

Vegetation Mapping of Port Stephens LGA: Stages 1 & 2: East of Pacific Highway



August 2025

Progress Report to
Port Stephens Council

Stephen A. J. Bell

Eastcoast Flora Survey
PO Box 216
Kotara NSW 2289



Contents

Background	1
Study Area	1
Methods	2
Results	3
References	8
Appendix 1: Summary of Vegetation Units, Port Stephens LGA (Stage 1-2)	9
Dry Rainforests.....	9
Littoral Rainforests	9
Alluvial Tall Moist Forests	9
Spotted Gum - Ironbark Forests	10
Coastal Plains Apple Woodlands	11
Nerong Smooth-barked Apple Forests	12
Coastal Sand Apple - Blackbutt Forests.....	13
Coastal Sand Wallum Woodland-Heaths.....	15
Clay Woodlands & Heaths	16
Swamp Mahogany - Paperbark Swamp Forests	17
Redgum-Rough-barked Apple Swamp Forests	19
Swamp Oak - Rushland Forests.....	20
Swamp Oak Sedge Forests.....	20
Dry Mahogany Swamp Forests	21
Estuarine Paperbark Scrubs.....	22
Coastal Wet Sand Cyperoid Heaths.....	22
Lepironia Swamps	25
Freshwater Wetland Complex	25
Mangrove Estuarine Complex.....	27
Wallum Clay Shrub Heaths	27
Coastal Sand Scrubs	28
Coastal Headland Complex	28
Rocky Headland Scrubs.....	29
Beach Spinifex.....	29
Swamp Thickets	30
Paperbark Scrub-Forests	30
Clay Forests	30
Fringing Baloskion Sedge Woodlands	31
Sedge Woodlands	31
Other Map Units	31

Background

Port Stephens Council have commissioned the production of a locally accurate vegetation classification and map for the Local Government Area (LGA), to be undertaken in a staged approach. Stage 1 (the Tomaree Peninsula) focused on the Salt Ash to Nelson Bay area and was completed to draft in 2024, while Stage 2 (Karuah – Tomago – Fern Bay – Salt Ash, east of the Pacific Highway) has now also been finalised to draft. Stage 3 (all remaining lands west of the Pacific Highway) is currently underway.

Council requires a vegetation map principally to assist in the management of Koala populations in the face of increasing development pressures. Additionally, such mapping will also support the management of several threatened plant species known from the LGA, allow consideration of Threatened Ecological Communities and other habitats of significance, and plan for the movement of all faunas through the landscape via corridor initiatives.

This progress report outlines the tasks undertaken and results obtained for the mapping of the combined Stage 1 and Stage 2 area, encompassing all lands within the LGA east of the Pacific Highway. The primary purpose of this report is to provide basic information on the methods used and the resulting draft defined vegetation units shown in the GIS mapping files (supplied separately to Council), to assist review and accompany public release. A more detailed report, incorporating diagnostic data and representative photographs for each vegetation community, is planned after the completion of mapping across the entire LGA.

Importantly, it should be remembered that mapping of the Stage 1 and 2 areas included in GIS files represents a working draft and should not be viewed as final. Additional field validations are planned for several areas, and it is hoped that public release may highlight areas where further revision is required. Accordingly, feedback is welcomed for any areas where field observations do not adequately reflect mapped units.

Study Area

Stage 1 of the mapping project encompassed the Tomaree Peninsula precinct, generally bounded by and including the suburbs of Anna Bay, Boat Harbour, Bobs Farm, Corlette, Fingal Bay, Fisherman's Beach, Nelson Bay, One Mile, Salamander Bay, Shoal Bay, Soldiers Point, and Taylors Beach. Collectively, this area comprises 11,860 ha (supporting c. 70% native vegetation), incorporating a mix of land uses and ownerships but including all or some of Bushy Island Nature Reserve (NR), One Tree Island NR, Shark Island NR, Tomaree National Park (NP), Tilligerry NR, Worimi NP, and Worimi Regional Park (RP).

The Stage 2 area includes the remaining lands east of the Pacific Highway, from Karuah to Tomago. It includes the suburbs of Campvale, Ferodale (east), Fern Bay, Fullerton Cove, Heatherbrae (east), Karuah, Lemon Tree Passage, Mallabula, Medowie, Oyster Cove, Raymond Terrace (east), Salt Ash, Swan Bay, Tanilba Bay, and Williamstown. This area comprises approximately 52,600 ha; however approximately 15,000 ha of this are major water bodies (Port Stephens, Karuah River, Hunter River and Grahamstown Dam). Stage 2 includes all or some of Gir-um-bit NP, Gir-um-bit State Conservation Area (SCA), Hunter Wetlands NP, Karuah NR, Medowie NR, Medowie SCA, Moffats Swamp NR, Snapper Island NR, Tilligerry NP, Tilligerry NR, Tilligerry SCA, Worimi NP, Worimi RP, and Worimi SCA.

[Figure 1](#) shows the combined area covered by the Stage 1 and Stage 2 mapping.

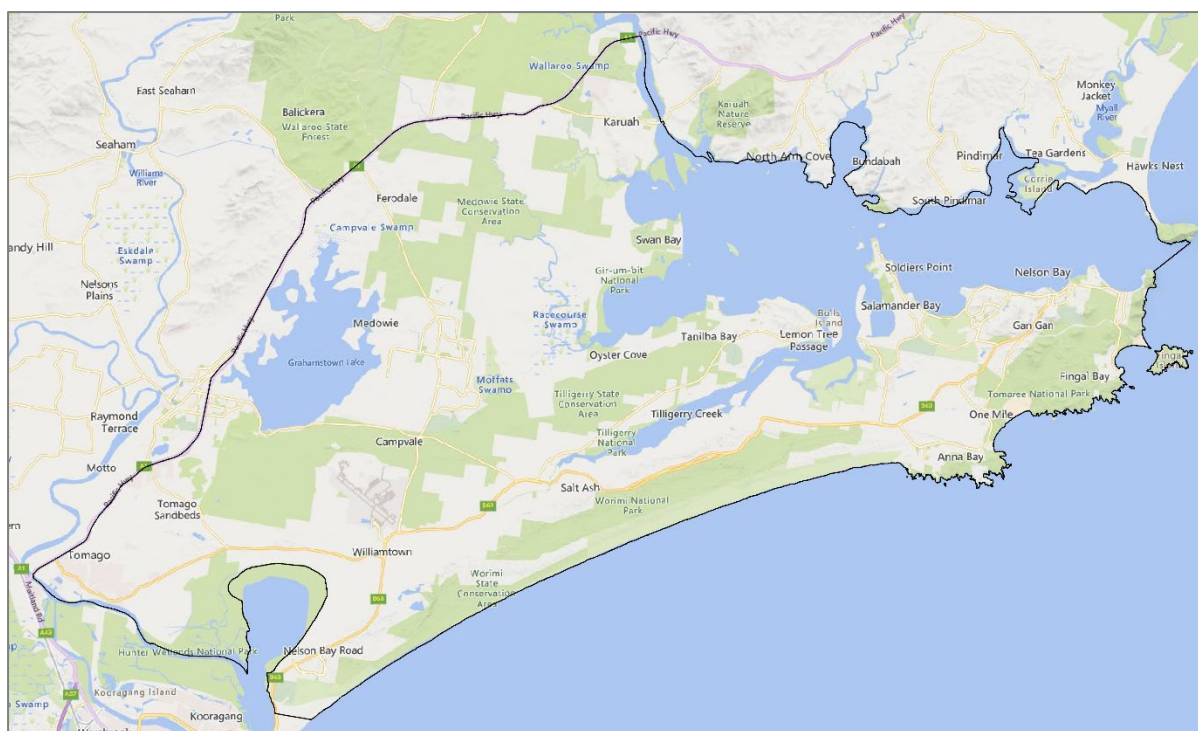


Figure 1 Stage 1 and Stage 2 mapping area, Port Stephens LGA.

Methods

Mapping methods used for Port Stephens LGA have built on previous projects where accurate, local-scale map products have been required. A basic outline of the process is included in Bell and Driscoll (2020). Existing mapping products for the Stage 1 and Stage 2 areas have been partially or fully revised and incorporated into this revision, including those for Tomaree NP and the Tomago and Anna Bay Sandbeds (Bell 1997; Bell & Driscoll 2006a), the Worimi Conservation Lands (Bell & Driscoll 2010), and the Salt Ash Weapons Range (Bell & Driscoll 2006b). Other projects, such as Council reserve mapping completed by various contractors and mapping associated with development projects, have also been reviewed and incorporated where suitable.

The following steps summarise the methods applicable to the mapping process:

1. **Mapping audit** of existing DA or other studies where point data resources or well-constructed (accurate) map layers are available (provided by Council).
2. **Data audit** of existing full floristic quadrat and rapid point mapping data, accessing NSW and local government databases to amalgamate all existing usable data into a single database.
3. **Rapid Data Points (RDPs)** for mapping were collected from as many accessible locations as possible, including public lands, roadside vegetation, and private lands where permission has been granted. This includes remnant ‘paddock’ or ‘backyard’ trees, as these are important for developing a pre-disturbance map layer and are integral to understanding landscape-scale patterns in distribution. Rapid Data Points collect information on dominant plant species within key structural layers to assist in the

classification and mapping process, and under the right conditions several hundred can be obtained in a single day.

4. **Draft vegetation map construction** of the study area, incorporating colour and textual patterns evident in digital aerial imagery (LPI Public Imagery) with RDP and other environmental data (e.g. landform, soil type, drainage, relative relief, contour data). A pre-disturbance map layer was initially prepared as the base, later extracting out extant vegetation as a separate layer. Base mapping incorporated all larger previous map products from within the study area (e.g. Tomaree NP, Tomago Sandbeds, Worimi Conservation Lands) and adopted the regional local-scale vegetation classification maintained by the author (common across the Lower Hunter and Central Coast region). This classification was added to as new units were uncovered and could not be adequately accommodated within existing units. Progressive updates to the classification and map layer were undertaken regularly following field collection of RDPs. Note that the classification nomenclature used is intuitive and is not yet supported by a specific LGA-based numerical analysis of plot data.
5. **Establish linkages** to the ENSW PCT Classification and install them in map attribute tables. Establishing links from local-scale units to State- or regional-scale units required manual assessment of each unit in combination with tracking existing plot allocation within the ENSW classification. Reference plots and their ENSW PCT allocations (available in Bionet) were viewed where they fell within map units to ascertain the most frequent or appropriate PCT. These have been adopted in the interim as ‘best fit’ PCTs until a full LGA-wide numerical analysis and reassessment of PCTs can be undertaken using the *Plot to PCT Tool* (DPE 2022).

Results

[Figure 2](#) summarises the extent of ground control data (RDPs) that were incorporated into the draft map layer, numbering nearly 15,000. Viewing of RDP spread and density provides an indication of the reliability of mapping, as each was intuitively used to inform the mapping process.

In total, 109 local-scale mapping units have been defined for the combined Stage 1 and Stage 2 area, including the non-vegetated units of Beach, Rock and Water Bodies. A small number of units (~5) are also predominantly comprised of exotic species yet form mappable entities (e.g. Unit 50c Coastal Sand Bitou Bush). Native vegetation units include various forms of rainforest, open forest, swamp forest, moist forest, heathland, sedgeland, and grassland. [Figure 3](#) provides an overview of the draft vegetation map, but viewing in GIS is more informative.

The ~100 local-scale native vegetation units currently equate to 52 ‘best-fit’ PCTs, with some representing a direct one-to-one relationship but others incorporating multiple local-scale units. These allocations will be refined after the completion of Stage 3 mapping and numerical analysis of plot data.

[Appendix 1](#) summarises the vegetation mapping units and PCTs defined for the study area. These are organised into major structural and landscape groups to aid navigation, following the order shown in [Table 1](#). Note that unit numbering is not always sequential but follows a broader regional coding system. Additional units present in subsequent work will be progressively added to this summary in future updates.

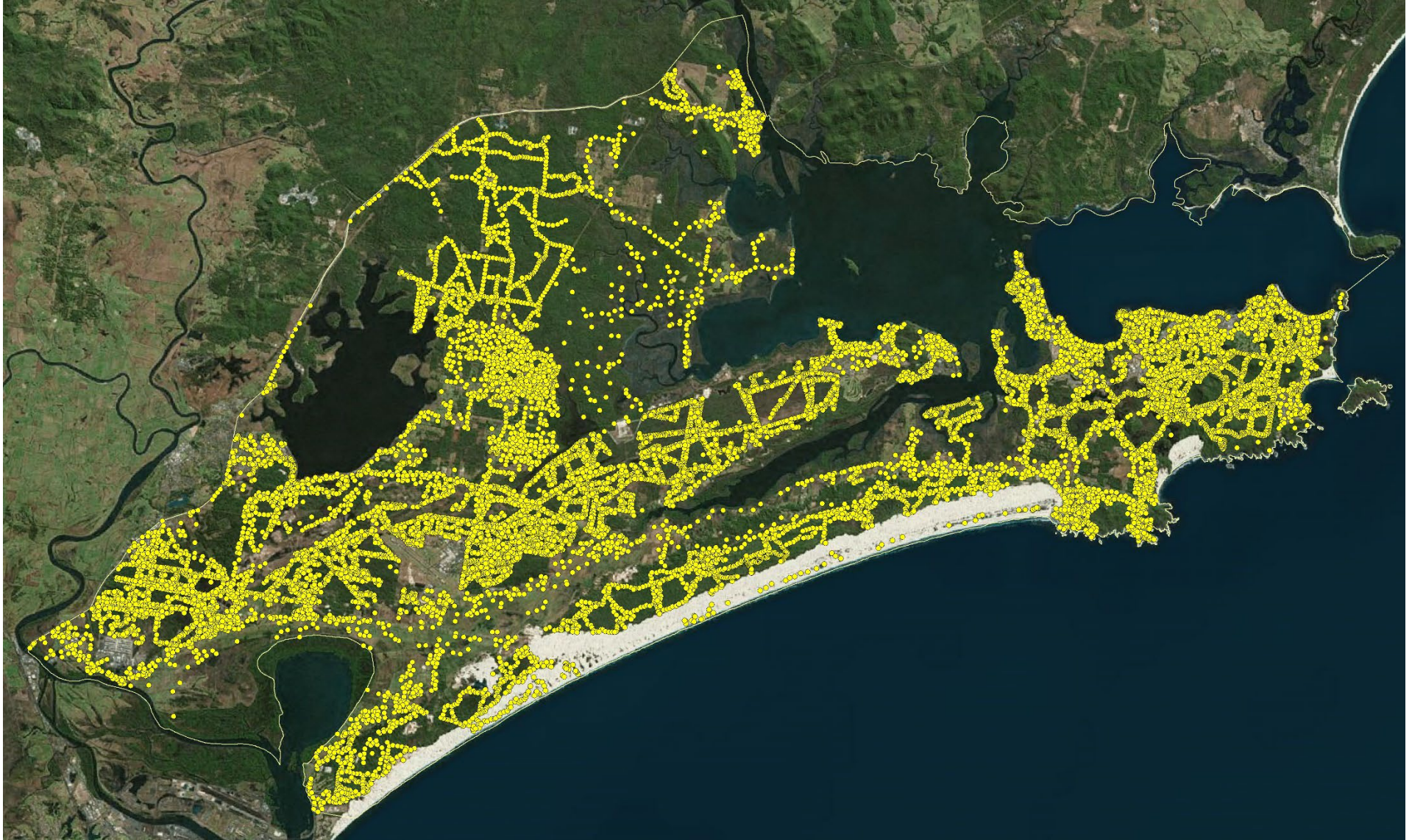


Figure 2 Distribution of ~15,000 Rapid Data Points used in the Stage 1 and Stage 2 mapping area.

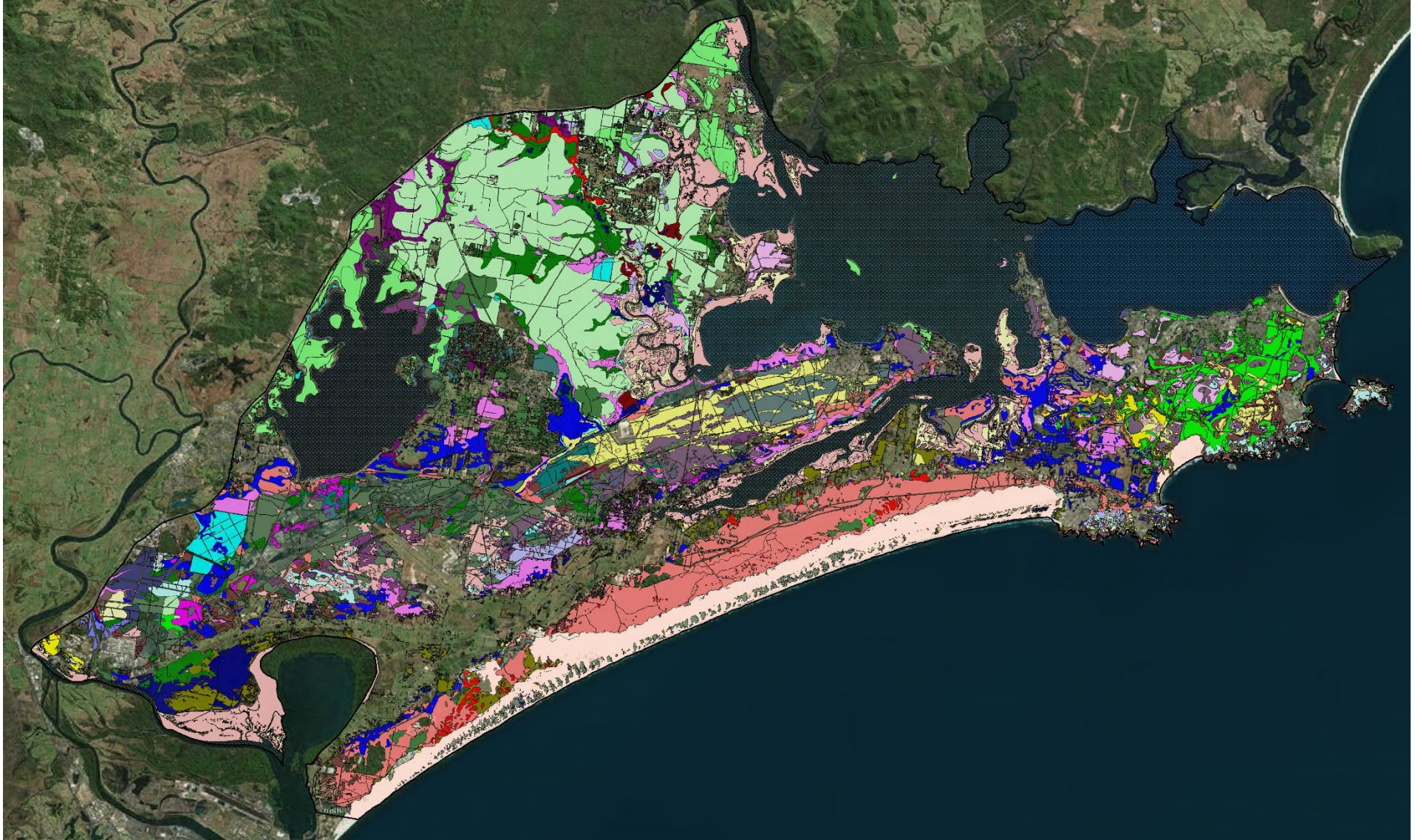


Figure 3 Draft vegetation map for the Stage 1 and Stage 2 mapping area.

Table 1 Arrangement of local-scale vegetation units shown in Appendix 1.

Group	Local-scale Unit
Dry Rainforests	3e: Grey Myrtle Dry Rainforest
Littoral Rainforests	4: Coastal Sand Littoral Rainforest 4e: Nerong Littoral Rainforest
Alluvial Tall Moist Forests	5f: Alluvial Flooded Gum Forest
Spotted Gum - Ironbark Forests	16: Seaham Spotted Gum - Ironbark Forest 16a: Tomago Spotted Gum - Ironbark Forest 16e: Medowie Grey Gum-Ironbark Forest 17o: Hinterland Spotted Gum - Red Ironbark Forest
Coastal Plains Apple Woodlands	30a: Buttonderry Footslopes Forest 30e: Coastal Plains Bloodwood - Apple Forest 30k: Medowie Stringybark - Bloodwood - Apple Forest 30l: Medowie Stringybark - Bloodwood - Apple - Woody Pear Forest 30o: Medowie Blackbutt - Peppermint Forest 30p: Medowie Scribbly Gum - Bloodwood - Apple Forest
Nerong Smooth-barked Apple Forests	32: Nerong Open Forest 32b: Nerong Scribbly Gum Forest 32c: Nerong Peppermint - Apple Forest 32d: Nerong Blackbutt-Apple-Bloodwood Forest
Coastal Sand Apple - Blackbutt Forests	33a: Frontal Dune Blackbutt Apple Forest 33e: Tomago Scribbly Gum - Apple - Bloodwood Forest 33f: Tomago Peppermint - Apple - Bloodwood Forest 33g: Anna Bay Blackbutt-Apple-Bloodwood Forest 33h: Tomago Mesic Blackbutt - Apple Forest 33i: Tomago Redgum - Apple - Banksia Forest 33j: Tomago Banksia - Apple Forest 33n: Medowie Relict Dune Forest 33o: Tomago Apple-Bloodwood Low Forest 33p: Tomago Blackbutt - Peppermint - Apple Forest
Coastal Sand Wallum Woodland-Heaths	34: Coastal Sand Wallum Woodland 34a: Coastal Sand Wallum Heath 34d: Depression Banksia Woodland 34e: Coastal Sand Wallum – Sedge Heath
Clay Woodlands & Heaths	36b: Earp's Gum - Peppermint Scrubby Forest 36c: Tomago Clay Wallum Scrub 36d: Earp's Gum Sedge Woodland
Swamp Mahogany - Paperbark Swamp Forests	37: Swamp Mahogany - Paperbark Forest 37e: Paperbark Swamp Forest 37h: Paperbark-Mahogany Sedge Swamp Forest 37i: Fringing Paperbark Sedge Forest 37m: Paperbark-Mahogany Dry Swamp Forest 37o: Mahogany - Baloskion Swamp Forest 37p: Coastal Sand Paperbark Swamp Forest
Redgum-Rough-barked Apple Swamp Forests	38: Foreshore Redgum-Rough-barked Apple Forest

Group	Local-scale Unit
Swamp Oak - Rushland Forests	38e: Headland Redgum-Swamp Oak Forest
	38f: Redgum - Red Mahogany - Ironbark Drainage Line Forest
	40: Estuarine Swamp Oak Forest
	40a: Phragmites Rushland
	40b: Estuarine Baumea Sedgeland
Swamp Oak Sedge Forests	40c: Estuarine Juncus Rushland
	40e: Estuarine Spiny Juncus Rushland
	41a: Regrowth Swamp Oak Forest
	41b: Swamp Oak - Cabbage Tree Palm Forest
Dry Mahogany Swamp Forests	42: Red Mahogany - Apple - Paperbark Forest
	42d: Charmhaven Apple - Paperbark Sedge Woodland
Estuarine Paperbark Scrubs	43a: Estuarine Paperbark Scrub Forest
	43g: Estuarine Paperbark Scrub-thicket
	43h: Estuarine Paperbark Heath-Scrub
Coastal Wet Sand Cyperoid Heaths	44d: Tomago Callistemon - Hakea Shrub Swamp
	44e: Tomago Callistemon - Lepidosperma Shrub Swamp
	44f: Tomago Callistemon - Paperbark Shrub Swamp
	44g: Coastal Sand Bottlebrush Wet Heath
	44h: Tomago Leptospermum-Callistemon Shrub Swamp
	44i: Tomago Strand Plain Wet Heath
	44j: Tomago Strand Plain Intermediate Heath
	44k: Tomago Interbarrier Depression Wet Heath
	44n: Medowie Grasstree Wet Heath
	44o: Tomago Strand Plain Intermediate Fern-Heath
	44p: Tomago Strand Plain Intermediate Redgum-Heath
Lepironia Swamps	45: Lepironia Sedgeland
Freshwater Wetland Complex	46: Freshwater Wetland Complex
	46a: Freshwater Typha Wetland
	46b: Freshwater Baumea Sedgeland
	46d: Freshwater Lepidosperma Sedgeland
	46e: Freshwater Chorizandra Sedgeland
	46f: Freshwater Philydrum Sedgeland
	46g: Freshwater Mixed Sedgeland
	46h: Freshwater Cladium Sedgeland
	46i: Freshwater Gahnia Sedgeland
	46j: Freshwater Beach Marsh
	46k: Freshwater Panicum Meadow
	46l: Freshwater Juncus Sedgeland
Mangrove Estuarine Complex	47: Estuarine Mangrove Scrub
	47a: Estuarine Saltmarsh/Grassland
Wallum Clay Shrub Heaths	49b: Anna Bay Depression Wet Heath
Coastal Sand Scrubs	50a: Coastal Sand Foredune Scrub
	50b: Coastal Sand Banksia Scrub
	50c: Coastal Sand Bitou Bush
Coastal Headland Complex	51a: Coastal Headland Grassland

Group	Local-scale Unit
	51b: Coastal Headland Shrubland
Rocky Headland Scrubs	52: Nerong Coastal Scrub 52a: Nerong Coastal Heath 52b: Nerong Fringe Myrtle Heath 52c: Nerong Coast Myall Scrub 52d: Nerong Banksia-Apple Low Forest
Beach Spinifex	53: Foredune Spinifex
Swamp Thickets	100a: Swamp Paperbark Thicket
Paperbark Scrub-Forests	110a: Red Ironbark - Paperbark Forest
Clay Forests	115: Tomago Forest Oak - Stringybark - Apple Forest
Fringing Baloskion Sedge Woodlands	116a: Fringing Scribbly Gum Baloskion Sedge Woodland 116b: Fringing Blackbutt-Apple-Baloskion Woodland
Sedge Woodlands	117: Long Swamp Sedge Woodland
Other Map Units	Beach: Beach Soak: Beach Soak Rehab: Rehabilitation Rock: Rock Water: Water body

References

Bell, S.A.J. (1997) *Tomaree National Park vegetation survey. A fire management document*. Eastcoast Flora Survey - Report to NSW National Parks and Wildlife Service (Hunter District). May 1997.

Bell, S.A.J. & Driscoll, C. (2006a) *Vegetation of the Tomago and Anna Bay Sandbeds, Port Stephens, New South Wales: Management of Groundwater Dependent Ecosystems. Part 1 – Vegetation Classification*. Unpublished Report to Hunter Water. Eastcoast Flora Survey. September 2006.

Bell, S.A.J. & Driscoll, C. (2006b) *Vegetation of the Salt Ash Weapons Range, Medowie, New South Wales*. Unpublished Report to Department of Defence. Eastcoast Flora Survey. May 2006.

Bell, S. A.J. & Driscoll, C. (2010) *Vegetation of the Worimi Conservation Lands, Port Stephens, New South Wales: Worimi NP, Worimi SCA & Worimi RP*. Unpublished Report to NSW Office of Environment and Heritage, November 2010.

Bell, S.A.J. & Driscoll, C. (2020) Data-informed sampling and mapping: an approach to ensure plot-based classifications locate, classify and map rare and restricted vegetation types. *Australian Journal of Botany* <https://doi.org/10.1071/BT20024>

Department of Planning and Environment (DPE) (2022) *Plot to PCT Assignment Tool User Guide Eastern NSW PCT Classification Version 1.1*.

Appendix 1: Summary of Vegetation Units, Port Stephens LGA (Stage 1-2)

Dry Rainforests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
3e: Grey Myrtle Dry Rainforest	<i>Backhousia myrtifolia</i> , <i>Ficus coronata</i> , <i>Olea paniculata</i> , <i>Guioa semiglaucula</i> , <i>Notelaea longifolia</i> , <i>Myrsine variabilis</i>	3074: Hunter Coast Lowland Grey Myrtle Wet Forest	Based on data included in GHD (2022) for the Biobanking assessment of land near Karuah.

Littoral Rainforests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
4: Coastal Sand Littoral Rainforest	<i>Alphitonia excelsa</i> , <i>Cupaniopsis anacardioides</i> , <i>Polyscias elegans</i> , <i>Endiandra sieberi</i> , <i>Livistona australis</i> , <i>Acacia maidenii</i> , <i>Glochidion ferdinandi</i> , <i>Banksia integrifolia</i>	3133: Sydney Coast Tuckerroo Littoral Rainforest	Generally, in protected areas associated with coastal sand bodies. May extent slightly onto adjacent hard country.
4e: Nerong Littoral Rainforest	<i>Acmena smithii</i> , <i>Cupaniopsis anacardioides</i> , <i>Wilkea huegeliana</i> , <i>Pittosporum revolutum</i> , <i>Synoum glandulosum</i> , <i>Rapanea variabilis</i> , <i>Zieria smithii</i> , <i>Eucalyptus paniculata</i> , <i>Eucalyptus umbra</i> , <i>Doodia aspera</i> , <i>Adiantum aethiopicum</i> , <i>Pteridium esculentum</i>	3135: Tomaree Headland Littoral Rainforest	On volcanic rock, typically on steep rocky slopes and often exposed to southerly winds. Can be severely wind-sheared and stunted, with little ground layer vegetation.

Alluvial Tall Moist Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
5f: Alluvial Flooded Gum Forest	<i>Eucalyptus grandis</i> , <i>Livistona australis</i> , <i>Syncarpia glomulifera</i> , <i>Alphitonia excelsa</i> , <i>Melaleuca stypheloides</i> , <i>Eleocarpus obovatus</i> , <i>Melia azedarach</i> , <i>Acacia maidenii</i> , <i>Astrotricha latifolia</i>	3158: Lower North Foothills Turpentine-Flooded Gum Wet Forest	Remnants occur in the Bobs Farm-Salt Ash area and at Tomago, almost all have been previously cleared and are regrowth. Scattered trees suggest it to be more extensive previously on alluvial flats. Additional areas tentatively mapped as this type for parts of Twelve Mile Creek, but further survey is required.

Spotted Gum - Ironbark Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
16: Seaham Spotted Gum - Ironbark Forest	<i>Corymbia maculata</i> , <i>Eucalyptus siderophloia</i> , +/- <i>Eucalyptus punctata</i> , <i>Eucalyptus fibrosa</i> , <i>Eucalyptus moluccana</i> , <i>Eucalyptus tereticornis</i> , <i>Allocasuarina torulosa</i> ; <i>Acacia falcata</i> , <i>Acacia implexa</i> , <i>Leucopogon juniperinus</i> , <i>Breynia oblongifolia</i> , <i>Persoonia linearis</i> , <i>Glycine clandestina</i> , <i>Hardenbergia violacea</i> , <i>Aristida vagans</i> , <i>Cymbopogon refractus</i> , <i>Echinopogon ovatus</i>	3244: Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	<i>Eucalyptus siderophloia</i> is the dominant ironbark species present, although scattered areas supporting <i>Eucalyptus fibrosa</i> in combination with <i>Eucalyptus siderophloia</i> also occur. <i>Eucalyptus tereticornis</i> may be present where in proximity to drainage lines.
16a: Tomago Spotted Gum - Ironbark Forest	<i>Corymbia maculata</i> , <i>Eucalyptus siderophloia</i> , <i>Eucalyptus fibrosa</i> , <i>Eucalyptus globoidea</i> , <i>Melaleuca nodosa</i> , <i>Banksia collina</i> , <i>Daviesia ulicifolia</i> , <i>Entolasia stricta</i> , <i>Aristida vagans</i> , <i>Cymbopogon refractus</i> , <i>Themeda triandra</i> , <i>Lepidosperma laterale</i> , <i>Ptilothrix deusta</i>	3244: Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Mapped only for the western end of the Tomago Sandbeds at Tomago. Floristically similar to Unit 16 and may represent a disjunct form of that type, differing in the presence of species such as <i>Banksia collina</i> , and with a high grass and graminoid cover.
16e: Medowie Grey Gum-Ironbark Forest	<i>Eucalyptus propinqua</i> , <i>Eucalyptus siderophloia</i> , <i>Allocasuarina torulosa</i> , +/- <i>Eucalyptus pilularis</i> , <i>Eucalyptus globoidea</i> , <i>Angophora costata</i>	3244: Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Immediately north of Medowie on mid-lower slopes and low ridgelines, typified by <i>Eucalyptus propinqua</i> with <i>Eucalyptus siderophloia</i> and <i>Allocasuarina torulosa</i> , and occurring within a wider matrix of Units 30k and 30o. Broadly similar to Unit 16 but lacking <i>Corymbia maculata</i> .
17o: Hinterland Spotted Gum - Red Ironbark Forest	<i>Corymbia maculata</i> , <i>Eucalyptus fibrosa</i> , <i>Eucalyptus umbra</i> , <i>Eucalyptus capitellata</i> , <i>Eucalyptus globoidea</i> , <i>Melaleuca decora</i> , <i>Dillwynia retorta</i> , <i>Themeda triandra</i> , <i>Joycea pallida</i>	3432: Hunter Coast Foothills Apple-Ironbark Grassy Forest	Generally present in small areas within or near to Unit 16, and distinguishable from that type by the co-dominance of <i>Corymbia maculata</i> with <i>Eucalyptus siderophloia</i> and <i>Eucalyptus umbra</i> , and a mid-storey of paperbarks.

Coastal Plains Apple Woodlands

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
30a: Buttonderry Footslopes Forest	<i>Angophora costata</i> , <i>Eucalyptus fibrosa</i> , <i>Eucalyptus resinifera</i> , <i>Eucalyptus globoidea</i> , <i>Corymbia maculata</i> , <i>Melaleuca nodosa</i> , <i>Daviesia squarrosa</i> , <i>Banksia collina</i> , <i>Themeda australis</i> , <i>Goodenia heterophylla</i>	3432: Hunter Coast Foothills Apple-Ironbark Grassy Forest	Tentatively placed with this type from Lake Macquarie and the Central Coast, but requires further investigation.
30e: Coastal Plains Bloodwood - Apple Forest	<i>Angophora costata</i> , <i>Corymbia gummifera</i> , +/- <i>Eucalyptus umbra</i> , <i>Eucalyptus capitellata</i> , <i>Eucalyptus globoidea</i> , <i>Dillwynia retorta</i> , <i>Pimelea linifolia</i> , <i>Acacia ulicifolia</i> , <i>Banksia collina</i> , <i>Themeda australis</i> , <i>Joycea pallida</i> , <i>Lomandra obliqua</i> , <i>Entolasia stricta</i>	3582: Hunter Coast Lowland Apple-Bloodwood Forest	Currently mapped for small peninsula areas along mid-lower Twelve Mile Creek, but requires further clarification. Canopy typically of <i>Angophora costata</i> and <i>Corymbia gummifera</i> .
30k: Medowie Stringybark - Bloodwood - Apple Forest	<i>Eucalyptus capitellata</i> , <i>Corymbia gummifera</i> , <i>Angophora costata</i> , <i>Eucalyptus piperita</i> , <i>Allocasuarina littoralis</i> , <i>Lambertia formosa</i> , <i>Banksia collina</i> , <i>Bossiaea obcordata</i> , <i>Xanthorrhoea latifolia</i> , <i>Themeda triandra</i> , <i>Entolasia stricta</i>	3582: Hunter Coast Lowland Apple-Bloodwood Forest	Widespread in and around Medowie, characterised by a canopy of <i>Eucalyptus capitellata</i> , <i>Corymbia gummifera</i> , <i>Angophora costata</i> , and <i>Eucalyptus piperita</i>
30l: Medowie Stringybark - Bloodwood - Apple - Woody Pear Forest	<i>Eucalyptus capitellata</i> , <i>Corymbia gummifera</i> , <i>Angophora costata</i> , <i>Eucalyptus piperita</i> , <i>Xylomelum pyriforme</i> , <i>Allocasuarina littoralis</i> , <i>Lambertia formosa</i> , <i>Banksia collina</i> , <i>Bossiaea obcordata</i> , <i>Xanthorrhoea latifolia</i> , <i>Themeda triandra</i> , <i>Entolasia stricta</i>	3582: Hunter Coast Lowland Apple-Bloodwood Forest	Very similar to Unit 30k but characterised by high density of <i>Xylomelum pyriforme</i> in the mid-storey, a species otherwise not present in Unit 30k. Potentially just a localised variant of that type, but known to occupy ~10 ha.
30o: Medowie Blackbutt - Peppermint Forest	<i>Eucalyptus pilularis</i> , <i>Eucalyptus piperita</i> , <i>Allocasuarina torulosa</i> , <i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Dodonaea triquetra</i> , <i>Leptospermum polygalifolium</i> , <i>Lomatia silaifolia</i> , <i>Pultenaea villosa</i> , <i>Acacia longifolia</i> , <i>Daviesia ulicifolia</i> , <i>Imperata cylindrica</i> , <i>Entolasia stricta</i>	3581: Hunter Coast Foothills Apple Forest	Centred on Medowie, this type occurs on clay soils and is characterised predominantly by <i>Eucalyptus pilularis</i> and <i>Eucalyptus piperita</i> in the canopy, often with <i>Allocasuarina torulosa</i> in more sheltered aspects. Similar to Units 33a and 33g, but they occur on coastal sands.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
30p: Medowie Scribbly Gum - Bloodwood - Apple Forest	<i>Eucalyptus racemosa</i> , <i>Corymbia gummifera</i> , <i>Angophora costata</i> , <i>Eucalyptus piperita</i> , <i>Eucalyptus globoidea</i> , <i>Allocasuarina littoralis</i> , <i>Daviesia ulicifolia</i> , <i>Banksia collina</i> , <i>Dodonaea triquetra</i> , <i>Lomatia silaifolia</i> , <i>Persoonia linearis</i> , <i>Pimelea linifolia</i> , <i>Themeda triandra</i> , <i>Xanthorrhoeae latifolia</i>	3582: Hunter Coast Lowland Apple-Bloodwood Forest	Restricted to the Medowie area, and largely already cleared. <i>Eucalyptus racemosa</i> is characteristic where it occurs with <i>Corymbia gummifera</i> , <i>Angophora costata</i> and <i>Eucalyptus piperita</i> .

Nerong Smooth-barked Apple Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
32: Nerong Open Forest	<i>Eucalyptus capitellata</i> , <i>Eucalyptus umbra</i> , <i>Eucalyptus resinifera</i> , <i>Angophora costata</i> , <i>Eucalyptus piperita</i> , <i>Corymbia gummifera</i> , <i>Acacia myrtifolia</i> , <i>Persoonia laurina</i> , <i>Doryanthes excelsa</i> , <i>Lambertia formosa</i> , <i>Lomatia silaifolia</i> , <i>Platylobium formosum</i> , <i>Dodonaea triquetra</i>	3434: Hunter Coast White Mahogany Low Forest	On volcanic peaks. Typically dominated by <i>Eucalyptus umbra</i> , <i>Angophora costata</i> and <i>Eucalyptus capitellata</i> . Areas dominated by other eucalypts have been separated out as different units given their distinct occurrence in the landscape.
32b: Nerong Scribbly Gum Forest	<i>Eucalyptus haemastoma</i> , <i>Corymbia gummifera</i> , <i>Eucalyptus umbra</i> , <i>Eucalyptus capitellata</i> , <i>Allocasuarina littoralis</i> , <i>Banksia spinulosa</i> , <i>Lambertia formosa</i> , <i>Bossiaea oblongifolia</i> , <i>Cyathochaeta diandra</i> , <i>Xanthorrhoea latifolia</i> , <i>Ptilothrix deusta</i>	3434: Hunter Coast White Mahogany Low Forest	Occurs on Nerong volcanics mostly at exposed aspects. Canopy characterised by <i>Eucalyptus haemastoma</i> in a disjunct population and at northern limit. Ranges from a woodland of <i>Eucalyptus haemastoma</i> with few other eucalypts, to an open forest with scattered <i>Eucalyptus umbra</i> , <i>Corymbia gummifera</i> and <i>Eucalyptus capitellata</i> over a heathy understorey. Requires targeted sampling.
32c: Nerong Peppermint - Apple Forest	<i>Eucalyptus piperita</i> , <i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Banksia serrata</i> , <i>Allocasuarina littoralis</i> , <i>Callicoma serratifolia</i> , <i>Elaeocarpus obovatus</i> , <i>Doryanthes excelsa</i> , <i>Pteridium esculentum</i>	3434: Hunter Coast White Mahogany Low Forest	Mostly on sheltered slopes of Nerong Volcanics, typified by <i>Eucalyptus piperita</i> and <i>Angophora costata</i> . Similar understorey composition to other subtypes, although incised gully situations often with moister species such as <i>Callicoma serratifolia</i> and <i>Elaeocarpus obovatus</i> and ferns. Requires targeted sampling.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
32d: Nerong Blackbutt-Apple-Bloodwood Forest	<i>Eucalyptus pilularis</i> , <i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Banksia serrata</i> , <i>Doryanthes excelsa</i> , <i>Banksia spinulosa</i> , <i>Pteridium esculentum</i>	3434: Hunter Coast White Mahogany Low Forest	Occurs on sand overlying Nerong volcanics. Distinguished from other similar sand-based communities by the abundance of <i>Doryanthes excelsa</i> in the ground layer, indicative of rocky substrate at or just below the surface. Requires targeted sampling.

Coastal Sand Apple - Blackbutt Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
33a: Frontal Dune Blackbutt Apple Forest	<i>Eucalyptus pilularis</i> , <i>Corymbia gummifera</i> , <i>Angophora costata</i> , <i>Banksia serrata</i> , <i>Monotoca scoparia</i> , <i>Eriostemon australasius</i> , <i>Monotoca elliptica</i> , <i>Pteridium esculentum</i> , <i>Themeda australis</i> , <i>Gonocarpus teucroides</i> , <i>Amperea xiphoclada</i> , <i>Xanthorrhoea arborea</i> , <i>Acacia suaveolens</i> , <i>Acacia longifolia</i>	3544: Coastal Sands Apple-Blackbutt Forest	Dominant along the well-drained frontal dune system on sand, between Newcastle and Anna Bay. Also currently mapped for more inland dunes (Fenninghams Island to Salamander Bay) which are likely former frontal dunes. These areas require sampling and analysis to determine if they are more typical of this unit or the related 33g.
33e: Tomago Scribbly Gum - Apple - Bloodwood Forest	<i>Eucalyptus signata</i> , <i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Banksia serrata</i> , <i>Bossiaea rhombifolia</i> , <i>Gompholobium latifolium</i> , <i>Leptospermum trinervium</i> , <i>Lambertia formosa</i> , <i>Isopogon anemonifolius</i> , <i>Gonocarpus teucroides</i> , <i>Trachymene incisa</i> , <i>Lomandra glauca</i> , <i>Macrozamia communis</i>	3549: Lower North Sandplain Heathy Forest	Common on the Tomago Sandbeds, particularly in central and western sections. Identification of Scribbly Gums is problematic, here shown as <i>Eucalyptus signata</i> although some authorities suggest these populations to be <i>Eucalyptus racemosa</i> .
33f: Tomago Peppermint - Apple - Bloodwood Forest	<i>Eucalyptus piperita</i> , <i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Ceratopetalum gummiferum</i> , <i>Monotoca elliptica</i> , <i>Isopogon anemonifolius</i> , <i>Lambertia formosa</i> , <i>Xanthorrhoea latifolia</i> , <i>Dianella caerulea</i> , <i>Anisopogon avenaceus</i>	3549: Lower North Sandplain Heathy Forest	Dominated by <i>Eucalyptus piperita</i> , <i>Angophora costata</i> and <i>Corymbia gummifera</i> , and characteristically supports often dense stands of the small tree <i>Ceratopetalum gummiferum</i> . Restricted to the Tomago Sandbeds.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
33g: Anna Bay Blackbutt-Apple-Bloodwood Forest	<i>Eucalyptus pilularis</i> , <i>Corymbia gummifera</i> , <i>Angophora costata</i> , <i>Banksia serrata</i> , <i>Monotoca elliptica</i> , <i>Monotoca scoparia</i> , <i>Eriostemon australasius</i> , <i>Pteridium esculentum</i> , <i>Themeda australis</i> , <i>Gonocarpus teucroides</i> , <i>Amperea xiphoclada</i> , <i>Bossiaea rhombifolia</i>	3549: Lower North Sandplain Heathy Forest	Differs floristically from unit 33a, although superficially very similar to that unit. Differences are likely due to lower relief sand hills which are closer to groundwater. More closely associated with Wallum and its associated species. Long-unburnt areas tend to be dominated in the mid-layer by <i>Pittosporum undulatum</i> , <i>Ceratopetalum gummiferum</i> and <i>Glochidion ferdinandi</i> .
33h: Tomago Mesic Blackbutt - Apple Forest	<i>Eucalyptus pilularis</i> , <i>Angophora costata</i> , <i>Glochidion ferdinandi</i> , <i>Alphitonia excelsa</i> , <i>Acacia maidenii</i> , <i>Allocasuarina torulosa</i> , <i>Banksia integrifolia</i> , <i>Monotoca elliptica</i> , <i>Oplismenus imbecillus</i> , <i>Lomandra longifolia</i>	3544: Coastal Sands Apple-Blackbutt Forest	Occurs principally at the western end of the Tomago Sandbeds, characteristically dominated by a mesic, small tree and understorey layer of <i>Glochidion ferdinandi</i> , <i>Alphitonia excelsa</i> , <i>Acacia maidenii</i> , <i>Allocasuarina torulosa</i> and <i>Banksia integrifolia</i> , beneath <i>Eucalyptus pilularis</i> and <i>Angophora costata</i> . Heavily infested with Lantana.
33i: Tomago Redgum - Apple - Banksia Forest	<i>Eucalyptus tereticornis</i> , <i>Angophora floribunda</i> , <i>Banksia integrifolia</i> , <i>Glochidion ferdinandi</i> , <i>Jacksonia scoparia</i> , <i>Breynia oblongifolia</i> , <i>Melaleuca thymifolia</i> , <i>Pteridium esculentum</i>	4036: Hunter Coast Lake Flats Apple Forest	Restricted to the far western end of the Tomago Sandbeds, near the Hunter River. The presence of <i>Angophora floribunda</i> and <i>Eucalyptus tereticornis</i> on a coastal sandplain is very unusual and perhaps pertains to the underlying clay substrate at the edge of the sandplain here. Closely related to Unit 33j.
33j: Tomago Banksia - Apple Forest	<i>Angophora floribunda</i> , <i>Banksia integrifolia</i> , <i>Banksia serrata</i> , <i>Eucalyptus pilularis</i> , <i>Monotoca elliptica</i> , <i>Jacksonia scoparia</i> , <i>Breynia oblongifolia</i>	3556: Umina Coastal Sand Woodland	Prominent along Tomago Road around the aluminium smelter. <i>Angophora floribunda</i> and <i>Banksia integrifolia</i> dominate the canopy, together with <i>Banksia serrata</i> and <i>Eucalyptus pilularis</i> . The single plot previously sampled aligned with others defining the Umina Coastal Sandplain Woodland TEC in the ENSW PCT classification.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
33n: Meadowie Relict Dune Forest	<i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Leptospermum trinervium</i> , <i>Ricinocarpus pinifolius</i> , <i>Leucopogon lanceolatus</i> var. <i>gracile</i> , <i>Aotus ericoides</i> , <i>Dillwynia retorta</i> , <i>Boronia pinnata</i> , <i>Eriostemon australasius</i> , <i>Amperea xiphoclada</i> , <i>Lomandra longifolia</i> , <i>Patersonia glabrata</i>	3549: Lower North Sandplain Heathy Forest	Tall forest on a relict sand deposit adjacent to Twelve Mile Creek, well distant from the major Pleistocene sandplain to the south where similar vegetation occurs. Dominated by <i>Angophora costata</i> and <i>Corymbia gummifera</i> , with a distinct sub-canopy of <i>Leptospermum trinervium</i> . Understorey vegetation comprises many species typical of Wallum heath vegetation.
33o: Tomago Apple-Bloodwood Low Forest	<i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Banksia serrata</i> , <i>Banksia aemula</i> , <i>Eriostemon australasicus</i> , <i>Acacia ulicifolia</i> , <i>Dillwynia retorta</i> , <i>Ricinocarpus pinifolius</i> , <i>Themeda australis</i> , <i>Xanthorrhoea macronema</i>	3545: Coastal Sands Bloodwood Low Forest	Occurs on poorly drained sand dunes and flats, often encircling Wallum heath areas (unit 34a). Can become quite stunted close to coastal exposure. Characterised by the absence or near-absence of <i>Eucalyptus pilularis</i> , which occurs on better drained sands.
33p: Tomago Blackbutt - Peppermint - Apple Forest	<i>Eucalyptus pilularis</i> , <i>Eucalyptus piperita</i> , <i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Banksia serrata</i> , <i>Monotoca elliptica</i> , <i>Lambertia formosa</i> , <i>Bossiaea rhombifolia</i> , <i>Pteridium esculentum</i> , <i>Imperata cylindrica</i> , <i>Dianella caerulea</i>	3544: Coastal Sands Apple-Blackbutt Forest	Occurs principally in the Heatherbrae area on the edge of the Tomago Sandbeds sandplain where it overlies floodplain clays. The canopy here is characterised by <i>Eucalyptus pilularis</i> with <i>Eucalyptus piperita</i> and other species typical of the sandbeds. Further analysis required to determine how distinct this type is from Unit 33f, where <i>Eucalyptus pilularis</i> is not present.

Coastal Sand Wallum Woodland-Heaths

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
34: Coastal Sand Wallum Woodland	<i>Eucalyptus signata</i> , <i>Corymbia gummifera</i> , <i>Banksia aemula</i> , <i>Ricinocarpus pinifolius</i> , <i>Leptospermum trinervium</i> , <i>Dillwynia retorta</i> , <i>Leucopogon leptospermoides</i> , <i>Bossiaea heterophylla</i> , <i>Eriostemon australasius</i> , <i>Monotoca scoparia</i> , <i>Eurymyrtus ramosissima</i> , <i>Hypolaena fastigiata</i> , <i>Lomandra glauca</i>	3802: Lower North Sandplain Wallum Heath	Occurs on the Tomago Sandbeds in the central portions, characterised by a scattered or regular emergent low canopy of <i>Eucalyptus signata</i> or <i>Corymbia gummifera</i> over wallum scrub. Further analysis required to determine relationships with Unit 34a.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
34a: Coastal Sand Wallum Heath	<i>Banksia aemula</i> , <i>Corymbia gummifera</i> , <i>Angophora costata</i> , <i>Eucalyptus piperita</i> , <i>Pimelea linifolia</i> , <i>Ricinocarpus pinifolius</i> , <i>Allocasuarina distyla</i> , <i>Monotoca scoparia</i> , <i>Lambertia formosa</i> , <i>Leucopogon ericoides</i> , <i>Woolisia pungens</i>	3802: Lower North Sandplain Wallum Heath	Low scrubs or heath with low woodland on sandplains or sand-mantled hills, characterised by <i>Banksia aemula</i> with scattered and stunted eucalypts. Related to Unit 33o, but scrubbier and with a higher diversity of heathy shrubs. <i>Eucalyptus piperita</i> may occasionally occur in small groups of stunted trees, likely indicative of hard rock just below the sand.
34d: Depression Banksia Woodland	<i>Banksia serrata</i> , <i>Calytrix tetragona</i> , <i>Leucopogon ericoides</i> , <i>Platysace lanceolata</i> , <i>Dillwynia retorta</i> , <i>Melaleuca nodosa</i> , <i>Ricinocarpos pinifolius</i> , <i>Conospermum taxifolium</i> , <i>Leptospermum laevigatum</i> , <i>Olax stricta</i> , <i>Dianella caerulea</i> , <i>Schoenus ericetorum</i> , <i>Amperea xiphoclada</i>	3555: Lower North Sand Swale Banksia Woodland	Restricted to a few areas along the frontal dune system between Stockton and Williamtown, in low-relief depressions surrounded by higher dunes. Potentially occurs on older sand sheets (not Holocene) given species composition is more typical of the older Pleistocene sands of the Tomago Sandbeds. Requires further sampling.
34e: Coastal Sand Wallum – Sedge Heath	<i>Banksia aemula</i> , <i>Leptospermum trinervium</i> , <i>Bossiaea heterophylla</i> , <i>Ricinocarpus pinifolius</i> , <i>Eriostemon australasius</i> , <i>Woolisia pungens</i> , <i>Brachyloma daphnoides</i> , <i>Boronia pinnata</i> , <i>Hypolaena fastigiata</i> , <i>Caustis recurvata</i> , <i>Leptocarpus tenax</i>	3803: Northern Sandplain Damp Wallum Heath	Restricted to the Long Swamp area of the Tomago Sandbeds, where poor drainage possibly from the high water table allows a high proportion of sedge species to replace lower shrubs and forbs.

Clay Woodlands & Heaths

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
36b: Earp's Gum - Peppermint Scrubby Forest	<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i> , <i>Eucalyptus piperita</i> , <i>Eucalyptus resinifera</i> , <i>Melaleuca nodosa</i> , <i>Acacia longifolia</i> , <i>Melaleuca sieberi</i> , <i>Banksia oblongifolia</i>	3802: Lower North Sandplain Wallum Heath	Notable for its scrubby understorey of <i>Melaleuca nodosa</i> , <i>Acacia longifolia</i> , <i>Melaleuca sieberi</i> and <i>Banksia oblongifolia</i> . Emergent eucalypts can include <i>Eucalyptus parramattensis</i> subsp. <i>decadens</i> or <i>Eucalyptus piperita</i> , and occasionally <i>Eucalyptus resinifera</i> . Potentially tied to poorly drained sands on the edge of larger expanses of wet heath or sedge woodland, and further investigation is required.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
36c: Tomago Clay Wallum Scrub	<i>Banksia aemula</i> , <i>Melaleuca nodosa</i> , <i>Leptospermum trinervium</i> , <i>Banksia oblongifolia</i> , <i>Melaleuca sieberi</i> , <i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	3803: Northern Sandplain Damp Wallum Heath	Characterised by a moderately dense tall shrub layer of <i>Banksia aemula</i> , <i>Melaleuca nodosa</i> , <i>Leptospermum trinervium</i> , <i>Banksia oblongifolia</i> , <i>Melaleuca sieberi</i> and <i>Eucalyptus parramattensis</i> subsp. <i>decadens</i> . It is a community unique to the Tomago Sandbeds.
36d: Earp's Gum Sedge Woodland	<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i> , <i>Leptocarpus tenax</i> , <i>Lepyrodia scariosa</i> , <i>Schoenus brevifolius</i> , <i>Entolasia stricta</i> , <i>Hemarthria uncinata</i> , <i>Paspalidium distans</i> , <i>Melaleuca thymifolia</i> , <i>Melaleuca sieberi</i> , <i>Banksia oblongifolia</i> , <i>Callistemon pachyphyllus</i> , +/- <i>Angophora costata</i> , <i>Eucalyptus robusta</i> , <i>Melaleuca quinquenervia</i>	4012: Tomago Drooping Red Gum Swamp Woodland	<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i> characterises this type, occurring over a sedge-dominated ground layer on the central Tomago Sandbeds. Other canopy species occasionally present include <i>Angophora costata</i> , <i>Eucalyptus robusta</i> and <i>Melaleuca quinquenervia</i> .

Swamp Mahogany - Paperbark Swamp Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
37: Swamp Mahogany - Paperbark Forest	<i>Eucalyptus robusta</i> , <i>Eucalyptus resinifera</i> , <i>Melaleuca linariifolia</i> , <i>Melaleuca sieberi</i> , <i>Melaleuca styphelioides</i> , <i>Melaleuca quinquenervia</i> , <i>Pultenaea villosa</i> , <i>Acacia longifolia</i> , <i>Homalanthus populifolius</i> , <i>Gahnia clarkei</i> , +/- <i>Eucalyptus tereticornis</i> , <i>Angophora floribunda</i>	4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest	A broad community with much variation, which may include a few sub-types yet to be defined. The Tomago-Anna Bay area on sand needs more sampling to delineate some of the sand-based variants.
37e: Paperbark Swamp Forest	<i>Melaleuca quinquenervia</i> , <i>Eucalyptus robusta</i> , <i>Pellaea falcata</i> , <i>Blechnum indicum</i> , <i>Gahnia clarkei</i> , <i>Phragmites australis</i> , <i>Baloskion tetraphyllum</i> , <i>Cyclosorus interruptus</i>	4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest	Dominated by <i>Melaleuca quinquenervia</i> with occasional <i>Eucalyptus robusta</i> and mostly occurs on coastal sand bodies. Also in sandy soils in swamps associated with coastal estuaries. Areas comprised solely of <i>Melaleuca quinquenervia</i> without <i>Eucalyptus robusta</i> , which are usually regrowth from past clearing, have been separated out as Unit 37p.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
37h: Paperbark-Mahogany Sedge Swamp Forest	<i>Eucalyptus robusta</i> , <i>Melaleuca sieberi</i> , <i>Melaleuca quinquenervia</i> , <i>Schoenus brevifolius</i> , <i>Baumea articulata</i> , <i>Leptocarpus tenax</i> , <i>Pseudoraphis paradoxa</i>	3995: Hunter Coast Paperbark-Swamp Mahogany Forest	Restricted occurrence, but generally on depressions within the frontal dune system between Tomago and Anna Bay, surrounded by dry forests on higher dunes. Characterised by sedges in the ground layer, which will change over time depending on groundwater levels.
37i: Fringing Paperbark Sedge Forest	<i>Melaleuca quinquenervia</i> , <i>Schoenus brevifolius</i> , <i>Baumea juncea</i> , <i>Gahnia clarkei</i> , <i>Entolasia stricta</i> , <i>Pseudoraphis paradoxa</i> , <i>Pultenaea retusa</i> , <i>Acacia longifolia</i> , <i>Callistemon pachyphyllus</i>	4007: Northern Sands Paperbark Sedge Low Forest	Closely related to 37e, but this unit typically fringes larger swamp systems of sedgelands and open water. <i>Melaleuca quinquenervia</i> characterises this type, and sedge composition varies depending on water inundation level.
37m: Paperbark-Mahogany Dry Swamp Forest	<i>Melaleuca quinquenervia</i> , <i>Eucalyptus robusta</i> , <i>Banksia serrata</i> , <i>Dodonaea triquetra</i> , <i>Platysace lanceolata</i> , <i>Dillwynia retorta</i> , <i>Acacia ulicifolia</i> , <i>Acacia longifolia</i> , <i>Imperata cylindrica</i> , <i>Hemarthria uncinata</i> , <i>Pomax umbellata</i> , <i>Gonocarpus teucroides</i> , <i>Lomandra longifolia</i> , <i>Panicum simile</i> , <i>Eragrostis brownii</i>	3996: Coastal Sand Swamp Mahogany Dry Forest	Occurs characteristically as small, open depressions in level to slightly undulating sand sheets within the frontal dune system. Dominated by <i>Melaleuca quinquenervia</i> , and occasionally <i>Eucalyptus robusta</i> , with a sparse or absent shrub layer. Ground layer vegetation composition is dynamic, with species turnover high as local conditions alternate between wet and dry.
37o: Mahogany - Baloskion Swamp Forest	<i>Eucalyptus robusta</i> , <i>Eucalyptus robusta</i> x <i>parramattensis</i> , <i>Melaleuca quinquenervia</i> , <i>Melaleuca nodosa</i> , <i>Leptospermum polygalifolium</i> , <i>Baloskion tetraphyllum</i> , <i>Lomandra longifolia</i>	4008: Northern Sands Swamp Mahogany Shrubby Rush Forest	Occurs principally in the western parts of Stockton Bight, with best representation near Fern Bay. Characterised by low trees of <i>Eucalyptus robusta</i> and <i>Eucalyptus robusta</i> x <i>parramattensis</i> (and occasional <i>Melaleuca quinquenervia</i>), and a tall dense shrub layer of <i>Melaleuca nodosa</i> and <i>Leptospermum polygalifolium</i> , with a ground layer dominated by <i>Baloskion tetraphyllum</i> and <i>Lomandra longifolia</i> . Typically only in open depressions and drainage lines with a clay influence.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
37p: Coastal Sand Paperbark Swamp Forest	<i>Melaleuca quinquenervia</i> , <i>Gahnia clarkei</i> [requires sampling]	4004: Northern Melaleuca quinquenervia Swamp Forest	Essentially monospecific stands of <i>Melaleuca quinquenervia</i> associated with coastal sand bodies, and often a result of past clearing. <i>Eucalyptus robusta</i> is generally absent, although may have historically occurred. This type has been separated out for Koala habitat mapping purposes. Requires targeted sampling.

Redgum-Rough-barked Apple Swamp Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
38: Foreshore Redgum-Rough-barked Apple Forest	<i>Eucalyptus tereticornis</i> , <i>Angophora floribunda</i> , <i>Allocasuarina littoralis</i> , <i>Pittosporum undulatum</i> , <i>Acacia longifolia</i> , <i>Leptospermum polygalifolium</i> , <i>Melaleuca styphelioides</i> , <i>Melaleuca linariifolia</i> , <i>Breynia oblongifolia</i> , <i>Dodonaea triquetra</i> , <i>Imperata cylindrica</i> , <i>Lomandra longifolia</i> , <i>Entolasia stricta</i>	3445: Lower North Coastal Hills Red Gum Grassy Forest	Occurs on and associated with rocky headlands adjacent to lakes and other water bodies. Mostly cleared or disturbed, often forming part of waterside recreational parks and picnic areas.
38e: Headland Redgum-Swamp Oak Forest	<i>Eucalyptus tereticornis</i> , <i>Casuarina glauca</i> , <i>Pittosporum undulatum</i> , <i>Notelaea longifolia</i> , <i>Breynia oblongifolia</i> , <i>Gahnia aspera</i> , <i>Lomandra longifolia</i>	3445: Lower North Coastal Hills Red Gum Grassy Forest	Rocky headlands of <i>Eucalyptus tereticornis</i> with <i>Casuarina glauca</i> dominating. Effectively an intergrade between Swamp Oak on the estuary fringes and Unit 38 on hard country.
38f: Redgum - Red Mahogany - Ironbark Drainage Line Forest	<i>Eucalyptus tereticornis</i> , <i>Eucalyptus resinifera</i> , <i>Eucalyptus siderophloia</i> , <i>Angophora costata</i> , <i>Melaleuca linariifolia</i> , <i>Glochidion ferdinandi</i> , <i>Acacia longifolia</i> , <i>Callistemon salignus</i> , <i>Melaleuca decora</i> , <i>Gahnia clarkei</i> , +/- <i>Eucalyptus robusta</i> , <i>Angophora floribunda</i> , <i>Melaleuca quinquenervia</i> , <i>Casuarina glauca</i>	3436: Hunter Coast Sandy Creekflat Low Paperbark Scrub	Yet to be fully defined, but occurs in broad drainage lines on clay soils draining into Grahamstown Dam and also in the upper reaches of Twelve Mile Creek.

Swamp Oak - Rushland Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
40: Estuarine Swamp Oak Forest	<i>Casuarina glauca</i> , <i>Juncus kraussii</i> , <i>Baumea juncea</i> , <i>Apium prostratum</i>	4028: Estuarine Swamp Oak Twig-rush Forest	Typically occurs close to estuarine water bodies where monospecific <i>Casuarina glauca</i> stands predominate. Cleared areas of this type commonly return to unit 41a, without the usual saline understorey species.
40a: Phragmites Rushland	<i>Phragmites australis</i> , +/- <i>Typha orientalis</i>	3962: Coastal Floodplain Phragmites Reedland	Rushland dominated almost exclusively with <i>Phragmites australis</i> , often in artificial wetland areas associated with estuarine environments.
40b: Estuarine Baumea Sedgeland	<i>Baumea juncea</i> , <i>Philydrum lanuginosum</i> , <i>Phragmites australis</i> , <i>Melaleuca ericifolia</i>	4028: Estuarine Swamp Oak Twig-rush Forest	Closely related and geographically adjacent to unit 40, this sedgeland is typified by <i>Baumea juncea</i> as the dominant ground cover. Occupies areas that are too waterlogged for forest development, and which are not tidal.
40c: Estuarine Juncus Rushland	<i>Juncus kraussii</i> subsp. <i>australiensis</i>	3963: Estuarine Reedland	Similar to Unit 40b but dominated by <i>Juncus kraussii</i> . Occurs in saline environments outside of the tidal range.
40e: Estuarine Spiny Juncus Rushland	<i>Juncus acutus</i> subsp. <i>acutus</i>	n/a	Typically in disturbed estuarine or freshwater areas where the exotic <i>Juncus acutus</i> has invaded, with few other species present. Evident on parts of Stockton Bight.

Swamp Oak Sedge Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
41a: Regrowth Swamp Oak Forest	<i>Casuarina glauca</i> +/- <i>Melaleuca linariifolia</i> , <i>Phragmites australis</i> , <i>Carex inversa</i>	4028: Estuarine Swamp Oak Twig-rush Forest	Previous cleared and often partially filled areas of Unit 40, later abandoned and left to regenerate. <i>Casuarina glauca</i> is the dominant species, reflecting its suckering and invasive growth form. Areas mapped as this unit potentially also include other swamp forest types that have been cleared.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
41b: Swamp Oak - Cabbage Tree Palm Forest	<i>Casuarina glauca</i> , <i>Livistona australis</i> , <i>Gahnia clarkei</i> [requires sampling]	4037: Hunter Coast Swamp Oak Rainforest	Remnants at Bobs Farm and around Williamstown, although mostly cleared with <i>Livistona australis</i> remaining as 'paddock trees'. Characterised by <i>Casuarina glauca</i> with <i>Livistona australis</i> in a moist swamp forest away from the saline influence of nearby Swamp Oak Forest. May represent PCT 4037, a placeholder type based on a single plot from Kooragang Island. Requires targeted sampling.

Dry Mahogany Swamp Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
42: Red Mahogany - Apple - Paperbark Forest	<i>Eucalyptus resinifera</i> , <i>Angophora costata</i> , <i>Eucalyptus robusta</i> , <i>Melaleuca linariifolia</i> , <i>Acacia longifolia</i> , <i>Glochidion ferdinandi</i> , <i>Gahnia clarkei</i> , <i>Lepyrodia scariosa</i> , <i>Schoenus brevifolius</i> , <i>Lepidosperma quadrangulatum</i> , <i>Chorizandra cymbaria</i> , <i>Empodisma minus</i>	3998: Lower North Creekflat Mahogany Swamp Forest	Occurs in broad or narrow drainage lines on clay substrates. Most commonly found with a dominant sedge understorey, but some areas support a more shrubby component. <i>Eucalyptus robusta</i> rarely dominant, Typically just sporadic individuals or small patches.
42d: Charmhaven Apple - Paperbark Sedge Woodland	<i>Angophora inopina</i> , <i>Angophora costata</i> , <i>Eucalyptus resinifera</i> , <i>Melaleuca sieberi</i> , <i>Melaleuca nodosa</i> , <i>Allocasuarina littoralis</i> , <i>Melaleuca thymifolia</i> , <i>Lepyrodia scariosa</i> , <i>Ptilothris deusta</i> , <i>Tetraria capillaris</i>	3906: Northern Lowland Clay Wet Heath	Sedgey low woodlands in poorly drained flats where <i>Angophora inopina</i> is prominent, but other canopy species including <i>Angophora costata</i> and <i>Eucalyptus resinifera</i> are also present. Typically occurs on brook floodplains such as along Twelve Mile Creek, and paperbarks including <i>Melaleuca sieberi</i> and <i>Melaleuca nodosa</i> can be sparse or dense.

Estuarine Paperbark Scrubs

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
43a: Estuarine Paperbark Scrub Forest	<i>Melaleuca nodosa</i> , <i>Melaleuca styphelioides</i> , <i>Eucalyptus resinifera</i> , <i>Angophora costata</i> , <i>Eucalyptus paniculata</i> , <i>Gahnia clarkei</i>	3998: Lower North Creekflat Mahogany Swamp Forest	Occurs in close proximity to coastal estuaries, although similar areas also occur well distant from estuaries and require further investigation. Typically a low scrubby forest growing on clay soils, with paperbarks the dominant feature.
43g: Estuarine Paperbark Scrub-thicket	<i>Melaleuca nodosa</i> , <i>Melaleuca sieberi</i> , <i>Pultenaea villosa</i> , <i>Leptospermum polygalifolium</i> , <i>Callistemon linearis</i> , <i>Ptilothrix deusta</i> , <i>Lepidosperma quadrangulatum</i> , <i>Entolasia stricta</i> , <i>Schoenus brevifolius</i> , <i>Baumea juncea</i> , <i>Gahnia clarkei</i>	3436: Hunter Coast Sandy Creekflat Low Paperbark Scrub	Occurs in estuarine swamp systems on alluvial claypans. Characterised by dense thickets of paperbarks (<i>Melaleuca nodosa</i> , <i>Melaleuca styphelioides</i>) with stunted emergent <i>Eucalyptus resinifera</i> or <i>Casuarina glauca</i> . Understorey vegetation is often limited, although clumps of <i>Gahnia clarkei</i> and <i>Baumea juncea</i> are typical. <i>Eucalyptus robusta</i> may occur sparingly where freshwater pools.
43h: Estuarine Paperbark Heath-Scrub	<i>Melaleuca nodosa</i> , <i>Melaleuca sieberi</i> , <i>Banksia collina</i> , <i>Pimelea linifolia</i> , <i>Hakea teretifolia</i> , <i>Entolasia stricta</i> , <i>Ptilothrix deusta</i>	3794: Lower North Coast Headland Clay Heath	Similar to Unit 43g, but supports a more heathy structure with species such as <i>Banksia collina</i> and <i>Hakea teretifolia</i> . Could possibly merge with that unit.

Coastal Wet Sand Cyperoid Heaths

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
44d: Tomago Callistemon - Hakea Shrub Swamp	<i>Callistemon pachyphyllus</i> , <i>Hakea teretifolia</i> , <i>Melaleuca thymifolia</i> , <i>Melaleuca ericifolia</i> , <i>Pultenaea retusa</i> , <i>Eucalyptus parramattensis</i> , <i>Schoenus brevifolius</i> , <i>Entolasia stricta</i> , <i>Gonocarpus micranthus</i> , <i>Rulingia prostrata</i>	3907: Lower North Sands Swamp Scrub	Relatively dry swamps where <i>Callistemon pachyphyllus</i> and <i>Hakea teretifolia</i> dominate, with <i>Melaleuca thymifolia</i> , <i>Melaleuca ericifolia</i> , and <i>Pultenaea retusa</i> . <i>Eucalyptus parramattensis</i> subsp. <i>decadens</i> also occurs as a widely scattered but low emergent in this community in some areas. On the ground, a moderately dense layer of <i>Schoenus brevifolius</i> , <i>Entolasia stricta</i> , <i>Gonocarpus micranthus</i> and <i>Paspalidium distans</i> is present, along with <i>Rulingia prostrata</i> in areas recently burnt.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
44e: Tomago Callistemon - Lepidosperma Shrub Swamp	<i>Callistemon pachyphyllus</i> , <i>Lepidosperma longitudinale</i> , <i>Pseudoraphis paradoxa</i> , <i>Entolasia stricta</i> , +/- <i>Eucalyptus robusta</i> , <i>Melaleuca linariifolia</i> , <i>Melaleuca sieberi</i>	3908: Lower North Sands Wallum Bottlebrush Swamp Heath	One of a range of shrubby swamps where <i>Callistemon</i> species are dominant. In this case, <i>Callistemon pachyphyllus</i> and <i>Lepidosperma longitudinale</i> dominate the vegetation, with scattered shrubs of <i>Eucalyptus robusta</i> , <i>Melaleuca linariifolia</i> and <i>Melaleuca sieberi</i> . Ground layer vegetation includes <i>Pseudoraphis paradoxa</i> and <i>Entolasia stricta</i> .
44f: Tomago Callistemon - Paperbark Shrub Swamp	<i>Callistemon linearis</i> , <i>Melaleuca quinquenervia</i> , <i>Callistemon pachyphyllus</i> , <i>Triglochin procerum</i> , <i>Gahnia clarkei</i>	3907: Lower North Sands Swamp Scrub	<i>Callistemon linearis</i> dominates this swamp with stunted <i>Melaleuca quinquenervia</i> , together with scattered shrubs of <i>Callistemon pachyphyllus</i> . Little ground layer vegetation is normally evident but includes <i>Triglochin procerum</i> and <i>Gahnia clarkei</i> . Often submerged for long periods of time.
44g: Coastal Sand Bottlebrush Wet Heath	<i>Callistemon citrinus</i> , <i>Lepidosperma longitudinale</i> , <i>Melaleuca quinquenervia</i>	3908: Lower North Sands Wallum Bottlebrush Swamp Heath	A wet heath swamp of <i>Callistemon citrinus</i> with <i>Lepidosperma longitudinale</i> in the ground layer, and stunted <i>Melaleuca quinquenervia</i> also scattered. Often submerged. Further sampling required to better describe floristic components.
44h: Tomago Leptospermum-Callistemon Shrub Swamp	<i>Leptospermum liversidgei</i> , <i>Callistemon citrinus</i> , <i>Callistemon pachyphyllus</i> , <i>Epacris obtusifolia</i> , <i>Leptospermum juniperinum</i> , <i>Banksia oblongifolia</i> , <i>Epacris microphylla</i> , <i>Leptocarpus tenax</i> , <i>Empodisma minus</i> , <i>Sporodanthus interruptus</i> , <i>Sporodanthus caudatus</i> , <i>Baloskion tetraphyllum</i>	3908: Lower North Sands Wallum Bottlebrush Swamp Heath	Characterised by wet heath shrub species on poorly drained dune swales. Stunted trees of <i>Eucalyptus robusta</i> and <i>Melaleuca quinquenervia</i> are present in some locations, but a dense and diverse sedge layer is nearly always present. Occurs sparingly on the Tomago Sandbeds, but it is more extensive on the Anna Bay sandbeds.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
44i: Tomago Strand Plain Wet Heath	<i>Baeckea diosmifolia</i> , <i>Darwinia leptantha</i> , <i>Conospermum taxifolium</i> , <i>Leptospermum trinervium</i> , <i>Banksia oblongifolia</i> , <i>Leptospermum arachnoides</i> , <i>Hakea teretifolia</i> , <i>Persoonia lanceolata</i> , <i>Epacris microphylla</i> , <i>Bauera capitata</i> , <i>Melaleuca sieberi</i>	3907: Lower North Sands Swamp Scrub	Occurs towards the eastern end of the Tomago Sandbeds, where remnants of the Inner Barrier strand plain remain. A distinctive form of wet heath occurs here which differs floristically from other similar areas. Much of the distribution of this community was regularly slashed as part of maintenance programs of the now abandoned RAAF parachute drop zone.
44j: Tomago Strand Plain Intermediate Heath	<i>Banksia oblongifolia</i> , <i>Melaleuca nodosa</i> , <i>Melaleuca thymifolia</i> , <i>Isopogon anemonifolius</i> , <i>Leptospermum polygalifolium</i> , <i>Leptospermum juniperinum</i> , <i>Leptocarpus tenax</i> , <i>Cyathochaeta diandra</i> , <i>Lepyrodia scariosa</i> , <i>Lepyrodia muelleri</i>	3907: Lower North Sands Swamp Scrub	Wet depressions on the eastern end of the old strand plain at Tomago support a heath vegetation that is intermediate between wet and dry. Further survey and analysis is required of all wet and intermediate heath vegetation at both Tomaree and Tomago to better define these entities.
44k: Tomago Interbarrier Depression Wet Heath	<i>Banksia oblongifolia</i> , <i>Hakea teretifolia</i> , <i>Melaleuca thymifolia</i> , <i>Xanthorrhoea fulva</i> , <i>Leptocarpus tenax</i> , <i>Lepyrodia scariosa</i> , <i>Schoenus brevifolius</i>	3907: Lower North Sands Swamp Scrub	A complex wet heath with several recognisable variations across its distribution. It occurs towards the eastern end of the Tomago Sandbeds, on and near the southern boundary where it merges with the interbarrier depression.
44n: Medowie Grasstree Wet Heath	<i>Xanthorrhoea fulva</i> , <i>Hakea teretifolia</i> , <i>Banksia oblongifolia</i> , <i>Epacris obtusifolia</i> , <i>Viminaria juncea</i> , <i>Melaleuca thymifolia</i> , <i>Leptospermum juniperinum</i> , <i>Boronia parviflora</i> , <i>Lepyrodia scariosa</i> , <i>Ptilothrix deusta</i> , <i>Leptocarpus tenax</i> , <i>Schoenus brevifolius</i>	3904: Hunter Coast Grasstree Graminoid Swamp Scrub	Old floodplains associated with Twelve Mile Creek support a low wet heath where <i>Xanthorrhoea fulva</i> is dominant. A range of sedges and grass species, together with moisture-loving shrubs and sub-shrubs are also present, and in places scattered low emergent <i>Melaleuca sieberi</i> occurs. The largest extent of this vegetation type to the east of Twelve Mile Creek also supports a narrow band of <i>Melaleuca linariifolia</i> along the creekline, but is too small to map.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
44o: Tomago Strand Plain Intermediate Fern-Heath	<i>Banksia oblongifolia</i> , <i>Melaleuca nodosa</i> , <i>Melaleuca thymifolia</i> , <i>Leptospermum polygalifolium</i> , <i>Leptospermum juniperinum</i> , <i>Gleichenia dicarpa</i>	3907: Lower North Sands Swamp Scrub	Similar to 44j, but with extensive low, sprawling thickets of the fern <i>Gleichenia dicarpa</i> . Superficially, this variant appears more similar to hanging swamps occurring on Hawkesbury Sandstone geology on the Central Coast, and requires further investigation.
44p: Tomago Strand Plain Intermediate Redgum-Heath	<i>Eucalyptus tereticornis</i> , <i>Banksia oblongifolia</i> , <i>Melaleuca nodosa</i> , <i>Melaleuca thymifolia</i> , <i>Leptospermum polygalifolium</i> , <i>Leptospermum juniperinum</i>	3907: Lower North Sands Swamp Scrub	Similar to 44j, but with low, scattered emergents of <i>Eucalyptus tereticornis</i> . Highly restricted to a small area on the Tomago Sandbeds.

Lepironia Swamps

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
45: Lepironia Sedgeland	<i>Lepironia articulata</i> , <i>Pseudoraphis paradoxa</i> , <i>Villarsia exaltata</i>	3961: Coast Sands Lepironia Sedgeland	<i>Lepironia articulata</i> dominates this type, and in places stunted emergent <i>Eucalyptus robusta</i> , <i>Melaleuca sieberi</i> or <i>Melaleuca quinquenervia</i> may occur. This community typically occurs in deep organic mud soils, which are normally waterlogged.

Freshwater Wetland Complex

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
46: Freshwater Wetland Complex	<i>Pericaria strigosa</i> , <i>Azolla pinnata</i> , <i>Maundia triglochinoides</i> , <i>Phragmites australis</i> , <i>Triglochin procerum</i> , <i>Typha australis</i> , <i>Hemarthria uncinata</i>	3967: Northern Lower Floodplain Eleocharis Wetland	Broad wetland unit requiring refinement, but often transient and dynamic depending on water flows and retention. Commonly modified through stock grazing practices. Indicative species shown only.
46a: Freshwater Typha Wetland	<i>Typha orientalis</i>	3962: Coastal Floodplain Phragmites Reedland	Mostly occurs in man-made dams where it forms monospecific stands, but may also be present in natural wetlands where water flows have been modified.
46b: Freshwater Baumea Sedgeland	<i>Baumea articulata</i>	3959: Coast Sands Jointed Twig-rush Sedgeland	Simple sedgeland dominated by the tall <i>Baumea articulata</i> , occurring in waterlogged depressions that often include standing water. Closely associated with unit 45 on coastal sand bodies.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
46d: Freshwater <i>Lepidosperma</i> Sedgeland	<i>Lepidosperma longitudinale</i>	3959: Coast Sands Jointed Twig-rush Sedgeland	Occurs only at Tomago and is totally dominated by the tall wetland sedge, <i>Lepidosperma longitudinale</i> . Prevalent in and around Sandhole Swamp immediately south of Grahamstown Dam, on deep organic mud soils.
46e: Freshwater <i>Chorizandra</i> Sedgeland	<i>Chorizandra sphaerocephala</i> <i>Viminaria juncea</i> <i>Leptospermum juniperinum</i> <i>Pseudoraphis paradoxa</i>	3914: Northern Sands <i>Chorizandra</i> Sedgeland	Known from a single location only, in Long Swamp towards the eastern end of the Tomago Sandbeds. Dominated by <i>Chorizandra sphaerocephala</i> and the shrubs <i>Viminaria juncea</i> , <i>Leptospermum juniperinum</i> and <i>Melaleuca thymifolia</i> , with the grass <i>Pseudoraphis paradoxa</i> .
46f: Freshwater <i>Philydrum</i> Sedgeland	<i>Philydrum lanuginosum</i> +/- <i>Lepironia articulata</i>	3959: Coast Sands Jointed Twig-rush Sedgeland	Characterised by dominant stands of <i>Philydrum lanuginosum</i> .
46g: Freshwater Mixed Sedgeland	<i>Leptocarpus tenax</i> , <i>Baloskion pallens</i> , <i>Baumea teretifolia</i> , <i>Schoenus brevifolius</i> , <i>Eurychorda complanata</i> , <i>Baumea articulata</i>	3968: Northern Sands <i>Baloskion</i> - <i>Machaerina</i> Wetland	Diverse sedgeland occurring in coastal sand depressions in the wider Anna Bay-Salamander Bay area. No single sedge species dominates, although in places <i>Schoenus brevifolius</i> is very common.
46h: Freshwater <i>Cladium</i> Sedgeland	<i>Cladium procerum</i> +/- <i>Phragmites australis</i> , <i>Typha orientalis</i>	3960: Coast Sands <i>Cladium</i> Sedgeland	Forms large monospecific clumps, merging into surrounding sedgelands of <i>Phragmites</i> and/ or <i>Typha</i> . May also include stunted but widely scattered <i>Melaleuca quinquenervia</i>
46i: Freshwater <i>Gahnia</i> Sedgeland	<i>Gahnia sieberiana</i> , +/- <i>Gahnia clarkei</i> , <i>Phragmites australis</i> , <i>Blechnum indicum</i>	3922: Sydney Coastal Sand Swamp Scrub	Forms large monospecific stands in enclosed freshwater wetland systems on coastal sands. Clearly dominated by <i>Gahnia sieberiana</i> .
46j: Freshwater Beach Marsh	<i>Ficinia nodosa</i> , <i>Juncus acutus</i> , <i>Hydrocotyle bonariensis</i> , <i>Phragmites australis</i> , <i>Philydrum lanuginosum</i> , <i>Fimbristylis velata</i> , <i>Epilates australis</i> , <i>Gratiola pedunculata</i> , <i>Typha domingensis</i> , <i>Lachnagrostis filiformis</i> , <i>Carex pumila</i>	3966: Foredune Swale Marsh	Occur along the length of Stockton Beach, in depressions within the beach dunes. Several floristic forms are evident, typically comprising very few species. These wetlands form where fresh groundwater meets the surface, typically at the foot of larger sand dunes, and allow simple ecosystems of perennial and ephemeral wetland species to survive.

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
46k: Freshwater Panicum Meadow	<i>Panicum repens</i>	n/a	Dominated by Torpedo Grass, principally around the edges of Grahamstown Dam
46l: Freshwater Juncus Sedgeland	<i>Juncus acutus</i>	n/a	Invaded beach wetlands and soaks such as on Stockton Beach.

Mangrove Estuarine Complex

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
47: Estuarine Mangrove Scrub	<i>Avicennia marina</i> , <i>Aegiceras corniculatum</i> , <i>Sarcocornia quinqueflora</i> , <i>Suaeda australis</i>	4091: Grey Mangrove-River Mangrove Forest	Dominant estuarine muds within the tidal zone of saltwater estuaries. Structurally diverse, from dense low forest to more open stands with stunted mangroves.
47a: Estuarine Saltmarsh/Grassland	<i>Sarcocornia quinqueflora</i> , <i>Sporobolus virginicus</i> , <i>Zoysia macrantha</i> , <i>Samolus repens</i>	4103: <i>Sporobolus virginicus</i> Saltmarsh	On estuarine mudflats within the tidal zone associated with coastal estuaries. Includes Saltmarsh, Grassland, and Herbland, each characterised by monospecific stands of specific species. Difficult to consistently differentiate each type within mapping, given their transitional nature.

Wallum Clay Shrub Heaths

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
49b: Anna Bay Depression Wet Heath	<i>Banksia oblongifolia</i> , <i>Melaleuca thymifolia</i> , <i>Melaleuca sieberi</i> , <i>Persoonia lanceolata</i> , <i>Baeckea diosmifolia</i> , <i>Callistemon pachyphyllus</i> , <i>Schoenus brevifolius</i> , <i>Leptocarpus tenax</i> , <i>Lepyrodia scariosa</i>	3907: Lower North Sands Swamp Scrub	Restricted distribution on the Anna Bay Sandbeds. It comprises components of both wet heath and the surrounding dryer Wallum Scrub. Forms in shallow depressions within surrounding <i>Banksia aemula</i> shrublands, where <i>Banksia oblongifolia</i> is characteristic.

Coastal Sand Scrubs

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
50a: Coastal Sand Foredune Scrub	<i>Acacia sophorae</i> , <i>Acacia longifolia</i> , <i>Chrysanthemoides monilifera</i> , <i>Carpobrotus glaucescens</i> , <i>Spinifex sericeus</i>	3788: Coastal Foredune Wattle Scrub	Narrow bands of low scrub dominated by <i>Acacia</i> . Occurs on beach sands at the upper edge outside of the active tidal zone, typically immediately inland from Spinifex Grassland (unit 53). <i>Chrysanthemoides monilifera</i> often co-dominates most stands.
50b: Coastal Sand Banksia Scrub	<i>Banksia integrifolia</i> , <i>Monotoca elliptica</i> , <i>Leptospermum laevigatum</i> , <i>Banksia serrata</i> , <i>Leucopogon parviflorus</i> , <i>Scaevola calendulacea</i> , <i>Correa alba</i> , <i>Pelargonium australe</i>	3546: Coastal Sands Littoral Scrub-Forest	Tall shrubland typified by <i>Banksia integrifolia</i> and <i>Leptospermum laevigatum</i> , occurring inland from unit 50a. Occurs on beach sands where there is limited protection from onshore exposure.
50c: Coastal Sand Bitou Bush	<i>Chrysanthemoides monilifera</i>	n/a	Monospecific stands of the invasive <i>Chrysanthemoides monilifera</i> , often forming large dense patches on beach dunes and associated lower coastal headlands.

Coastal Headland Complex

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
51a: Coastal Headland Grassland	<i>Themeda australis</i> , <i>Ptilothrix deusta</i> , <i>Pimelea linifolia</i> , <i>Acacia myrtifolia</i> , <i>Lasiopetalum parvifolium</i> , <i>Lomandra longifolia</i>	3407: Central Headland Grassland	Occurs on exposed coastal headlands in clay soils and areas of high exposure. Typified by <i>Themeda australis</i> but often <i>Lomandra longifolia</i> is dominant.
51b: Coastal Headland Shrubland	<i>Allocasuarina distyla</i> , <i>Westringia fruticosa</i> , <i>Melaleuca nodosa</i> , <i>Dodonaea triquetra</i> , <i>Hakea laevipes</i>	3793: Hunter Coast Headland Clay Heath	Low or tall heathland occurring in clay soils on coastal headlands. Species composition is variable and driven by fire history, the fire sensitive <i>Allocasuarina distyla</i> greatly reduced from the above-ground flora for several years after fire.

Rocky Headland Scrubs

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
52: Nerong Coastal Scrub	<i>Melaleuca armillaris</i> , <i>Leptospermum laevigatum</i> , <i>Monotoca elliptica</i> , <i>Pultenaea villosa</i> , <i>Acacia longifolia</i> , <i>Phebalium squamulosum</i> , <i>Acacia binervia</i>	3794: Lower North Coast Headland Clay Heath	A tall scrub occurring on coastal rocky headlands of the Nerong volcanics. Often dominated by either <i>Melaleuca armillaris</i> or <i>Leptospermum laevigatum</i> , but several other prominent species are also present. Requires targeted sampling.
52a: Nerong Coastal Heath	<i>Allocasuarina distyla</i> , <i>Isopogon anemonifolius</i> , <i>Melaleuca nodosa</i> , <i>Hakea laevipes</i> , <i>Callistemon linearis</i> , <i>Melaleuca groveana</i> , <i>Eucalyptus capitellata</i> , <i>Eucalyptus paniculata</i>	3793: Hunter Coast Headland Clay Heath	Heathland typified by <i>Allocasuarina distyla</i> and a range of other stunted shrub species, occurring on Nerong volcanics. Scattered small eucalypts may also be present. Generally a more diverse heathland than unit 51b.
52b: Nerong Fringe Myrtle Heath	<i>Calytrix tetragona</i> , <i>Pultenaea villosa</i> , <i>Lasiopetalum ferruginea</i> , <i>Epacris pulchella</i> , <i>Mirbelia rubiifolia</i> , <i>Themeda australis</i> , <i>Cheilanthes sieberi</i> , <i>Schoenus ericetorum</i>	3793: Hunter Coast Headland Clay Heath	Occurs on hard, resistant volcanic beds, normally towards the top of volcanic peaks. Often associated with nearby stands of <i>Acacia binervia</i> (unit 52c). Requires targeted sampling.
52c: Nerong Coast Myall Scrub	<i>Acacia binervia</i> [requires sampling]	3434: Hunter Coast White Mahogany Low Forest	More-or-less monospecific stands of <i>Acacia binervia</i> growing on rocky headlands in the Port Stephens area, occasionally on nearby sand-mantled bedrock. Occurrence related to fire history. Requires targeted sampling.
52d: Nerong Banksia-Apple Low Forest	<i>Angophora costata</i> , <i>Banksia integrifolia</i> , <i>Banksia serrata</i> , <i>Leptospermum laevigatum</i>	3434: Hunter Coast White Mahogany Low Forest	A low forest or scrub on perched sand over Nerong volcanics in the Anna Bay area. The characteristic <i>Banksia serrata</i> occurs with stunted <i>Angophora costata</i> and <i>Banksia integrifolia</i> . Requires targeted sampling.

Beach Spinifex

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
53: Foredune Spinifex	<i>Spinifex sericeus</i> , <i>Carpobrotus glaucescens</i> , <i>Scaevola calendulacea</i>	3410: Spinifex Strandline Grassland	Transitional grassland on frontal dunes, acting as a sand stabiliser in highly mobile beach dunes.

Swamp Thickets

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
100a: Swamp Paperbark Thicket	<i>Melaleuca ericifolia</i> , <i>Viminaria juncea</i> , <i>Leptospermum juniperinum</i> , <i>Pseudoraphis paradoxa</i> , <i>Baumea juncea</i> , +/- <i>Eucalyptus robusta</i> , <i>Casuarina glauca</i> , <i>Melaleuca quinquenervia</i> , <i>Melaleuca linariifolia</i>	3985: Coastal Floodplain Swamp Paperbark Scrub	Thickets of shrub on estuarine or freshwater floodplains, mostly dominated by <i>Melaleuca ericifolia</i> , with other species occurring occasionally. Ground layer dominated by sedges, with <i>Baumea juncea</i> dominant in estuarine areas.

Paperbark Scrub-Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
110a: Red Ironbark - Paperbark Forest	<i>Eucalyptus fibrosa</i> , <i>Melaleuca decora</i> , <i>Melaleuca nodosa</i> , <i>Bursaria spinosa</i>	3432: Hunter Coast Foothills Apple-Ironbark Grassy Forest	A dryer forest of <i>Eucalyptus fibrosa</i> and characteristically dense thickets of the paperbarks, <i>Melaleuca decora</i> over <i>Melaleuca nodosa</i> . Effectively a form of Spotted Gum-Ironbark Forest but where <i>Corymbia maculata</i> is very rare or absent.

Clay Forests

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
115: Tomago Forest Oak - Stringybark - Apple Forest	<i>Allocasuarina torulosa</i> , <i>Eucalyptus globoidea</i> , <i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Angophora floribunda</i> , <i>Eucalyptus resinifera</i> , <i>Melaleuca nodosa</i> , <i>Allocasuarina littoralis</i> , <i>Anisopogon avenaceus</i> , <i>Entolasia stricta</i> , <i>Digitaria ramularis</i> , <i>Microlaena stipoides</i> , <i>Imperata cylindrica</i> , <i>Lepidosperma laterale</i>	3581: Hunter Coast Foothills Apple Forest	Occurs on an island of clay bedrock surrounded by Pleistocene sand, typified by stands of <i>Melaleuca nodosa</i> over a grassy ground layer. Possibly related to Coastal Plains Apple Woodlands.

Fringing Baloskion Sedge Woodlands

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
116a: Fringing Scribbly Gum Baloskion Sedge Woodland	<i>Angophora costata</i> , <i>Eucalyptus signata</i> , <i>Corymbia gummifera</i> , <i>Banksia aemula</i> , <i>Baloskion tetraphyllum</i> , <i>Gahnia clarkei</i> , <i>Actinotus helianthin</i> , <i>Platysace ericoides</i> , <i>Gonocarpus teucrioides</i>	3803: Northern Sandplain Damp Wallum Heath	Fringing woodland in poorly drained low elevation areas near to swamp forests and reedlands. Characterised by <i>Eucalyptus signata</i> with other eucalypts, but always with <i>Baloskion tetraphyllum</i> in the ground layer. Differs from 116b mainly by canopy composition, but requires targeted sampling.
116b: Fringing Blackbutt-Apple-Baloskion Woodland	<i>Eucalyptus pilularis</i> , <i>Angophora costata</i> , <i>Corymbia gummifera</i> , <i>Baloskion tetraphyllum</i> , <i>Gania clarkei</i> , <i>Gleichenia dicarpa</i>	3803: Northern Sandplain Damp Wallum Heath	Fringing woodland in poorly drained low elevation areas around better developed swamp forests, with <i>Baloskion tetraphyllum</i> characteristic under 'dry' eucalypts. Generally between 2-4m ASL. Requires targeted sampling.

Sedge Woodlands

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
117: Long Swamp Sedge Woodland	<i>Melaleuca quinquenervia</i> , <i>Baloskion pallens</i> , <i>Leptocarpus tenax</i> , <i>Schoenus brevifolius</i> , <i>Callistemon pachyphyllus</i> , <i>Hakea teretifolia</i> , <i>Melaleuca nodosa</i>	3908: Lower North Sands Wallum Bottlebrush Swamp Heath	Known only from Long Swamp on the Tomago Sandbeds, characterised by an open woodland structure of <i>Melaleuca quinquenervia</i> over a diversity of sedges.

Other Map Units

Local Unit & Name	Floristic Summary	Best-fit PCT Equivalent	Notes
Beach: Beach	n/a	n/a	Beach sands
Soak: Beach Soak	n/a	n/a	Moist areas in depressions along Stockton Beach.
Rehab: Rehabilitation	Various	n/a	Rehabilitated former mining and other disturbed lands, generally with a wide range of species planted and/or those that have naturally returned.
Rock: Rock	n/a	n/a	Rock, predominantly along the coastline.
Water: Water body	n/a	n/a	Water body, including man-made.