Site Planners Guide for the CLLMM Region

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About this Guide

This guide was developed to assist individuals who were planning revegetation activities at a site (site planning). Ideally this guide will assist site planners to determine what vegetation types most likely occurred in the area they wish to replant, especially in the absence of any native remnant vegetation. Even if native vegetation remains at the site, it may be difficult to ascertain if it is an accurate representation of what was there in the past, especially if it has been planted. It is hoped that this guide will assist site planners to, if possible, accurately replace vegetation communities and broader ecosystems at terrestrial sites around lakes Alexandrina and Albert and along the Coorong.

It is extremely difficult to revegetate native plant communities, especially when we do not have accurate information about what occurred there in the past, or how these communities are likely to alter in the future as a result of climate change or other impacts. Not only is it very difficult to recreate habitat, but it is also very expensive, so every effort should be made to not only accurately replant areas, but to protect any remaining remnant habitats. To a degree it may be a matter of making the “best guess” possible when trying to decide what to replant where.

It is expected that site planners will have at least an intermediate knowledge of the plant communities occurring in the CLLMM region, and an ability to roughly differentiate between different soil types when they are using this guide. While other tools may make it easier to determine what vegetation type would have occurred in a given area, such as pre-European vegetation mapping and soil maps, an on-ground assessment of a site is necessary to accurately determine what should be planted. This is especially true if a number of different landforms and soil types (e.g., sand dune, swale and a saline area) occur in a relatively small area. However, in order to make revegetation planning simpler it is recommended that areas are more broadly mapped as a single ecosystem, rather than creating multiple small patches that each contain a different ecosystem. To a degree this requires that site planners use common sense when planning to plant an area, such as putting species requiring slightly wetter habitats in depressions and species tolerant to drying on higher ground.

Below we outline how each ecosystem was defined, and what environmental factors are likely to influence each ecosystem type. We then present a key to help determine what ecosystem type you are in for each management landscape. Below this is a definition of each ecosystem and the ecosystems that are likely to co-occur. Multiple ecosystems can co-occur in the same habitat, especially where habitat boundaries change, so it may be difficult to pinpoint a single vegetation type that will occur in a single area. This guide does not take into account how anthropogenic impacts (e.g., livestock grazing, ground compaction, etc.) or habitat fragmentation (e.g., edge effects, ecological thresholds) may influence the current state and future trajectory of remnant and replanted habitats. This requires a much better understanding of the ecosystems in question, and greater research is necessary if we want to adequately restore the structure and especially the functionality of these areas.

Ecosystem Types

A Landscape Assessment Framework using cluster analysis was undertaken for the CLLMM region and this identified twelve ecosystem types (Bonifacio et al., 2014). Another four (10.1 to 10.4) were identified with the assistance of expert knowledge, with the final ecosystem being agricultural land (Table 1). Of these, six areas were identified as priority ecosystems where habitat restoration, in particular revegetation, should take place (Bonifacio et al., 2014). These ecosystems were:

- Pink Gum (*Eucalyptus fasciculosa*) low open grassy woodland of the Mt Lofty Ranges,
- Mallee Box (*E. porosa*) grassy woodland,
- Peppermint Box (*E. odorata*) grassy woodland,

- Blue Gum (*E. leucoxylon* spp. *leucoxylon*) woodland,
- Samphire with *Melaleuca halmaturorum* and
- Non-Eucalypt grassy woodland dominated by Sheoak (*Allocasuarina verticillata*) and Native Pine (*Callitris gracilis*).

Each ecosystem was influenced by a number of environmental settings at a site, such as soil type, rainfall, slope and management landscape. Soil type had the greatest influence on floristics at a site and therefore ecosystem type (Table 1). Management landscapes were areas within the CLLMM landscape that had distinct soil subtypes (Hall et al., 2009) and Soil Land Systems (DWLBC Soil and Land Program, 2007). These management landscape were the (i) Mt Lofty Ranges, (ii) Lower Lakes terrestrial, (iii) Lower Lakes, (iv) Coastal Dunes, and (v) South East Coorong (

Figure 1, Figure 2, Figure 3). As this guide mainly focuses on terrestrial landscapes, the Lower Lakes (aquatic) management landscape was not included.

Table 1: Ecosystems identified in the Coorong, Lower Lakes and Murray Mouth region along with their dominant soil types and management landscapes. * Denotes priority ecosystem

Ecosystems	**Dominant soil types**	**Management Landscape**
1. *Eucalyptus fasciculosa* (Pink Gum) Low Open Grassy Woodland of the Mount Lofty Ranges*	Sand over clay (G4, G3); sand (H3)	Mt Lofty Ranges
2. *Eucalyptus cosmophylla* (Cup Gum) / *E. baxteri* (Brown Stringybark) Woodland over heath of the Mount Lofty Ranges	Sand over clay (G3,G5); acidic loams (K3); loam over clay (D5)	Mt Lofty Ranges
3. Coastal Shrubland of the Coorong	Sands (H1, H3); shallow loam over calcrete (B3)	Coorong
4. *Eucalyptus diversifolia* (Coastal White Mallee) Mallee	Shallow loam over calcrete (B2, B3); sands (H1, H3); sand over clay (G3, G5)	All
5. *Allocasuarina verticillata* (Drooping Sheoak) low woodland with shrubby understorey	Shallow loam over calcrete (B3); shallow sand over calcrete (B8); sand over clay (G3); sand (H3); saline wet (N2)	Lower Lakes terrestrial & South East Coorong
6. Mixed *Eucalypt* Woodland / Mallee		
6.1 *Eucalyptus porosa* (Mallee Box) Grassy Woodland*	Loam over clay (D3); shallow loam over calcrete (B3, B2)	Mt Lofty Ranges & Lower Lakes terrestrial
6.2 *Eucalyptus odorata* (Peppermint Box) Grassy Woodland*	Sand over clay (G4); loam over clay (D3)	Mt Lofty Ranges
6.3 *Eucalyptus incrassata* (Ridge Fruited Mallee) / *E. leptophylla* (Narrow Leafed Red Mallee) +/- *E. socialis* (Beaked Red Mallee) Mallee	Sand over loamy clay (G1); Sand over clay (G3);bleached siliceous sands (H3)	Mt Lofty Ranges
6.4 *Eucalyptus leucoxylon* ssp. (SA Blue Gum) Grassy Woodland*	Sand over clay (G3); shallow loam over calcrete (B3, B6); shallow sand over calcrete (B8)	Lower Lakes terrestrial & South East Coorong
7. Freshwater fringing wetland community	Saline soils (N2); wet soils (N3)	Lower Lakes
8. *Duma florulenta* (Lignum) Shrubland	Wet soils (N3); loam over poorly structured clay (D3); shallow loam over calcrete (B3);deep loams (F1)	Mt Lofty Ranges, Lower Lakes aquatic, Lower Lakes Terrestrial
9. Samphire +/- *Melaleuca halmaturorum* (Swamp Paper-bark) Shrubland*	Saline soils (N2)	All
10. Other		
10.1 *Gahnia filum* sedgeland	Wet soils (N3)	All
10.2 *Eucalyptus camaldulensis* var. *camaldulensis* (Red Gum) grassy woodland	Wet soils (N3)	Mt Lofty Ranges
10.3 Grassland community		Lower Lakes terrestrial
10.4 *Allocasuarina verticillata* (Sheoak) & *Callitris gracilis* (Native Pine) non eucalypt grassy woodland*	Sandy loam over calcrete (B3)	Lower Lakes terrestrial

Suggested Field Equipment

- Shovel/spade to dig into the soil layer (up to approximately 30cm)
- GPS
- Field guide to identify native plant species (e.g., Eucalypts and shrubs)
- The Soils of Southern South Australia (Hall *et al.* 2009)

Site Planners Key

Where are you within the CLLMM region?

Coast Dunes Management Landscape ……....Go to 1

South East Management Landscape ……....Go to 2

Mt Lofty Ranges Management Landscape ……..Go to 3

Lower Lakes Terrestrial Management Landscape ……Go to 4

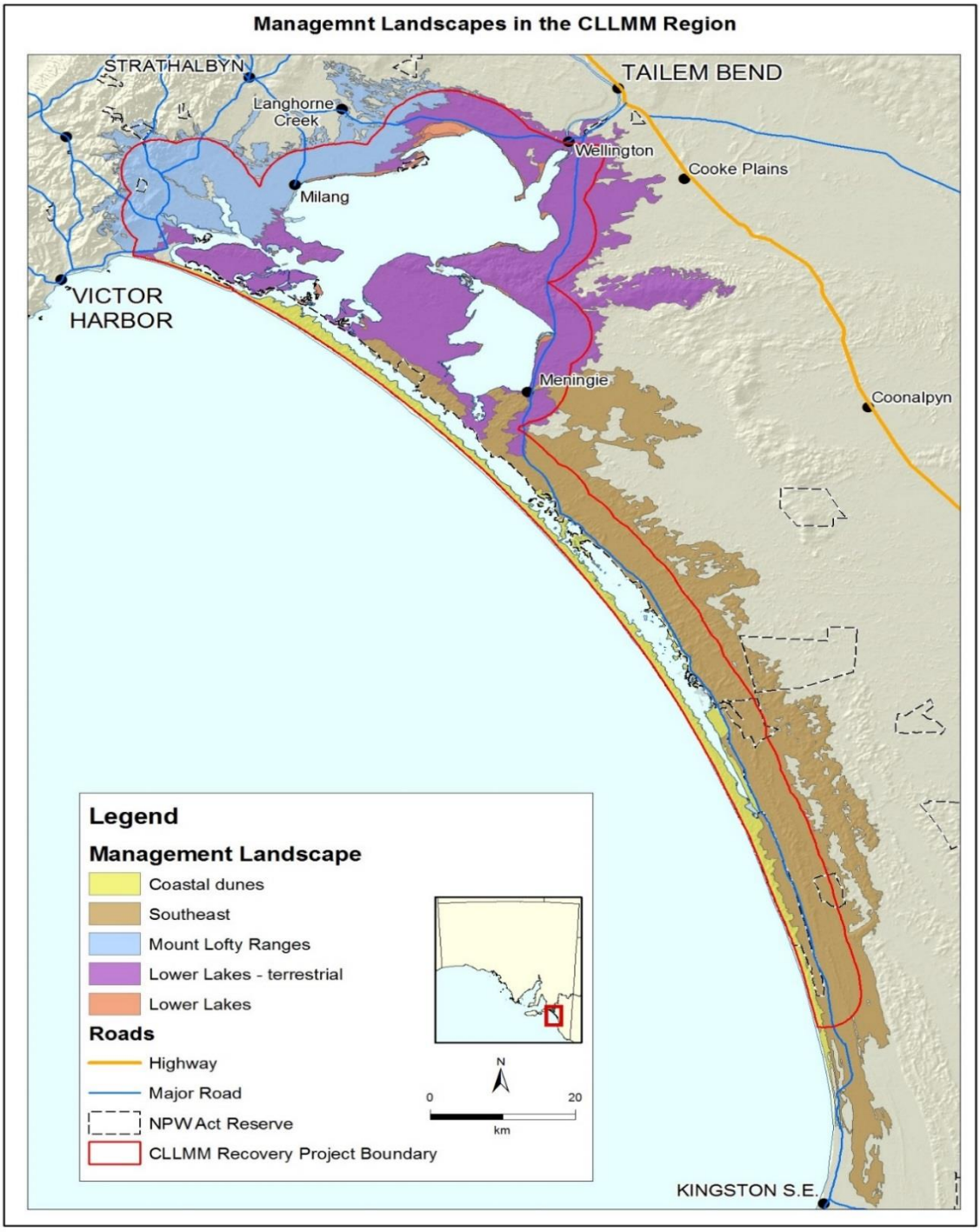

Figure 1. Map of the CLLMM boundary and the five management landscapes within the CLLMM region.

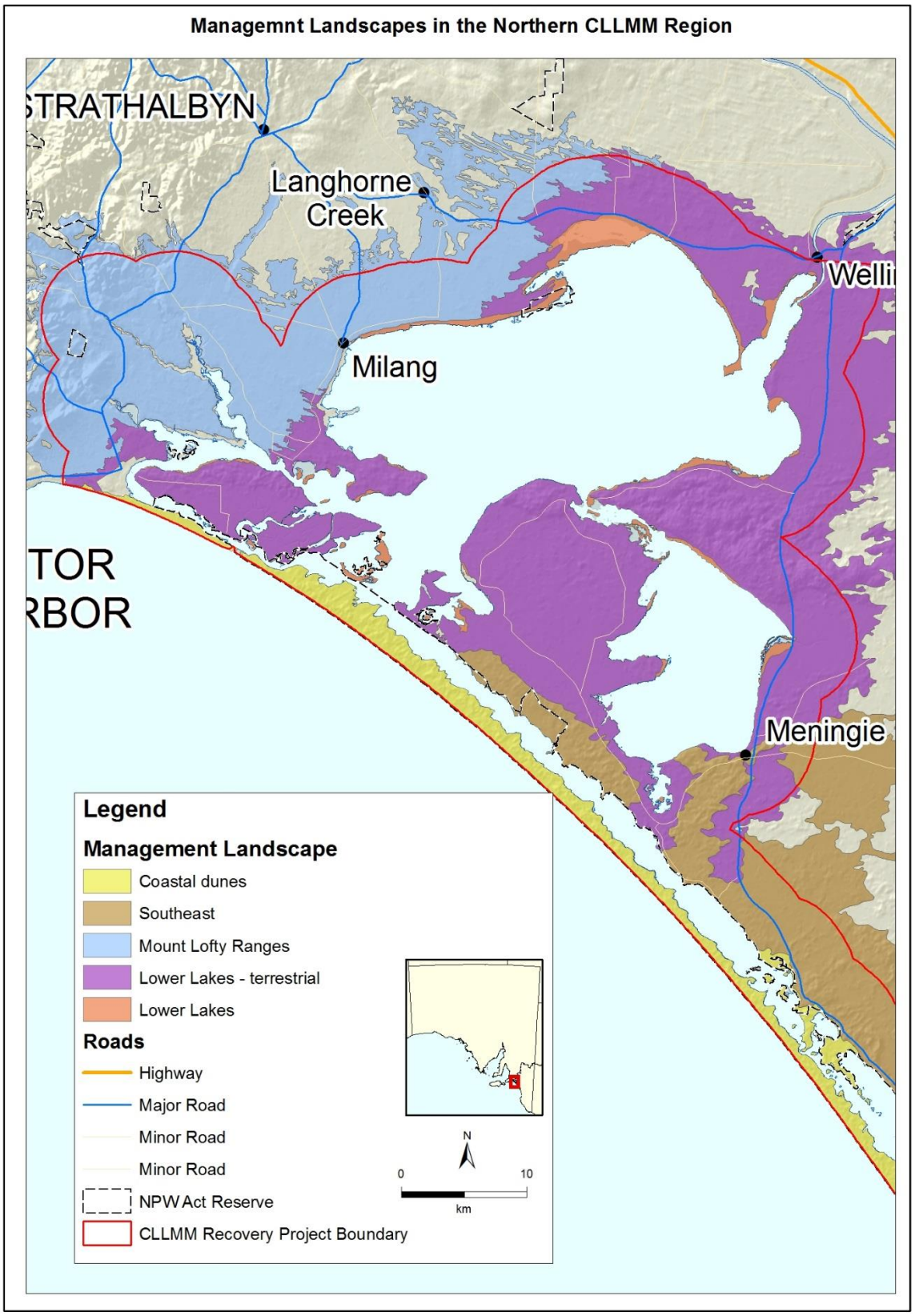

Figure 2. Map of the CLLMM boundary and the management landscapes within the Northern CLLMM region.

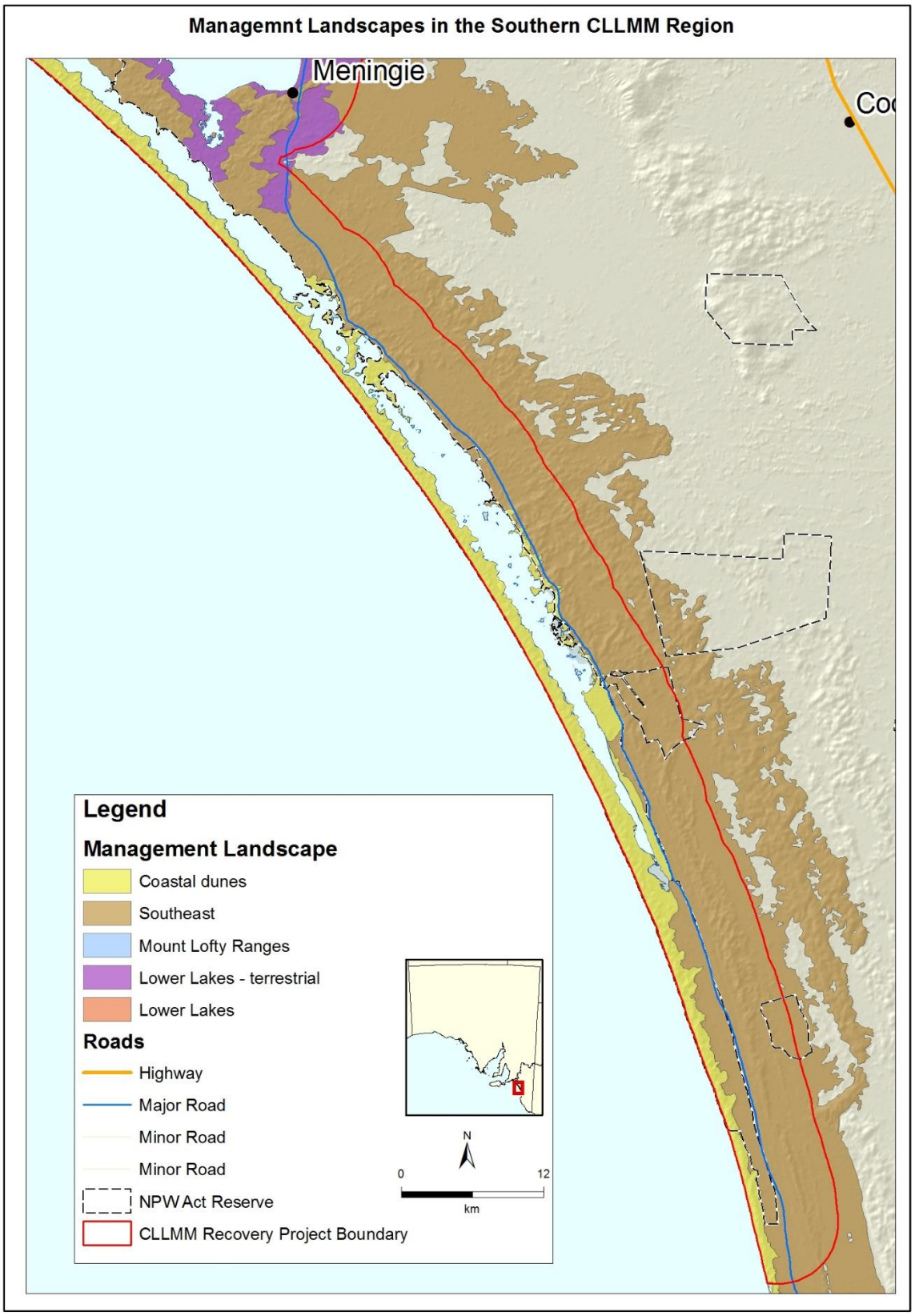

Figure 3. Map of the CLLMM boundary and the management landscapes within the Southern CLLMM region.

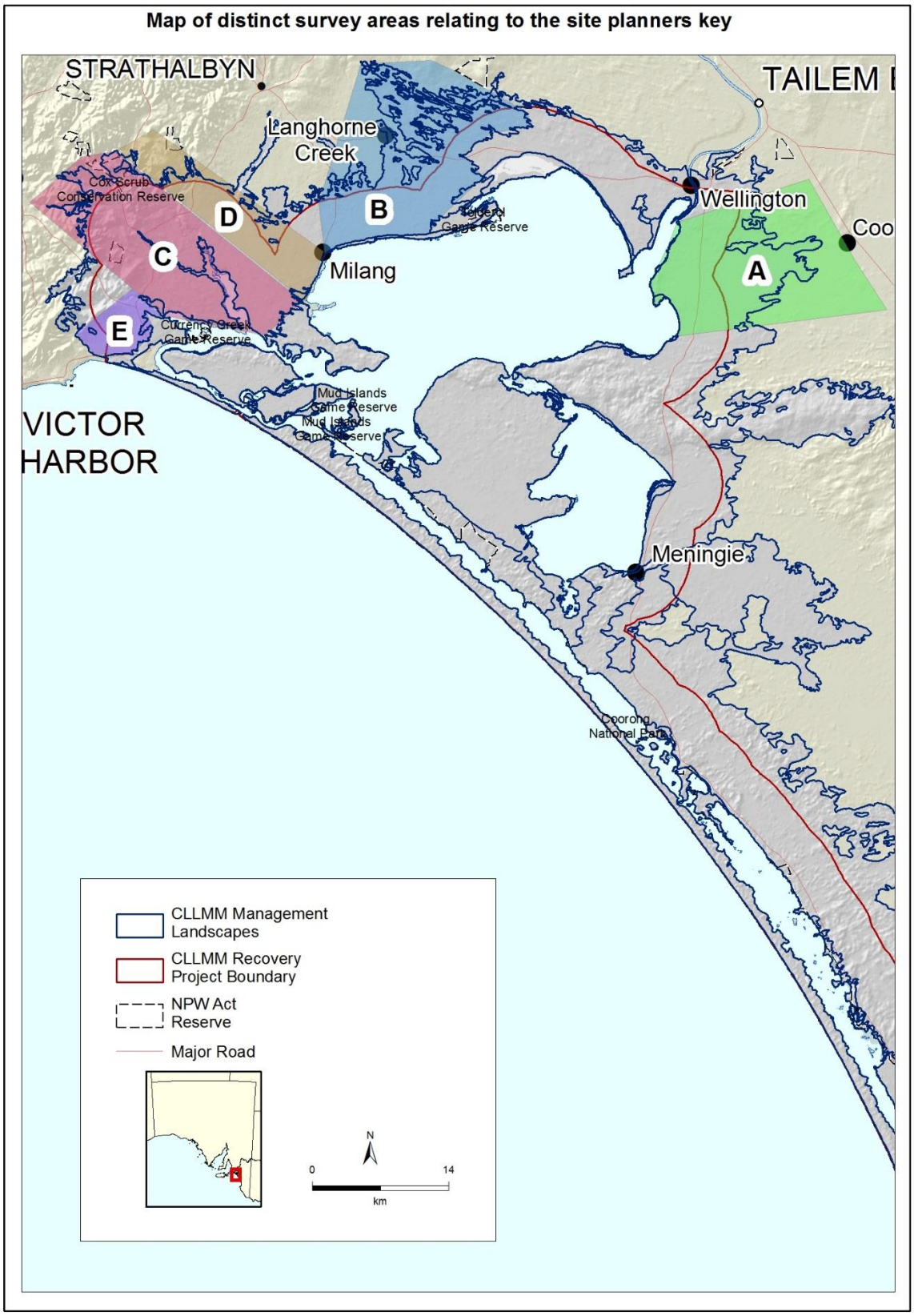

Figure 4. Survey areas for site planners key

1. Coastal Dunes

1. Are you in a depression or on the flats with saline or moderately saline soils?
    a. Yes……**Samphire** (N2 saline soils) or ***Gahnia filum*** **Sedgeland** (N3 moderately saline wet soils)
    b. No……Go to 2
2. Are you on a sand dune?
    a. Yes……..**Coastal shrubland**
    b. No……***Eucalyptus diversifolia*** **ssp. *diversifolia* Mallee** (rises with B2, B3 shallow sand or loam over calcrete)

2. South East

3. Are you in a depression or on the flats with saline or moderately saline soils (N2 & N3)?
    a. Yes……**Samphire** (N2 saline soils) or ***Gahnia filum*** **Sedgeland** (N3 moderately saline wet soils)
    b. No……..Go to 4
4. Are you on a ridge with siliceous sand (H3) or sandy loam on calcrete (B3 & B8) soils?
    a. Yes…… ***Allocasuarina verticillata*** **Woodland** or ***Callitris gracilis*** **(Non-Eucalypt) Woodland**
    b. No……..Go to 5
5. Are the soils sand (H1 & H3) or sand over acidic clay (G5)?
    a. Yes……..***E. diversifolia*** **ssp. *diversifolia* Mallee**
    b. No……..Go to 6
6. Are you on flat land or a lower slope with sandy loam or sand on calcrete (B3, B6 & B8) soils or thick sand over clay soils (G3)?
    a. Yes……..***E. leucoxylon*** **ssp. *leucoxylon* Woodland** or ***E. diversifolia*** **ssp. *diversifolia* Mallee**
    b. No……..Either ***E. diversifolia*** **ssp. *diversifolia* Mallee** or ***A. verticillata*** **Woodland** or ***Callitris gracilis*** (**Non-Eucalypt) Woodland**

3. Mt Lofty Ranges

7. Are you in a depression or on the flats with saline soils (N2) or wet soils (N3)?
    a. Yes……**Samphire (N2 soils)** or ***Gahnia filum*** **Sedgeland (N3 soils)**
    b. No……..Go to 8
8. Are the soils fresh or slightly saline (N3) in a depression or on the flats?
    a. Yes……***E. camaldulensis*** **ssp. *camaldulensis* Woodland** and ***Duma florulenta*** **Shrubland**
    b. No……...Go to 9
9. Are you on loamy or sandy loam soil over calcrete or clay (B2, B3, D2, D3)?
    a. Yes……..Go to 10
    b. No……..Go to 11
10. Are you on a lower or mid slope
    a. Yes…… ***E. odorata*** **Woodland** (may also occur on sand over clay)
    b. No…….. ***E. porosa*** **Woodland** (can occur on flats to dune areas)
11. Are you between **Milang and Ferries-McDonald CP** on sand over clay soils or deep sandy soils (G and H soils) (B in Figure 4)?
    a. Yes……Go to 12
    b. No……..Go to 14
12. Are you on a flat to lower slope?
    a. Yes……Most likely ***E. incrassata*** **Mallee** or ***E. diversifolia*** **ssp. *diversifolia* Mallee** near Ferries-McDonald
    b. No……..Go to 13
13. Are you on a moderate to high slope?
    a. Yes……Most likely ***E. cosmophylla*** **Woodland** +/- ***E. fasciculosa*** **Woodland** or ***E. diversifolia*** **ssp. *diversifolia* Mallee** near Ferries-McDonald
    b. No…….. ***E. diversifolia*** **ssp. *diversifolia* Mallee** near Ferries-McDonald
14. Are you between **Currency Creek and Finniss, extending up to Scott and Cox Scrub CP and down to Clayton Bay (**C in Figure 4**)**?
    a. Yes……Go to 15
    b. No……..Go to 17

Mt Lofty Ranges (cont.)

15. Are you on a low to moderate slope with sand over clay soils or deep sandy soils (G and H soils)?
    a. Yes…… ***E. fasciculosa* Woodland** +/- ***E. incrassata*** on flat ground or low slopes
    b. No……Go to 16
16. Are you on a moderate to high slope with sand over clay soils or deep sandy soils (G and H soils) or loamy/acidic sand over red clay (D5/K3)?
    a. Yes…….. ***E. cosmophylla* Woodland** or ***E. diversifolia* ssp. *diversifolia* Mallee**
    b. No…….. ***E. diversifolia* ssp. *diversifolia* Mallee**
17. Are you are between **Milang and Cox Scrub CP or around the Goolwa area** on sand over clay soils or deep sandy soils (G and H soils) on a low to moderate slope (D & E in Figure 4)?
    a. Yes……***E. fasciculosa* Woodland**
    b. No…….. ***E. cosmophylla* Woodland** (not around the Goolwa area)

4. Lower Lakes Terrestrial

18. Are you in a depression or on the flats with saline soils (N2)?
    a. Yes……**Samphire**
    b. No……..Go to 19
19. Are the soils fresh or slightly saline wet soils (N3) in a depression or on the flats?
    a. Yes……***Duma florulenta*** **Shrubland** or ***Gahnia filum*** **Sedgeland**
    b. No……...Go to 20
20. Are you between **Wellington Lodge and Cooke Plains** (A in Figure 4)?
    a. Yes……Go to 21
    b. No……..Go to 23
21. Are you on flat ground?
    a. Yes……**Grasslands**
    b. No……..Go to 22
22. Are you on a moderate slope to a ridge/dune on loam or sandy loam on clay
    a. Yes……***E. porosa***
    b. No……..***E. diversifolia*** **ssp.** ***diversifolia*** **Woodland +/-** ***A. verticillata*** **Woodland** (soils sand over clay, sand on calcrete or deep carbonate sand)
23. Are the soils loamy or sandy loam over clay (D2, D3)?
    a. Yes……Go to 24
    b. No……..***E. diversifolia*** **ssp.** ***diversifolia*** **Woodland +/-** ***A. verticillata*** **Woodland** (soils sand over clay, sand on calcrete or deep carbonate sand)
24. Are you on a moderate slope to a ridge/dune?
    a. Yes……Mixture between ***E. porosa*** **and Non-Eucalypt Woodland** (restricted to Narrung and Poltalloch on sandy loam over calcrete)
    b. No…….....***E. leucoxylon*** **ssp.** ***leucoxylon*** **Woodland** on flat ground to moderate slopes, but can include ***E. porosa*** **and Non-Eucalypt Woodland**

Ecosystem Descriptions

Below is a list of all the Ecosystems found in the CLLMM region and an explanation of the landscapes they are likely to be found in and the soil types they are associated with. There is a revegetation species list associated with each ecosystem provided below each of the soil maps in the appendices. This species list is for revegetation purposes and is based, where possible, on surveys undertaken in remnant areas (Appendix 1). A diagram of where the ecosystems are likely to be located in the CLLMM landscapes can be found in Appendix 17.

1. *Eucalyptus fasciculosa* (Pink Gum) Woodland

This ecosystem is found only in the Mt Lofty Ranges management landscape in the CLLMM region (Appendix 2) (Bonifacio et al., 2014). It is also found on Kangaroo Island and in the south-east (Nicolle, 2013). It is usually found on lower to mid slopes in poor quality (infertile) sandy soils (Nicolle, 2013) and on flats to low sandy rises in plains and low hills with sand over clay soils (G3 & G4) and/or dune type systems with bleached siliceous sand (H3).

Found associated with *E. baxteri* with an understorey dominated by grasses and sparse shrubs including *Rytidosperma s*pp., *Austrostipa* spp., *Lepidosperma* spp., and *Lomandra* spp., *Enchylaena tomentosa, Hibbertia virgata, Muehlenbeckia gunnii, Pimelea humilis* and *Acacia paradoxa.*

Note: On sandy soils this low woodland comprises scrubby smaller *E. fasciculosa* that other eucalypt communities are not strongly associated with. For example, *E. cosmophylla* prefers lateritic infertile loam, while *E. leptophylla* prefers sandy loam soils. *E. leucoxylon* prefers loam soils or shallow sandy soils.

2. *Eucalyptus cosmophylla* (Cup Gum) & *E. baxteri* (Brown Stringy Bark) Woodland over Heath

Found predominantly in the Mt Lofty Ranges management landscape (Appendix 3) on sand over clay soils (G3 & G5) and to a lesser extent on acidic sandy loam over red clay (K3) or hard loamy sand over red clay (D5). It is found in higher elevation and rainfall areas compared to the Pink Gum (*Eucalyptus fasciculosa*) ecosystem.

While the dominant overstorey species are usually *E. cosmophylla* +/- *E. baxteri*, while Pink Gum (*E. fasciculosa*) can also occur in these areas. Grass tree (*Xanthorrhoea semiplana*) is a common species of the understorey mixed with *Allocasuarina striata* and/or *Acacia* spp., *Banksia* and *Calytrix*.

Note: *E. cosmophylla* & *E. baxteri* ecosystems are usually found on low fertility sandy loams to loams with lateritic influence, where some blown in sand is present.

3. Coastal Shrubland of the Coorong

This ecosystem mostly occurs along the coastal dunes of the Coorong (Young Husband Peninsula), but may also occur in a small proportion of the Lower Lakes Terrestrial management landscape (

Appendix 4). It predominantly grows on deep sands (H1, H2), and to a lesser extent shallow sandy loam on calcrete (B3).

Dominant species occurring in this ecosystem are *Olearia axillaris*, *Leucopogon parviflorus* and *Acacia longifolia* var. *sophorae*, and commonly comprised of shrubland and grassland species of the Coorong.

4. *Eucalyptus diversifolia* ssp. *diversifolia* (Coastal White Mallee) Mallee

This ecosystem can occur in all management landscapes of the CLLMM region, but predominantly it is found in the South East and to a lesser extent the Lower Lakes Terrestrial area (Appendix 5). Predominantly it occurs on shallow sandy soil on calcrete (B2 & B3) and deep sands (H1 & H3), and to a lesser extent sand over clay (G3 & G5). In rare cases it can also occur on the upper margins of Samphire ecosystems in saline soils (N2) in the South East management landscape. Outcropping calcrete can often be seen.

This ecosystem is dominated by an *E. diversifolia* ssp. *diversifolia* and/or *E. incrassata* overstorey with a heathy-shrubby understorey. Common understorey species include *Xanthorrhoea caespitosa* (SE only), *Lepidosperma carphoides* and *Billardiera cymosa*. It occurs on a wide variety of soil types, so can co-occur with many of the ecosystems described here.

5. *Allocasuarina verticillata* (Drooping Sheoak) Low Woodland

This ecosystem is mainly found in the South East but also occurs in the Lower Lakes Terrestrial management landscape (Appendix 6). It occurs on shallow sandy soil on calcrete (B3 & B8) and to a lesser extent bleached sand over sandy clay (G3) bleached siliceous sand (H3) and rarely saline soils (N2).

This ecosystem has been severely cleared in the past. It has a shrubby understorey, although may have a grassy understorey in its original state (based on expert opinion). Current remnants have *Allocasuarina verticillata* as the dominant overstorey species with understorey species including *Xanthorrhoea caespitosa* (SE only), *Hibbertia sericea*, *Kunzea pomifera* and *Clematis microphylla*.

Note: The coastal form of this ecosystem has coastal heath or shrub understorey. Elsewhere it tends to be grassy and open.

6. Mixed Eucalypt Woodland/Mallee communities

6.1 Eucalyptus porosa (Mallee Box) Grassy Woodland

Found in the Mt Lofty Ranges and Lower Lakes Terrestrial management landscapes in the CLLMM region (Appendix 7) (Bonifacio et al., 2014) associated with a moderate rainfall in semi-arid areas (Berkinshaw, 2009). Not found in wetter areas on the Mt Lofty Ranges (Nicolle, 2013). It is also found on the Yorke and Eyre Peninsulas, Flinders Ranges and the South-east (Nicolle, 2013).

It is usually found in poorly drained depressions on clay over limestone and coastal limestone bluffs (Nicolle, 2013). In the CLLMM landscape it is associated with loam over poorly structured red clay (D3), shallow calcareous loam on calcrete (B2) or shallow sandy loam on calcrete (B3).

Found associated with *E. fasciculosa*, *E. leucoxylon, E. odorata*, *Allocasuarina verticillata* and *Callitris gracilis* with a sparsely distributed mid and understorey dominated by grasses and sparse shrubs including, *Austrostipa* sp., *Rytidosperma sp.,* Acacia sp., *Dianella revoluta*,

Dodonaea viscosa, *Clematis microphylla, Oxalis perennans*, *Lomandra effusa* and *Melaleuca* spp.

Therefore, in a bare landscape this ecosystem is most likely to occur in the Mt Lofty Ranges and Lower Lakes Terrestrial management landscapes on level to gently undulating plains but can occur on rises and low hills associated with coastal dune in loam or sandy loam over calcrete (B2 & B3) or loam over poorly structured red clay (D3).

6.2 Eucalyptus odorata (Peppermint Box) Grassy Woodland

Found in the Mt Lofty Ranges management landscape in the CLLMM region (Appendix 8) (Bonifacio et al., 2014) associated with moderate rainfall in semi-arid areas (Berkinshaw, 2009). It is also found on the Yorke and Eyre Peninsulas, South-east and Kangaroo Island (Nicolle, 2013).

This ecosystem is usually found on undulating plains with shallow loamy soils (Nicolle, 2013). In the CLLMM landscape it is associated with loam over poorly structured red clay (D3) and sand over poorly structured clay (G4).

Found associated with *E. fascicolosa, E. leucoxylon* and *E. phenax* with an understorey dominated by grasses and sparse shrubs including *Allocasuarina verticillata, Austrostipa sp., Rytidosperma sp., Dianella revoluta, Clematis microphylla, Oxalis perennans, Lomandra effusa* and *Melaleuca spp*.

Therefore, in a bare landscape this ecosystem is most likely to occur in the Mt Lofty Ranges management landscape on lower to mid slopes (up to 30m elevation) in loam over red clay (D3) and/or sand over clay (G4) soils.

Note: While it can be associated with drainage lines in other locations, in these management landscapes *E. porosa* is more likely to dominate while *E.* odorata tends to be associated with well drained situations at times tops of hills.

6.3 Eucalyptus incrassata / E. leptophylla +/- E. socialis Mallee Community

This community occurs on sand over clay soils (G1 & G3) and bleached siliceous sand (H3) in the Mount Lofty Ranges (Appendix 9). A mixture of *Acacia* spp and *Melaleuca* spp as well as *E. phenax* can occur in the ecosystem. Common understorey species are *Clematis microphylla*, *Dianella revoluta*, *Rhagodia candolleana*, *Austrostipa* spp., *Lomandra effusa* and *Oxalis perennans*.

6.4 Eucalyptus leucoxylon ssp. *leucoxylon* (SA Blue Gum) Woodland

Found in the Lower Lakes Terrestrial and South East Coorong management landscapes in the CLLMM region (Appendix 10) (Bonifacio et al., 2014). Only one subspecies occurs in the CLLMM region; *E. leucoxylon* ssp. *leucoxylon* (Nicolle, 2013). *Eucalyptus leucoxylon* ssp. *stephaniae* is probably not found in the CLLMM region but is located inland of the South East Coorong management landscape around Tintinara.

Eucalyptus leucoxylon ssp. *leucoxylon* is usually found in undulating or hilly terrain on loam soils while *E. leucoxylon* ssp. *stephaniae* is found on well drained sandy to loamy soils in shallow depressions surrounded by sand dunes. In the CLLMM region it is found on soils with shallow calcareous loam on calcrete (B2), shallow loam over red clay on calcrete (B6), shallow sand on calcrete (B8) and lesser extent thick sand over clay (G3).

This ecosystem can be found at times associated with *E. cosmophylla, E. fasciculosa, E. odorata, E. diversifolia, E. incrassata, E. leptophylla* and *Allocasuarina verticillata* with a sparsely distributed mid and understorey dominated by grasses and shrubs including

Austrostipa spp., *Rytidosperma* spp.*, Acacia* spp.*, Bursaria spinosa, Hakea* spp.*, Xanthorrhoea* spp.*, Dianella revoluta*, Dodonaea viscosa, *Clematis microphylla, Oxalis perennans*, *Lomandra effusa* and *Melaleuca* spp.

Therefore, in a bare landscape this ecosystem is most likely to occur in Lower Lakes Terrestrial and South East Coorong management landscapes in undulating or hilly terrain on loam soils (G3 - *E. leucoxylon* ssp. *leucoxylon*) or well drained sandy to loamy soils over calcrete, associated with sand dunes (B3, B6, & B8 - *E. leucoxylon* ssp. *stephaniae*).

7. Freshwater Fringing Wetland Ecosystem

Predominantly found in wet soils (N3) in the Lower Lakes aquatic ecosystem. The community requires constant or regular inundation and needs to have some tolerance to salinity up to brackish water. Dominant species are *Phragmites australis, Schoenoplectus validus*, *Hydrocotyle verticillata*, *Typha domingensis* and *Juncus kraussii*.

Note: This ecosystem is generally only associated with N3 (freshwater) soils, while samphire & *M. halmaturorum* is associated with N2 (saline) soils.

8. *Duma florulenta* (Lignum) Shrubland

Found in the Mt Lofty Ranges and the Lower Lakes aquatic ecosystems and to a lesser degree the Lower Lakes Terrestrial ecosystem (
Appendix 11). It mainly occurs in wet soils (N3) as well as loam over poorly structured red clay (D3). To a lesser extent if can grow on shallow sandy loam on calcrete (B3) and loam over brown or dark clay (F1)

This ecosystem is dominated by Lignum along with some flora species that are tolerant of water logging such as *Agrostis avenacea*, *Atriplex semibaccata* and *Distichlis distichophylla*.

9. Samphire Swamp (including *Melaleuca halmaturorum* swamp, *Duma florulenta* low shrubland & *Gahnia filum* sedgeland)

Found in all of the CLLMM management landscapes (Bonifacio et al., 2014) and across South Australia (Appendix 12). Found in sub-coastal and semi-saline swamps and wetlands, rivers, estuaries and seasonally inundated depressions and floodplains associated with heavy saline soil (N2) and to a much lesser extent wet soil (N3) ranging from deep clays to sand-over-clays to deep sand (Hall et al., 2009)**.**

Samphire swamp is found in wet depressions dominated by *Tecticornia* spp. and surrounded by *Melaleuca halmaturorum*. *Gahnia filum* and/or *Duma florulenta* may also be dominant plant species where N3 wet soils occur. The associated species composition is dependent on the salinity of the standing water and quantity of freshwater run-off.

Therefore, in a bare landscape this ecosystem can be found in all the CLLMM management landscapes which have saline or wet clays, sandy clays or deep sands associated with tidal flats, backswamps, valley floors, closed depressions and drainage depressions. The salinity level of the soil will determine the range of vegetation that will grow in the area. Very saline soils would be dominated by Samphire and *M. halmaturorum* swamps while saline with freshwater run-off would also include *M. halmaturorum* with *G. filum.*

10. Expert Opinion based Ecosystems

10.1 Gahnia filum sedgeland

This ecosystem is associated with wetlands and is dominated by *Gahnia filum*. The distribution of this ecosystem is now very limited in the CLLMM landscape (Appendix 13) (T. Croft, pers. com.).

Note: In the CLLMM landscape this ecosystem is associated with depressions, and may fringe Samphire and *M. halmaturorum* areas. It is a plant community that has suffered from adjacent terrestrial vegetation clearance, which has raised the saline groundwater, increasing salinity.

10.2 Eucalyptus camaldulensis var. *camaldulensis* grassy woodland

Associated with river floodplains and freshwater swamps (N3 soils), especially those in the Mt Lofty Ranges (Berkinshaw, 2009). This ecosystem has been largely cleared through-out the CLLMM landscape as this land is generally fertile. This ecosystem is dominated in the overstorey by *E. camaldulensis* and has a grassy, sedge and rush understorey, including shrubs such as *D. florulenta*. Expert knowledge indicates that the majority of its distribution is limited to creek lines of Langhorne Creek, although it is likely to occur in most landscapes where temporary freshwater inundation occurs (Appendix 14).

10.3 Grassland Community

This community has largely been cleared in the CLLMM landscape and only a few examples of what it may have resembled remains in the Lower Lakes Terrestrial management landscape (Appendix 15). This ecosystem is composed of tussock grassland species including *Lomandra effusa, Austrostipa* spp., *Rytidosperma* spp. and *Poa* spp.

10.4 Non-Eucalypt *(Allocasuarina verticillata* and *Callitris gracilis*) Woodland

Found in the Lower Lakes Terrestrial management landscape in the CLLMM region (Appendix 16) (Bonifacio et al., 2014). In the CLLMM region it is associated with sub-coastal plains and dunes and steep slopes of low hills (Berkinshaw, 2009) on shallow sandy loam on calcrete (B3).

For the CLLMM region, non-eucalyptus woodland will be dominated by *Allocasuarina verticillata* and/or *Callitris gracilis* with a sparsely distributed mid and understorey dominated by grasses and shrubs including *Austrostipa* spp., *Rytidosperma* spp., A*cacia* spp., *Bursaria spinosa, Hakea* spp., *Xanthorrhoea* spp., *Dianella revoluta, Dodonaea viscosa, Clematis microphylla, Oxalis perennans, Lomandra effusa* and *Melaleuca* spp.

Therefore, in a bare landscape this ecosystem is most likely to occur in the Lower Lakes Terrestrial management landscape on level to gently undulating plains and low hills associated with dunefields in sandy loam soils over calcrete (B3).

Soil Descriptions

The below definitions are based on Hall *et al.,* (2009).

- **B2** soils have a grey to red-brown loamy sand to light clay, but most commonly loamy, usually shallow to very shallow layer. B2 soils are mostly situated on level to gently undulating plains but can occur on rises and low hills, and are often associated with dunefields, old coastal dune ranges and coast sand spreads. B2 soils are common in higher rainfall environments.
- **B3** soils are shallow (0-9cm) brown to red sandy loam to light clay over a hard base of calcrete (approx. 20cm depth). As with B2 soils, B3 soils are mostly situated on level to gently undulating plains but can occur on rises and low hills, and are often associated with dunefields, old coastal dune ranges and coast sand spreads. B3 soils are common in higher rainfall environments.
- **B6** soils are shallow, red-brown loamy or clay loam over calcrete. Found in old coastal dunes or on flat to undulating land.
- **B8** soils are shallow, pale brown sand over calcrete. Found in coastal and near costal flats, rises and dunes.
- **D3** soils have a dark reddish brown sandy loam layer in the first 10cm overlaying yellow red clay loam.
- **F1** soils are loamy over brown or dark clay. They are commonly found in the Mt Lofty Ranges on plains and rises. The top 20-30cm are made up of dark loam soil and below that the soil is yellowish brown to light grey clay.
- **D5** hard loamy sand over red clay
- **G3** soils have sandy to sandy loam topsoils (dark brown to brown and brownish yellow) overlaying clayey subsoils (below 75cm).
- **G4** soils have a dark greyish loamy sand layer in the first 8cm, below which is a brown loamy sand (25cm) and then a shallow yellowish red to yellowish brown clay layer (below 25cm).
- **G5** soils are made up of sands over acidic clay. The first 20-40cm in this layer are made up of dark grey to pale brown loamy sand, below which is yellowish brown sandy clay loam. Found in high rainfall areas of the Mount Lofty Ranges.
- **H1** soils are made up of carbonate sand and usually make up coastal sand dunes along the coast line. Coastal dune ranges found further inland are also made-up of this soil type.
- **H3** soils, which are closely associated with G3 soils, are deep with the first 8 cm containing dark brown loose sands followed by a bleached subsurface layer (very pale brown, 8 to 35cm deep). Below this the soil is a brownish yellow colour.
- **K3** soils have an acidic sandy loam structure over red clay. They are common in the Mount Lofty Ranges on hillsides. The first 20 to 30cm are made up of a dark greyish brown sandy loam below which is red to yellowish brown heavy clay.
- **N2** soils are highly to extremely saline affected by shallow saline watertables and range from deep clays to sand-over-clays to deep sands. N2 soils occurs where saline groundwater comes close to the land surface (approx. 1m) with poor to very poor drainage associated with tidal flats, back-swamps, closed depressions and drainage depressions.
- **N3** soils are affected by prolonged wetness but are not peaty or highly to extremely saline. N3 soils are situated in low-lying and poorly to very poorly drained areas, mostly in high rainfall areas.

Landform Element Descriptions

The below definitions are based on McDonald *et al.,* (1998).

- **Crest** - Landform element that stands above all, or almost all, points in the adjacent terrain. It is characteristically smoothly convex upwards in downslope profile or in contour, or both. The margin of a crest element should be drawn at the limit of observed curvature.

- **Hillock** - compound landform element comprising a narrow crest and short adjoining slopes, the crest length being less than the width of the landform element.

- **Ridge** - compound landform element comprising a narrow crest and short adjoining slopes, the crest length being greater than the width of the landform element.

- **Simple Slope** - slope element adjacent below a crest or flat and adjacent above a flat or depression.

- **Upper Slope** - element adjacent below a crest or flat but not adjacent above a flat or depression.

- **Mid Slope** - slope element not adjacent below a crest or flat and not adjacent above a flat or depression.

- **Lower Slope** - slope element not adjacent below a crest or flat but adjacent above a flat or depression.

- **Flat** - planar landform element that is neither a crest nor a depression and is level or very gently inclined (<3 % tangent approximately).

- **Dune** - Moderately inclined to very steep ridge or hillock built up by wind. This element may comprise Dunecrest and Duneslope

- **Open Depression** (vale) / **Closed Depression** - Landform element that stands below all, or almost all, points in the adjacent terrain. A closed depression stands below all such points; an open depression extends at the same elevation, or lower, beyond the locality where it is observed. Many depressions are concave upwards and their margins should be drawn at the limit of observed curvature.

References

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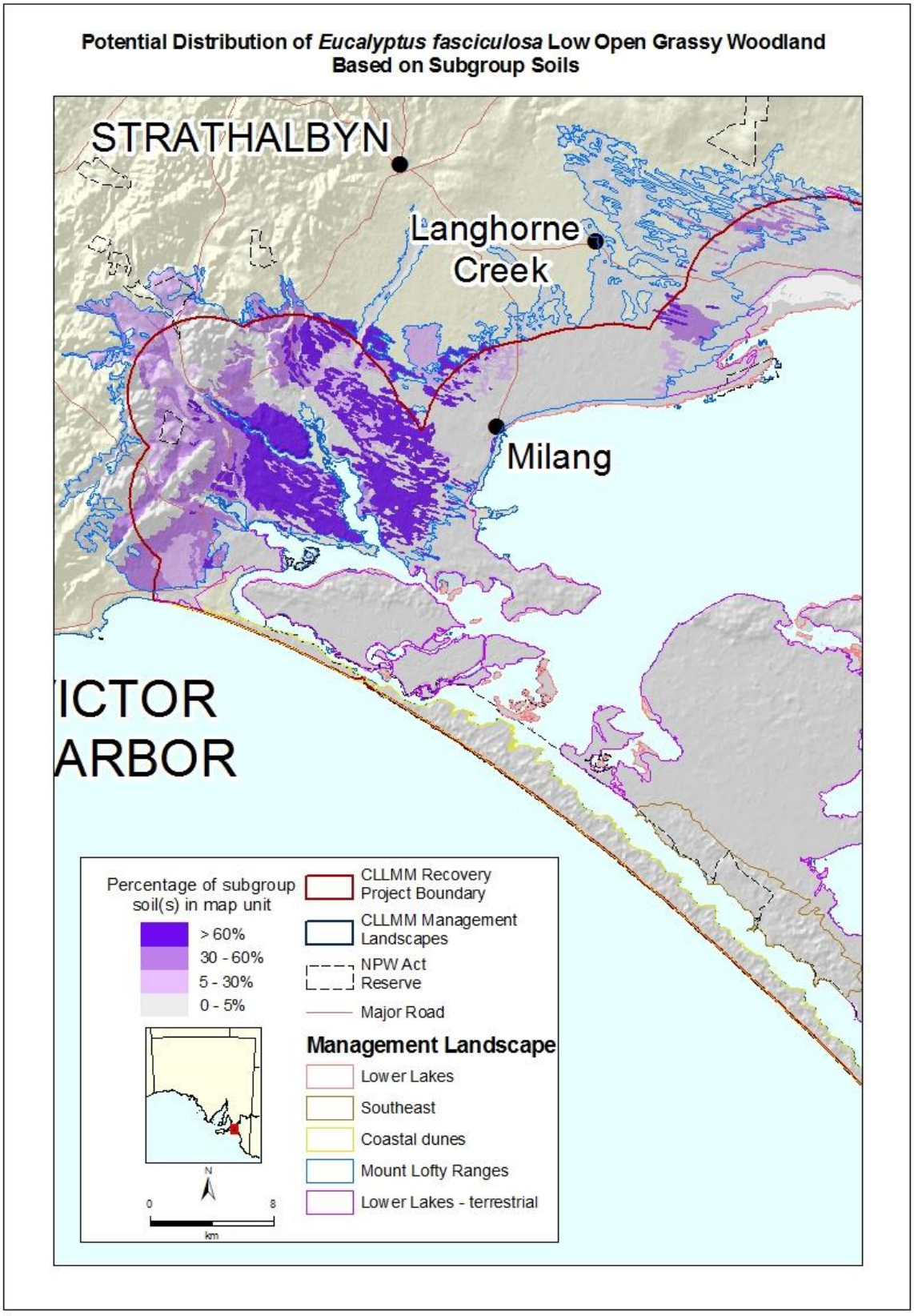
Appendices

Appendix 1: Number of vegetation surveys undertaken in remnant ecosystem types in 2013

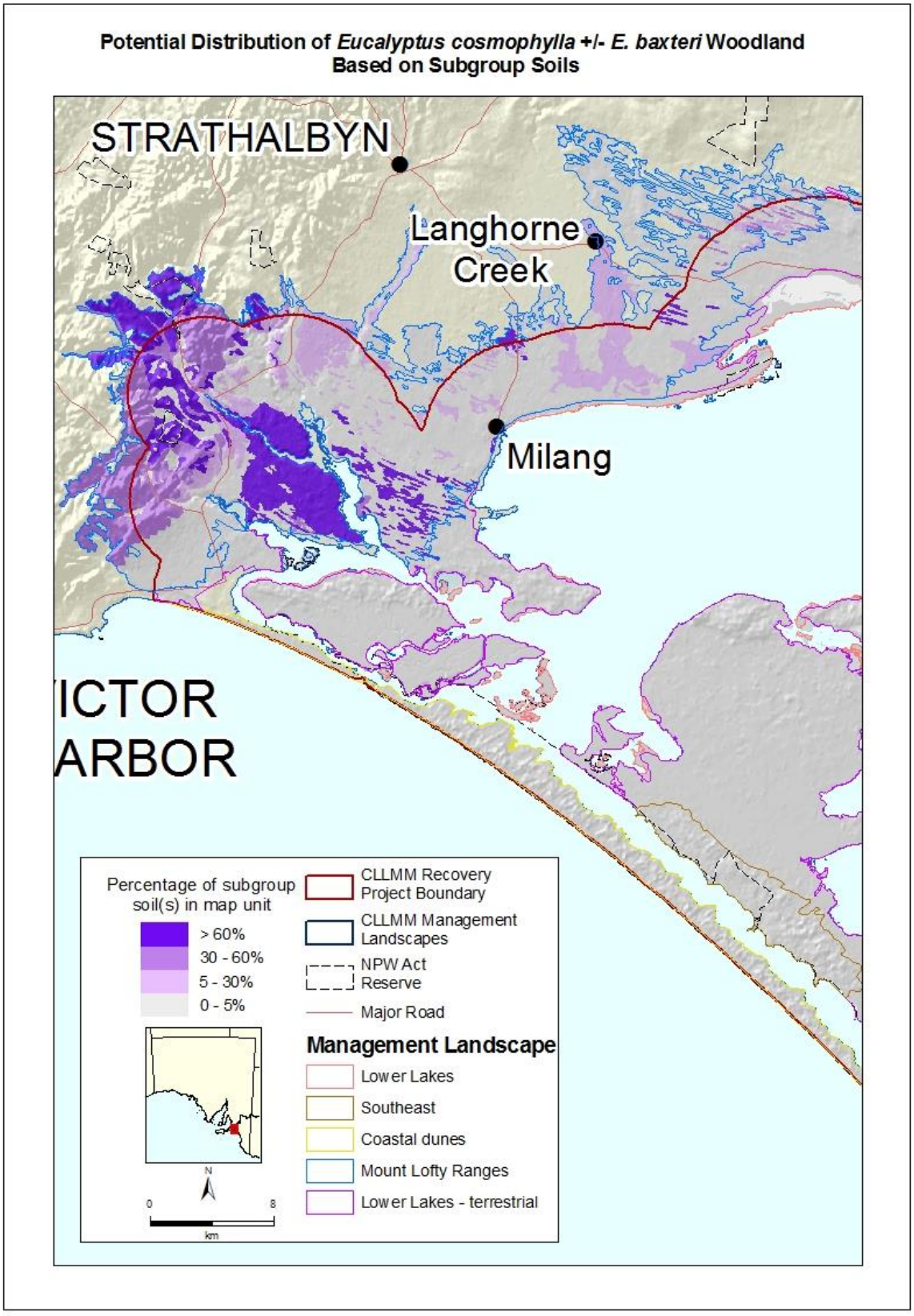
Ecosystem ID	Ecosystem Name	Number of remnants visited (N)
1	*E. fasciculosa* (Pink Gum) woodland	6
2	*E. cosmophylla* (Cup Gum) / *E. baxteri* (Brown Stringybark) woodland	2
3	Coastal shrubland of the Coorong	0
4	*E. diversifolia* (Coastal White Mallee) mallee	4
5	*A. verticillata* (Sheoak) low woodland	4
6.1	*E. porosa* (Mallee Box) grassy woodland	0
6.2	*E. odorata* (Peppermint Box) grassy woodland	1
6.3	*E. incrassata* (Ridge Fruited Mallee) / *E. leptophylla* +/- *E. socialis*	3
6.4	*E. leucoxylon* (Blue Gum) woodland	2
7	Freshwater fringing	0
8	*Duma florulenta* (Lignum) shrubland	0
9	Samphire +/- *Melaleuca halmaturorum*	4
10.1	*G. filum*	0
10.2	*E. camaldulensis* (Red Gum)	1
10.3	Grassland	1
10.4	Non-Eucalypt woodland	3

Appendix 2: *Eucalyptus fasciculosa* woodland subgroup soil mapping and propagation list



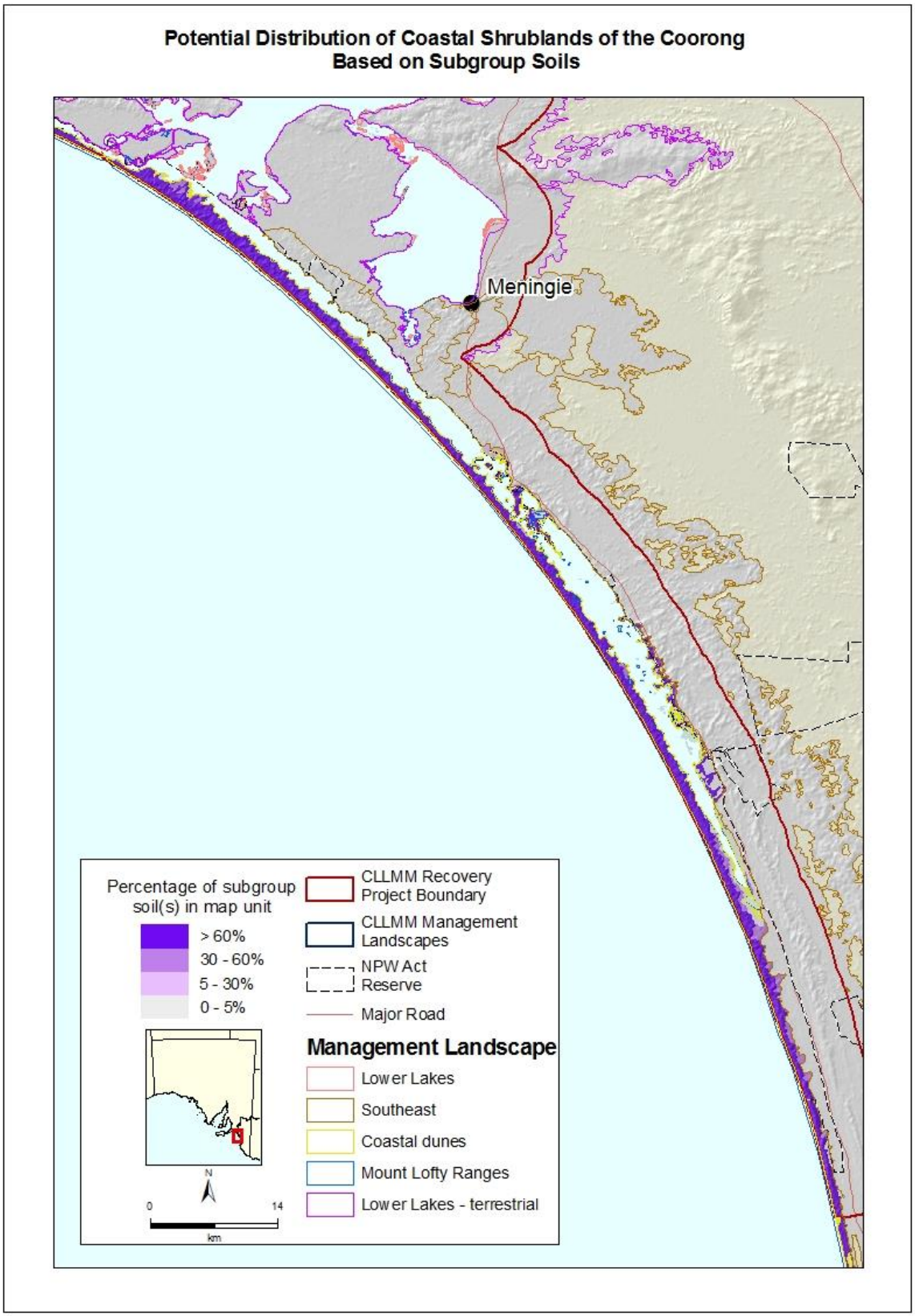
iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
1	*E.fasciculosa*	Over	M02230	*Eucalyptus fasciculosa*	300	Easy
1	*E.fasciculosa*	Over	Z02223	*Eucalyptus cosmophylla*	100	Easy
1	*E.fasciculosa*	Over	U32402	*Eucalyptus odorata*	100	Easy
1	*E.fasciculosa*	Over	Q02240	*Eucalyptus incrassata*	70	Easy
1	*E.fasciculosa*	Over	M03382	*Callitris gracilis*	30	Easy
1	*E.fasciculosa*	Over	M05830	*Melaleuca lanceolata*	30	Easy
1	*E.fasciculosa*	Mid	K02281	*Leptospermum myrsinoides*	1000	Easy
1	*E.fasciculosa*	Mid	S04937	*Xanthorrhoea semiplana*	1000	Easy
1	*E.fasciculosa*	Mid	Z02207	*Calytrix tetragona*	500	Difficult
1	*E.fasciculosa*	Mid	W01671	*Dillwynia sericea*	500	Easy
1	*E.fasciculosa*	Mid	Q01572	*Acacia hakeoides*	250	Easy
1	*E.fasciculosa*	Mid	C05985	*Acacia euthycarpa*	150	Easy
1	*E.fasciculosa*	Mid	A04208	*Bursaria spinosa* ssp. *spinosa*	150	Easy
1	*E.fasciculosa*	Mid	M01598	*Acacia paradoxa*	130	Easy
1	*E.fasciculosa*	Mid	K06209	*Acacia myrtifolia*	100	Easy
1	*E.fasciculosa*	Mid	C01605	*Acacia pycnantha*	100	Easy
1	*E.fasciculosa*	Mid	S05965	*Grevillea lavandulacea*	70	Difficult
1	*E.fasciculosa*	Mid	A03256	*Olearia ramulosa*	70	Easy
1	*E.fasciculosa*	Mid	M01618	*Acacia spinescens*	40	Easy
1	*E.fasciculosa*	Mid	K04781	*Dodonaea viscosa* ssp. *spatulata*	30	Easy
1	*E.fasciculosa*	Mid	Z00931	*Hakea rostrata*	30	Easy
1	*E.fasciculosa*	Mid	C03477	*Rhagodia candolleana*	30	Easy
1	*E.fasciculosa*	Under	G00435	*Neurachne alopecuroidea*	1000	Easy
1	*E.fasciculosa*	Under	M02434	*Leucopogon virgatus var. virgatus*	800	Difficult
1	*E.fasciculosa*	Under	A04920	*Boronia coerulescens*	500	Difficult
1	*E.fasciculosa*	Under	C04893	*Dianella revoluta var. revoluta*	500	Easy
1	*E.fasciculosa*	Under	G04827	*Dianella brevicaulis*	300	Easy
1	*E.fasciculosa*	Under	S03157	Helichrysum leucopsideum	250	Easy
1	*E.fasciculosa*	Under	S05869	*Correa reflexa var. reflexa*	200	Difficult
1	*E.fasciculosa*	Under	U04874	*Lomandra collina* (in sand)	200	Difficult
1	*E.fasciculosa*	Under	Z02135	*Pimelea octophylla*	200	Difficult
1	*E.fasciculosa*	Under	Q03844	*Austrostipa flavescens*	150	Easy
1	*E.fasciculosa*	Under	U00130	*Austrostipa mollis*	150	Easy
1	*E.fasciculosa*	Under	G02123	*Thomasia petalocalyx*	150	Difficult
1	*E.fasciculosa*	Under	G06231	*Anthosachne scabra*	100	Easy
1	*E.fasciculosa*	Under	Z02275	*Kunzea pomifera*	100	Easy
1	*E.fasciculosa*	Under	U01670	*Dillwynia hispida*	70	Easy
1	*E.fasciculosa*	Under	S02129	*Pimelea humilis*	50	Difficult
1	*E.fasciculosa*	Under	S00685	*Lomandra juncea*	40	Difficult
1	*E.fasciculosa*	Under	U00978	*Muehlenbeckia gunnii*	30	Easy

Appendix 3: *Eucalyptus cosmophylla +/- E. baxteri* woodland subgroup soils mapping and propagation list



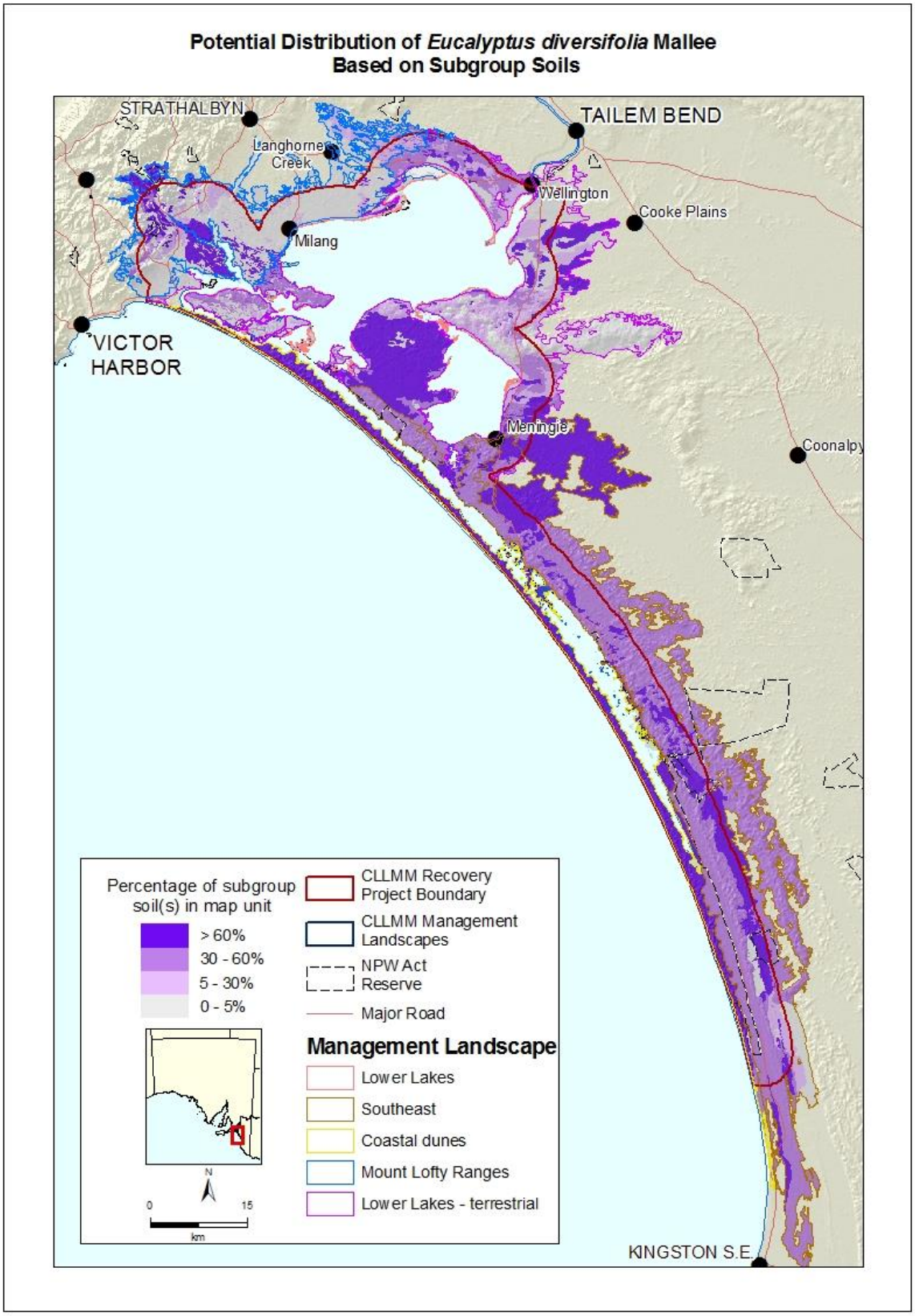
iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
2	*E.cosmophylla*	Over	M02214	*Eucalyptus baxteri*	1000	Easy
2	*E.cosmophylla*	Over	Z02223	*Eucalyptus cosmophylla*	1000	Easy
2	*E.cosmophylla*	Over	M02230	*Eucalyptus fasciculosa*	200	Easy
2	*E.cosmophylla*	Mid	W03635	*Allocasuarina striata*	500	Easy
2	*E.cosmophylla*	Mid	S04205	*Calytrix glaberrima*	500	Difficult
2	*E.cosmophylla*	Mid	Z02207	*Calytrix tetragona*	500	Difficult
2	*E.cosmophylla*	Mid	U00898	*Banksia ornata*	400	Easy
2	*E.cosmophylla*	Mid	K00921	*Hakea carinata*	400	Easy
2	*E.cosmophylla*	Mid	S04937	*Xanthorrhoea semiplana*	400	Easy
2	*E.cosmophylla*	Mid	K02281	*Leptospermum myrsinoides*	300	Easy
2	*E.cosmophylla*	Mid	Q00896	*Adenanthos terminalis*	200	Difficult
2	*E.cosmophylla*	Mid	Z00931	*Hakea rostrata*	150	Easy
2	*E.cosmophylla*	Mid	A03256	*Olearia ramulosa*	150	Easy
2	*E.cosmophylla*	Mid	C01605	*Acacia pycnantha*	100	Easy
2	*E.cosmophylla*	Mid	W01671	*Dillwynia sericea*	100	Easy
2	*E.cosmophylla*	Mid	U02058	*Spyridium thymifolium*	100	Difficult
2	*E.cosmophylla*	Mid	K06209	*Acacia myrtifolia*	50	Easy
2	*E.cosmophylla*	Under	S05869	*Correa reflexa var. reflexa*	1000	Difficult
2	*E.cosmophylla*	Under	K01765	*Pultenaea tenuifolia*	1000	Easy
2	*E.cosmophylla*	Under	E05870	*Correa reflexa var. scabridula*	900	Difficult
2	*E.cosmophylla*	Under	G01739	*Platylobium obtusangulum*	700	Easy
2	*E.cosmophylla*	Under	E01498	*Billardiera versicolor*	600	Difficult
2	*E.cosmophylla*	Under	A04920	*Boronia coerulescens*	400	Difficult
2	*E.cosmophylla*	Under	A00936	*Isopogon ceratophyllus*	300	Easy
2	*E.cosmophylla*	Under	U00130	*Austrostipa mollis*	150	Easy
2	*E.cosmophylla*	Under	G04827	*Dianella brevicaulis*	100	Easy
2	*E.cosmophylla*	Under	Y00680	*Lomandra densiflora*	100	Difficult
2	*E.cosmophylla*	Under	K01941	*Micrantheum demissum*	100	Difficult
2	*E.cosmophylla*	Under	A05836	*Rytidosperma carphoides*	100	Easy
2	*E.cosmophylla*	Under	S00685	*Lomandra juncea*	50	Difficult
2	*E.cosmophylla*	Under	S00165	*Rytidosperma caespitosum*	30	Easy

Appendix 4: Coastal shrublands subgroup soils mapping and propagation list



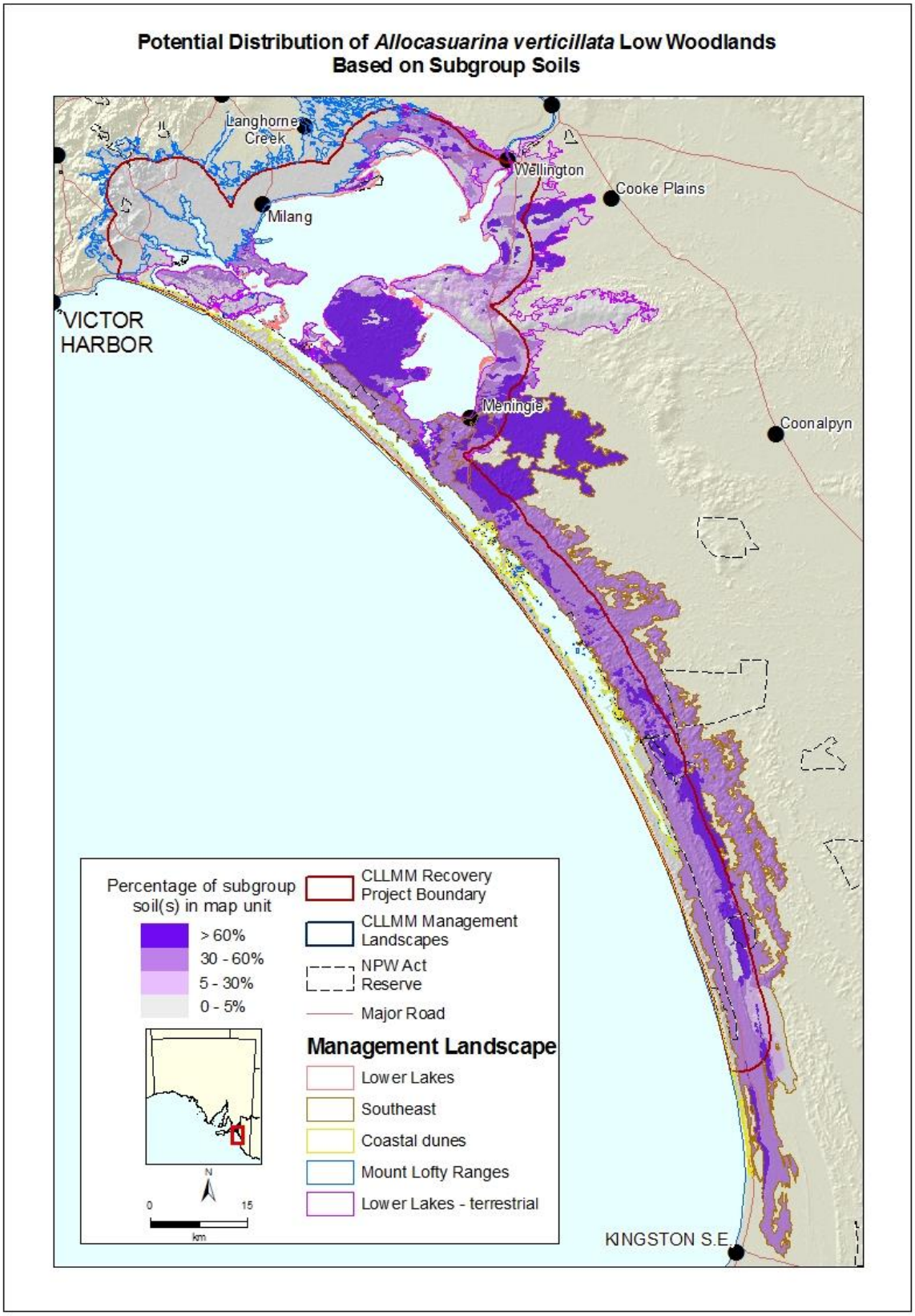
iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
3	Coastal	Over	A03636	*Allocasuarina verticillata*	200	Easy
3	Coastal	Over	K02805	*Myoporum insulare*	200	Easy
3	Coastal	Over	M05830	*Melaleuca lanceolata*	100	Easy
3	Coastal	Mid	Y02140	*Pimelea serpyllifolia* ssp. *serpyllifolia*	700	Difficult
3	Coastal	Mid	C01577	*Acacia leiophylla*	500	Easy
3	Coastal	Mid	C03477	*Rhagodia candolleana*	500	Easy
3	Coastal	Mid	C05237	*Acacia cupularis*	300	Easy
3	Coastal	Mid	K03753	*Acacia longifolia* ssp. *sophorae*	250	Easy
3	Coastal	Mid	M05718	Adriana quadripartita	250	Easy
3	Coastal	Mid	A01144	*Atriplex paludosa* ssp. *paludosa*	200	Easy
3	Coastal	Mid	K02117	*Lasiopetalum discolor*	200	Difficult
3	Coastal	Mid	M03234	*Olearia axillaris*	200	Easy
3	Coastal	Mid	G00947	*Exocarpos syrticola*	100	Difficult
3	Coastal	Mid	Y02432	*Leucopogon parviflorus*	100	Difficult
3	Coastal	Mid	K04781	*Dodonaea viscosa* ssp. *spatulata*	50	Easy
3	Coastal	Mid	C00945	*Exocarpos sparteus*	30	Difficult
3	Coastal	Under	G04827	*Dianella brevicaulis*	1000	Easy
3	Coastal	Under	A06360	*Billardiera cymosa* ssp. *cymosa*	500	Easy
3	Coastal	Under	K02989	*Leucophyta brownii*	300	Easy
3	Coastal	Under	M03710	*Poa poiformis var. poiformis*	300	Easy
3	Coastal	Under	W01151	*Atriplex semibaccata*	200	Easy
3	Coastal	Under	M00154	*Austrostipa stipoides*	200	Easy
3	Coastal	Under	Q06164	*Carpobrotus rossii*	200	Easy
3	Coastal	Under	M32150	*Clematis microphylla*	200	Easy
3	Coastal	Under	S05869	*Correa reflexa var. reflexa*	200	Difficult
3	Coastal	Under	E00230	*Distichlis distichophylla*	200	Easy
3	Coastal	Under	E01702	*Kennedia prostrata*	200	Easy
3	Coastal	Under	S05913	*Spinifex hirsutus*	200	Easy
3	Coastal	Under	E03638	*Tetragonia implexicoma*	150	Easy
3	Coastal	Under	K00577	*Ficinia nodosa*	100	Easy
3	Coastal	Under	M00974	*Muehlenbeckia adpressa*	100	Easy
3	Coastal	Under	U00978	*Muehlenbeckia gunnii*	100	Easy
3	Coastal	Under	G01879	Pelargonium australe	100	Easy
3	Coastal	Under	Q01504	*Enchylaena tomentosa*	70	Easy
3	Coastal	Under	C04893	*Dianella revoluta var. revoluta*	50	Easy
3	Coastal	Under	M01706	*Lotus australis*	50	Easy

Appendix 5: *Eucalyptus diversifolia* ssp. *diversifolia* mallee subgroup soils mapping and propagation list



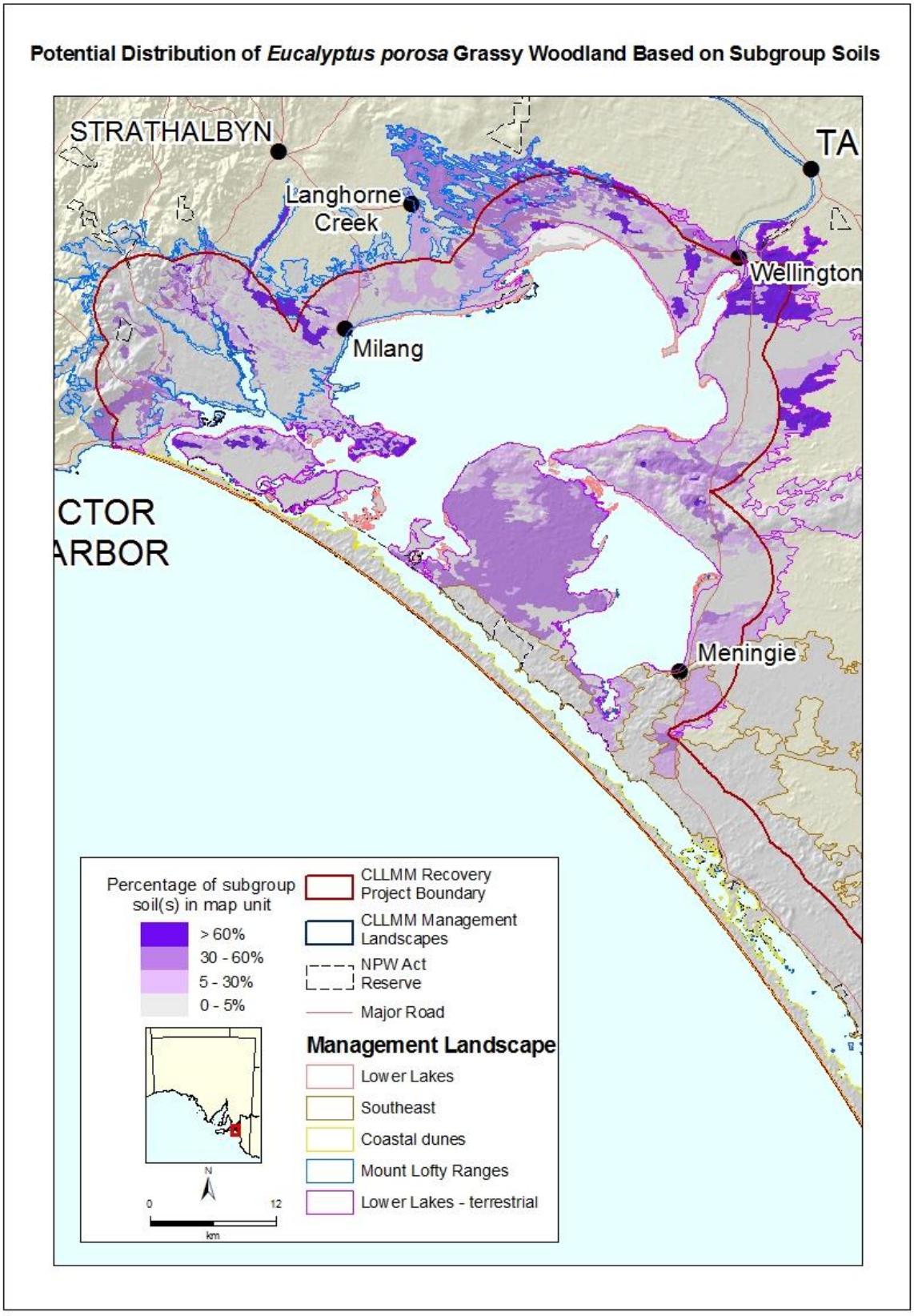
iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
4	*E.diversifolia*	Over	K02805	*Myoporum insulare*	800	Easy
4	*E.diversifolia*	Over	A03636	*Allocasuarina verticillata*	500	Easy
4	*E.diversifolia*	Over	M03382	*Callitris gracilis*	500	Easy
4	*E.diversifolia*	Over	Z05883	*Eucalyptus diversifolia* ssp. *diversifolia*	500	Easy
4	*E.diversifolia*	Over	Q02240	*Eucalyptus incrassata*	200	Easy
4	*E.diversifolia*	Over	M05830	*Melaleuca lanceolata*	30	Easy
4	*E.diversifolia*	Mid	U05006	*Xanthorrhoea caespitosa (if SE)*	1000	Easy
4	*E.diversifolia*	Mid	Y02140	*Pimelea serpyllifolia* ssp. *serpyllifolia*	700	Difficult
4	*E.diversifolia*	Mid	A04208	*Bursaria spinosa* ssp. *spinosa*	600	Easy
4	*E.diversifolia*	Mid	W00935	*Hakea vittata*	600	Easy
4	*E.diversifolia*	Mid	C01577	*Acacia leiophylla*	500	Easy
4	*E.diversifolia*	Mid	C01605	*Acacia pycnantha*	500	Easy
4	*E.diversifolia*	Mid	K04781	*Dodonaea viscosa* ssp. *spatulata*	500	Easy
4	*E.diversifolia*	Mid	Y05088	*Pomaderris paniculosa* ssp. *paniculosa*	500	Difficult
4	*E.diversifolia*	Mid	C03477	*Rhagodia candolleana*	400	Easy
4	*E.diversifolia*	Mid	K01545	*Acacia brachybotrya*	350	Easy
4	*E.diversifolia*	Mid	K06209	*Acacia myrtifolia*	300	Easy
4	*E.diversifolia*	Mid	S00897	*Banksia marginata*	300	Easy
4	*E.diversifolia*	Mid	K03753	*Acacia longifolia* ssp. *sophorae*	200	Easy
4	*E.diversifolia*	Mid	C00929	*Hakea mitchellii*	100	Easy
4	*E.diversifolia*	Mid	Y02432	*Leucopogon parviflorus*	100	Difficult
4	*E.diversifolia*	Mid	M03234	*Olearia axillaris*	100	Easy
4	*E.diversifolia*	Mid	S00941	*Choretrum glomeratum*	50	Difficult
4	*E.diversifolia*	Mid	Q01184	*Maireana brevifolia*	50	Easy
4	*E.diversifolia*	Mid	C00945	*Exocarpos sparteus*	30	Difficult
4	*E.diversifolia*	Under	C00133	*Austrostipa drummondii*	1000	Easy
4	*E.diversifolia*	Under	G04323	*Austrostipa pilata*	1000	Easy
4	*E.diversifolia*	Under	G04827	*Dianella brevicaulis*	1000	Easy
4	*E.diversifolia*	Under	K00517	*Gahnia deusta*	1000	Difficult
4	*E.diversifolia*	Under	S00165	*Rytidosperma caespitosum*	1000	Easy
4	*E.diversifolia*	Under	A06360	*Billardiera cymosa* ssp. *cymosa*	500	Easy
4	*E.diversifolia*	Under	C04893	*Dianella revoluta var. revoluta*	500	Easy
4	*E.diversifolia*	Under	G02115	*Lasiopetalum baueri*	500	Difficult
4	*E.diversifolia*	Under	G02123	*Thomasia petalocalyx*	500	Difficult
4	*E.diversifolia*	Under	S03157	*Helichrysum leucopsideum*	250	Easy
4	*E.diversifolia*	Under	Q06164	*Carpobrotus rossii*	200	Easy
4	*E.diversifolia*	Under	M32150	*Clematis microphylla*	200	Easy
4	*E.diversifolia*	Under	M00682	*Lomandra effusa*	200	Difficult
4	*E.diversifolia*	Under	Y00136	*Austrostipa elegantissima*	150	Easy
4	*E.diversifolia*	Under	K00577	*Ficinia nodosa*	100	Easy
4	*E.diversifolia*	Under	Z02275	*Kunzea pomifera*	100	Easy
4	*E.diversifolia*	Under	M00974	*Muehlenbeckia adpressa*	100	Easy
4	*E.diversifolia*	Under	U00978	*Muehlenbeckia gunnii*	100	Easy
4	*E.diversifolia*	Under	G00435	*Neurachne alopecuroidea*	100	Easy
4	*E.diversifolia*	Under	E03638	*Tetragonia implexicoma*	100	Easy
4	*E.diversifolia*	Under	Q01504	*Enchylaena tomentosa*	70	Easy
4	*E.diversifolia*	Under	A03352	*Vittadinia australasica var. australasica*	50	Easy

Appendix 6: *Allocasuarina verticillata* low woodlands subgroup soils mapping and propagation list



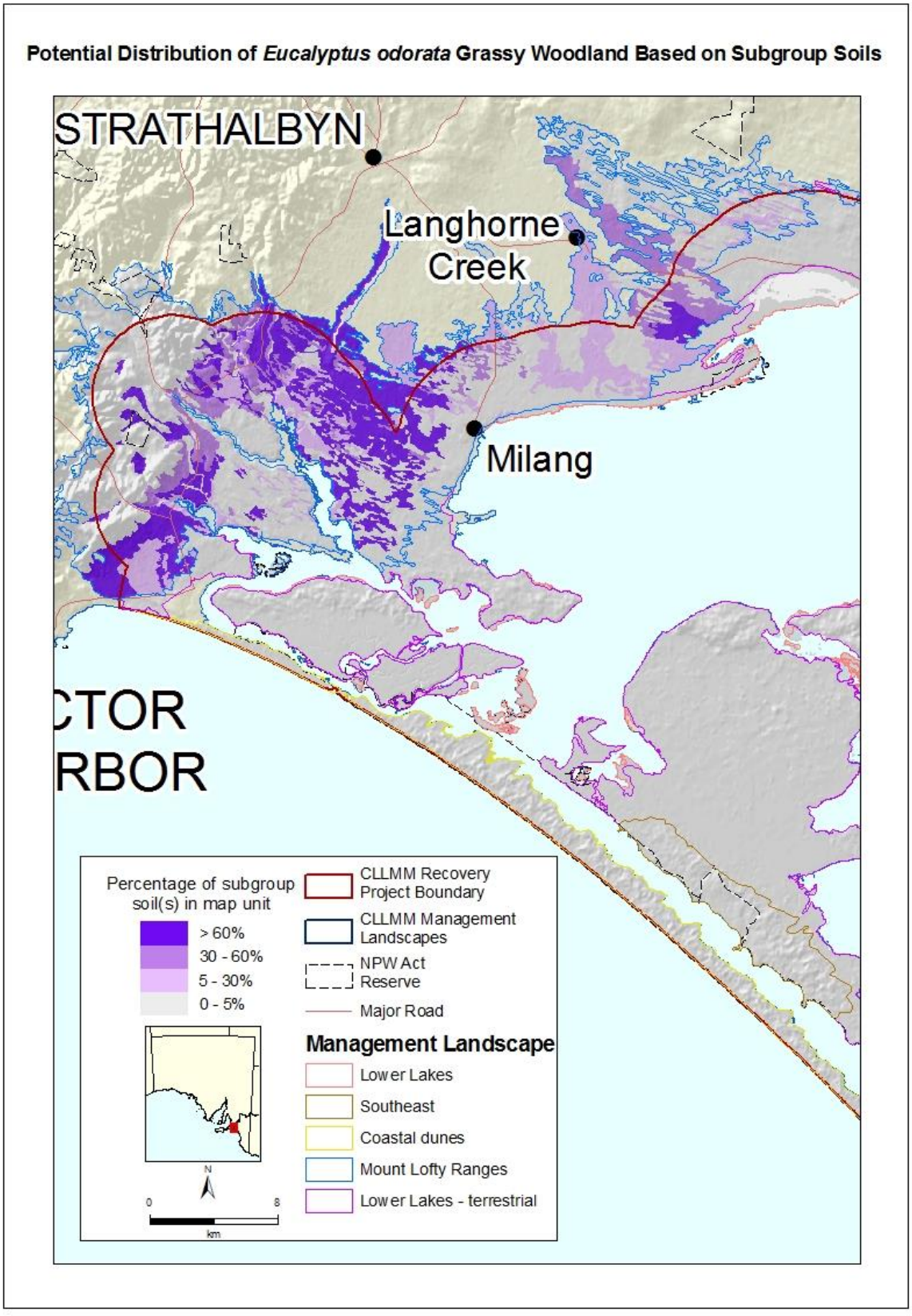
iEcoID	Ecosystem	Structure	NSX Code	*Species Name*	Plants Per Ha	Germination
5	*A.verticillata*	Over	K02805	*Myoporum insulare*	800	Easy
5	*A.verticillata*	Over	A03636	*Allocasuarina verticillata*	1000	Easy
5	*A.verticillata*	Over	M03382	*Callitris gracilis*	200	Easy
5	*A.verticillata*	Over	Z05883	*Eucalyptus diversifolia* ssp. *diversifolia*	50	Easy
5	*A.verticillata*	Over	A01508	*Pittosporum angustifolium*	50	Easy
5	*A.verticillata*	Over	M05830	*Melaleuca lanceolata*	200	Easy
5	*A.verticillata*	Mid	U05006	*Xanthorrhoea caespitosa (if SE)*	1000	Easy
5	*A.verticillata*	Mid	Y02140	*Pimelea serpyllifolia* ssp. *serpyllifolia*	700	Difficult
5	*A.verticillata*	Mid	C01605	*Acacia pycnantha*	600	Easy
5	*A.verticillata*	Mid	A04208	*Bursaria spinosa* ssp. *spinosa*	600	Easy
5	*A.verticillata*	Mid	C01577	*Acacia leiophylla*	500	Easy
5	*A.verticillata*	Mid	K04781	*Dodonaea viscosa* ssp. *spatulata*	500	Easy
5	*A.verticillata*	Mid	Y05088	*Pomaderris paniculosa* ssp. *paniculosa*	500	Difficult
5	*A.verticillata*	Mid	C03477	*Rhagodia candolleana*	400	Easy
5	*A.verticillata*	Mid	K01545	*Acacia brachybotrya*	350	Easy
5	*A.verticillata*	Mid	K06209	*Acacia myrtifolia*	300	Easy
5	*A.verticillata*	Mid	S00897	*Banksia marginata*	300	Easy
5	*A.verticillata*	Mid	K03753	*Acacia longifolia* ssp. *sophorae*	250	Easy
5	*A.verticillata*	Mid	C00929	*Hakea mitchellii*	100	Easy
5	*A.verticillata*	Mid	Y02432	*Leucopogon parviflorus*	100	Difficult
5	*A.verticillata*	Mid	M03234	*Olearia axillaris*	100	Easy
5	*A.verticillata*	Mid	C00945	*Exocarpos sparteus*	30	Difficult
5	*A.verticillata*	Under	C00133	*Austrostipa drummondii*	1000	Easy
5	*A.verticillata*	Under	G04323	*Austrostipa pilata*	1000	Easy
5	*A.verticillata*	Under	G04827	*Dianella brevicaulis*	1000	Easy
5	*A.verticillata*	Under	K00517	*Gahnia deusta*	1000	Difficult
5	*A.verticillata*	Under	Z02275	*Kunzea pomifera*	1000	Easy
5	*A.verticillata*	Under	S00165	*Rytidosperma caespitosum*	1000	Easy
5	*A.verticillata*	Under	A06360	*Billardiera cymosa* ssp. *cymosa*	500	Easy
5	*A.verticillata*	Under	C04893	*Dianella revoluta var. revoluta*	500	Easy
5	*A.verticillata*	Under	G02115	*Lasiopetalum baueri*	500	Difficult
5	*A.verticillata*	Under	G02123	*Thomasia petalocalyx*	500	Difficult
5	*A.verticillata*	Under	S03157	*Helichrysum leucopsideum*	250	Easy
5	*A.verticillata*	Under	M00682	*Lomandra effusa*	250	Difficult
5	*A.verticillata*	Under	Q06164	*Carpobrotus rossii*	200	Easy
5	*A.verticillata*	Under	M32150	*Clematis microphylla*	200	Easy
5	*A.verticillata*	Under	Y00136	*Austrostipa elegantissima*	150	Easy
5	*A.verticillata*	Under	E03638	*Tetragonia implexicoma*	150	Easy
5	*A.verticillata*	Under	K00577	*Ficinia nodosa*	100	Easy
5	*A.verticillata*	Under	M20114	*Lomandra micrantha* ssp.	100	Difficult
5	*A.verticillata*	Under	M00974	*Muehlenbeckia adpressa*	100	Easy
5	*A.verticillata*	Under	U00978	*Muehlenbeckia gunnii*	100	Easy
5	*A.verticillata*	Under	G00435	*Neurachne alopecuroidea*	100	Easy
5	*A.verticillata*	Under	Q01504	*Enchylaena tomentosa*	70	Easy
5	*A.verticillata*	Under	A03352	*Vittadinia australasica var. australasica*	50	Easy

Appendix 7: *Eucalyptus porosa* grassy woodland subgroup soils mapping and propagation list



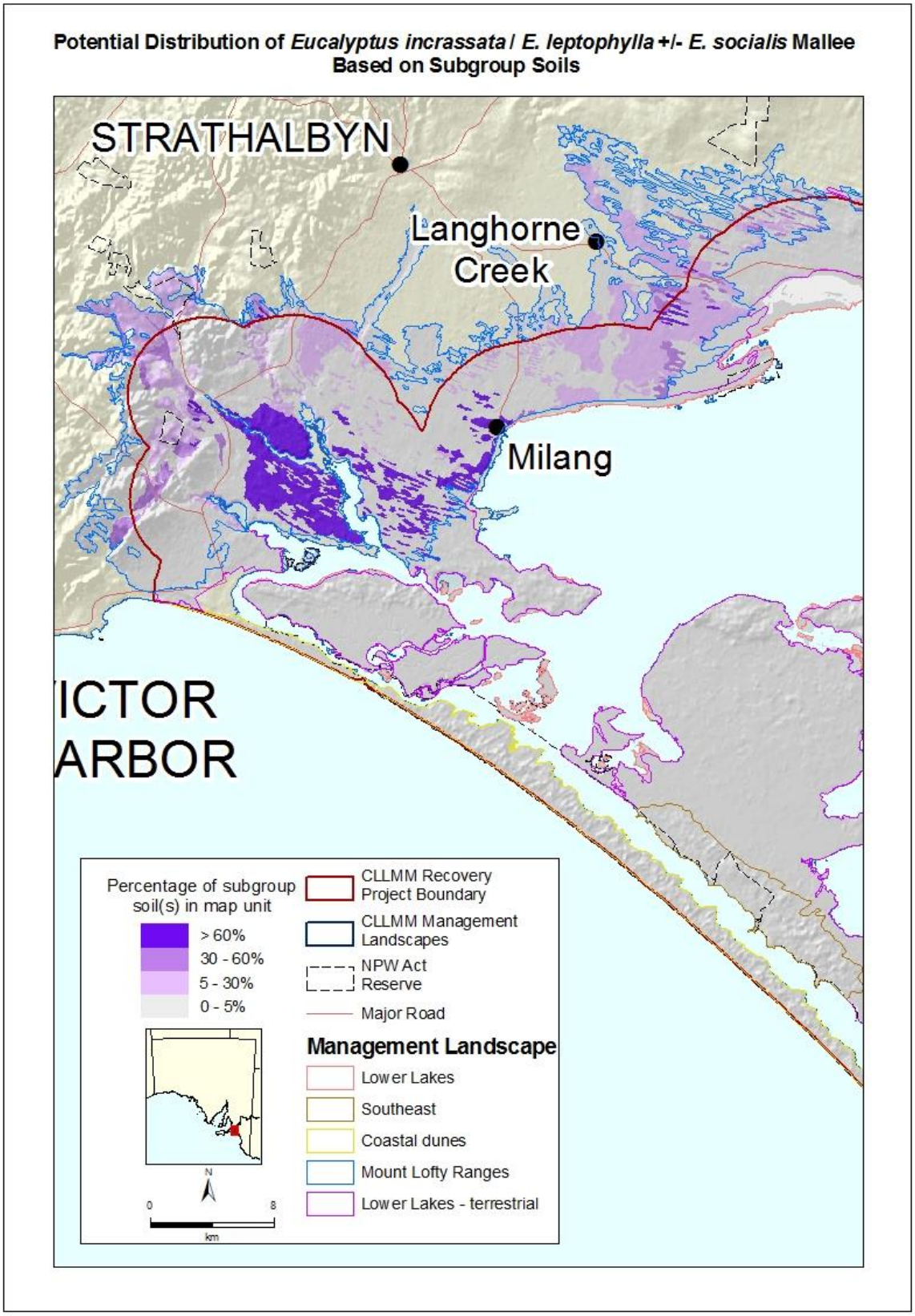
iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
6.1	*E.porosa*	Over	C02261	*Eucalyptus porosa*	500	Easy
6.1	*E.porosa*	Over	M03382	*Callitris gracilis*	200	Easy
6.1	*E.porosa*	Over	A03636	*Allocasuarina verticillata*	100	Easy
6.1	*E.porosa*	Over	Z05883	*Eucalyptus diversifolia*	100	Easy
6.1	*E.porosa*	Over	M05830	*Melaleuca lanceolata*	100	Easy
6.1	*E.porosa*	Over	K02805	*Myoporum insulare*	100	Easy
6.1	*E.porosa*	Over	U32402	*Eucalyptus odorata*	50	Easy
6.1	*E.porosa*	Mid	Y02140	*Pimelea serpyllifolia*	700	Difficult
6.1	*E.porosa*	Mid	A04208	*Bursaria spinosa* ssp. *spinosa*	600	Easy
6.1	*E.porosa*	Mid	C01605	*Acacia pycnantha*	500	Easy
6.1	*E.porosa*	Mid	Z02207	*Calytrix tetragona*	500	Difficult
6.1	*E.porosa*	Mid	Y05088	*Pomaderris paniculosa*	500	Difficult
6.1	*E.porosa*	Mid	K06209	*Acacia myrtifolia*	300	Easy
6.1	*E.porosa*	Mid	S00897	*Banksia marginata*	300	Easy
6.1	*E.porosa*	Mid	G03655	*Daviesia benthamii* ssp. *humilis*	200	Easy
6.1	*E.porosa*	Mid	M01598	*Acacia paradoxa*	130	Easy
6.1	*E.porosa*	Mid	K04781	*Dodonaea viscosa* ssp. *spatulata*	130	Easy
6.1	E.porosa	Mid	K02281	*Leptospermum myrsinoides*	100	Easy
6.1	*E.porosa*	Mid	A03256	*Olearia ramulosa*	100	Easy
6.1	*E.porosa*	Mid	C03477	*Rhagodia candolleana*	100	Easy
6.1	*E.porosa*	Mid	M01618	*Acacia spinescens*	40	Easy
6.1	*E.porosa*	Under	C00133	*Austrostipa drummondii*	1000	Easy
6.1	*E.porosa*	Under	S00165	*Rytidosperma caespitosum*	1000	Easy
6.1	*E.porosa*	Under	A06360	*Billardiera cymosa* ssp. *cymosa*	500	Easy
6.1	*E.porosa*	Under	C04893	*Dianella revoluta var. revoluta*	500	Easy
6.1	*E.porosa*	Under	Y03348	*Vittadinia cuneata var. cuneata*	500	Easy
6.1	*E.porosa*	Under	G04827	*Dianella brevicaulis*	300	Easy
6.1	*E.porosa*	Under	M00682	*Lomandra effusa*	250	Difficult
6.1	*E.porosa*	Under	Q06164	*Carpobrotus rossii*	200	Easy
6.1	*E.porosa*	Under	M32150	*Clematis microphylla*	200	Easy
6.1	*E.porosa*	Under	Q01504	*Enchylaena tomentosa*	200	Easy
6.1	*E.porosa*	Under	Y00136	*Austrostipa elegantissima*	150	Easy
6.1	*E.porosa*	Under	Q03844	*Austrostipa flavescens*	150	Easy
6.1	*E.porosa*	Under	G02123	*Thomasia petalocalyx*	150	Difficult
6.1	*E.porosa*	Under	K00577	*Ficinia nodosa*	100	Easy
6.1	*E.porosa*	Under	G02115	*Lasiopetalum baueri*	100	Difficult
6.1	*E.porosa*	Under	M20114	*Lomandra micrantha* ssp.	100	Difficult
6.1	*E.porosa*	Under	M00974	*Muehlenbeckia adpressa*	100	Easy
6.1	*E.porosa*	Under	U00978	*Muehlenbeckia gunnii*	100	Easy

Appendix 8: *Eucalyptus odorata* woodland subgroup soils mapping and propagation list



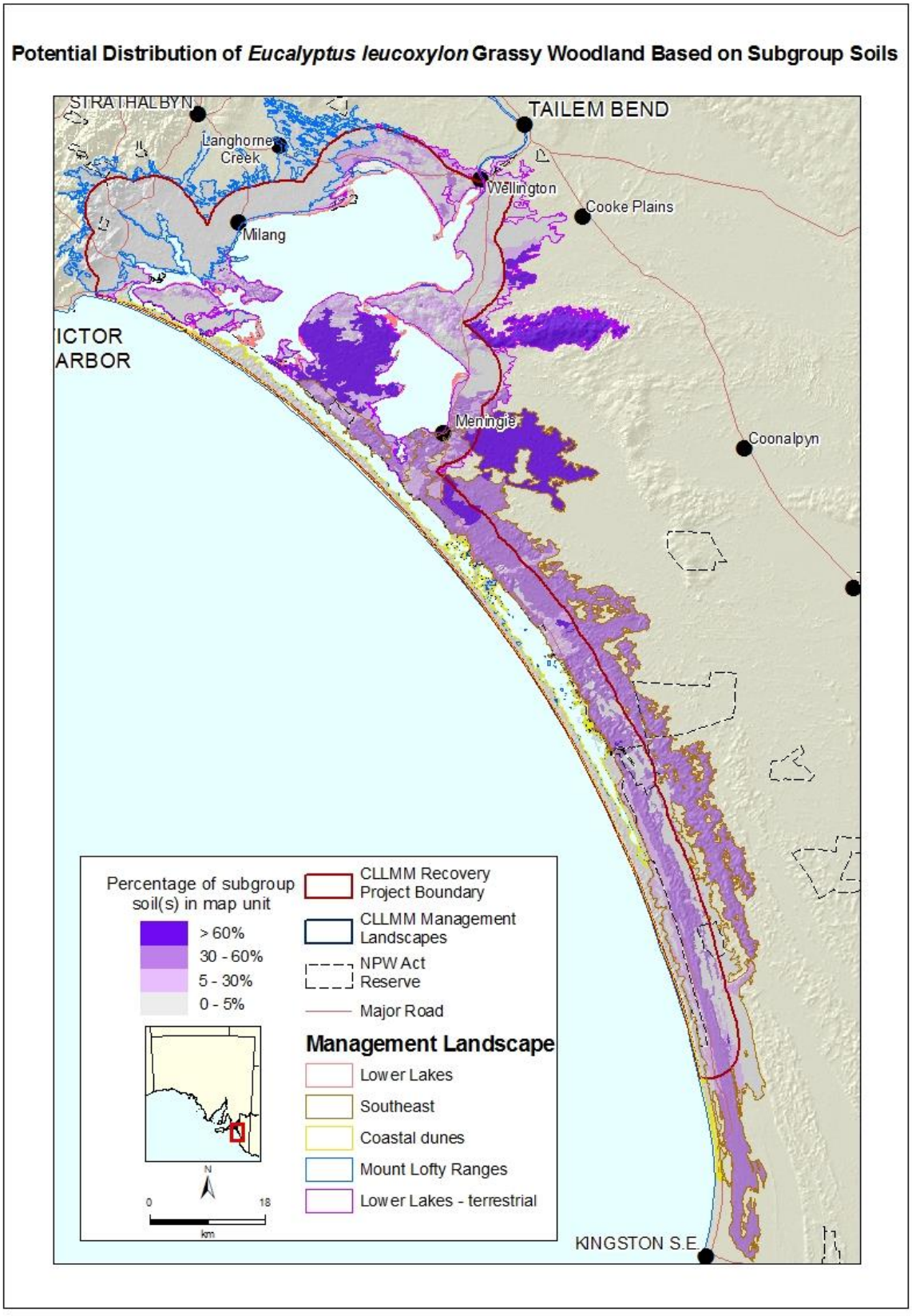
iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
6.2	*E.odorata*	Over	U32402	*Eucalyptus odorata*	800	Easy
6.2	*E.odorata*	Mid	W02007	*Dodonaea baueri*	700	Easy
6.2	*E.odorata*	Mid	C01605	*Acacia pycnantha*	500	Easy
6.2	*E.odorata*	Mid	G03655	*Daviesia benthamii* ssp. *humilis*	200	Easy
6.2	*E.odorata*	Mid	Q04432	*Olearia pannosa* ssp. *pannosa*	200	Easy
6.2	*E.odorata*	Mid	A03256	*Olearia ramulosa*	200	Easy
6.2	*E.odorata*	Mid	K05961	*Grevillea ilicifolia* ssp. *ilicifolia*	70	Difficult
6.2	E.odorata	Mid	E05986	*Melaleuca uncinata*	50	Easy
6.2	*E.odorata*	Mid	Z02055	*Spyridium phylicoides*	30	Difficult
6.2	*E.odorata*	Under	M04730	*Lomandra multiflora* ssp. *dura*	700	Difficult
6.2	*E.odorata*	Under	E01674	*Eutaxia microphylla*	600	Easy
6.2	*E.odorata*	Under	C04893	*Dianella revoluta var. revoluta*	500	Easy
6.2	*E.odorata*	Under	Y03348	*Vittadinia cuneata var. cuneata*	500	Easy
6.2	*E.odorata*	Under	G02115	*Lasiopetalum baueri*	100	Difficult
6.2	*E.odorata*	Under	Q01504	*Enchylaena tomentosa*	50	Easy
6.2	*E.odorata*	Under	C00177	*Rytidosperma setaceum*	50	Easy
6.2	*E.odorata*	Under	W01151	*Atriplex semibaccata*	30	Easy
6.2	*E.odorata*	Under	Z03983	*Chenopodium desertorum* ssp. *microphyllum*	30	Easy
6.2	*E.odorata*	Under	G04827	*Dianella brevicaulis*	30	Easy

Appendix 9: *Eucalyptus incrassata/ E. leptophylla* +/- *E. socialis* mallee subgroup soils mapping and propagation list

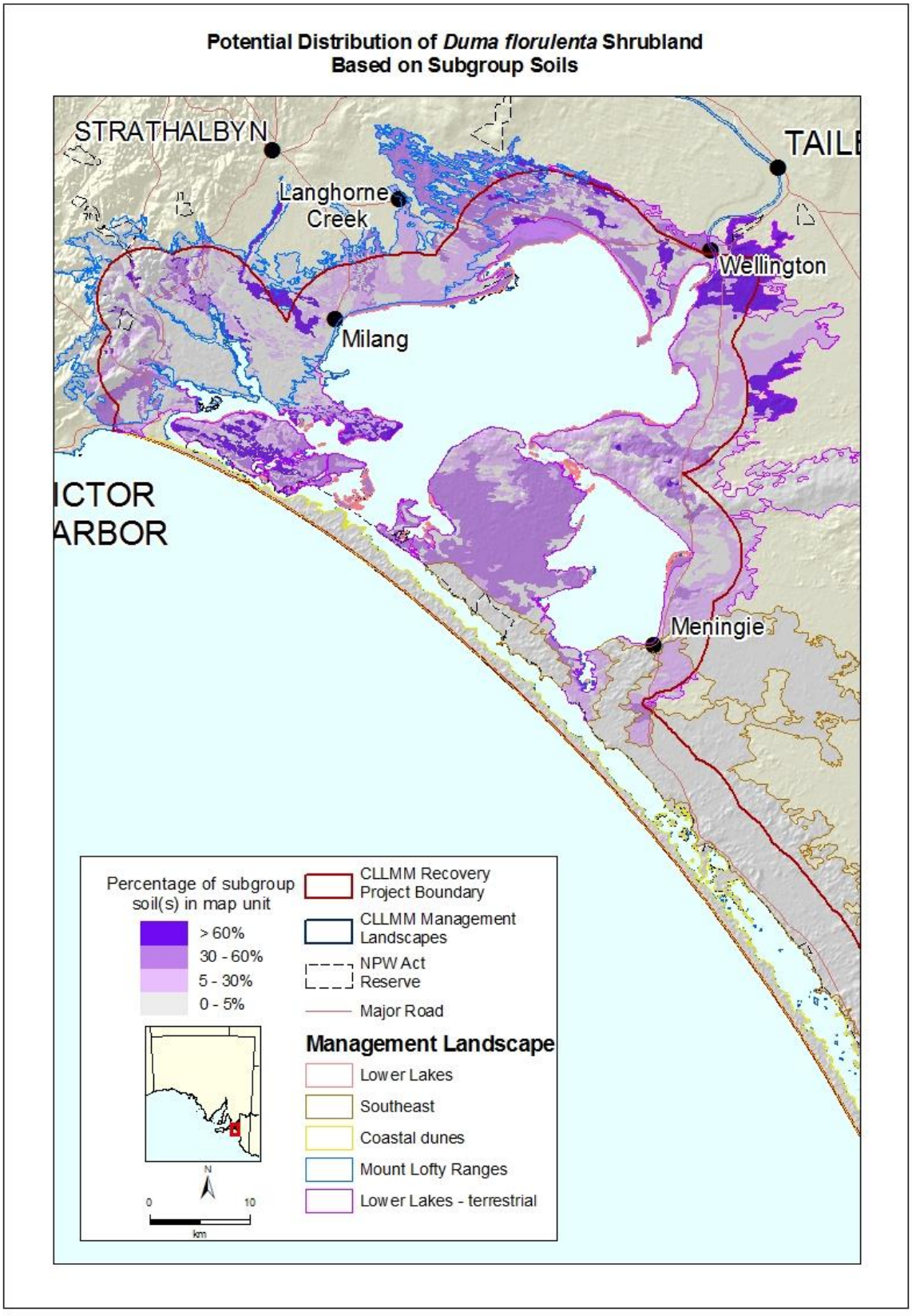


iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
6.3	*E.incrassata*	Over	E05978	*Eucalyptus socialis*	700	Easy
6.3	*E.incrassata*	Over	G32395	*Eucalyptus leptophylla*	600	Easy
6.3	*E.incrassata*	Over	Q02240	*Eucalyptus incrassata*	500	Easy
6.3	*E.incrassata*	Over	M03382	*Callitris gracilis*	400	Easy
6.3	*E.incrassata*	Over	M05830	*Melaleuca lanceolata*	300	Easy
6.3	*E.incrassata*	Over	E05686	*Eucalyptus phenax* ssp. *phenax*	70	Easy
6.3	*E.incrassata*	Over	M02230	*Eucalyptus fasciculosa*	30	Easy
6.3	*E.incrassata*	Mid	A04208	*Bursaria spinosa* ssp. *spinosa*	600	Easy
6.3	*E.incrassata*	Mid	A00520	*Gahnia lanigera*	500	Difficult
6.3	*E.incrassata*	Mid	Q02276	*Leptospermum coriaceum*	500	Easy
6.3	*E.incrassata*	Mid	E05986	*Melaleuca uncinata* (dune habitat)	500	Easy
6.3	*E.incrassata*	Mid	S01221	*Rhagodia crassifolia*	350	Easy
6.3	*E.incrassata*	Mid	Q01572	*Acacia hakeoides*	250	Easy
6.3	*E.incrassata*	Mid	Z02207	*Calytrix tetragona*	200	Difficult
6.3	*E.incrassata*	Mid	E01982	*Phebalium bullatum*	180	Difficult
6.3	*E.incrassata*	Mid	C05985	*Acacia euthycarpa*	100	Easy
6.3	*E.incrassata*	Mid	G01587	*Acacia microcarpa*	100	Easy
6.3	*E.incrassata*	Mid	Q03632	*Allocasuarina pusilla*	100	Easy
6.3	*E.incrassata*	Mid	C01605	*Acacia pycnantha*	70	Easy
6.3	*E.incrassata*	Mid	M01618	*Acacia spinescens*	70	Easy
6.3	*E.incrassata*	Mid	U02198	*Baeckea crassifolia*	70	Easy
6.3	*E.incrassata*	Mid	S02613	*Prostanthera aspalathoides*	70	Difficult
6.3	*E.incrassata*	Mid	A02148	*Hybanthus floribundus* ssp. *floribundus*	50	Difficult
6.3	*E.incrassata*	Mid	S03237	*Olearia ciliata var. ciliata*	50	Easy
6.3	*E.incrassata*	Mid	S02285	*Melaleuca acuminata* ssp. *acuminata*	30	Easy
6.3	*E.incrassata*	Under	M00682	*Lomandra effusa*	1000	Difficult
6.3	*E.incrassata*	Under	S00685	*Lomandra juncea*	1000	Difficult
6.3	*E.incrassata*	Under	G00435	*Neurachne alopecuroidea*	1000	Easy
6.3	*E.incrassata*	Under	C04893	*Dianella revoluta var. revoluta*	500	Easy
6.3	*E.incrassata*	Under	C02325	*Glischrocaryon behrii*	300	Difficult
6.3	*E.incrassata*	Under	M02142	*Pimelea stricta*	300	Difficult
6.3	*E.incrassata*	Under	K00593	*Hypolaena fastigiata*	250	Difficult
6.3	*E.incrassata*	Under	U00686	*Lomandra leucocephala* ssp. *robusta*	250	Difficult
6.3	*E.incrassata*	Under	M02866	*Dampiera rosmarinifolia*	200	Difficult
6.3	*E.incrassata*	Under	A06360	*Billardiera cymosa* ssp. *cymosa*	100	Easy
6.3	*E.incrassata*	Under	A04920	*Boronia coerulescens*	100	Difficult
6.3	*E.incrassata*	Under	Q02568	*Halgania cyanea*	100	Difficult
6.3	*E.incrassata*	Under	M00594	*Lepidobolus drapetocoleus*	100	Difficult
6.3	*E.incrassata*	Under	U04874	*Lomandra collina*	100	Difficult
6.3	*E.incrassata*	Under	U03782	*Pimelea flava* ssp. *dichotoma*	100	Difficult
6.3	*E.incrassata*	Under	Q04936	*Thysanotus patersonii*	100	Easy
6.3	*E.incrassata*	Under	G04827	*Dianella brevicaulis*	70	Easy
6.3	E.incrassata	Under	U01670	*Dillwynia hispida*	50	Easy
6.3	*E.incrassata*	Under	M32150	*Clematis microphylla*	30	Easy

Appendix 10: *Eucalyptus leucoxylon* ssp. *leucoxylon* woodland subgroup soils mapping and propagation list



Appendix 11: *Duma florulenta* shrubland subgroup soils mapping and propagation list

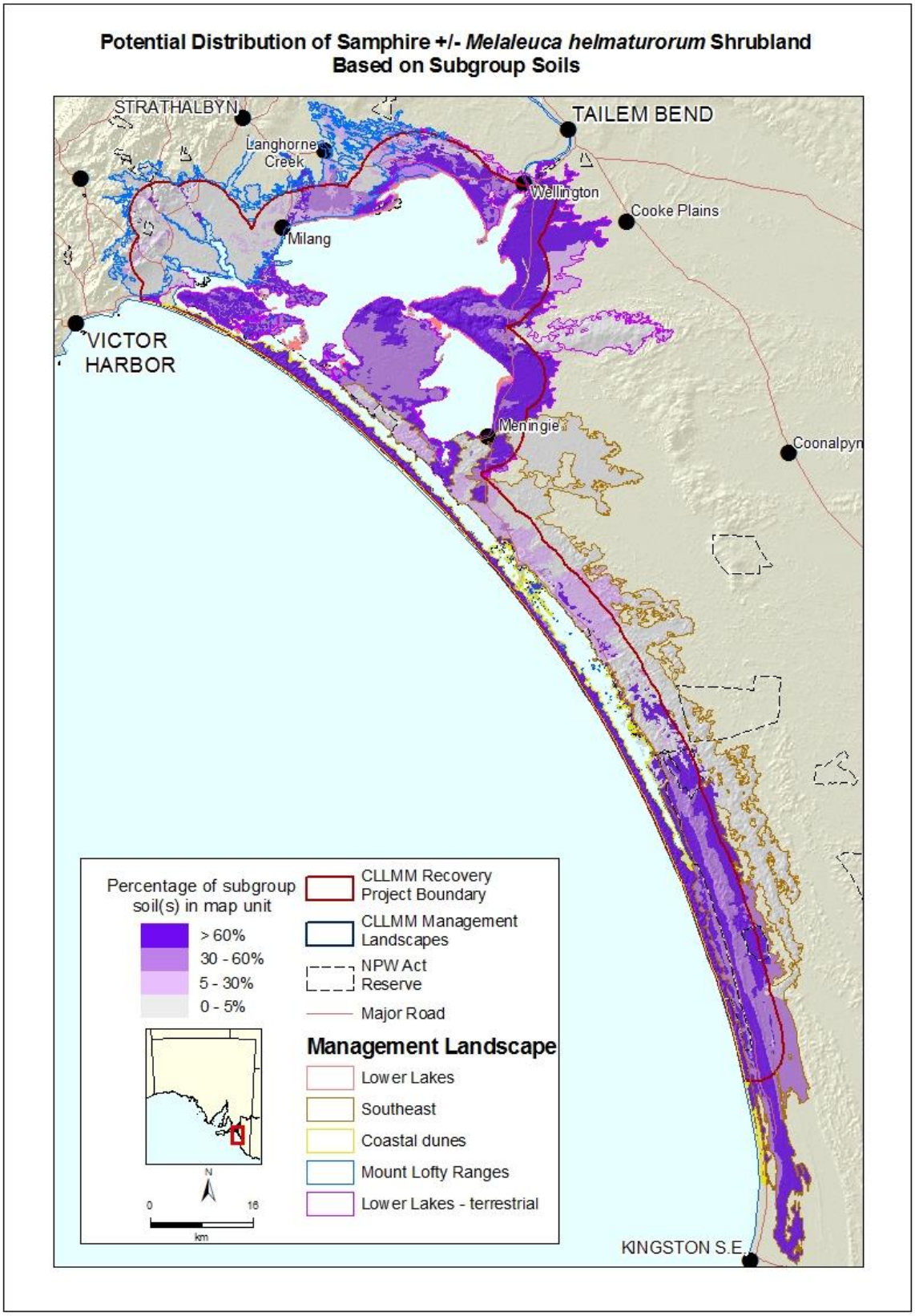


iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
6.4	*E.leucoxylon*	Over	E05342	*Eucalyptus leucoxylon* ssp. *leucoxylon*	200	Easy
6.4	*E.leucoxylon*	Mid	C01605	*Acacia pycnantha*	500	Easy
6.4	*E.leucoxylon*	Mid	A04208	*Bursaria spinosa* ssp. *spinosa*	500	Easy
6.4	*E.leucoxylon*	Mid	M01598	*Acacia paradoxa*	200	Easy
6.4	*E.leucoxylon*	Mid	K01561	*Acacia dodonaeifolia*	100	Easy
6.4	*E.leucoxylon*	Mid	A03256	*Olearia ramulosa*	100	Easy
6.4	*E.leucoxylon*	Under	K00197	*Aristida behriana*	1000	Easy
6.4	*E.leucoxylon*	Under	S02129	*Pimelea humilis*	1000	Difficult
6.4	*E.leucoxylon*	Under	W04875	*Lomandra nana*	100	Difficult
6.4	*E.leucoxylon*	Under	U04890	*Microlaena stipoides var. stipoides* (wet areas)	100	Easy

iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
7	Freshwater	Over	U00570	*Schoenoplectus validus*	20000	Easy

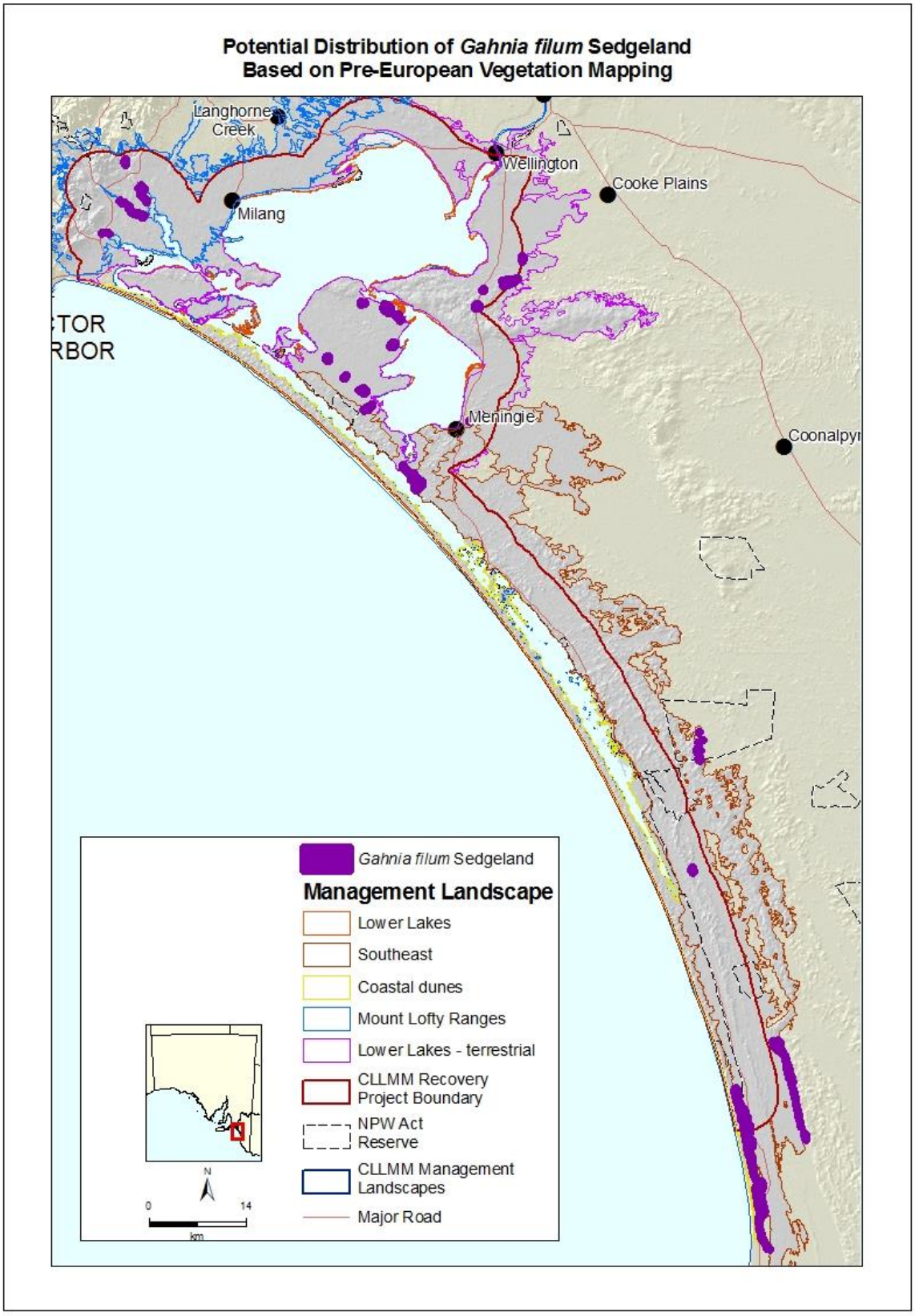
iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
8	*D.florulenta*	Over	Q32144	*Eucalyptus camaldulensis* ssp. *camaldulensis*	500	Easy
8	*D.florulenta*	Mid	Q00976	*Duma florulenta*	1000	Difficult
8	*D.florulenta*	Mid	G01155	*Atriplex suberecta*	50	Easy
8	*D.florulenta*	Under	Y00576	*Bolboschoenus caldwellii*	1000	Easy
8	*D.florulenta*	Under	M00462	*Carex appressa*	1000	Easy
8	*D.florulenta*	Under	W00503	*Eleocharis acuta*	1000	Easy
8	*D.florulenta*	Under	M00630	*Juncus kraussii*	1000	Easy
8	*D.florulenta*	Under	Z00251	*Poa labillardieri var. labillardieri*	50	Easy

Appendix 12: Samphire +/- *Melaleuca halmaturorum* shrubland subgroup soils mapping and propagation list

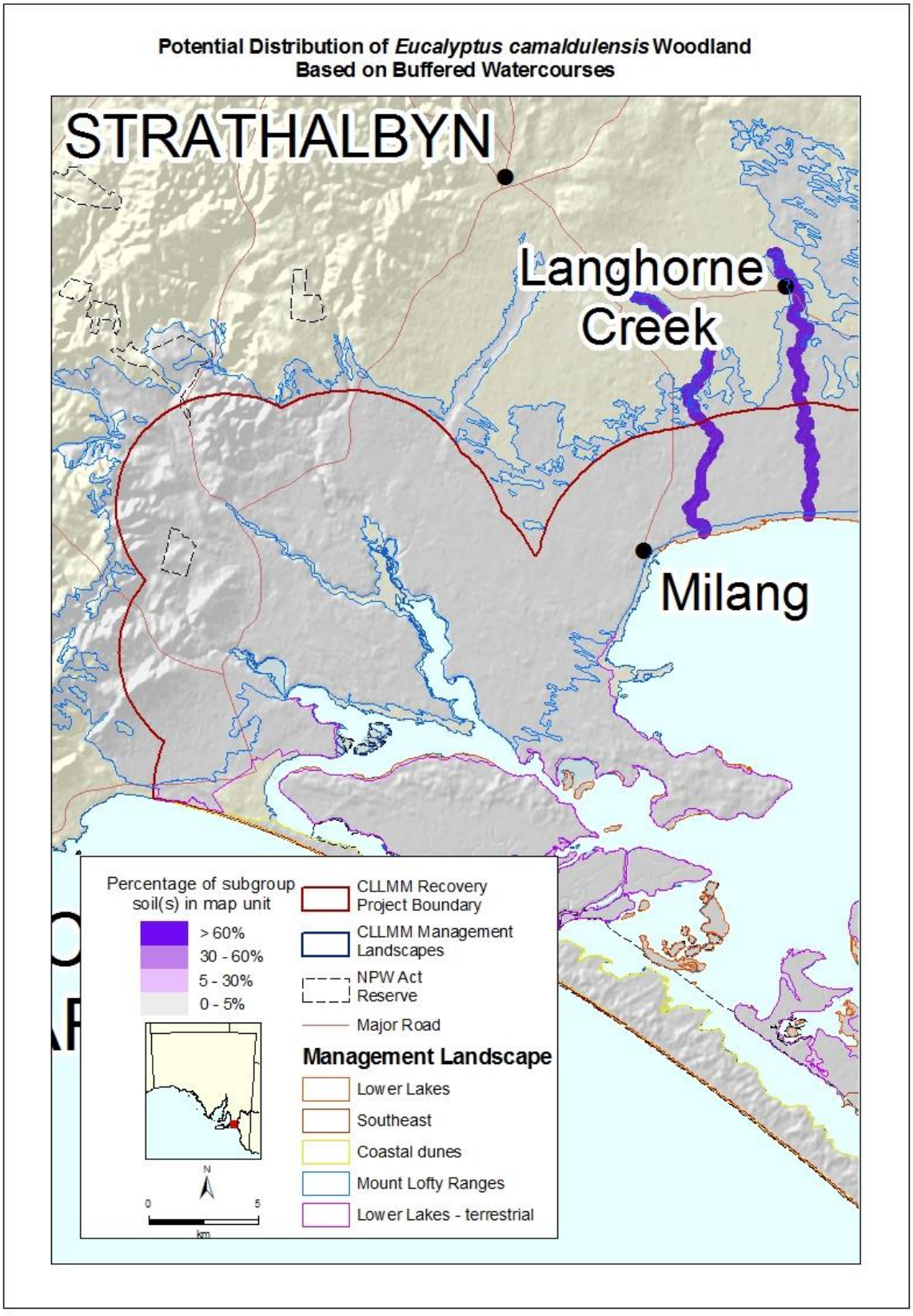


iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
9	Samphire	Over	S02293	*Melaleuca halmaturorum* (samphire edge)	1000	Easy
9	Samphire	Mid	G01199	*Maireana oppositifolia*	500	Easy
9	Samphire	Mid	A01144	*Atriplex paludosa* ssp. *paludosa*	100	Easy
9	Samphire	Mid	K02089	*Lawrencia spicata*	100	Difficult
9	Samphire	Under	E04886	*Disphyma crassifolium* ssp. *clavellatum*	1000	Easy
9	Samphire	Under	Q20088	*Frankenia pauciflora*	1000	Easy
9	Samphire	Under	A32164	*Puccinellia stricta*	1000	Easy
9	Samphire	Under	S02445	*Samolus repens*	1000	Difficult
9	Samphire	Under	E01518	*Sarcocornia quinqueflora*	1000	Easy
9	Samphire	Under	A01268	*Suaeda australis*	1000	Easy
9	Samphire	Under	S01117	*Tecticornia arbuscula* (tidal channels)	1000	Easy
9	Samphire	Under	U01118	*Tecticornia halocnemoides* ssp. *halocnemoides*	1000	Easy
9	Samphire	Under	Z02531	*Wilsonia backhousei*	1000	Difficult
9	Samphire	Under	Y00576	*Bolboschoenus caldwellii* (freshwater areas)	500	Easy
9	Samphire	Under	S02533	*Wilsonia rotundifolia*	300	Difficult
9	Samphire	Under	M01270	*Threlkeldia diffusa*	250	Easy
9	Samphire	Under	A04876	*Wilsonia humilis*	180	Easy
9	Samphire	Under	M00518	*Gahnia filum* (freshwater areas)	100	Difficult
9	Samphire	Under	M02726	*Mimulus repens* (freshwater areas)	100	Easy

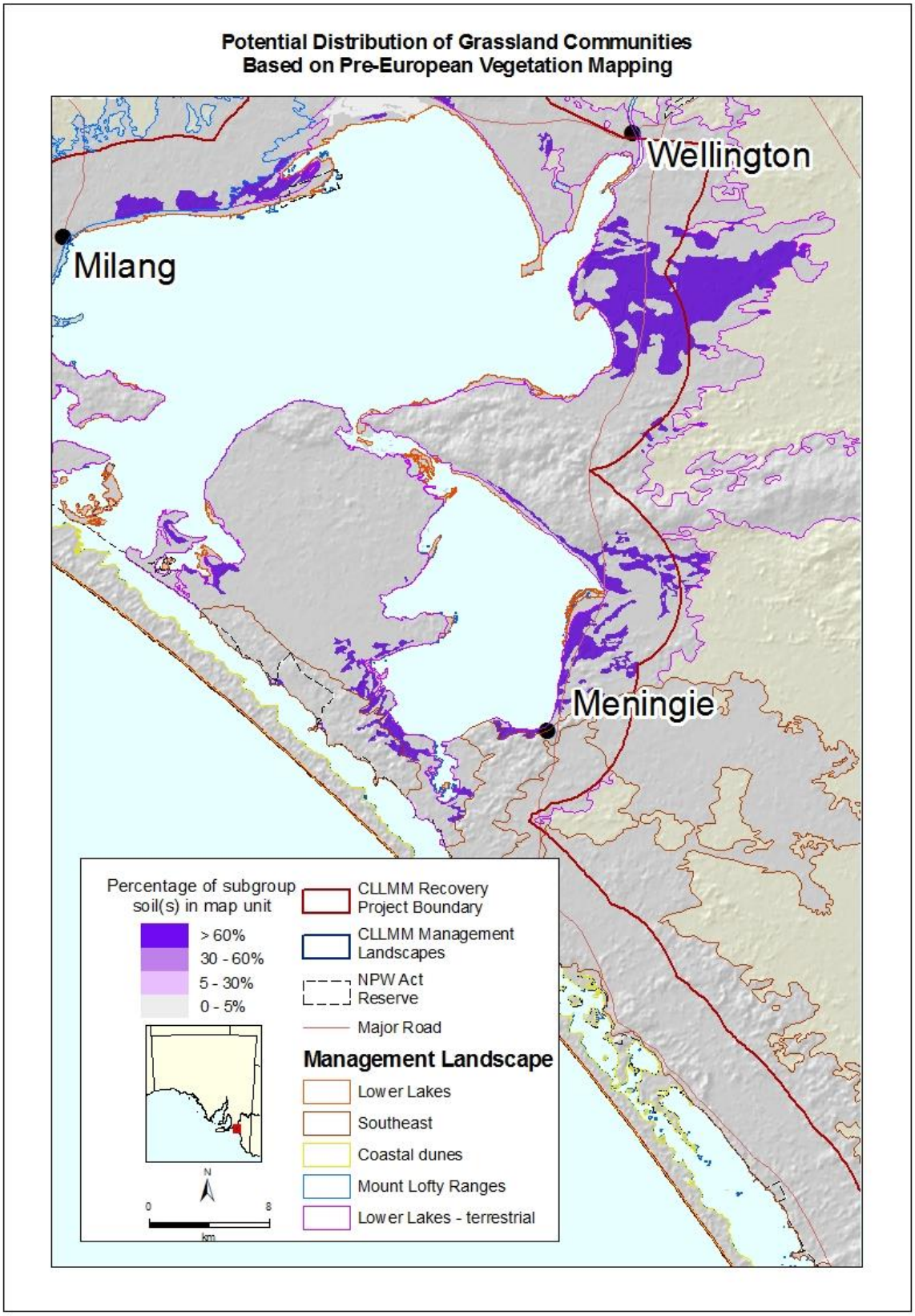
Appendix 13: *Gahnia filum* sedgeland pre-European mapping and propagation list



Appendix 14: *Eucalyptus camaldulensis* woodland subgroup soils mapping and propagation list



Appendix 15: Grassland community subgroup soils mapping and propagation list

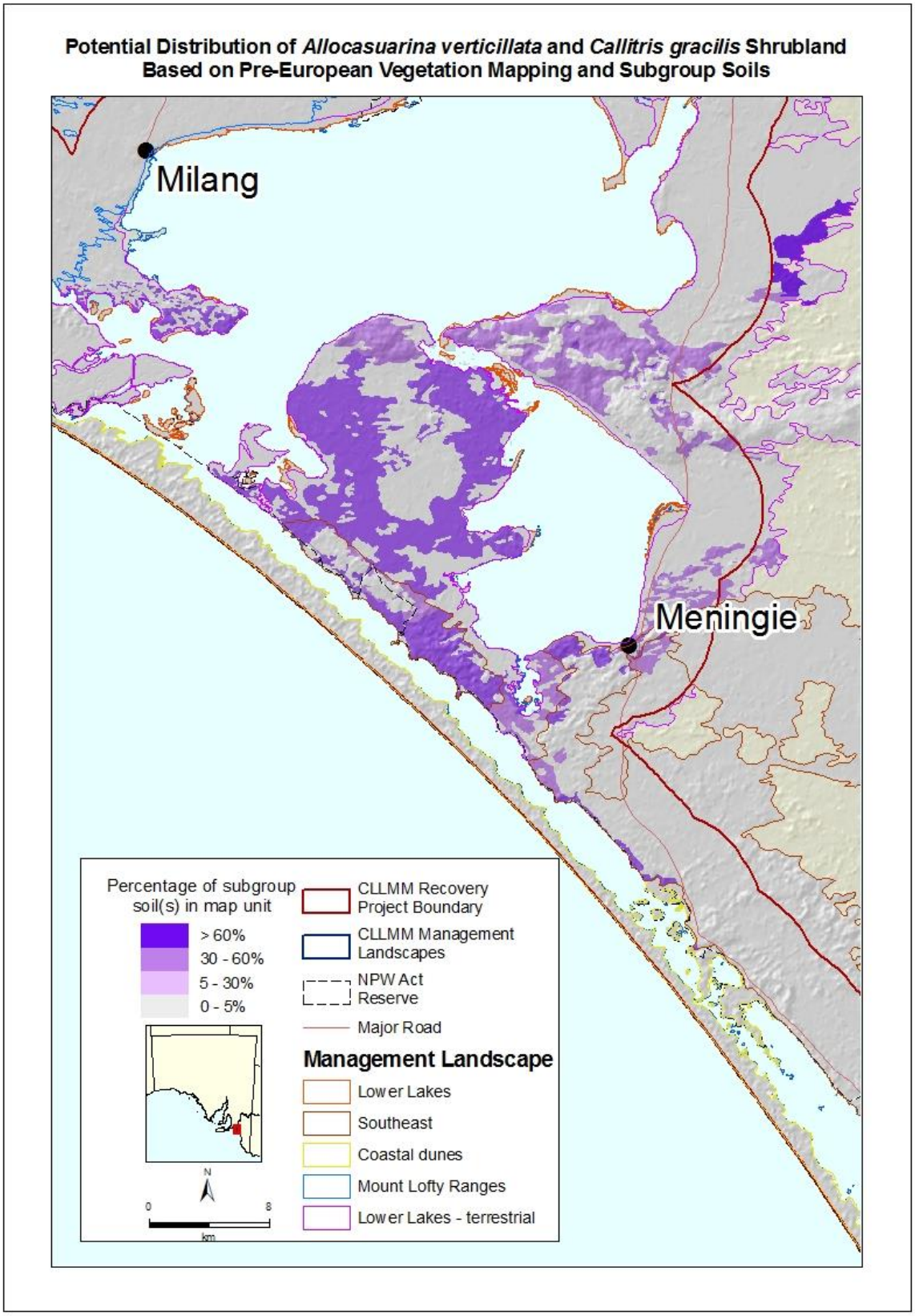


iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
10.1	*G.filum*	Mid	A01144	*Atriplex paludosa* ssp. *paludosa*	100	Easy
10.1	*G.filum*	Mid	K02089	*Lawrencia spicata*	100	Difficult
10.1	*G.filum*	Mid	G01155	*Atriplex suberecta*	50	Easy
10.1	*G.filum*	Under	E04886	*Disphyma crassifolium* ssp. *clavellatum*	1000	Easy
10.1	*G.filum*	Under	M00518	*Gahnia filum*	1000	Difficult
10.1	*G.filum*	Under	A32164	*Puccinellia stricta*	1000	Easy
10.1	*G.filum*	Under	S02445	*Samolus repens*	1000	Difficult
10.1	*G.filum*	Under	A01268	*Suaeda australis*	1000	Easy
10.1	*G.filum*	Under	Z02531	*Wilsonia backhousei*	1000	Difficult
10.1	*G.filum*	Under	S02533	*Wilsonia rotundifolia*	300	Difficult
10.1	*G.filum*	Under	M01270	*Threlkeldia diffusa*	250	Easy
10.1	*G.filum*	Under	A04876	*Wilsonia humilis*	180	Easy
10.1	*G.filum*	Under	M02726	*Mimulus repens*	100	Easy
10.1	*G.filum*	Under	Z00251	*Poa labillardieri var. labillardieri*	50	Easy

iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
10.2	*E.camaldulensis*	Over	Q32144	*Eucalyptus camaldulensis* ssp. *camaldulensis*	500	Easy
10.2	*E.camaldulensis*	Mid	Q00976	*Duma florulenta*	1000	Difficult
10.2	*E.camaldulensis*	Mid	M05426	*Acacia provincialis*	500	Easy
10.2	*E.camaldulensis*	Mid	C04533	*Callistemon rugulosus*	200	Easy
10.2	*E.camaldulensis*	Mid	E04534	*Callistemon sieberi*	200	Easy
10.2	*E.camaldulensis*	Mid	K05109	*Leptospermum continentale*	200	Easy
10.2	*E.camaldulensis*	Mid	Y02280	*Leptospermum lanigerum*	200	Easy
10.2	*E.camaldulensis*	Under	M00462	*Carex appressa*	1000	Easy
10.2	*E.camaldulensis*	Under	W00503	*Eleocharis acuta*	1000	Easy
10.2	*E.camaldulensis*	Under	G00523	*Gahnia trifida*	500	Difficult
10.2	*E.camaldulensis*	Under	M00630	*Juncus kraussii*	500	Easy
10.2	*E.camaldulensis*	Under	W00491	*Cyperus gymnocaulos*	500	Easy
10.2	*E.camaldulensis*	Under	A00476	*Chorizandra enodis*	50	Difficult
10.2	*E.camaldulensis*	Under	Z00251	*Poa labillardieri var. labillardieri*	50	Easy

iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
10.3	Grassland	Under	K00197	*Aristida behriana*	1000	Easy
10.3	Grassland	Under	K00137	*Austrostipa eremophila*	1000	Easy
10.3	Grassland	Under	W00327	*Enneapogon nigricans*	1000	Easy
10.3	Grassland	Under	M00682	*Lomandra effusa*	1000	Difficult
10.3	Grassland	Under	S00165	*Rytidosperma caespitosum*	1000	Easy

Appendix 16: *Allocasuarina verticillata* & *Callitris gracilis* woodland subgroup soils mapping and propagation list



iEcoID	Ecosystem	Structure	NSX Code	Species Name	Plants Per Ha	Germination
10.4	*C.gracilis*	Over	M03382	*Callitris gracilis*	500	Easy
10.4	*C.gracilis*	Over	A03636	*Allocasuarina verticillata*	100	Easy
10.4	*C.gracilis*	Over	Z05883	*Eucalyptus diversifolia* ssp. *diversifolia*	70	Easy
10.4	*C.gracilis*	Over	A01508	*Pittosporum angustifolium*	50	Easy
10.4	*C.gracilis*	Mid	U05006	*Xanthorrhoea caespitosa* (if in SE)	800	Easy
10.4	*C.gracilis*	Mid	C03477	*Rhagodia candolleana*	200	Easy
10.4	*C.gracilis*	Mid	K04781	*Dodonaea viscosa* ssp. *spatulata*	100	Easy
10.4	*C.gracilis*	Mid	C01605	*Acacia pycnantha*	70	Easy
10.4	*C.gracilis*	Mid	C01577	*Acacia leiophylla*	50	Easy
10.4	*C.gracilis*	Mid	A04208	*Bursaria spinosa* ssp. *spinosa*	30	Easy
10.4	*C.gracilis*	Mid	Q01660	*Daviesia arenaria*	30	Easy
10.4	*C.gracilis*	Under	S00165	*Rytidosperma caespitosum*	1000	Easy
10.4	*C.gracilis*	Under	Q00172	*Rytidosperma fulvum*	1000	Easy
10.4	*C.gracilis*	Under	S00685	*Lomandra juncea*	900	Difficult
10.4	*C.gracilis*	Under	Q01504	*Enchylaena tomentosa*	500	Easy
10.4	*C.gracilis*	Under	W32083	*Senecio spanomerus*	500	Easy
10.4	*C.gracilis*	Under	G04827	*Dianella brevicaulis*	400	Easy
10.4	*C.gracilis*	Under	M00146	*Austrostipa nodosa*	300	Easy
10.4	*C.gracilis*	Under	S03157	*Helichrysum leucopsideum*	250	Easy
10.4	*C.gracilis*	Under	Y00136	*Austrostipa elegantissima*	200	Easy
10.4	*C.gracilis*	Under	M02150	*Austrostipa trichophylla*	200	Easy
10.4	*C.gracilis*	Under	Z02275	*Kunzea pomifera*	100	Easy
10.4	*C.gracilis*	Under	W04875	*Lomandra nana*	50	Difficult
10.4	*C.gracilis*	Under	A03352	*Vittadinia australasica var. australasica*	50	Easy
10.4	*C.gracilis*	Under	C00301	*Amphipogon caricinus var. caricinus*	30	Easy
10.4	*C.gracilis*	Under	W00327	*Enneapogon nigricans*	30	Easy
10.4	*C.gracilis*	Under	U00130	*Austrostipa mollis*	20	Easy
10.4	*C.gracilis*	Under	U01670	*Dillwynia hispida*	20	Easy

Appendix 17: Map of where the different Ecosystems are likely to occur in the CLLMM region