

## Beachmere Foreshore Dune Vegetation Guide

2022

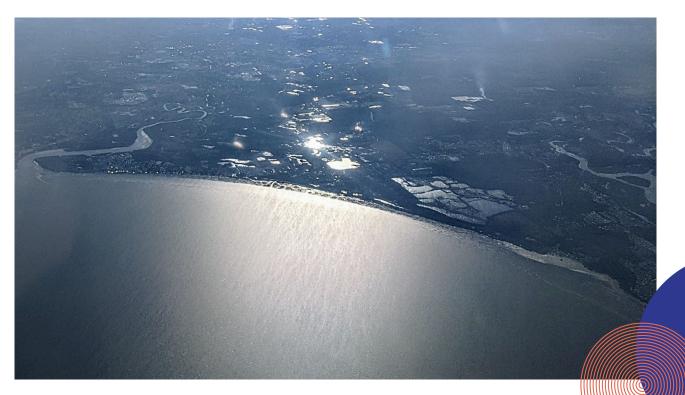




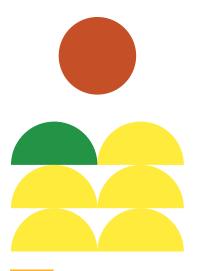
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## **Our Coastal Landscape**

This guide provides advice to Beachmere residents about native foreshore vegetation to minimise coastal erosion impacts. Planting and maintenance of local native plants as an alternative to seawalls is suggested as effective and attractive option in the local coastal landscape. Revegetation of disturbed shorelines, and protection and enhancement of existing native foreshore vegetation will increase foreshore resilience and enhance dune function for coastal protection. Foreshore vegetation management may also provide other benefits, such as improving beach amenity and providing habitat for native coastal fauna.



Source: Glen Dare 2022





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## **Role of Foreshore Dunes and Vegetation**

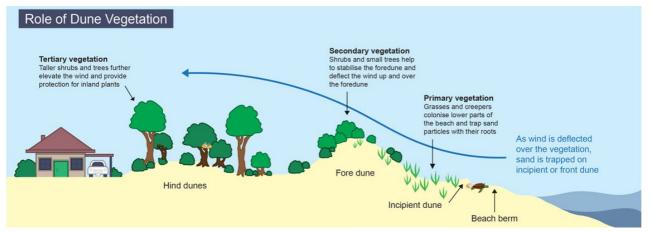
Dunes and native vegetation can play an important role in protecting the foreshore from coastal erosion. Sand that builds up around vegetation can also help replenish the beach after sudden erosion events. Foreshore vegetation also provides food and nesting areas for native fauna.

Foreshores generally have the profile shown in Figure 1 and may include:

- Primary vegetation, such as grasses and creepers found in the incipient dune, which can trap sand to help build up dunes and reduce the extent of beach erosion
- Secondary vegetation, such as shrubs and small trees, which help to stabilise the foredune and deflect the wind up and over the foredune
- Tertiary vegetation, such as taller shrubs and trees found in the hind dune, which further elevate the wind and provide protection for inland plants and structures.

Mangroves and seagrass may occur in intertidal areas near the shoreline and help protect the foreshore from coastal erosion.







Source: Glen Dare 2021

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Beachmere Foreshore Dune Vegetation Guide



## **Vegetation Management Options**

The best approach to vegetation management on your property depends on the availability of foreshore land.

• Wide buffers - at least 15 m between the Highest Astronomical Tide (HAT) mark and the nearest structure

These properties have the greatest opportunities for foreshore revegetation. They may already have a variety of vegetation and structures such as fencing or steps.

• Narrow buffers - where there is a sandy beach buffer between structures and the normal high tide mark

These properties are likely to benefit from foreshore revegetation. This may improve foreshore resilience and enhance dune function for coastal resilience.

• No buffers - where there is no sandy beach remaining during a normal high tide

Vegetation management on these properties may help to restore disturbed shorelines and protect existing foreshore vegetation.



Source: Glen Dare 2021



Foreshore vegetation can also be planted alongside existing seawalls within the private property area. You should consult Council before planting any vegetation on the foreshore outside of your property. Appropriate vegetation species can help improve the resilience of seawalls to extreme weather events.

Table 1	Planning	for dune	revegetation
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#### Site considerations

To determine what role vegetation could play on your property, consider:

- Existing vegetation (native and nonnative)
- Natural dune profile
- Coastal hazards, e.g. storm erosion
- Property boundaries
- Built structures
- Beach access.

Also consider:

- Access to water for plantings
- Landscaping that may be required, e.g. weeding, removal of turf, dune re-profiling

Timeframes for plants to become established and the need for on-going maintenance.

#### **Planting supplies**

Consider the materials required to replant your foreshore area:

- Number and type of plants
- Mulch, tree guards, herbicide and fertilisers
- Planting and weeding tools
- Access to water for plantings.

Plants should be planted at the highest density possible to create rapid vegetation cover and to reduce the risk of weed invasion and sand erosion:

- Groundcovers spaced at least 2–5 plants/m2
- Shrubs and trees spaced at 1.5 m centres to create a dense canopy cover.

You might consider collaborating with neighbouring properties to reduce costs by purchasing in bulk

#### Local suppliers

The best source of native plants suited to the local area are local nurseries with expertise in dune plant propagation.

Some local suppliers are:

- www.wallumnurseries.com/habitats
- bribieislandcommunitynursery.weebly.com
- www.kumbartcho.org.au

#### **Planting species**

Once the space available for foreshore vegetation has been identified, consider the soil type and the dune profile to select the appropriate species for planting. As a guide, general foreshore profiles and vegetation species native to Beachmere are shown in Figures 2, 3 and 4. In general:

- The incipient dune may be planted with a mix of native grasses and succulent creepers to bind the sand. These species are highly tolerant to salt, wind and smothering, and can grow in unstable sand on exposed bare sites.
- Secondary species, which include shrubs and small trees that are capable of withstanding strong winds and salt spray, may also be planted to the rear. These species are not likely to tolerate regular sand burial and frequent tidal inundation.

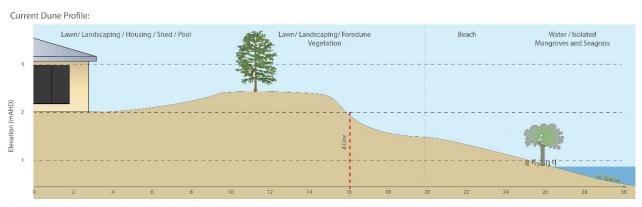
In northern Beachmere, where there is a more extensive foreshore, a higher diversity of native tree and shrub species (tertiary vegetation) may be planted in more protected areas to the rear.

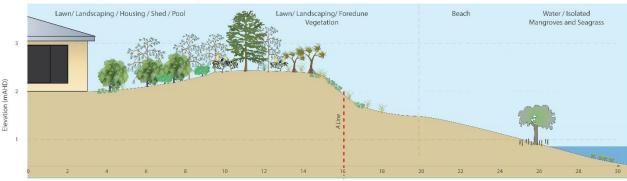


# Foreshore Profile and Revegetation Species

Native vegetation on dunes helps to reduce coastal erosion. To help protect property from coastal erosion a stable dune needs a variety of trees, shrubs, grasses, groundcovers and creepers. Foreshore profiles for parts of Beachmere and appropriate species are shown in Figures 2, 3 and 4.







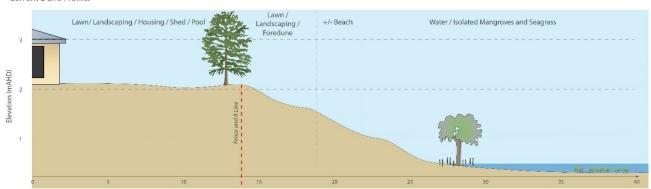
Potential Foreshore Revegetation and Foreshore Vegetation Protection:

Conceptual Shoreline Profile: Bishop Road

Local Revegetation Species:

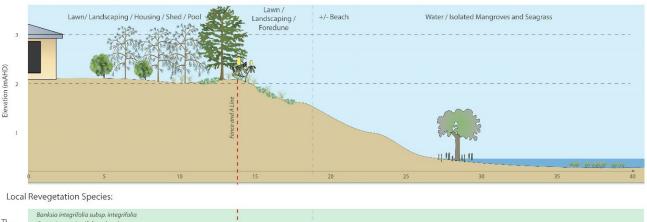
Trees and shrubs	Banksia integrifolia subsp. integrifolia Casuarina equisetifolia subsp. incana Cupaniopsis anacardioides Hibiscus tiliaceus	Casuarina equisetifolla subsp. Incana Hibiscus tiliaceus Banksia integrifolia subsp. integrifolia Pandanus tectorius			
Grasses	Cynodon dactylon Imperata cylindrica	Cynodon dactylon Imperata cylindrica Ischaemum triticeum	lschaemum triticeum Spinifex sericeus/hirsutus	Cynodon dactylon Ischaemum triticeum Spinifex sericeus/hirsutus Sporobolus virginicus Zoysia macrantha	
Herbs	Canavalia rosea Carpobrotus glaucescens Dianella congesta Hibbertia scandens Ipomoea pes-caprae subsp. brasiliensis Sesuvium portulacastrum Tetragonia tetragonoides	Canavalia rosea Carpobrotus glaucescens Dianella congesta Ipomoea pes-caprae subsp. brasiliensis Sesuvium portulacastrum Tetragonia tetragonoides	Canavalia rosea Carpobrotus glaucescens Ipomoea pes-caprae subsp. brasiliensis Sesuvium portulacastrum Tetragonia tetragonoides	Carpobrotus glaucescens Ipomoea pes-caprae subsp. brasiliensis Sesuvium portulacastrum Tetragonia tetragonoides	Symbols Courtesy of the Integration and Application Network, University of Maryland Center for Environmental Science (Jan.umces.edu/symbols/)





Conceptual Shoreline Profile: South Bayside Drive Current Dune Profile:

Potential Foreshore Revegetation and Foreshore Vegetation Protection:



Trees and shrubs	Banksia integritolia subsp. integritolia Casuarina equisetifolia subsp. incana Cupaniopsis anacardioides Hibiscus tiliaceus		
Grasses		Cynodon dactylon Ischaemum triticeum Spinifex sericeus/hirsutus Sporobolus virginicus Zoysia macrantha	
Herbs	Canavalia rosea Carpobrotus glaucescens Dianella congesta Hibbertia scandens Ipomoea pes-caprae subsp. brasiliensis Sesuvium portulacastrum Tetragonia tetragonoides	Carpobrotus glaucescens Ipomoea pes-caprae subsp. brasiliensis Sesuvium portulacastrum Tetragonia tetragonoides	Symbols Courtesy of the Integration and Application Network, University of Maryland Center for Environmental Science (Ian.umces.edu/symbols/)



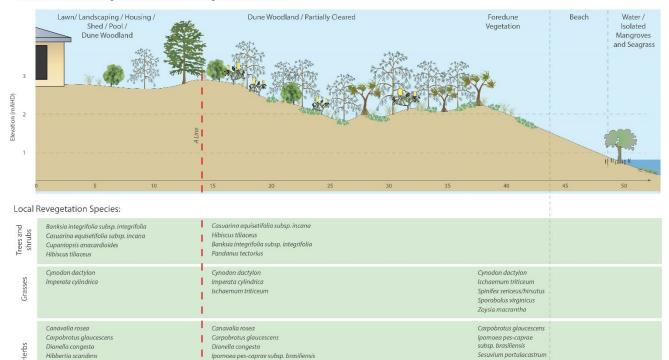
#### Figure 4: General foreshore profile and revegetation species – North Bayside Drive

Conceptual Shoreline Profile: North Bayside Drive

Current Dune Profile:







subsp. or asinchisis	
Sesuvium portulacastrum	
Tetragonia tetragonoides	
	Sesuvium portulacastrum



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Sesuvium portulacastrum Tetragonia tetragonoides

lpomoea pes-caprae subsp. brasiliensis Sesuvium portulacastrum

Tetragonia tetragonoides

## **Native Dune Vegetation**

Figure 5: General foreshore dune profile

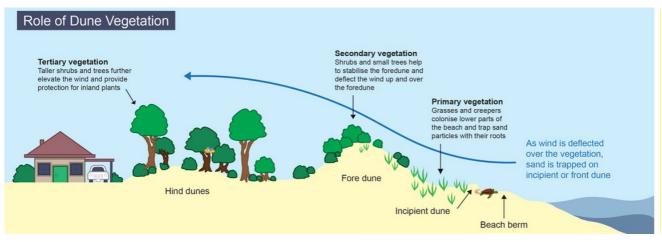


Table 2: Prominent native dune species of the Beachmere foreshore and Moreton Bay Region

Trees and Shrubs	
	Beach Tamarind / Tuckeroo ( <i>Cupaniopsis anacardioides</i> ) - hind dune Low tree to 10 m, with broad, dense canopy. Bark is smooth grey or brown with raised horizontal lines. Leaves are dark, glossy, oblong, pinnate and alternate with six to ten leaflets. Small greenish white flowers, and small orange to yellow fruit. Source: Atlas of Living Australia <u>https://bie.ala.org.au/</u> Creative Commons, CC-BY 2.5 (Au)
	Coastal Banksia (Banksia integrifolia subsp. integrifolia) - hind and fore dune Large shrub to low tree to 20 m, with a single stout, often gnarled trunk. Rough grey bark, dark green leaves with white underside. Pale yellow flowers that become a woody cone. Source: Atlas of Living Australia <u>https://bie.ala.org.au/</u> Creative Commons, CC-BY 2.5 (Au)





Casuarina / Coastal Sheoak (Casuarina equisetifolia subsp. incana) - hind and fore dune

Evergreen tree to 35 m, with green-grey, pine-like needles and small, hard, round, seed cones.

Source: Atlas of Living Australia <u>https://bie.ala.org.au/</u> Creative Commons, CC-BY 2.5 (Au)

Hibiscus / Cottonwood (Hibiscus tiliaceus) - hind and fore dune

Broad scrambling tree to 10 m. Flowers are bright yellow with a deep red centre. The branches of the tree often curve down over time. The leaves are heart shaped and can turn deep red.

Source: Atlas of Living Australia <u>https://bie.ala.org.au/</u> Creative Commons, CC-BY 2.5 (Au)

#### Pandanus / Screwpine (Pandanus tectorius) - fore dune

Small tree to 15 m, with a single spiralling trunk supported by aerial root buttresses. Leaves are long and bladed. Fruit grow in large, orange-red clusters.

Source: Atlas of Living Australia https://bie.ala.org.au/ Creative Commons, CC-BY 2.5 (Au)

#### **Broad-leaved Paperbark** (Melaleuca quinquenervia)

Spreading tree up to 20 m, with trunk covered by a white, beige and grey thick papery bark. The grey-green leaves are egg-shaped, and cream or white bottlebrush-like flowers.

Source: John Robert McPherson, 2018, CC BY-SA 4.0 https://commons.wikimedia.org





#### Grasses



**Couch** (*Cynodon dactylon*) - hind, fore and incipient dune

Ground-runner, deep-rooted grass, with short, grey-green blades. Seed heads are produced in a distinctive cluster of 2 to 6 spikes at the top of the stem (compared with marine couch, single spike).

Source: Atlas of Living Australia https://bie.ala.org.au/



Cogon Grass (Imperata cylindrica) - hind and fore dune

Tall grass, 0.6 to 3 m with extensive root mat. Long, sharp leaves, hairy near the base wide, narrow to a sharp point at the top. Large, white flower head.

Source: Apurv013, 2020, CC0, via Wikimedia Commons https://commons.wikimedia.org/wiki/File:Imperata\_cylindrica\_-\_Cogon\_grass.jpg



Ischaemum (Ischaemum triticeum) - fore and incipient dune

Grass with ground running nodes. Leaf stems to 2 m long. Green-brown, wheaty spiked flower heads.

Source: Harry Rose, Australia, 2006, CC BY 2.0 https://commons.wikimedia.org



Beach Spinifex (Spinifex sericeus / hirsutus) - incipient dune

Ground runner grass, with sharp, flat, spikey leaf clusters. Can detach and tumble.

Source: Atlas of Living Australia <u>https://bie.ala.org.au/</u> Creative Commons, CC-BY 2.5 (Au)







Marine Couch (Sporobolus virginicus) - incipient dune

Spreading tussock grass with narrow leaves 10 to 50 cm. Flowers are green or purple. Distinctive single spike flower head (compared with couch, multiple spikes).

Source: Flora of Australia, Creative Commons CC BY 4.0 AU <u>https://images.ala.org.au/image/41adcef1-c99f-4b31-b4a3-30631fb5d50a</u>



Prickly Couch / Nara Grass (Zoysia macrantha) - incipient dune

Spreading lawn-type grass, with short, bright green clumping leaved clusters. Short, wheaty seed spikelets.

Source: Atlas of Living Australia <u>https://bie.ala.org.au/</u> Creative Commons, CC-BY 2.5 (Au)

#### **Ground covers and Creepers**



Jack Bean (Canavalia rosea) - hind, fore and incipient dune

Spreading, matting, succulent groundcover. Compound leaf of three roundish leaflets. Small, purplish pink and flowers, flat bean-like pods.

Source: Atlas of Living Australia <u>https://bie.ala.org.au/</u> Creative Commons, CC-BY 2.5 (Au)



**Pigface** (*Carpobrotus glaucescens*) - hind, fore and incipient dune

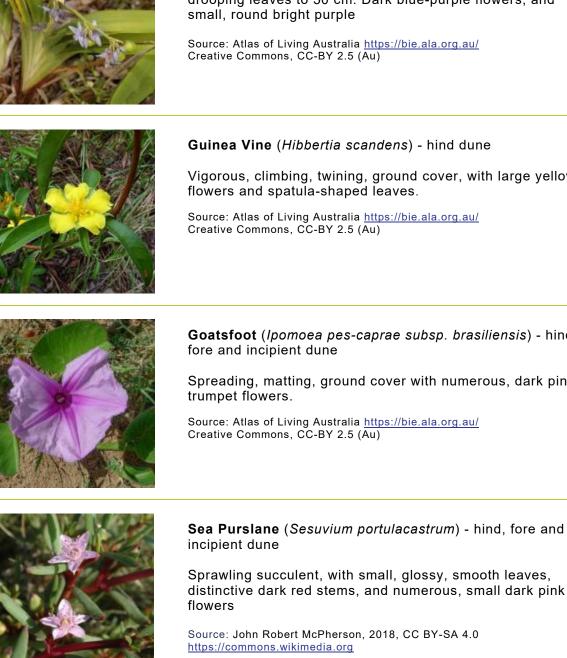
Matting ground cover with long stems up to 2 m. Plump leaves, daisy-like flowers with numerous pink to purple petals, and small red to purple fruit.

Source: Atlas of Living Australia <u>https://bie.ala.org.au/</u> Creative Commons, CC-BY 2.5 (Au)











Flax Lily (Dianella congesta) - hind and fore dune

Clumping, tufted, grass-like lily, with dark green, bladey, drooping leaves to 50 cm. Dark blue-purple flowers, and

Vigorous, climbing, twining, ground cover, with large yellow

Goatsfoot (Ipomoea pes-caprae subsp. brasiliensis) - hind,

Spreading, matting, ground cover with numerous, dark pink





Native Spinach / Warrigal Greens (*Tetragonia tetragonioides*) - hind, fore and incipient dune

Leafy, trailing herb, with large, triangular, bright green leaves, and small yellow flowers.

Source: Atlas of Living Australia <u>https://bie.ala.org.au/</u> Creative Commons, CC-BY 2.5 (Au)

## How to Plant

Provided there is adequate soil moisture, you should try to do your foreshore planting over the cooler months from April through to September and avoid hot weather and dry periods. Tube stock should also be well-watered prior to planting out. The key steps to planting include:

- 1. Preparing the hole
  - Dig hole slightly deeper than the size of the container and twice as wide
  - Fill the hole with water and allow to drain.
- 2. Preparing the plant
  - Trims roots protruding from the container
  - Tip prune the plant
  - Squeeze base firmly then place stem between fingers when removing the plant from the container.
- 3. Planting
  - Place plant in the hole; the surface level of the plant should be level with the ground surface
  - Backfill around the plant, finger down firmly so there are no air pockets
  - Shape a small depression around the plant so that water is directed towards the plant
  - Mulch lightly around the plant.
- 4. Watering
  - After planting, immediately water in gently upslope to avoid the root area
  - Every day for 1 week following planting
  - Then twice per week for 2 weeks
  - Then weekly for 4 weeks, as a minimum
  - Deep soaking is preferred over light watering to promote deep-rooting and should occur in the morning or late in the evening.
- 5. Fertiliser
  - Any fertiliser used at planting should be slow-release, low phosphorus and suitable for native plants
  - As most dune plants are adapted to relatively nutrient poor soils, there will probably be no need to use fertiliser beyond the initial planting.





## Weed Control

Weeds can reduce the success of revegetation, degrade native foreshore vegetation, and may not stabilise dunes as effectively as native species.

Prior to replanting, weeds should be cleared from the foreshore as much as practicable. Care should be taken when clearing woody weeds to ensure the removal of tree and shrub roots does not cause foreshore erosion. Weeds can be removed by manual removal or by using herbicides. If herbicides are applied in the foreshore, care should be taken when using close to native vegetation, including planted species. All weeds should be disposed of in green waste. As weeds can spread quickly after soil disturbance and can be introduced through nursery stock and mulch, weed management in the foreshore may be an on-going issue.

Online resources and tools to help you identify weeds and the best control measures include:

- MBRC: www.moretonbay.qld.gov.au/Services/Environment/Weeds
- Queensland Government: www.qld.gov.au/environment/plantsanimals/plants/herbarium/weedshttps://www.business.qld.gov.au/industries/farms-fishingforestry/agriculture/land-management/health-pests-weeds-diseases/weeds-diseases/invasiveplants/restricted
- Brisbane City Council weed identification tool: weeds.brisbane.qld.gov.au/
- Noosa Shire Council foreshore weeds: www.noosa.qld.gov.au/foreshore-weeds

 Table 3: Prominent weeds of the Beachmere foreshore and Moreton Bay Region









Herb or small shrub to 1 m, with fibrous roots. Glossy, dark green, oval, leaves about 2.5–3.5 cm. Tubular red to light pink flowers, with 5 flattened petals.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### Painted Spurge (Euphorbia cyathophora)

Upright herb to 1 m. Leaves are often fiddle-shaped and alternate along the stems. Green leaves have reddish-pink coloured bases and appear to be 'painted'.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### Treasure Flower (Gazania rigens)

Small, spreading, tufted, herb to 50 cm. Blue-grey leaves and brilliant yellow, daisy-like composite flowerheads often with black spots at the base of the petals.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### **Telegraph Weed** (Heterotheca grandiflora)

Tall, bristly, glandular plant often exceeding 1 m. Dense, hairy to spiny toothed or lobed leaves. Bright yellow daisy-like flower heads. Petals drop away to leave a spherical head of long white seeds.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

Prickly Pears (Opuntia spp.)

Large, trunk-forming, segmented cactus to 5–7 m. Stem segments are flattened, ovoid, green to blue-green, may be spineless or have hair-like prickles. Flowers are large, whorled clusters, often yellow, and has pink to red globular fruit.













### Singapore Daisy (Sphagneticola trilobata)

its creeping rhizome.

Mother In Law's Tongue (Sansevieria trifasciata)

Stiff, upright, waxy, grey-green leaves range from 70–90 cm long and 5–6 cm wide. Forms dense stands, spreading from

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

Spreading, mat-forming herb up to 30 cm high. Rounded stems up to 40 cm long, rooting at nodes. Serrated, fleshy leaves 4–9 cm long. Numerous, bright yellow daisy flowers.

Source: Flora of Australia CC BY 4.0 AU <u>https://profiles.ala.org.au/</u>

#### **Snakeweed** (Stachytarpheta jamaicensis)

Low, sprawling shrub to 1.2 m, purplish or yellowish brown, glabrous. Short, minty-looking leaves Long flower spikes with small, mauve-blue, tube-like flowers.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### Mossman River Grass (Cenchrus echinatus)

Low, clumping grass to 80 cm. Leaves with or without hairs. Grass has barbed burrs 4–10 mm long.











#### Rhodes Grass (Chloris gayana)

Tall, thin, tufting grass to 3 m. Flower is a single or double whorl of stalks to 15 cm, with multiple spike heads.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/



#### **Green Panic Grass / Guinea Grass (***Megathyrsus maximus***)**

Large, thin, clumping grass, to 3 m. Tall, sparse, feathery flower and seed heads.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/



#### Red Natal Grass (Melinis repens)

Tufted grass to 1.2 m. Flower bears numerous, open spikelets with distinctive, silky white or pink hairs.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### **Vine Weeds**



#### Asparagus Fern (Asparagus spp.)

Sprawling, climbing vine, with a short branching rhizome and fibrous roots. Spiny leaves, and small, globular red to black berries.







#### **Balloon Vine** (Cardiospermum grandiflorum)

Scrambling vine to over 10 m long, with small white flowers. Compound leaves with large teeth. The flowers are small, with creamy white petals. The fruit is a dry, papery 'balloon' that cracks into three parts.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### Coastal Morning Glory (Ipomoea cairica)

Herbaceous vine with palmate leaves and large, showy white to lavender flowers.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### Corky Passionflower (Passiflora suberosa)

Creeping or climbing vine up to 10 m long. Leaves are simple, alternate, three-lobed, shiny green. Lower part of the trunk becomes corky with age. Small greenish or yellowish flowers.

Source: Flora of Australia CC BY 4.0 AU <u>https://profiles.ala.org.au/</u>

#### Glory Lily (Gloriosa superba)

Scrambling and climbing herb to 4 m. Leaves are lanceshaped and tipped with curled tendrils. Large flowers have 6 ornate yellow, orange or red petals, each bearing a stemmed yellow pollen capsule.











#### **Siratro** (*Macroptilium atropurpureum*)

Climbing legume with dense, green leaves, often in sets of 3, and small, deep purple flowers. Forms seed pods in bunches of about 5-10.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### **Shrub Weeds**



#### Lantana (Lantana camara)

Heavily branched shrub that can form compact clumps, dense thickets or a climbing vine. Long, squarish, prickly stems. Leaves about 6 cm, covered in fine hairs. Flowers in clustered, compact heads, vary from pale cream to yellow, white, pink, orange and red. Round, berry-like fruit that turn from glossy green to purplish-black.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/



#### Easter Cassia (Senna pendula var. glabrata)

Erect or sprawling shrub usually to 2–4 m. Stems are muchbranched stems and compound leaves. Bright yellow flowers in clusters with five large petals. Fruit are long, thin, cylindrical pods that hang down.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### **Tree Weeds**



#### Slash Pine (Pinus elliottii)

Tall pine tree to 30 m, extensively planted for forestry. Bark red-grey-brown, in broad irregular plates and thin scales. Glossy, bright green, fine toothed leaves to 20–30 cm. Cones ovoid to conical, glossy brown.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/





#### **Umbrella** (Schefflera actinophylla)

Decorative, evergreen, medium tree to 15 m. Large, radiating, compound dark green leaves in groups of seven leaflets. Usually multi-trunked, Produces long flower sprays up to 2 m, containing numerous, small red flowers.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/





### **Broad-leaved Pepper / Brazilian Pepper** (Schinus terebinthifolius)

Sprawling shrub or small tree to 7–10 m, with shallow roots. The branches can be upright, reclining, or nearly vine-like. Profuse, small, white flowers, producing dense clusters of small red fruit.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

#### African Tulip (Spathodea campanulata)

Large tree to 35 m, with a dense, bushy, oval crown. Large flamboyant reddish-orange, open cupped flowers that have approximately five petals and are 8–15 cm.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/



#### **Cocos Palm / Queen Palm** (Syagrus romanzoffiana)

Medium-sized palm to 15 m, with pinnate fronds having around 300 leaflets, each around 50 cm long and 3–5 cm wide. Large cream yellow flowers with numerous, small, ovoid, yellow orange fruits.

Source: Flora of Australia CC BY 4.0 AU https://profiles.ala.org.au/

