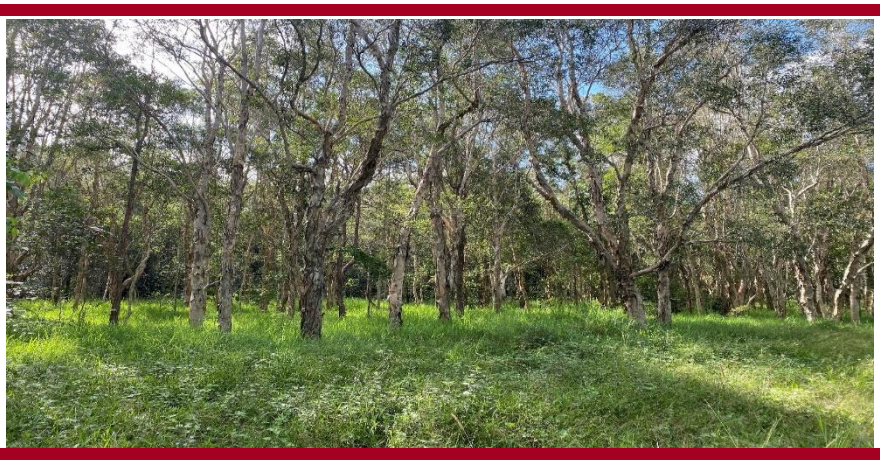
Paperbark (tea tree) forest on coastal plains



Landform	Coastal alluvial plains and low rises.
Woody vegetation	Paperbark tea tree open forest to woodland with bloodwoods, scribbly gum, blue gum, swamp mahogany, stringybarks, with cabbage tree palms, banksias and other wallum species.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species*
Preferred	Golden beard grass, black speargrass, kangaroo grass, Rhodes grass*, paspalum*, pangola*.
Intermediate	Pitted bluegrass, barbed wiregrass, Queensland blue couch*, mat grass*.
Non-preferred	Poverty grass, blady grass, tall paspalum*, native rat's tail grass.
Suitable sown pastures	Pangola grass, Rhodes grass, brachiaria, paspalum, digit grass, Narok setaria, lotononis, creeping vigna, lotus.
Introduced weeds	*Pinus* wildings, giant rat's tail grass, groundsel bush, cat's claw creeper, bracken fern (native species).
Soil	Typical soil groups are humic gleys (hydrosols) - poorly drained soils with dark surface over pale grey subsoils; humus podzols (podosols) – loose grey pale sands over dark cemented sands and soloths (kurosols) - loamy sands over coarse-structured hard clay subsoils.
Description	***Surface*:** Loose (humus podzols), crusting (humic gleys) to hard-setting (soloths); ***Surface texture*:** sandy to sandy loams ***Subsoil texture*:** structureless sand (humus podzols), sandy loam to heavy clays (humic gleys) to medium to heavy clay (soloths).
Features	Infiltration is slow (hard-setting surface) in soloths, faster for sandier humus podzols.
Water availability	Very low to low PAWC, shallow rooting depth due to extremely acid or sodic clay subsoils (soloths); however, water availability also depends on depth to watertable which is often high in these soils.
Drainage	Poor drainage – high watertables & waterlogging in humic gleys, humus podzols and impermeable subsoil in soloths.
Fertility	Nitrogen – low to medium (humus podzols, soloths), medium to high (humic gleys); Phosphorus - very low to low (humus podzols, soloths), variable low-high (humic gleys); Potassium - low in humus podzols, variable low to high in soloths, humic gleys.
Salinity	Low in humic gleys, humus podzols but soloths may be saline at depth.
Sodicity	Soloths & humic gleys have sodic to strongly sodic subsoil.
pH	Humic gleys & humus podzols are strongly to extremely acidic and are potential acid sulphate soils if disturbed. Soloths are slightly to strongly acid in surface and at depth.
Enterprise	Breeding, seasonal stocking with store cattle. Historically these areas have been cleared and drained and used for sugarcane & some other field crops, exotic pine plantations, and urban development as well as cleared & sown to pastures for grazing.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall mm				
Pasture type	Median tree cover (TBA m2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	Long term carrying capacity (ha/AE)
Native species	21 TBA 49 FPC		25%	
Sown pastures	21 TBA 49 FPC		25%	

Land use and management recommendations

- Significant limitations for agricultural production, however on suitable well - drained soils, water tolerant, shallow rooted crops can be grown. High seasonal watertable may restricts crop growth in summer months.
- In areas that are suitable for cropping, regular soil testing and routine application of N, P, K, Ca and trace elements will be required. Minimal tillage, use of pasture rotations, legume and cover crops and addition of organic amendments to maximise organic matter are required to maintain stability & fertility in areas used for cropping.
- For grazed pastures maintain high levels of effective surface cover (>90%), manage stock numbers to seasonal forage availability and routinely spell pastures to allow seeding, improve vigour and maintain dominance of desirable species and good land condition.
- Routine soil testing and ongoing application of nutrients, especially N, P, K & Ca may be required to maintain soil health and pasture production.
- Where P or Ca deficiencies occur, supplementation will be required, to prevent acute symptoms. Calcium deficiencies can be particularly severe in lactating cows.
- Fire is effective in managing woody regrowth and woodland thickening. Fire management guidelines for maintaining the ecological health of these paperbark forests, include burning at 6 – 20-year intervals in late summer and autumn with a moderate to high intensity for grassy, shrubby Melaleuca forests. Aim for 25–70% burn mosaic with surrounding ecosystems as Melaleuca ecosystems often occur in patches and natural drainage lines. Ensure secure boundaries from non-fire regime adapted ecosystems to prevent burn of larger areas and other vegetation types. High soil moisture (or presence of water on ground) is required, to avoid peat-type fires.

Land use limitations

- Soils are poorly drained and are affected by frequent seasonal waterlogging & leaching of nutrients. Humic gleys may be potential acid sulphate soils
- Chemical toxicities, particularly aluminium & manganese, affect plant uptake of other nutrients in strongly to extremely acid soils. Highly erodible & dispersive subsoils (soloths & humic gleys) affect soil stability and fertility. Low fertility constraints result in acute P & Ca deficiencies in grazing animals on soils with high magnesic subsoils.

Conservation features and related management

- These forests play a critical role in the hydrological regime of the coastal plain.
- Provide nesting & roosting sites for bird and bat species, important food resources for migratory species including flying-foxes and woodland birds (kingfishers, whistlers & robins) and seasonal habitat for frogs. The autumn and spring flowering cycles of various plants attract lorikeets, honeyeaters & flying-foxes.
- Threatened flora and fauna include swamp orchids (*Phaius australis* and *P. tancarvilleae*), the rare herbaceous plant *Durringtonia paludosa*, acid frogs (*Crinia tinnula, Litoria freycineti, L. olongburensis*), water mouse (*Xeromys myoides*) and honey blue eye (*Pseudomugil mellis*).
- Remnants are particularly susceptible to weed invasion on their margins.
- Landscape connectivity is important for wildlife corridors.
- Too frequent fires have affected regeneration in some areas. Infrequent fires at intervals of 15–30 years are recommended to retain wetland integrity

Regional Ecosystems

12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.7a, 12.2.7c, 12.3.20, 12.3.4, 12.3.4a, 12.3.5, 12.3.6, 12.5.2x1, 12.5.4a, 12.5.9a, 12.9-10.10.

Land resource area

Coastal plains 1a

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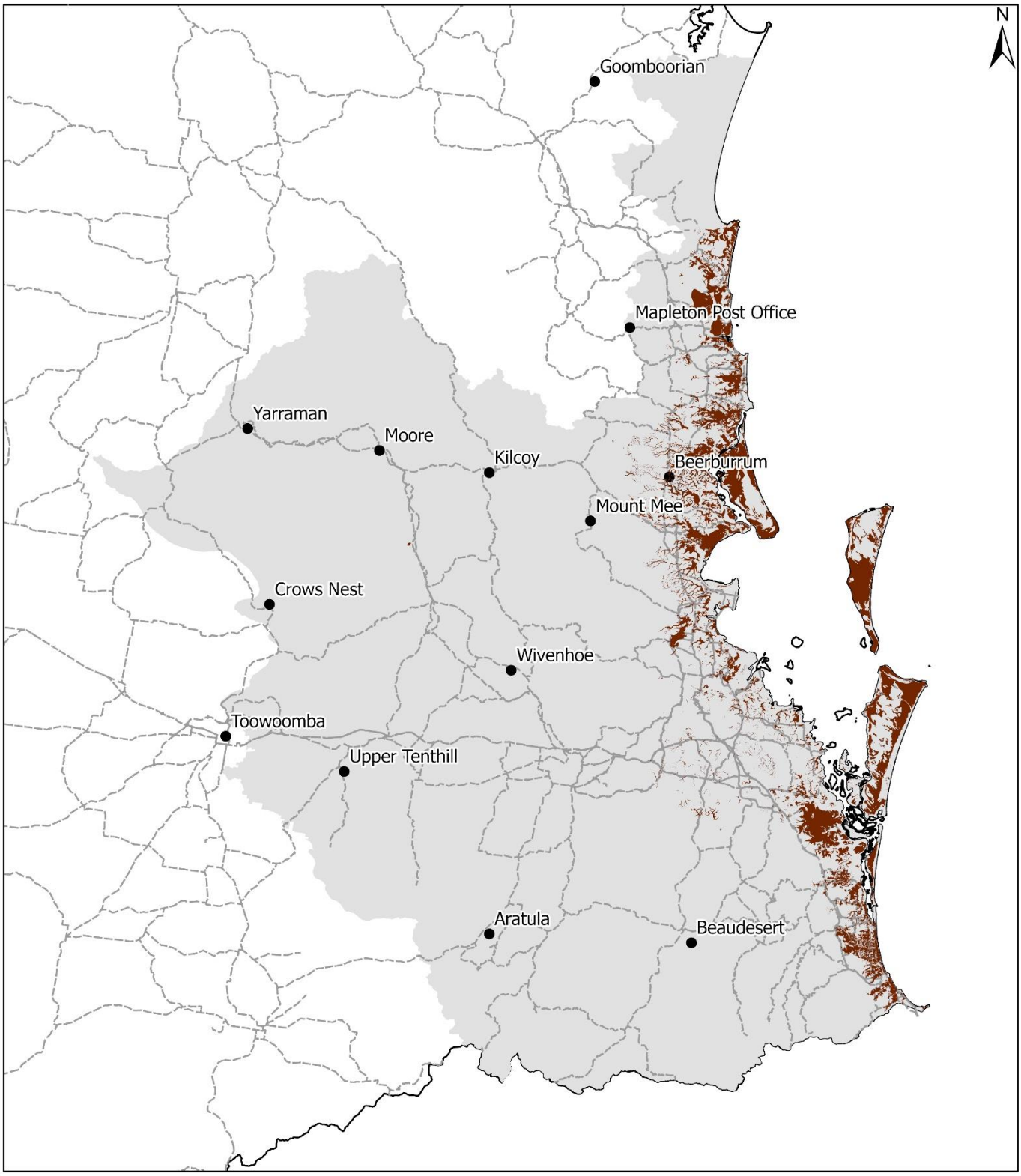

Area of land type in region: 4.4%
Median rainfall (region): 752–1672 mm
Average rainfall (region): 763–1766 mm
Area of land type with FPC: 32%
Median FPC: 49%
Median TBA: 21 m2/ha