebra, Acacia crassa* subsp. *crassa, Eucalyptus dwyeri, Allocasuarina verticillata, Acacia linearifolia*
Shrubs	3.5 m 3.5	10% 10	*Notelaea microcarpa* var. *microcarpa, Prostanthera nivea* var. *nivea, Hibiscus sturtii* var. *sturtii, Leucopogon muticus, Persoonia linearis, Bursaria spinosa* subsp. *spinosa, Isopogon dawsonii, Boronia anethifolia*
Ground Covers	0.4 m 0.4	85% 85	*Aristida ramosa* var. *ramosa, Gonocarpus elatus, Pomax umbellata, Cheilanthes austrotenuifolia, Cheilanthes sieberi* subsp. *sieberi, Digitaria ramularis, Paspalidium criniforme, Cleistochloa rigida, Lepidosperma laterale*
Vines and Climbers	N/A	N/A	

*Compiled from 1 of 1 sites with structural data recorded.

Threats

Threats arising from clearing and human-related land use are limited as the forest occupies environments unsuitable for agriculture. Frequent intense wildfire may result in localised extinction of *Acacia doratoxylon* (Bell 1998).

Conservation Status

This community occurs in localised patches across northern Wollemi NP, Manobalai NR and eastern Goulburn River NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	1103-1164 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	37.2 ha	537 ha 51% of extant area
Area in state forests	1.3 ha	Not available
Area in other tenures	9.1 ha	Not available
Total extant area	47.7 ha	1048 ha

Example Locations

- Lower escarpment footslopes behind *Kerrabee* homestead, northern Wollemi NP

Species Richness

Number of plots	1
Total species	20
Average species per plot	20

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this low forest shares many species with other dry exposed woodlands found in northern Wollemi NP and eastern Goulburn River NP. The presence of *Acacia doratoxylon*, *Corymbia trachyphloia* and ironbark species (including *Eucalyptus caleyi*) is shared with S_DSF57. That community can be distinguished by a denser, more diverse shrubby understorey as well as its occurrence on broken exposed rocky habitats. While present, *Acacia doratoxylon* is less abundant in that community.

Accuracy

Sample density is low in the study area and moderate across the ranges of the western Hunter valley. Mapping of this community was confounded by two problems. Firstly the map domains for this unit overlap with that of S_DSF57. Secondly digital imagery was not always suitable for discriminating stands dominated by *Acacia doratoxylon* and as a result small areas of this community are included within S_DSF57.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia doratoxylon	**4**	**100%**	**2**	**7%**	**positive**
Aristida ramosa	**4**	**100%**	**2**	**11%**	**positive**
Cheilanthes austrotenuifolia	1	100%	2	3%	uninformative
Cheilanthes sieberi* subsp. *sieberi	**2**	**100%**	**1**	**19%**	**positive**
Corymbia trachyphloia subsp. *amphistomatica*	1	100%	2	3%	uninformative
Digitaria ramularis	1	100%	1	5%	uninformative
Eragrostis lacunaria	**2**	**100%**	**2**	**0%**	**positive**
Eucalyptus caleyi* subsp. *caleyi	**2**	**100%**	**4**	**2%**	**positive**
Gonocarpus elatus	**4**	**100%**	**2**	**1%**	**positive**
Goodenia rotundifolia	**2**	**100%**	**1**	**4%**	**positive**
Hibiscus sturtii* var. *sturtii	**2**	**100%**	**2**	**1%**	**positive**
Leucopogon muticus	1	100%	2	24%	uninformative
Notelaea microcarpa var. *microcarpa*	1	100%	1	1%	uninformative
Panicum simile	**2**	**100%**	**2**	**2%**	**positive**
Paspalidium criniforme	**2**	**100%**	**1**	**1%**	**positive**
Persoonia linearis	1	100%	1	55%	uninformative
Pomax umbellata	**4**	**100%**	**2**	**33%**	**positive**
Prostanthera nivea	**2**	**100%**	**1**	**0%**	**positive**
Psydrax odorata	1	100%	3	0%	uninformative
Thyridolepis mitchelliana	**1**	**100%**	**0**	**0%**	**positive**

Statewide Class
Western Slopes Dry Sclerophyll Forests

Plant Community Type:
Grey Gum - Narrow-leaved Stringybark - ironbark woodland on ridges of the upper Hunter Valley, Sydney Basin

Description

Western Hunter Escarpment Ironbark Forest is a low to moderately tall eucalypt forest with a dry shrubby understorey and an open ground cover. It is found on narrow ridgelines and dry rocky and precipitous Narrabeen sandstone slopes along the interface with the open Permian valleys in the far north-west of the Sydney basin. Ironbarks dominate the canopy with red ironbark (*Eucalyptus fibrosa)* consistently recorded. The recently described *E. fibrosa* sp. aff. *yarrawa* is included within this red ironbark complex, and is likely to be far more common than currently documented. Grey gum (*Eucalyptus punctata*) may be co-dominant, though it occurs less frequently. An open cover of tall wattles including *Acacia linearifolia* and *Acacia crassa* subsp. *crassa* may be found above an open to moderate cover of dry shrubs. The lower-growing species comprise geebungs (*Persoonia* spp.), beard-heath (*Leucopogon muticus*), blackthorn (*Bursaria spinosa*), hop-bushes (*Dodonaea* spp.) and wattles (*Acacia* spp.). Some sites carry a very dense cover of scaly phebalium (*Phebalium squamulosum*). The ground layer is usually a patchy cover of hardy grasses such *Cleistochloa rigida* and small mat-rushes (*Lomandra* spp.) found in between rock outcropping.

The community is widespread across the sandstone escarpment of the Hunter valley between Bylong and Bulga. It is situated on the lower strata of the Narrabeen sediments, though at times can be found on upper Permian escarpment slopes that have a prominent component of sandstone talus. It spans an elevation range of 200-500 metres above sea level and receives between 590 and 750 millimetres of mean annual rainfall. It is most prominent on exposed aspects, but can be found on semi-sheltered sites where the environment remains dry and rocky. In the study area it is common on the lower ridges and slopes east and west of the Widden valley.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	13 m ±4 8-20	52% ± 26 10-95	*Eucalyptus fibrosa, Eucalyptus punctata, Eucalyptus sideroxylon, Eucalyptus sparsifolia*
Small Trees	4 m ±2 3-10	19% ± 14 5-50	*Acacia linearifolia, Acacia crassa* subsp. *crassa, Acacia penninervis*
Shrubs	2.2 m ±0.7 1.5-3.5	44% ±23 15-85	*Phebalium squamulosum, Acrotriche rigida, Dodonaea viscosa, Acacia uncinata, Persoonia linearis, Bursaria spinosa, Cassinia cunninghamii, Hovea lanceolata, Macrozamia communis, Choretrum* sp. A*, Leucopogon muticus*
Ground Covers	0.4 m ±0.1 0.4-0.6	25% ±23 5-85	*Cleistochloa rigida, Lepidosperma gunnii, Lomandra confertifolia, Lomandra glauca, Entolasia stricta, Goodenia rotundifolia, Cheilanthes distans, Dianella caerulea Digitaria ramularis, Pomax umbellata, Cheilanthes sieberi*
Vines & Climbers	N/A	N/A	*Hardenbergia violacea, Clematis glycinoides* var. *glycinoides*

*Compiled from 12 of 12 sites with structural data recorded.

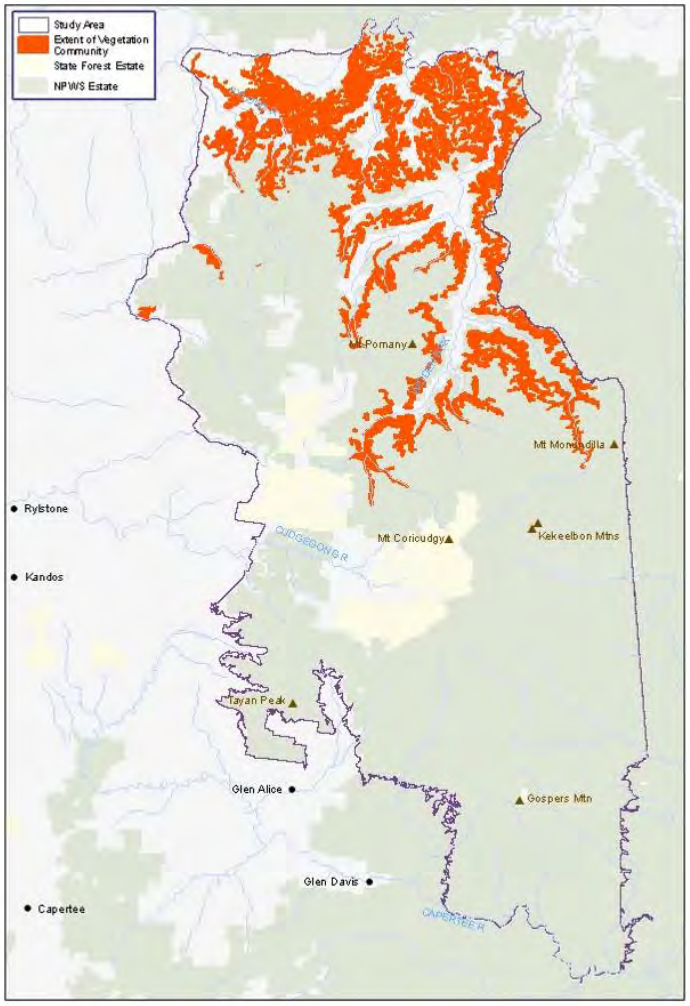
Threats

Threats associated with clearing and human-related land use are restricted by the rugged and infertile environment in which this community occurs. Some stands on lower slopes fringe open grazing lands and as a result may be subject to low-intensity grazing, dissection by tracks and trails and more frequent fire.

Conservation Status

This community is well represented in Wollemi NP, Manobalai NR and eastern Goulburn River NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	24,957-26,343 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	12,127.0 ha	17,127 ha 72% of extant area
Area in state forests	111.5 ha	Not available
Area in other tenures	1470.7 ha	Not available
Total extant area	13,709.1 ha	23,709 ha



Example Locations

- Coxs Gap, north-west Wollemi NP
- Plateau above Widden valley, north-west Wollemi NP

Species Richness

Number of plots	12
Total species	153
Average species per plot	31.9 ±6.7

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this community is closely related to other eucalypt forests and woodlands of the dry north-west sandstone plateaux of the Sydney basin. It is closely related to S_DSF63 into which it grades with increasing shelter and/or deeper soils. In this gradation, ironbark species become less frequently recorded and replaced by *Eucalyptus sparsifolia* and *Eucalyptus punctata*.

At slightly higher elevations on skeletal soils on very rocky outcrops and slopes this community grades into S_DSF60 and S_DSF61. The former is an open dry forest found on exposed locations dominated by *E. punctata* and *E. sparsifolia*. S_DSF61 is a low woodland or scrub with a mixed canopy comprising eucalypts, cypress and tall wattles.

Accuracy

Sample density is high. Mapped domains are extracted from elevation, rainfall and geology data from sample sites. Map unit boundaries are based on the interpretation of *Eucalyptus fibrosa* dominated forests on Narrabeen sandstone ridges and slopes near the interface of the Permian valleys.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia crassa* subsp. *crassa	**3**	**46%**	**2**	**1%**	**positive**
Acacia doratoxylon	1	23%	2	6%	uninformative
Acacia linearifolia	1	77%	2	5%	uninformative
Acacia penninervis var. *penninervis*	3	31%	1	5%	uninformative
Acacia uncinata	**2**	**38%**	**2**	**8%**	**positive**
Acrotriche rigida	1	69%	1	7%	uninformative
Allocasuarina littoralis	1	31%	1	11%	uninformative
Aristida ramosa	**2**	**38%**	**2**	**10%**	**positive**
Aristida vagans	2	15%	2	7%	uninformative
Astrotricha longifolia	1	15%	1	3%	uninformative
Bertya oblonga	**1**	**8%**	**0**	**0%**	**positive**
Bertya oleifolia	**1**	**8%**	**0**	**0%**	**positive**
Beyeria viscosa	**1**	**8%**	**0**	**0%**	**positive**
Billardiera scandens	1	46%	1	23%	uninformative
Boronia anethifolia	1	15%	1	4%	uninformative
Bursaria longisepala	1	15%	1	1%	uninformative
Bursaria spinosa subsp. *spinosa*	1	54%	2	24%	uninformative
Callistemon salignus	1	15%	3	1%	uninformative
Calytrix tetragona	1	15%	2	10%	uninformative
Cassinia cunninghamii	**2**	**38%**	**1**	**6%**	**positive**
Cassinia decipiens	2	15%	1	1%	uninformative
Cheilanthes distans	**2**	**62%**	**1**	**3%**	**positive**
Cheilanthes sieberi subsp. *sieberi*	2	31%	1	19%	uninformative
Choretrum sp. *A*	1	23%	1	7%	uninformative
Cleistochloa rigida	**2**	**85%**	**2**	**8%**	**positive**
Clematis aristata	1	23%	1	27%	uninformative
Correa reflexa	1	23%	1	7%	uninformative
Cryptandra spinescens	1	23%	2	2%	uninformative
Cymbopogon refractus	1	31%	2	3%	uninformative
Daviesia genistifolia	1	38%	1	4%	uninformative
Dianella caerulea	1	54%	1	31%	uninformative
Dianella revoluta var. *revoluta*	1	31%	1	28%	uninformative
Dichondra repens	2	15%	2	28%	uninformative
Digitaria ramularis	1	54%	1	4%	uninformative
Dodonaea triangularis	3	31%	1	1%	uninformative
Dodonaea viscosa	**2**	**62%**	**2**	**10%**	**positive**
Entolasia stricta	1	69%	2	31%	uninformative
Eucalyptus crebra	4	31%	3	6%	uninformative
Eucalyptus fibrosa	**3**	**92%**	**3**	**5%**	**positive**
Eucalyptus punctata	**3**	**46%**	**3**	**32%**	**positive**
Eucalyptus sideroxylon	4	31%	3	2%	uninformative
Eucalyptus sparsifolia	2	31%	3	28%	uninformative
Exocarpos cupressiformis	1	23%	1	5%	uninformative
Gahnia aspera	2	15%	1	6%	uninformative
Goodenia rotundifolia	**2**	**62%**	**1**	**3%**	**positive**
Goodenia stephensonii	1	38%	2	1%	uninformative
Grevillea johnsonii	1	15%	1	1%	uninformative
Haloragis aspera	**1**	**8%**	**0**	**0%**	**positive**
Haloragis serra	1	15%	2	3%	uninformative
Hardenbergia violacea	1	38%	1	25%	uninformative
Hovea lanceolata	**2**	**38%**	**1**	**6%**	**positive**
Isopogon dawsonii	1	23%	1	8%	uninformative
Joycea pallida	1	38%	2	14%	uninformative
Lepidosperma gunnii	**2**	**85%**	**2**	**11%**	**positive**
Lepidosperma laterale	1	23%	1	24%	uninformative
Leptospermum trinervium	1	15%	2	14%	uninformative
Leucopogon muticus	2	15%	2	24%	uninformative
Lomandra confertifolia	**2**	**77%**	**2**	**31%**	**positive**
Lomandra filiformis	1	23%	2	18%	uninformative
Lomandra glauca	**2**	**85%**	**2**	**28%**	**positive**
Lomandra multiflora subsp. *multiflora*	1	23%	1	25%	uninformative
Macrozamia reducta	1	23%	1	10%	uninformative
Maytenus silvestris	1	31%	1	5%	uninformative
Olearia ramulosa	1	15%	1	2%	uninformative
Oxalis perennans	1	15%	1	10%	uninformative
Panicum simile	2	15%	2	2%	uninformative
Persoonia linearis	1	69%	1	54%	uninformative
Phebalium squamulosum	**4**	**62%**	**2**	**9%**	**positive**
Phyllanthus hirtellus	1	62%	2	21%	uninformative
Plantago debilis	1	23%	2	13%	uninformative
Platysace ericoides	1	31%	2	22%	uninformative
Podolobium ilicifolium	2	15%	2	30%	uninformative
Pomax umbellata	1	23%	2	33%	uninformative
Poranthera corymbosa	1	23%	1	5%	uninformative
Prostanthera prunelloides	4	15%	3	1%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Pultenaea spinosa	2	23%	1	1%	uninformative
Sida filiformis	1	31%	1	0%	uninformative
Sida trichopoda	**1**	**8%**	**0**	**0%**	**positive**
Solanum campanulatum	1	23%	1	3%	uninformative

Statewide Class
Western Slopes Dry Sclerophyll Forests

Plant Community Type: Gum-Narrow-leaved Stringybark-Ironbark Woodland on ridges of the upper Hunter Valley, Sydney Basin (No. 528)

Description

Western Hunter Grey Gum-Stringybark Forest is a moderately tall eucalypt forest with a dry shrubby understorey and sparse rocky ground cover. It is found on the rugged and dry exposed slopes and ridges along the north-west sandstone plateaux of the Sydney basin. Narrow-leaved stringybark (*Eucalyptus sparsifolia*) and grey gum (*Eucalyptus punctata*) consistently dominate the canopy, with red ironbark (*Eucalyptus fibrosa*) occurring less frequently. The understorey is marked by a sparse to open cover of dry shrubs that comprise species typical of the infertile dry Narrabeen sandstone environment. This includes geebung (*Persoonia linearis*), wild shaggy pea (*Podolobium ilicifolium*), cone bush (*Isopogon dawsonii*), blunt beard-heath (*Leucopogon muticus*) and scaly phebalium (*Phebalium squamulosum*). Several other genera are also regularly recorded including wattles (*Acacia* spp.), peas (*Pultenaea* spp., *Dillwynia* spp.) and grevilleas (*Grevillea* spp.). The ground cover is marked by a shallow sandy soil which carries only a low percentage cover of vegetation. There is more often an even cover of leaf litter and scattered broken rock. Hardy grasses such as *Cleistochloa rigida* and wiry panic (*Entolasia stricta*) persist in isolated patches.

This forest is extensive across the dry Narrabeen sandstone plateaux north and north-east of Nullo Mountain where it extends toward the Goulburn River valley. It can be encountered on exposed slopes, crests and semi-sheltered locations with sites unified by a shallow layer of free-draining soil rather than very exposed skeletal soils associated with rocky outcropping. It occurs at elevations between 290 and 700 metres above sea level although it is most extensive above 450 metres. It receives an average annual rainfall of 600-700 millimetres. In the study area it is common on the ranges above the Widden, Bylong and Goulburn rivers.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	12 m ±3 8-18	56% ±13 25-70	*Eucalyptus punctata, Eucalyptus sparsifolia*
Small Trees	4 m ±2 2-8	38% ± 24 5-85	*Allocasuarina littoralis, Callitris endlicheri, Acacia linearifolia, Acacia crassa* subsp. *crassa*
Shrubs	2.1 m ±1.2 0.8-3.5	49% ±32 15-95	*Persoonia linearis, Leucopogon muticus, Phebalium squamulosum, Isopogon dawsonii, Hovea lanceolata, Acacia buxifolia subsp. buxifolia, Leptospermum parvifolium, Prostanthera prunelloides, Pultenaea flexilis, Podolobium ilicifolium, Grevillea mucronulata*
Ground Covers	0.5 m ±0.1 0.3-0.7	27% ±21 5-65	*Lomandra confertifolia, Cleistochloa rigida, Lomandra glauca, Lepidosperma laterale, Joycea pallida, Poranthera corymbosa, Pomax umbellata, Dampiera lanceolata* var. *lanceolata, Cheilanthes sieberi* subsp. *sieberi*
Vines & Climbers	N/A	N/A	*Hardenbergia violacea*

*Compiled from 14 of 16 sites with structural data recorded.

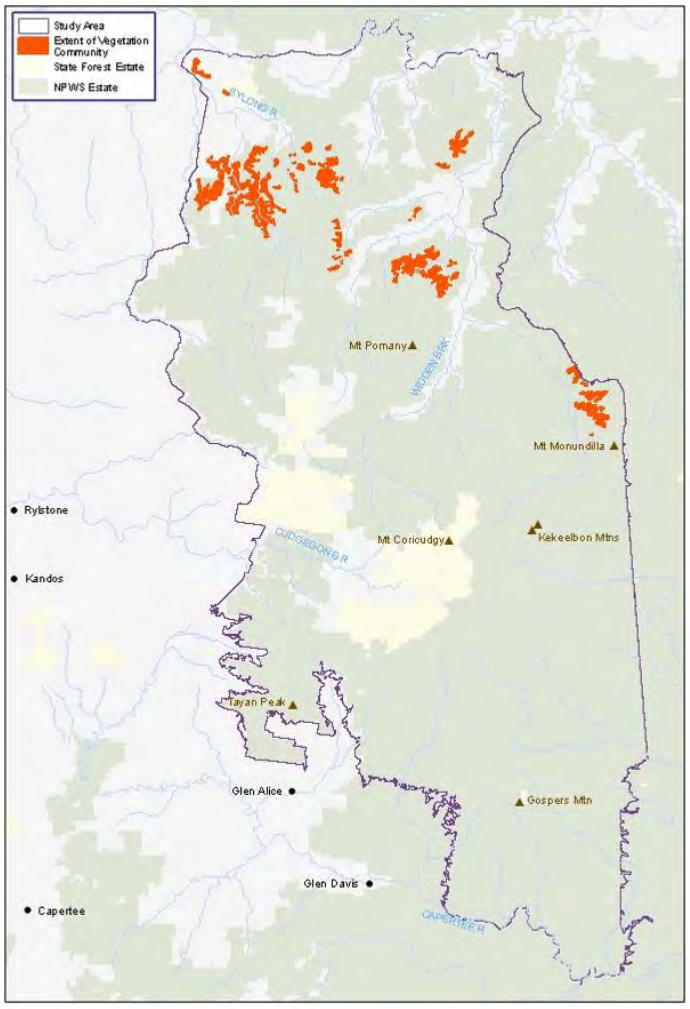
Threats

Threats arising from clearing and associated land use activities are low. The forest occurs on rugged infertile soils and has largely been undisturbed. Stands occurring on or proximate to private tenures may be subject to more frequent fuel reduction burning.

Conservation Status

This community is extensively distributed across northern Wollemi NP, Towarri NP and Manobalai NR.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	13,197-14,846 ha
Estimated percentage cleared	Not available	10-20%
Area in formal conservation reserves	1744.4 ha	6744 ha 57% of extant area
Area in state forests	4.6 ha	Not available
Area in other tenures	128.0 ha	Not available
Total extant area	1877.0 ha	11,877 ha



Example Locations

- Slopes above Lees Creek Road, Wollemi NP
- Puzzle Mountain area, north Wollemi NP
- Slopes and crests on deeper soils on ranges above Widden valley

Species Richness

Number of plots	16
Total species	167
Average species per plot	25.8 ±6.4

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this community forms part of a complex of dry shrubby eucalypt forests and woodlands on the dry northern sandstone plateaux of the Sydney basin. It is very closely related to the dry ironbark forest S_DSF59 found near the steep Hunter escarpment. That community is dominated by *Eucalyptus fibrosa*.

Spatially this community grades into S_DSF63 with increased shelter. This community will also grade into dry rainforests dominated by *Backhousia myrtifolia* (S_RF13) in deep gullies and on steep protected slopes.

Accuracy

Sample density is high. Map domains are based on the elevation, substrate and topographic data of sample sites. Map boundaries are drawn from the interpretation of *Eucalyptus punctata* and *Eucalyptus sparsifolia* dominated forests found on exposed and semi-sheltered aspects on dry Narrabeen sandstone.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia buxifolia* subsp. *buxifolia	**2**	**38%**	**1**	**11%**	**positive**
Acacia doratoxylon	4	13%	2	7%	uninformative
Acacia implexa	1	19%	1	4%	uninformative
Acacia linearifolia	2	13%	2	7%	uninformative
Acacia obliquinervia	2	13%	1	5%	uninformative
Acacia penninervis var. *penninervis*	1	19%	1	5%	uninformative
Acacia uncinata	2	25%	2	8%	uninformative
Acrotriche rigida	3	13%	1	9%	uninformative
Actinotus helianthi	2	13%	1	4%	uninformative
Allocasuarina littoralis	1	38%	1	11%	uninformative
Angophora floribunda	1	19%	2	16%	uninformative
Astrotricha longifolia	1	19%	1	3%	uninformative
Billardiera scandens	1	19%	1	24%	uninformative
Boronia anethifolia	1	19%	1	4%	uninformative
Boronia rubiginosa	2	19%	1	1%	uninformative
Bursaria longisepala	1	13%	1	1%	uninformative
Bursaria spinosa* subsp. *spinosa	**2**	**38%**	**2**	**25%**	**positive**
Callitris endlicheri	1	31%	1	11%	uninformative
Calytrix tetragona	2	13%	2	10%	uninformative
Cassinia cunninghamii	2	19%	1	6%	uninformative
Cassinia quinquefaria	1	13%	2	9%	uninformative
Cassytha glabella f. *glabella*	1	19%	1	8%	uninformative
Cheilanthes sieberi subsp. *sieberi*	1	25%	1	19%	uninformative
Choretrum sp. *A*	1	13%	1	7%	uninformative
Cleistochloa rigida	**2**	**50%**	**2**	**9%**	**positive**
Comesperma ericinum	1	19%	1	3%	uninformative
Correa reflexa	1	13%	1	8%	uninformative
Dampiera lanceolata var. *lanceolata*	2	19%	1	2%	uninformative
Dianella caerulea	1	19%	1	32%	uninformative
Dianella revoluta var. *revoluta*	2	13%	1	28%	uninformative
Dillwynia retorta	1	13%	2	5%	uninformative
Dodonaea boroniifolia	2	25%	2	1%	uninformative
Entolasia stricta	2	13%	2	33%	uninformative
Eucalyptus punctata	**4**	**94%**	**2**	**30%**	**positive**
Eucalyptus rossii	2	19%	3	14%	uninformative
Eucalyptus sparsifolia	**4**	**88%**	**3**	**25%**	**positive**
Exocarpos cupressiformis	1	25%	1	5%	uninformative
Exocarpos strictus	1	13%	1	17%	uninformative
Gonocarpus elatus	2	13%	2	1%	uninformative
Gonocarpus tetragynus	3	13%	2	13%	uninformative
Gonocarpus teucrioides	2	13%	2	15%	uninformative
Goodenia decurrens	3	19%	2	4%	uninformative
Goodenia heterophylla	2	13%	2	11%	uninformative
Goodenia ovata	3	13%	1	6%	uninformative
Grevillea mucronulata	2	25%	1	6%	uninformative
Hakea dactyloides	2	13%	1	19%	uninformative
Hardenbergia violacea	1	13%	1	26%	uninformative
Hibbertia circumdans	1	19%	1	13%	uninformative
Homoranthus cernuus	2	19%	2	1%	uninformative
Hovea lanceolata	2	25%	1	6%	uninformative
Isopogon dawsonii	1	44%	1	7%	uninformative
Joycea pallida	**2**	**38%**	**2**	**14%**	**positive**
Lepidosperma gunnii	1	13%	2	13%	uninformative
Lepidosperma laterale	**2**	**50%**	**1**	**23%**	**positive**
Lepidosperma urophorum	1	19%	1	4%	uninformative
Leptospermum parvifolium	1	31%	2	11%	uninformative
Leptospermum sphaerocarpum	1	25%	2	14%	uninformative
Leptospermum squarrosum	**1**	**6%**	**0**	**0%**	**positive**
Leptospermum trinervium	3	19%	2	14%	uninformative
Leucopogon muticus	**3**	**44%**	**2**	**23%**	**positive**
Logania albiflora	1	25%	1	3%	uninformative
Lomandra confertifolia	**2**	**100%**	**2**	**30%**	**positive**
Lomandra filiformis	2	25%	2	17%	uninformative
Lomandra glauca	**2**	**38%**	**2**	**30%**	**positive**
Lomandra multiflora subsp. *multiflora*	1	19%	1	25%	uninformative
Melaleuca erubescens	**1**	**6%**	**0**	**0%**	**positive**
Persoonia linearis	1	81%	1	54%	uninformative
Phebalium squamulosum	**2**	**50%**	**3**	**9%**	**positive**
Philotheca ericifolia	**1**	**6%**	**0**	**0%**	**positive**
Philotheca myoporoides	1	25%	3	1%	uninformative
Philotheca salsolifolia	2	25%	2	5%	uninformative
Phyllanthus hirtellus	1	31%	2	22%	uninformative
Platysace ericoides	1	25%	2	22%	uninformative
Platysace lanceolata	1	13%	2	17%	uninformative
Poa affinis	3	13%	2	14%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Podolobium ilicifolium	2	19%	2	30%	uninformative
Pomax umbellata	1	31%	2	33%	uninformative
Poranthera corymbosa	1	31%	1	4%	uninformative
Prostanthera prunelloides	4	25%	3	1%	uninformative
Pultenaea flexilis	2	25%	3	3%	uninformative
Pultenaea scabra	2	13%	2	7%	uninformative
Stylidium laricifolium	**3**	**13%**	**0**	**0%**	**positive**
Stypandra glauca	2	19%	1	7%	uninformative
Styphelia triflora	2	13%	1	13%	uninformative
Xanthorrhoea glauca	**1**	**6%**	**0**	**0%**	**positive**
Zieria cytisoides	1	13%	1	1%	uninformative

Statewide Class
Western Slopes Dry Sclerophyll Forests

Plant Community Type: Dwyer's Red Gum low woodland on exposed sandstone ridges of the upper Hunter Valley, Sydney Basin

Description

Western Hunter Dwyer's Red Gum-Cypress Woodland is a low woodland with a mixed canopy of eucalypts, cypress and wattle, an understorey of heathy shrubs and a sparse ground cover. The canopy has an uneven height, with some taller eucalypts such as brown bloodwood (*Corymbia trachyphloia*) and ironbarks (including *Eucalyptus fibrosa*) found above the sprawling mallee-like Dwyer's red gum (*Eucalyptus dwyeri*). The conical crowns of black cypress pine (*Callitris endlicheri*) are common, as are taller wattles such as currawang (*Acacia doratoxylon*) or *Acacia crassa* subsp. *crassa.* An open cover of chest-high heathy shrubs is prominent including tea-trees (*Leptospermum* spp.), cone bush (*Isopogon dawsonii*), beard-heath (*Leucopogon muticus*), common fringe myrtle (*Calytrix tetragona*) and geebung (*Persoonia linearis*). The ground layer is characterised by exposed rock plates, boulders and benches, on which only a scatter of hardy grasses such as *Cleistochloa rigida* and herbs such as *Pomax umbellata* are found.

This dry woodland occurs on the Narrabeen sandstone ranges of the Goulburn River catchment between Bylong and Denman. It spans an elevation of between 260 and 450 metres above sea level and occurs within some of the driest areas of the Sydney Basin Bioregion where average annual rainfall falls to 550-700 millimetres. The study area encompasses a substantial proportion of the known extent of this community on the exposed ranges of northern Wollemi NP between Bylong and Widden valley. It extends easterly into the adjoining parts of Wollemi NP and north into eastern Goulburn River NP.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	10 m ±2 7-12	46% ±21 15-85	*Callitris endlicheri, Corymbia trachyphloia, Eucalyptus dwyeri, Eucalyptus fibrosa, Eucalyptus sparsifolia, Eucalyptus caleyi, Eucalyptus sideroxylon*
Small Trees	4 m ±1 3-6	39% ±20 10-75	*Leptospermum trinervium, Acacia doratoxylon, Allocasuarina littoralis, Callitris gracilis* subsp. *gracilis*
Shrubs	2.3 m ±0.8 1.5-3.0	32% ±15 15-45	*Leucopogon muticus, Calytrix tetragona, Leptospermum parvifolium, Isopogon dawsonii, Hovea lanceolata, Persoonia linearis, Boronia anethifolia, Platysace lanceolata, Dodonaea triangularis*
Ground Covers	0.5 m ±0.1 0.3-0.8	25% ±31 2-85	*Cleistochloa rigida, Lepidosperma laterale, Lomandra glauca, Dianella revoluta* var. *revoluta, Pomax umbellata, Cheilanthes sieberi* subsp. *sieberi*
Vines & Climbers	N/A	N/A	

*Compiled from 12 of 12 sites with structural data recorded.

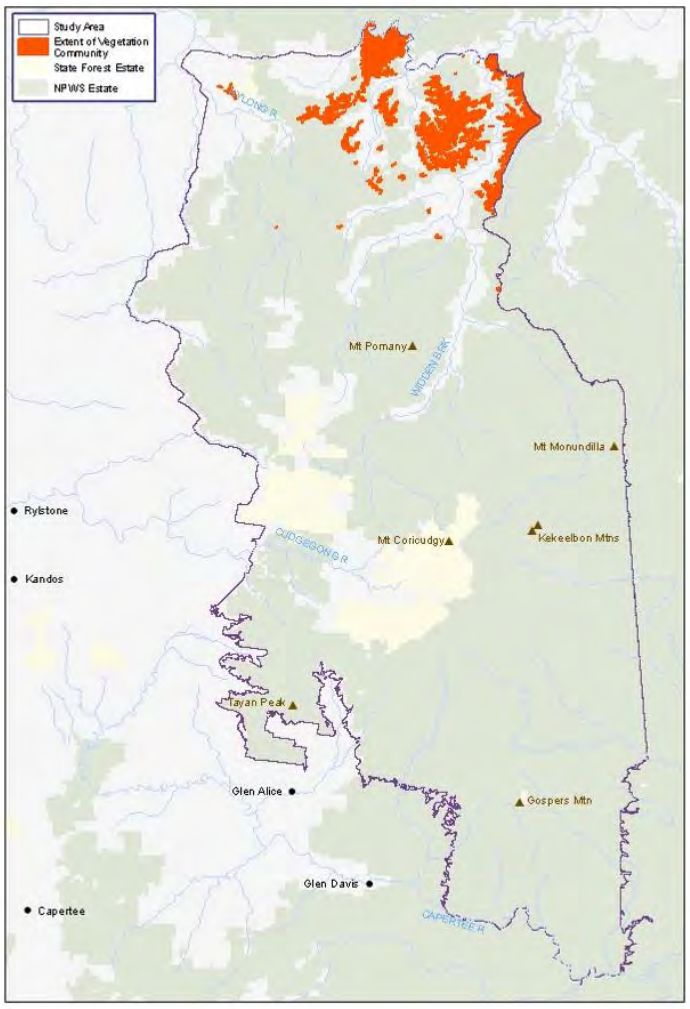
Threats

Threats to this community are considered to be low. The community is associated with rocky infertile sandstone soils of the northern Sydney basin plateaux and hence has not been subject to human land use pressures such as clearing and habitat modification.

Conservation Status

This community is distributed across northern Wollemi NP, Manobalai NR and eastern Goulburn River NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	14,530-15,142 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	4298.9 ha	12,299 ha 85% of extant area
Area in state forests	31.6 ha	Not available
Area in other tenures	54.4 ha	Not available
Total extant area	4384.9 ha	14,385 ha



Example Locations

- Mount Kerrabee above Coxs Gap Tunnel, northern Wollemi NP
- Ridges above Phipps Cutting picnic area, northern Wollemi NP

Species Richness

Number of plots	12
Total species	86
Average species per plot	23.3 ±5.7

Known Variations

Variation occurs in the dominance of canopy species. Some stands exclude eucalypts and may be dominated by taller wattles or cypress pines.

Relationship to Other Communities

Floristically this woodland forms one of several rocky sandstone heath-woodland communities found in the dry climates in the north-west of the Sydney Basin Bioregion. It shares many species with S_DSF57, another exposed woodland, but that community is dominated by the distinctive Caley's ironbark (*Eucalyptus caleyi*). S_DSF61 is also closely related to S_DSF58, but the latter community supports a noticeably denser cover of *Acacia doratoxylon*.

This community grades towards a rocky heath-mallee (S_DSF62) as the soil layer becomes skeletal on massive sandstone rockplates. That latter community can be distinguished by a lower canopy with few eucalypts other than the mallee *Eucalyptus dwyeri*, and a dense heath layer.

Accuracy

Sample density is moderate. Map unit domains are based on the geology, aspect, elevation and rainfall parameters of sample sites. Map unit boundaries are based on the interpretation of mixed low eucalypt, cypress and wattle woodlands on exposed rocky Narrabeen sandstone. Some areas of S_DSF62 may be included within the mapping of this community.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia crassa subsp. *crassa*	2	17%	2	2%	uninformative
Acacia doratoxylon	**2**	**83%**	**2**	**5%**	**positive**
Acacia linearifolia	1	17%	2	7%	uninformative
Acacia penninervis var. *penninervis*	2	17%	1	6%	uninformative
Acacia uncinata	2	17%	2	9%	uninformative
Acrotriche rigida	1	25%	1	8%	uninformative
Allocasuarina littoralis	1	67%	1	10%	uninformative
Aristida ramosa	1	25%	2	11%	uninformative
Bertya linearifolia	**1**	**8%**	**0**	**0%**	**positive**
Boronia anethifolia	1	50%	1	3%	uninformative
Callitris endlicheri	**3**	**67%**	**1**	**10%**	**positive**
Callitris gracilis subsp. *gracilis*	4	33%	2	1%	uninformative
Calytrix tetragona	**2**	**67%**	**2**	**8%**	**positive**
Cassinia cunninghamii	2	25%	1	6%	uninformative
Cheilanthes sieberi subsp. *sieberi*	1	33%	1	19%	uninformative
Cleistochloa rigida	**2**	**92%**	**2**	**8%**	**positive**
Corymbia trachyphloia* subsp. *amphistomatica	**3**	**58%**	**1**	**2%**	**positive**
Dampiera adpressa	1	17%	2	1%	uninformative
Dianella caerulea	2	25%	1	32%	uninformative
Dianella revoluta var. *revoluta*	2	25%	1	28%	uninformative
Digitaria ramularis	1	17%	1	5%	uninformative
Dodonaea triangularis	2	17%	1	2%	uninformative
Dodonaea viscosa	1	42%	2	10%	uninformative
Eucalyptus caleyi subsp. *caleyi*	2	17%	4	2%	uninformative
Eucalyptus crebra	3	17%	3	7%	uninformative
Eucalyptus dwyeri	**2**	**75%**	**2**	**1%**	**positive**
Eucalyptus fibrosa	1	42%	3	7%	uninformative
Eucalyptus sideroxylon	1	25%	3	2%	uninformative
Eucalyptus sparsifolia	2	33%	3	27%	uninformative
Goodenia rotundifolia	1	17%	2	4%	uninformative
Grevillea mucronulata	1	17%	1	7%	uninformative
Hakea dactyloides	1	17%	1	19%	uninformative
Harmogia densifolia	2	17%	2	4%	uninformative
Hibbertia circumdans	1	33%	1	13%	uninformative
Hovea lanceolata	**2**	**50%**	**1**	**6%**	**positive**
Isopogon dawsonii	1	75%	1	6%	uninformative
Kunzea* sp. *'Mt Kaputar'	**4**	**17%**	**0**	**0%**	**positive**
Lepidosperma gunnii	1	17%	2	13%	uninformative
Lepidosperma laterale	**2**	**58%**	**1**	**23%**	**positive**
Leptospermum parvifolium	**2**	**67%**	**3**	**10%**	**positive**
Leptospermum trinervium	**3**	**75%**	**2**	**12%**	**positive**
Leucopogon muticus	**2**	**100%**	**2**	**22%**	**positive**
Lomandra confertifolia	1	25%	2	33%	uninformative
Lomandra glauca	**2**	**50%**	**2**	**29%**	**positive**
Melichrus erubescens	1	17%	1	3%	uninformative
Melichrus urceolatus	1	33%	1	13%	uninformative
Oxylobium pulteneae	1	17%	1	1%	uninformative
Persoonia linearis	1	50%	1	55%	uninformative
Phebalium squamulosum	**3**	**75%**	**2**	**8%**	**positive**
Philotheca salsolifolia	2	33%	2	5%	uninformative
Platysace ericoides	1	17%	2	22%	uninformative
Platysace lanceolata	1	42%	2	16%	uninformative
Pomax umbellata	1	42%	2	33%	uninformative
Solanum campanulatum	1	25%	1	3%	uninformative
Stypandra glauca	1	17%	1	7%	uninformative
Zieria aspalathoides subsp. *aspalathoides*	1	25%	2	1%	uninformative

Statewide Class
Western Slopes Dry Sclerophyll Forests

Plant Community Type:
Common Fringe-myrtle - Babingtonia densifolia - Leptospermum parvifolium low shrubland on sandstone ridges of the upper Hunter, Sydney Basin

Description

Western Hunter Rockplate Heath-Mallee is a low open heath with a sparse cover of low stunted mallee-form eucalypts, wattles and/or cypress pine that is situated on massive sandstone rock plates, benches and outcropping in the far north-west of the Sydney basin. It forms small disjunct patches within a mosaic of taller dry sclerophyll woodlands and forests. This community is one of two communities found in the driest and most impoverished soils of the Sydney Basin Bioregion. The plant assemblage found in these environments has some affinity with Inland Rocky Hill Woodlands (Keith 2004) in western New South Wales. Low-growing shrubs are characterised by common fringe myrtle (*Calytrix tetragona*), tea-trees (*Leptospermum parvifolium* and *L. arachnoides*), *Micromyrtus sessilis* and sometimes the sprawling spurwing wattle (*Acacia triptera*). Mallee eucalypts such as Dwyer's red gum (*Eucalyptus dwyeri*) or the rare *Eucalyptus aenea* may be present, along with stunted brown bloodwood (*Corymbia trachyphloia*), black cypress pine (*Callitris endlicheri*) and currawang (*Acacia doratoxylon*). The rocky ground supports few ground-layer plants except in narrow crevices and depressions where soils accumulate (Bell 1998).

This community extends across the dry Narrabeen sandstones from the far north-west boundary of the Sydney Basin Bioregion near Ulan to the western rim of the Hunter valley near Scone. It spans an elevation range of 200-400 metres above sea level and a mean annual rainfall range of 550-650 millimetres. The study area encompasses small isolated patches of this community along the northern plateaux of Wollemi NP.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees			*Corymbia trachyphloia* subsp. *amphistomatica, Acacia doratoxylon, Eucalyptus dwyeri, Callitris endlicheri*
Shrubs	2.0 m ±0.0 2.0-2.0	65% ±28 45-85	*Calytrix tetragona, Leptospermum parvifolium, Leucopogon muticus, Olax stricta, Isopogon dawsonii*
Ground Covers	0.5 m ±0.3 0.3-0.7	8% ±4 5-10	*Pomax umbellata, Pimelea linifolia, Aristida ramosa* var. *ramosa, Cheilanthes sieberi* subsp. *sieberi, Digitaria ramularis, Gonocarpus elatus, Panicum simile, Philotheca salsolifolia, Stypandra glauca, Eragrostis brownii*
Vines & Climbers	N/A	N/A	

*Compiled from 2 of 3 sites with structural data recorded.

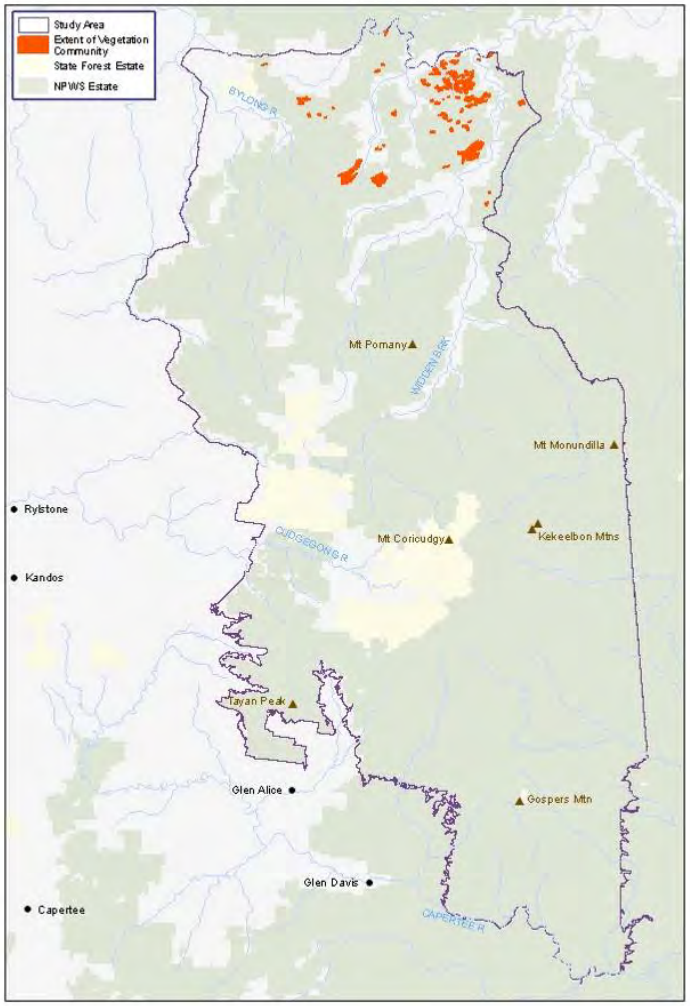
Threats

Frequent intense wildfire occurs across the dry sandstone environments of the north-west Sydney basin. Localised impacts may occur on private lands where the community adjoins rural land uses.

Conservation Status

This community is extensively distributed across northern Wollemi NP, Manobalai NR and eastern Goulburn River NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	1073-1119 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	508.2 ha	1008 ha 95% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	4.5 ha	Not available
Total extant area	512.6 ha	1063 ha



Example Locations

- Rocky ridges above Kerrabee

Species Richness

Number of plots	3
Total species	49
Average species per plot	21.7 ±4.0

Known Variations

The composition and abundance of emergent tree species varies between sites, as does the density of the heath layer. The heath layer may be dominated by an individual species such as *Micromyrtus sessilis* or *Acacia triptera.*

Relationship to Other Communities

Floristically the map unit shares many species with the surrounding forests and woodlands that are found on dry, rocky Narrabeen sandstones of the far north-west Sydney basin (S_DSF57, S_DSF58, and S_DSF61). The height of the upper stratum is one of the most immediate differences between the units, with this unit exhibiting the lowest canopy height and most sparse eucalypt cover. The abundance of *Calytrix tetragona* and *Leptospermum parvifolium* also help to distinguish this unit from other units found on dry rocky outcrops.

Spatially the unit grades into dry rocky woodlands (S_DSF61 and S_DSF57) as soil depth increases. This can occur over relatively short distances.

Accuracy

Sample density is moderate. Mapping domains were based on elevation, mean annual rainfall and geology of sample sites. Map unit boundaries relied on the interpretation of exposed rocky Narrabeen sandstone with low-growing woody vegetation. There are a number of different communities that occupy these environments and they are not always separable from one another using environmental predictors or stereoscopic interpretation of aerial photography. As a result map unit boundaries may include small areas of units S_DSF61 and S_DSF57.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia doratoxylon	2	33%	2	7%	uninformative
Acacia uncinata	1	33%	2	9%	uninformative
Actinotus gibbonsii	2	33%	1	0%	uninformative
Allocasuarina distyla	2	33%	2	1%	uninformative
Aristida ramosa	1	67%	2	11%	uninformative
Boronia anethifolia	1	33%	1	4%	uninformative
Calytrix tetragona	**4**	**100%**	**2**	**9%**	**positive**
Cassytha glabella f. *glabella*	1	33%	1	8%	uninformative
Caustis flexuosa	2	33%	1	12%	uninformative
Cheilanthes distans	2	33%	1	5%	uninformative
Cheilanthes sieberi subsp. *sieberi*	2	33%	1	19%	uninformative
Corymbia trachyphloia subsp. *amphistomatica*	1	100%	2	3%	uninformative
Digitaria ramularis	1	67%	1	5%	uninformative
Dodonaea boroniifolia	2	33%	2	2%	uninformative
Eragrostis brownii	1	33%	2	0%	uninformative
Exocarpos cupressiformis	1	33%	1	5%	uninformative
Gonocarpus elatus	**2**	**67%**	**1**	**1%**	**positive**
Grevillea mucronulata	1	33%	1	7%	uninformative
Harmogia densifolia	2	33%	2	4%	uninformative
Hibbertia circumdans	2	33%	1	13%	uninformative
Hibbertia monogyna	2	33%	1	3%	uninformative
Isopogon dawsonii	1	33%	1	8%	uninformative
Lepidosperma laterale	1	33%	1	24%	uninformative
Leptospermum parvifolium	**4**	**100%**	**2**	**11%**	**positive**
Leucopogon muticus	1	100%	2	23%	uninformative
Leucopogon neoanglicus	**3**	**33%**	**0**	**0%**	**positive**
Lomandra glauca	2	33%	2	30%	uninformative
Melichrus erubescens	2	33%	1	3%	uninformative
Mirbelia pungens	1	33%	1	0%	uninformative
Olax stricta	1	67%	1	2%	uninformative
Oxalis perennans	1	33%	1	10%	uninformative
Oxylobium pulteneae	1	33%	1	1%	uninformative
Panicum simile	2	33%	2	2%	uninformative
Phebalium squamulosum	1	33%	2	10%	uninformative
Philotheca salsolifolia	1	67%	2	5%	uninformative
Pimelea linifolia	**2**	**100%**	**2**	**11%**	**positive**
Platysace lanceolata	3	33%	2	17%	uninformative
Pomax umbellata	**2**	**100%**	**2**	**33%**	**positive**
Prostanthera howelliae	**2**	**33%**	**0**	**0%**	**positive**
Stypandra glauca	**2**	**67%**	**1**	**7%**	**positive**
Tripogon loliiformis	2	33%	3	0%	uninformative
Wahlenbergia gracilis	1	33%	1	5%	uninformative
Wahlenbergia stricta	1	33%	1	3%	uninformative

Statewide Class Western Slopes Dry Sclerophyll Forests

Plant Community Type: Not described

Description

Western Hunter Stringybark-Ironbark Sheltered Forest is a moderately tall eucalypt forest with a dry shrubby understorey that is found on sheltered slopes of the rugged and dry north-west sandstone plateaux of the Sydney basin. Stringybarks (*Eucalyptus sparsifolia/E. agglomerata*) are invariably present and red ironbark (*Eucalyptus fibrosa*) may dominate the canopy. Grey gum (*Eucalyptus punctata*) is a common associate tree. A sparse layer of smaller trees such as black she-oak (*Allocasuarina littoralis*) and narrow-leaved wattle (*Acacia linearifolia*) occurs just below the eucalypt layer. At times the understorey may grade towards dense low thickets of grey myrtle (*Backhousia myrtifolia*). An open cover of sclerophyllous shrubs regularly includes combinations of geebung (*Persoonia linearis*), wild shaggy pea (*Podolobium ilicifolium*), blunt beard-heath (*Leucopogon muticus*) and gold dust wattle (*Acacia uncinata*). The ground layer features a moderate cover of grasses, herbs and small ferns. Tussocks of wallaby grass (*Joycea pallida*) are often most prominent, and when flowering these grasses may reach the height of the shrub layer.

This forest is found on the dry Narrabeen sandstone plateaux north of Nullo Mountain and the Hunter Range watershed, where it extends north toward the Goulburn River valley. It is encountered on steep sheltered rocky slopes as well as some crests with deeper soils. It occurs at elevations between 350 and 650 metres above sea level although it is most extensive above 450 metres. It receives an average annual rainfall of 650-750 millimetres. In the study area it is common on the ranges above the Widden, Bylong and Goulburn rivers.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	19 m ±4 12-24	41% ±13 30-65	*Eucalyptus punctata, Eucalyptus sparsifolia, Eucalyptus fibrosa*
Small Trees	5 m ±2 3-8	28% ±21 10-70	*Backhousia myrtifolia, Leptospermum trinervium, Callitris endlicheri, Acacia linearifolia*
Shrubs	1.8 m ±0.6 0.8-2.5	34% ±17 10-55	*Persoonia linearis, Podolobium ilicifolium, Platysace ericoides, Acacia uncinata, Correa reflexa* var. *reflexa, Grevillea mucronulata, Cassinia quinquefaria, Leucopogon muticus, Phebalium squamulosum, Pultenaea flexilis, Melichrus urceolatus*
Ground Covers	0.5 m ±0.2 0.1-1.0	29% ±24 5-85	*Joycea pallida, Lepidosperma gunnii, Lomandra confertifolia, Dianella revoluta* var. *revoluta, Poa affinis, Cheilanthes sieberi* subsp. *sieberi, Phyllanthus hirtellus, Pomax umbellata, Entolasia stricta, Lepidosperma laterale*
Vines & Climbers	N/A	N/A	*Hardenbergia violacea*

*Compiled from 10 of 10 sites with structural data recorded.

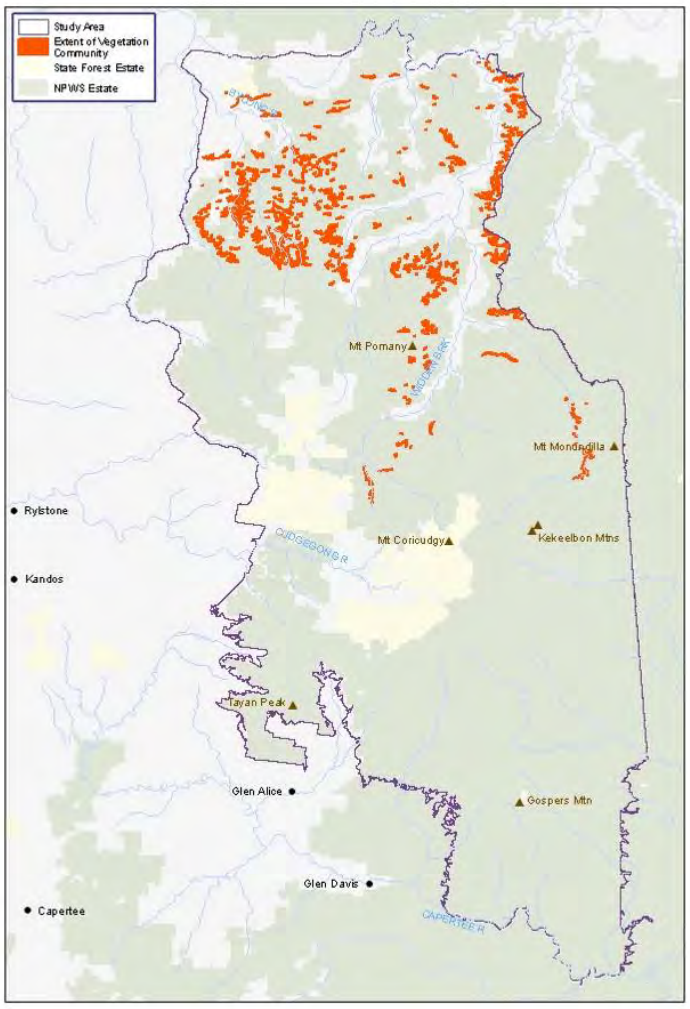
Threats

Threats arising from clearing and associated land use activities are low. This forest occurs on rugged infertile soils and has largely been undisturbed. Stands occurring on or proximate to private tenures may be subject to more frequent fuel reduction burning.

Conservation Status

This community is extensively distributed across northern Wollemi NP and eastern Goulburn River NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	6144-6485 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	2250.0 ha	4750 ha 81% of extant area
Area in state forests	6.8 ha	Not available
Area in other tenures	79.7 ha	Not available
Total extant area	2336.4 ha	5836 ha



Example Locations

- Sheltered slopes of Baerami Trig
- Sheltered slopes and crests on deeper soils on ranges above the Widden valley

Species Richness

Number of plots	10
Total species	145
Average species per plot	37.7 ±5.9

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this community forms part of the dry shrubby eucalypt forests and woodlands of the northern sandstone plateaux of the Sydney basin. It grades into S_DSF60 on exposed aspects and ridges. While canopy composition is shared between the two communities, S_DSF60 features a sparser ground cover and a greater component of heathy shrubs. With increasing shelter S_DSF63 grades into a layered eucalypt and rainforest assemblage that is dominated by *Backhousia myrtifolia* (S_RF13).

Accuracy

Sample density is low. Map unit domains are based on the elevation, substrate and aspect of sample sites. Map unit boundaries are drawn from the interpretation of *Eucalyptus punctata*, *Eucalyptus sparsifolia/E. agglomerata* and *E. fibrosa* forests on sheltered Narrabeen sandstone.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia buxifolia subsp. *buxifolia*	2	20%	1	12%	uninformative
Acacia decora	1	10%	2	4%	uninformative
Acacia linearifolia	1	30%	2	7%	uninformative
Acacia linifolia	2	10%	1	6%	uninformative
Acacia obliquinervia	1	10%	2	5%	uninformative
Acacia penninervis var. *penninervis*	1	20%	2	6%	uninformative
Acacia saliciformis	1	10%	1	7%	uninformative
Acacia salicina	**2**	**10%**	**0**	**0%**	**positive**
Acacia ulicifolia	1	10%	1	11%	uninformative
Acacia uncinata	**2**	**60%**	**2**	**8%**	**positive**
Acrotriche rigida	1	40%	1	8%	uninformative
Allocasuarina littoralis	1	50%	1	11%	uninformative
Amyema miquelii	1	10%	1	1%	uninformative
Angophora costata	3	20%	3	3%	uninformative
Aristida ramosa	2	20%	2	11%	uninformative
Aristida vagans	2	10%	2	7%	uninformative
Asplenium flabellifolium	1	10%	1	12%	uninformative
Astrotricha longifolia	1	40%	1	3%	uninformative
Backhousia myrtifolia	2	30%	4	4%	uninformative
Billardiera scandens	**2**	**60%**	**1**	**23%**	**positive**
Boronia anethifolia	1	10%	1	4%	uninformative
Brachyloma daphnoides	1	10%	1	14%	uninformative
Brachyscome multifida	1	10%	1	2%	uninformative
Breynia oblongifolia	1	10%	1	3%	uninformative
Bursaria longisepala	1	10%	1	2%	uninformative
Bursaria spinosa subsp. *spinosa*	1	40%	2	25%	uninformative
Callitris endlicheri	1	30%	1	12%	uninformative
Cassinia cunninghamii	1	30%	2	6%	uninformative
Cassinia quinquefaria	**2**	**40%**	**2**	**9%**	**positive**
Cassytha glabella f. *glabella*	1	10%	1	8%	uninformative
Cheilanthes distans	2	10%	1	5%	uninformative
Cheilanthes sieberi* subsp. *sieberi	**2**	**70%**	**1**	**18%**	**positive**
Choretrum sp. *A*	1	30%	1	7%	uninformative
Cleistochloa rigida	2	20%	2	10%	uninformative
Clematis aristata	1	10%	1	27%	uninformative
Coopernookia barbata	2	10%	1	3%	uninformative
Correa reflexa	1	60%	1	7%	uninformative
Corymbia trachyphloia subsp. *amphistomatica*	2	10%	2	3%	uninformative
Dampiera lanceolata var. *lanceolata*	3	10%	1	3%	uninformative
Daviesia acicularis	2	10%	1	1%	uninformative
Daviesia genistifolia	1	10%	1	5%	uninformative
Dianella revoluta* var. *revoluta	**2**	**100%**	**1**	**26%**	**positive**
Dichelachne micrantha	1	10%	1	9%	uninformative
Dichondra repens	2	10%	2	28%	uninformative
Dillwynia rudis	3	10%	2	4%	uninformative
Dodonaea triquetra	1	10%	2	4%	uninformative
Dodonaea truncatiales	2	10%	3	1%	uninformative
Dodonaea viscosa	2	30%	2	11%	uninformative
Drosera auriculata	1	10%	2	1%	uninformative
Entolasia stricta	**2**	**60%**	**2**	**32%**	**positive**
Eucalyptus agglomerata	3	10%	2	5%	uninformative
Eucalyptus crebra	1	50%	3	6%	uninformative
Eucalyptus fibrosa	**4**	**80%**	**3**	**6%**	**positive**
Eucalyptus punctata	**2**	**90%**	**3**	**31%**	**positive**
Eucalyptus sparsifolia	**3**	**90%**	**3**	**26%**	**positive**
Exocarpos strictus	1	10%	1	17%	uninformative
Gahnia aspera	2	10%	1	7%	uninformative
Galium binifolium	2	20%	2	4%	uninformative
Galium gaudichaudii	2	20%	2	4%	uninformative
Gonocarpus teucrioides	2	20%	2	14%	uninformative
Goodenia heterophylla	2	30%	2	11%	uninformative
Goodenia ovata	1	10%	1	6%	uninformative
Goodenia rotundifolia	1	30%	2	4%	uninformative
Goodenia stephensonii	1	10%	2	2%	uninformative
Grevillea mucronulata	1	70%	1	6%	uninformative
Grevillea triternata	2	10%	1	1%	uninformative
Hakea dactyloides	**2**	**40%**	**1**	**18%**	**positive**
Hardenbergia violacea	1	70%	1	24%	uninformative
Hibbertia acicularis	1	10%	1	7%	uninformative
Hibbertia circumdans	2	20%	1	13%	uninformative
Hibbertia obtusifolia	2	20%	1	5%	uninformative
Hovea lanceolata	1	40%	2	6%	uninformative
Hovea linearis	1	20%	1	8%	uninformative
Hybanthus monopetalus	2	10%	1	3%	uninformative
Isotoma axillaris	1	10%	1	1%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Joycea pallida	**3**	**90%**	**2**	**13%**	**positive**
Lasiopetalum ferrugineum	2	10%	1	1%	uninformative
Lepidosperma gunnii	**2**	**80%**	**1**	**11%**	**positive**
Lepidosperma laterale	2	30%	1	24%	uninformative
Leptospermum sphaerocarpum	1	10%	2	14%	uninformative
Leptospermum trinervium	2	20%	2	14%	uninformative
Leucopogon muticus	**2**	**50%**	**2**	**23%**	**positive**
Lindsaea microphylla	1	10%	1	2%	uninformative
Lissanthe strigosa	1	10%	1	1%	uninformative
Logania albiflora	1	30%	1	3%	uninformative
Lomandra confertifolia	**2**	**70%**	**2**	**32%**	**positive**
Lomandra filiformis	**2**	**60%**	**2**	**17%**	**positive**
Lomandra glauca	1	30%	2	30%	uninformative
Lomandra gracilis	1	10%	2	1%	uninformative
Lomandra multiflora subsp. *multiflora*	2	10%	1	26%	uninformative
Lomatia silaifolia	1	20%	2	22%	uninformative
Macrozamia reducta	1	70%	1	9%	uninformative
Marsdenia suaveolens	**1**	**10%**	**0**	**0%**	**positive**
Maytenus silvestris	1	40%	1	5%	uninformative
Melichrus erubescens	1	20%	1	3%	uninformative
Melichrus urceolatus	2	20%	1	13%	uninformative
Microlaena stipoides	1	10%	2	28%	uninformative
Monotoca scoparia	1	30%	2	24%	uninformative
Notelaea longifolia	1	10%	1	9%	uninformative
Notodanthonia longifolia	2	10%	2	4%	uninformative
Olearia ramulosa	1	20%	1	2%	uninformative
Opercularia hispida	2	20%	2	2%	uninformative
Oxalis chnoodes	2	10%	1	3%	uninformative
Oxalis perennans	1	20%	1	10%	uninformative
Oxylobium pulteneae	1	10%	1	2%	uninformative
Ozothamnus diosmifolius	2	10%	1	3%	uninformative
Pandorea pandorana	1	40%	1	8%	uninformative
Panicum simile	2	10%	2	2%	uninformative
Patersonia sericea	1	20%	2	20%	uninformative
Persoonia linearis	1	100%	1	54%	uninformative
Phebalium squamulosum	3	20%	2	10%	uninformative
Phyllanthus hirtellus	**2**	**80%**	**2**	**21%**	**positive**
Platysace ericoides	1	90%	2	20%	uninformative
Platysace lanceolata	1	10%	2	17%	uninformative
Poa affinis	**2**	**40%**	**2**	**13%**	**positive**
Podolobium ilicifolium	**2**	**100%**	**2**	**28%**	**positive**
Pomax umbellata	**2**	**70%**	**2**	**32%**	**positive**
Poranthera corymbosa	1	20%	1	5%	uninformative
Poranthera microphylla	1	30%	1	13%	uninformative
Pultenaea flexilis	1	30%	3	3%	uninformative
Pultenaea spinosa	1	10%	2	1%	uninformative
Senecio bathurstianus	1	10%	1	1%	uninformative
Solanum prinophyllum	1	10%	1	11%	uninformative
Styphelia triflora	1	20%	1	13%	uninformative
Tetratheca decora	**2**	**10%**	**0**	**0%**	**positive**
Wahlenbergia stricta	1	10%	1	3%	uninformative
Xanthorrhoea johnsonii	1	30%	1	1%	uninformative

Statewide Class: Sydney Hinterland Dry Sclerophyll Forests
Plant Community Type: Not described

Description

Wolgan Plateau Grey Gum-Stringybark Woodland is a moderately tall eucalypt woodland with an open heathy understorey that is found along the sandstone ranges of the western Blue Mountains. The canopy consistently includes narrow-leaved stringybark (*Eucalyptus sparsifolia*) and grey gum (*Eucalyptus punctata*), with scattered areas of inland scribbly gum (*Eucalyptus rossii*) and yertchuk (*Eucalyptus consideniana*) that can be locally dominant. Near the major western escarpment of the plateaux cypress pines (*Callitris* spp.) are prevalent at cliff edges and a number of other interesting eucalypt species have been recorded including the tablelands stringybark (*Eucalyptus tenella*) and outlying westerly stands of narrow-leaved apple (*Angophora bakeri*). The mid-stratum comprises a moderately dense and diverse cover of heath plants that includes wattles (*Acacia* spp.), conesticks (*Isopogon* spp.), tea-trees (*Leptospermum* spp.), geebungs (*Persoonia* spp.), peas (*Dillwynia* spp., *Podolobium* spp., *Bossiaea* spp.), hakeas (*Hakea* spp), grevilleas (including the rare *Grevillea evansiana*) and hibbertias (*Hibbertia* spp.). The ground layer features a sparse cover of grasses such as wiry panic (*Entolasia stricta*) and wallaby grass (*Joycea pallida*), along with small mat rushes (*Lomandra* spp.) and lilies (*Dianella* spp.).

This woodland occurs on gentle benches and rocky moderate slopes that lead to escarpment edges which define the western boundary of Wollemi NP between the Newnes Plateau and the Cudgegong valley. It occurs between 650 and 900 metres above sea level where rainfall is between 650 and 800 millimetres per annum. In the study area it is widespread on ridges west of Gospers Mountain and is extensive along the western limit of the sandstone plateaux. The total extent of the community distribution falls within Wollemi and northern Blue Mountains national parks.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	15 m ±4 10-22	38% ±14 20-65	*Eucalyptus sparsifolia, Eucalyptus punctata, Eucalyptus rossii, Eucalyptus consideniana*
Small Trees	5 m ±2 1-10	18% ±14 5-55	*Persoonia linearis, Hakea dactyloides, Acacia linifolia, Xylomelum pyriforme*
Shrubs	1.8 m ±0.8 0.7-3.0	28% ±17 5-65	*Platysace ericoides, Leptospermum trinervium, Monotoca scoparia, Isopogon anemonifolius, Leptospermum sphaerocarpum, Banksia spinulosa, Hibbertia riparia, Leucopogon muticus, Pimelea linifolia, Hibbertia acicularis, Phyllota phylicoides*
Ground Covers	0.5 m ±0.2 0.2-0.9	30% ±26 5-70	*Entolasia stricta, Lomandra glauca, Lomandra obliqua, Caustis flexuosa, Pomax umbellata, Patersonia sericea, Austrostipa pubescens, Phyllanthus hirtellus, Dampiera stricta, Joycea pallida, Lomandra multiflora* subsp. *multiflora, Patersonia glabrata*
Vines & Climbers	N/A	N/A	

*Compiled from 7 of 7 sites with structural data recorded.

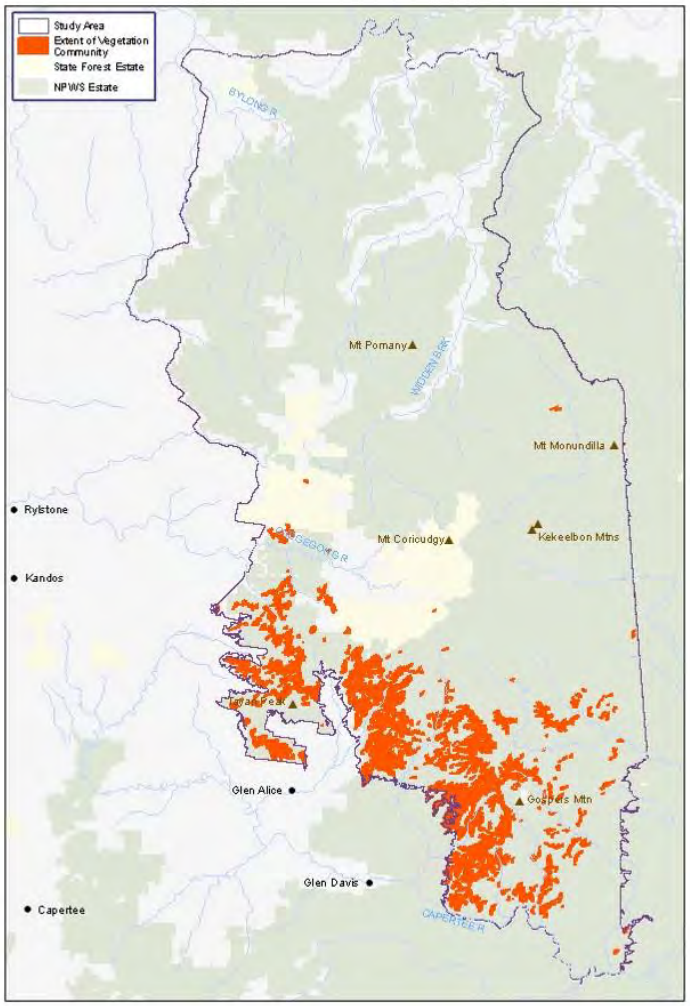
Threats

Threats arising from clearing and associated land use activities are limited by the remote, rugged and infertile habitat in which this woodland occurs. Frequent intense wildfire may simplify the floristic composition.

Conservation Status

This community is well represented within Wollemi NP and Blue Mountains NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	12,156-12,668 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	8949.0 ha	11,949 ha 99% of extant area
Area in state forests	15.7 ha	Not available
Area in other tenures	69.4 ha	Not available
Total extant area	9034.1 ha	12,034 ha



Example Locations

- South-west of Gospers Mountain airstrip
- Ridges along Glen Alice Fire Trail

Species Richness

Number of plots	7
Total species	89
Average species per plot	36.9 ±6.6

Known Variations

Variation occurs across the east-west gradient of this community; subdivision of the community may be warranted, but would only be determined by further sampling. Variation in canopy dominance and heath species occurs in the east and south-east where stands are more likely to feature yertchuk (*Eucalyptus consideniana*) and may include *Banksia spinulosa* in the heath layer.

Relationship to Other Communities

Floristically this woodland is related to other heathy communities found in the central Wollemi sandstone plateaux. S_DSF65 occurs along the higher, exposed rocky ridges of the Hunter Range where yertchuk (*Eucalyptus consideniana*) assumes dominance. As elevation rises toward the Newnes Plateau south of the study area it grades into high-elevation sandstone heathy woodlands that include silvertop ash (*Eucalyptus sieberi*).

Spatially, as soil depth increases this community grades into open forests with a less pronounced shrub layer. Along the Army Road the broad plateaux support a taller canopy featuring *E. sparsifolia, E. piperita, E. crebra* and *A. costata* (S_DSF33). S_DSF64 grades into S_DSF49 on the drier northern plateau as elevation rises toward Nullo Mountain.

Accuracy

Sample density is moderate. Map unit domains are derived from elevation, geology and aspect of sample sites. Map unit boundaries are drawn from the interpretation of heathy eucalypt woodlands dominated by *Eucalyptus punctata*, *E. sparsifolia* and *E. rossii* situated on gentle Narrabeen sandstone plateaux above the western Blue Mountains escarpment.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia buxifolia subsp. *buxifolia*	1	43%	1	11%	uninformative
Acacia linifolia	1	86%	2	4%	uninformative
Acacia obtusifolia	**2**	**43%**	**2**	**13%**	**positive**
Actinotus helianthi	2	14%	1	4%	uninformative
Allocasuarina gymnanthera	3	29%	2	3%	uninformative
Allocasuarina littoralis	3	14%	1	12%	uninformative
Angophora bakeri	3	14%	3	0%	uninformative
Angophora floribunda	2	14%	2	17%	uninformative
Anisopogon avenaceus	**2**	**57%**	**2**	**8%**	**positive**
Apatophyllum constablei	2	14%	1	1%	uninformative
Aristida ramosa	1	29%	2	11%	uninformative
Austrostipa pubescens	**2**	**71%**	**2**	**5%**	**positive**
Boronia ledifolia	3	14%	1	1%	uninformative
Boronia rigens	1	14%	2	1%	uninformative
Boronia rubiginosa	1	14%	2	1%	uninformative
Bossiaea heterophylla	1	43%	2	7%	uninformative
Brachyloma daphnoides	1	43%	1	13%	uninformative
Callistemon linearis	3	14%	3	0%	uninformative
Callitris endlicheri	3	29%	1	12%	uninformative
Callitris rhomboidea	3	29%	2	2%	uninformative
Cassinia aureonitens	2	14%	1	1%	uninformative
Cassytha glabella f. *glabella*	1	14%	1	8%	uninformative
Caustis flexuosa	1	86%	1	11%	uninformative
Conospermum longifolium	1	14%	2	0%	uninformative
Dampiera stricta	1	14%	2	10%	uninformative
Dianella caerulea	1	14%	1	32%	uninformative
Dianella prunina	1	57%	1	2%	uninformative
Dianella revoluta var. *revoluta*	1	14%	1	28%	uninformative
Entolasia stricta	**2**	**100%**	**2**	**31%**	**positive**
Eucalyptus crebra	3	14%	3	7%	uninformative
Eucalyptus punctata	**3**	**100%**	**2**	**32%**	**positive**
Eucalyptus rossii	**3**	**57%**	**3**	**13%**	**positive**
Eucalyptus sparsifolia	**3**	**100%**	**3**	**26%**	**positive**
Exocarpos strictus	**2**	**43%**	**1**	**16%**	**positive**
Gahnia microstachya	1	29%	2	2%	uninformative
Gompholobium uncinatum	1	14%	2	2%	uninformative
Gompholobium virgatum	1	14%	2	4%	uninformative
Gonocarpus tetragynus	**2**	**43%**	**2**	**13%**	**positive**
Goodenia heterophylla	**2**	**57%**	**2**	**10%**	**positive**
Grevillea evansiana	1	57%	2	1%	uninformative
Hakea dactyloides	**2**	**71%**	**1**	**18%**	**positive**
Hakea sericea	2	29%	1	3%	uninformative
Hibbertia acicularis	2	14%	1	7%	uninformative
Hibbertia circumdans	1	43%	1	13%	uninformative
Hibbertia riparia	**3**	**57%**	**2**	**3%**	**positive**
Hovea linearis	1	43%	1	7%	uninformative
Isopogon anemonifolius	1	71%	1	7%	uninformative
Joycea pallida	**2**	**71%**	**2**	**14%**	**positive**
Lasiopetalum parviflorum	1	14%	2	0%	uninformative
Laxmannia gracilis	1	14%	1	3%	uninformative
Lepidosperma concavum	3	14%	2	2%	uninformative
Lepidosperma gunnii	**2**	**43%**	**2**	**13%**	**positive**
Lepidosperma laterale	**2**	**43%**	**1**	**23%**	**positive**
Lepidosperma urophorum	1	14%	1	4%	uninformative
Leptomeria acida	1	14%	1	8%	uninformative
Leptospermum parvifolium	1	57%	2	11%	uninformative
Leptospermum sphaerocarpum	**2**	**43%**	**2**	**14%**	**positive**
Leptospermum trinervium	**2**	**100%**	**2**	**13%**	**positive**
Leucopogon muticus	**2**	**86%**	**2**	**23%**	**positive**
Leucopogon setiger	**2**	**71%**	**1**	**3%**	**positive**
Lomandra confertifolia	2	29%	2	33%	uninformative
Lomandra glauca	**2**	**57%**	**2**	**29%**	**positive**
Lomandra multiflora subsp. *multiflora*	1	71%	1	24%	uninformative
Lomandra obliqua	**2**	**100%**	**2**	**15%**	**positive**
Microlaena stipoides	2	29%	2	28%	uninformative
Monotoca scoparia	1	100%	2	23%	uninformative
Patersonia sericea	**2**	**71%**	**2**	**19%**	**positive**
Persoonia levis	1	29%	1	9%	uninformative
Persoonia linearis	**2**	**86%**	**1**	**54%**	**positive**
Persoonia oblongata	1	29%	1	2%	uninformative
Petrophile pulchella	1	14%	1	5%	uninformative
Phyllanthus hirtellus	**2**	**86%**	**2**	**21%**	**positive**
Phyllota phylicoides	2	29%	2	4%	uninformative
Platysace ericoides	**2**	**100%**	**2**	**21%**	**positive**
Platysace lanceolata	2	29%	2	17%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Podolobium ilicifolium	1	43%	2	30%	uninformative
Pomax umbellata	**2**	**100%**	**2**	**32%**	**positive**
Poranthera corymbosa	2	14%	1	5%	uninformative
Pultenaea echinula	1	14%	2	0%	uninformative
Scaevola ramosissima	1	29%	1	2%	uninformative
Schoenus imberbis	**2**	**43%**	**2**	**4%**	**positive**
Stypandra glauca	1	14%	1	7%	uninformative
Xanthorrhoea arborea	1	29%	3	1%	uninformative
Xanthosia pilosa	1	29%	2	8%	uninformative
Xylomelum pyriforme	1	71%	2	3%	uninformative

Statewide Class Sydney Hinterland Dry Sclerophyll Forests

Plant Community Type: Not described

Description

Wollemi Yertchuk-Stringybark Exposed Woodland is a low to moderately tall eucalypt woodland with an open heath layer that is found on elevated Narrabeen sandstone ridges in the north-west of the Sydney Basin Bioregion. It is extensively distributed throughout the sandstone plateaux of the central Wollemi ranges. The eucalypt canopy can vary from a sparse cover on rocky sites to a dense cover on sites with low rock but shallow soil. It is dominated by yertchuk (*Eucalyptus consideniana*) and narrow-leaved stringybark (*Eucalyptus sparsifolia*). Rocky outcrops at the end of ridgelines include stands of the rare *Eucalyptus bensonii.* The understorey is distinguished by the diversity and abundance of the heath/shrub layer that features wattles (*Acacia* spp.), conesticks (*Petrophile* spp.), drumsticks (*Isopogon* spp.), peas (e.g. *Dillwynia* spp.), tea-trees (*Leptospermum* spp.), hakeas (*Hakea* spp.) and geebung (*Persoonia* spp.). The ground is sparsely covered by wire grass (*Entolasia stricta)* with small isolated patches of mat rushes (*Lomandra* spp.), herbs and the twiner curly wig (*Caustis flexuosa*).

This heathy woodland is associated with exposed skeletal infertile soils derived from Narrabeen sandstone. It occurs on narrow ridgelines and steep exposed upper slopes in a landscape marked by outcropping sandstone. It spans an elevation range of 550-1000 metres above sea level, although the bulk of the distribution lies between 600 and 900 metres above sea level, extending from Three Ways near Putty SF to Glen Davis. Mean annual rainfall in these parts of the sandstone plateau is moderate, ranging between 700 and 850 millimetres per annum. Wollemi NP encompasses a large proportion of the known extent of this community.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	14 m ±6 5-25	35% ±21 2-75	*Eucalyptus consideniana, Eucalyptus sparsifolia, Eucalyptus bensonii, Eucalyptus multicaulis*
Small Trees	5 m ±3 1-12	19% ±13 5-50	*Leptospermum trinervium, Persoonia levis, Hakea dactyloides, Persoonia linearis, Acacia terminalis*
Shrubs	2.2 m ±1.2 0.8-6.0	45% ±21 15-80	*Leptospermum sphaerocarpum, Monotoca scoparia, Isopogon anemonifolius, Platysace lanceolata, Bossiaea heterophylla, Dillwynia retorta, Epacris pulchella, Lomatia silaifolia, Petrophile pulchella, Mirbelia rubiifolia*
Ground Covers	0.6 m ±0.3 0.2-1.0	23% ±16 10-60	*Lomandra obliqua, Caustis flexuosa, Patersonia glabrata, Stylidium productum, Lomandra glauca, Dampiera stricta, Xanthosia atkinsoniana, Entolasia stricta, Xanthosia pilosa, Pomax umbellata, Anisopogon avenaceus*
Vines & Climbers	N/A	N/A	*Cassytha glabella* f. *glabella*

*Compiled from 20 of 20 sites with structural data recorded.

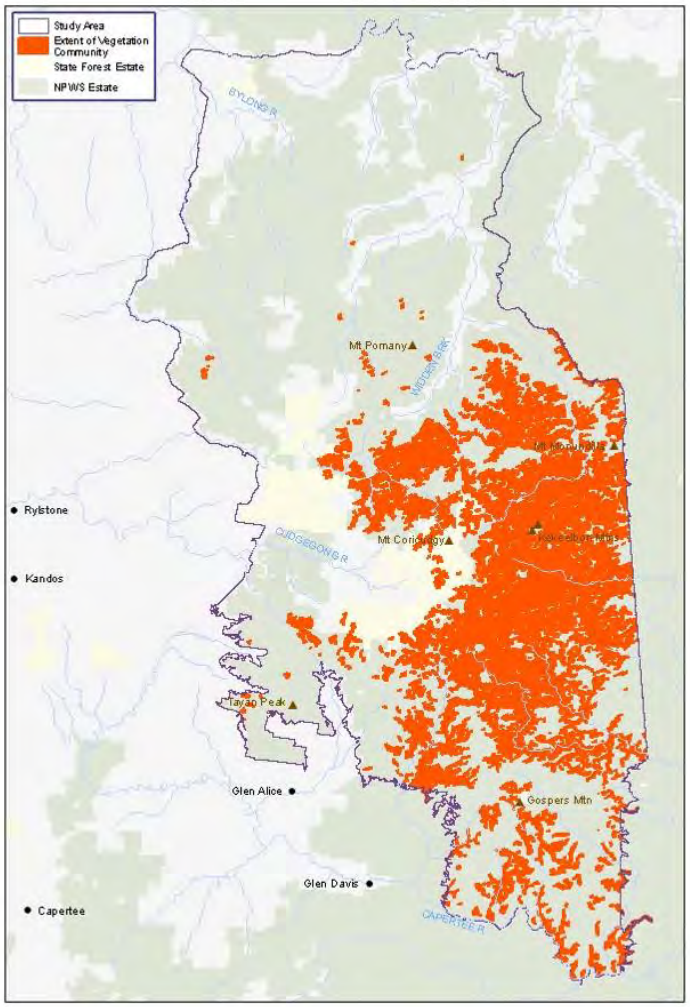
Threats

Threats to this community are few as it is encompassed within the reserve system and has not been subject to clearing pressures or other human-related land use impacts. Repeated high-intensity wildfire in the reserve system may impact on local stands.

Conservation Status

This community is extensively distributed across Wollemi NP. Smaller areas are present within Coricudgy SF.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	39,946-41,628 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	28,846.8 ha	37,847 ha 96% of extant area
Area in state forests	697.4 ha	Not available
Area in other tenures	2.8 ha	Not available
Total extant area	29,547.0 ha	39,547 ha



Example Locations

- Crests and rises on narrow ridgelines in the Coorongooba catchment
- Narrow ridgelines off the Glen Alice Trail
- Gospers Mountain airstrip area

Species Richness

Number of plots	20
Total species	251
Average species per plot	40.4 ±5.5

Known Variations

Variation occurs in rocky sites where the woodland is very open and broken and may include patches of low heath and mallee-form eucalypts including *Eucalyptus bensonii.* The dominant canopy species associated with this unit are not present in all stands.

Relationship to Other Communities

Floristically this woodland has affinities with other exposed dry shrubby woodlands that are found on Narrabeen sandstone ranges of the elevated Wollemi plateaux. It shares many species with S_DSF33, into which it grades on deeper soils associated with ridgetops and upper slopes. S_DSF33 is more often dominated by *Eucalyptus piperita* or *Angophora costata* and has fewer heath plants amongst the shrub layer. On rockier sites S_DSF65 grades into a montane heath community (S_HL12) that includes *Banksia ericifolia* and *Allocasuarina nana*. S_DSF65 grades into S_DSF64 with decreasing rainfall on the plateaux at the western margins of Wollemi NP.

Accuracy

Sample density is moderate. Map unit domains were derived from characteristics of sample sites. Map unit boundaries were based on the interpretation of low heathy woodlands on rocky and exposed Narrabeen sandstone dominated by *Eucalyptus consideniana*.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia hamiltoniana	2	10%	1	1%	uninformative
Acacia linifolia	2	25%	1	5%	uninformative
Acacia longifolia subsp. *longifolia*	2	20%	2	4%	uninformative
Acacia obtusifolia	2	20%	2	14%	uninformative
Acacia suaveolens	2	20%	1	2%	uninformative
Acacia terminalis	1	65%	1	11%	uninformative
Acacia ulicifolia	**2**	**40%**	**1**	**10%**	**positive**
Actinotus helianthi	2	25%	1	3%	uninformative
Actinotus minor	2	10%	2	1%	uninformative
Allocasuarina littoralis	1	20%	1	12%	uninformative
Allocasuarina nana	2	10%	3	2%	uninformative
Amperea xiphoclada	**2**	**70%**	**1**	**10%**	**positive**
Angophora costata	3	10%	3	3%	uninformative
Anisopogon avenaceus	**2**	**45%**	**2**	**6%**	**positive**
Austrostipa pubescens	1	20%	2	5%	uninformative
Baeckea utilis	2	10%	2	1%	uninformative
Banksia cunninghamii	2	10%	3	1%	uninformative
Banksia ericifolia	3	10%	2	2%	uninformative
Banksia serrata	2	30%	1	2%	uninformative
Banksia spinulosa	1	20%	2	5%	uninformative
Billardiera scandens	1	30%	1	23%	uninformative
Boronia anemonifolia subsp. *anemonifolia*	4	10%	1	0%	uninformative
Boronia floribunda	2	10%	1	1%	uninformative
Boronia microphylla	2	10%	2	2%	uninformative
Boronia pinnata	**2**	**10%**	**0**	**0%**	**positive**
Boronia rigens	2	10%	2	1%	uninformative
Bossiaea heterophylla	**2**	**60%**	**1**	**5%**	**positive**
Bossiaea obcordata	4	10%	3	2%	uninformative
Brachyloma daphnoides	2	25%	1	13%	uninformative
Calytrix tetragona	2	15%	2	10%	uninformative
Cassytha glabella f. *glabella*	1	35%	1	7%	uninformative
Caustis flexuosa	**2**	**75%**	**1**	**9%**	**positive**
Caustis pentandra	4	10%	2	3%	uninformative
Chloanthes stoechadis	2	15%	1	2%	uninformative
Comesperma ericinum	1	15%	1	3%	uninformative
Corymbia gummifera	3	20%	3	2%	uninformative
Dampiera stricta	**2**	**60%**	**2**	**7%**	**positive**
Darwinia taxifolia	3	10%	1	0%	uninformative
Daviesia ulicifolia	2	10%	2	4%	uninformative
Dianella caerulea	1	25%	1	32%	uninformative
Dianella revoluta var. *revoluta*	1	40%	1	27%	uninformative
Dillwynia floribunda	3	10%	1	2%	uninformative
Dillwynia retorta	3	30%	1	4%	uninformative
Dillwynia rudis	2	30%	2	2%	uninformative
Elaeocarpus reticulatus	1	10%	1	8%	uninformative
Entolasia stricta	**2**	**55%**	**2**	**31%**	**positive**
Epacris pulchella	**2**	**40%**	**1**	**3%**	**positive**
Eucalyptus bensonii	1	15%	1	1%	uninformative
Eucalyptus consideniana	**4**	**85%**	**3**	**3%**	**positive**
Eucalyptus eugenioides	**2**	**5%**	**0**	**0%**	**positive**
Eucalyptus multicaulis	4	30%	1	2%	uninformative
Eucalyptus piperita	3	10%	3	16%	uninformative
Eucalyptus punctata	2	10%	3	34%	uninformative
Eucalyptus sparsifolia	**3**	**40%**	**3**	**27%**	**positive**
Gahnia filifolia	**1**	**5%**	**0**	**0%**	**positive**
Gahnia microstachya	3	20%	1	1%	uninformative
Gahnia radula	**2**	**5%**	**0**	**0%**	**positive**
Gompholobium glabratum	**1**	**5%**	**0**	**0%**	**positive**
Gompholobium latifolium	2	10%	2	3%	uninformative
Gompholobium virgatum	2	25%	2	3%	uninformative
Gonocarpus tetragynus	1	25%	2	13%	uninformative
Gonocarpus teucrioides	1	40%	2	13%	uninformative
Goodenia bellidifolia	2	10%	2	5%	uninformative
Goodenia decurrens	2	10%	2	4%	uninformative
Goodenia heterophylla	2	25%	2	10%	uninformative
Grevillea buxifolia	2	20%	2	2%	uninformative
Grevillea buxifolia* subsp. *ecorniculata	**2**	**15%**	**0**	**0%**	**positive**
Grevillea phylicoides	**2**	**5%**	**0**	**0%**	**positive**
Haemodorum corymbosum	1	10%	1	0%	uninformative
Hakea dactyloides	1	50%	1	17%	uninformative
Hakea propinqua	**2**	**10%**	**0**	**0%**	**positive**
Hakea salicifolia	2	10%	2	2%	uninformative
Hakea sericea	1	15%	1	3%	uninformative
Hardenbergia violacea	2	20%	1	26%	uninformative
Hibbertia acicularis	1	15%	1	7%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Hibbertia aspera	2	10%	2	1%	uninformative
Hibbertia circumdans	1	15%	1	14%	uninformative
Hibbertia monogyna	2	15%	1	3%	uninformative
Hibbertia obtusifolia	2	25%	1	5%	uninformative
Hybanthus vernonii	2	10%	2	1%	uninformative
Isopogon anemonifolius	**2**	**55%**	**1**	**6%**	**positive**
Laxmannia gracilis	2	15%	1	3%	uninformative
Lepidosperma filiforme	1	10%	2	1%	uninformative
Lepidosperma gunnii	2	10%	2	13%	uninformative
Lepidosperma laterale	2	30%	1	23%	uninformative
Lepidosperma urophorum	1	20%	1	4%	uninformative
Leptomeria acida	1	20%	1	8%	uninformative
Leptospermum arachnoides	2	30%	2	6%	uninformative
Leptospermum parvifolium	2	10%	2	12%	uninformative
Leptospermum sphaerocarpum	**3**	**65%**	**2**	**12%**	**positive**
Leptospermum trinervium	**2**	**60%**	**2**	**12%**	**positive**
Lepyrodia scariosa	3	10%	2	2%	uninformative
Leucopogon microphyllus	2	20%	2	4%	uninformative
Leucopogon muticus	2	15%	2	24%	uninformative
Leucopogon setiger	2	15%	2	4%	uninformative
Lindsaea linearis	2	10%	1	1%	uninformative
Lindsaea microphylla	1	10%	2	2%	uninformative
Lomandra confertifolia	2	30%	2	33%	uninformative
Lomandra filiformis	1	25%	2	17%	uninformative
Lomandra glauca	**2**	**55%**	**2**	**29%**	**positive**
Lomandra gracilis	2	15%	2	1%	uninformative
Lomandra longifolia	2	10%	1	29%	uninformative
Lomandra multiflora subsp. *multiflora*	1	25%	1	25%	uninformative
Lomandra obliqua	**2**	**90%**	**2**	**12%**	**positive**
Lomatia silaifolia	**2**	**50%**	**2**	**20%**	**positive**
Mirbelia rubiifolia	2	25%	2	1%	uninformative
Monotoca scoparia	**2**	**75%**	**2**	**22%**	**positive**
Ochrosperma oligomerum	3	10%	2	1%	uninformative
Olax stricta	2	10%	1	3%	uninformative
Omphacomeria acerba	1	10%	1	2%	uninformative
Patersonia fragilis	**1**	**5%**	**0**	**0%**	**positive**
Patersonia glabrata	**2**	**80%**	**2**	**8%**	**positive**
Patersonia sericea	**2**	**40%**	**2**	**19%**	**positive**
Persoonia levis	1	80%	1	6%	uninformative
Persoonia linearis	1	65%	1	54%	uninformative
Persoonia myrtilloides	1	15%	2	6%	uninformative
Persoonia oblongata	3	10%	1	2%	uninformative
Petrophile pulchella	1	35%	1	4%	uninformative
Phyllanthus hirtellus	2	20%	2	22%	uninformative
Phyllota phylicoides	3	10%	2	4%	uninformative
Phyllota squarrosa	3	10%	2	2%	uninformative
Pimelea linifolia	2	20%	2	12%	uninformative
Platysace ericoides	2	25%	2	22%	uninformative
Platysace lanceolata	**2**	**65%**	**2**	**15%**	**positive**
Podolobium ilicifolium	2	30%	2	30%	uninformative
Polyscias sambucifolia	1	15%	2	12%	uninformative
Pomax umbellata	**2**	**55%**	**2**	**32%**	**positive**
Prostanthera saxicola* var. *saxicola	**3**	**5%**	**0**	**0%**	**positive**
Pteridium esculentum	**2**	**35%**	**2**	**31%**	**positive**
Pultenaea scabra	2	15%	2	7%	uninformative
Pultenaea setulosa	**3**	**5%**	**0**	**0%**	**positive**
Schizaea dichotoma	**1**	**5%**	**0**	**0%**	**positive**
Schoenus ericetorum	1	15%	1	3%	uninformative
Schoenus imberbis	2	20%	2	3%	uninformative
Smilax glyciphylla	1	10%	1	9%	uninformative
Sporadanthus gracilis	**1**	**5%**	**0**	**0%**	**positive**
Stylidium productum	**2**	**60%**	**2**	**5%**	**positive**
Styphelia triflora	1	10%	1	13%	uninformative
Tetratheca ericifolia	**3**	**5%**	**0**	**0%**	**positive**
Tetratheca rubioides	**1**	**5%**	**0**	**0%**	**positive**
Xanthorrhoea media	1	15%	1	1%	uninformative
Xanthosia atkinsoniana	**2**	**65%**	**2**	**9%**	**positive**
Xanthosia pilosa	**2**	**60%**	**1**	**6%**	**positive**

Statewide Class
North-west Slopes Dry Sclerophyll Forests

Plant Community Type:
Red Box - Grey Gum - stringybark woodland on talus slopes of the western Blue Mountains, Sydney Basin

Description

Capertee Footslopes Box-Stringybark Forest is a moderately tall open eucalypt forest with a sparse cover of low dry shrubs and a patchy grass cover. It is associated with moderately fertile loams found on the lower slopes, valley floors and escarpment benches of the Wolgan and Capertee valleys. The main canopy species present in this dry sclerophyll forest are box trees with grey gum (*Eucalyptus punctata*), red gum (*Eucalyptus blakelyi*) and stringybark companions. The box is typically one of the smooth-bark types, notably red box (*E. polyanthemos*) and less frequently yellow box (*E. melliodora*) or white box (*Eucalyptus albens*). The stringybarks may be from either the red stringybark group (*E. cannonii* or *E. macrorhyncha*) or in the narrow-leaved group (*E. tenella* or *E. sparsifolia*). Scattered kurrajong (*Brachychiton populneus*) is also present. Dry shrubs, such as native cranberry (*Astroloma humifusum*) and Australian indigo (*Indigofera australis*), form a low open cover. The ground layer has a diverse assemblage of grasses with wallaby grass (*Austrodanthonia racemosa*) and weeping grass (*Microlaena stipoides*) the most common and abundant. Small herbs such as the pennywort (*Hydrocotyle laxiflora)* are also common. The ground layer is often open, with the vegetation cover being either even but sparse, or patchy with prominent bare earth and litter.

This forest is situated on deeper fine-grained sediment soils that derive from either Permian shales or Narrabeen talus. It occupies the hinterlands of the wider rainshadow valleys at elevations between 450 and 750 metres above sea level in areas that receive between 600 and 850 millimetres of main annual rainfall. It is restricted to the dry valleys of the western Blue Mountains. In the study area it occurs along the western boundary of the reserve on the margins of the eastern Capertee Valley escarpment.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	22.6 m ±6 10-40	32% ±7 15-65	*Eucalyptus cannonii, E. polyanthemos, E. punctata, Eucalyptus blakelyi, Eucalyptus melliodora, Eucalyptus albens*
Shrubs	2.7 m ±1.8 1.4-4.8	15% ±10.5 9-25	*Acacia falciformis, Indigofera australis, Persoonia linearis*
Ground Covers	0.5 m ±0.4 0.1-1.5	33.6% ±24 15-70	*Acaena ovina, Astroloma humifusum, Austrodanthonia racemosa, Cheilanthes austrotenuifolia, Desmodium varians, Dichondra repens, Echinopogon spp., Gonocarpus tetragynus, Hydrocotyle laxiflora, Lagenifera stipitata, Lomandra filiformis, Lomandra multiflora, Microlaena stipoides, Oxalis perennans, Plantago hispida, Poranthera microphylla, Veronica plebeia, Wahlenbergia stricta*
Vines & Climbers	N/A	N/A	*Glycine clandestina*

*Taken from DEC (2006). Compiled from 20 of 21 sites with structural data recorded in that study.

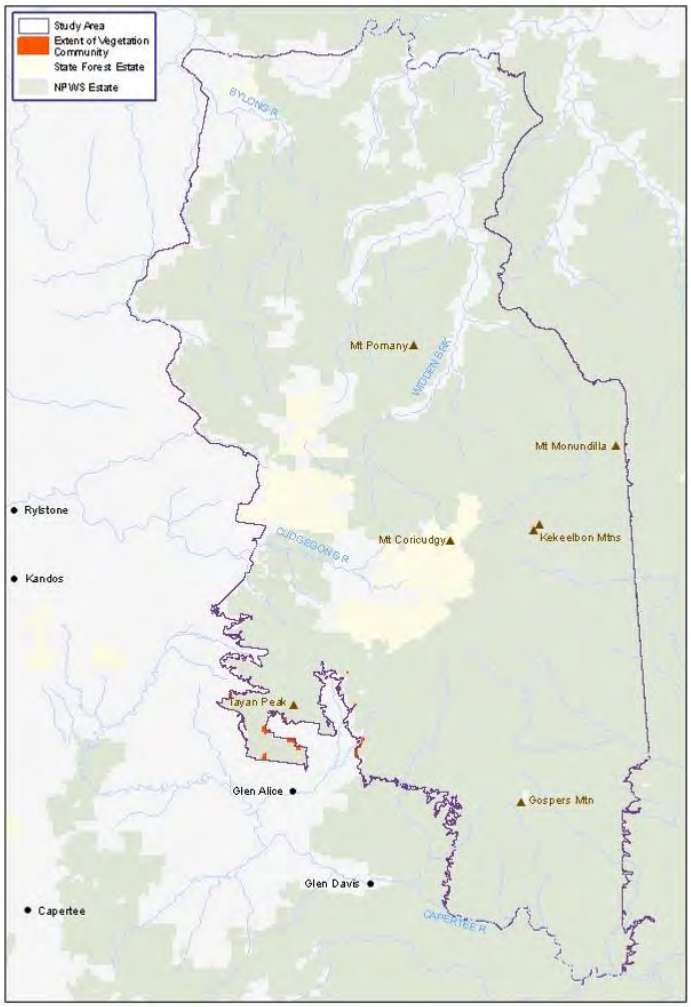
Threats

This forest occupies areas that have been utilised for rough grazing. The less accessible areas have been free from livestock for several years and are now regenerating. Some areas continue to experience low-intensity grazing pressures. Fragmentation, clearing, introduction of exotic plant species, establishment of tracks and trails and seasonal burning have all occurred as part of these land use activities.

Conservation Status

Small areas of this community are present within Capertee and Wollemi national parks and Mugii Murum-ban State Conservation Area (SCA).

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	10,464-14,488 ha
Estimated percentage cleared	Not available	10-35%
Area in formal conservation reserves	38.3 ha	1538 ha 16% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	10.1 ha	Not available
Total extant area	48.4 ha	9417 ha



Example Locations

- Lower Glen Alice Trail, Capertee escarpment

Species Richness

Number of plots	2
Total species	N/A
Average species per plot	N/A

Known Variations

Across the range of topographic positions of this forest there is variation in the dominant canopy species, although invariably one or more box species is present. Shallower soils support a shrubbier understorey and sparser grass cover. Conversely more fertile soils have a more continuous cover of grass with an open shrub layer. This may be artificially enhanced by active or recent grazing.

Relationship to Other Communities

Floristically this community has few close relatives within the study area, but has more in common with the woodlands of the undulating southern tablelands of New South Wales. There is a weak relationship with the grassy basalt forests found around the peaks of Nullo Mountain although those are clearly separable by more than 500 metres in elevation and deep volcanic soils.

Spatially this forest grades into dry sclerophyll forests S_DSF67 and S_DSF68 with increasing elevation on the escarpment slopes.

Accuracy

This community has not been sampled in the study area, but sampling effort is moderate across the adjoining region (DEC 2006). Map unit boundaries have been taken from that study where the maps join.

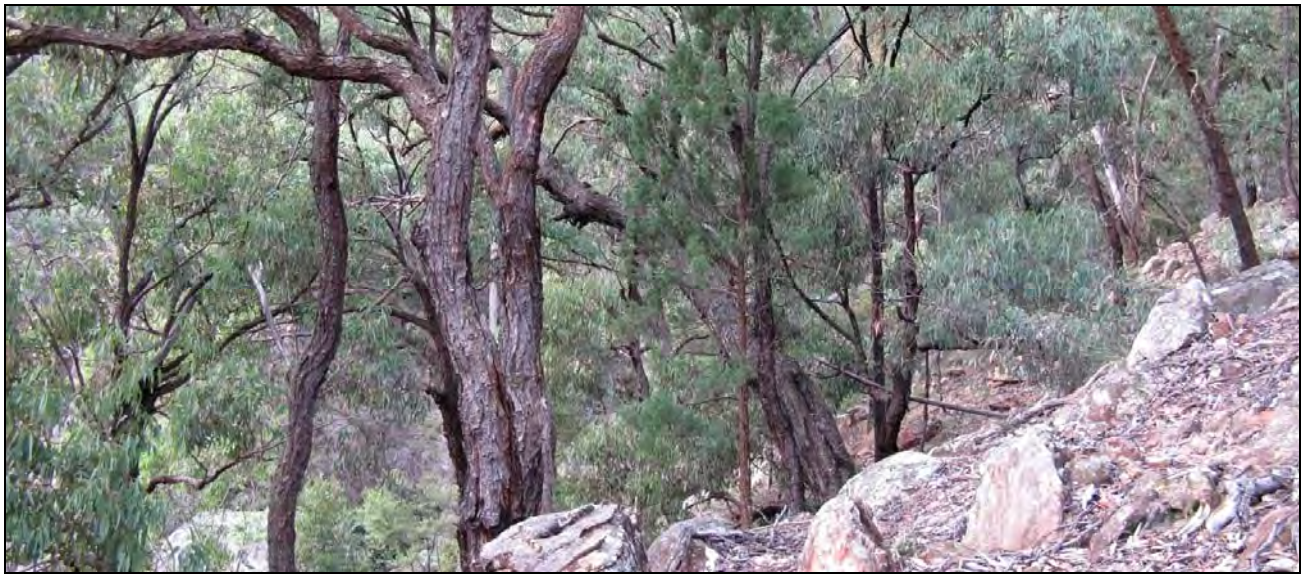
Diagnostic Species S_DSF66

No diagnostic species generated for this profile. Not sampled in the study area.

See diagnostic species list of map unit 21 in DEC (2006).

Statewide Class Western Slopes Dry Sclerophyll Forest

Plant Community Type: Not described



Description

Capertee Escarpment Ironbark Forest is a eucalypt and cypress woodland with a dry shrub layer and very sparse ground cover. It is found on dry escarpment upper slopes and benches below the north-west Blue Mountains. The canopy is dominated by ironbark (mostly red ironbark (*Eucalyptus fibrosa*) and narrow-leaf ironbark (*E. crebra*)) with a patchy cover of black cypress pine (*Callitris endlicheri*). Grey gum (*E. punctata*), stringybarks (*E. sparsifolia* and *E. cannonii*) and scribbly gum (*E. rossii*) may be local companions. There is a sparse to moderately dense cover of dry shrubs including beard heath (*Leucopogon muticus*), geebung (*Persoonia linearis*) and native cranberry (*Astroloma humifusum*). The ground cover is generally very sparse and rocky supporting small numbers of pomax (*Pomax umbellata*), wiry panic (*Entolasia stricta*) and *Goodenia hederacea.* Most sites support a shallow layer of leaf litter.

This woodland is one of a number that are found on the escarpments and benches of the Capertee and Wolgan valleys, however this map unit occupies the driest and most impoverished of sites. This is typically north-west slopes, though some semi-sheltered aspects are equally dry. It occurs on Permian sediments though there is often an overlay of sandstone rocky talus. The altitudinal range is from 450-700 metres above sea level though it reaches over 800 metres on the escarpment of the Airly Mountain mesa. It experiences a mean annual precipitation between 640 and 750 millimetres. In the study area the woodland is found along the western boundary of the reserve between the Newnes and Glen Alice.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	14 m	25%	*E. fibrosa, E. punctata, Callitris endlicheri*
Shrubs	1 m	5%	*Persoonia linearis, Lissanthe strigosa*
Ground Covers	0.3 m 0.5	5%	*Dianella revoluta, Entolasia stricta, Goodenia hederacea, Joycea pallida, Lepidosperma gunnii, Lomandra confertifolia, Macrozamia reducta*
Vines & Creepers	N/A	N/A	

*Compiled from 1 of 1 sites with structural data recorded.

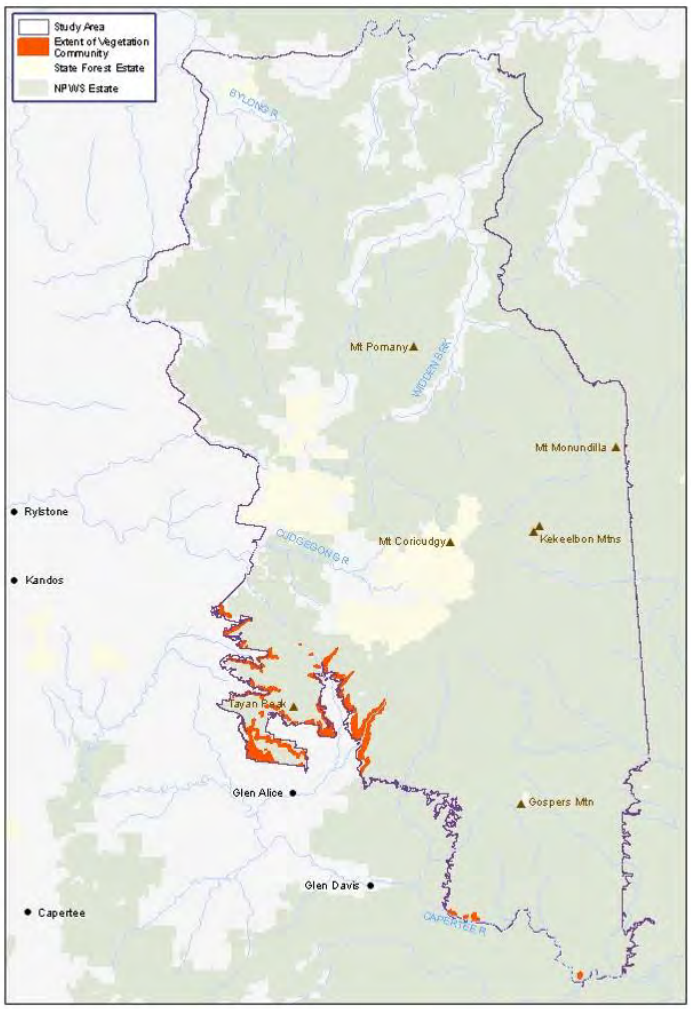
Threats

Impacts from clearing have been highly localised as the woodland occurs across rugged, infertile slopes. Some sites with more gentle gradients show evidence of low-intensity tree harvesting for fencing timbers. Areas that adjoin open agricultural landuses may be accessed by cattle as a thoroughfare, though generally there is insufficient palatable vegetation to support grazing.

Conservation Status

This community occurs along the western escarpment of Wollemi NP and on the ranges within Capertee NP and Mugii Murum-ban SCA.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	2162-2282 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	925.4 ha	1225 ha 60% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	273.5 ha	Not available
Total extant area	1198.9 ha	2054 ha



Example Locations

- Exposed upper escarpment above Numietta Creek

Species Richness

Number of plots	1
Total species	30
Average species per plot	30

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this community is related to the dry shrubby ironbark-cypress woodlands of the central west ranges toward Mudgee and Cassilis. In the study area it is related to the dry shrub forests found on the steep Permian escarpments of the western Blue Mountains (S_DSF66, S_DSF68). It grades into those forests along the layers in the Permian stratum exposed with decreasing elevation. S_DSF68 is more commonly found on mid slopes below S_DSF67, while S_DSF66 is associated with deep more fertile soils on the escarpment footslopes. Those communities are separable from S_DSF67 as they support box trees (*Eucalyptus dawsonii* or *E. polyanthemos*) and a more diverse and abundant cover of grasses.

Accuracy

Sample effort is low in the reserve, though moderate across the adjoining region (DEC 2006). Map domains have been taken from that study. Map unit boundaries have relied on the interpretation of exposed rocky Permian escarpment slopes dominated by ironbark, grey gum or scribbly gum and supporting black cypress pine.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group score (50 Percentile)	Non-group Frequency	Fidelity Class
Astroloma humifusum	1	100%	1	9%	uninformative
Callitris endlicheri	**3**	**100%**	**1**	**12%**	**positive**
Cassinia uncata	1	100%	1	5%	uninformative
Correa reflexa	1	100%	1	8%	uninformative
Dianella revoluta* var. *revoluta	**2**	**100%**	**1**	**27%**	**positive**
Digitaria ramularis	1	100%	1	5%	uninformative
Entolasia stricta	1	100%	2	32%	uninformative
Eucalyptus fibrosa	**3**	**100%**	**3**	**8%**	**positive**
Eucalyptus punctata	**2**	**100%**	**3**	**33%**	**positive**
Goodenia hederacea subsp. *hederacea*	1	100%	2	8%	uninformative
Hardenbergia violacea	1	100%	1	25%	uninformative
Hovea lanceolata	**2**	**100%**	**1**	**7%**	**positive**
Indigofera australis	1	100%	2	15%	uninformative
Joycea pallida	**2**	**100%**	**2**	**14%**	**positive**
Lepidosperma gunnii	**2**	**100%**	**2**	**13%**	**positive**
Lissanthe strigosa	1	100%	1	1%	uninformative
Lomandra confertifolia	**2**	**100%**	**2**	**33%**	**positive**
Lomandra glauca	**2**	**100%**	**2**	**30%**	**positive**
Lomandra multiflora subsp. *multiflora*	1	100%	1	25%	uninformative
Macrozamia reducta	1	100%	1	10%	uninformative
Olearia ramulosa	1	100%	1	2%	uninformative
Opercularia aspera	1	100%	1	4%	uninformative
Persoonia linearis	1	100%	1	55%	uninformative
Phyllanthus hirtellus	1	100%	2	22%	uninformative
Plantago debilis	1	100%	2	13%	uninformative
Pomax umbellata	**2**	**100%**	**2**	**33%**	**positive**
Poranthera corymbosa	1	100%	1	5%	uninformative
Pultenaea scabra	**2**	**100%**	**2**	**7%**	**positive**

Statewide Class North-west Slopes Dry Sclerophyll Forest

Plant Community Type: Not described

Description

Capertee Escarpment Slaty Gum Forest is a eucalypt and cypress forest with a dry shrub layer and a sparse rocky ground cover. It is found on exposed dry escarpment slopes of the western Blue Mountains and Wollemi plateaux. It features an open and moderately tall cover of the locally endemic slaty gum (*E. dawsonii*) in association with black cypress pine (*Callitris endlicheri*). Grey gum (*E. punctata)*, ironbarks (*E. sideroxylon* and *E. fibrosa*) and less frequently box (*Eucalyptus albens* X *moluccana*) may also be present and on occasion may dominate stands. The shrub layer may be open to very sparsely populated by hopbush (*Dodonaea viscosa*), wattles (*Acacia ixiophylla*) and *Cassinia quinquefaria*. More distinctive is the broken rocky ground cover that provides only a shallow soil layer. This is sufficiently fertile to support a reasonably diverse cover of grasses and herbs, but the abundance is restricted to just a few sparsely scattered individuals.

This forest grows on the dry exposed Permian escarpment slopes that occur beneath the western edge of the sandstone plateaux, between the Wolgan valley and the Wollar near the Wilpinjong valley in the north-west of the Sydney basin region. The soils are sandy and are influenced by talus from the eroding sandstone clifflines above. The community extends from about 320 metres above sea level to about 600 metres, with a small outlier at 800 metres near Mount Marsden. The average rainfall values are between 650 and 750 millimetres per annum. In the study area it is restricted to the eastern escarpments of the Capertee Valley.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	24 m 9-35	30% +/-12 19-45	*Eucalyptus dawsonii, E. fibrosa, E. punctata, E. sideroxylon*
Shrubs	3 m 0.8-6.0	15% +/-9 6-22	*Callitris endlicheri, Dodonaea viscosa* subsp. *cuneata, Lissanthe strigosa, Acacia ixiophylla*
Ground Covers	0.5 m 0.1-1.2	17% +/-20.1 5-40	*Aristida spp., Austrostipa scabra, Brunoniella australis, Entolasia stricta, Gahnia aspera, Goodenia hederacea, Lepidosperma gunnii, Lomandra confertifolia, Notodanthonia longifolia*
Vines & Creepers	N/A	N/A	

*Taken from DEC (2006). Compiled from 9 of 13 sites with structural data recorded in that study (height standard deviations not calculated in that study). One of the sites in that study is within the current study area.

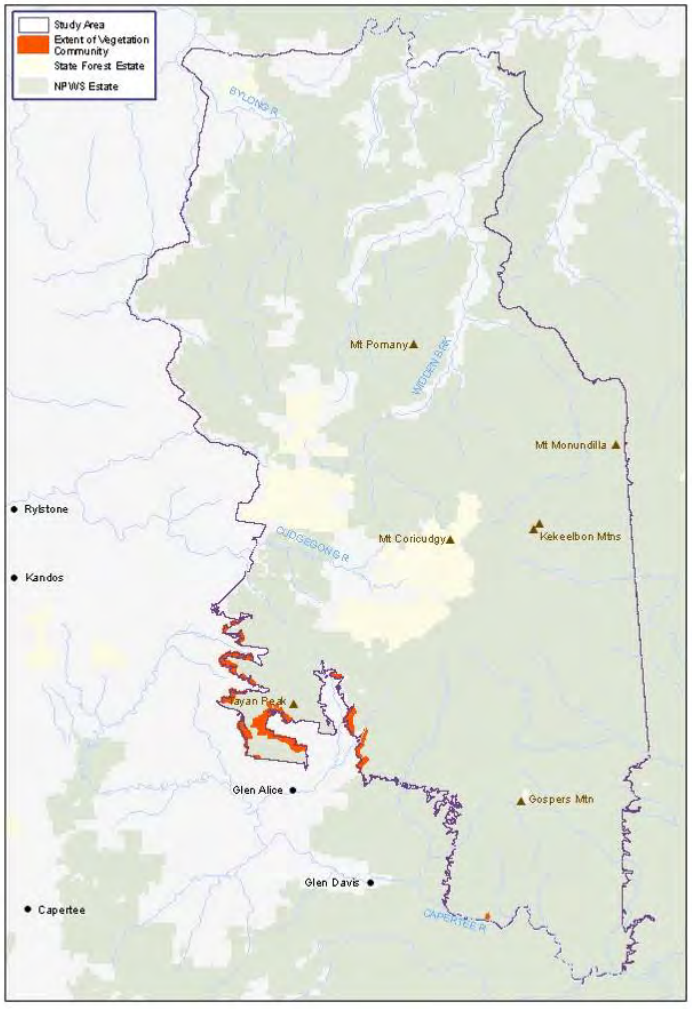
Threats

Threats to this community are restricted by the steep and inaccessible terrain that it occupies. At lower points of the escarpment some stands have been cleared or logged for farming timbers, resulting in an even-aged forest. Low intensity grazing may also occur although this is highly localised. More disturbed sites may have a prolific growth of regenerating black cypress pine.

Conservation Status

This community occurs in Wollemi NP, with small areas present on the margins of Munghorn Gap NR. It is not included within the TEC described as Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion under the TSC Act.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	3519-4273 ha
Estimated percentage cleared	Not available	15-30%
Area in formal conservation reserves	418.6 ha	619 ha 21% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	568.5 ha	Not available
Total extant area	987.1 ha	2991 ha



Example Locations

- Upper slopes Glen Alice Trail

Species Richness

Number of plots	6
Total species	135
Average species per plot	34.5

Known Variations

Variation in associate canopy species occurs across the range of this community. Localised cover of mugga ironbark (*Eucalyptus sideroxylon*) is present on lower slopes. Red ironbark (*E. fibrosa*) may also occur amongst the canopy. Variations in shrub density also occur, with higher percentage cover found on sites containing larger sandstone boulders.

Relationship to Other Communities

Floristically the community is related to other dry shrub/grass box-ironbark eucalypt woodlands found on Permian sediments throughout the Sydney basin. It shares a similar, though spatially separate, habitat and a common suite of canopy species with slaty gum forests on the Hunter valley escarpment (S_DSF41). The differences are subtle and appear to relate to specific shrub species; *Choretrum* sp. A, *Notelaea microcarpa* and *Hibiscus sturtii* are not present in S_DSF68. The grass species *Austrostipa scabra* and the shrub *Lissanthe strigosa* occur in this community, but are not found in the Hunter valley forest.

Spatially this forest grades into S_DSF67 with increasing soil depth on escarpment footslopes and benches.

Accuracy

Sample effort is low in the study area, though moderate across the adjoining region (DEC 2006). Map domains have been taken from DEC (2006). Map unit boundaries have relied on the interpretation of exposed rocky Permian escarpment slopes dominated by box, ironbark or grey gum and supporting black cypress pine.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia buxifolia subsp. *buxifolia*	1	14%	1	12%	uninformative
Acacia decora	2	29%	2	3%	uninformative
Acacia filicifolia	1	14%	2	7%	uninformative
Acacia ixiophylla	2	29%	2	1%	uninformative
Acacia melanoxylon	1	14%	2	9%	uninformative
Acacia obtusifolia	3	14%	2	11%	uninformative
Acacia uncinata	2	14%	2	8%	uninformative
Allocasuarina littoralis	2	14%	1	10%	uninformative
Amyema pendulum	**3**	**57%**	**2**	**1%**	**positive**
Angophora floribunda	3	14%	3	16%	uninformative
Aristida jerichoensis	2	29%	2	0%	uninformative
Aristida vagans	**2**	**86%**	**2**	**8%**	**positive**
Arthropodium milleflorum	1	14%	2	5%	uninformative
Astroloma humifusum	1	43%	1	9%	uninformative
Austrodanthonia racemosa var. *racemosa*	2	14%	2	5%	uninformative
Austrodanthonia richardsonii	2	14%	2	0%	uninformative
Austrostipa rudis	1	14%	2	2%	uninformative
Austrostipa scabra	**2**	**43%**	**2**	**5%**	**positive**
Bothriochloa decipiens var. *decipiens*	2	14%	1	1%	uninformative
Brachychiton populneus subsp. *populneus*	1	14%	1	8%	uninformative
Brachyscome dissectifolia	**2**	**14%**	**0**	**0%**	**positive**
Brachyscome multifida	2	14%	1	2%	uninformative
Brunonia australis	**2**	**14%**	**0**	**0%**	**positive**
Brunoniella australis	**2**	**43%**	**2**	**2%**	**positive**
Bursaria spinosa subsp. *spinosa*	2	14%	2	25%	uninformative
Callitris endlicheri	**3**	**71%**	**1**	**13%**	**positive**
Cassinia arcuata	1	14%	2	1%	uninformative
Cassinia cunninghamii	1	29%	1	7%	uninformative
Cassinia leptocephala	**3**	**14%**	**0**	**0%**	**positive**
Cassinia quinquefaria	1	43%	2	9%	uninformative
Cheilanthes austrotenuifolia	1	57%	2	4%	uninformative
Cheilanthes distans	2	29%	1	6%	uninformative
Cheilanthes sieberi subsp. *sieberi*	1	57%	1	20%	uninformative
Chrysocephalum apiculatum	1	14%	1	1%	uninformative
Cymbopogon refractus	**2**	**43%**	**2**	**5%**	**positive**
Dendrophthoe glabrescens	1	14%	1	0%	uninformative
Desmodium varians	2	14%	2	21%	uninformative
Dianella revoluta* var. *revoluta	**2**	**43%**	**1**	**25%**	**positive**
Dichelachne inaequiglumis	1	14%	1	0%	uninformative
Dichondra repens	**2**	**57%**	**2**	**30%**	**positive**
Digitaria diffusa	2	14%	2	2%	uninformative
Dodonaea viscosa	**2**	**57%**	**2**	**12%**	**positive**
Entolasia stricta	2	29%	2	29%	uninformative
Eremophila debilis	1	14%	1	0%	uninformative
Eucalyptus albens	3	14%	3	6%	uninformative
Eucalyptus dawsonii	**3**	**57%**	**4**	**3%**	**positive**
Eucalyptus fibrosa	3	29%	3	7%	uninformative
Eucalyptus moluccana	3	14%	3	4%	uninformative
Eucalyptus punctata	**4**	**86%**	**3**	**33%**	**positive**
Eucalyptus rossii	3	14%	3	14%	uninformative
Eucalyptus sideroxylon	**3**	**57%**	**3**	**2%**	**positive**
Exocarpos strictus	2	29%	1	17%	uninformative
Gahnia aspera	**2**	**57%**	**1**	**9%**	**positive**

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Galium binifolium	2	14%	2	5%	uninformative
Galium gaudichaudii	1	29%	2	4%	uninformative
Glycine clandestina	**2**	**43%**	**2**	**19%**	**positive**
Gonocarpus humilis	2	14%	1	1%	uninformative
Goodenia bellidifolia	1	14%	2	5%	uninformative
Goodenia hederacea* subsp. *hederacea	**2**	**71%**	**2**	**9%**	**positive**
Goodenia ovata	2	29%	1	7%	uninformative
Hibbertia circumdans	2	14%	1	14%	uninformative
Hibbertia obtusifolia	1	14%	1	5%	uninformative
Hibbertia serpyllifolia	1	14%	1	1%	uninformative
Indigofera australis	2	14%	2	16%	uninformative
Joycea pallida	**2**	**43%**	**2**	**13%**	**positive**
Lagenophora stipitata	1	14%	1	10%	uninformative
Lepidosperma gunnii	**2**	**57%**	**2**	**11%**	**positive**
Lepidosperma laterale	3	29%	1	24%	uninformative
Leptospermum polyanthum	3	14%	3	2%	uninformative
Leucopogon muticus	1	43%	2	24%	uninformative
Lissanthe strigosa	**2**	**71%**	**1**	**1%**	**positive**
Lomandra confertifolia	**2**	**71%**	**2**	**33%**	**positive**
Lomandra filiformis	**2**	**57%**	**2**	**18%**	**positive**
Lomandra glauca	2	29%	2	29%	uninformative
Macrozamia reducta	**2**	**57%**	**1**	**10%**	**positive**
Marsdenia viridiflora subsp. *viridiflora*	2	14%	1	0%	uninformative
Microlaena stipoides	**2**	**43%**	**2**	**28%**	**positive**
Monotoca elliptica	1	14%	2	1%	uninformative
Notodanthonia longifolia	**2**	**71%**	**2**	**6%**	**positive**
Olearia microphylla	2	14%	1	0%	uninformative
Opercularia hispida	1	14%	2	1%	uninformative
Oxalis perennans	1	14%	1	11%	uninformative
Panicum effusum	2	29%	1	2%	uninformative
Paspalidium gracile	2	14%	1	2%	uninformative
Pimelea latifolia	2	14%	2	5%	uninformative
Pittosporum undulatum	1	14%	1	5%	uninformative
Plantago hispida	1	29%	2	1%	uninformative
Pomax umbellata	1	29%	2	33%	uninformative
Pteridium esculentum	1	14%	2	32%	uninformative
Pultenaea microphylla	2	14%	2	1%	uninformative
Pultenaea scabra	**2**	**43%**	**2**	**6%**	**positive**
Sida corrugata	2	14%	1	2%	uninformative
Solanum brownii	1	14%	1	7%	uninformative
Solanum campanulatum	2	14%	1	5%	uninformative
Stackhousia viminea	1	14%	1	2%	uninformative
Veronica plebeia	1	14%	2	16%	uninformative
Vittadinia cuneata	2	14%	1	4%	uninformative
Vittadinia muelleri	2	29%	2	1%	uninformative
Vittadinia sulcata	1	14%	2	3%	uninformative
Wahlenbergia planiflora	1	14%	1	0%	uninformative
Xanthorrhoea johnsonii	2	14%	1	1%	uninformative

Statewide Class

Plant Community Type: Sydney Montane Heaths

Blue Mountains Mallee Ash - Dwarf Casuarina heath of the upper Blue Mountains, Sydney Basin

Description

Blue Mountains Heath-Mallee is a low heath community that grows on exposed sandstone rock plates, pagodas and cliff edges on the drier elevated sandstone plateaux in the central western areas of the Sydney Basin Bioregion. This patchily distributed, though widespread, community is characterised by a consistent cover of dwarf she-oaks (*Allocasuarina nana, A. distyla/A. gymnanthera),* heath-leaved banksia (*Banksia ericifolia*), and tea-tree (*Leptospermum arachnoides).* Other heath plants are also common including hakeas (*Hakea* spp.), conesticks (*Petrophile pulchella*), grevilleas (*Grevillea* spp.), wattles (*Acacia* spp.) and drumsticks (*Isopogon* spp.), though these are less frequently recorded and are not abundant. There are a number of rare mallee eucalypts that on occasion emerge above the heath, including *Eucalyptus laophila* and *Eucalyptus bensonii* as well as the more common whipstick-mallee ash (*Eucalyptus multicaulis).* The ground cover is rarely more than patchy, with the sedge *Lepidosperma laterale*, and the small shrub *Platysace linearifolia* regularly recorded. The dwarf triggerplant (*Stylidium lineare*) is also common.

This heath is found between 650 and 950 metres above sea level. It extends from the cliff and gorge edges in the Bungleboori Creek catchment across the Newnes Plateau, north to around Coricudgy Mountain area and west to Airly Mountain and Cullen Bullen. These elevated plateaux receive an annual average rainfall between 750 and 900 millimetres and are drier environments than the upper mountains plateaux to the south. The study area encompasses a large proportion of the extent of this heath, particularly within the Coorongooba catchment.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Small Trees & Shrubs	2.2 m ±1.6 0.5-5.0	25% ±23 5-70	*Allocasuarina nana, Banksia ericifolia, Eucalyptus multicaulis, Leptospermum arachnoides, Platysace lanceolata, Goodenia decurrens, Petrophile pulchella, Allocasuarina distyla, Grevillea buxifolia, Kunzea ambigua, Eucalyptus bensonii, Hakea sericea, Hemigenia purpurea, Isopogon anemonifolius, Leptospermum trinervium, Xanthorrhoea media, Zieria laevigata*
Ground Covers	0.9 m ±0.3 0.6-1.1	70% ±13 60-85	*Dampiera stricta, Lomandra obliqua, Actinotus helianthi, Laxmannia gracilis, Caustis pentandra, Goodenia bellidifolia* subsp. *bellidifolia, Lepidosperma viscidium, Lepyrodia scariosa, Schoenus imberbis*
Vines & Climbers	N/A	N/A	*Cassytha pubescens*

*Compiled from 5 of 6 sites with structural data recorded.

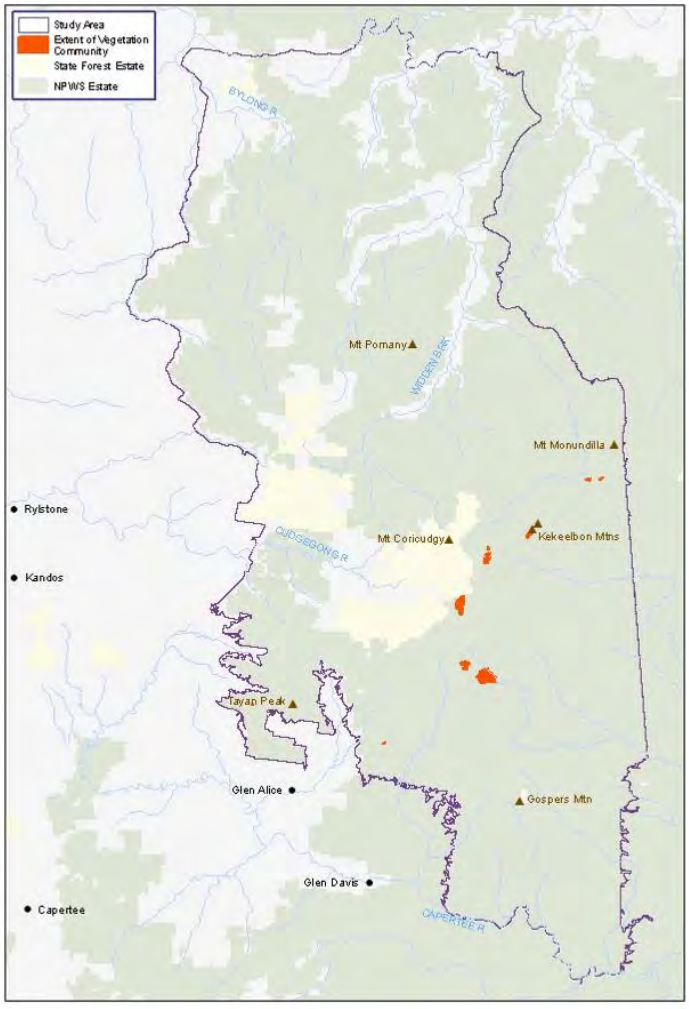
Threats

Threats to this community are low as it occurs in rocky infertile environments. Frequent fire may result in the gradual decline of locally endemic mallee species (Bell 1998).

Conservation Status

This community is widespread within Wollemi and Gardens of Stone national parks. It also occurs in Newnes, Ben Bullen and Airly state forests and Crown lands. These sites are excluded from timber harvesting operations and form a component of the recreational values of these lands.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	8224-8571 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	240.2 ha	6440 ha 79% of extant area
Area in state forests	1.9 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	242.2 ha	8142 ha



Example Locations

- o Cyril Rocks, Old Army Road
- o Bare Rock Bluff, Hunter Main Trail

Species Richness

Number of plots	6
Total species	125
Average species per plot	35.0 ±7.1

Known Variations

Small structural variations occur with the presence of emergent mallee species. The particular mallee species that are present is also variable between sites. *Allocasuarina gymnanthera* becomes more frequent towards the northern extremity of the community as average annual rainfall declines.

Relationship to Other Communities

Floristically, this community is closely associated with the sandstone mallee heath found outside the study area in areas of central and upper Blue Mountains (600-950 metres above sea level). Patches of this community in the study area are outlying examples at the northern limit of the distribution of the Blue Mountains heaths.

Spatially this heath may form a mosaic with pagoda shrubland (S_HL13), into which it grades as the soil layer becomes increasing shallow and patchy. These communities share several plant species, but are readily separated by the greater dominance of shrubs from the Myrtaceae family in S_HL13. This includes tea-trees (*Leptospermum* spp.) and common fringe myrtle (*Calytrix tetragona*).

Accuracy

Sample density is moderate. The community is a highly identifiable photo pattern based on both the characteristic exposed rocky habitat and the distinctive signature presented by the dense cover of dwarf she-oak (*Allocasuarina* spp.).

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia brownii	1	17%	1	2%	uninformative
Acacia echinula	2	17%	3	0%	uninformative
Acacia obtusata	1	17%	2	1%	uninformative
Acacia obtusifolia	1	17%	2	14%	uninformative
Acacia penninervis var. *penninervis*	1	17%	1	6%	uninformative
Acacia suaveolens	2	33%	1	2%	uninformative
Acacia terminalis	1	33%	1	13%	uninformative
Acacia ulicifolia	1	17%	1	11%	uninformative
Actinotus helianthi	1	67%	2	4%	uninformative
Actinotus minor	2	33%	2	1%	uninformative
Allocasuarina distyla	**2**	**50%**	**2**	**1%**	**positive**
Allocasuarina nana	**3**	**100%**	**2**	**1%**	**positive**
Amperea xiphoclada	2	17%	1	13%	uninformative
Anisopogon avenaceus	2	33%	2	8%	uninformative
Baeckea brevifolia	4	17%	3	0%	uninformative
Baeckea linifolia	3	17%	3	1%	uninformative
Baeckea utilis	1	17%	2	2%	uninformative
Banksia ericifolia	1	83%	2	2%	uninformative
Banksia penicillata	**2**	**50%**	**2**	**2%**	**positive**
Banksia serrata	1	17%	1	3%	uninformative
Banksia spinulosa	1	17%	2	6%	uninformative
Bauera rubioides	**1**	**17%**	**0**	**0%**	**positive**
Boronia anemonifolia	1	17%	1	1%	uninformative
Boronia floribunda	3	17%	1	2%	uninformative
Boronia microphylla	1	17%	2	2%	uninformative
Bossiaea heterophylla	1	33%	2	8%	uninformative
Bossiaea rhombifolia	1	17%	2	3%	uninformative
Brachyloma daphnoides	1	17%	1	14%	uninformative
Callistemon citrinus	2	17%	2	3%	uninformative
Calytrix tetragona	2	33%	2	10%	uninformative
Cassytha glabella f. *glabella*	1	17%	1	8%	uninformative
Cassytha pubescens	2	33%	2	6%	uninformative
Caustis flexuosa	1	17%	1	12%	uninformative
Caustis pentandra	**2**	**50%**	**2**	**3%**	**positive**
Chloanthes stoechadis	2	17%	2	2%	uninformative
Conospermum taxifolium	1	17%	1	0%	uninformative
Dampiera purpurea	1	17%	1	1%	uninformative
Dampiera stricta	**2**	**83%**	**2**	**9%**	**positive**
Darwinia peduncularis	2	17%	1	1%	uninformative
Darwinia taxifolia	1	17%	3	1%	uninformative
Dillwynia acicularis	2	17%	1	1%	uninformative
Dillwynia floribunda	1	17%	2	3%	uninformative
Dillwynia sericea	2	33%	1	3%	uninformative
Epacris coriacea	1	17%	2	1%	uninformative
Epacris microphylla	2	33%	1	1%	uninformative
Epacris muelleri	**1**	**17%**	**0**	**0%**	**positive**
Epacris obtusifolia	2	17%	2	1%	uninformative
Epacris pulchella	2	33%	1	5%	uninformative
Eucalyptus apiculata	**3**	**17%**	**0**	**0%**	**positive**
Eucalyptus bensonii	3	33%	1	1%	uninformative
Eucalyptus laophila	1	17%	2	0%	uninformative
Eucalyptus multicaulis	**2**	**67%**	**3**	**3%**	**positive**
Eucalyptus oblonga	1	17%	1	0%	uninformative
Eucalyptus piperita	1	17%	3	16%	uninformative
Gahnia microstachya	2	17%	2	2%	uninformative
Gahnia subaequiglumis	**2**	**17%**	**0**	**0%**	**positive**
Goodenia bellidifolia	1	50%	2	5%	uninformative
Goodenia decurrens	**2**	**83%**	**2**	**4%**	**positive**
Grevillea buxifolia	2	33%	2	2%	uninformative
Grevillea sericea	1	17%	1	4%	uninformative
Gymnoschoenus sphaerocephalus	1	17%	5	1%	uninformative
Hakea dactyloides	**2**	**50%**	**1**	**18%**	**positive**
Hakea sericea	1	50%	1	3%	uninformative
Harmogia densifolia	1	17%	2	4%	uninformative
Hemigenia purpurea	**1**	**50%**	**0**	**0%**	**positive**
Hibbertia acicularis	1	17%	1	7%	uninformative
Hybanthus monopetalus	1	17%	1	3%	uninformative
Isopogon anemonifolius	1	50%	1	8%	uninformative
Isopogon anethifolius	1	17%	2	1%	uninformative
Kunzea ambigua	2	33%	2	2%	uninformative
Laxmannia gracilis	**2**	**67%**	**1**	**2%**	**positive**
Lepidosperma concavum	1	17%	3	2%	uninformative
Lepidosperma filiforme	4	17%	2	1%	uninformative
Lepidosperma laterale	1	17%	1	24%	uninformative
Lepidosperma urophorum	1	17%	1	4%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Lepidosperma viscidum	**3**	**50%**	**2**	**2%**	**positive**
Leptospermum arachnoides	**2**	**83%**	**2**	**6%**	**positive**
Leptospermum sphaerocarpum	2	33%	2	14%	uninformative
Leptospermum trinervium	1	50%	2	14%	uninformative
Lepyrodia scariosa	3	33%	2	2%	uninformative
Leucopogon esquamatus	**1**	**17%**	**0**	**0%**	**positive**
Leucopogon microphyllus	2	33%	2	5%	uninformative
Leucopogon muticus	1	17%	2	24%	uninformative
Leucopogon setiger	1	33%	2	4%	uninformative
Lomandra glauca	2	17%	2	30%	uninformative
Lomandra obliqua	1	100%	2	15%	uninformative
Mirbelia platylobioides	1	17%	1	2%	uninformative
Mirbelia rubiifolia	2	33%	2	2%	uninformative
Nematolepis squamea subsp. *squamea*	1	17%	3	1%	uninformative
Ochrosperma oligomerum	2	33%	3	1%	uninformative
Olax stricta	2	33%	1	3%	uninformative
Omphacomeria acerba	1	17%	1	2%	uninformative
Patersonia sericea	2	33%	2	20%	uninformative
Persoonia levis	1	33%	1	9%	uninformative
Petrophile pulchella	1	83%	1	4%	uninformative
Philotheca hispidula	1	17%	2	3%	uninformative
Philotheca obovalis	3	17%	2	0%	uninformative
Platysace ericoides	3	17%	2	22%	uninformative
Platysace lanceolata	**2**	**83%**	**1**	**16%**	**positive**
Ptilothrix deusta	2	17%	2	1%	uninformative
Schoenus brevifolius	3	17%	1	1%	uninformative
Schoenus ericetorum	2	17%	1	4%	uninformative
Schoenus imberbis	**2**	**50%**	**2**	**4%**	**positive**
Stylidium productum	1	17%	2	8%	uninformative
Styphelia triflora	1	17%	1	13%	uninformative
Styphelia tubiflora	1	17%	2	1%	uninformative
Tetratheca neglecta	**1**	**17%**	**0**	**0%**	**positive**
Xanthorrhoea media	2	33%	1	1%	uninformative
Xanthosia atkinsoniana	1	17%	2	12%	uninformative
Xanthosia pilosa	2	33%	1	8%	uninformative
Xanthosia tridentata	2	17%	2	1%	uninformative
Xyris gracilis	2	17%	2	1%	uninformative
Zieria laevigata	1	50%	2	1%	uninformative

Statewide Class: Sydney Montane Heaths
Plant Community Type: Not described

Description

Western Blue Mountains Pagoda Shrubland is a dry, low-growing and open shrub community found on massive residual sandstone outcrops known as pagodas. These landforms are a spectacular sight on the edges of the sandstone plateaux and mesas of the western Blue Mountains. The scrub that forms on them comprises blunt beard heath (*Leucopogon muticus*), common fringe myrtle (*Calytrix tetragona*) and tea-trees (*Leptospermum arachnoides* and *Leptospermum parvifolium*). Wattles (*Acacia* spp.) and she-oaks (*Allocasuarina* spp.) are also common, but less abundant. Emergent cypress pines (*Callitris* spp.) appear dotted across these rocky environments, occasionally with a stunted eucalypt or two. The eucalypts include mallee species such as Blue Mountains mallee ash (*Eucalyptus stricta*) or mallee growth forms of species that also occur in the surrounding woodlands. Exposed rock makes up a large proportion of the ground cover and as a result the mix of ground layer species and their percentage cover is highly variable. An example of the ground layer is the small clumps of sedges such as *Lepidosperma viscidum* that cling to damp skeletal soils in rock crevices.

This rocky shrubland occurs between Lithgow and Bylong and is restricted to the Triassic-aged Narrabeen sediments. It is commonly encountered between 660 and 950 metres above sea level, although some patches are found above 1000 metres on the Newnes Plateau. It occurs in environments that receive an average annual rainfall of between 680 and 1080 millimetres. In the study area the community extends from Glen Davis to Dunns Swamp and north to Bylong, and is found throughout the central and western cliffllines that dissect the sandstone plateaux west of old Army Road.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	5 m ±3 1-10	32% ±32 5-95	*Callitris endlicheri, Eucalyptus stricta, Eucalyptus multicaulis, Callitris rhomboidea*
Shrubs	2.1 m ±0.7 1.4-3.0	63% ±13 45-85	*Leptospermum parvifolium, Calytrix tetragona, Leptospermum arachnoides, Leucopogon muticus, Allocasuarina gymnanthera, Dillwynia sericea, Platysace lanceolata, Acacia ulicifolia, Leucopogon microphyllus* var. *microphyllus*
Ground Covers	0.5 m ±0.3 0.2-1.0	6% ±4 2-15	*Lomandra glauca, Schoenus imberbis, Schoenus ericetorum, Caustis flexuosa, Drosera auriculata, Entolasia stricta, Lepidosperma concavum, Lepidosperma viscidium, Lomandra confertifolia* subsp. *rubiginosa*
Vines & Climbers	N/A	N/A	*Cassytha pubescens*

*Compiled from 11 of 13 sites with structural data recorded.

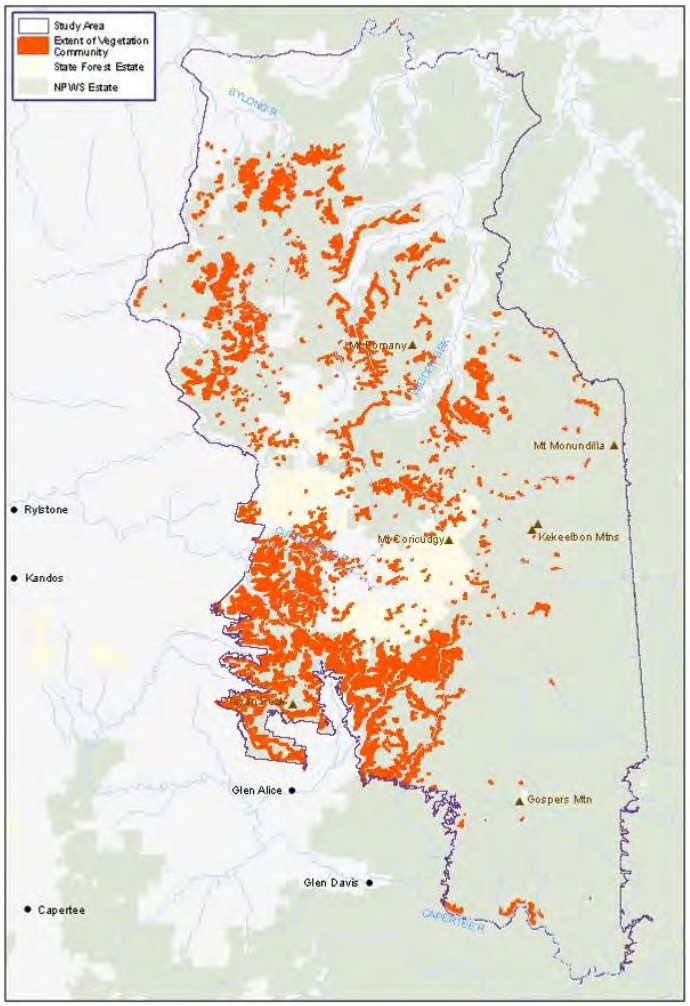
Threats

Threats to this community are low as it occurs in rocky infertile environments. Frequent fire may penetrate the shrubland and kill stands of cypress pine. Recreational use of spectacular vistas may result in local impacts through unformed walking and four-wheel drive trails and rubbish dumping.

Conservation Status

This community is widespread within Wollemi and Gardens of Stone national parks. It also occurs in Newnes, Ben Bullen, and Airly state forests and Crown lands. These sites are excluded from timber harvesting operations and form a component of the recreational values of these lands.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	11,870-12,370 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	9331.0 ha	9631 ha 82% of extant area
Area in state forests	305.4 ha	Not available
Area in other tenures	217.0 ha	Not available
Total extant area	9853.3 ha	11,751 ha



Example Locations

- o Puzzle Mountain area, Bylong
- o Pagodas in the Dunns Swamp area

Species Richness

Number of plots	13
Total species	129
Average Species per plot	22.2 ±7.3

Known Variations

No variations recognised.

Relationship to Other Communities

Floristically this community is related to rocky heathy woodlands found in northern Wollemi NP and the western Hunter sandstone ranges (S_DSF51, S_DSF54). The former is most similar, but can be distinguished by a taller eucalypt canopy. The latter has a less dense shrub layer and fewer of the tea-tree and fringe myrtle shrubs.

Spatially this community may grade into S_HL12, a heath assemblage dominated by dwarf she-oak (*Allocasuarina nana*). It may also grade into eucalypt woodlands with a distinctive heathy understorey (S_DSF65, S_DSF51, S_DSF54) which are found between pagodas on less rocky soils.

Accuracy

Sample density is high. Mapping domains were based on elevation and mean annual rainfall of sample sites. Rocky shrublands occupy a very distinctive habitat that is readily distinguished using stereoscopic aerial photography. However, it often occurs in a mosaic with other rocky heaths and woodlands and as a result some small areas are likely to be included within other map units.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia decora	1	23%	2	3%	uninformative
Acacia elongata	**1**	**8%**	**0**	**0%**	**positive**
Acacia hamiltoniana	1	23%	2	1%	uninformative
Acacia longifolia subsp. *longifolia*	2	15%	2	5%	uninformative
Acacia obtusifolia	3	15%	2	14%	uninformative
Acacia terminalis	1	31%	1	13%	uninformative
Acacia ulicifolia	1	38%	1	10%	uninformative
Actinotus helianthi	2	15%	1	4%	uninformative
Allocasuarina gymnanthera	1	38%	2	2%	uninformative
Banksia ericifolia	3	15%	2	2%	uninformative
Banksia penicillata	2	15%	2	2%	uninformative
Boronia floribunda	1	15%	1	1%	uninformative
Bossiaea heterophylla	1	15%	2	8%	uninformative
Brachyloma daphnoides	2	15%	1	14%	uninformative
Callitris endlicheri	1	31%	1	11%	uninformative
Callitris muelleri	**1**	**8%**	**0**	**0%**	**positive**
Callitris rhomboidea	1	15%	2	2%	uninformative
Calytrix tetragona	**3**	**100%**	**2**	**7%**	**positive**
Cassytha glabella f. *glabella*	2	15%	1	8%	uninformative
Cassytha pubescens	**2**	**38%**	**2**	**5%**	**positive**
Caustis flexuosa	2	15%	1	12%	uninformative
Cheilanthes sieberi subsp. *sieberi*	1	15%	1	19%	uninformative
Chloanthes stoechadis	1	15%	2	2%	uninformative
Dampiera stricta	1	15%	2	9%	uninformative
Darwinia peduncularis	1	15%	2	1%	uninformative
Dillwynia floribunda	3	15%	2	2%	uninformative
Dillwynia rudis	2	15%	2	3%	uninformative
Dillwynia sericea	1	46%	2	2%	uninformative
Drosera auriculata	2	15%	1	0%	uninformative
Entolasia stricta	1	23%	2	33%	uninformative
Eucalyptus multicaulis	1	15%	3	3%	uninformative
Eucalyptus rossii	2	23%	3	14%	uninformative
Eucalyptus sparsifolia	2	23%	3	28%	uninformative
Gonocarpus teucrioides	2	15%	2	15%	uninformative
Goodenia decurrens	2	15%	2	4%	uninformative
Grevillea evansiana	2	15%	1	1%	uninformative
Harmogia densifolia	**2**	**54%**	**2**	**3%**	**positive**
Hibbertia riparia	2	23%	3	3%	uninformative
Hibbertia vestita	**1**	**8%**	**0**	**0%**	**positive**
Homoranthus darwinioides	**2**	**8%**	**0**	**0%**	**positive**
Isopogon anemonifolius	1	15%	1	8%	uninformative
Kunzea ambigua	2	15%	2	2%	uninformative
Lepidosperma concavum	3	15%	2	1%	uninformative
Lepidosperma laterale	2	15%	1	24%	uninformative
Leptospermum arachnoides	**3**	**77%**	**2**	**5%**	**positive**
Leptospermum parvifolium	**4**	**100%**	**2**	**9%**	**positive**
Leptospermum sphaerocarpum	2	23%	2	14%	uninformative
Leptospermum trinervium	2	23%	2	14%	uninformative
Leucopogon appressus	2	31%	3	1%	uninformative
Leucopogon microphyllus	**2**	**77%**	**1**	**3%**	**positive**
Leucopogon muticus	**2**	**92%**	**2**	**22%**	**positive**
Lomandra confertifolia	2	23%	2	33%	uninformative
Lomandra glauca	1	38%	2	30%	uninformative
Monotoca scoparia	1	23%	2	24%	uninformative
Nematolepis squamea subsp. *squamea*	4	15%	1	1%	uninformative
Notodanthonia semiannularis	**1**	**8%**	**0**	**0%**	**positive**
Petrophile pulchella	1	31%	1	5%	uninformative
Philotheca salsolifolia	2	31%	2	5%	uninformative
Platysace lanceolata	**2**	**46%**	**2**	**16%**	**positive**
Pomax umbellata	1	15%	2	34%	uninformative
Prostanthera hindii	2	15%	1	0%	uninformative
Schoenus ericetorum	1	31%	1	3%	uninformative
Schoenus imberbis	2	31%	2	3%	uninformative
Stylidium lineare	2	15%	2	1%	uninformative
Styphelia triflora	1	15%	1	13%	uninformative
Xanthosia pilosa	1	15%	2	8%	uninformative

Statewide Class: Coastal Heath Swamps
Plant Community Type: Not described

Description

Blue Mountains Coral Fern Shrub Swamp is found along gently sloping drainage lines in the higher elevations of the Blue Mountains. By far the most distinctive feature of this community is the dense knee-high tangles of coral fern (*Gleichenia dicarpa*) that hide the creekline and its banks. Amongst the fern layer are small native fuchsias (*Epacris* spp.), weeping baeckea (*Baeckea linifolia*) and saw sedge (*Gahnia sieberiana*). Small sedges such as *Empodisma minus* and water-loving ferns such as *Blechnum* spp. are also frequently recorded. Above the ferns is a variable cover of larger woody shrubs such as tea-trees (*Leptospermum* spp.), crimson bottlebrush (*Callistemon citrinus*) and wattles (*Acacia* spp.). These shrubs are often shadowed by overhanging eucalypts that branch across the drainage line.

This swamp community is patchily distributed across the cooler mid and upper regions of the Blue Mountains at elevations between 680 and 1050 metres above sea level. These areas receive between 850 and 1200 millimetres of average annual rainfall. They often occur within a mosaic of hanging swamps and exposed sandstone forests and woodlands between Leura and Mount Victoria, and are found north to Gospers Mountain in Wollemi NP. There are only two small patches known from the study area. They occupy small areas along drainage channels and appear to mark the change in substrate from deep sandy material to rocky, shallow and incised gullies.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Emergents (overhanging)	15 15	5% 5	*Eucalyptus cypellocarpa, Eucalyptus radiata, Eucalyptus piperita*
Shrubs	5 m ±0 5-5	60% ±28 40-80	*Leptospermum continentale, Callistemon citrinus, Leptospermum grandifolium, Leptospermum polygalifolium* subsp. *polygalifolium*
Ground Covers	0.9 m ±0.9 0.1-1.8	68% ±46 15-100	*Gleichenia dicarpa, Blechnum nudum, Gahnia sieberiana, Baumea teretifolia, Baumea tetragona, Entolasia stricta, Microlaena stipoides* var. *stipoides, Empodisma minus*
Vines & Climbers	N/A	N/A	*Pratia purpurascens*

*Compiled from 2 of 2 sites with structural data recorded.

Threats

Threats to this community largely arise from impacts associated with proximity to urban areas across the Blue Mountains (NSW Scientific Committee 2008b), many of which are considered to be Key Threatening Processes under the TSC Act. These include erosion, sedimentation and weed invasion. In addition, clearing for urban and industrial development is likely to have resulted in the loss of some areas of this community, although current areas exposed to clearing are considered to be relatively small. Some stands may be threatened by hydrological changes resulting from longwall mining or water extraction from underlying aquifers. Frequent fire arising from hazard reduction operations on the urban fringe can also impact on the persistence of this community.

Conservation Status

Blue Mountains Coral Fern Shrub Swamp is likely to form a component of Blue Mountains Swamps in the Sydney Basin Bioregion, a TEC listed under the TSC Act. It is also a component of Temperate Highland Peat Swamps on Sandstone, a TEC listed under the EPBC Act.

This community is represented in Blue Mountains and Wollemi national parks.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	1057-1115 ha
Estimated percentage cleared	Not available	5-10%
Area in formal conservation reserves	3.9 ha	204 ha 20% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	3.9 ha	1004 ha

Example Locations

- Gospers Mountain area

Species Richness

Number of plots	2
Total species	34
Average species per plot	19.5 ±12.0

Known Variations

There is variation in the density of the woody shrub layer.

Relationship to Other Communities

Floristically this community is closely related to the sedge swamps of the upper Blue Mountains (S_FrW15). However that latter community occupies wetter sites, the diversity of sedges is far higher, and button grass (*Gymnoschoenus sphaerocephalus*) is very prominent.

Spatially this community grades into the surrounding gully sclerophyll forests (S_WSF10).

Accuracy

Sample density is high. This shrub swamp community is naturally restricted to higher elevation sandstone plateaux in the study area. The dense green colour of the coral fern and the low woody vegetation makes this community easy to discern from stereoscopic aerial photography.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia saliciformis	1	50%	1	7%	uninformative
Acacia ulicifolia	1	50%	1	11%	uninformative
Baumea teretifolia	**4**	**50%**	**0**	**0%**	**positive**
Baumea tetragona	**3**	**50%**	**0**	**0%**	**positive**
Billardiera scandens	1	50%	1	24%	uninformative
Blechnum nudum	**6**	**100%**	**2**	**2%**	**positive**
Blechnum wattsii	**2**	**50%**	**0**	**0%**	**positive**
Callistemon citrinus	**3**	**100%**	**2**	**2%**	**positive**
Calochlaena dubia	1	50%	3	8%	uninformative
Dianella caerulea	1	50%	1	31%	uninformative
Echinopogon caespitosus	1	50%	2	3%	uninformative
Empodisma minus	**3**	**50%**	**3**	**1%**	**positive**
Entolasia marginata	1	50%	2	2%	uninformative
Entolasia stricta	**2**	**50%**	**2**	**32%**	**positive**
Eucalyptus cypellocarpa	1	50%	3	10%	uninformative
Euchiton involucratus	1	50%	1	3%	uninformative
Gahnia sieberiana	**3**	**100%**	**1**	**2%**	**positive**
Gleichenia dicarpa	**5**	**100%**	**2**	**1%**	**positive**
Gonocarpus micranthus	**2**	**50%**	**2**	**1%**	**positive**
Hydrocotyle laxiflora	**2**	**50%**	**2**	**19%**	**positive**
Hydrocotyle sibthorpioides	**2**	**50%**	**2**	**2%**	**positive**
Leptospermum continentale	**4**	**100%**	**2**	**2%**	**positive**
Leptospermum grandifolium	**2**	**50%**	**4**	**0%**	**positive**
Leptospermum polygalifolium* subsp. *polygalifolium	**4**	**50%**	**2**	**6%**	**positive**
Leucopogon lanceolatus	**2**	**50%**	**1**	**12%**	**positive**
Microlaena stipoides	**2**	**50%**	**2**	**28%**	**positive**
Notelaea longifolia	1	50%	1	9%	uninformative
Persoonia linearis	1	50%	1	55%	uninformative
Poa affinis	**2**	**50%**	**2**	**14%**	**positive**
Polyscias sambucifolia	**2**	**50%**	**1**	**12%**	**positive**
Pratia purpurascens	**2**	**50%**	**2**	**1%**	**positive**
Pteridium esculentum	1	50%	2	32%	uninformative
Solanum prinophyllum	1	50%	1	11%	uninformative
Viola banksii	**2**	**50%**	**3**	**0%**	**positive**

Statewide Class
Coastal Heath Swamps

Plant Community Type: Prickly Tea-tree - sedge wet heath on sandstone plateaux, central and southern Sydney Basin

Description

Blue Mountains Sedge Swamp is a freshwater wetland community associated with poorly drained soils situated on the higher elevation sandstone plateaux of the Blue Mountains. Also known as hanging swamps, these wetlands support a community characterised by sedges and woody shrubs. The density of the latter is variable between sites, often in response to different fire history. The peaty soils are periodically waterlogged by subterranean water seepage that favours a dense cover of sedges from the Cyperaceae family. The most immediately distinguishable of these is button grass (*Gymnoschoenus sphaerocephalus)* as it often reaches over one metre tall. Other species from this sedge family include *Lepidosperma limicola* and *Chorizandra sphaerocephala.* A wide range of other small, moisture-loving species is also present including *Empodisma minus* and coral fern (*Gleichenia dicarpa*). Larger woody shrubs tend to provide an open cover that includes a distinctive assemblage of tea-trees (*Leptospermum* spp.), heath-leaved banksia (*Banksia ericifolia*), hakea (*Hakea dactyloides*), baeckeas (*Baeckea* spp.) and wattles (e.g. *Acacia ptychoclada)*. *Acacia ptychoclada* is one of several locally endemic woody shrub species restricted to these wetlands.

The occurrence of this swamp community is closely correlated with the highest rainfall zones of the Blue Mountains and elevations greater than 900 metres above sea level. Mean annual rainfall easily exceeds 1000 millimetres per year and this is supplemented by moisture generated by mists and fogs that blanket the upper mountains in the cooler months. The swamps are commonly situated at the heads of gentle gullylines and above clifflines, where they form small often isolated patches. Narrow Neck Plateau and Kings Tableland support some the largest consolidated areas in the Blue Mountains. In the study area there are several small outlying examples found on the high points of the Hunter Range between Mount Coricudgy and Mount Kekeelbon.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Shrubs	1.8 m ±0.7 0.8-2.2	77% ±16 60-98	*Baeckea linifolia, Callistemon citrinus, Leptospermum grandifolium, Acacia ptychoclada, Banksia ericifolia, Boronia barkeriana, Comesperma defoliatum, Epacris obtusifolia, Baeckea utilis*
Ground Covers	0.7 m ±0.4 0.4-1.0	25% ±7 20-30	*Empodisma minus, Gymnoschoenus sphaerocephalus, Lepidosperma limicola, Xyris gracilis, Baloskion fimbriatum, Lepyrodia scariosa, Drosera binata, Drosera burmanni, Lycopodiella lateralis, Sphagnum* spp., *Utricularia dichotoma, Xyris operculata, Gleichenia dicarpa*
Vines & Climbers	N/A	N/A	*Cassytha glabella* f. *glabella*

*Compiled from 3 of 3 sites with structural data recorded.

Threats

Threats to this community largely arise from impacts associated with proximity to urban areas across the Blue Mountains (NSW Scientific Committee 2008b), many of which are considered to be Key Threatening Processes under the TSC Act. This includes erosion, sedimentation and weed invasion. In addition, clearing for urban and industrial development is likely to have resulted in the loss of some areas of this community, although current areas exposed to clearing are considered to be relatively small. Some stands may be threatened by hydrological changes resulting from longwall mining or water extraction from underlying aquifers. Frequent fire arising from hazard reduction operations on the urban fringe can also impact on the persistence of this community.

Conservation Status

Blue Mountains Sedge Swamp is a component of Blue Mountains Swamps in the Sydney Basin Bioregion, a TEC listed under the TSC Act. It is also a component of Temperate Highland Peat Swamps on Sandstone, a TEC listed under the EPBC Act.

This community is represented in Blue Mountains and Wollemi national parks.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	5070-5284 ha
Estimated percentage cleared	Not available	1-5%
Area in formal conservation reserves	13.5 ha	3514 ha 70% of extant area
Area in state forests	6.0 ha	Not available
Area in other tenures	0 ha	Not available
Total extant area	19.5 ha	5020 ha

Example Locations

- Western Hunter Main Trail, Hunter Range near Mount Coricudgy

Species Richness

Number of plots	3
Total species	45
Average species per plot	23.3 ±5.9

Known Variations

Within the study area, and across the range of this community in the region, there is variation in the cover of woody shrubs. Some sites support only a sparse heath layer above a continuous cover of sedges and herbs. These open sedgelands have not been mapped separately.

Relationship to Other Communities

Floristically this community is closely related to other swamps situated on the sandstone plateaux of the Sydney basin. In the study area this includes the coral fern swamps (S_FrW14).

Spatially the swamps grade into the surrounding dry sclerophyll forests and woodlands of the elevated sandstone plateaux (e.g. S_DSF65).

Accuracy

The extent of patches of this swamp community is small in the study area and two thirds of the patches have been visited. The swamps present a highly visible pattern in aerial photography and represent a high contrast feature to the surrounding dry sclerophyll forests and woodlands. As a result mapping accuracy is considered to be high.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia ptychoclada	**2**	**67%**	**0**	**0%**	**positive**
Baeckea linifolia	**3**	**67%**	**3**	**0%**	**positive**
Baeckea utilis	2	33%	2	1%	uninformative
Baloskion australe	1	33%	2	1%	uninformative
Baloskion fimbriatum	**3**	**67%**	**0**	**0%**	**positive**
Banksia ericifolia	**2**	**67%**	**2**	**2%**	**positive**
Boronia barkeriana	**2**	**67%**	**0**	**0%**	**positive**
Callistemon citrinus	**2**	**100%**	**2**	**2%**	**positive**
Cassytha glabella* f. *glabella	**2**	**67%**	**1**	**8%**	**positive**
Comesperma defoliatum	**2**	**67%**	**0**	**0%**	**positive**
Dillwynia rudis	1	33%	2	3%	uninformative
Drosera binata	**2**	**67%**	**0**	**0%**	**positive**
Drosera burmanni	**2**	**67%**	**1**	**0%**	**positive**
Empodisma minus	**4**	**100%**	**3**	**1%**	**positive**
Entolasia stricta	1	33%	2	32%	uninformative
Epacris microphylla	1	33%	2	1%	uninformative
Epacris obtusifolia	**2**	**67%**	**2**	**0%**	**positive**
Epacris paludosa	**1**	**33%**	**0**	**0%**	**positive**
Gleichenia dicarpa	1	33%	2	2%	uninformative
Gonocarpus micranthus	2	33%	2	1%	uninformative
Gymnoschoenus sphaerocephalus	**5**	**100%**	**2**	**0%**	**positive**
Hakea dactyloides	1	33%	1	19%	uninformative
Lepidosperma limicola	**3**	**100%**	**1**	**0%**	**positive**
Lepidosperma neesii	**2**	**33%**	**0**	**0%**	**positive**
Leptospermum continentale	2	33%	2	2%	uninformative
Leptospermum grandifolium	**4**	**67%**	**2**	**0%**	**positive**
Leptospermum obovatum	1	33%	1	1%	uninformative
Leptospermum trinervium	1	33%	2	14%	uninformative
Lepyrodia muelleri	2	33%	1	0%	uninformative
Lepyrodia scariosa	**3**	**67%**	**2**	**1%**	**positive**
Lycopodiella lateralis	**2**	**67%**	**0**	**0%**	**positive**
Patersonia sericea	1	33%	2	20%	uninformative
Ptilothrix deusta	2	33%	2	1%	uninformative
Sprengelia incarnata	**1**	**33%**	**0**	**0%**	**positive**
Stylidium graminifolium	2	33%	1	3%	uninformative
Utricularia dichotoma	**2**	**67%**	**0**	**0%**	**positive**
Xanthosia dissecta	**2**	**33%**	**0**	**0%**	**positive**
Xyris gracilis	**2**	**100%**	**2**	**0%**	**positive**
Xyris operculata	**3**	**67%**	**0**	**0%**	**positive**

Statewide Class Montane Bogs and Fens
Plant Community Type: Not described

Description

Central Tableland Flats Swamp Gum Low Forest occurs on poorly drained depressions along the western margin of the greater Sydney region. It forms a damp to wet shrub swamp on periodically waterlogged peaty soils. A dense low cover of woody vegetation features tea-trees (*Leptospermum continentale/L. obovatum*) and crimson bottlebrush (*Callistemon citrinus*), with the mallee-like broad-leaved sally (*Eucalyptus camphora*) often conspicuous. Sedges and rushes are prominent amongst the ground layer vegetation. While button grass (*Gymnoschoenus sphaerocephalus*) may dominate some individual sites, *Empodisma minus*, *Baloskion australe* and *Juncus* spp. are more consistently recorded. A patchy cover of snow grasses (*Poa* spp.) and spiky-headed mat rush (*Lomandra longifolia*) occurs at drier locations.

This community occurs on swampy infertile Permian sediments that lie below the elevated sandstone escarpments of the western Blue Mountains. Sites are situated at elevations between 600 and 720 metres above sea level and receive between 750 and 900 millimetres of mean annual rainfall. The shrub swamps are typically found near the junction of the Permian and Triassic sediments. Seepage between the strata appears to collect in these depressions, and gives rise to regularly waterlogged soils. The community has a relatively restricted distribution, with sites known only from the Megalong and Cudgegong valleys. The latter occurs in the study area, although mostly on private land. It is here that the original type specimen for *Eucalyptus camphora* was identified in 1895. This eucalypt species is known elsewhere on the northern and southern tablelands, but there are few samples of the plant assemblages in which it occurs to compare overall floristic composition. A similar shrub swamp community is found on the Bindook Highlands in the southern Blue Mountains and southern highlands, although different eucalypt and sedge species are present.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	6 m ±1 5-6	50% ±0 50-50	*Eucalyptus camphora*
Shrubs	2.6 m ±0.4 2.3-0.4	45% ±26 30-75	*Callistemon citrinus, Baeckea utilis, Banksia marginata, Leptospermum continentale, Leptospermum obovatum, Epacris microphylla* var. *microphylla, Leptospermum polygalifolium* subsp. *polygalifolium*
Ground Covers	0.6 m ±0.4 0.2-1.2	50% ±29 5-90	*Baloskion australe, Lomandra longifolia, Gleichenia dicarpa, Gonocarpus micranthus* subsp. *ramosissimus, Hydrocotyle laxiflora, Microlaena stipoides, Dichondra repens, Empodisma minus, Hemarthria uncinata* var. *uncinata, Sphagnum* spp., *Deyeuxia quadriseta, Galium propinquum, Geranium solanderi* var. *solanderi, Gymnoschoenus sphaerocephalus, Isachne globosa, Juncus continuus, Lepidosperma limicola, Pteridium esculentum, Stellaria pungens, Tetraria capillaris*
Vines & Climbers	N/A	N/A	

*Compiled from 3 of 3 sites with structural data recorded.

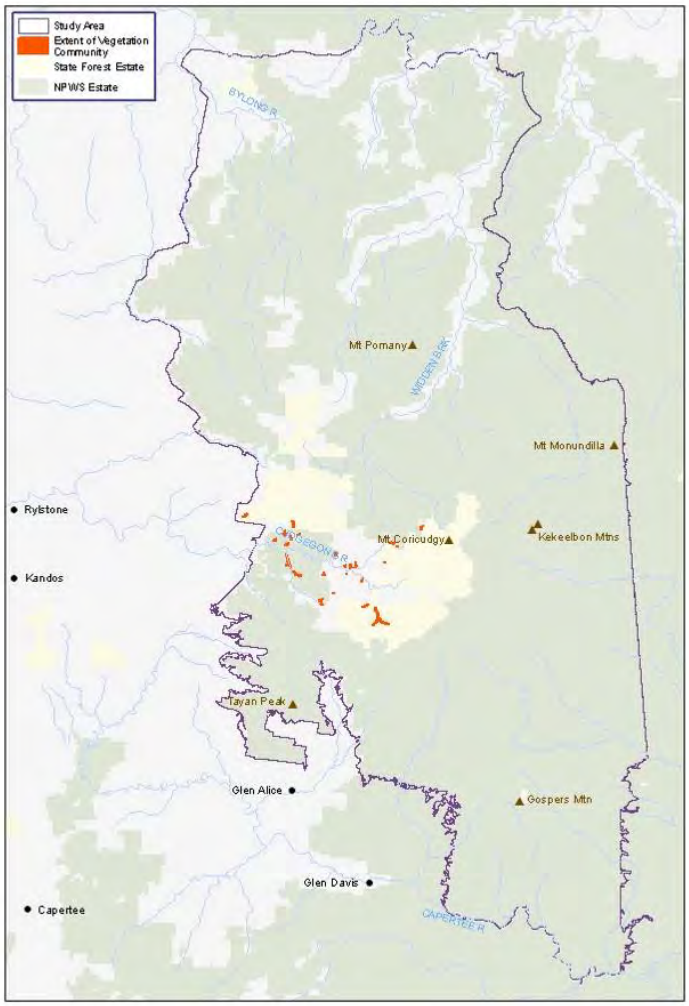
Threats

Known stands of this community are situated on private lands and state forests and are subject to continued rural land use pressures, including grazing and trampling by livestock. Past clearing for agriculture is likely to have reduced the original extent of this community, given that it occupies flat terrain in close proximity to fresh water supplies. Feral pigs (*Sus scrofa*) are known to trample and uproot native vegetation, and locations such as where this community grows are favoured by pigs for foraging and wallowing. At the time of the current survey, stands of the community within the study area had been extensively burnt by wildfire.

Conservation Status

This vegetation community is represented in Blue Mountains NP (Megalong Valley) and Wollemi NP.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	931-1055 ha
Estimated percentage cleared	Not available	15-25%
Area in formal conservation reserves	23.0 ha	193 ha 24% of extant area
Area in state forests	21.4 ha	Not available
Area in other tenures	17.1 ha	Not available
Total extant area	61.4 ha	791 ha



Example Locations

- Rollen Creek, Coricudgy SF

Species Richness

Number of plots	3
Total species	64
Average species per plot	31.0 ±2.6

Known Variations

Small variations in the density of eucalypt cover occur between some sites. Recent wildfire has consumed woody vegetation in some areas resulting in a more open appearance.

Relationship to Other Communities

This woody swamp community forms part of a series of communities found in open poorly drained depressions in cool elevated parts of the central tablelands. It shares many species with the treeless sedgeland community that occupies wetter parts of the swamp (S_FrW17).

Accuracy

Sample density is high. Map accuracy is considered to be high as this shrub swamp community occupies a discrete habitat in the study area. Shrubs, thickets and low eucalypts are readily discernable from stereoscopic aerial photograph imagery based on the differences in height and topographic position compared to the surrounding dry sclerophyll forests and woodlands.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Austrostipa verticillata	3	33%	2	3%	uninformative
Baeckea utilis	**2**	**67%**	**1**	**1%**	**positive**
Baloskion australe	**2**	**100%**	**1**	**0%**	**positive**
Banksia marginata	**2**	**67%**	**1**	**2%**	**positive**
Baumea planifolia	1	33%	2	0%	uninformative
Blechnum indicum	2	33%	5	0%	uninformative
Callistemon citrinus	**4**	**100%**	**2**	**2%**	**positive**
Centella asiatica	2	33%	1	0%	uninformative
Desmodium varians	1	33%	2	19%	uninformative
Deyeuxia quadriseta	1	67%	1	0%	uninformative
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Digitaria diffusa	2	33%	2	1%	uninformative
Drosera burmanni	1	33%	2	0%	Uninformative
Echinopogon caespitosus	2	33%	2	3%	Uninformative
Empodisma minus	**3**	**67%**	**4**	**1%**	**Positive**
Epacris microphylla	**2**	**67%**	**1**	**1%**	**Positive**
Epaltes australis	**1**	**33%**	**0**	**0%**	**Positive**
Eriocaulon scariosum	1	33%	1	0%	Uninformative
Eucalyptus camphora	**5**	**100%**	**1**	**0%**	**positive**
Eucalyptus rubida subsp. *rubida*	1	33%	3	1%	uninformative
Euchiton involucratus	1	33%	1	3%	uninformative
Galium gaudichaudii	2	33%	2	4%	uninformative
Galium propinquum	**2**	**67%**	**2**	**16%**	**positive**
Geranium solanderi var. *solanderi*	1	67%	2	10%	uninformative
Gleichenia dicarpa	**4**	**67%**	**2**	**1%**	**positive**
Glycine clandestina	2	33%	2	17%	uninformative
Gonocarpus micranthus	**2**	**67%**	**2**	**0%**	**positive**
Gonocarpus tetragynus	1	33%	2	13%	uninformative
Gratiola pumilo	**2**	**33%**	**0**	**0%**	**positive**
Gymnoschoenus sphaerocephalus	2	33%	5	1%	uninformative
Hakea microcarpa	1	33%	2	0%	uninformative
Hemarthria uncinata	**2**	**67%**	**0**	**0%**	**positive**
Hydrocotyle laxiflora	**2**	**67%**	**2**	**19%**	**positive**
Hydrocotyle sibthorpioides	2	33%	2	2%	uninformative
Hypericum gramineum	1	33%	2	6%	uninformative
Imperata cylindrica	1	33%	1	2%	uninformative
Isachne globosa	2	33%	3	0%	uninformative
Juncus continuus	1	67%	2	0%	uninformative
Juncus fockei	**2**	**33%**	**0**	**0%**	**positive**
Juncus planifolius	2	33%	1	0%	uninformative
Lagenophora stipitata	2	33%	1	10%	uninformative
Lepidosperma limicola	1	67%	3	1%	uninformative
Leptospermum continentale	**2**	**67%**	**2**	**2%**	**positive**
Leptospermum obovatum	**2**	**67%**	**1**	**0%**	**positive**
Leptospermum polygalifolium subsp. *polygalifolium*	2	33%	2	6%	uninformative
Lepyrodia leptocaulis	**2**	**33%**	**0**	**0%**	**positive**
Lomandra longifolia	1	100%	1	27%	uninformative
Lomatia silaifolia	1	33%	2	21%	uninformative
Microlaena stipoides	**2**	**100%**	**2**	**27%**	**positive**
Mimulus prostratus	**1**	**33%**	**0**	**0%**	**positive**
Oxalis perennans	1	33%	1	10%	uninformative
Patersonia sericea	1	33%	2	20%	uninformative
Pimelea linifolia	1	33%	2	12%	uninformative
Pteridium esculentum	3	33%	2	32%	uninformative
Pultenaea microphylla	1	33%	2	1%	uninformative
Schoenus apogon	2	33%	2	1%	uninformative
Stellaria pungens	2	33%	2	17%	uninformative
Tetraria capillaris	**3**	**67%**	**0**	**0%**	**positive**
Trachymene composita	1	33%	2	1%	uninformative
Veronica plebeia	2	33%	2	15%	uninformative

Statewide Class Montane Bogs and Fens
Plant Community Type: Not described

Description

Central Tableland Sedge Swamp is an open sedgeland community with a sparse cover of woody vegetation that is found on poorly drained alluvial flats. Semi-permanent waterlogging of the peaty soils results in an abundant cover of sedges including the loosely tufted *Carex* spp., soft-twig rush (*Baumea rubiginosa*), *Eleocharis sphacelata* and a variety of *Juncus* spp. The ground cover also frequently includes the grass *Isachne globosa* amongst other moisture-loving herbs and ferns. The occurrence of a woody shrub and tree layer is inconsistent between patches, with some sites featuring a very sparse cover and others a moderately dense cover. Tea-trees (*Leptospermum obovatum/L. juniperinum*) are most frequently recorded, but smaller species such as crimson bottlebrush (*Callistemon citrinus*) may also occur. Eucalypts are rare. *Sphagnum* moss can sometimes be found on the margins of the swamp. The structure and composition of the vegetation is likely to be a response to variations in water table gradients (Tozer et al. 2010). Disturbance from clearing and the frequency of fire is also likely to determine the structure at any given site.

This swamp community forms small isolated patches across a wide area of the central tablelands. In the Sydney basin it is restricted to the southern highlands region and along the western side of the Blue Mountains between Oberon and Rylstone. It spans an elevation range of 300-1100 metres above sea level (Tozer et al. 2010), although most sites occur above 600 metres. It receives a mean annual rainfall of between 700 and 1100 millimetres. Soils are typically sedimentary fill mixed with deep peats, and situated on a number of different lithologies throughout the region. Within the study area, the community is restricted to the Cudgegong valley.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Shrubs (no data)			*Callistemon citrinus, Leptospermum obovatum*
Ground Covers	1.0 m 1.0	100% 100	*Baumea rubiginosa, Carex bichenoviana, Isachne globosa, Blechnum indicum, Deyeuxia quadriseta, Eleocharis sphacelata, Eriocaulon scariosum, Gleichenia dicarpa*

*Compiled from 1 of 1 sites with structural data recorded.

Threats

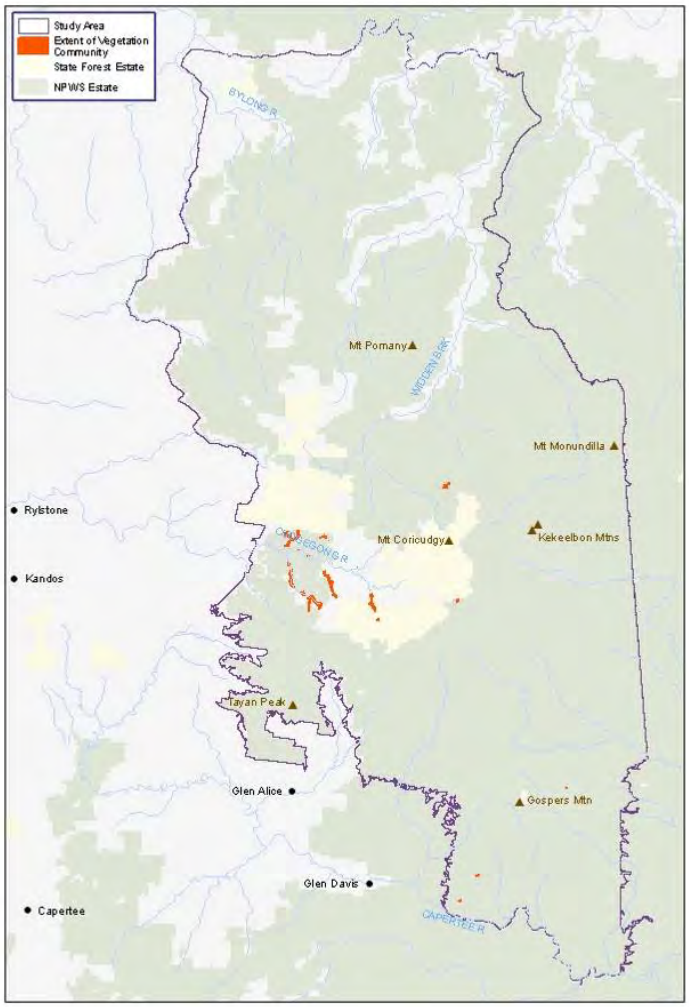
Impacts of human-related disturbance are widespread across the distribution of this community in the region. Clearing for agricultural land use and subsequent grazing pressures have resulted in diminished extent in the region. In some instances altered drainage patterns have altered the intensity and frequency of flooding events required to sustain semi-aquatic vegetation. Soil compaction and grazing from livestock persists on private lands. Feral pigs (*Sus scrofa*) are known to trample and uproot native vegetation, and locations such as where this community grows are favoured by pigs for foraging and wallowing. Some sites are vulnerable to frequent wildfires.

Conservation Status

Central Tableland Sedge Swamp is a component of Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps, a TEC listed under the TSC Act.

Small areas of this community are represented in Kanangra-Boyd and Blue Mountains national parks. In the study area it is most extensive on private land.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	15,491-25,819 ha
Estimated percentage cleared	Not available	75-85%
Area in formal conservation reserves	29.5 ha	35 ha 1% of extant area
Area in state forests	7.3 ha	Not available
Area in other tenures	36.0 ha	Not available
Total extant area	72.8 ha	3873 ha



Example Locations

- Rollen Creek, Coricudgy SF

Species Richness

Number of plots	1
Total species	11
Average species per plot	11

Known Variations

No variations recognised.

Relationship to Other Communities

This sedgeland forms part of a series communities found in open poorly drained depressions in cool elevated parts of the central tablelands. The community grades into the shrub swamps as sites become drier and less frequently inundated. Typically S_FrW16 adjoins the community and as a result species overlap is common.

Wet sedgelands on the sandstone plateau (S_FrW15) present a similar treeless appearance. However S_FrW15 does not occupy depressions in wide valleys and the dominant sedge species are different.

Accuracy

Sampling is limited to a single site although this swamp community is very limited in extent within the study area. Most patches have been visited during the course of this study. Mapping accuracy is considered to be high as the map unit occupies a discrete habitat and the swamps are easily identified from stereoscopic aerial photography.

Diagnostic Species S_FrW17

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Baumea rubiginosa	**3**	**100%**	**0**	**0%**	**positive**
Blechnum indicum	**2**	**100%**	**5**	**0%**	**positive**
Callistemon citrinus	1	100%	2	3%	uninformative
Carex bichenoviana	**5**	**100%**	**0**	**0%**	**positive**
Deyeuxia quadriseta	1	100%	1	0%	uninformative
Eleocharis sphacelata	**1**	**100%**	**0**	**0%**	**positive**
Eriocaulon scariosum	1	100%	1	0%	uninformative
Gleichenia dicarpa	1	100%	2	2%	uninformative
Isachne globosa	**3**	**100%**	**2**	**0%**	**positive**
Leptospermum obovatum	1	100%	1	1%	uninformative
Senecio prenanthoides	1	100%	2	4%	uninformative

FORESTED WETLANDS

Statewide Class: Coastal Floodplain Wetlands
Plant Community Type: Not described

Description

Groves of flax-leaved paperbark (*Melaleuca linariifolia*) are found in long narrow ribbons, tracing creek lines and poorly drained sandy alluvial soils within or adjoining the sandstone plateaux of the Sydney basin region. These stands of paperbark form a low forest or thicket sometimes with emergent or overhanging eucalypts. This community is identifiable by the prominence of paperbarks, although the overall floristic composition represents a variation to the eucalypt dominated riverflat communities in the region. Many sites are highly disturbed by clearing or livestock grazing, while other stands appear to be profuse regrowth that has followed the cessation of agricultural landuse. The composition of the understorey varies considerably depending on the presence of standing water, the substrate, the disturbance history and the fire history. While the wettest sites will include sedges such as tall sedge (*Carex appressa*), drier sites are grassy and herbaceous with weeping grass (*Microlaena stipoides*), *Entolasia marginata* and *Pratia purpurascens* common. A sparse cover of wattles such as fern-leaved wattle (*Acacia filicifolia*) or Parramatta wattle (*Acacia parramattensis*) may also be present.

This swamp forest occurs across a wide elevational gradient between 5 and 800 metres above sea level in areas receiving between 750 and 1000 millimetres of rainfall per annum. It is patchily distributed within the major sandy infill valley systems between the Hawkesbury-Nepean catchment and the Hunter catchment. Typically the sandy alluvium forms flats below sandstone massifs and cliffs, and is supplied moisture by a shallow watertable or creekline system. The study area presents an outlying western, high altitude example of this otherwise coastal swamp forest. Small areas are restricted to the Cudgegong valley. Some outstanding old growth stands are found along Towinhingy Creek, with some of the tallest examples of *Melaleuca linariifolia* known in the region.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	13 m ±3 11-15	60% ±14 50-70	*Melaleuca linariifolia*
Shrubs	6 m ±3 4-8	18% ±18 5-30	*Acacia parramattensis, Melicytus dentata, Leptospermum polygalifolium* subsp. *polygalifolium*
Ground Covers	0.8 m ±0.6 0.1-1.4	51% ±27 20-80	*Dichondra repens, Microlaena stipoides* var. *stipoides, Blechnum nudum, Hydrocotyle laxiflora, Hypolepis muelleri, Calochlaena dubia, Desmodium gunnii, Gahnia sieberiana, Galium propinquum, Geranium homeanum, Geranium solanderi* var. *solanderi, Lomandra longifolia, Pellaea falcata, Poa affinis, Pteridium esculentum, Urtica incisa, Viola banksii*
Vines & Climbers	N/A	N/A	*Calystegia marginata, Glycine clandestina*

*Compiled from 2 of 2 sites with structural data recorded.

Threats

Clearing has depleted much of the original extent of this community in the Sydney basin. Remnants occur in highly modified landscapes where agricultural land uses dominate.

Conservation Status

This community forms a component of Swamp Sclerophyll Forest on Coastal Floodplains, a TEC listed under the TSC Act.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	228-277 ha
Estimated percentage cleared	Not available	15-30%
Area in formal conservation reserves	14.9 ha	35 ha 18% of extant area
Area in state forests	10.0 ha	Not available
Area in other tenures	9.2 ha	Not available
Total extant area	34.2 ha	194 ha

Example Locations

- Rollen Creek, Cudgegong valley
- Towinhingy Creek

Species Richness

Number of plots	2
Total species	51
Average species per plot	31.0 ±8.5

Known Variations

Composition and diversity of understorey flora varies between sites, particularly in response to current livestock grazing. Variation in eucalypt emergents occurs with elevation, with examples found on lower elevations including cabbage gum (*Eucalyptus amplifolia*). At higher elevations on the western side of the Blue Mountains ribbon gum (*Eucalyptus viminalis*) is often recorded within or nearby the paperbark groves.

Relationship to Other Communities

Floristically this community shares many species with paperbark dominated swamp forests found on low-lying alluviums that drain the Sydney and Central Coast hinterlands. In the study area this swamp forest is most closely related to the other riverflat community S_FoW13, although the dominant tree species are distinctly different.

In the study area this community grades into the surrounding gully forest S_WSF25 which is dominated by *Eucalyptus viminalis*.

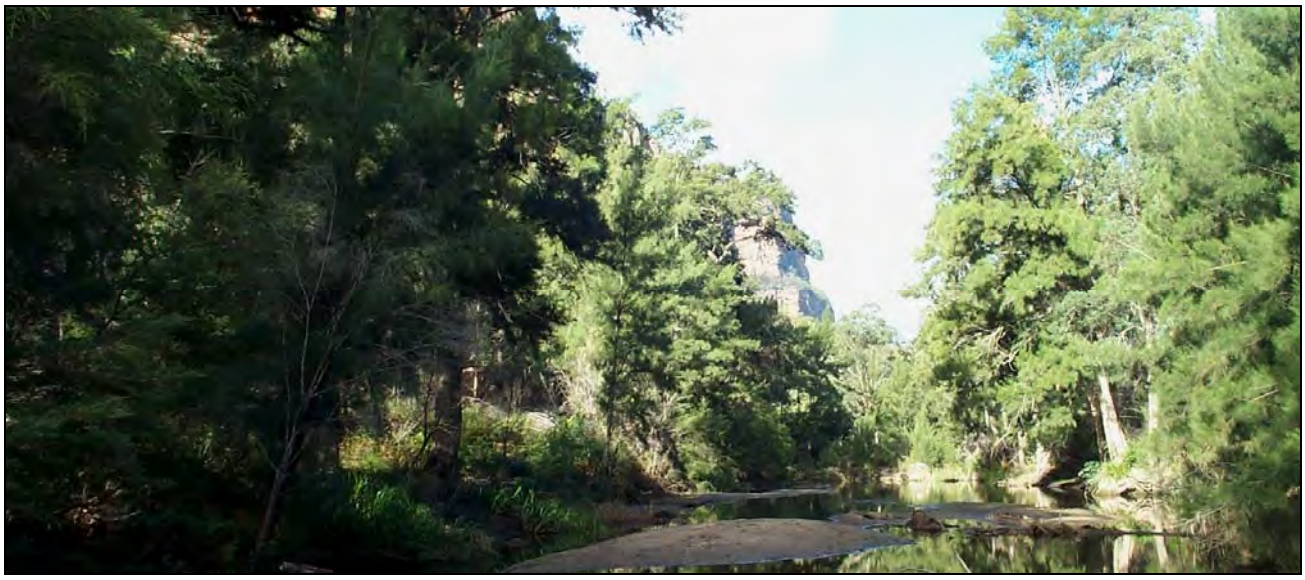
Accuracy

Sample density is high. Map unit boundaries are drawn from the interpretation of paperbark dominated forests on elevated alluvial flats.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia obtusifolia	1	50%	2	14%	uninformative
Acacia parramattensis	**2**	**50%**	**3**	**3%**	**positive**
Adiantum aethiopicum	1	50%	2	6%	uninformative
Asplenium flabellifolium	1	50%	1	11%	uninformative
Austrocynoglossum latifolium	1	50%	2	0%	uninformative
Blechnum nudum	**3**	**100%**	**2**	**2%**	**positive**
Calochlaena dubia	**2**	**50%**	**3**	**8%**	**positive**
Calystegia marginata	**2**	**50%**	**1**	**0%**	**positive**
Cassinia uncata	1	50%	1	5%	uninformative
Clematis aristata	**2**	**50%**	**1**	**27%**	**positive**
Coprosma quadrifida	1	50%	2	4%	uninformative
Cyathea australis	1	50%	1	2%	uninformative
Desmodium varians	**2**	**100%**	**2**	**18%**	**positive**
Dianella caerulea	1	50%	1	31%	uninformative
Dichondra repens	**3**	**100%**	**2**	**27%**	**positive**
Echinopogon ovatus	**2**	**50%**	**2**	**16%**	**positive**
Entolasia stricta	**2**	**50%**	**2**	**32%**	**positive**
Eucalyptus piperita	1	50%	3	15%	uninformative
Eucalyptus viminalis	1	50%	3	8%	uninformative
Eustrephus latifolius	1	50%	1	8%	uninformative
Gahnia sieberiana	**3**	**50%**	**1**	**3%**	**positive**
Galium propinquum	**2**	**100%**	**2**	**16%**	**positive**
Geranium homeanum	**2**	**50%**	**2**	**5%**	**positive**
Geranium solanderi* var. *solanderi	**3**	**50%**	**2**	**11%**	**positive**
Glycine clandestina	**2**	**50%**	**2**	**17%**	**positive**
Gonocarpus tetragynus	1	50%	2	13%	uninformative
Hydrocotyle laxiflora	**3**	**100%**	**2**	**19%**	**positive**
Hypolepis muelleri	**6**	**100%**	**0**	**0%**	**positive**
Lagenophora stipitata	**2**	**50%**	**1**	**10%**	**positive**
Leptospermum polygalifolium subsp. *polygalifolium*	1	50%	2	6%	uninformative
Lomandra longifolia	**3**	**50%**	**1**	**28%**	**positive**
Melaleuca linariifolia	**6**	**100%**	**1**	**0%**	**positive**
Melicytus dentatus	1	50%	1	5%	uninformative
Microlaena stipoides	**3**	**100%**	**2**	**27%**	**positive**
Notelaea longifolia	1	50%	1	9%	uninformative
Oplismenus imbecillis	**2**	**50%**	**2**	**4%**	**positive**
Pellaea falcata	1	50%	2	6%	uninformative
Poa affinis	1	100%	2	13%	uninformative
Pteridium esculentum	**2**	**50%**	**2**	**32%**	**positive**
Solanum prinophyllum	1	50%	1	11%	uninformative
Stellaria flaccida	**2**	**50%**	**2**	**7%**	**positive**
Urtica incisa	**3**	**50%**	**2**	**7%**	**positive**
Veronica plebeia	**2**	**50%**	**2**	**15%**	**positive**
Viola banksii	**3**	**50%**	**2**	**0%**	**positive**
Wahlenbergia gracilis	1	50%	1	5%	uninformative

Statewide Class
Eastern Riverine Forests

Plant Community Type: River Oak riparian Woodland of the north Coast and Northern Sydney Basin (Id 496)



Description

River Oak Forest occurs on the pebbly and sandy banks of the larger river systems of the Sydney basin region. It is characterised by stands of river oak (*Casuarina cunninghamiana* subsp. c*unninghamiana*) that form distinctive narrow ribbons in areas frequently inundated by fast-flowing flood waters. Scattered eucalypts may also occur amongst the canopy. The forest understorey is highly variable, mostly because human-related disturbance has removed and fragmented much of its original cover. Many of the small remnants carry an abundance of succulent and invasive weeds carried by water and/or livestock. Where native species are present the ground cover is grassy, with weeping grass (*Microlaena stipoides* var. *stipoides*) and *Oplismenus imbecillis* most commonly encountered. A wide variety of herbs such as native wandering Jew (*Commelina cyanea*) and sedges (*Juncus* spp.) may also be present. The shrub layer is also highly variable depending on site disturbance. Thickets of the thorny shrub tree violet (*Melicytus dentata)* or blackthorn (*Bursaria spinosa*) may dominate alongside weeds such as lantana (*Lantana camara*). Mesic shrubs and trees such as grey myrtle (*Backhousia myrtifolia*) and red ash (*Alphitonia excelsa*) sometimes occur, occasionally hosting wonga vine (*Pandorea pandorana*).

This riverbank forest occurs between five and 700 metres above sea level and spans a wide distribution across the Illawarra coastal plain, Hawkesbury, Nepean, Wollondilly, Hunter and Wollombi rivers. In the study area, scattered stands occur along the Cudgegong and Bylong rivers and Widden Brook.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	0.8 m ±0.9 0.1-1.4	60% ±28 40-80	*Casuarina cunninghamiana* subsp. *cunninghamiana, Angophora floribunda, Eucalyptus blakelyi, Eucalyptus punctata*
Shrubs	0.8 m ±0.9 0.1-1.4	60% ±28 40-80	*Melicytus dentata, Acacia filicifolia, Breynia oblongifolia, Leptospermum polyanthum, Astrotricha longifolia, Elaeocarpus reticulatus, Ficus coronata, Goodenia ovata, Pimelea latifolia, Senecio minimus, Tristaniopsis laurina, Bursaria spinosa, Backhousia myrtifolia, Melia azedarach*
Ground Covers	0.8 m ±0.9 0.1-1.4	60% ±28 40-80	*Microlaena stipoides* var. *stipoides, Lomandra longifolia, Dichondra repens, Oplismenus imbecillis, Pteridium esculentum, Adiantum aethiopicum, Hydrocotyle laxiflora, Urtica incisa, Austrostipa verticillata, Entolasia stricta, Oxalis perennans, Sigesbeckia orientalis, Solanum americanum, Solanum campanulatum, Solanum prinophyllum, Entolasia marginata*
Vines & Climbers	N/A	N/A	*Stephania japonica* var. *discolor, Pandorea pandorana*

*Compiled from 4 of 4 sites with structural data recorded.

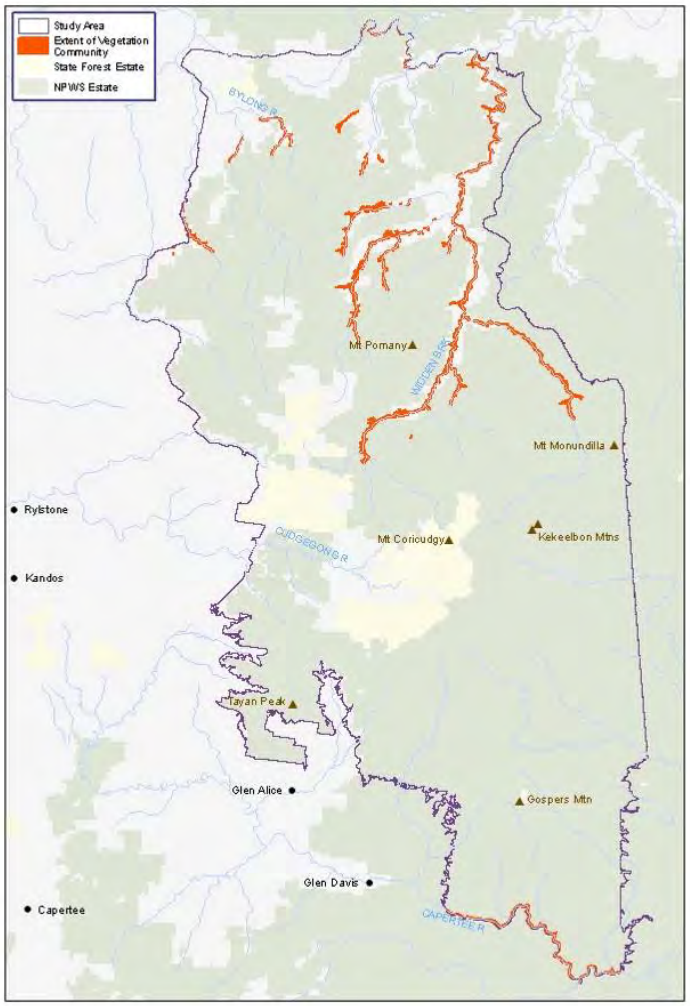
Threats

Clearing has depleted much of the original extent of this community in the Sydney basin. Remnants occur in highly modified landscapes where agricultural land uses dominate. All examples in the study area have been assessed as highly disturbed.

Conservation Status

This community is recorded within a number of reserves of the Sydney basin including the southern area of Blue Mountains NP, Nattai NP, Abercrombie River NP and Wollemi NP. However the most extensive stands of the community remain outside the reserve system and are subject to ongoing pressures associated with agricultural landuse.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	12,626-17,887 ha
Estimated percentage cleared	Not available	15-40%
Area in formal conservation reserves	601.5 ha	4501 ha 42% of extant area
Area in state forests	0 ha	Not available
Area in other tenures	730.8 ha	Not available
Total extant area	1332.3 ha	10,732 ha



Example Locations

- o Bylong River near Nullo Mountain
- o Upper Widden valley

Species Richness

Number of plots	4
Total species	137
Average species per plot	49.0 ±20.7

Known Variations

This forest is highly variable depending on the degree of disturbance and the proliferation of exotic species. Variation also occurs in response to subtle variations in time since flooding, substrate and sheltering. In the case of the latter, mesic shrubs may be more common and the ground cover more herbaceous. Sites located directly on the stream bank or on poorly drained terraces might include species that prefer inundation such as sedges and rushes.

Relationship to Other Communities

Floristically this community shares affinities with freshwater wetland communities associated with alluvial soils across the region. This includes coastal and tableland floodplain forests.

This community grades into eucalypt dominated forests associated with alluvial plains and terraces as distance from the stream bank increases. The patterns are not always readily discernable as clearing and fragmentation is common. Where alluvial vegetation is more extensive than the riverbank itself the community may grade into S_FoW19. S_FoW19 is dominated by eucalypts and rough-barked apple (*Angophora floribunda*) with few river oaks present. Further away on alluvial terraces or Permian escarpment footslopes, the widest valleys will support grassy woodlands (S_GW05 and S_GW06), both of which are dominated by box trees.

Accuracy

Sample density is high. The habitat and prominent canopy species associated with this map unit form a highly distinctive pattern observable on stereo digital aerial photography. The accuracy of both the extent and location of this community is considered to be high.

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia dealbata	**3**	**25%**	**0**	**0%**	**positive**
Acacia elata	1	25%	1	4%	uninformative
Acacia filicifolia	**4**	**50%**	**2**	**5%**	**positive**
Acacia obtusifolia	2	25%	2	14%	uninformative
Acacia schinoides	1	25%	1	0%	uninformative
Adiantum aethiopicum	1	75%	2	5%	uninformative
Angophora floribunda	**2**	**75%**	**2**	**16%**	**positive**
Arrhenechthites mixta	2	25%	1	3%	uninformative
Astrotricha longifolia	2	25%	1	3%	uninformative
Austrostipa ramosissima	1	25%	2	1%	uninformative
Austrostipa verticillata	**2**	**50%**	**2**	**3%**	**positive**
Backhousia myrtifolia	**2**	**50%**	**4**	**4%**	**positive**
Billardiera scandens	2	25%	1	24%	uninformative
Blechnum cartilagineum	1	25%	3	10%	uninformative
Blechnum minus	1	25%	2	0%	uninformative
Brachychiton populneus subsp. *populneus*	1	50%	1	6%	uninformative
Breynia oblongifolia	1	75%	1	2%	uninformative
Bursaria spinosa* subsp. *spinosa	**2**	**50%**	**2**	**25%**	**positive**
Calochlaena dubia	**2**	**50%**	**3**	**8%**	**positive**
Casuarina cunninghamiana* subsp. *cunninghamiana	**4**	**100%**	**3**	**0%**	**positive**
Ceratopetalum apetalum	2	25%	4	3%	uninformative
Cheilanthes austrotenuifolia	2	25%	2	3%	uninformative
Cheilanthes distans	1	25%	1	5%	uninformative
Cissus hypoglauca	1	50%	2	4%	uninformative
Clematis aristata	**2**	**100%**	**1**	**26%**	**positive**
Commersonia fraseri	**1**	**25%**	**0**	**0%**	**positive**
Correa reflexa	1	25%	1	8%	uninformative
Cynoglossum australe	2	25%	2	4%	uninformative
Cyperus laevis	**2**	**25%**	**0**	**0%**	**positive**
Desmodium varians	2	25%	2	19%	uninformative
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Dodonaea multijuga	1	25%	2	1%	uninformative
Dodonaea triquetra	**2**	**50%**	**2**	**3%**	**positive**
Echinopogon intermedius	3	25%	2	1%	uninformative
Echinopogon ovatus	**2**	**50%**	**2**	**16%**	**positive**
Einadia trigonos	**2**	**50%**	**2**	**0%**	**positive**
Elaeocarpus reticulatus	1	75%	1	7%	uninformative
Entolasia marginata	2	25%	2	2%	uninformative
Entolasia stricta	**3**	**50%**	**2**	**32%**	**positive**
Eucalyptus blakelyi	1	25%	3	2%	uninformative
Eucalyptus punctata	1	25%	3	33%	uninformative
Eucalyptus tereticornis	1	25%	3	1%	uninformative
Eustrephus latifolius	1	25%	1	8%	uninformative
Ficus coronata	1	50%	2	1%	uninformative
Gahnia aspera	2	25%	1	6%	uninformative
Galium gaudichaudii	2	25%	2	4%	uninformative
Geitonoplesium cymosum	**2**	**50%**	**1**	**7%**	**positive**
Geranium homeanum	2	25%	2	5%	uninformative
Geranium potentilloides	**2**	**50%**	**2**	**3%**	**positive**
Gleichenia dicarpa	1	25%	2	2%	uninformative
Glycine clandestina	1	25%	2	17%	uninformative
Glycine tabacina	2	25%	2	10%	uninformative
Gonocarpus longifolius	1	25%	2	1%	uninformative
Gonocarpus teucrioides	2	25%	2	14%	uninformative
Goodenia ovata	**2**	**50%**	**1**	**6%**	**positive**
Hakea salicifolia	2	25%	2	2%	uninformative
Hydrocotyle laxiflora	**2**	**100%**	**2**	**19%**	**positive**
Juncus planifolius	1	25%	2	0%	uninformative
Lepidosperma laterale	1	25%	1	24%	uninformative
Leptospermum polyanthum	**3**	**50%**	**3**	**1%**	**positive**
Leptospermum polygalifolium	3	25%	3	0%	uninformative
Leptospermum polygalifolium subsp. *polygalifolium*	2	25%	2	6%	uninformative
Libertia paniculata	1	25%	2	1%	uninformative
Lomandra longifolia	1	75%	1	27%	uninformative
Lomatia myricoides	**2**	**50%**	**1**	**0%**	**positive**
Maytenus silvestris	1	25%	1	5%	uninformative
Melaleuca styphelioides	1	25%	3	1%	uninformative
Melia azedarach	**1**	**25%**	**0**	**0%**	**positive**
Melicytus dentatus	**4**	**75%**	**1**	**5%**	**positive**
Microlaena stipoides	**4**	**75%**	**2**	**27%**	**positive**
Morinda jasminoides	2	25%	1	3%	uninformative
Myoporum montanum	1	25%	1	3%	uninformative
Notelaea venosa	1	25%	1	1%	uninformative

Species Name	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Oplismenus imbecillis	**2**	**100%**	**2**	**4%**	**positive**
Oxalis perennans	**2**	**50%**	**1**	**9%**	**positive**
Pandorea pandorana	1	50%	1	8%	uninformative
Paspalidium gracile	4	25%	1	1%	uninformative
Passiflora cinnabarina	2	25%	1	1%	uninformative
Pellaea falcata	2	25%	2	6%	uninformative
Persoonia linearis	1	25%	1	55%	uninformative
Phyllanthus gunnii	1	25%	2	0%	uninformative
Pimelea latifolia	2	25%	2	4%	uninformative
Pittosporum multiflorum	1	25%	2	0%	uninformative
Pittosporum undulatum	1	25%	1	4%	uninformative
Plectranthus parviflorus	1	25%	1	4%	uninformative
Poa affinis	2	25%	2	14%	uninformative
Poa labillardierei var. *labillardierei*	3	25%	1	7%	uninformative
Podocarpus spinulosus	**2**	**25%**	**0**	**0%**	**positive**
Polyscias sambucifolia	2	25%	1	12%	uninformative
Pomaderris aspera	**1**	**25%**	**0**	**0%**	**positive**
Pomaderris ferruginea	1	25%	1	1%	uninformative
Pomaderris prunifolia	**2**	**25%**	**0**	**0%**	**positive**
Pratia purpurascens	1	25%	2	1%	uninformative
Prostanthera incisa	**1**	**25%**	**0**	**0%**	**positive**
Pseuderanthemum variabile	**1**	**25%**	**0**	**0%**	**positive**
Pteridium esculentum	**2**	**75%**	**2**	**31%**	**positive**
Rumex brownii	1	25%	1	3%	uninformative
Sarcopetalum harveyanum	**2**	**50%**	**1**	**0%**	**positive**
Schoenus apogon	2	25%	2	1%	uninformative
Senecio minimus	**2**	**50%**	**1**	**2%**	**positive**
Sicyos australis	**1**	**25%**	**0**	**0%**	**positive**
Sigesbeckia orientalis* subsp. *orientalis	**2**	**50%**	**2**	**4%**	**positive**
Solanum americanum	**2**	**50%**	**0**	**0%**	**positive**
Solanum aviculare	1	25%	2	0%	uninformative
Solanum campanulatum	**2**	**50%**	**1**	**3%**	**positive**
Solanum prinophyllum	**2**	**50%**	**1**	**10%**	**positive**
Stenocarpus salignus	1	25%	2	1%	uninformative
Stephania japonica* var. *discolor	**2**	**75%**	**1**	**1%**	**positive**
Sticherus flabellatus var. *flabellatus*	1	25%	2	1%	uninformative
Stypandra glauca	2	25%	1	7%	uninformative
Trema tomentosa var. *aspera*	1	50%	1	1%	uninformative
Tristaniopsis laurina	**3**	**50%**	**2**	**0%**	**positive**
Tylophora barbata	**2**	**50%**	**2**	**3%**	**positive**
Urtica incisa	**2**	**75%**	**2**	**7%**	**positive**
Veronica calycina	2	25%	2	3%	uninformative
Veronica plebeia	2	25%	2	15%	uninformative
Viola hederacea	2	25%	2	10%	uninformative
Vittadinia sulcata	1	25%	2	2%	uninformative
Wahlenbergia gracilis	1	25%	1	5%	uninformative
Zieria smithii	1	25%	2	0%	uninformative

Statewide Class Eastern Riverine Forests
Plant Community Type: Not described

Description

Western Hunter Flats Rough-barked Apple Forest is a tall eucalypt forest with an open shrub layer and grassy ground cover. It occurs on deep alluvial sands associated with riverflats and creek banks in the dry valleys in the north-west of the Sydney basin. The distinctive rough-barked apple (*Angophora floribunda*) invariably dominates the canopy, although it may be joined by a range of eucalypts including red gums (*Eucalyptus* blakelyi/*E. tereticornis*), yellow box (*Eucalyptus melliodora*) and grey gum (*Eucalyptus punctata*) amongst others. Wattles (*Acacia* spp.) are the tallest species amongst a sparse shrub layer. Lower shrubs such as geebung (*Persoonia linearis*) and blackthorn (*Bursaria spinosa*) are commonly recorded. The ground layer is very grassy, but dominated by weeping grass (*Microlaena stipoides* var. *stipoides*) rather than a diverse range of species. Small herbs also comprise a high proportion of the ground layer and some stands may feature a moderate to high percentage cover of bracken (*Pteridium esculentum*).

This riparian forest is encountered on streams that drain the sandstone plateaux of the north-west Sydney basin. The flats can be low-lying in the base of deep valleys, or perched at higher elevations in shallow valleys that dissect the Great Dividing Range. Streams carry the eroding coarse sandy material and deposit it on the banks and terraces following floods. Stands of this forest are rarely beyond eyesight of sandstone cliffs and plateaux. Its distribution spans an elevation range of 200-600 metres above sea level and falls within a rainfall band of 600-750 millimetres per annum. Within the study area it occurs on the margins of the Wollemi sandstone plateaux between Capertee River and the Widden valley. It is more extensive elsewhere in the narrow valleys of the Goulburn River catchment between Ulan and Denman.

Floristic Summary*

	Average Height & Height Range (metres)	Average Cover & Cover Range (per cent)	Typical Species
Trees	20 m ±4 15-25	44% ±15 30-65	*Angophora floribunda, Eucalyptus blakelyi, Eucalyptus punctata*
Small Trees	7 m ±3 3-10	34% ±18 7-45	*Acacia linearifolia, Acacia filicifolia*
Shrubs	3.0 m ±0.0 3.0-3.0	20% ±21 5-35	*Bursaria spinosa, Persoonia linearis, Brachyloma daphnoides, Melichrus urceolatus*
Ground Covers	0.6 m ±0.6 0.1-1.5	40% ±31 5-85	*Microlaena stipoides, Dichondra repens, Lomandra longifolia, Hydrocotyle laxiflora, Lepidosperma laterale, Plantago debilis, Veronica plebeia, Cheilanthes sieberi* subsp. *sieberi, Echinopogon ovatus, Entolasia stricta, Oxalis perennans, Poranthera microphylla, Solanum prinophyllum, Echinopogon caespitosus, Imperata cylindrica, Pteridium esculentum*
Vines & Climbers	N/A	N/A	*Glycine clandestina*

*Compiled from 4 of 4 sites with structural data recorded.

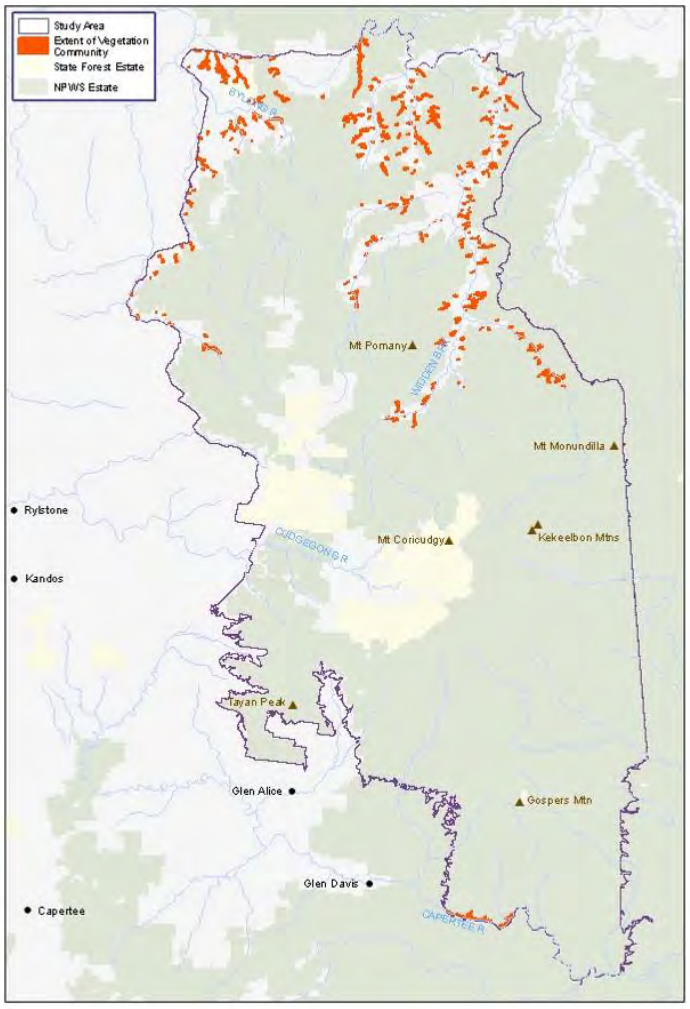
Threats

While the sandy soils are less desirable for agriculture than the surrounding clay-rich Permian sediments, stands of this community have nevertheless been subjected to extensive clearing and modification. Proximity to fresh water and palatable grasses have resulted in human-related disturbance, such that stands are commonly dominated by regrowth trees and pioneering shrub species. Livestock grazing pressures persist on private lands and state forest adjoining the reserve, where small patchy areas of exotic ground covers are often recorded. Frequent burning regimes also are likely to persist in the valley to reduce the cover of woody shrubs and litter.

Conservation Status

This community is represented in Goulburn River and Wollemi national parks and Munghorn Gap NR. Stands are extensive across private lands of the region.

	Within Study Area	Within Sydney Basin
Estimate of pre-clearing area	Not available	8749-12,248 ha
Estimated percentage cleared	Not available	30-50%
Area in formal conservation reserves	516.4 ha	1716 ha 28% of extant area
Area in state forests	13.6 ha	Not available
Area in other tenures	594.1 ha	Not available
Total extant area	1124.1 ha	6124 ha



Example Locations

- Upper Bylong valley
- Widden valley

Species Richness

Number of plots	4
Total species	127
Average species per plot	45.5 ±6.9

Known Variations

There is variation in the canopy composition between stands, particularly with subtle changes in soil properties. Heavier clay soils may support canopy species such as red gums and yellow box, as well as a greater diversity of grass species in the ground layer; some of the diagnostic sclerophyllous shrubs may be absent.

Relationship to Other Communities

This forest forms part of the alluvial eucalypt forest complex of the Sydney basin. It occupies similar deposits outside the study area on the flats beneath the eastern Hunter Range from Putty to Wollombi. In the study area it shares most floristic similarity with the other forested wetlands (S_FrW13, S_FrW05). These latter two communities are visually distinctive from this forest owing to the absence of eucalypts. They are subject to more frequent inundation.

Typically this forest grades into adjoining grassy box woodlands associated with alluvial terraces (S_GW06) or Permian escarpment footslopes (S_GW05).

Accuracy

Sample density is moderate. Map unit domains are derived from elevation, substrate and rainfall characteristics of sample data. Map unit boundaries are based on the interpretation of eucalypt and rough-barked apple forests and woodlands found on alluvial flats. The landscape on which this forest occurs, and the crown signature of dominant canopy species, is a distinctive photo pattern in digital aerial photography.

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Acacia buxifolia subsp. *buxifolia*	1	25%	1	12%	uninformative
Acacia filicifolia	**2**	**50%**	**2**	**5%**	**positive**
Acacia linearifolia	**4**	**50%**	**2**	**7%**	**positive**
Acacia ulicifolia	1	25%	1	11%	uninformative
Acrotriche rigida	1	25%	1	9%	uninformative
Angophora floribunda	**4**	**75%**	**2**	**16%**	**positive**
Arrhenechthites mixta	2	25%	1	3%	uninformative
Arthropodium sp. B	**2**	**25%**	**0**	**0%**	**positive**
Astroloma humifusum	1	25%	1	9%	uninformative
Austrodanthonia racemosa var. *racemosa*	2	25%	2	4%	uninformative
Austrostipa verticillata	2	25%	2	3%	uninformative
Bertya pomaderroides	**2**	**25%**	**0**	**0%**	**positive**
Billardiera scandens	1	100%	1	23%	uninformative
Brachyloma daphnoides	1	25%	1	13%	uninformative
Brunoniella australis	2	25%	1	1%	uninformative
Bursaria spinosa* subsp. *spinosa	**2**	**75%**	**2**	**25%**	**positive**
Calomeria amaranthoides	1	25%	2	0%	uninformative
Carex inversa	1	25%	1	3%	uninformative
Cassinia cunninghamii	2	25%	1	7%	uninformative
Cheilanthes austrotenuifolia	**2**	**50%**	**2**	**3%**	**positive**
Cheilanthes sieberi* subsp. *sieberi	**2**	**75%**	**1**	**19%**	**positive**
Clematis aristata	**2**	**100%**	**1**	**26%**	**positive**
Correa reflexa	2	25%	1	8%	uninformative
Cynoglossum australe	2	25%	2	4%	uninformative
Desmodium varians	**2**	**75%**	**2**	**18%**	**positive**
Dianella longifolia	1	25%	1	3%	uninformative
Dianella revoluta var. *revoluta*	1	25%	1	28%	uninformative
Dichondra repens	**2**	**100%**	**2**	**27%**	**positive**
Digitaria diffusa	1	25%	2	1%	uninformative
Dodonaea multijuga	2	25%	1	1%	uninformative
Dodonaea triquetra	2	25%	1	4%	uninformative
Dodonaea viscosa	1	75%	2	11%	uninformative
Echinopogon caespitosus	2	25%	2	3%	uninformative
Echinopogon ovatus	**2**	**75%**	**2**	**16%**	**positive**
Entolasia stricta	**3**	**50%**	**2**	**32%**	**positive**
Eucalyptus blakelyi	**4**	**50%**	**3**	**2%**	**positive**
Eucalyptus moluccana	1	25%	3	3%	uninformative
Eucalyptus punctata	**4**	**50%**	**3**	**33%**	**positive**
Euchiton sphaericus	2	25%	1	2%	uninformative
Exocarpos strictus	2	25%	1	16%	uninformative
Gahnia aspera	3	25%	1	6%	uninformative
Galium binifolium	2	25%	2	4%	uninformative
Galium propinquum	2	25%	2	16%	uninformative
Geitonoplesium cymosum	1	25%	1	7%	uninformative
Geranium homeanum	1	25%	2	5%	uninformative
Geranium solanderi var. *solanderi*	2	25%	2	11%	uninformative
Glycine clandestina	**2**	**75%**	**2**	**17%**	**positive**
Glycine microphylla	1	25%	2	3%	uninformative
Glycine tabacina	2	25%	2	10%	uninformative
Gonocarpus humilis	1	25%	4	0%	uninformative
Gonocarpus longifolius	1	25%	2	1%	uninformative
Goodenia stephensonii	2	25%	2	2%	uninformative
Hakea dactyloides	**3**	**50%**	**1**	**18%**	**positive**
Hardenbergia violacea	1	25%	1	25%	uninformative
Homalanthus populifolius	2	25%	1	0%	uninformative
Hybanthus monopetalus	1	25%	1	3%	uninformative
Hydrocotyle laxiflora	**2**	**100%**	**2**	**19%**	**positive**
Imperata cylindrica	2	25%	1	2%	uninformative
Isopogon dawsonii	1	25%	1	8%	uninformative
Lagenophora stipitata	1	25%	1	10%	uninformative
Lasiopetalum ferrugineum	1	50%	2	0%	uninformative
Lepidosperma gunnii	1	25%	2	13%	uninformative
Lepidosperma laterale	**3**	**50%**	**1**	**23%**	**positive**
Lepidosperma urophorum	1	25%	1	4%	uninformative
Leptospermum continentale	1	25%	2	2%	uninformative
Leptospermum polyanthum	5	25%	3	1%	uninformative
Leptospermum polygalifolium subsp. *polygalifolium*	2	25%	2	6%	uninformative
Leucopogon muticus	1	25%	2	24%	uninformative
Lomandra confertifolia	1	50%	2	33%	uninformative
Lomandra longifolia	**2**	**100%**	**1**	**27%**	**positive**
Lomandra multiflora subsp. *multiflora*	1	50%	1	25%	uninformative
Macrozamia reducta	1	25%	1	10%	uninformative
Melichrus urceolatus	1	25%	1	13%	uninformative
Melicytus dentatus	1	25%	1	5%	uninformative

Species Name*	Group Score (50 Percentile)	Group Frequency	Non-group Score (50 Percentile)	Non-group Frequency	Fidelity Class
Microlaena stipoides	**4**	**100%**	**2**	**27%**	**positive**
Monotoca elliptica	1	25%	2	0%	uninformative
Notelaea venosa	1	25%	1	1%	uninformative
Olearia elliptica subsp. *elliptica*	1	25%	2	3%	uninformative
Oplismenus aemulus	2	25%	1	2%	uninformative
Oxalis perennans	**2**	**75%**	**1**	**9%**	**positive**
Pandorea pandorana	1	25%	1	8%	uninformative
Paspalidium gracile	2	25%	1	1%	uninformative
Passiflora cinnabarina	1	25%	1	1%	uninformative
Persoonia linearis	1	100%	1	54%	uninformative
Phyllanthus hirtellus	1	25%	2	22%	uninformative
Pimelea latifolia	2	25%	2	4%	uninformative
Pittosporum undulatum	1	25%	1	4%	uninformative
Plantago debilis	**2**	**75%**	**2**	**12%**	**positive**
Plantago varia	2	25%	2	1%	uninformative
Platysace lanceolata	2	25%	2	17%	uninformative
Podolobium ilicifolium	1	50%	2	30%	uninformative
Pomaderris lanigera	1	25%	1	0%	uninformative
Pomax umbellata	1	25%	2	33%	uninformative
Poranthera corymbosa	1	50%	1	5%	uninformative
Poranthera microphylla	**2**	**75%**	**1**	**12%**	**positive**
Pratia purpurascens	2	25%	2	1%	uninformative
Pteridium esculentum	2	25%	2	32%	uninformative
Sigesbeckia orientalis subsp. *orientalis*	1	25%	2	5%	uninformative
Solanum campanulatum	1	25%	1	4%	uninformative
Solanum parvifolium subsp. *parvifolium*	1	25%	1	1%	uninformative
Solanum prinophyllum	**2**	**75%**	**1**	**10%**	**positive**
Stenocarpus salignus	**2**	**50%**	**2**	**1%**	**positive**
Styphelia triflora	1	50%	1	13%	uninformative
Trema tomentosa var. *aspera*	1	25%	1	1%	uninformative
Tricoryne elatior	**1**	**25%**	**0**	**0%**	**positive**
Urtica incisa	1	25%	2	7%	uninformative
Veronica plebeia	**2**	**100%**	**2**	**14%**	**positive**
Viola silicestris	2	25%	2	1%	uninformative
Vittadinia cuneata	1	25%	1	2%	uninformative
Vittadinia muelleri	**1**	**25%**	**0**	**0%**	**positive**
Xerochrysum bracteatum	1	25%	1	1%	uninformative

OTHER MAP UNITS

A number of other vegetation types, waterbodies and other landscape features were mapped. These appear in the GIS layer with their own map unit code and name. They are listed in the table below with a description of what each encompasses.

Map Unit Name	Map Unit Code	Description
Mixed Derived Native and Agricultural Grasslands	S_MGL	Areas of vegetation that support less than approximately five per cent of woody vegetation cover. Commonly defines agricultural landscapes, however some native vegetation cover may be included within the unit which may conform to definitions of some TECs under State or Commonwealth legislation.
Cleared: Infrastructure	S_CL	Built environments often featuring buildings, roads, pipelines, powerlines and houses.
Regenerating Vegetation	S_RGS	Undifferentiated pioneering shrubs that are located in areas of previous disturbance such as clearing. May include a range of native species such as wattles (*Acacia* spp.) and blackthorn (*Bursaria spinosa*) as well as some exotic species. Some areas may conform to definitions of some TECs under State or Commonwealth legislation.
Non Native Vegetation	S_NNV	Disturbed landscapes where exotic species occupy more than 50 per cent of the upper stratum of the vegetation cover.
Water	S_WA	Standing water bodies visible at the time of photography.
Derived Freshwater Wetland	S_DFW	Wetlands associated with man-made freshwater storage such as farm dams, reservoirs and drainage channels.

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