

9. Foredune grassland/forbland on the coastal plain

NVIS structural code G1i/F1i¹



Plate 1 Foredune grassland/forbland within the project site

Indicative species composition:

Upper (U1): *Hibiscus tiliaceus* (d), *Ficus aculeata* (a),

Ground (G1): *Spinifex longifolius* (c), *Ipomoea pes-caprae* (c), *Cenchrus polystachyios** (s), *Imperata cylindrica* (s), *Sporobolus virginicus* (s), *Canavalia rosea* (s), *Cyperus javanicus* (s), *Cenchrus echinatus** (s), *Vigna marina* (s), *Vitex rotundifolia* (s), *Tridax procumbens** (a), *Boerhavia albiflora* (a)

+ = dominant/defining layer; d= dominant; c=co-dominant species; s=sub-dominant; a=associated (ie occasional); * = exotic species

Landform²: Beach ridge plain (foredune adjacent to beach).

Site drainage: Well drained.

Analogous vegetation community:

- Litchfield Shire 1: 100, 000 mapping³: Mapped as units 2 and 24 – broadly analogous to unit 24.
- NT 1:1 million mapping⁴: analogous to an element of unit 102 (49, 030 ha in the NT (Department of Natural Resources, Environment and the Arts, 2004)).

Land system⁵: Mapped as Kay and Keefer's Hut but is analogous with Littoral – level tidal flats and coastal plains, active and stable coastal sand dunes.

¹ All structural references (eg tall open woodland, tall shrubland, grassland) use terminology as defined by the NVIS - see NVIS entries in Appendices 3, 4 and 5 to *Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping*. Technical Report No. 02/2007D. (Brocklehurst et al. 2007).

² All landform descriptions use terminology as defined in the *Australian Soil and Land Survey Field Handbook*, 3rd edtn. (The National Committee on Soil and Terrain 2009).

³ *Litchfield Shire Remnant Vegetation*, 1:100, 000 mapping (NT government, 2002).

⁴ *Vegetation Survey of the Northern Territory, Australia* (Wilson, et al., 1990).

⁵ Land systems are as described in *Land Systems of the Greater Darwin Region* (Wood et al. 1985).

Land unit⁶: 9c.

Condition⁷: Type II– Modified (native vegetation community composition and regenerative capacity intact – perturbed by land use/land management practice).

Comments:

- This community occupies the low foredune immediately adjacent to the beach.
- It is moderately impacted by human camping and day use activities at the project site, primarily through the creation of numerous tracks, compaction, unburied human waste, litter and the introduction of weeds.
- It was also severely burnt this year prior to the July survey.
- It provides habitat for the near threatened species *Operculina turpethum*, a vine recorded from this community within the project site.



Plate 2 Foredune grassland/forbland mapping

⁶ Land units are as described in *Litchfield Municipality Land Units* (Northern Territory Government, 2015).

⁷ Using terminology from *Vegetation Assets, States and Transitions (VAST): accounting for vegetation condition in the Australian landscape* (Thackway and Lesslie 2005).

10. Monsoon vine thicket on the coastal plain

NVIS structural code T6d¹



Plate 1 Characteristic monsoon vine thicket, occupying a low foredune immediately adjacent to the beach

Indicative species composition:

Upper 1 (U1): *Schefflera actinophylla* (d)

+Upper 2 (U2): *Millettia pinnata* (c), *Hibiscus tiliaceus* (c), *Thespesia populnea* (s), *Acacia auriculiformis* (s), *Trema tomentosa* (s), *Flagellaria indica* (s), *Flueggea virosa* (s), *Cathormion umbellatum* (s), *Clerodendrum floribundum* (s), *Abrus precatorius* (s), *Manoon australe* (s), *Pisonia aculeata* (a), *Ficus aculeata* (a)

Ground (G1): *Cenchrus polystachyios** (d), *Cenchrus echinatus** (s), *Sida acuta** (s), *Acanthospermum hispidulum** (s), *Boerhavia albiflora* (a)

+ = dominant/defining layer; d= dominant; c=co-dominant species; s=sub-dominant; a=associated (ie occasional); * = exotic species

Landform²: Beach ridge plain (foredune immediately adjacent to beach).

Site drainage: Well drained.

Analogous vegetation community:

- Litchfield Shire 1: 100, 000 mapping³: Mapped as units 2 and 24 - analogous to unit 2.
- NT 1:1 million mapping⁴: analogous to an element of unit 102 (49, 030 ha in the NT (Department of Natural Resources, Environment and the Arts, 2004)).

Land system⁵: Mapped as Kay and Keefer's Hut but is analogous with Littoral – level tidal flats and coastal plains, active and stable coastal sand dunes.

¹ All structural references (eg tall open woodland, tall shrubland, grassland) use terminology as defined by the NVIS - see NVIS entries in Appendices 3, 4 and 5 to *Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping*. Technical Report No. 02/2007D. (Brocklehurst *et al.* 2007).

² All landform descriptions use terminology as defined in the *Australian Soil and Land Survey Field Handbook*, 3rd edtn. (The National Committee on Soil and Terrain 2009).

³ *Litchfield Shire Remnant Vegetation*, 1:100, 000 mapping (NT government, 2002).

⁴ *Vegetation Survey of the Northern Territory, Australia* (Wilson, *et al.*, 1990).

Land unit⁶: 9c.

Condition⁷: Type II– Modified (native vegetation community composition and regenerative capacity intact – perturbed by land use/land management practice).

Comments:

- This community occupies the low foredune immediately adjacent to the beach.
- Due to its narrow width (usually no more than 20 m) and close co-occurrence with mangrove low closed forest (which occupies the adjacent swale), it has been mapped together with that community.
- This community is moderately impacted by human camping and day use activities at the project site.
- It may provide habitat for the near threatened species *Pittosporum moluccanum* (a small tree recorded from monsoon vine thicket within two kilometres of the project site) and *Operculina turpethum* (a vine recorded from within a few hundred metres of monsoon vine thicket on the project site).



Plate 2 Monsoon vine thicket mapping (due to very narrow occurrence, it has been mapped with the mangrove low closed forest, with which it co-occurs)

⁵ Land systems are as described in *Land Systems of the Greater Darwin Region* (Wood *et al.* 1985).

⁶ Land units are as described in *Litchfield Municipality Land Units* (Northern Territory Government, 2015).

⁷ Using terminology from *Vegetation Assets, States and Transitions (VAST): accounting for vegetation condition in the Australian landscape* (Thackway and Lesslie 2005).

11. Mangrove low closed forest on the coastal plain

NVIS structural code T6d¹



Plate 1 Characteristic mangrove low closed forest at the project site

Indicative species composition:

+Upper (U1): *Avicennia marina* (c), *Lumnitzera racemosa* (c), *Rhizophora stylosa* (s), *Thespesia populnea* (s), *Hibiscus tiliaceus* (s)

Ground (G1): *Sporobolus virginicus* (c), *Ipomoea pes-caprae* (c)

+ = dominant/defining layer; d= dominant; c=co-dominant species; s=sub-dominant; a=associated (ie occasional); * = exotic species

Landform²: Beach ridge plain (shallow swale behind foredune, draining to beach).

Site drainage: Moderate to poorly drained.

Analogous vegetation community:

- Litchfield Shire 1: 100, 000 mapping³: Mapped as units 2 and 24 - analogous to unit 9.
- NT 1:1 million mapping⁴: analogous to an element of unit 102 (49, 030 ha in the NT (Department of Natural Resources, Environment and the Arts, 2004)).

Land system⁵: Mapped as Kay and Keefer's Hut but is analogous with Littoral – level tidal flats and coastal plains, active and stable coastal sand dunes.

Land unit⁶: 9c.

¹ All structural references (eg tall open woodland, tall shrubland, grassland) use terminology as defined by the NVIS - see NVIS entries in Appendices 3, 4 and 5 to *Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping*. Technical Report No. 02/2007D. (Brocklehurst *et al.* 2007).

² All landform descriptions use terminology as defined in the *Australian Soil and Land Survey Field Handbook*, 3rd edn. (The National Committee on Soil and Terrain 2009).

³ *Litchfield Shire Remnant Vegetation*, 1:100, 000 mapping (NT government, 2002).

⁴ *Vegetation Survey of the Northern Territory, Australia* (Wilson, *et al.*, 1990).

⁵ Land systems are as described in *Land Systems of the Greater Darwin Region* (Wood *et al.* 1985).

⁶ Land units are as described in *Litchfield Municipality Land Units* (Northern Territory Government, 2015).

Condition⁷: Type II– Modified (native vegetation community composition and regenerative capacity intact – perturbed by land use/land management practice).

Comments:

- This community occupies shallow, relatively short (usually only a few hundred metres) swales that drain to the beach. They are likely to be inundated only at the highest tides, or during the wet season from overland flow.
- Due to its narrow width (usually no more than 20 m) and close co-occurrence with monsoon vine thicket, it has been mapped together with that community.
- This community is moderately impacted by human camping and day use activities at the project site.



Plate 2 Mangrove low closed forest map (due to very narrow occurrence, it has been mapped with the monsoon vine thicket, with which it co-occurs)

⁷ Using terminology from *Vegetation Assets, States and Transitions (VAST): accounting for vegetation condition in the Australian landscape* (Thackway and Lesslie 2005).

Appendix C VAST Definitions

Table 1

Vegetation Assets, States and Transitions

Increasing vegetation modification from left to right



Native Vegetation Cover					Non-native Vegetation Cover		
Dominant structuring plant species indigenous to the locality and spontaneous in occurrence – i.e. a vegetation community described using definitive vegetation types relative to estimated pre1750 types [#]					Dominant structuring plant species indigenous to the locality but cultivated; alien to the locality and cultivated; or alien to the locality and spontaneous*		
Vegetation Cover Classes	Type 0: RESIDUAL BARE Areas where native vegetation does not naturally persist	Type I: RESIDUAL native vegetation community structure, composition, and regenerative capacity intact – no significant perturbation from land use/land management practice	Type II: MODIFIED native vegetation community structure, composition and regenerative capacity intact - perturbed by land use/land management practice	Type III: TRANSFORMED native vegetation community structure, composition and regenerative capacity significantly altered by land use/land management practice	Type IV: REPLACED - ADVENTIVE native vegetation replacement – species alien to the locality and spontaneous in occurrence	Type V: REPLACED - MANAGED native vegetation replacement with cultivated vegetation	Type VI: REMOVED vegetation removal
	Current regenerative capacity	Natural regenerative capacity unmodified	Natural regeneration tolerates / endures under past &/or current land management practices	Natural regenerative capacity limited / at risk under past &/or current land use or land management practices. Rehabilitation and restoration possible through modified land management practice	Regeneration of native vegetation community has been suppressed by ongoing disturbances of the natural regenerative capacity. Limited potential for restoration.	Regeneration of native vegetation community lost or suppressed by intensive land management. Limited potential for restoration	Nil or minimal
Diagnostic criteria	Vegetation structure	Structural integrity of native vegetation community is very high	Structure is predominantly altered but intact e.g. a layer / strata and/or growth forms and/or age classes removed	Dominant structuring species of native vegetation community significantly altered e.g. a layer / strata frequently & repeatedly removed	Dominant structuring species of native vegetation community removed or predominantly cleared or extremely degraded	Dominant structuring species of native vegetation community removed	Vegetation absent or ornamental
	Vegetation composition	Compositional integrity of native vegetation community is very high	Composition of native vegetation community is altered but intact	Dominant structuring species present - species dominance significantly altered	Dominant structuring species of native vegetation community removed	Dominant structuring species of native vegetation community removed	Vegetation absent or ornamental
Examples	Bare mud; rock; river and beach sand, salt and freshwater lakes	Old growth forests; Native grasslands that have not been grazed; Wildfire in native forests and woodlands of a natural frequency and/or intensity;	Native vegetation types managed using sustainable grazing systems; Selective timber harvesting practices; Severely burnt (wildfire) native forests and woodlands not of a natural frequency and/or intensity	Intensive native forestry practices; Heavily grazed native grasslands and grassy woodlands; Obvious thinning of trees for pasture production; Weedy native remnant patches; Degraded roadside reserves; Degraded coastal dune systems; Heavily grazed riparian vegetation	Severe invasions of introduced weeds; Invasive native woody species found outside their normal range; Isolated native trees/shrubs/grass species in the above examples	Forest plantations; Horticulture; Tree cropping; Orchards; Reclaimed mine sites; Environmental and amenity plantings; Improved pastures. (includes heavy thinning of trees for pasture); Cropping; Isolated native trees/ shrubs/ grass species in the above examples	Water impoundments; Urban and industrial landscapes; quarries and mines; Transport infrastructure; salt scalded areas

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