

Regional ecosystem 9.3.1

Description: Fringing woodland to open forest of *Eucalyptus camaldulensis* (river red gum) and/or *E. tereticornis* (bluegum) +/- *Melaleuca fluviatilis* (teatree) and/or *M. leucadendra* (weeping teatree) +/- *Casuarina cunninghamiana* (river sheoak) +/- *Corymbia tessellaris* (Moreton Bay ash). A distinct sub-canopy can occur and contain *Ficus* spp., *Lophostemon* spp. and *Pleiogynium timorense* (Burdekin plum) as well as juvenile canopy species. The shrub layer varies from none to mid-dense and contain *Ficus opposita* (sandpaper fig), *Melaleuca* spp. and *Acacia crassicaarpa* (hickory wattle). The dense ground cover commonly includes *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass) as well as a range of other graminoid and forb species. Occurs on stream and channel banks. Riverine. (BVG1M: 16a).

Short description: *Eucalyptus camaldulensis* and/or *E. tereticornis* +/- *Melaleuca* spp. +/- *Casuarina cunninghamiana* fringing woodland on channels and levees

Supplementary descriptions:

Subregions: 4, 5, (6), (2), (10.3), (11.1), (11.4), (11.3), (11.5), (7.5)

Protected areas: Girringun NP, Paluma Range NP, Pinnacles NP, Dalrymple NP, White Mountains RR, Porcupine Gorge NP, Great Basalt Wall NP, White Mountains NP

Extent in reserves: Low

Wetland: Riverine

Special values: 9.3.1: Significant habitat as drought refuge, wildlife corridors and for arboreal animals.

Comments: 9.3.1: In areas close to the Wet Tropics Bioregion, *Syzygium* spp., *Lophostemon suaveolens* (swamp mahogany) and *Acacia aulacocarpa* (brown salwood) may be present and in the southeast *Livistona* spp. (cabbage palm) are present. Small areas of *Melaleuca* sp. aff. *viridiflora* woodland occur at the tops of drainage lines in the south. In narrow ephemeral drainage lines patches dominated *Melaleuca bracteata* may occur. Generally on eastern flowing rivers in the south of the bioregion. Vulnerable to invasive weeds *Lantana camara*, *Melinis repens* (Red Natal grass), *Cryptostegia grandiflora* (rubber vine), *Xanthium occidentale* (thornapple), *Sida rhombifolia* (Paddy's lucerne), *Mesosphaerum suaveolens*, *Stachytarpheta jamaicensis* (snakeweed), *Bidens pilosa* (cobblers' peg) and *Megathyrsus maximus* (Guinea grass). Subject to introduction of exotic pasture species such as *Cynodon dactylon* (couch)* through pasture improvement.

Estimated extent:¹ Pre-clearing 93000 ha; Remnant 2021 91000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Rubber vine (*Cryptostegia grandiflora*) infestation and total high grazing pressures are leading to degradation. Timber harvesting is removing significant habitat trees.

Regional ecosystem 9.3.2

Description: Woodland to open woodland of *Eucalyptus leptophleba* (Molloy red box) and/or *E. chlorophylla* (glossy-leaved box) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *E. cullenii* (Cullen's ironbark). There is usually a sparse sub-canopy layer, which can contain canopy species along with *Melaleuca viridiflora* (broad-leaved paperbark), *M. nervosa* (woodland paperbark), *M. citrolens* (scrub teatree) and *Petalostigma* spp. The shrub-layer is absent to sparse and can contain *Carissa lanceolata* (currantbush), *Planchonia careya* (cocky apple) and *Gardenia vilhelmii* (breadfruit). A mid-dense to dense grassy ground layer is generally present and often includes *Heteropogon contortus* (black speargrass), *Aristida* spp., *Themeda triandra* (kangaroo grass) and *Sarga plumosum* (plume sorghum). Occurs on river levees and terraces. Not a Wetland. (BVG1M: 16b).

Short description: *Eucalyptus leptophleba* and/or *E. chlorophylla* +/- *Corymbia dallachiana* woodland on river levees and terraces

Supplementary descriptions: Perry et al. (1964): Georgetown Unit 6

Subregions: 3, (2), (2.4), (2.6), (7.9), (7.8)

Protected areas: Mount Lewis NP, Kuranda West FR

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.3.2: Significant habitat particularly for herbivores such as macropods and arboreal mammals.

Comments: 9.3.2: This unit is distinguished from communities 9.3.3a and 9.3.3e by not having the subdominant species as a major component of the community. Confined to the north of the bioregion. *Cryptostegia grandiflora* (rubber vine) infestation and total high grazing pressures are leading to degradation. Logging is occurring in some areas.

Estimated extent:¹ Pre-clearing 19000 ha; Remnant 2021 18000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.3.3

Description: Mixed woodland to open woodland often dominated by *Eucalyptus leptophleba* (Molloy red box) but also including combinations of the species *E. platyphylla* (poplar gum), *Corymbia clarksoniana* (Clarkson's bloodwood), *E. crebra* (narrow-leaved ironbark), *C. tessellaris* (Moreton Bay ash), and *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *C. grandifolia* subsp. *grandifolia* and *C. polycarpa* (long-fruited bloodwood). An open sub-canopy dominated by canopy species often occurs. An absent to a mid-dense shrub layer of *Melaleuca* spp., *Planchonia careya* (cocky apple), *Carissa lanceolata* (currantbush) and juveniles of canopy species can occur. The mid-dense to dense ground layer is dominated by *Heteropogon* spp., *Themeda triandra* (kangaroo grass) and *Sarga plumosum* (plume sorghum). Occurs on alluvial plains, terraces and levees. Soils are generally sandy alluvium. Not a Wetland. (BVG1M: 16b).

Vegetation communities in this regional ecosystem include:

9.3.3a: Woodland to low open woodland of *Eucalyptus leptophleba* (Molloy red box) +/- *E. platyphylla* (poplar gum) +/- *Corymbia confertiflora* (broad-leaved carbeen) +/- *E. crebra* (narrow-leaved ironbark) or *E. cullenii* (Cullen's ironbark) +/- *C. clarksoniana* (Clarkson's bloodwood). The subdominant species may be codominant in this community. An open sub-canopy of canopy species can occur. The shrub layer is absent to sparse and contain juvenile canopy species, *Carissa lanceolata* (currantbush) and *Atalaya hemiglaucula* (whitewood). The dense grassy ground layer is dominated by *Heteropogon contortus* (black speargrass) and *Bothriochloa* spp. (bluegrasses). Occurs on alluvial plains and terraces. Not a Wetland. (BVG1M: 16b).

9.3.3b: Mixed woodland including combinations of *Corymbia tessellaris* (Moreton Bay ash), *Eucalyptus crebra* (narrow-leaved ironbark), *E. platyphylla* (poplar gum) and *E. tereticornis* (bluegum) and/or *E. camaldulensis* (river red gum) +/- *C. clarksoniana* (Clarkson's bloodwood). A sub-canopy dominated by canopy species often occurs. The shrub-layer varies from none to scattered juvenile canopy species and *Carissa lanceolata* (currantbush) and *Capparis lasiantha*. The ground layer is dense grassy and is dominated by *Heteropogon contortus* (black speargrass). Occurs on alluvial plains and terraces. Not a Wetland. (BVG1M: 16b).

9.3.3c: Woodland to open woodland of *Eucalyptus leptophleba* (Molloy red box) +/- *E. platyphylla* (poplar gum) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *E. cullenii* (Cullens ironbark) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Corymbia* spp. The mixed sub-canopy is sparse to mid-dense and includes canopy species, *Petalostigma pubescens* (quinine) and *Melaleuca* spp. The shrub layer is sparse. The ground layer is mid-dense to dense and is dominated by the grasses *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on alluvial plains and terraces. Not a Wetland. (BVG1M: 16b).

9.3.3d: Woodland to open woodland of *Eucalyptus leptophleba* (Molloy red box) +/- *Corymbia polycarpa* (long-fruited bloodwood) +/- *Corymbia grandifolia* subsp. *grandifolia* +/- *Corymbia* spp. The sub-canopy contains scattered canopy species, *Terminalia* spp., *Lysiphyllum* spp. and *Grevillea* spp. The shrub layer varies from none to sparse and includes *Gardenia vilhelmii* (breadfruit), *Planchonia careya* (cocky apple), *Carissa lanceolata* (currantbush) and juveniles of canopy species. There is a grassy ground layer usually dominated by *Heteropogon contortus* (black speargrass). Occurs on alluvial plains and levees. Not a Wetland. (BVG1M: 16b).

9.3.3e: Woodland of *Eucalyptus leptophleba* (Molloy red box) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Corymbia* spp. The shrub layer varies from none to sparse and includes juvenile canopy species and *Planchonia careya* (cocky apple). The ground layer is mid-dense to dense and is dominated by the grasses *Heteropogon contortus* (black speargrass) and *H. triticeus* (giant speargrass), *Sarga plumosum* (plume sorghum) and *Themeda triandra* (kangaroo grass). Alluvial flats and river levees. Not a Wetland. (BVG1M: 16b).

Short description: *Corymbia* spp. and *Eucalyptus* spp. dominated mixed woodland on alluvial flats, levees and plains

Supplementary descriptions:

Subregions: 4, 2, 3, 1, (5), (3.1), (6), (2.6), (2.4), (2.9), (2.5), (3.5), (3.6), (11.3), (7.8), (7.9), (10.3)

Protected areas: Littleton NP, Girringun NP, Dalrymple NP, Girringun CP, Blackbraes NP, Canyon RR, Bulleringa NP, Girringun RR, Undara Volcanic NP, Littleton RR, Dinden West FR, Kuranda West FR, Mount Lewis NP, Hann Tableland NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.3.3: Significant habitat as drought refuge, wildlife corridors and for arboreal animals.

Comments: 9.3.3: Occurs extensively through-out the bioregion.
 9.3.3a: This unit is distinguished from RE 9.3.2 by having *Corymbia* spp. and *Eucalyptus* spp. as a major component of the vegetation community. Occurs on alluvial plains in the central part of the bioregion.
 9.3.3b: This unit is distinguished from 9.3.3d by not having *E. leptophleba* as a component of the community. Occurs from the Lynd Junction to Charters Towers in the south of the bioregion.
 9.3.3c: Occurs in the northern part of the bioregion.
 9.3.3d: This unit is distinguished from 9.3.3b by having *E. leptophleba* as a component of the community. Occurs in the west of the bioregion.
 9.3.3e: Occurs close to the boundary with the Cape York Peninsula bioregion in the north of the bioregion.

Estimated extent:¹ Pre-clearing 151000 ha; Remnant 2021 130000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: High total grazing pressure and weeds such as *Mesosphaerum suaveolens* are leading to degradation. Subject to minor clearing.

Regional ecosystem 9.3.4

Description: Wetlands frequently fringed by narrow bands of trees and shrubs including various mixes of *Melaleuca viridiflora* (broad-leaved paperbark), *Eucalyptus camaldulensis* (river red gum) or *E. tereticornis* (bluegum), *Corymbia tessellaris* (Moreton Bay ash), *E. platyphylla* (poplar gum), *E. brownii* (Reid River box) and *E. moluccana* (gum-topped box). *M. viridiflora* low woodland to woodland commonly occurs. On some wetlands floating plants such as *Monochoria* spp. and *Nymphoides* spp. may occur, while the bottom-rooted *Ludwigia perennis*, *Nymphaea* spp. and *Caldesia oligococca* are dominant in other areas. Tall graminoids emerging above the water surface including *Eleocharis* spp., *Oryza rufipogon* and *Panicum trichoides* are frequently present and dominate in some areas. Emergent forbs such as *Aeschynomene* spp., *Melochia corchorifolia* and *Sesbania* spp. may also occur. Occurs on swamps, lakes and billabongs on alluvial plains. Palustrine. (BVG1M: 34d).

Short description: Permanent or seasonal wetlands frequently fringed by narrow bands of trees and shrubs including *Eucalyptus* spp. On alluvial plains

Supplementary descriptions:

Subregions: 4, 6, 5, 3, 2, (1), (2.6)

Protected areas: Girringun NP, Girringun CP, Dalrymple NP, Littleton NP, Great Basalt Wall NP

Extent in reserves: Medium

Wetland: Palustrine

Special values: 9.3.4: Seasonal and permanent fresh water habitats significant for water bird feeding, breeding and drought refuge.

Comments: 9.3.4: The wetlands in this unit are usually shallow and dry out in the dry season. The floristic composition and dominance of this unit varies with locality, depth of water, flooding frequency and the substrate. This unit is distinguished by being on Quaternary alluvial surfaces whereas 9.3.7 is on Tertiary surfaces. Occurs on alluvial plains throughout the bioregion.

Estimated extent:¹ Pre-clearing 7000 ha; Remnant 2021 5000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes: Subject to clearing. Poned pastures and high total grazing pressure are leading to loss of habitat and siltation.

Regional ecosystem 9.3.5

Description: Open woodland to woodland of *Eucalyptus brownii* (Reid River box) +/- *E. crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *E. leptophleba* (Molloy red box) +/- *E. camaldulensis* (river red gum). There may be a very open sub-canopy that can contain *E. brownii*, *Atalaya hemiglauca* (whitewood) and *Grevillea striata* (beefwood). The shrub layer varies from absent to mid-dense and can include canopy species, *Eremophila mitchellii* (false sandalwood), *Carissa lanceolata* (currantbush) and *Acacia victoriae* (gundabluey). The ground layer varies from open to dense and can contain a variety of species including *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass), *Chrysopogon fallax* (golden beard grass) and *Bothriochloa* spp. (bluegrasses). Occurs on alluvial plains and depressions in sandplains. Not a Wetland. (BVG1M: 17a).

Short description: *Eucalyptus brownii* +/- *Eucalyptus* spp. +/- *Corymbia* spp. open woodland on alluvial plains

Supplementary descriptions:

Subregions: 2, 4, 5, (2.9), (6), (11.4), (10.3)

Protected areas: Blackbraes NP, Porcupine Gorge NP, Girringun NP, Girringun CP, Girringun RR

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.3.5: In the south west of the bioregion this community includes some areas of *E. brownii* on sandplains. Occurs on alluvial plains in the southern half of the bioregion. Subject to invasion by weeds *Cryptostegia grandiflora* (rubber vine), *Vachellia farnesiana* (mimosa), *Melinis repens* (Red Natal grass), *Lantana camara* and *Malvastrum americanum* (spiked *Malvastrum*). Subject to introduction of pasture grasses such as *Cenchrus ciliaris* (buffel grass).

Estimated extent:¹ Pre-clearing 60000 ha; Remnant 2021 59000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: High total grazing pressure and clearing are leading to degradation.

Regional ecosystem 9.3.6

Description: Woodland to open woodland of *Eucalyptus platyphylla* (poplar gum) +/- *Corymbia* spp. The mid layer is generally absent and the ground layer is sparse. Occurs on alluvial plains and run-on areas, often on Tertiary remnant surfaces. Often on areas with clay sub-soil and impeded drainage. Contains Palustrine. (BVG1M: 16c).

Vegetation communities in this regional ecosystem include:

9.3.6a: Woodland to open woodland of *Eucalyptus platyphylla* (poplar gum) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. tessellaris* (Moreton Bay ash) +/- *E. tereticornis* (bluegum). The sub-canopy layer varies from none to scattered individuals of canopy species, *Petalostigma pubescens* (quinine), *Bursaria incana* (prickly pine) and *Grevillea* spp. The shrub layer varies from absent to very scattered individuals of *Denhamia cunninghamii* (yellowberry bush). The sparse to grassy ground layer is dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on alluvial plains and run-on areas. Often on areas with clay sub-soil and impeded drainage. Contains Palustrine. (BVG1M: 16c).

9.3.6b: Open woodland to woodland of *Eucalyptus platyphylla* (poplar gum) and *Eucalyptus tereticornis* (bluegum). The mid-layer is absent though scattered juvenile canopy species and *Melaleuca viridiflora* (broad-leaved paperbark) do occur. The dense ground cover is dominated by *Eleocharis* spp., *Leersia hexandra* and sedges, with *Nymphoides* spp. and *Myriophyllum* spp. common when the ground layer is inundated. Occurs on depressions on Tertiary remnant surfaces. Palustrine. (BVG1M: 16c).

Short description: *Eucalyptus platyphylla* +/- *Eucalyptus* spp. +/- *Corymbia* spp. woodland on alluvial plains

Supplementary descriptions:

Subregions: 4, 6, 5, (10.3), (3), (10.2)

Protected areas: Girringun NP, Girringun CP, Great Basalt Wall NP, Girringun RR

Extent in reserves: Medium

Wetland: Contains Palustrine

Special values: 9.3.6: Includes seasonal wetlands important for water bird feeding.
9.3.6a: Includes seasonal wetlands important for water bird feeding.

Comments: 9.3.6: *Corymbia clarksoniana* is more common as a subdominant species in the north. Occurs throughout the bioregion. Vulnerable to invasion by weeds *Melinis repens* (Red Natal grass), *Lantana camara*, *Themeda quadrivalvis* (grader grass), *Malvastrum americanum* (spiked Malvastrum) and *Xanthium occidentale* (thornapple).
9.3.6a: Occurs throughout the bioregion. Vulnerable to invasion by weeds *Melinis repens* (Red Natal grass), *Lantana camara*, *Themeda quadrivalvis* (grader grass), *Malvastrum americanum* (spiked Malvastrum) and *Xanthium occidentale* (thornapple).
9.3.6b: Restricted to depressions within Tertiary surfaces near the upper Burdekin River.

Estimated extent:¹ Pre-clearing 20000 ha; Remnant 2021 19000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.3.7

Description: Wetlands and seasonally inundated grasslands with a fringing open woodland of mixed *Eucalyptus* spp. varying between *Eucalyptus platyphylla* (poplar gum), *E. leptophleba* (Molloy red box), *E. camaldulensis* (river red gum) or *E. tereticornis* (bluegum), *E. brownii* (Reid River box) and *Corymbia polycarpa* (long-fruited bloodwood) with no mid layer and a ground layer dominated by sedges, aquatic grasses and grasses which are seasonally dependent. In some areas prone to less inundation shrublands of *Melaleuca* spp. can occur. Occurs on Tertiary surfaces, often formed against basalt flows. Palustrine. (BVG1M: 34d).

Short description: Wetlands and seasonally inundated grasslands with a fringing open woodland of mixed *Eucalyptus* spp. on Tertiary surfaces

Supplementary descriptions:

Subregions: 5, 6, 2, 4, (2.9)

Protected areas: Blackbraes NP, Canyon RR, Girringun NP, Great Basalt Wall NP

Extent in reserves: Low

Wetland: Palustrine

Special values: 9.3.7: Includes both seasonal and permanent wetlands significant as feeding and breeding sites for water birds, and as drought refuge.

Comments: 9.3.7: Distinguished from RE 9.3.4 by being on Tertiary surfaces, rather than Quaternary alluvial surfaces. Occurs in the central and southern parts of the bioregion.

Estimated extent:¹ Pre-clearing 11000 ha; Remnant 2021 11000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes: Ponded pastures and seasonally high total grazing pressure are leading to degradation.

Regional ecosystem 9.3.8

Description: Woodland to open forest of *Eucalyptus moluccana* (gum-topped box) +/- *E. tereticornis* (bluegum) +/- *E. crebra* (narrow-leaved ironbark). The shrub layer varies from absent to scattered shrubs including juvenile *E. moluccana*, *Acacia* spp. and *Petalostigma pubescens* (quinine). The ground layer is dominated by tussock grasses including *Bothriochloa* spp. (bluegrasses) and *Heteropogon contortus* (black speargrass). Occurs on alluvial deposits and run-on areas often on a Tertiary remnant surface. Soils may be grey self-mulching clays. Alluvial deposits may overlie lateritised surfaces. Not a Wetland. (BVG1M: 13d).

Short description: *Eucalyptus moluccana* woodland on alluvial deposits

Supplementary descriptions:

Subregions: 6, 4, (5), (7.6)

Protected areas: Girringun NP, Girringun RR, Girringun CP

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.3.8: Occurs in the central eastern parts of the bioregion adjacent to the Wet Tropics bioregional boundary.

Estimated extent:¹ Pre-clearing 13000 ha; Remnant 2021 13000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: High total grazing pressure is leading to degradation.

Regional ecosystem 9.3.9

Description: Woodland to low closed forest of *Acacia cambagei* (gidgee) +/- *A. harpophylla* (brigalow). There is often an open sub-canopy which can contain *A. cambagei*, *Lysiphyllum carronii* (Queensland ebony), *Eremophila mitchellii* (false sandalwood) and *Terminalia oblongata* (yellowwood). Canopy species can also be found in an open shrub layer along with *Carissa lanceolata* (currantbush) and *Atalaya hemiglauca* (whitewood). The ground layer contains a range of grasses and forbs and is seasonally dependent. Occurs on run-on areas and gentle drainage depressions on cracking clay soils. Not a Wetland. (BVG1M: 26a).

Short description: *Acacia cambagei* +/- *A. harpophylla* woodland on cracking clay soils

Supplementary descriptions:

Subregions: 5, 4

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.3.9: Possible regional refuge for some species.

Comments: 9.3.9: Occurs in a restricted area east of the Great Basalt Wall in the south of the bioregion. Vulnerable to invasive weed species *Cryptostegia grandiflora* (rubber vine) and *Malvastrum americanum* (spiked Malvastrum) and exotic pasture species *Cenchrus ciliaris* (buffel grass) and *Bothriochloa pertusa* (Indian couch).

Estimated extent:¹ Pre-clearing 2000 ha; Remnant 2021 800 ha

VM class: Of concern

Biodiversity status: Endangered

Biodiversity status notes: Rare ecosystem. Clearing and high total grazing pressure are leading to degradation.

Regional ecosystem 9.3.10

Description: Low closed forest to woodland of *Melaleuca bracteata*. Occurs on swamps and occasionally along creek lines on basalt geologies. Palustrine. (BVG1M: 21b).

Vegetation communities in this regional ecosystem include:

9.3.10a: Low woodland to low open forest of *Melaleuca bracteata* (black teatree) +/- *Casuarina cunninghamiana* (river sheoak) +/- *Eucalyptus leptophleba* (Molloy red box) +/- *Eucalyptus* spp. +/- *Corymbia* spp. emergents or vine scrub species. The shrub layer varies from absent, to a continuum with *M. bracteata* and dry rainforest species where these are present. The ground layer is dominated by tussock grasses such as *Heteropogon contortus* (black speargrass), *Eragrostis* spp. and *Eulalia aurea* (silky browntop) or *Cyperaceae* spp. (sedges). This community is very variable in structure and can also occur as small clumps of trees in association with the grassland regional ecosystem 9.3.27 or as a dense sub-canopy layer of *M. bracteata* under a dominant canopy of *Casuarina cunninghamiana*. Occurs on or fringing swamps and springs on basalt. Palustrine. (BVG1M: 21b).

9.3.10b: Low open forest to open forest of *Melaleuca bracteata* (black teatree) +/- *Lysiphyllum carronii* (Queensland ebony). The shrub layer varies from absent to scattered canopy species. The ground layer can contain a range of graminoid and sedge species. Occurs along creek lines in basalt. Riverine. (BVG1M: 21b).

Short description: *Melaleuca bracteata* low closed forest +/- *Eucalyptus* spp. emergents or vine thicket species on swamps in basalt plains

Supplementary descriptions:

Subregions: 5, (4), (2), (6)

Protected areas: Undara Volcanic NP, Mount Rosey RR, Blackbraes NP, Porcupine Gorge NP, Kinrara NP, Great Basalt Wall NP

Extent in reserves: High

Wetland: Palustrine

Special values: 9.3.10: Springs associated with this ecosystem are significant for local fauna and may support endemic flora.

Comments: 9.3.10: Occurs in the central and southern bioregion. Subject to invasive weed species *Cryptostegia grandiflora* (rubber vine), *Themeda quadrivalvis* (grader grass), *Vachellia farnesiana* (mimosa), *Melinis repens* (Red Natal grass), *Passiflora foetida* (stinking passionflower) and *Malvastrum americanum* (spiked Malvastrum). These are groundwater discharge areas associated with salinity risk. Associated springs are subject to high total grazing pressure and can be considered endangered.

9.3.10a: Occurs in the central and southern bioregion.

9.3.10b: Occurs in the central and southern bioregion.

Estimated extent:¹ Pre-clearing 77000 ha; Remnant 2021 76000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.3.11

Description: Wetlands (sometimes ephemeral), fringed by grasses and sedges or with a fringing woodland which can contain *Eucalyptus camaldulensis* (river red gum) or *E. tereticornis* (bluegum) or *Melaleuca fluviatilis* (teatree). Occurs in pockets surrounded by rocky basalt walls, run-on areas and areas of alluvial deposition on basalt geologies. Palustrine. (BVG1M: 34d).

Vegetation communities in this regional ecosystem include:

9.3.11a: Wetlands (sometimes ephemeral), often with a fringing woodland which can contain *Eucalyptus camaldulensis* (river red gum) or *E. tereticornis* (bluegum) +/- *Eucalyptus platyphylla* (poplar gum) +/- *E. leptophleba* (Molloy red box). The fringing vegetation can also include a sub-canopy layer which can contain *Melaleuca* spp. (teatrees) Alternatively the fringing woodland species can occur as emergents +/- *Casuarina* spp. (sheoaks). Ground layer species present include *Marsilea hirsuta* (short-fruited nardoo), *Schoenoplectus* spp. (clubrush) and *Eleocharis* spp. (spike-rushes) This unit may have areas of grassland included. Occurs on run-on areas and areas of alluvial deposition on basalt geologies. Palustrine. (BVG1M: 34d).

9.3.11b: Permanent or ephemeral wetlands on dark basaltic clay with or without loose basalt rocks, surrounded by Quaternary basalt. This unit includes a mosaic of open areas and low rocky rises with *Eucalyptus camaldulensis*. Water bodies are fringed by *Sesbania cannabina* var. *cannabina*, grasses such as *Paspalidium udum*, and/or sedges such as *Cyperus exaltatus*, often with a zone of trees behind. Trees include *Eucalyptus camaldulensis* (river red gum) and/or *Melaleuca fluviatilis* (teatree). Open grassland areas include *Eriochloa* sp., *Cyperus* sp. and various other spp. Closed depressions in the great basalt wall surrounded by Quaternary basalt. Palustrine. (BVG1M: 34d).

Short description: Wetlands (sometimes ephemeral) with aquatic species and fringed with *Eucalyptus* spp. communities within basalt plains and flows

Supplementary descriptions:

Subregions: 5, (6), (4), (2), (1)

Protected areas: Undara Volcanic NP, Great Basalt Wall NP, Dalrymple NP, Kinrara NP

Extent in reserves: Low

Wetland: Palustrine

Special values: 9.3.11: Seasonal wetlands significant for water bird feeding and breeding.
9.3.11a: Seasonal wetlands significant for water bird feeding and breeding.

Comments: 9.3.11: Occurs extensively though the McBride basalts and the Great Basalt Wall in the central and southern bioregion respectively.
9.3.11a: Occurs in scattered patches in the central and southern bioregion.
9.3.11b: Confined to within the Great Basalt Wall in the south of the bioregion. The naturalised grass *Cynodon dactylon** is common in the ground layer.

Estimated extent:¹ Pre-clearing 25000 ha; Remnant 2021 25000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: High total grazing pressure and weeds such as ponded pastures and *Vachellia farnesiana* are leading to degradation.

Regional ecosystem 9.3.12

Description: Sandy or rocky river beds sometimes with waterholes and lagoons. Occurs along major rivers and channels. Riverine. (BVG1M: 16d).

Vegetation communities in this regional ecosystem include:

9.3.12a: Sandy river beds sometimes with patches of ephemeral grassland, herbland or sedgeland, which can include *Heteropogon contortus* (black speargrass), *Bothriochloa* spp., and *Ammannia multiflora*. There can be clumps of shrubs (or isolated emergents), which can include *Lophostemon grandiflorus*, *Melaleuca* spp., *Eucalyptus camaldulensis* (river red gum) and *Casuarina cunninghamiana* (river sheoak). Sandy river beds. Riverine. (BVG1M: 16d).

9.3.12b: Waterholes and lagoons in the bed of larger rivers containing aquatic vegetation. Waterholes and lagoons in the bed of larger rivers. Riverine. (BVG1M: 16d).

Short description: River beds and associated waterholes on major rivers and channels

Supplementary descriptions:

Subregions: 2, 4, 1, 3, (5), (2.9), (6), (2.6), (3.1), (2.5), (2.4), (11.1), (11.3), (11.5), (11.4), (7.5), (7.9), (10.3)

Protected areas: Bulleringa NP, Rungulla NP, Canyon RR, Palmer Goldfield RR, Mount Windsor NP, Littleton NP, Paluma Range NP, Dalrymple NP, Chillagoe-Mungana Caves NP, White Mountains NP, Mount Lewis NP, Rungulla RR, Porcupine Gorge NP

Extent in reserves: Low

Wetland: Riverine

Special values: 9.3.12: Significant habitat as drought refuge, wildlife corridors and for arboreal animals.

Comments: 9.3.12: Generally mapped in a mosaic with fringing woodland regional ecosystems. Occurs on major rivers through-out the bioregion.
9.3.12a: Occurs in major rivers through-out the bioregion.
9.3.12b: Occurs on major rivers through-out the bioregion.

Estimated extent:¹ Pre-clearing 67000 ha; Remnant 2021 66000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Rubber vine (*Cryptostegia grandiflora*) infestation, total high grazing pressures and alluvial mining are leading to degradation.

Regional ecosystem 9.3.13

Description: Fringing open forest to low woodland containing any combination of *Melaleuca argentea* (silver-leafed paperbark), *M. fluviatilis* (teatree) or *M. leucadendra* (weeping teatree), *Eucalyptus camaldulensis* (river red gum), *Casuarina cunninghamiana* (river sheoak), *Lophostemon grandiflorus* (Northern swamp box), +/- *Corymbia* spp. In eastern areas *E. tereticornis* (bluegum) may replace *E. camaldulensis* (river red gum). There can be an open sub-canopy, which can include canopy species, *M. linariifolia* (Snow-in-summer) and/or *M. bracteata* (black teatree), *Lysiphillum* sp., *Ficus opposita* (sandpaper fig) and *Acacia* spp. Low woodlands of *M. bracteata* with emergent *Eucalyptus* spp. can also occur. The shrub layer can vary from none to scattered juvenile canopy spp., *Acacia holosericea* (velvet wattle) and/or other *Acacia* spp. and *Planchonia careya* (cocky apple). The ground layer on the steep banks can be grassy and include *Heteropogon* spp. (speargrasses), *Arundinella* spp., *Eragrostis* spp. and *Cyperus* spp. (sedges) but its presence is seasonally dependent. Occurs on stream and channel banks. Riverine. (BVG1M: 22c).

Short description: *Melaleuca* spp., *Eucalyptus camaldulensis* and *Casuarina cunninghamiana* fringing open forest on streams and channels

Supplementary descriptions:

Subregions: 2, 1, 4, 3, (2.9), (5), (2.6), (6), (2.5), (2.4), (3.1), (7.8)

Protected areas: Littleton NP, Canyon RR, Bulleringa NP, Rungulla NP, Chillagoe-Mungana Caves NP, Rungulla RR, Dinden West FR, Littleton RR, Danbulla NP, Kuranda West FR, Hann Tableland NP

Extent in reserves: Low

Wetland: Riverine

Special values: 9.3.13: Significant habitat as drought refuge, wildlife corridors and for arboreal animals.

Comments: 9.3.13: Often only one crown width wide. *Casuarina cunninghamiana* occurs in small areas of rocky river beds. Generally occurs on western flowing rivers on the western side of the bioregion. This site is vulnerable to weed infestation and the ground layer particularly was heavily infested with weeds, including *Cryptostegia grandiflora* (rubber vine), Vulnerable to invasion by exotic weeds, including *Cryptostegia grandiflora* (rubber vine), *Mesosphaerum suaveolens*, *Megathyrsus maximus* (Guinea grass), *Melinis repens* (Red Natal grass), and *Themeda quadrivalvis* (grader grass).

Estimated extent:¹ Pre-clearing 95000 ha; Remnant 2021 93000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Rubber vine (*Cryptostegia grandiflora*) infestation, total high grazing pressures and alluvial mining are leading to degradation.

Regional ecosystem 9.3.14

Description: Fringing woodland to open forest of *Melaleuca fluviatilis* (teatree) and/or *M. leucadendra* (weeping teatree) and/or *M. argentea* (silver-leafed paperbark) +/- *Eucalyptus tereticornis* (bluegum) or *Eucalyptus camaldulensis* (river red gum) +/- *Nauclea orientalis* (Leichhardt tree). A mid-dense shrub layer is present. The ground layer is frequently bare sand with leaf litter. Occurs on stream banks and channels on western-flowing rivers draining the Hodgkinson Basin metamorphics (subregion 3). Riverine. (BVG1M: 22c).

Vegetation communities in this regional ecosystem include:

9.3.14a: Fringing open and low open forest to open woodland of *Melaleuca leucadendra* (weeping teatree) and/or *M. fluviatilis* (teatree) and/or *Eucalyptus camaldulensis* (river red gum) or *E. tereticornis* (bluegum) +/- *Lophostemon grandiflorus* (Northern swamp box) +/- *Nauclea orientalis* (Leichhardt tree) +/- *Ficus* spp. *E. camaldulensis* can sometimes occur as an emergent. An open sub-canopy can occur and include *Terminalia* spp., *Acacia* spp., *M. linariifolia* (Snow-in Summer) and *Casuarina cunninghamiana* (river sheoak). There is often a low open to mid-dense shrub layer, which often includes juvenile canopy species, *Lagerstroemia* spp., and *M. trichostachya*. The very sparse to mid-dense shrub layer is composed of a variety of species. The ground layer is sparse to mid-dense and can include *Eragrostis schultzei*, *Nelsonia campestris*, *Cyperus* spp. and *Panicum* spp. Occurs on major rivers and streams. Riverine. (BVG1M: 22c).

9.3.14b: Woodland of *Melaleuca argentea* (silver-leafed paperbark) and/or *M. leucadendra* (weeping teatree), *Acacia auriculiformis* (sallywood) and *Syzygium forte* subsp. *potamophilum*. Deciduous species such as *Nauclea orientalis* (Leichhardt tree), and less frequently *Ficus racemosa* var. *racemosa*, *Lagerstroemia archeriana* subsp. *archeriana* and *Terminalia platyphylla* (wild plum), are often present as scattered canopy trees. A sparse to mid-dense sub-canopy tree layer is usually present, with *Diospyros* spp., *Barringtonia acutangula* subsp. *acutangula*, *Acacia torulosa* and *Strychnos lucida* frequent species in this layer. *Leptospermum madidum* subsp. *madidum* frequently occurs in the stream channels as a low tree up to 4 metres tall. The very sparse to mid-dense shrub layer is composed of a variety of species. The ground layer is generally very sparse with *Panicum trichoides* the most frequent graminoid. Occurs along major rivers. Riverine. (BVG1M: 22c).

Short description: *Melaleuca* spp. +/- *Acacia* spp. +/- *Syzygium* spp. +/- *Leptospermum* spp. fringing woodland on channels and levees

Supplementary descriptions: Neldner and Clarkson (1995): 50, Neldner and Clarkson (1995): 48

Subregions: 3, (3.1), (2), (3.5), (2.4), (3.6), (7.8), (7.9)

Protected areas: Mount Windsor NP, Palmer Goldfield RR, Mount Lewis NP

Extent in reserves: Low

Wetland: Riverine

Special values: 9.3.14: Significant habitat as drought refuge, wildlife corridors and for arboreal animals.

Comments: 9.3.14: It usually occurs in a narrow band ranging from 1 to 50 metres wide, adjacent to the stream channels. Occurs on rivers draining the Hodgkinson Basin metamorphics. Prone to weed infestation by *Cryptostegia grandiflora*, *Melinis repens*, *Themeda quadrivalvis* and *Xanthium occidentale*.
9.3.14b: In the south of its distribution it may be less mesic species in this community. Occurs along major streams near Lakeland Downs in the north of the bioregion.

Estimated extent:¹ Pre-clearing 19000 ha; Remnant 2021 18000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Rubber vine (*Cryptostegia grandiflora*) infestation and high grazing pressure are leading to degradation. Weedy forbs such as *Passiflora foetida*, *Mesosphaerum suaveolens*, *Achyranthes aspera*, *Euphorbia hirta*, are frequent in the ground layer

Regional ecosystem 9.3.15

Description: Fringing woodland to open forest containing any combination of *Casuarina cunninghamiana*, *Eucalyptus tereticornis* and *E. platyphylla* +/- *Lophostemon suaveolens* +/- *Nauclea orientalis* +/- *Corymbia tessellaris* +/- *C. clarksoniana*. There is often a low sub-canopy layer which can include canopy species and *Ficus* spp. The open shrub layer contains juvenile canopy species and can include mesic species such as *Euroschinus falcatus*, *Acacia mangium* and *Syzygium* sp. The ground layer is medium to dense grassy and contains *Imperata cylindrica*, *Crotalaria* sp., *Heteropogon contortus*, *Cyperus* spp. and *Paspalum* spp. Occurs on stream banks and channels in areas of higher rainfall in the central east of the bioregion (subregion 6). Riverine. (BVG1M: 16a).

Short description: *Eucalyptus tereticornis* +/- *Casuarina cunninghamiana* +/- *Melaleuca* spp. fringing woodland on channels and levees

Supplementary descriptions:

Subregions: 6, 4, 3, (2), (5), (7.4), (7.6), (7.5)

Protected areas: Girringun NP, Girringun CP, Girringun RR, Evelyn Creek CP

Extent in reserves: High

Wetland: Riverine

Special values: 9.3.15: Significant habitat as drought refuge, wildlife corridors and for arboreal animals.

Comments: 9.3.15: In areas close to the Wet Tropics bioregion mesic species such as *Tristania* spp. and *Syzygium* spp. may occur. In areas of higher rainfall in the central east of the bioregion. Subject to clearing. Also very prone to weed infestation, including *Lantana camara*, *Megathyrsus maximus*, *Melinis repens*, *Passiflora* sp. and *Mesosphaerum suaveolens*.

Estimated extent:¹ Pre-clearing 21000 ha; Remnant 2021 20000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Rubber vine (*Cryptostegia grandiflora*) infestation and total high grazing pressures are leading to degradation. Timber harvesting is removing significant habitat trees.

Regional ecosystem 9.3.16

Description: Open forest to open woodland of *Eucalyptus tereticornis* (bluegum) and/or *E. platyphylla* (poplar gum) and/or *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. tessellaris* (Moreton Bay ash). The sub-canopy can be absent to open and include canopy species, *Melaleuca nervosa* (woodland paperbark), *M. viridiflora* (broad-leaved paperbark) and *Lophostemon suaveolens* (swamp mahogany). The shrub layer ranges from absent to open and can include *Acacia crassicaarpa* (spoon tree), *Petalostigma pubescens* (quinine), *Pandanus* sp. and *Ficus opposita* (sandpaper fig). There is a mid-dense to dense grassy layer usually dominated by *Heteropogon contortus* (black speargrass) or *Imperata cylindrica* (blady grass). Occurs on alluvial plains and levees rather than as a fringing woodland. Not a Wetland. (BVG1M: 16c).

Short description: *Eucalyptus tereticornis* and/or *E. platyphylla* and/or *Corymbia clarksoniana* woodland on alluvial flats, levees and plains

Supplementary descriptions:

Subregions: 6, 4, (5), (3), (2), (7.5), (7.6), (7.8)

Protected areas: Girringun NP, Girringun CP, Girringun RR, Mount Lewis NP, Kuranda West FR

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.3.16: Significant habitat as drought refuge, wildlife corridors and for arboreal animals.

Comments: 9.3.16: Not a fringing woodland and lacks the *Melaleuca* spp. in the canopy of similar units such as 9.3.1 and 9.3.15. Close to the Wet Tropics boundary mainly in the central east bioregion. Vulnerable to weed infestation by *Themeda quadrivalvis* (grader grass), *Megathyrsus maximus* (Guinea grass) and *Praxelis clematidea*.

Estimated extent:¹ Pre-clearing 33000 ha; Remnant 2021 29000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Subject to minor clearing and degradation due to high total grazing pressure and the presence of weeds.

Regional ecosystem 9.3.17

Description: Open forest to open woodland of *Casuarina cunninghamiana* (river sheoak) and/or *Eucalyptus tereticornis* (bluegum) or *E. camaldulensis* (river red gum). Patches dominated by *Melaleuca bracteata* (black teatree) can also occur. The sub-canopy can be absent to mid-dense and include canopy species, *M. fluviatilis* (teatree) and *M. leucadendra* (weeping teatree). The shrub layer can be absent to open and include *M. bracteata*, juvenile canopy species and *Ficus opposita* (sandpaper fig). The ground layer is dense grassy and is dominated by *Dichanthium* spp. Occurs along banks and flats along creeks. Riverine. (BVG1M: 16a).

Short description: *Casuarina cunninghamiana* and/or *Eucalyptus camaldulensis* or *E. tereticornis* fringing open forest on channels and levees on basalt flows

Supplementary descriptions:

Subregions: 5, 4, (10.3)

Protected areas: Porcupine Gorge NP

Extent in reserves: Low

Wetland: Riverine

Special values: 9.3.17: Potential habitat for NCA listed species: *Oenanthe javanica*.

Comments: 9.3.17: Occurs north of the Great Basalt Wall in the south of the bioregion. *Dichanthium aristatum** is sometimes common.

Estimated extent:¹ Pre-clearing 9000 ha; Remnant 2021 9000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes: Rubber vine (*Cryptostegia grandiflora*) infestation and total high grazing pressures are leading to degradation. Subject to some clearing

Regional ecosystem 9.3.19

Description: Woodland to open woodland of *Eucalyptus coolabah* (coolibah) and/or *E. leptophleba* (Molloy red box). There is generally no mid layer and a grassy ground layer. Occurs on alluvial plains adjacent to major watercourses, on dark clay soils washed down from basalt areas. Not a Wetland. (BVG1M: 16c).

Vegetation communities in this regional ecosystem include:

9.3.19a: Woodland to open woodland of *Eucalyptus coolabah* (coolibah) and/or *E. leptophleba* (Molloy red box) +/- *Grevillea striata* (beefwood) +/- *Lysiphyllum hookeri* (Queensland ebony) +/- *Atalaya hemiglauca* (whitewood) +/- *Acacia tephрина* (boree). There is no mid layer though scattered *Eremophila* spp. and *Carissa lanceolata* (currantbush) may occur. The grassy ground layer is often dominated by *Bothriochloa* spp. (bluegrasses) and *Chloris* spp. Occurs on alluvial plains adjacent to major watercourses, on dark clay soils washed down from basalt areas. Not a Wetland. (BVG1M: 16c).

9.3.19b: Open woodland to woodland of *Eucalyptus coolabah* (coolibah). The mid-layer is generally absent. The ground layer is grassy. Occurs on alluvial plains adjacent to major watercourses, on dark clay soils washed down from basalt areas. Not a Wetland. (BVG1M: 16c).

Short description: *Eucalyptus coolabah* and/or *E. leptophleba* woodland on alluvial plains

Supplementary descriptions:

Subregions: 2, 5, 4

Protected areas: Dalrymple NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.3.19: Distinguished from 9.3.18 by not being a fringing woodland. Occurs in two distinct areas in the central and south east of the bioregion. Vulnerable to exotic weeds *Cryptostegia grandiflora* (rubber vine), *Parkinsonia aculeata* and *Malvastrum americanum* (spiked Malvastrum) and invasive pasture species *Cenchrus ciliaris* (buffel grass).

9.3.19a: Western flowing rivers. Concentrated around the upper Einasleigh River in the central bioregion.

9.3.19b: Eastern flowing rivers. Occurs adjacent to the Burdekin River north of Charters Towers in the south of the bioregion. Vulnerable to invasion by pasture species such as *Cenchrus ciliaris* and also weeds including *Malvastrum americanum*.

Estimated extent:¹ Pre-clearing 18000 ha; Remnant 2021 18000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Subject to degradation due to high total grazing pressure and the presence of weeds such as rubber vine (*Cryptostegia grandiflora*).

Regional ecosystem 9.3.20

Description:	Woodland to low open woodland of <i>Eucalyptus microneura</i> (Georgetown box) +/- <i>Corymbia pocillum</i> +/- <i>E. leptophleba</i> (Molloy red box) +/- <i>Terminalia</i> spp. There is an absent to sparse mixed shrub layer which can include juvenile canopy species, <i>Gardenia vilhelmii</i> (breadfruit), <i>Dolichandrone alternifolia</i> (lemonwood), <i>Atalaya hemiglaucula</i> (whitewood), <i>Melaleuca</i> spp. and <i>Carissa lanceolata</i> (currantbush), with some of these species sometimes forming an open sub-canopy layer. The grassy ground layer is generally dominated by <i>Heteropogon contortus</i> (black speargrass), <i>Eragrostis</i> spp. and <i>Aristida</i> spp. Occur on alluvial plains. Not a Wetland. (BVG1M: 18d).
Short description:	<i>Eucalyptus microneura</i> +/- <i>Corymbia</i> spp. +/- <i>E. leptophleba</i> woodland on alluvial plains
Supplementary descriptions:	Perry et al. (1964): Belmore Unit 3
Subregions:	2, 1, 2.6, 2.9, 5, (4), (2.5), (2.4)
Protected areas:	Littleton NP, Undara Volcanic NP, Canyon RR, Rungulla NP, Littleton RR
Extent in reserves:	Low
Wetland:	Not a Wetland
Special values:	9.3.20: Significant habitat particularly for herbivores such as macropods and arboreal mammals.
Comments:	9.3.20: This regional ecosystem can also have patches of grassland scattered through it. Occurs from Mt. Surprise to Esmeralda in the central west of the bioregion. Rubber vine <i>Cryptostegia grandiflora</i> infestation and total high grazing pressures are leading to degradation. Weeds species <i>Mesosphaerum suaveolens</i> and <i>Malvastrum americanum</i> can also occur.
Estimated extent:¹	Pre-clearing 46000 ha; Remnant 2021 45000 ha
VM class:	Least concern
Biodiversity status:	No concern at present
Biodiversity status notes:	

Regional ecosystem 9.3.21

Description:	Woodland to open woodland of <i>Eucalyptus chlorophylla</i> (glossy-leaved box) +/- <i>Erythrophleum chlorostachys</i> (Cooktown ironwood) +/- <i>Corymbia clarksoniana</i> (Clarkson's bloodwood) +/- <i>Terminalia platyptera</i> (yellowwood) +/- <i>Melaleuca stenostachya</i> (teatree). A very sparse sub-canopy of <i>Hakea persiehana</i> , <i>Melaleuca viridiflora</i> (broad-leaved paperbark) and <i>Erythrophleum chlorostachys</i> is sometimes present. A shrub layer is rarely formed, but scattered <i>Dolichandrone alternifolia</i> (lemonwood), <i>Grewia savannicola</i> , <i>M. viridiflora</i> , <i>Flueggea virosa</i> subsp. <i>melanthesoides</i> and <i>Erythrophleum chlorostachys</i> shrubs may be present. The ground layer is sparse to dense and <i>Themeda triandra</i> (kangaroo grass), <i>T. arguens</i> , <i>Sarga plumosum</i> (plume sorghum), <i>Heteropogon contortus</i> (black speargrass) and <i>H. triticeus</i> (giant speargrass) are frequent dominant grasses. Occurs extensively on alluvial plains. Not a Wetland. (BVG1M: 16c).
Short description:	<i>Eucalyptus chlorophylla</i> +/- <i>Corymbia clarksoniana</i> +/- <i>Terminalia</i> spp. woodland on alluvial plains
Supplementary descriptions:	
Subregions:	3, 3.1, 2.4, (2.6)
Protected areas:	
Extent in reserves:	No representation
Wetland:	Not a Wetland
Special values:	
Comments:	9.3.21: This unit has affinities with Cape York Peninsula regional ecosystems 3.3.16 and 3.3.36. <i>Cymbidium canaliculatum</i> is a frequent epiphyte on trees in this unit. Occurs around Lakeland Downs the far north of the bioregion.
Estimated extent:¹	Pre-clearing 6000 ha; Remnant 2021 5000 ha
VM class:	Of concern
Biodiversity status:	Of concern
Biodiversity status notes:	Clearing and high total grazing pressure are leading to degradation

Regional ecosystem 9.3.22

Description: Open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. cullenii* (Cullen's ironbark) and *Corymbia clarksoniana* (Clarkson's bloodwood) and/or *C. dallachiana* (Dallachy's gum). The shrub layer can be absent to open and the ground layer is grassy. Occurs on levees, terraces and banks of larger rivers and on flat to very gentle slopes associated with drainage lines. Not a Wetland. (BVG1M: 16c).

Vegetation communities in this regional ecosystem include:

9.3.22a: Open woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark), *Corymbia clarksoniana* (Clarkson's bloodwood) and/or *C. dallachiana* (Dallachy's gum) +/- *E. platyphylla* (poplar gum) +/- *E. brownii* (Reid River box) +/- *Eucalyptus* spp., with *E. platyphylla* and *E. brownii* sometimes dominating in small patches in the southeast. An open sub-canopy can occur and includes canopy species, *Grevillea striata* (beefwood) and *Lophostemon grandiflorus* (Northern swamp box). The dense grassy ground layer is dominated by *Heteropogon contortus* (black speargrass) and *Dichanthium* sp. Occurs on levees, terraces and banks of larger rivers and on flat to very gentle slopes associated with drainage lines. Not a Wetland. (BVG1M: 16c).

9.3.22b: Woodland of *Eucalyptus cullenii* (Cullen's ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum). The mid-layer can contain *Planchonia careya* (cocky apple) +/- *Grevillea mimosoides*. Occurs on alluvial flats along major streams. Not a Wetland. (BVG1M: 18b).

Short description: *Eucalyptus crebra* or *E. cullenii* +/- *Corymbia* spp. open woodland on alluvial levees and terraces

Supplementary descriptions:

Subregions: 4, 2, (6), (5), (2.9), (7.5)

Protected areas: Blackbraes NP, Girringun CP, Girringun NP, Girringun RR, Paluma Range NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.3.22: Potential habitat for NCA listed species: *Macropteranthes montana*.

Comments: 9.3.22: Occurs extensively in the south of the bioregion. Subject to clearing. Vulnerable to invasion by exotic weed species including *Themeda quadrivalvis* (grader grass), *Melinis repens* (Red Natal grass), *Mesosphaerum suaveolens* and *Bidens pilosa* (cobbler's peg),.

9.3.22a: Occurs extensively in the south of the bioregion.

9.3.22b: Occurs along the Walsh River between Dimbulah and Chillagoe in the central bioregion.

Estimated extent:¹ Pre-clearing 102000 ha; Remnant 2021 99000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: High total grazing pressure is leading to degradation.

Regional ecosystem 9.3.23

Description: Open forest to woodland of *Acacia tephрина* (boree). There is no mid layer though isolated individuals of *Atalaya hemiglaucа* (whitewood), *Lysiphyllum carronii* (Queensland ebony) and *Carissa lanceolata* (currantbush) can occur. The ground layer is generally sparse and forb dominated. Occurs on gilaied deep alluvial clays on the Einasleigh River, derived from, but downstream of, basalt areas. Not a Wetland. (BVG1M: 27a).

Short description: *Acacia tephрина* open forest on alluvial clay plains

Supplementary descriptions:

Subregions: 5, 2

Protected areas: Great Basalt Wall NP

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.3.23: Significant habitat as drought refuge, wildlife corridors and for arboreal animals.

Comments: 9.3.23: Occurs on the upper Einasleigh River and pockets in and adjacent to Great Basalt Wall in the central and southern bioregion. Vulnerable to invasion by exotic pasture species *Cenchrus ciliaris* (buffel grass). Other weeds are *Urochloa mosambicensis*, *Bidens bipinnata* (cobble's peg), *Xanthium occidentale* (Noogoora burr), *Vachellia farnesiana* (mimosa) and *Bothriochloa pertusa* (Indian couch).

Estimated extent:¹ Pre-clearing 4000 ha; Remnant 2021 4000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes: High total grazing pressure is leading to degradation.

Regional ecosystem 9.3.24

Description: Low woodland to low open woodland of *Melaleuca viridiflora* (broad-leaved paperbark) and/or *M. citrolens* (scrub teatree) with *Eucalyptus* spp. and *Corymbia* spp. emergents. There is no shrub layer but isolated juveniles of the canopy species, *Petalostigma banksii* (smooth-leaved quinine) and *Gardenia vilhelmii* (breadfruit) can occur. There is a dense grassy ground layer dominated by *Schizachyrium fragile* (firegrass) *Aristida* spp. and *Heteropogon* spp. (speargrasses). Occurs in shallow gully lines and drainage depressions in rolling granite or rhyolite hills. Not a Wetland. (BVG1M: 21a).

Short description: *Melaleuca viridiflora* and/or *M. citrolens* low woodland +/- *Corymbia* spp. emergents on alluvial deposits

Supplementary descriptions:

Subregions: 1, 2.9, 2, (2.4), (2.6), (2.5), (5), (3)

Protected areas: Littleton NP, Bulleringa NP, Canyon RR, Littleton RR

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.3.24: Potential habitat for NCA listed species: *Hardenbergia* sp. (Mt Mulligan J.R.Clarkson 5775).

Comments: 9.3.24: Occurs extensively around Croydon in the west of the bioregion.

Estimated extent:¹ Pre-clearing 27000 ha; Remnant 2021 27000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.3.25

Description: Grassland of *Dichanthium* spp. and/or *Astrebla* spp. and *Iseilema* spp. +/- isolated trees of *Eucalyptus microneura* (Georgetown box) +/- *E. coolabah* (coolibah) +/- *Grevillea striata* (beefwood) +/- *Lysiphyllum* sp. +/- *E. tereticornis* (bluegum) +/- *E. leptophleba* (Molloy red box) +/- *E. moluccana* (gum-topped box) +/- *E. platyphylla* (poplar gum). Occurs on alluvial grey clay deposits derived from basalt soils (as compared with 9.3.26). Contains Palustrine. (BVG1M: 30b).

Vegetation communities in this regional ecosystem include:

9.3.25a: Grassland of *Dichanthium* sp. on basalt derived soils. Occurs on basalt derived alluvium. Not a Wetland. (BVG1M: 30b).

9.3.25b: Swamps & run-on areas in grassland on basalt derived soils. Occurs on run-on areas from the basalt. Palustrine. (BVG1M: 34d).

Short description: *Dichanthium* spp., and/or *Astrebla* spp. +/- *Iseilema* spp. grassland on alluvial deposits derived from basalt soils

Supplementary descriptions: Galloway et al. (1970): Radnor, Balurga Unit 4, Koolburra Unit 3

Subregions: 2, 5, 4, (6)

Protected areas: Girringun NP

Extent in reserves: Low

Wetland: Contains Palustrine

Special values: 9.3.25: Significant habitat particularly for herbivores such as macropods and arboreal mammals.

Comments: 9.3.25: This RE is distinguished from 9.3.27 by being on basalt derived alluvium transported out of basalt geologies NOT overlying basalt geologies. Occurs in patches through-out the central and southern bioregion.

9.3.25a: Occurs in patches through-out the central and southern bioregion.

9.3.25b: Occurs in patches through-out the central and southern bioregion.

Estimated extent:¹ Pre-clearing 18000 ha; Remnant 2021 18000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: High total grazing pressure is leading to degradation

Regional ecosystem 9.3.26

Description: Variable mixed grassland including *Eragrostis* spp., *Aristida* spp., *Enneapogon* spp., *Iseilema* spp., *Chloris* spp. or *Dichanthium* spp. These grasslands may have isolated trees or small clumps of *Eucalyptus leptophleba* (Molloy red box) and/or *E. microneura* (Georgetown box) and/or *Melaleuca viridiflora* (broad-leaved paperbark) and/or *M. citrolens* (scrub teatree) scattered across them. Occurs on alluvial deposits that are not derived from basalt soils (as compared with 9.3.25). Contains Palustrine. (BVG1M: 32a).

Vegetation communities in this regional ecosystem include:

9.3.26a: Grassland to open grassland on non-basalt derived alluvial deposits. These grasslands may have isolated trees or small clumps of various *Eucalyptus* spp. or *Melaleuca* spp. Occurs on non-basalt derived alluvium. Not a Wetland. (BVG1M: 32b).

9.3.26b: Swamps and run-on areas in grassland to open grassland on non-basalt derived alluvial deposits. Occurs on swamps and run-on areas. Palustrine. (BVG1M: 34d).

Short description: Mixed grassland to open grassland including *Eragrostis* sp., *Aristida* sp., *Enneapogon* sp., *Iseilema* sp., *Chloris* sp. or *Dichanthium* sp. on non-basalt derived alluvial deposits

Supplementary descriptions:

Subregions: 2.9, 1, 2, 4, 2.5, (2.6), (2.4), (5), (6)

Protected areas: Littleton NP, Girringun NP, Blackbraes NP, Littleton RR, Rungulla NP

Extent in reserves: Medium

Wetland: Contains Palustrine

Special values: 9.3.26: Significant habitat particularly for herbivores such as macropods and arboreal mammals.

Comments: 9.3.26: Occurs in patches though-out the west and central bioregion.

9.3.26a: Occurs in patches though-out the west and central bioregion.

9.3.26b: Occurs in patches though-out the west and central bioregion.

Estimated extent:¹ Pre-clearing 37000 ha; Remnant 2021 37000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: High total grazing pressure is leading to degradation.

Regional ecosystem 9.3.27

Description: Grassland of *Dichanthium* spp. or *Heteropogon contortus* (black speargrass) or *Imperata cylindrica* (Blady grass) or *Iseilema* spp. (Flinders grass), with patches of sedgeland. A range of *Eucalyptus* spp. And *Corymbia* spp. can occur as emergents. Occurs on alluvial deposits overlying basalt geologies. Not a Wetland. (BVG1M: 30b).

Vegetation communities in this regional ecosystem include:

9.3.27a: Grassland of *Dichanthium* spp. or *Imperata cylindrica* (Blady grass) or *Iseilema* spp. (Flinders grass) or *Heteropogon contortus* (black speargrass) with patches of sedgeland. Isolated low clumps of *Melaleuca bracteata* (black teatree) and a range of other species such as *Eucalyptus brownii* (Reid River box), *E.*

leptophleba (Molloy red box), *E. orgadophila* (mountain coolibah) and *Corymbia dallachiana* (Dallachy's gum) may occur as emergents. Occurs on alluvial deposits overlying basalt geologies. Not a Wetland. (BVG1M: 30b).

9.3.27b: Grassland with emergent *Corymbia tessellaris* (Moreton Bay ash), *E. camaldulensis* (river red gum) or *E. tereticornis* (bluegum) and/or *E. platyphylla* (poplar gum). The emergents may become an open woodland in small patches. Occurs in alluvium within basalt flows. Not a Wetland. (BVG1M: 31a).

Short description: *Dichanthium* sp. or *Iseilema* sp. grassland +/- *Eucalyptus* spp. or *Corymbia* spp. emergents on alluvials on basalt geologies

Supplementary descriptions:

Subregions: 5, 2, 4, (2.9), (6)

Protected areas: Blackbraes NP, Great Basalt Wall NP, Kennedy Road Gravel RR

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.3.27: Springs associated with this ecosystem (9.8.8) are significant for local fauna and may support endemic flora.

Comments: 9.3.27: This grassland contains patches of sedgeland. *Imperata cylindrica* may dominate as a result of management. 9.3.27 is distinguished from 9.3.25 by specifically overlying basalt geologies. Occurs mainly south of the Lynd Junction but scattered elsewhere though the central and southern bioregion. Subject to minor clearing. Some salinity risk associated with groundwater discharge areas. Rubber vine *Cryptostegia grandiflora* infestation and total high grazing pressures are leading to degradation. Timber harvesting is removing significant habitat trees.

9.3.27a: Occurs within basalt geologies. Occurs mainly south of the Lynd Junction but scattered elsewhere though the central bioregion.

9.3.27b: Occurs in pockets in the Great Basalt Wall in the south of the bioregion.

Estimated extent:¹ Pre-clearing 33000 ha; Remnant 2021 32000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes: Prone to infestation of by weeds including *Bothriochloa pertusa*, *Vachellia farnesiana*, *Cryptostegia grandiflora* and *Themeda quadrivalvis*. Some salinity risk associated with groundwater discharge areas.

Regional ecosystem 9.4.1

Description: Woodland to open woodland of *Eucalyptus cambageana* (Dawson gum). There is a distinct sub-canopy and/or shrub layer which often includes *Eremophila mitchellii* (false sandalwood), *Psydrax oleifolia*, *Flindersia maculosa* (leopardwood) and *Lysiphyllum* spp. +/- *Owenia acidula* (emu apple). *Capparis lasiantha* and *Carissa lanceolata* (currantbush) are also often found in the shrub layer. The grass layer is sparse to mid-dense. Occurs on plains on clay lenses within Cainozoic sediments. Not a Wetland. (BVG1M: 12a).

Short description: *Eucalyptus cambageana* woodland with a shrub layer of *Eremophila mitchellii*, *Psydrax oleifolia*, *Flindersia maculosa* and *Lysiphyllum* spp. on clay lenses in Cainozoic plains

Supplementary descriptions:

Subregions: 4

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.4.1: Occurs on plains north of Charters Towers in the south of the bioregion.

Estimated extent:¹ Pre-clearing 1000 ha; Remnant 2021 1000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.4.2

Description: Open woodland to woodland of *Eucalyptus persistens* (box) or *E. brownii* (box) +/- *Ventilago viminalis* (supplejack) +/- *Lysiphyllum carronii* (Queensland ebony) +/- *E. crebra* (sens. lat.) (narrow-leaved ironbark). The very open sub-canopy can contain canopy species as well as *Eremophila mitchellii* (false sandalwood) and *Flindersia* spp. A distinct open shrub layer includes canopy species, *Psydrax oleifolia*, *Carissa* spp. (currantbush), *Erythroxylum australe* (cocaine tree) and *Capparis lasiantha*. A patchy grassy cover often has *Chrysopogon fallax* (golden beard grass) *Aristida* spp. and *Echinochloa* spp. Occurs on plains on clay lenses within Cainozoic sediments. Not a Wetland. (BVG1M: 19d).

Short description: *Eucalyptus persistens* or *E. brownii* open woodland with a shrub layer of *Eremophila mitchellii*, *Psydrax oleifolia*, *Flindersia maculosa* and *Lysiphyllum* spp. on clay lenses in Cainozoic plains

Supplementary descriptions:

Subregions: 4

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.4.2: Occurs north of Charters Towers in the south of the bioregion.

Estimated extent:¹ Pre-clearing 9000 ha; Remnant 2021 9000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.4.3

Description: Open woodland of *Acacia harpophylla* (brigalow) and *Lysiphyllum carronii* (Queensland ebony). There is a low sub-canopy of canopy species +/- *Eremophila mitchellii* (false sandalwood) +/- *Santalum lanceolatum* (sandalwood) +/- *Atalaya hemiglauca* (whitewood). The sparse shrub layer can contain canopy species and *Carissa ovata* (currantbush). This community can also exist as low open woodland of the same canopy species with *Acacia harpophylla* emergents. The sparse ground cover is a varied mixture of grass and forb species sometimes dominated by *Dichanthium* spp. Occurs on plains on clay lenses within Cainozoic sediments. Not a Wetland. (BVG1M: 24a).

Short description: *Acacia harpophylla* and *Lysiphyllum carronii* open woodland on Cainozoic clays

Supplementary descriptions:

Subregions: 4

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.4.3: Found in a restricted area north-east of Charters Towers in the south of the bioregion. Vulnerable to invasive weed species *Cryptostegia grandiflora* (rubber vine).

Estimated extent:¹ Pre-clearing 100 ha; Remnant 2021 100 ha

VM class: Of concern

Biodiversity status: Endangered

Biodiversity status notes: Rare ecosystem < 1000ha pre-clearing extent and vulnerable to invasive weed species *Cryptostegia grandiflora* (rubber vine).

Regional ecosystem 9.5.1

Description: Open forest to woodland of *Eucalyptus similis* (yellowjacket) +/- *Corymbia setosa* (rough-leaved bloodwood) +/- *E. crebra* (narrow-leaved ironbark) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *C. erythrophloia* (red bloodwood) or open woodland of *Eucalyptus provecta* +/- *Acacia shirleyi* (lancewood) +/- *A. burdekensis* +/- *Corymbia pocillum*. Occurs on plains on Tertiary plateaus and mesas. Soils are generally red kandosols and may overlie lateritic surfaces on the plateaus. May also occur on thin sandsheets overlying granite or rhyolite. Not a Wetland. (BVG1M: 17c).

Vegetation communities in this regional ecosystem include:

9.5.1a: Open forest to woodland of *Eucalyptus similis* (yellowjacket) +/- *Corymbia setosa* (rough-leaved bloodwood) +/- *E. crebra* (narrow-leaved ironbark) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *C. erythrophloia* (red bloodwood). *C. setosa* is sometimes a dominant. Other *Eucalyptus* spp. and *Corymbia* spp. occur occasionally. An open sub-canopy layer often occurs and can contain juvenile canopy species, *Grevillea glauca* (bushman's clothes peg), *G. parallela* (silver oak) and *Melaleuca nervosa* (woodland paperbark). The shrub layer is generally sparse and can include *Petalostigma banksii* (smooth-leaved quinine) and *Acacia* spp. (wattle). The ground cover is dense grassy and is dominated by *Themeda triandra* (kangaroo grass), *Sarga plumosum* (plume sorghum) and *Heteropogon* spp. (speargrasses). *C. polycarpa* occurs in the west. Occurs on plains on Tertiary plateaus and mesas. Soils are generally red kandosols and may overlie lateritic surfaces on the plateaus. May also occur on thin sandsheets overlying granite or rhyolite. Not a Wetland. (BVG1M: 17c).

9.5.1b: Open woodland of *Eucalyptus provecta* +/- *Acacia shirleyi* (lancewood) +/- *A. burdekensis* +/- *Corymbia pocillum*. A low sub-canopy layer contains scattered canopy species, *Gardenia vilhelmii* (breadfruit) and *Petalostigma banksii* (smooth-leaved quinine). Scattered juvenile canopy species can be scattered in every open shrub layer. The ground layer is mid-dense and can include *Fimbristylis* spp., *Schizachyrium* spp. and *Triodia* spp. (spinifex). Occurs on shallow Tertiary remnant soils overlying granite and rhyolite. Not a Wetland. (BVG1M: 19d).

Short description: *Eucalyptus similis* open forest on red kandosols on Tertiary plateaus, mesas and tablelands

Supplementary descriptions:

Subregions: 4, 2

Protected areas: Canyon RR

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.5.1: Occurs on the Newcastle Range and near Greenvale in the west and south of the bioregion. Restricted regional ecosystem in this bioregion.
9.5.1a: Occurs on the Newcastle Range and near Greenvale in the west and south of the bioregion. Restricted regional ecosystem in this bioregion.
9.5.1b: Occurs in the Newcastle Range in the west of the bioregion.

Estimated extent:¹ Pre-clearing 25000 ha; Remnant 2021 24000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.2

Description: Semi-evergreen vine thicket often including *Bridelia leichhardtii* (small scrub ironbark), *Lysiphyllum* spp., *Terminalia* spp., *Brachychiton australis* (broad-leaved bottle-tree), *Notelaea microcarpa* (native olive), *Pleigynium timorense* (Burdekin plum), *Geijera salicifolia* (narrow-leaved wilga) often with *B. australis* and *Gyrocarpus americanus* (helicopter tree) emergents. The sub-canopy to shrub layer is generally a continuum and usually includes canopy species, *Everistia vacciniifolia*, *Ehretia membranifolia* (peach bush), *Alectryon connatus* (grey bird's eye), *Planchonella cotinifolia*, *Erythroxylum australe* (cocaine tree), *Diospyros humilis* (Queensland ebony) and *Carissa ovata* (currantbush). The sparse ground cover can contain *Ancistrachne uncinulata* (hooky grass), *Abutilon* spp., and *Croton* spp. Vine species commonly found include *Parsonsia* spp., *Cissus* spp., *Glossocarya hemiderma* and *Secamone elliptica* (corky milk vine). Occurs on red kandosols, often overlying a lateritic surface, on Tertiary plateaus. Not a Wetland. (BVG1M: 7a).

Short description: Semi-evergreen vine thicket on red kandosols on Tertiary plateaus

Supplementary descriptions:

Subregions: 6, 4, (5), (2)

Protected areas: Forty Mile Scrub NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.5.2: Regional refugia for many plant and animal species.

Comments: 9.5.2: Includes a number of floristic communities. Scattered through the central and southern bioregion. Has been subject to clearing in some areas.

Estimated extent:¹ Pre-clearing 7000 ha; Remnant 2021 6000 ha

VM class: Of concern

Biodiversity status: Endangered

Biodiversity status notes: Fire is a particular threatening process, compounded by the presence of the weed *Lantana camara* in a warming and drying climate. Other threatening processes include grazing, disturbance by feral pigs and weed invasion.

Regional ecosystem 9.5.3

Description: Woodland of *Eucalyptus crebra* (narrow-leaved ironbark) and *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *C. tessellaris* (Moreton Bay ash) +/- *C. erythrophloia* (red bloodwood) +/- *E. brownii* (Reid River box). In some areas *E. drepanophylla* or *E. exilipes* may replace *E. crebra*. A sub-canopy with canopy species and *Grevillea* spp. can occur. The shrub layer ranges from none to open and includes scattered specimens of canopy species, *Atalaya hemiglauca* (whitewood), *Denhamia cunninghamii* (yellowberry bush), *Petalostigma* spp., *Erythroxylum australe* (cocaine tree) and *Carissa* spp. (currantbush). There is a mid to dense grassy ground layer of mixed species which can include *Heteropogon* spp., *Themeda triandra* (kangaroo grass), *Aristida* spp. and *Chrysopogon fallax* (golden beard grass). Occurs on flat to gently undulating Quaternary sandplains and sandsheets. Not a Wetland. (BVG1M: 18b).

Short description: *Eucalyptus crebra* or *E. drepanophylla* and *Corymbia clarksoniana* woodland on sand plains

Supplementary descriptions:

Subregions: 4, 5, 2, (4.6)

Protected areas: Dalrymple NP, Porcupine Gorge NP, Great Basalt Wall NP, White Mountains RR, Blackbraes NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.5.3: Occurs extensively in the south of the bioregion.

Estimated extent:¹ Pre-clearing 185000 ha; Remnant 2021 181000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.4

Description: Woodland to open woodland of *Eucalyptus melanophloia* (silver-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *E. crebra* (narrow-leaved ironbark). There is often an open sub-canopy, which can include canopy species, *Petalostigma pubescens* (quinine), *Bursaria incana* (prickly pine) and *Alphitonia excelsa* (soapbush). An open shrub layer often contains juvenile canopy species as well as *Melaleuca nervosa* (woodland paperbark), *P. banksii* (smooth-leaved quinine) and *Carissa* spp. There is a sparse to mid-dense grassy ground layer of *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and/or *Tridodia pungen* (spinifex). Occurs on gently undulating terrain with sandy loam to sandy clay soils on Quaternary sandplains. Not a Wetland. (BVG1M: 17b).

Short description: *Eucalyptus melanophloia* +/- *Corymbia dallachiana* woodland on sand plains

Supplementary descriptions:

Subregions: 4, 11.3, 5, (11.7), (11.13)

Protected areas: Great Basalt Wall NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.5.4: Occurs close to the Desert Uplands boundary in the south of the bioregion.

Estimated extent:¹ Pre-clearing 12000 ha; Remnant 2021 12000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.5

Description: Mixed open forest to woodland including combinations of the species *Corymbia clarksoniana* (Clarkson's bloodwood), *Eucalyptus portuensis* (white mahogany), *E. crebra* (sens. lat.) (narrow-leaved ironbark), *C. citriodora* subsp. *citriodora* (lemon-scented gum) and *E. moluccana* (gum-topped box). The sub-canopy varies from absent to a distinct layer of *Callitris intratropica* (cypress pine). The shrub layer is sparse to dense with a mixture of species. The ground layer is grassy. Occurs on red kandosols on undulating Tertiary surfaces in the central east of the bioregion. Not a Wetland. (BVG1M: 9e).

Vegetation communities in this regional ecosystem include:

9.5.5a: Mixed woodland to open forest of *Eucalyptus crebra* (narrow-leaved ironbark), *Corymbia clarksoniana* (Clarkson's bloodwood) and *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *E. portuensis* (white mahogany) with a generally open sub-canopy of canopy species +/- *Callitris intratropica* (cypress pine) and *Acacia* spp. The open shrub layer often contains juvenile canopy species, *Petalostigma pubescens* (quinine), *Acacia flavescens* (powder puff wattle) and other *Acacia* spp. *Themeda triandra* (kangaroo grass) is the dominant species in a dense grassy ground layer. Occurs on Tertiary plateaus and remnants. Not a Wetland. (BVG1M: 10b).

9.5.5b: Woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. granitica* +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood) with a usually open sub-canopy and shrub layer including juvenile canopy species, *Grevillea glauca* (bushman's clothes peg), *G. parallela* (silver oak), *Acacia flavescens* (powder puff wattle), *Petalostigma pubescens* (quinine), *Melaleuca viridiflora* (broad-leaved paperbark) and *Denhamia cunninghamii* (yellow-berry). The grassy ground layer is dominated by *Themeda triandra* (kangaroo grass). Occurs on Tertiary plateaus and remnants. Not a Wetland. (BVG1M: 18b).

9.5.5c: Woodland to open woodland of *Eucalyptus moluccana* (gum-topped box) or *E. tereticornis* (bluegum) +/- *Lophostemon suaveolens* (swamp mahogany) +/- *Corymbia clarksoniana* (Clarkson's bloodwood). The distinct sub-canopy usually contains canopy species +/- *Melaleuca viridiflora* (broad-leaved paperbark). Scattered *M. viridiflora*, *Petalostigma pubescens* (quinine) and *Acacia* spp. may be found in the shrub layer. The dense grassy ground layer is often dominated by *Themeda triandra* (kangaroo grass) and *Chrysopogon fallax* (golden beard grass). Occurs on Tertiary sandplains. Not a Wetland. (BVG1M: 13d).

9.5.5d: Low woodland to tall shrubland of *Callitris intratropica* (cypress pine) +/- *Melaleuca viridiflora* (broad-leaved paperbark) +/- *Petalostigma pubescens* (quinine). A number of *Eucalyptus* spp. and/or *Corymbia* spp. can occur in the dominant layer including *Eucalyptus crebra* (narrow-leaved ironbark), *Corymbia clarksoniana* (Clarkson's bloodwood) and *Corymbia citriodora* subsp. *citriodora* (lemon-scented gum), or occur as emergents. A dense lower canopy layer can occur and include *Callitris intratropica* and other canopy species. The lower mid-layer is generally open and usually contains canopy juvenile species +/- *Acacia* spp. The ground layer is mid-dense grassy and usually dominated by *Themeda triandra* (kangaroo grass) or *Chrysopogon fallax* (golden beard grass). This description can include *Eucalyptus* spp. and/or *Corymbia* spp. woodlands with a dense understory of *Callitris intratropica*. Occurs on Tertiary plateaus and remnants. Not a Wetland. (BVG1M: 20a).

9.5.5e: Woodland to open forest of *Corymbia intermedia* (pink bloodwood), *Eucalyptus crebra* (narrow-leaved ironbark) +/- *E. portuensis* (white mahogany) +/- *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *C. dallachiana* (Dallachy's gum). A sub-canopy is generally absent, but a tall shrub layer containing juvenile canopy species and *Acacia flavescens* (powder puff wattle) +/- *Grevillea glauca* (bushman's clothes peg) +/- *Persoonia falcata* often occurs. The dense grassy ground layer is dominated by *Themeda triandra* (kangaroo grass) +/- *Heteropogon triticeus* (giant speargrass). Occurs on Tertiary sandplains. Not a Wetland. (BVG1M: 9e).

9.5.5f: Woodland to open forest of *Corymbia intermedia* (pink bloodwood) +/- *Eucalyptus portuensis* (white mahogany) +/- *E. tereticornis* (bluegum) +/- *Lophostemon suaveolens* (swamp mahogany). A sub-canopy layer and shrub layer often occurs and contain canopy species as well as *Acacia flavescens* (powder puff wattle), *Grevillea glauca* (bushman's clothes peg) and *Melaleuca viridiflora* (broad-leaved paperbark). The moderate to dense grassy cover is usually dominated by *Themeda triandra* (kangaroo grass) or *Mnesithea rottboellioides* (northern canegrass). Occurs on Tertiary sandplains. Not a Wetland. (BVG1M: 9e).

9.5.5g: Open woodland to woodland of *Eucalyptus exserta* (Queensland peppermint), *E. crebra* (narrow-leaved ironbark) and *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *Callitris intratropica* (cypress pine). In some cases the upper stratum can be emergent *E. exserta* and/or *E. crebra* over a low woodland dominated by *Callitris intratropica*. The open shrub layer usually contains juvenile canopy species and *Melaleuca viridiflora* (broad-leaved paperbark) and *Petalostigma pubescens* (quinine). A range of grasses and sedges can be found in the ground layer including *Abildgaardia* spp., *Fimbristylis cinnamometorum* and *Ectrosia leporina*. Occurs on Tertiary plains and remnants. Not a Wetland. (BVG1M: 18b).

Short description: *Corymbia clarksoniana*, *Eucalyptus portuensis*, *E. crebra* and *C. citriodora* subsp. *citriodora* in mixed open forests on red kandosols on Tertiary surfaces

Supplementary descriptions:

Subregions: 6, (4), (2), (5), (7.6), (7.5)

Protected areas: Girringun NP, Girringun CP, Forty Mile Scrub NP, Girringun RR

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.5.5: Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.

Comments: 9.5.5: This regional ecosystem is made of a complex of seven major vegetation communities which at a finer scale of mapping may be separated. In this landscape it is closely associated with RE 9.3.8 and RE 9.5.6. Further survey required to verify faunal values. Occurs close to the Wet Tropics in the central east of the bioregion.

9.5.5a: Occurs close to the Wet Tropics in the central eastern part of the bioregion.

9.5.5b: Occurs close to the Wet Tropics in the central eastern part of the bioregion. Prone to invasion by *Praxelis clematidea*.

9.5.5c: Occurs in the central eastern part of the bioregion. Prone to invasion by weeds *Praxelis clematidea* and *Sporobolus jacquemontii*.

9.5.5d: This vegetation community is characterised by the presence of *Callitris intratropica* in the dominant layer. Occurs on Tertiary remnants south of Ravenshoe in the central bioregion.

9.5.5e: This vegetation community has drier elements than 9.5.5f. Restricted to area south of Yourka in the east of the bioregion.

9.5.5f: This vegetation community has wetter elements than 9.5.5e. Occurs around the Herbert River near the Wet Tropics in the east of the bioregion.

9.5.5g: This community is often associated with areas where there has been some partial stripping of the sandy surface and the duricrust layer is closer to the surface and there-fore has some similarities to the Regional Ecosystem 9.7.4 or 9.7.1c. Occurs on Yourka Station and adjacent to 40 Mile Scrub NP in the central bioregion.

Estimated extent:¹ Pre-clearing 210000 ha; Remnant 2021 201000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: High total grazing pressure and clearing is leading to degradation and fragmentation.

Regional ecosystem 9.5.6

Description: Woodland to open woodland of *Eucalyptus leptophleba* (Molloy red box) +/- *Corymbia* spp. The mid-layer is generally absent to isolated shrubs and the grassy ground layer is dominated by *Heteropogon contortus* (black speargrass). Occurs on yellow kandosols on Tertiary plateau remnants. Not a Wetland. (BVG1M: 18c).

Vegetation communities in this regional ecosystem include:

9.5.6a: Woodland to open woodland of *Eucalyptus leptophleba* (Molloy red box) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *E. platyphylla* (poplar gum) +/- *C. tessellaris* (Moreton Bay ash). The mid layer is generally isolated shrubs which may include *Petalostigma pubescens* (quinine), *Melaleuca* spp. and *Acacia* spp., *Alphitonia pomaderroides* and *Grevillea glauca* (bushman's clothes peg). There is a grassy ground layer usually dominated by *Heteropogon contortus* (black speargrass). Occurs on yellow kandosols and mapped as YEPR (yellow earths on gently undulating plains and plateaus on Tertiary lateritic remnants) by Grundy (1988). Not a Wetland. (BVG1M: 18c).

9.5.6b: Woodland to open woodland of *Eucalyptus leptophleba* (Molloy red box) and/or *E. crebra* (narrow-leaved ironbark) (sens. lat.) and/or *Corymbia dallachiana* (Dallachy's gum) +/- *E. platyphylla* (poplar gum). The mid layer varies from absent to a moderate shrub or low tree layer which can include *Petalostigma pubescens* (quinine), *Denhamia cunninghamii* (yellowberry bush) and *Carissa lanceolata* (currantbush). The ground layer is often grassy and dominated by *Heteropogon contortus* (black speargrass). Occurs on yellow kandosols mapped as YEAN (yellow earths of the alluvial plains on non-basalt alluvium) by Grundy (1988). Not a Wetland. (BVG1M: 18c).

Short description: *Eucalyptus leptophleba* +/- *Corymbia* spp. woodland on yellow kandosols on Tertiary remnant surfaces

Supplementary descriptions: Tracey (1982): 16h Tracey and Webb (1975): 16h

Subregions: 6, 2, 4, (5)

Protected areas: Blackbraes NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.5.6: Associated with TQs on the geology map. Occurs on Tertiary plains surrounding the McBride basalts in the central bioregion. Subject to minor clearing. Threatened by logging/small scale clearing west of Mareeba and south of Mt Garnet.
9.5.6a: Occurs south-west of Ravenshoe in the central east of the bioregion.
9.5.6b: Associated with areas mapped as TQs on the Einasleigh (1994) geology map. Occurs near the Lynd Junction and south in the central bioregion.

Estimated extent:¹ Pre-clearing 66000 ha; Remnant 2021 62000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.7

Description: Woodland of *Eucalyptus crebra* (narrow-leaved ironbark) (sens. lat.), *Corymbia erythrophloia* (red bloodwood) +/- *C. polycarpa* (long-fruited bloodwood). The shrub layer is absent to very sparse. The ground layer is dominated by *Themeda triandra* (kangaroo grass). Occurs on red kandosols on Tertiary plateaus. Not a Wetland. (BVG1M: 18b).

Vegetation communities in this regional ecosystem include:

9.5.7a: Woodland to (occasionally) open forest of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. whitei* (White's ironbark) and *Corymbia erythrophloia* (red bloodwood) +/- *C. polycarpa* (long-fruited bloodwood) and/or *C. clarksoniana* (Clarkson's bloodwood) +/- *C. dallachiana* (Dallachy's gum) with *Erythrophleum chlorostachys* (Cooktown ironwood) sometimes in a scattered sub-canopy. The shrub layer is absent to very open and can include *Persoonia falcata* (geebung), *Petalostigma* spp. (quinine), *Grevillea parallela* (silver oak), *Acacia* spp. and juvenile canopy species. The mid-grassy ground layer is dominated by *Themeda triandra* (kangaroo grass). Occurs on Tertiary plateaus. Not a Wetland. (BVG1M: 18b).

9.5.7b: Woodland of *Eucalyptus crebra* (narrow-leaved ironbark) +/- *Callitris intratropica* (cypress pine) +/- *E. provecta* (box) +/- *Corymbia polycarpa* (long-fruited bloodwood). A mixed open shrub layer can contain *Gardenia vilhelmii* (breadfruit), *Grevillea parallela* (silver oak), *Petalostigma banksii* (smooth-leaved quinine) and *Carissa lanceolata* (currantbush). The grassy cover is dominated by *Aristida* spp. Occurs on rises and low hills. Not a Wetland. (BVG1M: 18b).

Short description: *Eucalyptus crebra* and *Corymbia erythrophloia* +/- *C. polycarpa* woodland on kandosols

Supplementary descriptions:

Subregions: 2

Protected areas: Canyon RR

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.5.7: Differs from 9.5.3 in the subdominant species, particularly the presence of *C. polycarpa*. *Eucalyptus similis* may occur in ecotones with 9.5.1. Occurs on Newcastle Range in the west of the bioregion.
9.5.7a: Restricted to Newcastle range in the west of the bioregion.
9.5.7b: Restricted to Newcastle range in the west of the bioregion.

Estimated extent:¹ Pre-clearing 15000 ha; Remnant 2021 15000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.8

Description: Woodland to open woodland of *Eucalyptus cullenii* (Cullen's ironbark) and/or *E. leptophleba* (Molloy red box) +/- *Corymbia erythrophloia* (red bloodwood) +/- *Erythrophleum chlorostachys* (Cooktown ironwood). *Eucalyptus tardecidens* (box) may also occur as a subdominant in northern extent of this regional ecosystem. A sparse shrub layer includes *Petalostigma* spp., *Melaleuca* spp., *Grevillea* spp., *Alphitonia pomaderroides* and *Denhamia cunninghamii* (yellowberry bush). The sparse to dense ground layer is dominated by *Heteropogon contortus* (black speargrass) and *Sarga plumosum* (plume sorghum). Occurs on undulating plains in valleys in ranges on Tertiary/Quaternary soils overlying granite and metamorphic geologies. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus cullenii* and/or *E. leptophleba* woodland on undulating plains on remnant Tertiary surfaces

Supplementary descriptions:

Subregions: 3.1, 2, 3, (2.6), (6), (2.4), (5), (7.4)

Protected areas: Chillagoe-Mungana Caves NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.5.8: Potential habitat for NCA listed species: *Acacia guymeri*, *Euphorbia carissoides*.

Comments: 9.5.8: Scattered through the central and northern parts of the bioregion. Subject to clearing.

Estimated extent:¹ Pre-clearing 59000 ha; Remnant 2021 50000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.9

Description: Woodland to open woodland of *Corymbia clarksoniana* (Clarkson's bloodwood) and/or *Eucalyptus leptophleba* (Molloy red box) and/or *E. platyphylla*. A sparse to mid-dense shrub layer including *Melaleuca* spp., *Grevillea* spp., and *Planchonia careya* (cocky apple) can occur. The ground layer is dominated by *Themeda triandra* (kangaroo grass) and *Heteropogon* spp. Occurs on plains, undulating plains and outwash deposits and Tertiary to Quaternary locally consolidated high-level alluvium and colluvium. Not a Wetland. (BVG1M: 9e).

Vegetation communities in this regional ecosystem include:

9.5.9a: Woodland to open woodland of *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *Eucalyptus platyphylla* (poplar gum) +/- *E. leptophleba* (Molloy red box) +/- *C. tessellaris* (Moreton Bay ash) with a distinct to sparse sub-canopy layer often including *Melaleuca viridiflora* (broad-leaved paperbark), *Grevillea glauca* (bushman's clothes peg), *Petalostigma pubescens* (quinine) and *Alphitonia pomaderroides* (soapbush). An open to sparse shrub layer includes *Melaleuca* spp., *Persoonia falcata*, *Grevillea* spp. and *Petalostigma pubescens* (quinine). The sparse to mid-dense ground layer is dominated by *Themeda triandra* (kangaroo grass), *Aristida* spp., *Heteropogon contortus* (black speargrass), *H. triticeus* (giant speargrass), and *Sarga plumosum* (plume sorghum). Occurs on undulating plains. Not a Wetland. (BVG1M: 9e).

9.5.9b: Woodland of *Eucalyptus leptophleba* (Molloy red box), *E. platyphylla* (poplar gum) and/or *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. intermedia* (pink bloodwood) +/- *C. dallachiana* (Dallachy's gum). An open to mid-dense sub-canopy of mixed species often includes *Corymbia* spp. and *Melaleuca nervosa* (woodland paperbark). The open to mid-dense shrub layer is dominated by *Planchonia careya* (cocky apple), *Petalostigma pubescens* (quinine) and *Acacia* spp. The ground layer is dominated by *Themeda triandra* (kangaroo grass), *Heteropogon triticeus* (giant speargrass) and *H. contortus* (black speargrass). Occurs on plains. Not a Wetland. (BVG1M: 18c).

9.5.9c: Woodland of *Corymbia clarksoniana* (Clarkson's bloodwood), *Eucalyptus leptophleba* (Molloy red box) and/or *E. cullenii* (Cullen's ironbark), +/- *E. platyphylla* (poplar gum). A mid-dense sub-canopy layer of *Melaleuca* spp. can occur. The sparse shrub layer can include *Melaleuca viridiflora* (broad-leaved paperbark), *Petalostigma* spp. and *Erythrophleum chlorostachys* (Cooktown ironwood). The dense ground layer is dominated by *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *Arundinella* spp. Occurs on plains. Not a Wetland. (BVG1M: 9e).

Short description: *Corymbia clarksoniana* and/or *Eucalyptus leptophleba* and/or *E. platyphylla* woodland on plains

Supplementary descriptions:

Subregions: 3, 2, (3.1), (2.6), (6), (7.8), (7.9), (7.4)

Protected areas: Kuranda West FR, Mount Lewis NP, Mount Windsor NP, Dinden West FR, Hann Tableland NP, Chillagoe-Mungana Caves NP, Bare Hill CP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.5.9: Potential habitat for NCA listed species: *Habenaria rumphii*.

Comments: 9.5.9: Occurs extensively in the eastern bioregion from Mareeba north. Vulnerable to invasion by exotic weeds *Praxelis clematidea*, *Mesosphaerum suaveolens*, *Sporobolus jacquemontii* (giant rat-tails grass), *Themeda quadrivalvis* (grader grass), *Crotalaria goreensis* (Gambia pea). Subject to extensive clearing.
9.5.9a: Occurs from Mareeba to Chillagoe in the central bioregion.
9.5.9b: Occurs from Mareeba to Lakeland Downs in the east of the bioregion.
9.5.9c: Occurs between Mount Molloy and Palmer River in the east of the bioregion.

Estimated extent:¹ Pre-clearing 92000 ha; Remnant 2021 54000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.10

Description: Low woodland to (occasionally) low open woodland of *Eucalyptus microneura* (Georgetown box) +/- *Terminalia* spp. An open to often clumped shrub layer is often present. The grassy ground layer is generally sparse to mid-dense and dominated by *Heteropogon contortus* (black speargrass) and *Aristida* spp. Occurs on sandsheets over various land zone 11 and 12 geologies, on low rises and undulating plains and to a lesser extent in plains in valleys. Not a Wetland. (BVG1M: 18d).

Vegetation communities in this regional ecosystem include:

9.5.10a: Low woodland of *Eucalyptus microneura* (Georgetown box) +/- *Corymbia pocillum* or *C. erythrophloia* (red bloodwood) +/- *Terminalia* spp. +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *C. dallachiana* (Dallachy's gum). *C. pocillum* tends to occur in the west of this community, while *C. erythrophloia* occurs in the east. An open to mid-dense shrub often occurs and usually contains *Gardenia vilhelmii* (breadfruit), *Petalostigma banksii* (smooth-leaved quinine), *Carissa lanceolata* (currantbush) and sometimes clumps of *Melaleuca citrolens* (scrub teatree). The often dense grassy ground layer is dominated by *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *Aristida* spp. Occurs on low rises and undulating plains. Not a Wetland. (BVG1M: 18d).

9.5.10b: Low woodland to woodland of *Eucalyptus microneura* (Georgetown box), *Terminalia platyptera* (yellow-wood) +/- *T. aridicola* subsp. *Chillagoensis* (arid peach) +/- *Lysiphyllum* sp. +/- *Acacia leptostachya* (slender wattle). An open to mid-dense shrub layer is dominated by *Gardenia vilhelmii*, *Petalostigma banksii* and *Carissa lanceolata*. The grassy ground layer is dominated by *Aristida* spp. and *Heteropogon contortus*. In some areas this community may be dominated by *Terminalia platyptera* and/or *Lysiphyllum* sp. Low rises and undulating plains. Not a Wetland. (BVG1M: 18d).

9.5.10c: Low open woodland to low woodland of *Eucalyptus microneura* (Georgetown box) +/- *Corymbia grandifolia* subsp. *grandifolia* (large-leaved cabbage-gum) +/- *C. dallachiana* (Dallachy's gum) +/- *Terminalia platyptera* (yellow-wood) +/- *C. polycarpa* (long-fruited bloodwood), with patches of *Melaleuca citrolens* (scrub teatree) shrubland. Occurs on slopes and rounded valley bottoms of low hills. Not a Wetland. (BVG1M: 18d).

Short description:	<i>Eucalyptus microneura</i> +/- <i>Terminalia</i> spp. low woodland on sand sheets
Supplementary descriptions:	Perry et al. (1964): Dandry Unit 4; Perry et al. (1964): Kilbogie Unit 2 and Unit 3; Perry et al. (1964): Leichhardt Unit 2; Perry et al. (1964): Torwood Unit 2; Perry et al. (1964): Torwood Unit 1; Perry et al. (1964): Strathpark Unit 1
Subregions:	1, 2, 2.9, 5, (2.5), (2.6), (2.4)
Protected areas:	Littleton NP, Canyon RR, Bulleringa NP, Undara Volcanic NP, Littleton RR
Extent in reserves:	Medium
Wetland:	Not a Wetland
Special values:	
Comments:	9.5.10: Occurs mainly between Mt. Surprise and Croydon in the west of the bioregion. 9.5.10a: Occurs on plains in the central and western parts of the bioregion. 9.5.10b: Occurs east of Croydon in the west of the bioregion. 9.5.10c: Occurs between the Newcastle Range and Croydon in the west of the bioregion.
Estimated extent:¹	Pre-clearing 109000 ha; Remnant 2021 107000 ha
VM class:	Least concern
Biodiversity status:	No concern at present
Biodiversity status notes:	

Regional ecosystem 9.5.11

Description: Woodland to open woodland of *Eucalyptus persistens* (box) +/- *E. crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum). *E. brownii* (Reid River box) can sometimes occur as a dominant. A sparse to mid-dense shrub layer can include *Petalostigma banksii* (smooth-leaved quinine), *Denhamia cunninghamii* (yellowberry bush), *Atalaya hemiglaucula* (whitewood), *Carissa lanceolata* (currantbush) and *Eremophila mitchellii* (false sandalwood). A dense grassy cover can include *Bothriochloa decipiens*, *Chrysopogon fallax* (golden beard grass) and *Heteropogon* spp. Occurs on level and undulating Tertiary remnant plains. Not a Wetland. (BVG1M: 19d).

Short description: *Eucalyptus persistens* +/- *E. crebra* woodland on flats on Tertiary remnant plains

Supplementary descriptions:

Subregions: 4, 2, (6), (5)

Protected areas: Girringun NP, Girringun CP, Forty Mile Scrub NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.5.11: Occurs extensively in the south central southern part of the bioregion.

Estimated extent:¹ Pre-clearing 54000 ha; Remnant 2021 53000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.12

Description: Woodland to open woodland of *Eucalyptus chlorophylla* (box) and/or *E. tardecidens* (box) +/- *E. cullenii* (Cullen's ironbark) +/- *Melaleuca stenostachya* +/- *Terminalia* spp. There is sometimes an open sub-canopy layer which can include *Melaleuca* spp., *Terminalia platyptera* (yellow-wood) and *Grevillea striata* (beefwood). The very sparse shrub layer can contain *Dolichandrone alternifolia* (lemonwood), *Melaleuca* spp., *Terminalia* spp., and *Petalostigma pubescens* (quinine). The sparse to mid-dense ground layer can include *Heteropogon contortus* (black speargrass), *Sarga plumosum* (plume sorghum), *Schizachyrium fragile* (firegrass), *Themeda* spp. and *Aristida* spp. Occurs on undulating plains on Tertiary remnants. Not a Wetland. (BVG1M: 18c).

Short description: *Eucalyptus chlorophylla* and/or *E. tardecidens* woodland on Tertiary plains

Supplementary descriptions:

Subregions: 3

Protected areas: Mount Windsor NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.5.12: Potential habitat for NCA listed species: *Habenaria rumphii*.

Comments: 9.5.12: Occurs near Mt Carbine and Lakeland Downs in the north of the bioregion. Some small scale clearing and logging occurring west of Mareeba and south of Mt. Garnet.

Estimated extent:¹ Pre-clearing 30000 ha; Remnant 2021 27000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.13

Description: Low woodland to low open woodland of *Melaleuca citrolens* (scrub teatree) and/or *Macropteranthes montana*. The mid layer varies from none to scattered mixed shrubs and the mid-dense to grassy ground layer can include *Schizachyrium* spp. or *Aristida* spp. Occurs on plains, low rises and small hill tops. Not a Wetland. (BVG1M: 21b).

Vegetation communities in this regional ecosystem include:

9.5.13a: Low woodland to low open woodland of *Melaleuca citrolens* (scrub teatree) +/- *M. viridiflora* (broad-leaved paperbark) +/- *Terminalia* spp. +/- *Eremophila mitchellii* (false sandalwood) +/- emergents of *Eucalyptus microneura* (Georgetown box) or *E. tardecidens* and/or *E. cullenii* (Cullen's ironbark). There can be scattered *Melaleuca* spp. in the sub-canopy. The shrub layer varies from none to open and can include *Gardenia vilhelmii* (breadfruit), *M. citrolens*, *Petalostigma banksii* (smooth-leaved quinine) and *Carissa lanceolata* (currantbush). There is a mid-dense to grassy ground layer which can contain *Schizachyrium* spp. or *Aristida* spp. *E. microneura* or *E. tardecidens* can sometimes be codominant in this community. Occurs on Tertiary plains and low rises. Not a Wetland. (BVG1M: 21b).

9.5.13b: Low woodland to low open woodland of *Macropteranthes montana*, *Melaleuca citrolens* (scrub teatree) +/- *Eremophila mitchellii* (false sandalwood). The open shrub layer can contain juvenile canopy species and *Carissa lanceolata* (currantbush). The patchy grassy ground layer is often dominated by *Schizachyrium* spp. and *Aristida* spp. Occurs on plains. Not a Wetland. (BVG1M: 21b).

9.5.13c: Tall shrubland of *Melaleuca citrolens* (scrub teatree) usually with *M. foliolosa* (scale-leaved teatree). A sparse low shrub layer is usually present. The ground layer is short and very sparse, with *Aristida* spp. (three-awned speargrass), *Eriachne* spp. (wanderie grass) and *Fimbristylis* spp. being the most commonly encountered species. Bare areas are common. Occurs on footslopes and colluvial sediments. Not a Wetland. (BVG1M: 21b).

Short description: *Melaleuca citrolens* and/or *Macropteranthes montana* low woodland with *Eucalyptus* spp. emergents on Tertiary sand sheets

Supplementary descriptions:

Subregions: 1, 2, 2.9, 3, 5, 2.4, (2.5), (3.6), (3.1), (3.2), (2.6), (3.5)

Protected areas: Littleton NP, Mount Lewis NP, Littleton RR

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.5.13: Habitat for the vulnerable plant species *Macropteranthes montana*.

Comments: 9.5.13: Scattered through various land systems. Occurs in scattered patches through the west, central and northern bioregion.

9.5.13a: Occurs near Mount Molloy and Mount Surprise in the central bioregion.

9.5.13b: Restricted occurrence east of Bulleringa National Park in the central west of the bioregion.

9.5.13c: Occurs north-east of Lakeland Downs in the northern end of the bioregion.

Estimated extent:¹ Pre-clearing 36000 ha; Remnant 2021 36000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.14

Description: Low open woodland to woodland of *Melaleuca viridiflora* (broad-leaved paperbark) and/or *M. stenostachya* +/- *Eucalyptus* spp. A very sparse sub-canopy layer dominated by *Petalostigma banksii* (smooth-leaved quinine), *Melaleuca* spp., *Grevillea* spp. and *Planchonia careya* (cocky apple) is usually present. Scattered shrubs consisting mainly of juvenile canopy species plus *Carissa lanceolata* (currantbush) is sometimes present. *Xanthorrhoea johnsonii* (grass-tree) dominates the shrub layer in some areas. The ground layer is sparse to mid-dense and dominated by *Sarga plumosum* (plume sorghum), *Alloteropsis semialata*, *Arundinella setosa* and *Schizachyrium* spp. Occurs on erosional and alluvial plains. Not a Wetland. (BVG1M: 21a).

Short description: *Melaleuca viridiflora* and/or *M. stenostachya* low open woodland on erosional plains

Supplementary descriptions: Neldner and Clarkson (in prep), 157

Subregions: 3, 6, (2)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.5.14: Occurs near Lakeland Downs in the north of the bioregion. There are some small occurrences near Innot Hots Springs in the central bioregion. Subject to minor areas of clearing.

Estimated extent:¹ Pre-clearing 8000 ha; Remnant 2021 8000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.5.15

Description: Mixed low woodland to low open forest of *Melaleuca monantha*, often codominant with *Melaleuca viridiflora* (broad-leaved paperbark) *Callitris intratropica* (cypress pine) and emergent *Eucalyptus* spp. and *Corymbia* spp. The sub-canopy and/or shrub layer is open to mid-dense and the ground layer is sparse to mid-dense. Occurs on valley infill. Not a Wetland. (BVG1M: 21a).

Vegetation communities in this regional ecosystem include:

9.5.15a: Mixed low woodland to low open forest of *Melaleuca monantha*, *M. viridiflora* (broad-leaved paperbark), *Callitris intratropica* (cypress pine) and *Allocasuarina luehmannii* +/- *Grevillea parallela* (silver oak) +/- *G. pteridifolia* (toothbrush grevillea), often with emergent *Eucalyptus cullenii* (Cullen's ironbark), *E. leptophleba* (Molloy red box), *Corymbia clarksoniana* (Clarkson's bloodwood) or *C. dallachiana* (Dallachy's gum). An open to mid-dense sub-canopy or shrub layer usually includes canopy species +/- *Petalostigma banksii* (smooth-leaved quinine), *Jacksonia thesioides* and *Grevillea* spp. The mid-dense to dense grassy ground layer is usually dominated by *Themeda triandra* (kangaroo grass). Occurs on valley infill between metamorphic hills. Not a Wetland. (BVG1M: 21a).

9.5.15b: Low open forest of *Melaleuca monantha* +/- *Callitris intratropica* (cypress pine) +/- *Melaleuca* spp. with occasional emergent *C. intratropica* and *Corymbia dallachiana* (Dallachy's gum). The shrub layer is absent to mid-dense and often includes *Petalostigma banksii* (smooth-leaved quinine). A sparse to mid-dense grass layer is usually dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on valley infill between metamorphic hills. Not a Wetland. (BVG1M: 21b).

Short description: *Melaleuca monantha* +/- *M. viridiflora* +/- *Callitris intratropica* mixed low woodland on valley infill

Supplementary descriptions:

Subregions: 3, (6), (7.8)

Protected areas: Kuranda West FR

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.5.15: Occurs close to Wet Tropics from Mareeba to Mt. Carbine in the central bioregion.

9.5.15a: Occurs close to Wet Tropics from Mareeba to Mt. Carbine in the central bioregion. Prone to invasion by *Lantana camara*.

9.5.15b: Occurs west of Mareeba in the central bioregion.

Estimated extent:¹ Pre-clearing 16000 ha; Remnant 2021 12000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.16

Description: Woodland to open woodland of *Eucalyptus tetrodonta* (Darwin stringybark) frequently with *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. erythrophloia* (red bloodwood) +/- *Eucalyptus cullenii* (Cullen's ironbark) +/- *E. chartaboma* (Queensland flaky-bark). The mixed shrub layer is open to absent and can include *Gardenia vilhelmii* (breadfruit), *Grevillea* spp., *Melaleuca* spp. The grassy ground cover is usually dominated by *Heteropogon contortus* (black speargrass) but can include *Sarga plumosum* (plume sorghum) and *Arundinella setosa*. Occurs on Tertiary remnant sandsheets. Small areas of laterisation may be present. Not a Wetland. (BVG1M: 14b).

Short description: *Eucalyptus tetrodonta* +/- *Erythrophleum chlorostachys* woodland on Tertiary remnants

Supplementary descriptions:

Subregions: 2, 1, (3), (5), (2.6), (6)

Protected areas: Littleton NP, Bulleringa NP, Forty Mile Scrub NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.5.16: Potential habitat for NCA listed species: *Euphorbia carissoides*.

Comments: 9.5.16: Occurs between Mt. Surprise and Dimbulah in the central part of bioregion.

Estimated extent:¹ Pre-clearing 35000 ha; Remnant 2021 34000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.5.17

Description: Mixed low open woodland to low woodland of *Eucalyptus exserta* (Queensland peppermint), *Corymbia abergiana* (range bloodwood) and *Callitris intratropica* (cypress pine) +/- *Corymbia citriodora* subsp. *citriodora* (lemon-scented gum) +/- *Eucalyptus crebra* (narrow-leaved ironbark). There is often a distinct sub-canopy or tall shrub layer dominated by *Allocasuarina* spp. (sheoak) as well as juvenile canopy species +/- *Grevillea pteridifolia* (toothbrush grevillea). *Xanthorrhoea johnsonii* (grass-tree) is often prominent in a lower shrub layer and the moderately sparse ground layer is often dominated by *Themeda triandra* (kangaroo grass) and sedge species such as *Schoenus sparteus*. Occurs on Tertiary remnants and valley infill. Not a Wetland. (BVG1M: 20a).

Short description: *Eucalyptus exserta*, *Corymbia abergiana* and *Callitris intratropica* mixed low woodland on Tertiary remnants

Supplementary descriptions:

Subregions: 6, (7.6)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.5.17: This is differentiated from similar Regional Ecosystems 9.5.14 and 9.5.15 by different dominant taxa and the conspicuous *Xanthorrhoea* sp. understory. Occurs close to the Wet Tropics on Yourka Station (Bush Heritage) in the east of the bioregion.

Estimated extent:¹ Pre-clearing 2000 ha; Remnant 2021 2000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.7.1

Description: Woodland of *Eucalyptus persistens* (box) +/- *E. crebra* (sens.lat.) (narrow-leaved ironbark) +/- *Corymbia* spp. The mid layer varies from none to a dominant shrub layer of *Melaleuca uncinata* (broombush) with emergent *Eucalyptus* spp. The ground layer is dominated by sparse grasses and/or *Triodia* spp. (spinifex). Occurs on edges of lateritised Tertiary plateaus. Not a Wetland. (BVG1M: 19d).

Vegetation communities in this regional ecosystem include:

9.7.1a: Woodland to open woodland of *Eucalyptus persistens* (box) +/- *E. crebra* (narrow-leaved ironbark) (sens.lat.) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum). An open sub-canopy can contain *Atalaya hemiglaucula* (whitewood) and *Petalostigma pubescens* (quinine). The mid layer varies from absent to an open shrub layer of *Carissa lanceolata* (currantbush) or *Melaleuca uncinata* (broombush) or *Eremophila mitchellii* (false sandalwood) (in the south) +/- *Acacia* spp., *Denhamia cunninghamii* (yellowberry bush) and *Erythroxylum australe* (cocaine tree). The sparse to dense grassy ground layer is dominated by *Themeda triandra* (kangaroo grass), *Heteropogon contortus* (black speargrass) and/or *Triodia* spp. (spinifex). Occurs on pediments below scarps of lateritised Tertiary plateaus and on deeply weathered profiles on rolling hills. Not a Wetland. (BVG1M: 19d).

9.7.1b: Low open forest of *Melaleuca borealis* or *M. uncinata* (broombush) +/- emergents of *Eucalyptus persistens* (box) and/or *E. moluccana* (gum-topped box) and/or *Acacia shirleyi* (lancewood). The mid-layer is absent to a dense layer of juvenile *M. uncinata*. The ground layer is patchily vegetated. Occurs on pediments below scarps of lateritised Tertiary plateaus and on deeply weathered profiles on rolling hills. Not a Wetland. (BVG1M: 21b).

9.7.1c: Woodland to low open woodland of *Eucalyptus persistens* (box) and/or *E. exserta* (Queensland peppermint) +/- *E. crebra* (narrow-leaved ironbark) +/- *Acacia shirleyi* (lancewood) +/- *Callitris intratropica* (cypress pine). There is an absent to dense shrubland of *Melaleuca uncinata* (broombush) +/- *Petalostigma banksii* (smooth-leaved quinine) +/- *Acacia* spp. The ground layer is usually grassy or dominated by *Triodia mitchellii*. Occurs on deeply weathered granite hills. Not a Wetland. (BVG1M: 19d).

Short description: *Eucalyptus persistens* woodland on lateritised and deeply weathered surfaces on undulating terrain

Supplementary descriptions:

Subregions: 4, 6, (2), (5), (11.3), (11.5)

Protected areas: Girringun NP, Forty Mile Scrub NP, Girringun CP

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.7.1: Habitat for the near threatened plant species *Leptospermum pallidum* near Poison Lake.

Comments: 9.7.1: The weathered profiles are often overlying land zone 11 and 12 geologies. In some areas this grades into a shrubland of *Melaleuca uncinata* (veg community 9.7.1b). Occurs extensively through the central and southern bioregion.

9.7.1a: Occurs extensively in the south of the bioregion.

9.7.1b: Occurs north of Greenvale in the central bioregion.

9.7.1c: Occurs in scattered patches in the centre of the bioregion.

Estimated extent:¹ Pre-clearing 89000 ha; Remnant 2021 87000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.7.2

Description: Low woodland to open forest of *Acacia shirleyi* (lancewood) or (occasionally) *Eucalyptus exserta* (Queensland peppermint). The shrub layer is usually absent but when present often includes *Petalostigma banksii* (smooth-leaved quinine). The sparse ground layer is often dominated by *Triodia* spp. (spinifex). Occurs on lateritised mesa slopes and remnant colluvium. Not a Wetland. (BVG1M: 24a).

Vegetation communities in this regional ecosystem include:

9.7.2a: Woodland to low-woodland of *Acacia shirleyi* (lancewood) with only scattered *Corymbia trachyphloia* (brown bloodwood) +/- *C. lamprophylla* +/- *Eucalyptus persistens* (box) +/- *Acacia leptostachya* (slender wattle) +/- *E. exserta* (Queensland peppermint) +/- *Corymbia* spp. There may be a sub-canopy layer of *A. shirleyi* and a variety of other species. The shrub layer varies from none to mid-dense and includes *Acacia* spp., *Persoonia falcata*, *Erythroxylum australe* (cocaine tree) and/or *Petalostigma banksii* (smooth-leaved quinine). The ground layer is sparsely grassed and includes *Aristida* spp., *Cleistochloa subjuncea* and/or *Triodia* spp. (spinifex). Occurs on lateritised mesa slopes and tops, breakaways, scree slopes and remnant colluvium. Not a Wetland. (BVG1M: 24a).

9.7.2b: Woodland to low open woodland of *Eucalyptus exserta* (Queensland peppermint) +/- a mix of subdominant to codominant species including *Acacia shirleyi* (lancewood), *Corymbia lamprophylla*, *C. peltata* (rustyjack) and *Callitris intratropica* (cypress pine). A moderate to dense shrub layer often includes *Acacia leptostachya* (slender wattle), *A. shirleyi* (lancewood) and *Petalostigma banksii* (smooth-leaved quinine) and the ground layer is dominated by *Triodia* spp. (spinifex). Occurs on rolling hills. Not a Wetland. (BVG1M: 13a).

Short description: *Acacia shirleyi* low woodland on mesas and lateritised surfaces

Supplementary descriptions:

Subregions: 4, (1), (6), (2), (2.9), (2.6)

Protected areas: Littleton NP, Girringun NP, Girringun CP, Bulleringa NP, Dalrymple NP, Littleton RR, Forty Mile Scrub NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.7.2: Potential habitat for NCA listed species: *Cerbera dumicola*, *Leptospermum pallidum*.

Comments: 9.7.2: Occurs mainly around Greenvale in the central bioregion.
9.7.2a: Occurs mainly around Greenvale in the central bioregion.
9.7.2b: Occurs north-west of Greenvale in the central bioregion.

Estimated extent:¹ Pre-clearing 89000 ha; Remnant 2021 88000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.7.3

Description: Woodland of *Eucalyptus crebra* (narrow-leaved ironbark) (sens. lat.) or *E. portuensis* (white mahogany) +/- *C. clarksoniana* (Clarkson's bloodwood) and/or *C. intermedia* (pink bloodwood). The mid-layer is sparse to dense. The proportions of subdominants may change throughout the community. Occurs on lateritised weathering profiles. Not a Wetland. (BVG1M: 12b).

Vegetation communities in this regional ecosystem include:

9.7.3a: Open woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *E. exserta* (Queensland peppermint) +/- *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *E. howittiana* (Howitt's box). An absent to mid-dense sub-canopy or shrub layer can include *Petalostigma pubescens* (quinine), *Allocasuarina inophloia* (stringybark sheoak), *Melaleuca nervosa*, *Grevillea glauca* (bushman's clothes peg) and *Bursaria incana* (prickly pine). The sparse to grassy ground layer often includes *Themeda triandra* (kangaroo grass) and *Heteropogon contortus* (black speargrass). Woodlands dominated by *E. howittiana* with an open understory and a sedge groundcover exist on the edges of some Tertiary plateaus. Occurs on lateritised weathering profiles overlying land zone 11 or 12 geologies and on lateritised edges of granite breakaways and Tertiary plateaus in subregion 6. Not a Wetland. (BVG1M: 12b).

9.7.3b: Woodland of *Eucalyptus portuensis* (white mahogany) +/- *Corymbia trachyphloia* (brown bloodwood) +/- *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *C. intermedia* (pink bloodwood) +/- *E. crebra* (narrow-leaved ironbark) +/- *E. howittiana* (Howitt's box). A sparse sub-canopy can contain canopy species +/- *Grevillea glauca* (bushman's clothes peg). A sparse to mid-dense shrub layer is often present and includes canopy species, *Acacia* spp. (wattle), *Grevillea* spp. +/- *Pultenaea* spp. There is a mid-dense grassy cover of *Themeda triandra* (kangaroo grass). Occurs on lateritised weathering profiles overlying land zone 11 or 12 geologies and on lateritised edges of granite breakaways and Tertiary plateaus in subregion 6. Not a Wetland. (BVG1M: 12b).

9.7.3c: Woodland to open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) sens. lat.) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *C. confertiflora* (broad-leaved Moreton Bay ash). The shrub layer varies from absent to open and can include *Petalostigma pubescens* (quinine), *Grevillea glauca* (bushman's clothes peg), *G. parallela* (silver oak) and *Bursaria incana* (prickly pine) and a grassy ground layer is dominated by *Bothriochloa* sp. Occurs on low rolling hills. Not a Wetland. (BVG1M: 12b).

Short description: *Eucalyptus crebra* or *E. portuensis* +/- *Corymbia clarksoniana* woodland on lateritised surfaces and edges of Tertiary surfaces

Supplementary descriptions:

Subregions: 6, 4, (2), (5), (7.6), (7.5)

Protected areas: Girringun NP, Girringun CP

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.7.3: The regional ecosystem 9.7.4 may be closely associated with this regional ecosystem. Occurs adjacent to the Wet Tropics bioregional boundary in the central east of the bioregion.

9.7.3a: Occurs adjacent to the Wet Tropics bioregional boundary in the central east of the bioregion.

9.7.3b: Occurs in a scattered distribution from Princess Hill to Mt. Zero in the central east bioregion.

9.7.3c: Occurs north of Greenvale in the centre of bioregion.

Estimated extent:¹ Pre-clearing 42000 ha; Remnant 2021 42000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.7.4

Description: Low open woodland to woodland of *Allocasuarina inophloia* (stringybark sheoak) +/- *Eucalyptus exserta* (Queensland peppermint) (sometimes emergent) +/- *Melaleuca nervosa* (woodland paperbark). A sub-canopy layer may be present and includes *M. viridiflora* (broad-leaved paperbark) and *Petalostigma* spp. (quinine). There is a mid-dense mid layer present which can contain *Acacia holosericea*, *Petalostigma* spp., and/or *Melaleuca* spp. The grassy ground layer often contains *Themeda triandra* (kangaroo grass), *Heteropogon* spp. (speargrass) and *Aristida* spp. Occurs in run-on areas on the exposed lateritised surface of Tertiary remnant plateau. Not a Wetland. (BVG1M: 19d).

Short description: *Allocasuarina inophloia* +/- *Eucalyptus exserta* low open woodland on exposed lateritic surfaces on Tertiary plateaus

Supplementary descriptions:

Subregions: 6, (4)

Protected areas: Girringun NP

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.7.4: Occurs in the upper reaches of the Burdekin River near Wairuna.

Estimated extent:¹ Pre-clearing 7000 ha; Remnant 2021 7000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.7.5

Description: Low open woodland to open forest of *Corymbia setosa* (rough-leaved bloodwood) and/or *C. peltata* (rustyjacket) +/- emergent *Eucalyptus crebra* (narrow-leaved ironbark) (sens. lat.) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Eucalyptus melanophloia* (silver-leaved ironbark) +/- *E. shirleyi* (silver-leaved ironbark) +/- *C. lamprophylla* +/- *Acacia* spp. An open to mid-dense shrub layer includes a mixture of juvenile canopy species, *Petalostigma banksii* (smooth-leaved quinine), *Grevillea glauca* (bushman's clothes peg), *Erythroxylum australe* (cocaine tree), *Persoonia falcata* and *Acacia* spp. The ground layer is generally grassy and includes *Themeda triandra* (kangaroo grass), *Triodia* spp. (spinifex) and *Chrysopogon fallax* (golden beard grass). Occurs on Tertiary remnant slopes, plateaus and footslopes. Not a Wetland. (BVG1M: 12b).

Short description: *Corymbia setosa* and/or *C. peltata* low open woodland on lateritised and deeply weathered surfaces

Supplementary descriptions:

Subregions: 4, 6, 2, (5)

Protected areas: Girringun NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values:

Comments: 9.7.5: Occurs in the Greenvale area in the central bioregion. Scalded bare areas are common throughout this unit.

Estimated extent:¹ Pre-clearing 13000 ha; Remnant 2021 13000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.7.6

Description: Woodland of *Eucalyptus chartaboma* (Queensland flaky-bark) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *Acacia shirleyi* (lancewood) +/- *E. persiciens*. A shrub layer of a mixture of juvenile canopy species, predominantly *E. chartaboma*, *Grevillea glauca* (bushman's clothes peg), *Planchonia careya* (cocky apple), *Alphitonia excelsa* (soapbush) and *Coelospermum reticulatum* (medicine bush) is present. The ground layer is sparse and consists predominantly of grasses. Occurs on lateritised remnant sandsheets overlying land zone 11 and 12 geologies. Soils are sandy and generally have ironstone gravel on the surface. Not a Wetland. (BVG1M: 14d).

Short description: *Eucalyptus chartaboma* +/- *Corymbia clarksoniana* +/- *Acacia shirleyi* woodland on lateritised remnant sand sheets

Supplementary descriptions:

Subregions: 2, 1, (2.9), (2.6)

Protected areas: Bulleringa NP, Littleton NP

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.7.6: Occurs in scattered patches from Mt. Surprise to Mt. Garnet in the central bioregion.

Estimated extent:¹ Pre-clearing 9000 ha; Remnant 2021 9000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.8.1

Description: Open woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood). *E. leptophleba* (Molloy red box) sometimes occurs as a dominant. The mid-layer is generally absent but an open sub-canopy or shrub layer sometimes occurs. Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. Not a Wetland. (BVG1M: 11b).

Vegetation communities in this regional ecosystem include:

9.8.1a: Open woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *Corymbia* spp. +/- *Eucalyptus* spp. A sub-canopy can occur and include canopy species, *Bursaria incana* (prickly pine) and *Erythrina vespertilio* (batswing coral tree). The shrub layer ranges from absent to patches of shrubs including *Denhamia cunninghamii* (yellowberry bush), *B. incana*, *Carissa lanceolata* (currantbush), and *Grevillea parallela* (silver oak). The ground layer is dense and generally dominated by *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *H. triticeus* (giant speargrass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. Not a Wetland. (BVG1M: 11b).

9.8.1b: Open woodland to woodland of *Eucalyptus leptophleba* (Molloy red box) +/- *C. erythrophloia* (red bloodwood) +/- *Corymbia dallachiana* (Dallachy's gum). An open sub-canopy layer containing canopy species can occur. The shrub layer is usually absent but scattered species including *Planchonia careya* (cocky apple), *Denhamia cunninghamii* (yellowberry bush) and *Carissa lanceolata* (currantbush) can occur. The ground layer is dense and grassy and dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. Not a Wetland. (BVG1M: 11c).

9.8.1c: Woodland to open woodland of *Eucalyptus cullenii* (Cullen's ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *Terminalia platyptera* (yellow-wood). Occurs as small patches on basalt soils. Not a Wetland. (BVG1M: 11c).

9.8.1d: Open woodland of *Corymbia terminalis* (western bloodwood) +/- *C. dallachiana* (Dallachy's gum). There can also be an open sub-canopy layer which can include *Atalaya hemiglauca* (whitewood), *Terminalia aridicola* (arid peach) and/or *Santalum lanceolatum* (sandalwood). Shrubs present may include *Eremophila* spp., *Acacia* spp. and *Carissa lanceolata* (currantbush). There is a sparse grassy cover. This community may contain small patches where the canopy layer disappears. Occurs on basalt plains on plateaus. Not a Wetland. (BVG1M: 11c).

Short description: *Eucalyptus crebra* +/- *Corymbia dallachiana* +/- *E. leptophleba* open woodland on plains and rocky rises of basalt geologies

Supplementary descriptions:

Subregions: 5, (4), (2), (2.9), (10.2), (10.3), (10.1), (4.6), (6), (1)

Protected areas: Undara Volcanic NP, Blackbraes NP, Mount Rosey RR, Great Basalt Wall NP, Porcupine Gorge NP, Kinrara NP, White Mountains NP, Moonstone Hill RR, Kennedy Road Gravel RR, Dalrymple NP, Forty Mile Scrub NP, Girringun NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.8.1: Potential habitat for NCA listed species: *Cycas cairnsiana*, *Cycas desolata*.

Comments: 9.8.1: Very widespread in the bioregion. In some areas other ironbark species may be dominant. This regional ecosystem is the ironbark woodland of lower rainfall areas on basalt and is distinguished from RE 9.8.4 (ironbark woodland of wetter areas of basalt) by different subdominant species. Occurs extensively in the central and southern bioregion. Vulnerable to invasive weeds species *Cryptostegia grandiflora* (rubber vine), *Lantana camara*, *Melinis repens* (Red Natal grass) and *Vachellia farnesiana* (mimosa). Logging of *Corymbia citriodora* on Chudleigh Plateau.
9.8.1a: In some areas other ironbark species may be dominant. On rockier rises *Corymbia erythrophloia* and/or *C. dallachiana* may be the dominant species. Occurs extensively in the central and southern bioregion.
9.8.1b: The regional ecosystem 9.8.2a differs from this community by being confined to the basalts around Mareeba and Lakeland Downs. Occurs across the McBride basalt in the central bioregion.
9.8.1c: Confined to small basalt flows on Amber Station in the central bioregion.
9.8.1d: Occurs extensively in the south western bioregion.

Estimated extent:¹ Pre-clearing 1107000 ha; Remnant 2021 1096000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.8.2

Description: Woodland to open woodland of *Eucalyptus leptophleba* (Molloy red box) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. dallachiana* (Dallachy's gum). *Corymbia erythrophloia* (red bloodwood) or *Terminalia* spp. sometimes occur as dominants. The sub-canopy and shrub layers are generally sparse. Occurs on basalt plains and undulating rises of the Tertiary MacLean Basalt group. Not a Wetland. (BVG1M: 11c).

Vegetation communities in this regional ecosystem include:

9.8.2a: Woodland to open woodland of *Eucalyptus leptophleba* (Molloy red box) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood) +/- *E. cullenii* (Cullen's ironbark) +/- *E. platyphylla* (poplar gum). There is often an open sub-canopy layer with canopy species. The shrub layer is absent or contains scattered canopy species, *Planchonia careya* (cocky apple), *Melaleuca* spp. and/or *Grevillea* spp. The ground layer is mid-dense and dominated by *Heteropogon* spp. (speargrasses) and *Themeda triandra* (kangaroo grass). Occurs on basalt plains and undulating rises of the Tertiary MacLean Basalt group. Not a Wetland. (BVG1M: 11c).

9.8.2b: Woodland of *Corymbia erythrophloia* (red bloodwood) +/- *Eucalyptus leptophleba* (Molloy red box) +/- *C. dallachiana* (Dallachy's gum). A very sparse sub-canopy tree and shrub layer can contain canopy species, *Erythrina vespertilio* (batswing coral tree) and *Terminalia platyphylla* (wild plum). The sparse to mid-dense ground layer is dominated by *Heteropogon contortus* (black speargrass), *H. triticeus* (giant speargrass) and/or *Themeda triandra* (kangaroo grass). Mainly occurs on the steep boulder-strewn slopes at the edge of the flow and on old volcanic plugs. Not a Wetland. (BVG1M: 11b).

9.8.2c: Low woodland of *Terminalia aridicola* subsp. *chillagoensis* (arid peach) and *T. platyphylla*. sub-canopy trees are usually absent and the shrub layer is very open. The mid-dense to dense ground layer is dominated by *Heteropogon contortus* (black speargrass). Occurs as small patches within 9.8.2a. Not a Wetland. (BVG1M: 32b).

Short description: *Eucalyptus leptophleba* +/- *Corymbia clarksoniana* +/- *C. erythrophloia* open woodland on basalt plains

Supplementary descriptions:

Subregions: 3, 6, (5), (7.4), (7.7), (7.9), (7.8)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.8.2: Potential habitat for NCA listed species: *Peristylus banfieldii*, *Spathoglottis paulinae*.

Comments: 9.8.2: Occurs around Mareeba and Lakeland Downs in the central and northern bioregion. Vulnerable to invasive weed species *Themeda quadrivalvis* (grader grass), *Mesosphaerum suaveolens* (hyptis) and *Crotalaria goreensis* (Gambia pea).
9.8.2a: This community is distinguished from 9.8.1b by being on the MacLean Basalt group. *C. clarksoniana* can be a major subdominant in some areas. *C. tessellaris* and *Eucalyptus platyphylla* can occur in wetter areas and *E. cullenii* and *C. erythrophloia* can occur in drier areas. Occurs on basalt near Lakeland Downs and Mareeba in the central and northern bioregion.
9.8.2b: Confined to Lakeland Downs area in the north of the bioregion.
9.8.2c: Confined to Lakeland Downs area in the north of the bioregion. In some areas prone to infestation with weeds species.

Estimated extent:¹ Pre-clearing 41000 ha; Remnant 2021 20000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Clearing has led to fragmentation. Infestation by weeds (*Themeda quadrivalvis*, *Crotalaria goreensis* and *Mesosphaerum suaveolens*) and total grazing pressure have led to degradation of remnants.

Regional ecosystem 9.8.3

Description: Semi-evergreen vine thicket (5-10m) often including *Notelaea microcarpa* (native olive), *Diospyros humilis* (native ebony), *Bridelia leichhardtii* (scrub ironbark), *Everistia vacciniifolia* (small-leaved Canthium), *Alectryon connatus* (grey birds-eye), *Erythroxylum australe* (cocaine tree), *Drypetes deplanchei* (yellow tulip), *Pleiogynium timorense* (Burdekin plum), *Gossia bidwillii* (scrub-python tree), *Geijera salicifolia* (narrow-leaved wilga) and *Brachychiton australis* (broad-leaved bottle tree). Emergent trees (8-14m) include *Eucalyptus granitica* (granite ironbark), *E. tereticornis* (bluegum), *B. australis* and *Gyrocarpus americanus* (helicopter tree). There is a tall mid layer including canopy species as well as *Pittosporum spinescens* (wallaby apple), *Ehretia membranifolia* (peach bush) and *Ficus* spp. The shrub layer is absent to dense and *Carissa ovata* (currantbush), *Solanum* spp. *Breynia oblongifolia* and *Capparis arborea* are frequent lower mid layer species. The ground layer is dominated by forbs, though some sedge species, particularly *Cyperus gracilis* and the grass *Ancistrachne uncinulata* (hooky grass) can be common. The orchid *Dockrillia bowmanii* occurs regularly as do the vine species *Secamone elliptica* (corky milk-vine), *Melodorum leichhardtii* (zigzag vine), *Cissus oblonga* (native grape), *C. reniformis* (kidney-leaved water vine) and *Parsonsia plaesiophylla*. Occurs on Quaternary basalt soils on plains. Not a Wetland. (BVG1M: 7a).

Short description: Semi-evergreen vine thicket on Quaternary basalt soils

Supplementary descriptions: Galloway et al. (1970): Lukin; Fensham 1996

Subregions: 5

Protected areas: Forty Mile Scrub NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.8.3: Regional refuge for a large number of plant and animal species.

Comments: 9.8.3: Includes a number of floristic communities. There may be occasional emergent *Eucalyptus crebra* (sens. lat.), *Corymbia erythrophloia* or *E. tereticornis* (after Fensham 1994). Occurs mainly in the Forty Mile Scrub in the central bioregion. *Lantana camara** is commonly found in the shrub layer.

Estimated extent:¹ Pre-clearing 2000 ha; Remnant 2021 400 ha

VM class: Endangered

Biodiversity status: Endangered

Biodiversity status notes: Subject to high total grazing pressure, weed invasion by *Lantana camara* and fire damage.

Regional ecosystem 9.8.4

Description: Open woodland to woodland of *Eucalyptus crebra* (sens. lat.) (narrow-leaved ironbark) and/or *E. tereticornis* (bluegum). The mid-layer is generally absent. Occurs on basalt plains and rocky basalt plains and hills. Not a Wetland. (BVG1M: 11b).

Vegetation communities in this regional ecosystem include:

9.8.4a: Woodland to open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. granitica* (granite ironbark) +/- *Corymbia clarksoniana* or *Corymbia intermedia* (pink bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *C. tessellaris* (Moreton Bay ash). Scattered canopy species and *Lophostemon suaveolens* (swamp mahogany) can sometimes occur in the sub-canopy. The shrub layer is absent to sparse. The ground layer is dense and grassy and is dominated by *Themeda triandra* (kangaroo grass) and *Heteropogon contortus* (black speargrass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. Not a Wetland. (BVG1M: 11b).

9.8.4b: Open woodland to woodland of *Eucalyptus tereticornis* (bluegum) +/- *E. crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *E. leptophleba* (Molloy red box) +/- *C. tessellaris* (Moreton Bay ash). The mid-layer is absent to occasionally scattered plants. The ground layer is densely grassy and includes *Heteropogon contortus* (black speargrass) and/or *Dichanthium* spp. Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. Not a Wetland. (BVG1M: 11b).

9.8.4c: Open woodland to woodland of *Eucalyptus moluccana* (gum-topped box) +/- *E. crebra* (sens. lat.) (narrow-leaved ironbark) +/- *E. platyphylla* (poplar gum). A very open sub-canopy containing canopy species often occurs. There is no shrub layer though there can be scattered canopy species and *Denhamia cunninghamii* (yellowberry bush). The grassy ground layer is dominated by *Heteropogon contortus* (black speargrass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. Not a Wetland. (BVG1M: 13d).

Short description: *Eucalyptus crebra* and/or *E. tereticornis* open woodland on basalt plains

Supplementary descriptions:

Subregions: 5, 6, (4), (2), (7.5), (7.4)

Protected areas: Girringun NP, Forty Mile Scrub NP, Undara Volcanic NP, Evelyn Creek CP, Kinrara NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.8.4: This regional ecosystem is the ironbark woodland of higher rainfall areas of basalt and is distinguished from 9.8.1 (ironbark woodland of drier areas of basalt) by the different subdominant species. Occurs on basalt in the wetter eastern parts of the central bioregion.
9.8.4a: Small areas of *Eucalyptus moluccana* may occur. Occurs on basalt in the wetter eastern parts of the central bioregion.
9.8.4b: Occurs on basalt in the wetter eastern parts of the central bioregion. Vulnerable to weeds species *Themeda quadrivalvis* (grader grass).
9.8.4c: Occurs on basalt in the wetter eastern parts of the central bioregion.

Estimated extent:¹ Pre-clearing 130000 ha; Remnant 2021 123000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.8.5

Description: Grassland of *Astrebla* spp. (Mitchell Grass) +/- *Iseilema vaginiflorum* (Red Flinders grass). Scattered shrubs or trees of mixed species including *Carissa lanceolata* (currantbush), *Acacia* spp., *Atalaya hemiglauc*a (whitewood) or *Corymbia terminalis* (western bloodwood) may occur. Occurs on gently undulating to undulating basalt plains with numerous surface basalt boulders and grey to black soil. Not a Wetland. (BVG1M: 30b).

Vegetation communities in this regional ecosystem include:

9.8.5a: [RE not in use]²: This vegetation community is now mapped as 9.8.5. Grassland of *Astrebla* spp. (Mitchell Grass) +/- *Iseilema vaginiflorum* (Red Flinders grass). Scattered shrubs or trees of mixed species including *Carissa lanceolata* (currantbush), *Acacia* spp., *Atalaya hemiglauc*a (whitewood) or *Corymbia terminalis* (western bloodwood) may occur. Occurs on gently undulating to undulating basalt plains with numerous surface basalt boulders and grey to black soil. Not a Wetland. (BVG1M: 30b).

9.8.5b: [RE not in use]²: This vegetation community is now mapped as 9.8.1d. Open woodland of *Corymbia terminalis* (western bloodwood) +/- *C. dallachiana* (Dallachy's gum). There can also be an open sub-canopy layer which can include *Atalaya hemiglauc*a (whitewood), *Terminalia aridicola* (arid peach) and/or *Santalum lanceolatum* (sandalwood). Shrubs present may include *Eremophila* spp., *Acacia* spp. and *Carissa lanceolata* (currantbush). There is a sparse grassy cover. This community can have areas where the canopy layer disappears and it becomes grassland. Occurs on basalt plains on plateaus. Not a Wetland. (BVG1M: 11b).

Short description: *Astrebla* spp. +/- *Iseilema vaginiflorum* grassland on basalt plains

Supplementary descriptions:

Subregions: 5, (10.1), (4.6), (2.5), (10.2), (2.9), (4), (10.3), (4.5)

Protected areas: Porcupine Gorge NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments:

9.8.5: Largely restricted to the south-west of the bioregion.

9.8.5a: Largely restricted to the south-west of the bioregion. Subject to high grazing pressure. Subject to weed infestation by *Cryptostegia grandiflora* and *Themeda quadrivalvis* (grader grass) and invasive exotic weed species *Vachellia farnesiana* (mimosa) and *A. nilotica* (prickly Acacia) may change the community to a tall open shrubland. Subject to invasion by the exotic pasture species *Cenchrus ciliaris* (buffel grass).

9.8.5b: This community is closely associated and interspersed with the vegetation community 9.8.5 (grassland). Occurs extensively in the south western bioregion.

Estimated extent:¹ Pre-clearing 171000 ha; Remnant 2021 170000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes: Degradation from grazing pressure and invasion by weeds in some areas.

Regional ecosystem 9.8.6

Description: Low open forest to low woodland of *Acacia cambagei* (gidgee) +/- *Denhamia oleaster* +/- *Atalaya hemiglauca* (whitewood) +/- *Acacia crombiei* (pink gidgee). There is generally no shrub layer but scattered juvenile *Acacia cambagei* and other species may occur. There is a sparse to mid-dense ground layer of tussock grasses. *Acacia crombiei* may dominate in some places. Occurs on scarps and margins of basalt tablelands and their associated footslopes in the south-west of the bioregion. Soils are skeletal with basalt boulders common. Not a Wetland. (BVG1M: 26a).

Short description: *Acacia cambagei* low open forest on scree slopes and footslopes of basalt tablelands

Supplementary descriptions:

Subregions: 5, 4.6, (2.5), (4.5), (10.1)

Protected areas: Porcupine Gorge NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.8.6: Habitat for the vulnerable plant species *Acacia crombiei*.

Comments: 9.8.6: Occurs in the south-west of the bioregion.

Estimated extent:¹ Pre-clearing 63000 ha; Remnant 2021 62000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Lower slopes subject to clearing for pasture development. Subject to logging of sandalwood (*Santalum lanceolatum*).

Regional ecosystem 9.8.7

Description: Semi-evergreen vine thicket with many codominant species, many vines and without clearly defined layers. Includes *Gyrocarpus americanus* (helicopter tree), *Brachychiton australis* (bottle tree), *Pleiogynium timorense* (Burdekin plum), *Bridelia leichhardtii*, *Psydrax odorata*, *Cupaniopsis anacardioides*, *Diospyros humilis* and *Homalium brachybotrys*. Can occur as a closed forest with *Alstonia scholaris* (milky pine), *Terminalia sericocarpa* (damsonwood), *Nauclea orientalis* (Leichhardt tree), *Ficus racemosa* (cluster fig) and *F. virens* (strangler fig) on creeks and around springs or as an open woodland of *Corymbia tessellaris* (Moreton Bay ash) and/or *Eucalyptus tereticornis* (bluegum) with an open mid layer of vine thicket species. Occurs on lava flows, cones and craters and rocky substrates with no soil development on Quaternary and Tertiary basalts. Contains Palustrine. (BVG1M: 7a).

Vegetation communities in this regional ecosystem include:

9.8.7a: Softwood scrubs on rocky basalt substrates. Occurs on lava flows, cones and craters and rocky substrates with no soil development on Quaternary and Tertiary basalts. Not a Wetland. (BVG1M: 7a).

9.8.7b: Softwood scrubs on rocky basalt substrates with wetlands. Occurs on lava flows, cones and craters and rocky substrates with no soil development on Quaternary and Tertiary basalts. Palustrine. (BVG1M: 7a).

Short description: Semi-evergreen vine thicket on cones, craters and rocky basalt flows with little soil development

Supplementary descriptions:

Subregions: 5, (4), (3)

Protected areas: Great Basalt Wall NP, Kinrara NP, Undara Volcanic NP, Mount Rosey RR, Dalrymple NP, Girringun NP

Extent in reserves: High

Wetland: Contains Palustrine

Special values: 9.8.7: Habitat for near threatened and threatened flora species. Important seasonal wetland habitats associated with this ecosystem. Lava tunnels with endemic fauna and significant bat maternity sites.

Comments: 9.8.7: Occurs on basalt boulderfields throughout the bioregion. Prone to invasion by the weeds *Cryptostegia grandiflora** (rubber vine) and *Lantana camara*.

9.8.7a: Occurs on basalt boulderfields throughout the bioregion.

9.8.7b: Occurs on basalt boulderfields throughout the bioregion.

Estimated extent:¹ Pre-clearing 86000 ha; Remnant 2021 86000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Also subject to inappropriate fire regimes.

Regional ecosystem 9.8.8

Description: Vegetation communities associated with springs and peat soils. Occurs on basalt and alluvium. Palustrine. (BVG1M: 34e).

Short description: Springs associated with basalt and alluvium

Supplementary descriptions: Fensham et al. (2004)

Subregions: 2

Protected areas:

Extent in reserves: No representation

Wetland: Palustrine

Special values: 9.8.8: The springs associated with this regional ecosystem are significant for local fauna and flora species.

Comments: 9.8.8: Some of the springs within basalt aquifers flow large volumes. Many have moderately geothermal heated water. Occurs throughout the bioregion. There are records to suggest that many of these springs became extinct in the early pastoral period (White undated).

Estimated extent:¹ Pre-clearing 10 ha; Remnant 2021 10 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes: Impacted by the introduction of ponded pastures, excavation, pig rooting and stock trampling.

Regional ecosystem 9.8.9

Description: Open woodland to woodland of *Eucalyptus orgadophila* (mountain coolibah) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *E. crebra* (narrow-leaved ironbark) +/- *C. erythrophloia* (red bloodwood) with occasional small patches of grassland. There is generally no mid layer although scattered juveniles of the canopy species may occur or in the wetter areas clumps of *Melaleuca bracteata* (black teatree) can occur. The ground layer is dense and grassy and dominated by *Heteropogon contortus* (black speargrass) and/or *Themeda triandra* (kangaroo grass). Occurs on basalt plains to gently undulating plains. Some areas may have basalt boulders to the surface. Soils are generally brown-black vertosols and brown ferrosols. Not a Wetland. (BVG1M: 11a).

Short description: *Eucalyptus orgadophila* +/- *Corymbia* spp. open woodland on basalt plains and rocky basalt hills

Supplementary descriptions:

Subregions: 5, (6), (2), (2.9), (4)

Protected areas: Undara Volcanic NP, Blackbraes NP, Porcupine Gorge NP, Mount Rosey RR, Great Basalt Wall NP, Kinrara NP, Kennedy Road Gravel RR, Moonstone Hill RR, Rungulla NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values:

Comments: 9.8.9: Occurs extensively on basalt plains through-out the central and southern bioregion. Vulnerable to invasion by the woody weed *Vachellia farnesiana* (mimosa) and the pasture species *Cenchrus ciliaris* (buffel grass).

Estimated extent:¹ Pre-clearing 109000 ha; Remnant 2021 109000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.8.10

Description: Woodland of *Eucalyptus tereticornis* (bluegum) and/or *Corymbia tessellaris* (Moreton Bay ash) and/or *Lophostemon suaveolens* (swamp mahogany) and/or *E. camaldulensis* (river red gum). An open sub-canopy layer can occur and include *Atalaya hemiglauc*a (whitewood) and *Bursaria incana* (prickly pine). The shrub layer varies from absent to mid-dense to clumped and can include *A. hemiglauc*a and *B. incana* and vine thicket species such as *Ficus* spp., *Cupaniopsis anacardioides* and *Diospyros humilis*. The ground cover is very sparse and can include vine species which may extend into the mid-strata. Occurs on basalt boulder fields with little or no soil development. Not a Wetland. (BVG1M: 11b).

Short description: *Eucalyptus tereticornis* and *Lophostemon suaveolens* woodland +/- a shrubby understorey on rocky basalt flows

Supplementary descriptions:

Subregions: 5, (2), (4)

Protected areas: Kinrara NP

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.8.10: Occurs mainly on the Kinrara basalt flow in the central bioregion.

Estimated extent:¹ Pre-clearing 5000 ha; Remnant 2021 5000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.8.11

Description: Woodland to low open woodland of *Eucalyptus microneura* (Georgetown box) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood) +/- *E. crebra* (narrow-leaved ironbark) or *E. cullenii* (Cullen's ironbark) +/- *Terminalia aridicola* (arid peach). The mid layer varies from absent to clumped shrubs including *Atalaya hemiglauc*a (whitewood), *Petalostigma pubescens* (quinine), *Carissa lanceolata* (currantbush), *Melaleuca citrolens* (scrub teatree) and *Gardenia vilhelmii* (breadfruit). The ground layer is grassy and generally dominated by *Heteropogon contortus* (black speargrass), but may include sedge species. Occurs on basalt plains at the extremities of the basalt flows. Not a Wetland. (BVG1M: 11b).

Short description: *Eucalyptus microneura* +/- *Corymbia* spp. +/- *Terminalia* spp. woodland on basalt plains

Supplementary descriptions:

Subregions: 5, 2, 1, (2.5)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.8.11: Includes a small area of *Eucalyptus similis* woodland near Stockmans Creek, close to the Einasleigh River. Occurs on patches of basalt in the central west of the bioregion.

Estimated extent:¹ Pre-clearing 17000 ha; Remnant 2021 17000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.8.12

Description: Low open woodland to open shrubland of *Excoecaria parvifolia* (gutta percha) with isolated *E. parvifolia* in the shrub layer. The ground layer is almost bare. Occurs on rocky basalt plains with cracking black clays. Not a Wetland. (BVG1M: 27a).

Short description: *Excoecaria parvifolia* low open woodland on cracking clays on rocky basalt plains

Supplementary descriptions:

Subregions: 5

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.8.12: Occurs north of Mt. Surprise in the central bioregion. Vulnerable to the invasive weed species *Cryptostegia grandiflora* (rubber vine).

Estimated extent:¹ Pre-clearing 1000 ha; Remnant 2021 1000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.8.13

Description: Grassland to very open grassland of *Iseilema* spp. (Flinders grass) and/or *Dichanthium* spp. +/- *Bothriochloa* spp. (bluegrasses) +/- *Heteropogon contortus* (black speargrass) +/- *Ophiuros exaltatus* (canegrass) +/- *Eulalia aurea* (silky browntop) +/- *Aristida* spp. In some areas any of the subdominant species can be dominant. There are often emergents including *Corymbia dallachiana* (Dallachy's gum), *Eucalyptus crebra* (narrow-leaved ironbark), *E. orgadophila* (mountain coolibah) and *C. erythrophloia* (red bloodwood) or scattered shrubs including *Carissa lanceolata* (currantbush) and *Atalaya hemiglaucula* (whitewood). Occurs on basalt plains and undulating plains with varying soil depths. Not a Wetland. (BVG1M: 30b).

Short description: *Iseilema* spp. and/or *Dichanthium* spp. tussock grassland on basalt plains

Supplementary descriptions:

Subregions: 5, (4), (6), (2), (2.9), (10.2), (10.3)

Protected areas: Undara Volcanic NP, Mount Rosey RR, Blackbraes NP, Girringun NP, Porcupine Gorge NP, Great Basalt Wall NP, White Mountains NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.8.13: Potential habitat for NCA listed species: *Dichanthium queenslandicum*.

Comments: 9.8.13: *Imperata cylindrica* and/or *Aristida* spp. may become prevalent under different land management regimes. Occurs mainly in the central and southern bioregion. The weeds *Vachellia farnesiana* (mimosa) and *Cryptostegia grandiflora* (rubber vine) can occur in an emergent shrub layer.

Estimated extent:¹ Pre-clearing 168000 ha; Remnant 2021 165000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes: Degradation from grazing pressure..

Regional ecosystem 9.10.1

Description: Woodland to open forest of *Eucalyptus chartaboma* (Queensland flaky-bark) +/- *E. tetradonta* (Darwin stringybark) +/- *Eucalyptus* spp. +/- *Corymbia* spp. The shrub layer is generally absent. The ground layer is sparse. Include bare sandstone pavements and associated vegetation. Occurs on sandstone scarps and plateaus with shallow sandy soils. Not a Wetland. (BVG1M: 14d).

Vegetation communities in this regional ecosystem include:

9.10.1a: Woodland to open forest of *Eucalyptus chartaboma* (Queensland flaky-bark) +/- *E. tetradonta* (Darwin stringybark) +/- *E. crebra* (narrow-leaved ironbark) +/- *E. similis* (yellowjacket) +/- *Corymbia* spp. The shrub layer is generally absent but can include *Grevillea* spp., *Persoonia falcata*, *Acacia* spp. and *Bossiaea armitii*. The ground layer is sparse and dominated by *Schizachyrium* spp. Occurs on sandstone plateaus. Not a Wetland. (BVG1M: 14d).

9.10.1b: Woodland to open forest of *Eucalyptus chartaboma* (Queensland flaky-bark) +/- *E. tetradonta* (Darwin stringybark) +/- *Corymbia stockeri* +/- *Callitris intratropica* (cypress pine) +/- *Acacia julifera* subsp. *gilbertensis*. The sparse to mid-dense shrub layer includes *Alphitonia pomaderroides* (soapbush), *Petalostigma* spp., *Grevillea* spp., *Acacia julifera* subsp. *gilbertensis*, *Callitris intratropica* and *Persoonia falcata*. The sparse to mid-dense ground layer includes *Aristida* spp., *Schizachyrium* spp., and *Arundinella setosa*. Occurs on sandstone mountains. Not a Wetland. (BVG1M: 14d).

9.10.1c: Predominantly bare rock on sandstone plateaus with small clumps of *Acacia leptostachya* (slender wattle) &/or *A. shirleyi* (lancewood) or scattered individuals of *Corymbia serendipita* or *Eucalyptus chartaboma* (Queensland flaky-bark). Occurs on sandstone plateaus. Not a Wetland. (BVG1M: 14d).

Short description: *Eucalyptus chartaboma* +/- *E. tetradonta* woodland on sandstone scarps and plateaus with shallow sandy soils

Supplementary descriptions:

Subregions: 1, 2, 5, 10.2, (2.9), (3), (4.6)

Protected areas: Porcupine Gorge NP, Canyon RR, White Mountains NP, Littleton NP, Bulleringa NP

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.10.1: Habitat for near threatened plant species *Labichea brassii*.

Comments: 9.10.1: Similar ecosystem to RE 2.10.2 in Gulf Plains Bioregion. The subdominant species can become codominant depending on soil depth and characteristics. Occurs mainly on the Newcastle Range in the west of the bioregion. The exotic weed *Mesosphaerum suaveolens* may be present in some areas.

9.10.1a: Occurs throughout the Newcastle Range in the central west bioregion.

9.10.1b: Occurs at the northern edge of Ngarrabullgan (Mt. Mulligan) in the central bioregion.

9.10.1c: Occurs in the west of the bioregion near Cobbold Gorge.

Estimated extent:¹ Pre-clearing 36000 ha; Remnant 2021 36000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.10.2

Description: Springs and their associated vegetation. Occurs on quartzose sandstone, fine-grained sedimentary rock (limestone), metamorphic rock and granite. Palustrine. (BVG1M: 34e).

Short description: Springs and their associated vegetation on quartzose sandstone, limestone, metamorphic rock and granite

Supplementary descriptions: Fensham and Fairfax (2002); Fensham et al. (2004)

Subregions: 2.6, 1, 2

Protected areas:

Extent in reserves: No representation

Wetland: Palustrine

Special values: 9.10.2: Springs associated with this ecosystem are significant for local fauna. Specialised organisms may be associated with hot springs.

Comments: 9.10.2: Includes springs that are geothermally heated including the hottest spring in Queensland (~65 degrees C). Occurs throughout the bioregion.

Estimated extent:¹ Pre-clearing 50 ha; Remnant 2021 40 ha

VM class: Of concern

Biodiversity status: Endangered

Biodiversity status notes: Rare ecosystem < 1000ha pre-clearing extent and impacted by grazing and subject to weed invasion. Introduction of ponded pastures, excavation, pig rooting and stock trampling are leading to some degradation.

Regional ecosystem 9.10.3

Description: Woodland to open forest of *Acacia shirleyi* (lancewood) +/- *Eucalyptus* spp. +/- *Corymbia* spp. The mid layer ranges from absent to a mid-dense shrub layer of *Acacia* spp. or *Petalostigma banksii* (smooth-leaved quinine). The ground layer varies from absent to a sparse cover of *Schizachyrium* spp. Occurs on sandstone scarps and mesas and on plateaus with shallow soils. Not a Wetland. (BVG1M: 24a).

Vegetation communities in this regional ecosystem include:

9.10.3a: Woodland to open forest of *Acacia shirleyi* (lancewood) and/or *Corymbia serendipita* +/- *Eucalyptus chartaboma* (Queensland flaky-bark) +/- *E. provecta* +/- *C. polycarpa* +/- *E. crebra* (narrow-leaved ironbark). There is often an open sub-canopy which includes canopy species as well as *Callitris intratropica* (cypress pine), *A. leptostachya* (slender wattle) and *A. julifera* (catkin wattle). The community structure is very variable. In some cases the *Acacia* spp. can form a low woodland or low open forest with emergent *Corymbia serendipita* and/or *C. polycarpa* (long-fruited bloodwood) and in areas of sandstone outcrops *Eucalyptus chartaboma* can predominate along with *Corymbia serendipita*. The sparse shrub layer can contain scattered individuals of juvenile canopy species as well as *Petalostigma banksii* (smooth-leaved quinine) and *Persoonia falcata* (geebung). The ground layer varies from absent to sparse grasses and is dominated by *Aristida* spp., *Cleistochloa subjuncea* and *Schizachyrium* spp. Sandstone scarps and plateaus with shallow soils. Not a Wetland. (BVG1M: 24a).

9.10.3b: Woodland to (occasionally) open forest of *Acacia shirleyi* (lancewood) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *C. polycarpa* (long-fruited bloodwood). The mid layer ranges from isolated plants of *Melaleuca viridiflora* (broad-leaved paperbark) and *M. stenostachya* (teatree) to a shrubland of *Petalostigma banksii* (smooth-leaved quinine). The ground layer is grassy and dominated by *Schizachyrium* spp. (firegrass) or sometimes *Triodia* spp. (spinifex). Sandstone scarps and small plateaus. Not a Wetland. (BVG1M: 24a).

9.10.3c: Low open woodland of *Eucalyptus tetrodonta* (Darwin stringybark) +/- *Acacia shirleyi* (lancewood) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. erythrophloia*. A dense shrub layer of *Acacia leptostachya* (slender wattle) and *Petalostigma banksii* (smooth-leaved quinine) often occurs and *Schizachyrium* sp. (firegrass) dominates the mid-dense ground layer on stony, sandstone ground. Occurs on sandstone outcrops. Not a Wetland. (BVG1M: 14d).

Short description: *Acacia shirleyi* +/- mixed species woodland to open forest on sandstone

Supplementary descriptions:

Subregions: 2, 1, 2.9, (5), (2.4), (2.6), (3), (2.5)

Protected areas: Littleton NP, Bulleringa NP, Canyon RR, Rungulla NP, Porcupine Gorge NP, Blackbraes NP, Littleton RR, Great Basalt Wall NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.10.3: Potential habitat for NCA listed species: *Euphorbia carissoides*.

Comments: 9.10.3: Similar to RE 2.10.5 in Gulf Plains Bioregion. Occurs mainly on the Newcastle Range in the west of the bioregion.

9.10.3a: Occurs on the Newcastle Range down to Gilberton in the west of the bioregion.

9.10.3b: Occurs mainly on the Newcastle Range in the west of the bioregion but also near Porcupine Gorge NP in the south of the bioregion.

9.10.3c: Occurs in the central west of the bioregion near Bulleringa.

Estimated extent:¹ Pre-clearing 72000 ha; Remnant 2021 72000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.10.4

Description: Woodland to open forest of *Corymbia trachyphloia* (brown bloodwood) and/or *Eucalyptus exilipes* (fine-leaved ironbark) and *Acacia* spp. *C. trachyphloia* and *E. exilipes* can also occur as emergents. A sparse sub-canopy layer of canopy species can occur and *Corymbia peltata* (rustyjacket) can also be found in small gullies. A sparse shrub layer including *Acacia* spp., *Melaleuca nodosa*, *Petalostigma banksii* (smooth-leaved quinine) and *Persoonia falcata* (geebung) is present. The ground layer is sparse to dense and often dominated by *Cleistochloa subjuncea*. Occurs on sandstone hills. Not a Wetland. (BVG1M: 12b).

Short description: *Corymbia trachyphloia* and/or *Eucalyptus exilipes* woodland on remnant sandstone sheets overlying mountain ranges

Supplementary descriptions:

Subregions: 4, 2

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.10.4: Habitat for the vulnerable plant species *Acacia crombiei*.

Comments: 9.10.4: Similar to RE 2.10.3 in Gulf Plains Bioregion. Occurs over a small area west of Greenvale in the central bioregion.

Estimated extent:¹ Pre-clearing 2000 ha; Remnant 2021 2000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.10.5

Description: Open forest of *Eucalyptus similis* (yellowjacket) +/- *Corymbia* spp. +/- *E. crebra* (narrow-leaved ironbark) +/- *Acacia shirleyi* (lancewood) +/- *C. peltata* (rustyjacket) +/- *Callitris intratropica* (cypress pine). Open woodlands dominated by *Eucalyptus provecta* occur in some areas. Occurs on terraces and edges of sandstone plateaus and on shallow Tertiary remnant soils overlying granite and rhyolite. Not a Wetland. (BVG1M: 17c).

Vegetation communities in this regional ecosystem include:

9.10.5a: Open forest of *Eucalyptus similis* (yellowjacket) +/- *Corymbia erythrophloia* (red bloodwood) +/- *E. crebra* (sens. lat.) (narrow-leaved ironbark) +/- *C. polycarpa* (long-fruited bloodwood) +/- *Acacia shirleyi* (lancewood) +/- *C. peltata* (rustyjacket) +/- *Callitris intratropica* (cypress pine) +/- *E. provecta* +/- *Corymbia serendipita* +/- *C. trachyphloia* (brown bloodwood). The mid layer varies from absent to a mid-dense shrub layer including canopy species juveniles, *Grevillea glauca* (bushman's clothes peg) and *Acacia* spp. The mid-dense ground layer is dominated by *Themeda triandra* (kangaroo grass) and *Capillipedium parviflorum*. Small areas of *Eucalyptus provecta* +/- *A. shirleyi* +/- *Callitris intratropica* open woodland may occur in this regional ecosystem. Occurs on terraces and edges of sandstone plateaus and on shallow Tertiary remnant soils overlying granite and rhyolite. Not a Wetland. (BVG1M: 17c).

9.10.5b: Open woodland of *Eucalyptus provecta* +/- *Acacia shirleyi* (lancewood) +/- *A. burdekinsii* +/- *Corymbia pocillum*. A low sub-canopy layer contains scattered canopy species, *Gardenia vilhelmii* (breadfruit) and *Petalostigma banksii* (smooth-leaved quinine). Scattered juvenile canopy species can be scattered in every open shrub layer. The ground layer is mid-dense and can include *Fimbristylis* spp., *Schizachyrium* spp. and *Triodia* spp. (spinifex). Occurs on terraces and edges of sandstone plateaus and on shallow Tertiary remnant soils overlying granite and rhyolite. Not a Wetland. (BVG1M: 19d).

9.10.5c: Open woodland to woodland of *Eucalyptus granitica* (granite ironbark), *Corymbia peltata* (rustyjacket) +/- *E. similis* (yellowjacket). The mid layer is an open shrubland to shrubland of *Acacia julifera* subsp. *julifera* with the ground layer a mid-dense grassland of *Themeda triandra* (kangaroo grass), *Heteropogon contortus* (black speargrass) and *Aristida* spp. Occurs on slopes above wetlands on the Newcastle Range plateau. Not a Wetland. (BVG1M: 17c).

Short description: *Eucalyptus similis* +/- *Corymbia erythrophloia* open forest on remnant sandstone sheets overlying mountain ranges

Supplementary descriptions:

Subregions: 2

Protected areas: Canyon RR

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.10.5: Occurs in the Newcastle Range in the west of the bioregion.
9.10.5a: Occurs in the Newcastle Range in the west of the bioregion.
9.10.5b: Occurs in the Newcastle Range in the west of the bioregion.

Estimated extent:¹ Pre-clearing 4000 ha; Remnant 2021 4000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.10.7

Description: Mixed woodland to low woodland which can include a range of *Corymbia* spp. (bloodwoods) and *Eucalyptus* spp. (ironbarks). The shrub layer is sparse to mid-dense and can include *Grevillea* spp., *Acacia* spp. The ground layer is sparse to grassy. Occurs on the top, side slopes and talus footslopes of sandstone massifs. Not a Wetland. (BVG1M: 12b).

Vegetation communities in this regional ecosystem include:

9.10.7a: Woodland including combinations of *Corymbia hylandii* (Hyland's bloodwood), *C. trachyphloia* (brown bloodwood), *C. leichhardtii* (yellowjacket), *C. tessellaris* (Moreton Bay ash), *Eucalyptus cloeziana* (Gympie messmate) and *E. cullenii* (Cullen's ironbark). A shrub layer including *Grevillea* spp., *Acacia* spp., *Coelospermum reticulatum* (medicine bush) and *Lamprolobium fruticosum* is present. The ground layer includes tussock grasses and *Xanthorrhoea* sp. Occurs on the plateau. Not a Wetland. (BVG1M: 12b).

9.10.7b: Woodland of *Corymbia stockeri* +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Eucalyptus crebra* (narrow-leaved ironbark). The sparse mid layer includes shrubs of *Alphitonia* sp., *Cupaniopsis anacardioides*, *Acacia* spp., *Coelospermum reticulatum* (medicine bush), *Denhamia cunninghamii* (yellowberry bush) and *Labichea brassii*. The sparse ground layer includes *Arundinella setosa*, *Triodia microstachya*, *Mnesithea rottboellioides* (northern canegrass) and *Lomandra multiflora* subsp. *multiflora*. Occurs on plateau side slopes. Rocks are frequent. Not a Wetland. (BVG1M: 14d).

9.10.7c: Low woodland of *Eucalyptus cullenii* (Cullen's ironbark) +/- *Corymbia stockeri* subsp. *peninsularis*. A mid-dense shrub layer including *Jacksonia thesioides*, *Melaleuca stenostachya*, *Petalostigma banksii* (smooth-leaved quinine), *Grevillea decora* and *Santalum lanceolatum* (sandalwood) is present. The mid-dense ground layer includes *Schizachyrium* spp., *Eriachne* spp., *Setaria surgens* and *Fimbristylis* spp. with frequent bare patches. Occurs on talus footslopes. Not a Wetland. (BVG1M: 12b).

Short description: *Corymbia* spp. and *Eucalyptus* spp. woodland on sandstones of Ngarrabullgan

Supplementary descriptions:

Subregions: 3, (2)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.10.7: Habitat for the near threatened species *Labichea brassii*.

Comments: 9.10.7: This Regional Ecosystem is restricted to Ngarrabullgan (Mt. Mulligan) in the central bioregion.
9.10.7a: Restricted to Ngarrabullgan (Mt. Mulligan) in the central bioregion.
9.10.7b: Restricted to Ngarrabullgan (Mt. Mulligan) in the central bioregion.
9.10.7c: Occurs on the eastern side of Ngarrabullgan (Mt. Mulligan) and the Featherbed Volcanics to the west.

Estimated extent:¹ Pre-clearing 4000 ha; Remnant 2021 4000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.10.8

Description: Woodland to open forest of *Eucalyptus mediocris* (mahogany) and *E. cloeziana* (Gympie messmate), *C. trachyphloia* (brown bloodwood), *C. clarksoniana* (Clarkson's bloodwood) and *E. cullenii* (Cullen's ironbark). The shrub layer includes *Acacia flavescens* (yellow wattle) and *A. leptostachya* (slender wattle). The ground layer is grassy and includes *Lomandra multiflora* subsp. *multiflora*. Occurs on plateau top. Not a Wetland. (BVG1M: 12b).

Short description: *Eucalyptus mediocris* and *E. cloeziana* woodland on sandstones of Ngarabullgan

Supplementary descriptions:

Subregions: 3

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.10.8: Potential habitat for NCA listed species: *Dodonaea uncinata*, *Coleus minutus*, *Prostanthera mulliganensis*, *Stenanthemum argenteum*.

Comments: 9.10.8: Restricted to Ngarabullgan (Mt. Mulligan) in the central bioregion and only occurs as a subdominant community.

Estimated extent:¹ Pre-clearing 700 ha; Remnant 2021 700 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.10.9

Description: Low woodland to tall open shrubland of *Acacia johannis*, interspersed with bare sandstone pavements with small shrublands of *Grevillea decora* subsp. *decora*, *Calytrix exstipulata*, *Acacia* spp., *Jacksonia thesioides*, *Petalostigma banksii* (smooth-leaved quinine) and *Persoonia falcata* (geebung). Occurs on plateau. Not a Wetland. (BVG1M: 24a).

Short description: *Acacia johannis* low woodland on sandstones of Ngarabullgan

Supplementary descriptions:

Subregions: 3, (2)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.10.9: Habitat for the vulnerable species *Macropteranthes montana*. The ecosystem is also habitat for *Acacia johannis* that has a restricted distribution.

Comments: 9.10.9: Restricted to Ngarabullgan (Mt. Mulligan) in the central bioregion.

Estimated extent:¹ Pre-clearing 2000 ha; Remnant 2021 2000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.11.1

Description: Low woodland to low open woodland of *Eucalyptus melanophloia* (silver-leaved ironbark) or *E. shirleyi* +/- *Corymbia peltata* (rustyjacket) +/- *C. dallachiana* (Dallachy's gum) +/- *E. crebra* (narrow-leaved ironbark). There is usually no shrub-layer but scattered shrubs can occur and the ground is usually dense and grassy. Occurs on undulating rises and low metamorphic hills. Not a Wetland. (BVG1M: 17b).

Vegetation communities in this regional ecosystem include:

9.11.1a: Low woodland to low open woodland of *Eucalyptus melanophloia* (silver-leaved ironbark) +/- *E. persistens* (box) +/- *E. crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. peltata* (rustyjacket) +/- *E. brownii* (Reid River box) +/- *Acacia julifera* (catkin wattle). *E. shirleyi* (silver-leaved ironbark) may sometimes be dominant. The shrub layer is usually absent but scattered juvenile canopy species, *Petalostigma* spp., *Denhamia cunninghamii* and *Hakea* spp. may occur. The ground layer is dense grassy and includes *Themeda triandra* (kangaroo grass), *Cymbopogon bombycinus* (lemon-scented grass) and *Heteropogon contortus* (black speargrass). Occurs on skeletal soils of slopes and crests of undulating rises and low hills of folded metasediments and other metamorphic rocks. Not a Wetland. (BVG1M: 17b).

9.11.1b: Low open woodland to woodland of *Eucalyptus melanophloia* or *E. shirleyi* +/- *Corymbia dallachiana* (Dallachy's gum) +/- *E. persistens* (box) +/- *C. peltata* (rustyjacket) +/- *E. crebra* (narrow-leaved ironbark). There is usually no sub-canopy but scattered specimens of *Petalostigma* spp. Or *Grevillea* spp. Can occur. The shrub layer is generally absent but scattered shrubs can include *Jacksonia ramosissima* (angled broom bush), *Acacia decora* (showy wattle) and *Dodonaea dodecandra* (false hophbush). The mixed grassy ground layer can include *Chrysopogon fallax* (golden beard grass), *Aristida* spp., *Digitaria* spp., *Triodia pungens* (spinifex), *Schizachyrium* spp. (firegrass) and *Cymbopogon bombycinus* (lemon-scented grass). Occurs on skeletal soils of slopes and crests of undulating rises and low hills of folded metasediments and other metamorphic rocks. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus melanophloia* low woodland on skeletal soils on metamorphics hills

Supplementary descriptions:

Subregions: 4, (10.3), (10.2), (2), (5), (11.3)

Protected areas: Dalrymple NP, Blackbraes NP, White Mountains NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.11.1: Occurs from Greenvale to Charters Towers in the central and southern bioregion.
9.11.1a: Occurs from Greenvale to Lyndhurst in the central bioregion.
9.11.1b: Occurs from Greenvale to near Charters Towers in the central and southern bioregion.

Estimated extent:¹ Pre-clearing 158000 ha; Remnant 2021 156000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.2

Description: Woodland to open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) and/or a number of similar ironbark species +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood). A sparse sub-canopy layer can occur. The shrub layer is absent to sparse and often includes canopy species and *Denhamia cunninghamii* (yellowberry bush). The ground layer is mid-dense and is generally dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on a wide variety of landforms, but predominantly undulating rises and hills generally on shallow loamy soils. Not a Wetland. (BVG1M: 13c).

Vegetation communities in this regional ecosystem include:

9.11.2a: Woodland to open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *Eucalyptus* spp. +/- *Corymbia* spp. An open to mid-dense sub-canopy layer can occur and include canopy species, *Bursaria incana* (prickly pine), *Hakea* spp., and *Acacia* spp. The shrub layer is sparse to open and can include canopy species, *Denhamia cunninghamii* (yellowberry bush), *Grewia savannicola*, *Erythroxylum australe* (cocaine tree), *Carissa* spp., *Hakea* spp. And *Acacia* spp. The ground layer is grassy and dominated by *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *H. triticeus* (giant speargrass). Occurs on metamorphic hills and rises. Not a Wetland. (BVG1M: 13c).

9.11.2b: Woodland of *Eucalyptus exilipes* (fine-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum). An open sub-canopy can include *C. erythrophloia* (red bloodwood), *Hakea lorea* subsp. *lorea* (shoe-lace Hakea), *Bursaria incana* (prickly pine) and *Acacia excelsa* or *Vachellia bidwillii* (corkwood wattle). The shrub layer is absent to very open and can include *Denhamia cunninghamii* (yellowberry bush), *Grewia savannicola* and *Hakea chordophylla*. The sparse to mid-dense grassy ground layer is dominated by *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *Bothriochloa* spp. (bluegrasses). Occurs on steep metamorphic rises. Not a Wetland. (BVG1M: 13c).

9.11.2c: Woodland to open woodland of *Eucalyptus whitei* (White's ironbark) and/or *E. crebra* (narrow-leaved ironbark) +/- *Corymbia peltata* (rustyjacket) +/- *C. erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum). There can also be scattered canopy species in the sub-canopy. There is no shrub layer though very scattered shrubs of juvenile canopy species or *Denhamia cunninghamii* (yellowberry bush) and *Cycas* sp. can occur. The ground layer is dense grassy and is usually dominated by *Themeda triandra* (kangaroo grass) and *Heteropogon contortus* (black speargrass). Occurs on metamorphic rises and footslopes. Not a Wetland. (BVG1M: 13c).

9.11.2d: Open woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. granitica* (granite ironbark), sometimes with a sparse sub-canopy of *Corymbia* spp. An open shrub layer includes *Grevillea parallela* (silver oak), *Denhamia cunninghamii* (yellowberry bush), *Acacia flavescens* (yellow wattle) and *Alphitonia pomaderroides* (soapbush). The ground layer is grassy and dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Restricted to Serpentine geologies. Not a Wetland. (BVG1M: 13c).

9.11.2e: Open woodland of *Eucalyptus drepanophylla* (grey ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum). The mid-layer is very open though scattered individuals of the canopy species, *Melaleuca nervosa* (woodland paperbark) and *Carissa lanceolata* (currantbush) can occur in the shrub layer. A dense grassy cover is usually dominated by *Bothriochloa* spp. or *Aristida* spp. Occurs on undulating metamorphic rises. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* (or several other ironbark species) +/- *Corymbia* spp. woodland on shallow texture contrast soils on low metamorphic hills and lowlands

Supplementary descriptions:

Subregions: 4, (5), (6), (2), (10.3), (11.3), (10.2)

Protected areas: Girringun CP, White Mountains RR, Girringun NP, Dalrymple NP, White Mountains NP, Blackbraes NP, Girringun RR

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.11.2: Potential habitat for NCA listed species: *Corchorus subargenteus*, *Cycas couttsiana*, *Cycas platyphylla*, *Eucalyptus paedoglaucula*, *Grevillea glossadenia*.

Comments: 9.11.2: The northern distribution of this unit may overlap with RE 9.11.3. Includes other narrow leaved ironbark taxa such as *Eucalyptus drepanophylla*, and their intergrades. Occurs throughout the central and southern bioregion.
9.11.2a: Occurs extensively across the southern half of the bioregion.
9.11.2b: Occurs in a restricted range around Lolworth in the central bioregion.
9.11.2c: Restricted to the Montgomery Range in the central bioregion.
9.11.2d: Restricted to several locations on Serpentine from Mt. Garnet to Maryvale in the central bioregion.
9.11.2e: Occurs south of the Harvey Range road in the south of the bioregion.

Estimated extent:¹ Pre-clearing 359000 ha; Remnant 2021 351000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.3

Description: Woodland to open woodland of *Eucalyptus cullenii* (Cullen's ironbark) or *E. staigeriana* (lemon-scented ironbark). Subdominant species often include *Corymbia clarksoniana* (Clarkson's bloodwood), *Erythrophleum chlorostachys* (Cooktown ironwood) and *C. hylandii* (Hyland's bloodwood). Low woodlands dominated by *Terminalia* spp. and *Melaleuca* spp. can occur. The shrub layer varies from none to mid-dense. Occurs on flats, hills and ranges of metamorphic geologies and on varying soil types and depths. Not a Wetland. (BVG1M: 13a).

Vegetation communities in this regional ecosystem include:

9.11.3a: Woodland to low open woodland of *Eucalyptus cullenii* (Cullen's ironbark) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *C. erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum). *Eucalyptus crebra* (narrow-leaved ironbark) can be dominant in some areas. A variety of other *Eucalyptus* spp., *Corymbia* spp. and *Melaleuca* spp. can occur as subdominants throughout the range of this community. There can be an open sub-canopy containing canopy species, *M. stenostachya* (teatree), *Grevillea glauca* (bushman's clothes peg) and other *Grevillea* spp. The shrub layer can be absent to mid-dense and include *Denhamia cunninghamii* (yellowberry bush), *Gardenia vilhelmii* (breadfruit), *Petalostigma* spp., *Persoonia falcata* and *Grevillea* spp. The ground layer is grassy and dominated by *Themeda triandra* (kangaroo grass), *Heteropogon* spp. (speargrass), *Aristida* spp. and *Schizachyrium* spp. (firegrass). Occurs on flats, hills and ranges of metamorphic ranges. Not a Wetland. (BVG1M: 13a).

9.11.3b: Low open woodland to woodland of *Eucalyptus cullenii* (Cullen's ironbark) +/- *Corymbia hylandii* (Hyland's bloodwood) +/- *C. clarksoniana* (Clarkson's bloodwood). The sub-canopy is generally open with canopy species and *Terminalia* spp. A sparse to mid-dense shrub layer includes *Petalostigma banksii* (smooth-leaved quinine), *Denhamia cunninghamii* (yellowberry bush), *Gardenia vilhelmii* (breadfruit), *Carissa lanceolata* (currantbush) and *Melaleuca* spp. The mid-dense to dense ground layer is dominated by *Heteropogon contortus* (black speargrass), *Aristida* spp., *Schizachyrium fragile* (firegrass) and *Themeda triandra* (kangaroo grass). On metamorphic hills and ranges. Not a Wetland. (BVG1M: 13a).

9.11.3c: Open woodland to woodland of *Eucalyptus staigeriana* (lemon-scented ironbark) +/- *E. cullenii* (Cullen's ironbark) +/- *Corymbia hylandii* (Hyland's bloodwood) +/- *E. tetrodonta* (Darwin stringybark). The shrub layer varies from absent to open and can include juveniles of canopy species, *Erythrophleum chlorostachys* (Cooktown ironwood) and *Grevillea dryandri* subsp. *dryandri* (Dryander's grevillea). The ground layer is a sparse to mid-dense and grassy, dominated by *Heteropogon triticeus* (giant speargrass), *Themeda triandra* (kangaroo grass) and *Schizachyrium* spp. (firegrass). Occurs on metamorphic hills. Not a Wetland. (BVG1M: 13a).

9.11.3d: Low woodland to low open woodland of *Melaleuca citrolens* (scrub teatree) and/or *M. stenostachya* or *Terminalia* spp. +/- *Eucalyptus cullenii* (Cullen's ironbark). *Eucalyptus* spp. and/or *Corymbia* spp. can sometimes occur in an emergent layer. The shrub layer is sparse to mid-dense and can include *Denhamia cunninghamii* (yellowberry bush), *Petalostigma banksii* (smooth-leaved quinine), *Gardenia vilhelmii* (breadfruit), *Dolichandrone alternifolia* (lemonwood) and juvenile canopy species. The grassy ground layer is dominated by *Heteropogon contortus* (black speargrass), *Aristida* spp. and *Themeda triandra* (kangaroo grass). Footslopes and lower slopes of metamorphic hills. Not a Wetland. (BVG1M: 21b).

9.11.3e: Low open woodland of *Corymbia hylandii* (Hyland's bloodwood) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) with a very sparse shrub layer of *Petalostigma banksii* (smooth-leaved quinine). The ground layer is mid-dense and dominated by *Heteropogon triticeus* (giant speargrass), *H. contortus* (black speargrass) and *Schizachyrium* spp. (firegrass). Occurs on metamorphic hills. Not a Wetland. (BVG1M: 21b).

9.11.3f: Woodland to low open woodland of *Eucalyptus cullenii* (Cullen's ironbark) and *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Corymbia hylandii* (Hyland's bloodwood). The shrub layer is absent to sparse shrubs dominated by *Erythrophleum chlorostachys*, *Terminalia* spp., *Grevillea mimosoides*, *Dolichandrone alternifolia* (lemonwood) and *Petalostigma* spp. The ground layer is mid-dense and dominated by *Heteropogon triticeus* (giant speargrass), *H. contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *Sarga plumosum* (plume sorghum). Occurs on metamorphic hills. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus cullenii* or *E. staigeriana* +/- *Corymbia clarksoniana* woodland on skeletal soils on metamorphic hills

Supplementary descriptions: Neldner and Clarkson (1995): 70 (part), 68 (part)

Subregions: 3, 2, (6), (5), (2.6), (3.1), (2.4), (3.2), (3.5), (7.9), (4), (7.4)

Protected areas: Palmer Goldfield RR, Mount Windsor NP, Ngalba-bulal NP (CYPAL), Mount Lewis NP, Hann Tableland NP, Chillagoe-Mungana Caves NP, Undara Volcanic NP, Bulleringa NP, Daintree NP (CYPAL)

Extent in reserves: Low

Wetland: Not a Wetland

Special values:	9.11.3: Potential habitat for NCA listed species: <i>Acacia guymeri</i> , <i>Acacia purpureopetala</i> , <i>Cucumis costatus</i> , <i>Dianella incollata</i> , <i>Ehretia microphylla</i> , <i>Euphorbia carissoides</i> , <i>Macropteranthes montana</i> , <i>Panicum chillagoanum</i> , <i>Stenanthemum argenteum</i> .
Comments:	<p>9.11.3: The southern distribution of this community may overlap with RE 9.11.2. Occurs extensively in the north of the bioregion. Vulnerable to invasion by weed species <i>Cryptostegia grandiflora</i> (rubber vine), <i>Mesosphaerum suaveolens</i>, <i>Themeda quadrivalvis</i> (grader grass) and <i>Malvastrum americanum</i> (spiked <i>Malvastrum</i>).</p> <p>9.11.3a: Occurs extensively from Lakeland Downs to Einasleigh in the north of the bioregion.</p> <p>9.11.3b: Merges into unit 9.11.3d. Occurs from Palmer River to Kondaparinga Station in the north of the bioregion.</p> <p>9.11.3c: Occurs around Palmerville in the north-west of the bioregion.</p> <p>9.11.3d: This unit merges into unit 9.11.3a and 9.11.3b. Occurs from Palmer River to Mareeba in the north of the bioregion.</p> <p>9.11.3e: Restricted to an area south of Palmerville in the north of the bioregion.</p> <p>9.11.3f: Occurs from Palmerville to Chillagoe in the north of the bioregion.</p>
Estimated extent: ¹	Pre-clearing 924000 ha; Remnant 2021 917000 ha
VM class:	Least concern
Biodiversity status:	No concern at present
Biodiversity status notes:	

Regional ecosystem 9.11.4

Description: Mixed open forest to woodland of *Eucalyptus crebra* (narrow-leaved ironbark), *Corymbia clarksoniana* (Clarkson's bloodwood), *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *E. portuensis* (white mahogany) +/- *C. peltata* (rustyjacket) +/- *E. shirleyi* (silver-leaved ironbark). An open sub-canopy can occur. The shrub layer is absent to mid-dense. The mid-dense ground layer is dominated by *Themeda triandra* (kangaroo grass) and *Heteropogon contortus* (black speargrass). Occurs on hills and mountains on shallow soils derived from metamorphic geologies. Not a Wetland. (BVG1M: 13c).

Vegetation communities in this regional ecosystem include:

9.11.4a: Open forest to open woodland of *Eucalyptus granitica*, *Corymbia clarksoniana* (Clarkson's bloodwood) and/or *C. intermedia* (pink bloodwood), *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *E. portuensis* (white mahogany) +/- *C. dallachiana* (Dallachy's gum) +/- *E. tereticornis* (bluegum). Other ironbark species may also occur, namely *E. crebra*, *E. drepanophylla* (grey ironbark) in the south and *E. cullenii* (Cullen's ironbark) in the north. An open sub-canopy can occur and include canopy species, *Erythrophleum chlorostachys* (Cooktown ironwood) and *Grevillea glauca* (bushman's clothes peg). The mid-dense shrub layer includes *Acacia flavescens* (yellow wattle), *Grevillea glauca*, *Petalostigma* spp., *Bursaria incana* (prickly pine) and *Denhamia cunninghamii* (yellowberry bush). *Xanthorrhoea johnsonii* (grass-tree) may also occur in a lower shrub layer. The mid-dense ground layer is grassy and dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on metamorphic hills. Not a Wetland. (BVG1M: 13c).

9.11.4b: Woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. drepanophylla* (grey ironbark), *Corymbia peltata* (rustyjacket), *E. portuensis* (white mahogany) +/- *E. shirleyi* (silver-leaved ironbark) or *E. melanophloia* (silver-leaved ironbark) +/- *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *C. dallachiana* (Dallachy's gum). An open sub-canopy can include canopy species, *Bursaria incana* (prickly pine) and *Vachellia bidwillii* (corkwood wattle). The shrub layer is generally absent. The dense grassy ground layer is dominated by *Themeda triandra* (kangaroo grass), *Heteropogon contortus* (black speargrass) and *H. triticeus* (giant speargrass). Occurs on moderate to steep metamorphic hills. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra*, *Corymbia clarksoniana*, *C. citriodora* subsp. *citriodora* +/- *E. portuensis* open forest on shallow soils on metamorphic hills and ranges

Supplementary descriptions:

Subregions: 4, 6, 3, (7.5), (7.9), (7.7), (7.8)

Protected areas: Girringun NP, Mount Windsor NP, Dinden West FR, Paluma Range NP, Davies Creek NP, Bare Hill CP

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.11.4: This unit often forms part of a diffuse boundary between the Einasleigh Uplands bioregion and the Wet Tropics bioregion and may occasionally contain more mesic elements. Occurs close to the Wet Tropics boundary in the east of the bioregion. Subject to timber harvesting.
9.11.4a: Occurs close to the Wet Tropics boundary in the east of the bioregion.
9.11.4b: Occurs in the south-east of the bioregion in the southern Harvey Range.

Estimated extent:¹ Pre-clearing 41000 ha; Remnant 2021 41000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.5

Description: Woodland to low woodland of *Eucalyptus persistens* (box) +/- *E. crebra* (narrow-leaved ironbark). Sub-dominants of other species may sometimes occur. There can be an open sub-canopy layer which can include canopy species, *Terminalia oblongata* (yellowwood), *Eremophila mitchellii* (false sandalwood) and *Grevillea* spp. The shrub layer varies from absent to dense and includes *Erythroxylum australe* (cocaine tree), *Carissa lanceolata* (currantbush), *Eremophila mitchellii*, *Petalostigma banksii* (smooth-leaved quinine), *Denhamia cunninghamii* (yellowberry bush), *Acacia burdekinsii* (Burdekin wattle) and other *Acacia* spp. The ground layer is sparse to dense and includes the grasses *Themeda triandra* (kangaroo grass), *Aristida* spp., and *Heteropogon contortus* (black speargrass). Occurs on hills and undulating rises on a variety of soil types on metamorphic geologies. Not a Wetland. (BVG1M: 19d).

Short description: *Eucalyptus persistens* +/- *E. crebra* woodland on low metamorphic hills

Supplementary descriptions:

Subregions: 4, (5), (10.3), (6), (2)

Protected areas: Girringun NP, Girringun CP, Dalrymple NP, Girringun RR

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.11.5: Potential habitat for NCA listed species: *Leptospermum pallidum*, *Lepturus minutus*.

Comments: 9.11.5: Occurs extensively from Greenvale to north of Charters Towers in the south of the bioregion. Subject to degradation from high total grazing pressure.

Estimated extent:¹ Pre-clearing 393000 ha; Remnant 2021 389000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.7

Description: Woodland to low open woodland of *Eucalyptus platyphylla* (poplar gum) and/or *E. cullenii* (Cullen's ironbark). A low open forest to shrubland of *Melaleuca monantha* can also occur on lower slopes. Occurs on rolling to steep metamorphic hills. Not a Wetland. (BVG1M: 9b).

Vegetation communities in this regional ecosystem include:

9.11.7a: Woodland to low open woodland of *Eucalyptus platyphylla* (poplar gum) and/or *E. cullenii* (Cullen's ironbark) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *Lophostemon suaveolens* (swamp mahogany) +/- *E. leptophleba* (Molloy red box). In some areas the subdominant species may be codominant. A low sparse sub-canopy layer with *Petalostigma pubescens* (quinine), *Melaleuca* spp. and *Acacia* spp. can occur. The shrub layer is very sparse and includes *Melaleuca viridiflora* (broad-leaved paperbark), *Grevillea parallela* (silver oak), other *Grevillea* spp. and *Acacia* spp. and *Grewia savannicola* (dysentery bush). The sparse to mid-dense ground layer is grassy and dominated by *Themeda triandra* (kangaroo grass), *Heteropogon* spp. (speargrasses) and *Sarga plumosum* (plume sorghum). Occurs on rolling to steep metamorphic hills. Not a Wetland. (BVG1M: 9b).

9.11.7b: Low open forest to tall shrubland of *Melaleuca monantha* +/- *Petalostigma* spp. with occasional emergent *Eucalyptus cullenii* (Cullen's ironbark) or *Corymbia dallachiana* (Dallachy's gum) or *Eucalyptus chlorophylla*. The shrub layer is absent to sparse and the ground layer can vary from bare to mid-grassy and is usually dominated by *Themeda triandra* (kangaroo grass) or *Schizachyrium fragile* (firegrass). Occurs on footslopes and low metamorphic hills. Not a Wetland. (BVG1M: 21a).

Short description:	<i>Eucalyptus platyphylla</i> and/or <i>E. cullenii</i> +/- <i>Corymbia clarksoniana</i> woodland on texture contrast soils on metamorphic hills
Supplementary descriptions:	Neldner and Clarkson (1995): 81; Galloway et al. (1970): Maytown Unit 2; Tracey (1982): 16j; Tracey and Webb (1975): 16j
Subregions:	3, (7.8), (7.9)
Protected areas:	Kuranda West FR, Mount Windsor NP, Hann Tableland NP, Mount Lewis NP, Kuranda NP
Extent in reserves:	Low
Wetland:	Not a Wetland
Special values:	
Comments:	9.11.7: Occurs north of Mareeba close to the Wet Tropics boundary in the north of the bioregion. Subject to minor clearing. 9.11.7a: Occurs close to the Wet Tropics boundary from Mt. Molloy to Mareeba in the north of the bioregion.. Subject to minor clearing. 9.11.7b: Occurs in patches north of Mareeba in the central bioregion.
Estimated extent:¹	Pre-clearing 41000 ha; Remnant 2021 39000 ha
VM class:	Least concern
Biodiversity status:	No concern at present
Biodiversity status notes:	

Regional ecosystem 9.11.8

Description: Semi-evergreen vine thicket. Occurs on karst limestone. Not a Wetland. (BVG1M: 7a).

Vegetation communities in this regional ecosystem include:

9.11.8a: Semi-evergreen vine thicket commonly containing *Gyrocarpus americanus* (helicopter tree), often occurring as an emergent, as well as *Premna dallachyana*, *Brachychiton chillagoensis* (Chillagoe kurrajong), *B. australis* (broad-leaved bottle-tree), *Lysiphyllum hookeri* (white Bauhinia), *Drypetes deplanchei*, *Ficus henneana* (deciduous fig), *F. virens* (white fig), and *Geijera salicifolia* (narrow-leaved wilga). A sub-canopy and/or shrub layer can also contain *Terminalia aridicola* (arid peach), *T. subacroptera*, *Alectryon tropicus*, *Flueggea leucopyrus*, *Capparis* spp. and *Ficus opposita* (sandpaper fig). The ground layer is generally sparse but often contains *Panicum effusum*, *Scleria mackaviensis* and *Ancistrachne uncinulata* (hooky grass). Vines species commonly found are *Glossocarya calcicola*, *Jasminum didymum* (native jasmine), *Cissus* spp. and *Cayratia cardiophylla*. Occurs on limestone karst near Chillagoe. Not a Wetland. (BVG1M: 7a).

9.11.8b: Semi-evergreen vine thicket commonly containing *Brachychiton australis* (broad-leaved bottle-tree) and *Gyrocarpus americanus* (helicopter tree), with both often occurring as emergents, as well as *Lysiphyllum hookeri* (white Bauhinia), *Diospyros humilis*, *Drypetes deplanchei*, *Pleiogynium timorense* (Burdekin plum), *Denhamia oleaster*, *Exocarpos latifolius* (broad-leaved native cherry) and *Geijera salicifolia* (narrow-leaved wilga). A sub-canopy and/or shrub layer can also contain *Notelaea microcarpa* (native olive), *Ehretia membranifolia* (peach bush), *Psydrax oleifolia*, *Alectryon connatus*, *Carissa ovata* (currant bush), *Flueggea leucopyrus*, *Capparis* spp. and *Ficus* spp. The ground layer is generally sparse but often contains *Cyperus gracilis* and *Ancistrachne uncinulata* (hooky grass). Vines species commonly found are *Plantago* spp., *Jasminum didymum* (native jasmine), *Cissus* spp. and *Parsonsia lanceolata*. Occurs on limestone karst around Broken River. Not a Wetland. (BVG1M: 7a).

9.11.8x1: *Acacia cambagei* tall shrubland to low woodland often with *Eremophila mitchellii* and *Atalaya hemiglaucula*. Occurs on low metamorphic hills and rises. Not a Wetland. (BVG1M: 26a).

Short description: Semi-evergreen vine thicket on limestone rock outcrops

Supplementary descriptions:

Subregions: 3, 4, (11.1), (2), (2.4)

Protected areas: Chillagoe-Mungana Caves NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.11.8: Includes caves and associated specialised fauna and flora. Particularly significant for breeding for some bat species. Habitat for threatened plant species including *Croton magneticus*, *Dendrobium bigibbum*, *Lepturus minutus*, *Macropteranthes montana*, *Panicum chillagoanum* and *Stictocardia queenslandica*.

Comments: 9.11.8: Distinguished from 9.11.9 by being specifically on limestone. Concentrated around two areas near Chillagoe and Broken River. Some clearing associated with the red soils in the north. Very prone to invasion by *Lantana camara*, *Cryptostegia grandiflora* and *Ziziphus mauritiana*.
9.11.8a: Occurs in the north of the bioregion, particularly around Chillagoe and Palmerville. Very prone to invasion by *Lantana camara*, *Cryptostegia grandiflora* and *Ziziphus mauritiana*.
9.11.8b: Occurs in the south of the bioregion, particularly around Broken River.
9.11.8x1: North of the Burdekin River near Charters Towers.

Estimated extent:¹ Pre-clearing 10000 ha; Remnant 2021 9000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes: Limestone and marble mining is impacting some areas, while infestation of rubber vine (*Cryptostegia grandiflora*) is degrading others.

Regional ecosystem 9.11.9

Description: Semi-evergreen vine thicket including *Notelaea microcarpa* (native olive), *Drypetes deplanchei*, *Planchonella cotinifolia*, *Erythroxylum australe* (cocaine tree), *Pleiogynium timorense* (Burdekin plum) +/- *Brachychiton australis* (broad-leaved bottle tree) +/- *Lysiphyllum hookeri* (white Bauhinia) +/- *Ficus* spp. Some canopy species +/- *Gyrocarpus americanus* (helicopter tree) can occur as emergents. The sub-canopy to shrub layers often include *Everistia vacciniifolia*, *Geijera salicifolia*, *Acacia celsa*, *Alphitonia excelsa*, *Bridelia leichhardtii* (small scrub ironbark), *Psydrax odorata*, *Ehretia membranifolia* (peach bush), *Antidesma parvifolium*, *Denhamia oleaster*, *Carissa ovata* (currant bush) and *Alyxia ruscifolia*. The ground layer often includes *Ancistrachne uncinulata* (hooky grass), *Cyperus gracilis*, *Croton* spp. and *Abutilon* sp. Vine species often found include *Deeringia amaranthoides*, *Melodorum leichhardtii* (zigzag vine) *Glossocarya hemiderma* and *Secamone elliptica* (corky milk vine). Occurs on undulating terrain, hillslopes and rocky outcrops of metamorphic geologies. Not a Wetland. (BVG1M: 7a).

Short description: Semi-deciduous vine thicket on metamorphic soils (not limestone)

Supplementary descriptions:

Subregions: 4, 3, (2), (5)

Protected areas: Dalrymple NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.11.9: Potential habitat for NCA listed species: *Ehretia microphylla*.

Comments: 9.11.9: Distinguished from 9.11.8 by not being on limestone. *Acacia disparrima* subsp. *calidestris* may be a canopy species and *Melaleuca bracteata* may be on drainage lines in this unit in the south. Occurs in scattered patches throughout the central and northern bioregion.

Estimated extent:¹ Pre-clearing 3000 ha; Remnant 2021 3000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.11.10

Description: Mixed woodland to open forest including combinations of the species *Eucalyptus cloeziana* (Gympie messmate), *Corymbia citriodora* subsp. *citriodora* (lemon-scented gum), *C. leichhardtii* (yellowjacket), *E. portuensis* (white mahogany), *E. cullenii* (Cullen's ironbark), *E. atrata* (Herberton ironbark), *E. crebra* (narrow-leaved ironbark) and *C. clarksoniana* (Clarkson's bloodwood) +/- *Callitris intratropica* (cypress pine). There can be an open sub-canopy of canopy species, *Grevillea glauca* (bushman's clothes peg) and *Allocasuarina inophloia* (stringybark sheoak). The shrub layer varies from scattered plants to mid-dense and can include juvenile canopy species, *Grevillea* spp., *Acacia* spp., *Persoonia falcata*, *Melaleuca viridiflora* (broad-leaved paperbark), *Cycas platyphylla* and *Xanthorrhoea johnsonii* (grass-tree). The grassy ground layer is mid-dense to dense and often dominated by *Themeda triandra* (kangaroo grass), *Arundinella* spp. and occasionally *Triodia* spp. (*Spinifex*). Occurs on steep dissected hills and flats on highly metalliferous metamorphic rocks, often with shallow soils. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus cloeziana*, *Corymbia citriodora* subsp. *citriodora*, *E. portuensis* and *E. cullenii* mixed woodland on steep dissected hills on highly metalliferous metamorphic rocks

Supplementary descriptions:

Subregions: 6, (2), (3)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.11.10: Habitat for geographically restricted and vulnerable flora species including *Goodenia stirlingii*, *Acacia purpureopetala*, *Grevillea glossadenia* and *Corymbia rhodops*.

Comments: 9.11.10: Occurs predominantly in the Irvinebank area in the central bioregion.

Estimated extent:¹ Pre-clearing 34000 ha; Remnant 2021 34000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Disturbed and fragmented due to mining activities. Under review.

Regional ecosystem 9.11.11

Description: [RE not in use]²: This regional ecosystem was merged into 9.11.10 based on a review of mapping. *Lophostemon* spp. And/or *Acacia* spp. And/or *Melaleuca viridiflora* and/or *Allocasuarina littoralis* +/- *Eucalyptus* spp. +/- *Corymbia* spp. Tall open shrubland on exposed hill slopes of islands and headlands on metamorphosed sediments. Occurs on steep dissected hills and flats on highly metalliferous metamorphic rocks, often with shallow soils. Not a Wetland. (BVG1M: 10b).

Short description: *Lophostemon* spp. and/or *Acacia* spp. and/or *Melaleuca viridiflora* and/or *Allocasuarina littoralis* +/- *Eucalyptus* spp. +/- *Corymbia* spp. tall open shrubland on exposed hill slopes of islands and headlands on metamorphosed sediments

Supplementary descriptions:

Subregions:

Protected areas:

Extent in reserves:

Wetland: Not a Wetland

Special values:

Comments:

Estimated extent:¹

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes: Subject to disturbance from mining activities.

Regional ecosystem 9.11.12

Description: Woodland to low woodland of *Eucalyptus cullenii* (Cullen's ironbark), *Corymbia hylandii* (Hyland's bloodwood), *E. tetradonta* (Darwin stringybark) +/- *Erythrophleum chlorostachys* (Cooktown ironwood). There is a sparse to open sub-canopy layer including canopy species, *Planchonia careya* (cocky apple), and *Acacia* spp. The very sparse to open shrub layer includes juvenile canopy species, *Persoonia falcata* (geebung), *Grevillea mimosoides* (wattle Grevillea), *Planchonia careya* and *Petalostigma* spp. (quinine). The ground layer is grassy and includes *Sarga plumosum* (plume sorghum), *Heteropogon contortus* (black speargrass), *H. triticeus* (giant speargrass) and *Themeda triandra* (kangaroo grass). Occurs on metamorphic ranges and low hills with quartzite. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus cullenii*, *Corymbia hylandii* and *E. tetradonta* +/- *Erythrophleum chlorostachys* woodland on metamorphic hills

Supplementary descriptions:

Subregions: 3, (3.5), (3.1), (2.4), (3.6)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.11.12: Occurs near Palmerville in the north-west of the bioregion.

Estimated extent:¹ Pre-clearing 118000 ha; Remnant 2021 117000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.13

Description: Open woodland to low open woodland of *Eucalyptus cullenii* (Cullen's ironbark) and *Corymbia hylandii* (Hyland's bloodwood) or *C. erythrophloia* (with *C. hylandii* codominant in the north and *C. erythrophloia* codominant in the south) +/- *E. leptophleba* (Molloy red box) +/- *C. dallachiana* (Dallachy's gum). A sparse sub-canopy of canopy species can occur. The shrub layer is absent to sparse and includes *Planchonia careya* (cocky apple), *Terminalia* spp., *Petalostigma banksii* (smooth-leaved quinine) and *Grevillea mimosoides*. The mid-dense ground layer is grassy and dominated by *Heteropogon contortus* (black speargrass), *Sarga plumosum* (plume sorghum) and *Themeda triandra* (kangaroo grass). Occurs on red kandosols derived from limestone on undulating plains and rises. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus cullenii* and *Corymbia hylandii* or *C. erythrophloia* open woodland on undulating plains and rises

Supplementary descriptions:

Subregions: 3, (2.4), (2)

Protected areas: Chillagoe-Mungana Caves NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.11.13: This unit is distinguished from 9.11.3 and 9.11.12 by the origin of its soils and the different subdominant species. This may include some areas mapped as geology TQr with soils derived from transported limestone sediments. Restricted to the Chillagoe and Palmerville area in the north of the bioregion.

Estimated extent:¹ Pre-clearing 30000 ha; Remnant 2021 29000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.14

Description: Woodland to open forest of *Eucalyptus crebra* (narrow-leaved ironbark) and *Corymbia citriodora* subsp. *citriodora* (lemon-scented gum) +/- *Corymbia* spp. A sparse to mid-dense sub-canopy can occur and include canopy species as well as *Grevillea* spp., *Bursaria incana* (prickly pine) and *Acacia burdekinsii* (Burdekin wattle). The shrub layer can be absent to dense and include *Denhamia cunninghamii* (yellowberry bush), juvenile canopy species, *A. burdekinsii* and *Jacksonia ramosissima* (angled broom bush). The mid-dense to dense grassy ground layer is dominated by a combination of *Heteropogon contortus* (black speargrass), *Sarga plumosum* (plume sorghum), *H. triticeus* (giant speargrass) and *Themeda triandra* (kangaroo grass). Occurs on undulating hills and some isolated hills. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* and *Corymbia citriodora* subsp. *citriodora* +/- *Corymbia* spp. woodland on metamorphic hills and mountains in far south-west of bioregion

Supplementary descriptions:

Subregions: 4, 2, (5)

Protected areas: Blackbraes NP

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.11.14: Occurs in areas which are wetter due to their higher altitude (700m to 900m ASL) in the south west of the bioregion.

Estimated extent:¹ Pre-clearing 43000 ha; Remnant 2021 43000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.15

Description: Woodland to low open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) and/or *E. cullenii* (Cullen's ironbark) and/or *E. whitei* (White's ironbark) +/- *E. microneura* (Georgetown box) +/- *Corymbia pocillum* or *C. erythrophloia* (red bloodwood). The shrub layer varies from absent to open. The ground layer is grassy and dominated by *Heteropogon contortus* and *Themeda triandra*. Occurs on rolling metamorphic hills and rises. Not a Wetland. (BVG1M: 13c).

Vegetation communities in this regional ecosystem include:

9.11.15a: Woodland to low open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. cullenii* (Cullen's ironbark) +/- *Corymbia erythrophloia* (red bloodwood) or *C. pocillum* +/- *C. dallachiana* (Dallachy's gum) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Eucalyptus microneura* (Georgetown box). An open sub-canopy layer of *C. erythrophloia* or *C. pocillum* can occur. The shrub layer varies from absent to isolated plants including *Denhamia cunninghamii* (yellowberry bush), *Vachellia bidwillii* (corkwood wattle), *Gardenia vilhelmii* (breadfruit), *Hakea arborescens* and *Carissa lanceolata* (currantbush). The ground layer is grassy and dominated by *Heteropogon contortus* (black speargrass) and *Dichanthium* spp. Occurs on low hills and rises with moderately deep soils derived from metamorphic geologies. Not a Wetland. (BVG1M: 13c).

9.11.15b: Open woodland to woodland of *Eucalyptus whitei* (White's ironbark) +/- *Corymbia pocillum* +/- *E. microneura* (Georgetown box) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Corymbia* spp. A sparse sub-canopy containing canopy species, *Terminalia aridicola* (arid peach), *Dolichandrone alternifolia* (lemonwood) or *Acacia leptostachya* (slender wattle) can occur. The mixed shrub layer is scattered to open and can include canopy species, *Denhamia cunninghamii* (yellowberry bush), *Gardenia vilhelmii* (breadfruit), *Petalostigma banksii* (smooth-leaved quinine), *T. aridicola*, and *Acacia* spp. The dense grassy ground layer is dominated by *Heteropogon contortus* (black speargrass), *Aristida* spp. and *Themeda triandra* (kangaroo grass). Occurs on highly dissected hills. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus crebra* and/or *E. cullenii* and/or *E. whitei* +/- *Corymbia pocillum* or *C. erythrophloia* woodland on metamorphic hills

Supplementary descriptions:

Subregions: 2, 1, (5), (4)

Protected areas: Canyon RR, Undara Volcanic NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.11.15: Potential habitat for NCA listed species: *Cycas cairnsiana*, *Solanum carduiforme*.

Comments: 9.11.15: Occurs from Georgetown to the Lynd Junction in the west of the bioregion.
9.11.15a: This vegetation community is distinguished from 9.11.16 by occurring on plains, rises and lower hills. Occurs mainly east of the Newcastle Range in the west of the bioregion.
9.11.15b: This vegetation community is distinguished from 9.11.16 by the frequent presence of *Eucalyptus microneura*. Occurs between Georgetown and Cobbold Gorge in the west of the bioregion.

Estimated extent:¹ Pre-clearing 175000 ha; Remnant 2021 174000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.16

Description: Woodland to open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) +/- *Corymbia erythrophloia* (red bloodwood) or *C. pocillum* +/- *Corymbia* spp. A sub-canopy layer of canopy species, *Terminalia aridicola* (arid peach) and/or *Erythroxylum ellipticum* (kerosene wood) may be present. The shrub layer varies from isolated plants to mid-dense and can include *Denhamia cunninghamii* (yellowberry bush), *Vachellia bidwillii* (corkwood wattle), *Petalostigma* spp., *Erythrophleum chlorostachys* (Cooktown ironwood), *Bursaria incana* (prickly pine) and other *Acacia* spp. The ground layer is grassy and dominated by *Themeda triandra* (kangaroo grass) and/or *Heteropogon contortus* (black speargrass). Occurs on red to brown soils derived from metamorphic geologies on steep to rolling hills. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* +/- *Corymbia erythrophloia* or *C. pocillum* woodland on steep to rolling hills

Supplementary descriptions: Perry et al. (1964): Kilbogrie; Perry et al. (1964): Leichhardt Unit 1 and 2

Subregions: 2, 1, (5), (2.9)

Protected areas: Blackbraes NP, Rungulla NP, Rungulla RR, Kennedy Road Gravel RR

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.11.16: Potential habitat for NCA listed species: *Labichea brassii*, *Macropteranthes montana*.

Comments: 9.11.16: Distinguished from 9.11.15a by being on steeper, more dissected hills. Distinguished from 9.11.15b by absence of *Eucalyptus microneura*. Occurs from Cobbold Gorge to Oak Park in the west of the bioregion.

Estimated extent:¹ Pre-clearing 312000 ha; Remnant 2021 312000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.17

Description: Low woodland to open woodland of *Corymbia peltata* (rustyjacket) +/- *Eucalyptus crebra* (narrow-leaved ironbark) +/- *E. shirleyi* (silver-leaved ironbark) or *E. melanophloia* (silver-leaved ironbark) +/- *Corymbia* spp. In some areas *Eucalyptus crebra* (narrow-leaved ironbark) may be replaced by *E. exilipes* (fine-leaved ironbark) or *E. xanthoclada* (yellow-branched ironbark). An open sub-canopy can occur with *Terminalia aridicola* (arid peach), *E. shirleyi* (silver-leaved ironbark) and *Bursaria incana* (prickly pine). The shrub layer varies from absent to mid-dense and can include *Denhamia cunninghamii* (yellowberry bush), *Persoonia falcata* (geebung), *Erythroxylum* spp. (cocaine tree), *Acacia* spp. and juveniles of canopy species. The sparse to dense ground layer is grassy and generally dominated by *Heteropogon* spp. (speargrasses) and *Aristida* spp. Occurs on gravelly soils on hills to mountains. Not a Wetland. (BVG1M: 12b).

Short description: *Corymbia peltata* +/- *Eucalyptus crebra* +/- *E. shirleyi* or *E. melanophloia* low open woodland on metamorphic hills and mountains

Supplementary descriptions:

Subregions: 4, 2, 11.3, (10.3), (5), (2.9)

Protected areas: Blackbraes NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.11.17: Potential habitat for NCA listed species: *Macropteranthes montana*.

Comments: 9.11.17: Occurs north of Blackbraes in the central bioregion and south of Charters Towers in the south of the bioregion.

Estimated extent:¹ Pre-clearing 30000 ha; Remnant 2021 30000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.18

Description: Open woodland to woodland of *Eucalyptus quadricostata* (square-fruited ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. leichhardtii* (yellowjacket) +/- *C. lamprophylla* (shiny-leaved bloodwood). A sparse sub-canopy layer can occur and include canopy species, *Bursaria incana* (prickly pine) and *Grevillea* spp. The shrub layer varies from absent to sparse and includes juvenile canopy species, *Denhamia cunninghamii* (yellowberry bush), *B. incana*, *Grevillea* spp., *Acacia* spp., and *Xanthorrhoea johnsonii* (grasstree). There is a sparse mixed grassy ground layer which can include *Heteropogon contortus* (black speargrass), *Enneapogon* spp. and *Triodia* spp. (*spinifex*). Occurs on gravelly soils on hills and steep hills. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus quadricostata* +/- *Corymbia erythrophloia* +/- *C. leichhardtii* open woodland on metamorphic hills and ranges

Supplementary descriptions:

Subregions: 4, (10.2), (10.3)

Protected areas: White Mountains RR, White Mountains NP

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.11.18: Restricted to hills north of the White Mountains NP in the south of the bioregion. Subject to minor clearing.

Estimated extent:¹ Pre-clearing 29000 ha; Remnant 2021 27000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.19

Description: Woodland to open woodland of *Eucalyptus cambageana* (Dawson gum) +/- *E. crebra* (narrow-leaved ironbark) +/- *E. brownii* (Reid River box). An open sub-canopy layer of canopy species can occur. The shrub layer varies from absent to open and often contains *Eremophila mitchellii* (false sandalwood), *Erythroxylum australe* (cocaine tree) and *Carissa lanceolata* (currantbush). The ground layer is sparse and can include *Eragrostis* spp. and *Enteropogon* spp. Occurs on undulating rises amongst Palaeozoic metamorphosed sediments. Not a Wetland. (BVG1M: 12a).

Short description: *Eucalyptus cambageana* +/- *E. crebra* +/- *E. brownii* woodland on low metamorphic rises

Supplementary descriptions:

Subregions: 4, 5

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.11.19: Occurs in a restricted area south of Greenvale in the central bioregion.

Estimated extent:¹ Pre-clearing 9000 ha; Remnant 2021 9000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.11.20

Description: [RE not in use]²: History of this RE is unknown. *Corymbia nesophila* +/- *Eucalyptus crebra* (sens. Lat.) +/- *E. brassiana* woodland to low woodland. There is a very sparse subcanopy layer dominated by *C. nesophila*, *Acacia flavescens*, *Lophostemon suaveolens* and *Grevillea glauca*. A sparse shrub layer. Occurs most extensively on the upper, mid and lower slopes of granitic hills and ranges. Not a Wetland. (BVG1M: 13d).

Short description: *Corymbia nesophila* +/- *Eucalyptus brassiana* woodland to open forest on metamorphic hills

Supplementary descriptions:

Subregions:

Protected areas:

Extent in reserves:

Wetland: Not a Wetland

Special values:

Comments: 9.11.20: This regional ecosystem was previously in the REDD version 4 for Einasleigh Uplands but has now been assigned a Cape York Bioregion regional ecosystem (3.11.13) following a re-assessment of the bioregional boundary. Occurs in wetter areas adjacent to the Wet Tropics boundary, in the far north of the bioregion.

Estimated extent:¹

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.21

Description: Woodland to low open woodland of *Corymbia setosa* (rough-leaved bloodwood) +/- *Eucalyptus crebra* (narrow-leaved ironbark) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *Melaleuca nervosa* (woodland paperbark) +/- *C. peltata* (rustyjacket). *C. clarksoniana* and/or *E. crebra* can also occur as emergents. An open sub-canopy layer can occur and include canopy species, *Petalostigma pubescens* (quinine) and *Grevillea glauca* (bushman's clothes peg). The open to mid-dense shrub layer includes *M. nervosa*, *Petalostigma* spp., *Denhamia cunninghamii* (yellowberry bush) and *Alphitonia* spp. The grassy ground layer is dominated by *Heteropogon contortus* (black speargrass) and *Aristida* spp. Occurs on low hills to hills. Not a Wetland. (BVG1M: 13a).

Short description: *Corymbia setosa* +/- *Eucalyptus crebra* low open woodland on metamorphic hills

Supplementary descriptions:

Subregions: 2, 4

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.11.21: Occurs on low hills south of Lynd Junction in the south of the bioregion. Vulnerable to invasion of exotic weeds *Vachellia farnesiana* (mimosa) and *Melinis repens* (Red Natal grass).

Estimated extent:¹ Pre-clearing 4000 ha; Remnant 2021 4000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.11.22

Description: Low woodland to low open woodland of *Eucalyptus melanophloia* (silver-leaved ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *Terminalia platyptera* (yellow-wood) +/- *E. microneura* (Georgetown box) and/or *C. erythrophloia* emergents. *E. microneura* may dominate at the base of hills. A sparse to mid-dense shrub layer of *Petalostigma banksii* (smooth-leaved quinine) +/- *Acacia* spp., +/- *Alphitonia* spp. +/- *Gardenia wilhelmii* (breadfruit) is present. The grassy ground layer is dominated by *Heteropogon contortus* (black speargrass), *Schizachyrium* spp. (firegrass) and *Aristida* spp. Occurs on rolling hills. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus melanophloia* +/- *Corymbia erythrophloia* +/- *Terminalia platyptera* low woodland on metamorphic hills

Supplementary descriptions: Perry et al. (1964): Townley Unit 4; Perry et al. (1964): Leichhardt Unit 1

Subregions: 1, 2, (5)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.11.22: Is distinguished from 9.11.1 by the different subdominant species. It also has a more northerly distribution (subregion 1 and 2) than 9.11.1. Occurs from Georgetown to Chillagoe in the west and north of the bioregion. Vulnerable to invasion by exotic weed species *Mesosphaerum suaveolens* and *Malvastrum americanum* (spiked *Malvastrum*).

Estimated extent:¹ Pre-clearing 8000 ha; Remnant 2021 8000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.11.23

Description: Low open woodland to woodland of *Eucalyptus microneura* (Georgetown box) +/- *Corymbia* spp. (bloodwoods) or *Eucalyptus* spp. (ironbarks) +/- *Melaleuca citrolens* (scrub teatree) with *M. citrolens* sometimes forming a low woodland. A sub-canopy layer is sometimes present and the shrub layer is absent to occasionally mid-dense. The grassy ground layer is generally dominated by *Heteropogon contortus* (black speargrass). Rocky outcrops dominated by *Acacia leptostachya* can also occur. Occurs on rolling hills to steep hills often with rocky rises. Not a Wetland. (BVG1M: 13b).

Vegetation communities in this regional ecosystem include:

9.11.23a: Low open woodland to low woodland of *Eucalyptus microneura* (Georgetown box) +/- *Corymbia erythrophloia* (red bloodwood) or *C. pocillum* +/- *Terminalia* spp. +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Corymbia* spp. A sub-canopy layer sometimes occurs and includes *Eucalyptus microneura*, *Terminalia* spp. and *Acacia leptostachya* (slender wattle). The shrub layer is absent to mid-dense and includes *Gardenia vilhelmii* (breadfruit), *Denhamia cunninghamii* (yellowberry bush), *Carissa lanceolata* (currantbush), *Petalostigma banksii* (smooth-leaved quinine) as well as juvenile canopy spp. The grassy ground layer is generally dominated by *Heteropogon contortus* (black speargrass), *Aristida* spp. and *Schizachyrium* spp. (firegrass). Rocky outcrops occur in some areas. The larger ones may have small areas of *Acacia shirleyi* (lancewood) and the smaller ones, *A. leptostachya* (slender wattle). Occurs on rolling metamorphic hills often with rocky outcrops. Not a Wetland. (BVG1M: 13b).

9.11.23b: Low open woodland to woodland of *Eucalyptus microneura* (Georgetown box) +/- *E. cullenii* (Cullen's ironbark) or *E. crebra* (narrow-leaved ironbark) often with *Melaleuca citrolens* (scrub teatree) and *Terminalia platyptera* (yellow-wood) in an open sub-canopy. The shrub layer varies from absent to open with *Gardenia vilhelmii* (breadfruit), *Dolichandrone alternifolia*, *Atalaya hemiglaucula* (whitewood), *Carissa lanceolata* (currantbush) and *Melaleuca* spp. The ground layer is sparse to dense and often dominated by *Aristida* spp., *Heteropogon contortus* (black speargrass) and *Schizachyrium* spp. Occurs on metamorphic hills. Not a Wetland. (BVG1M: 13b).

9.11.23c: Low woodland of *Eucalyptus microneura* (Georgetown box) +/- *E. whitei* (White's ironbark) +/- *Corymbia pocillum* or low woodland of *C. erythrophloia* (red bloodwood) +/- *C. terminalis* (western bloodwood) +/- *Terminalia* spp. The shrub layer varies from absent to an open shrub layer including *Denhamia cunninghamii* (yellowberry bush), *Gardenia vilhelmii* (breadfruit) and *Acacia* spp. The ground layer is grassy and dominated by *Aristida* spp. and *Heteropogon contortus* (black speargrass). Rocky hill tops are dominated by an *Acacia leptostachya* (slender wattle). Occurs on rolling hills. Not a Wetland. (BVG1M: 13b).

9.11.23d: Low woodland of *Melaleuca citrolens* (scrub teatree) +/- *Terminalia* spp. +/- *Eucalyptus microneura* (Georgetown box) which is sometimes emergent. The shrub layer is absent to sparse and can include *Denhamia cunninghamii* (yellowberry bush) and *Petalostigma banksii* (smooth-leaved quinine). The sparse ground layer is grassy and can include *Heteropogon contortus* (black speargrass), *Aristida* spp. and *Schizachyrium* spp. (firegrasses). Occurs on rolling to undulating metamorphic hills. Not a Wetland. (BVG1M: 21b).

Short description: *Eucalyptus microneura* +/- *Corymbia erythrophloia* or *C. pocillum* low open woodland on rolling metamorphic hills and rises

Supplementary descriptions:

Subregions: 1, 2, (2.6), (2.9), (5), (4)

Protected areas: Littleton NP, Blackbraes NP, Rungulla NP, Littleton RR, Bulleringa NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.11.23: Potential habitat for NCA listed species: *Euphorbia carissoides*.

Comments: 9.11.23: In the western areas, subdominants in the canopy layer may not be present. Also in the west, smaller rocky rises may have *Acacia leptostachya* and larger ones may have *Acacia shirleyi*. Occurs extensively throughout the west of the bioregion. The exotic weed species *Malvastrum americanum* (spiked Malvastrum) frequently occurs, while *Vachellia farnesiana* (mimosa) can also occur.
9.11.23a: Occurs extensively in the far west of the bioregion.
9.11.23b: Occurs in the central bioregion from Amber Station down to the Lynd Junction.
9.11.23c: Occurs around Georgetown in the west of the bioregion.
9.11.23d: Closely associated with other vegetation communities within regional ecosystem 9.11.23. Occurs in a restricted area north of the Newcastle Range in the west of the bioregion.

Estimated extent:¹ Pre-clearing 257000 ha; Remnant 2021 256000 ha

VM class: Least concern

Biodiversity status: No concern at present

Regional ecosystem 9.11.24

Description: Low open woodland of *Eucalyptus microneura* (Georgetown box) or *E. whitei* (White's ironbark), which can also grade into a low woodland to low open woodland of *Melaleuca citrolens* (scrub teatree) +/- *E. microneura* +/- *E. whitei*. The shrub layer varies from absent to open and the ground layer is usually dominated by *Triodia* spp. (*spinifex*). Occurs on light brown stony lithosols on low gravelly hills and rises. Not a Wetland. (BVG1M: 13b).

Vegetation communities in this regional ecosystem include:

9.11.24a: Low open woodland of *Eucalyptus microneura* (Georgetown box) +/- *Terminalia platyptera* (yellow-wood) +/- *Melaleuca citrolens* (scrub teatree). The shrub layer is generally absent to open and include juvenile *E. microneura*, *Petalostigma banksii* (smooth-leaved quinine), *Gardenia vilhelmii* (breadfruit) and *Acacia* spp.

Occasionally a dense low shrub layer can contain *Dodonaea physocarpa* (hop-bush), *Jacksonia* spp. or *Acacia gonoclada*. The ground layer is dominated by *Triodia pungens* (*spinifex*) with *Aristida* spp. and *Schizachyrium* spp. (firegrass) also often present. Occurs on slopes and hills. Not a Wetland. (BVG1M: 13b).

9.11.24b: Low open woodland of *Eucalyptus whitei* (White's ironbark) +/- *E. microneura* (Georgetown box) +/- *Corymbia pocillum*. The shrub layer is usually absent but scattered *Denhamia cunninghamii* (yellowberry bush), *Melaleuca citrolens* (scrub teatree) and *Carissa lanceolata* (currantbush) can occur. The ground layer is dominated by *Triodia* spp. (*spinifex*) or *Aristida* spp. but *Schizachyrium* spp. (firegrasses) are often present. Occurs on slopes and hills. Not a Wetland. (BVG1M: 13a).

9.11.24c: Low woodland to low open woodland of *Melaleuca citrolens* (scrub teatree) +/- *Eucalyptus microneura* (Georgetown box) +/- *E. whitei* (White's ironbark). *E. microneura* and *E. whitei* can also be emergent. The shrub layer is often absent but isolated shrubs of juveniles of canopy species, *Denhamia cunninghamii* (yellowberry bush) and *Carissa lanceolata* (currantbush) can occur. The ground layer is dominated by *Triodia* spp. (*spinifex*) with some patches of open grassland. Occurs on ridge crests. Not a Wetland. (BVG1M: 21b).

Short description: *Eucalyptus microneura* or *Melaleuca citrolens* or *E. whitei* low open woodland with *Triodia* spp. ground layer on metamorphic low gravelly hills and rises

Supplementary descriptions: Perry et al. (1964): Georgetown; Perry et al. (1964): Belmore; Perry et al. (1964): Townley- no direct equivalent; Perry et al. (1964): Ortona Unit 3

Subregions: 1, (2.6), (2.9)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.11.24: This regional ecosystem is made up of all three vegetation communities which combine to make a distinctive landscape pattern. Occurs on low stony hills and rises west of Forsayth in the west of the bioregion.
9.11.24a: Occurs on low stony hills and rises west of Forsayth in the west of the bioregion.
9.11.24b: Occurs on low stony hills and rises west of Forsayth.
9.11.24c: Occurs on low stony hills and rises west of Forsayth in the west of the bioregion.

Estimated extent:¹ Pre-clearing 83000 ha; Remnant 2021 83000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.25

Description: Low woodland to low open woodland of *Eucalyptus tardecidens* (box) or *E. chlorophylla* +/- *Corymbia* spp. +/- *E. cullenii* (Cullen's ironbark) +/- *Melaleuca* spp. A sparse sub-canopy can include canopy species, *Melaleuca* spp. or *Terminalia* spp. The shrub layer is sparse to open and can include *Petalostigma* spp., *Melaleuca stenostachya* (teatree), *Denhamia cunninghamii* (yellowberry bush), *Acacia* spp. and *Santalum lanceolatum* (sandalwood). The ground layer can vary from mainly bare soil and rock to a dense cover of grasses including *Heteropogon contortus* (black speargrass), *Aristida* spp. and *Themeda triandra* (kangaroo grass). Occurs on rolling low hills to steep hills. Not a Wetland. (BVG1M: 19d).

Short description: *Eucalyptus tardecidens* or *E. chlorophylla* +/- *Corymbia* spp. +/- *E. cullenii* low woodland on steep to rolling metamorphic hills and rises

Supplementary descriptions:

Subregions: 3, 2, (3.2), (6), (2.6), (7.9), (3.5)

Protected areas: Mount Windsor NP, Chillagoe-Mungana Caves NP, Mount Lewis NP, Hann Tableland NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.11.25: Potential habitat for NCA listed species: *Acacia guymeri*, *Acacia purpureopetala*, *Cucumis costatus*.

Comments: 9.11.25: Occurs extensively from Chillagoe to Lakeland Downs in the north of the bioregion. Subject to degradation from high total grazing pressure.

Estimated extent:¹ Pre-clearing 195000 ha; Remnant 2021 193000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.26

Description: Woodland of *Eucalyptus leptophleba* (Molloy red box) and/or *E. cullenii* (Cullen's ironbark) and/or *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *E. platyphylla* (poplar gum). A very sparse sub-canopy layer may be present and the shrub layer is also very sparse to sparse. Occurs on rolling hills to steep hills. Not a Wetland. (BVG1M: 13a).

Vegetation communities in this regional ecosystem include:

9.11.26a: Woodland of *Eucalyptus leptophleba* (Molloy red box) and/or *E. cullenii* (Cullen's ironbark) and/or *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. tessellaris* (Moreton Bay ash). A very sparse sub-canopy tree layer of *Erythrophleum chlorostachys* (Cooktown ironwood) and *Terminalia platyptera* (yellow-wood) may be present. The very sparse to open shrub layer includes *Melaleuca* spp., *Grevillea glauca* (bushman's clothes peg), *Terminalia platyptera* (yellow-wood) and juvenile canopy species. The grassy ground layer is mid-dense and dominated by *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *Heteropogon triticeus* (giant speargrass). Occurs on rolling hills to steep hills. Not a Wetland. (BVG1M: 13a).

9.11.26b: Woodland of *Eucalyptus leptophleba* and *E. platyphylla* (poplar gum) +/- *Corymbia tessellaris* (Moreton Bay ash). The sub-canopy tree layer is very sparse and includes canopy species and *Melaleuca* spp. The very sparse shrub layer includes *Melaleuca* spp., juvenile canopy species and *Planchonia careya* (cocky apple). The grassy ground layer is mid-dense and dominated by *Heteropogon contortus* (black speargrass), *H. triticeus* (giant speargrass), *Mnesithea rottboellioides* (northern canegrass) and *Themeda triandra* (kangaroo grass). Occurs on low rolling hills. Not a Wetland. (BVG1M: 9b).

Short description: *Eucalyptus leptophleba* and/or *E. cullenii* and/or *Corymbia clarksoniana* +/- *E. platyphylla* woodland on undulating terrain to rolling hills

Supplementary descriptions:

Subregions: 3, (5), (6), (2), (3.1), (2.4), (3.2), (2.6), (7.9), (7.8)

Protected areas: Palmer Goldfield RR, Mount Windsor NP, Ngalba-bulal NP (CYPAL), Mount Lewis NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.11.26: Occurs extensively in the north of the bioregion. Alien forbs such as *Crotalaria goreensis* and *Stachytarpheta jamaicensis*, and grasses such as *Themeda quadrivalvis* occur at high densities in many of these sites.

9.11.26a: Occurs in the north of the bioregion from Chillagoe to Lakeland Downs.

9.11.26b: Occurs close to Cape York Peninsula Bioregion in the far north of the bioregion.

Estimated extent:¹ Pre-clearing 67000 ha; Remnant 2021 66000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.27

Description: [RE not in use]²: This regional ecosystem has been merged into 9.11.7. *Eucalyptus platyphylla* and/or *E. cullenii* +/- *Corymbia clarksoniana* woodland on texture contrast soils on metamorphic hills. Occurs on rolling to steep metamorphic hills. Not a Wetland. (BVG1M: 21a).

Short description: *Eucalyptus platyphylla* and/or *E. cullenii* +/- *Corymbia clarksoniana* woodland on texture contrast soils on metamorphic hills

Supplementary descriptions:

Subregions:

Protected areas:

Extent in reserves:

Wetland: Not a Wetland

Special values:

Comments:

Estimated extent:¹

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.28

Description: Woodland to open forest of *Acacia shirleyi* (lancewood) +/- *Eucalyptus microneura* (Georgetown box) +/- *E. crebra* (narrow-leaved ironbark) (sens. lat.). The shrub layer is generally absent to mid-dense, though areas of *Melaleuca citrolens* (scrub teatree) with emergents of the above canopy taxa may occur. Occurs on undulating hills and rises and on metamorphosed sandstone outcrops. Not a Wetland. (BVG1M: 24a).

Vegetation communities in this regional ecosystem include:

9.11.28a: Low woodland to open forest of *Acacia shirleyi* (lancewood) +/- *Eucalyptus microneura* (Georgetown box) +/- *Corymbia pocillum* +/- *E. provecta* (box). The shrub layer is generally absent to mid-dense and can include canopy species, *Petalostigma banksii* (smooth-leaved quinine), *Melaleuca citrolens*, *Acacia* spp., *Carissa lanceolata* (currantbush) and softwood species. The ground layer is grassy and dominated by *Aristida* spp., *Schizachyrium* spp. (firegrass) or *Triodia* spp. (spinifex). Occurs on rolling metamorphic hills. Not a Wetland. (BVG1M: 24a).

9.11.28b: Woodland to open forest of *Acacia shirleyi* (lancewood) and *Eucalyptus crebra* (narrow-leaved ironbark) (sens. lat.) +/- *Corymbia erythrophloia* (red bloodwood) or *C. dallachiana* (Dallachy's gum). The shrub layer varies from open to scattered shrubs of *Melaleuca citrolens* (scrub teatree), *Gardenia vilhelmii* (breadfruit), *Petalostigma banksii* (smooth-leaved quinine) and there is a sparse grassy ground layer, often with *Schizachyrium fragile* (firegrass) or sometimes *Triodia* spp. (spinifex). Occurs on undulating low hills and rises. Not a Wetland. (BVG1M: 24a).

9.11.28c: Low woodland to shrubland of *Melaleuca citrolens* (scrub teatree) often with emergent *Acacia shirleyi* (lancewood), *Eucalyptus crebra* (narrow-leaved ironbark) and *E. microneura* (Georgetown box) and the ground layer is often sparse and grassy. Undulating low hills and rises. Not a Wetland. (BVG1M: 21b).

Short description: *Acacia shirleyi* +/- *Eucalyptus microneura* +/- *E. crebra* woodland on metamorphic hills and outcrops

Supplementary descriptions:

Subregions: 1, 2, 2.6, (2.9)

Protected areas: Rungulla NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.11.28: Potential habitat for NCA listed species: *Labichea brassii*.

Comments: 9.11.28: Occurs in the west of the bioregion.
9.11.28a: Occurs west of the Newcastle Range in the west of the bioregion.
9.11.28b: Restricted to hills in the western bioregion between Gilberton and Kidston.
9.11.28c: Restricted to hills in the western bioregion between Gilberton and Kidston.

Estimated extent:¹ Pre-clearing 18000 ha; Remnant 2021 18000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.29

Description: Woodland to open forest of *Eucalyptus crebra* (narrow-leaved ironbark), *Corymbia leichhardtii* (yellowjacket), *C. lamprophylla* +/- *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *C. erythrophloia* (red bloodwood). An open sub-canopy can contain *Acacia* spp., *Larsenaikia ochreata*, *Persoonia falcata* and *Grevillea glauca* (bushman's clothes peg). A low open shrub layer commonly includes *Acacia humifusa*, *Larsenaikia ochreata*, *Breynia oblongifolia* and *Indigofera* spp. The mixed grassy ground cover often includes *Sarga* spp., *Themeda triandra* (kangaroo grass) and *Aristida* spp. Occurs on steep hills and associated plateau tops. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra*, *Corymbia leichhardtii* and *C. lamprophylla* woodland on steep to rugged metamorphic hills

Supplementary descriptions: Perry et al. (1964): Belmore Unit 1; Perry et al. (1964): Ortona Unit 2 and Unit 3; Perry et al. (1964): Torwood Unit 2

Subregions: 4

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.11.29: Is distinguished from 9.11.28 by the different landform and different subdominant species. Confined to Blue Range and adjacent hills east of Greenvale in the central bioregion.

Estimated extent:¹ Pre-clearing 9000 ha; Remnant 2021 9000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.11.30

Description: Low woodland to tall shrubland of *Acacia leptostachya* (slender wattle) with emergent *Eucalyptus* spp. or *Corymbia* spp. The shrub layer is sparse to mid-dense and the ground layer is sparse grassy. Occurs on very stony and rocky hills. Not a Wetland. (BVG1M: 24a).

Vegetation communities in this regional ecosystem include:

9.11.30a: Low woodland to tall shrubland of *Acacia leptostachya* (slender wattle) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) with emergents of *Eucalyptus chartaboma* (Queensland flaky-bark) and/or *Erythrophleum chlorostachys* (Cooktown ironwood) and/or *Corymbia pocillum*. An open to mid-dense shrub layer of juvenile canopy species, *Calytrix* spp. and *Petalostigma banksii* (smooth-leaved quinine) is present. The ground layer is grassy and dominated by *Schizachyrium* spp. (firegrass). Occurs on rocky hills. Not a Wetland. (BVG1M: 24a).

9.11.30b: Low woodland to tall shrubland of *Acacia leptostachya* with emergents of *Corymbia pocillum* or *Eucalyptus whitei* (White's ironbark). The shrub layer contains scattered shrubs of *Petalostigma banksii* (smooth-leaved quinine) and *Alphitonia* spp. The ground layer is a sparse grassy and dominated by *Schizachyrium* spp. Occurs on steep rocky hills. Not a Wetland. (BVG1M: 24a).

Short description: *Acacia leptostachya* low woodland with emergents on stony and rocky metamorphic hills

Supplementary descriptions: Perry et al. (1964): Belmore ; Perry et al. (1964): Belmore Unit 1; Perry et al. (1964): Leichhardt Unit 1

Subregions: 1, 2.6, 2, (2.9)

Protected areas: Littleton NP, Rungulla RR, Littleton RR, Rungulla NP

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.11.30: The vegetation communities associated with this regional ecosystem are distinguished by different shrub layers. Occurs in the west of the bioregion between Georgetown and Croydon.

9.11.30a: Restricted mainly to hills east of Croydon in the west of the bioregion.

9.11.30b: Occurs in isolated patches south of Georgetown in the west of the bioregion.

Estimated extent:¹ Pre-clearing 18000 ha; Remnant 2021 18000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.31

Description: Woodland to low woodland of *Corymbia terminalis* (western bloodwood) and/or *Eucalyptus crebra* (narrow-leaved ironbark) and/or *C. erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *Bursaria incana* (prickly pine) +/- *Acacia excelsa* (ironwood). A sub-canopy layer of a mix of any of these +/- *Hakea arborescens* (yellow Hakea) may be present. *E. crebra* can occur as an emergent. The shrub layer varies from absent to a mid-dense shrub layer, including vine thicket species, *Bursaria incana* (prickly pine), *Carissa lanceolata* (currantbush) and *Petalostigma* spp. The mid-dense ground layer is grassy with *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *Bothriochloa* spp. dominating. Occurs on aprons around limestone outcrops. Not a Wetland. (BVG1M: 13c).

Short description: *Corymbia terminalis* and/or *Eucalyptus crebra* and/or *C. erythrophloia* woodland on aprons surrounding limestone outcrops

Supplementary descriptions:

Subregions: 4, (5)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.11.31: Potential habitat for threatened species due to proximity to 9.11.8b (softwood scrubs).

Comments: 9.11.31: Has very close ecological links with the semi-evergreen vine thickets of 9.11.8b. Occurs on limestone soils near Greenvale and Charters Towers in the south of the bioregion.

Estimated extent:¹ Pre-clearing 13000 ha; Remnant 2021 13000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.11.32

Description: Woodland to open woodland of *Eucalyptus leptophleba* (Molloy red box) and/or *Corymbia terminalis* (western bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *E. tetradonta* (Darwin stringybark) +/- *C. hylandii* (Hyland's bloodwood). The absent to sparse shrub layer can include *Planchonia careya* (cocky apple) and *Capparis* spp. The ground layer is grassy and dominated by *Heteropogon contortus* (black speargrass). Occurs on aprons around limestone karst. Not a Wetland. (BVG1M: 11c).

Short description: *Eucalyptus leptophleba* and/or *Corymbia terminalis* +/- *C. dallachiana* woodland on aprons surrounding limestone outcrops

Supplementary descriptions:

Subregions: 3, (2), (2.4)

Protected areas: Chillagoe-Mungana Caves NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values:

Comments: 9.11.32: Has close ecological links with the semi-evergreen vine thickets of 9.11.8a. This RE may include some areas mapped as geology TQr with soils derived from transported limestone sediments. Occurs around Chillagoe and Palmerville in the north of the bioregion.

Estimated extent:¹ Pre-clearing 5000 ha; Remnant 2021 5000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.12.1

Description: Woodland to low open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) and/or *E. xanthoclada* (yellow-branched ironbark) and/or *E. drepanophylla* (grey ironbark) and/or *E. paedoglauca* (Mount Stewart ironbark). The mid layer is usually absent but an open sub-canopy or shrub layer can occur. Sparsely wooded areas may grade into grassland. Occurs on a variety of landforms from undulating plains to steep hills on igneous rocks. Not a Wetland. (BVG1M: 13c).

Vegetation communities in this regional ecosystem include:

9.12.1a: Woodland to low open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *Corymbia* spp. *E. exilipes* (fine-leaved ironbark) or *E. granitica* (granite ironbark) can sometimes occur as a dominant. An open sub-canopy can occur with canopy species as well as *Geijera salicifolia* (wilga), *Petalostigma pubescens* (quinine), *Denhamia cunninghamii* (yellowberry bush), *Bursaria incana* (prickly pine) and *Acacia* spp. An open shrub layer usually includes canopy and sub-canopy species and *Carissa lanceolata* (currantbush). The sparse to dense ground layer is dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on a variety of landforms from undulating plains to steep hills. Not a Wetland. (BVG1M: 13c).

9.12.1b: Open woodland to low open woodland of *Eucalyptus xanthoclada* (yellow-branched ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *Corymbia* spp. +/- *Eucalyptus* spp. There may be a sparse sub-canopy layer which can include *Vachellia bidwillii* (corkwood wattle), *Bursaria incana* (prickly pine) or *Euroschinus* spp. The shrub layer can contain mixed species including canopy species, *Denhamia cunninghamii* (yellowberry bush), *B. incana*, *Carissa lanceolata* (currantbush), *A. bidwillii* and *Persoonia falcata* (geebung). The ground layer is sparse tussock grasses dominated by *Heteropogon contortus* (black speargrass). Occurs on a variety of landforms from undulating plains to steep hills. Not a Wetland. (BVG1M: 13c).

9.12.1c: Woodland of *Eucalyptus drepanophylla* (grey ironbark) or *E. crebra* (narrow-leaved ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum). An open sub-canopy or shrub layer containing canopy species +/- *Vachellia bidwillii* (corkwood wattle) +/- *Bursaria incana* (prickly pine) often occurs. The grassy ground is dominated by *Themeda triandra* (kangaroo grass) and *Heteropogon contortus* (black speargrass). Occurs on a variety of landforms from undulating plains to steep hills. Not a Wetland. (BVG1M: 13c).

9.12.1d: Woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. granitica* (granite ironbark) +/- *C. dallachiana* (Dallachy's gum) +/- *Corymbia* spp. The mid layer ranges from absent to sparse and can include *Acacia flavescens* (yellow wattle), *Grevillea glauca* (bushman's clothes peg), *Bursaria incana* (prickly pine) and juvenile canopy species. The dense grassy ground layer is dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on steep rugged hills and mountain ranges. Not a Wetland. (BVG1M: 13c).

9.12.1e: Grassland with isolated emergent trees of *Eucalyptus crebra* (sens. lat.) (narrow-leaved ironbark) +/- clumps of shrubs of *Acacia decora* and/or *A. leptostachya* (slender wattle) and/or *Jacksonia thesioides* and/or *Allocasuarina inophloia* (stringybark sheoak). Occurs on granite hills. Not a Wetland. (BVG1M: 29b).

9.12.1f: Woodland of *Eucalyptus paedoglauca* (Mount Stewart ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum). Mid-layer absent to sparse. Grassy cover dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on granite hills. Not a Wetland. (BVG1M: 13c).

Short description:	<i>Eucalyptus crebra</i> and/or <i>E. xanthoclada</i> and/or <i>E. drepanophylla</i> low open woodland on igneous rocks
Supplementary descriptions:	Perry et al. (1964): Leichhardt Unit 1 and Unit 2
Subregions:	4, 2, (6), (10.3), (11.1), (11.3), (5), (11.5), (11.6), (2.9), (10.2), (11.2), (11.4), (11.7), (7.5), (7.6)
Protected areas:	Girringun NP, Girringun CP, Forty Mile Scrub NP, Undara Volcanic NP, Girringun RR, White Blow CP
Extent in reserves:	Low
Wetland:	Not a Wetland
Special values:	9.12.1: Potential habitat for NCA listed species: <i>Eucalyptus paedoglauca</i> , <i>Solanum angustum</i> .

Comments:	<p>9.12.1: This regional ecosystem is distinguished from 9.12.11 which occurs on acid volcanics. Occurs extensively through-out the central and southern bioregion. Vulnerable to invasion by the weeds <i>Cryptostegia grandiflora</i> (rubber vine), <i>Vachellia farnesiana</i> (mimosa), <i>Melinis repens</i> (Red Natal grass), <i>Ziziphus mauritiana</i> (chinee apple) and the exotic pasture species <i>Cenchrus ciliaris</i> (buffel grass). In wetter areas <i>Lantana camara</i> can be invasive.</p> <p>9.12.1a: Occurs extensively through-out the central and southern bioregion. Prone to invasion by the weeds <i>Cryptostegia grandiflora</i>, <i>Ziziphus mauritiana</i> and <i>Melinis repens</i> and the introduced pasture species <i>Cenchrus ciliaris</i>.</p> <p>9.12.1b: Occurs extensively south of Charters Towers in the south of the bioregion. Prone to invasive weeds <i>Cryptostegia grandiflora</i>, <i>Vachellia farnesiana</i>, <i>Ziziphus mauritiana</i>, <i>Lantana camara</i> and <i>Malvastrum americanum</i>.</p> <p>9.12.1c: Occurs south east of Greenvale in the south central bioregion.</p> <p>9.12.1d: The structure of this vegetation community is consistently taller and more dense than other vegetation communities in 9.12.1. Occurs adjacent to the Wet Tropics bioregion. Prone to invasive weed <i>Lantana camara</i>.</p> <p>9.12.1e: Occurs in a restricted area north of Greenvale in the central bioregion.</p> <p>9.12.1f: Occurs in restricted areas on the ranges west of Townsville in the southern bioregion.</p>
Estimated extent: ¹	Pre-clearing 880000 ha; Remnant 2021 838000 ha
VM class:	Least concern
Biodiversity status:	No concern at present
Biodiversity status notes:	Vegetation communities within this regional ecosystem have threatened species present and are degraded by grazing pressure, and environmental weeds.

Regional ecosystem 9.12.2

Description:	Mixed woodland to open forest including combinations of the species <i>Eucalyptus portuensis</i> (white mahogany), <i>Corymbia citriodora</i> subsp. <i>citriodora</i> (lemon-scented gum), <i>E. granitica</i> (granite ironbark) or <i>E. crebra</i> (narrow-leaved ironbark), <i>C. intermedia</i> (pink bloodwood) or <i>C. clarksoniana</i> (Clarkson's bloodwood) +/- <i>E. cloeziana</i> (Gympie messmate) +/- <i>Corymbia</i> spp. There is often an open to mid-dense sub-canopy containing canopy species +/- <i>Melaleuca viridiflora</i> (broad-leaved paperbark) +/- <i>Lophostemon suaveolens</i> (swamp mahogany) +/- <i>C. leichhardtii</i> (yellowjacket). The shrub layer varies from scattered shrubs to mid-dense and includes juvenile canopy species, <i>Acacia flavescens</i> (yellow wattle), <i>Callitris intratropica</i> (cypress pine), <i>L. suaveolens</i> , <i>Xanthorrhoea johnsonii</i> (grasstree) and <i>Petalostigma pubescens</i> (quinine). The dense grassy ground layer is generally dominated by <i>Themeda triandra</i> (kangaroo grass) +/- <i>Heteropogon triticeus</i> (giant speargrass) +/- <i>Mnesithea rottboellioides</i> (northern canegrass). In some areas, patches dominated by <i>E. moluccana</i> (gum-topped box) or <i>E. cloeziana</i> may occur. Occurs on rises, hill and ranges. Not a Wetland. (BVG1M: 9d).
Short description:	<i>Eucalyptus portuensis</i> , <i>Corymbia citriodora</i> subsp. <i>citriodora</i> , <i>E. granitica</i> or <i>E. crebra</i> , <i>C. intermedia</i> or <i>C. clarksoniana</i> mixed woodland on steep hills and ranges on igneous hills close to Wet Tropics boundary
Supplementary descriptions:	
Subregions:	6, 4, 3, (2), (11.1), (5), (7.4), (7.5), (7.6)
Protected areas:	Girringun NP, Paluma Range NP, Hann Tableland NP, Pinnacles NP, Girringun CP, Mount Windsor NP, Girringun RR, Mount Lewis NP
Extent in reserves:	High
Wetland:	Not a Wetland
Special values:	9.12.2: Old growth of this ecosystem is significant for a number of species including arboreal mammals. Habitat for vulnerable flora species including <i>Corymbia rhodops</i> .
Comments:	9.12.2: The dominant species within this Regional Ecosystem can vary considerably and include a wide range of subdominant <i>Eucalypt</i> and <i>Corymbia</i> spp. <i>Eucalyptus cloeziana</i> mainly occurs on the boundary with the Wet Tropics. Occurs adjacent to the Wet Tropics bioregion from Mareeba south. Vulnerable to invasion by the weeds <i>Praxelis clematidea</i> and <i>Melinis repens</i> (Red Natal grass).
Estimated extent: ¹	Pre-clearing 116000 ha; Remnant 2021 115000 ha
VM class:	Least concern
Biodiversity status:	No concern at present
Biodiversity status notes:	

Regional ecosystem 9.12.3

Description: Woodland to low woodland of *Eucalyptus chartaboma* (Queensland flaky-bark) and/or *E. crebra* (narrow-leaved ironbark) or *E. cullenii* (Cullen's ironbark) or *E. granitica* +/- *Corymbia erythrophloia* (red bloodwood) +/- *E. tetradonta* (Darwin stringybark) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *C. dallachiana* (Dallachy's gum) +/- *C. clarksoniana* (Clarkson's bloodwood). There can be sub-canopy including canopy species, *Grevillea glauca* (bushman's clothes peg) and *Petalostigma pubescens* (quinine). The shrub layer is sparse to open and includes juveniles of canopy species, *Grevillea* spp., *Petalostigma* spp., *Melaleuca viridiflora* (broad-leaved paperbark), *Alphitonia pomaderroides* and *Planchonia careya* (cocky apple). The dense ground layer is dominated by *Heteropogon* spp., *Themeda triandra* (kangaroo grass), *Schizachyrium fragile* (firegrass) and *Sarga plumosum* (plume sorghum). In the north of the bioregion the *Eucalyptus crebra* is replaced by *E. cullenii*. Small areas with *C. trachyphloia* (brown bloodwood) or *E. similis* (yellowjacket) may occur. Occurs in patches on footslopes, low hills, crests and ridges. Not a Wetland. (BVG1M: 14d).

Short description: *Eucalyptus chartaboma* +/- *Eucalyptus* spp. +/- *Corymbia* spp. woodland on sandy soils on igneous rocks

Supplementary descriptions:

Subregions: 2, 5, (3), (6), (2.6)

Protected areas: Undara Volcanic NP, Canyon RR

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.12.3: Old growth of this ecosystem is significant for a number of species including arboreal mammals.

Comments: 9.12.3: Occurs in patches. Occurs mainly south of Chillagoe with several patches near Palmerville in the north of the bioregion.

Estimated extent:¹ Pre-clearing 40000 ha; Remnant 2021 40000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.4

Description: Low open woodland to woodland of *Eucalyptus shirleyi* (silver-leaved ironbark) +/- *Corymbia peltata* (rustyjacket) +/- *Callitris intratropica* (cypress pine). The mid layer varies from absent to a mid-dense sub-canopy and/or shrub layer and the ground layer is dense and grassy. Occurs predominantly on sandy shallow soils derived from igneous rocks on rolling low hills to hills. Not a Wetland. (BVG1M: 17b).

Vegetation communities in this regional ecosystem include:

9.12.4a: Low woodland to occasionally a low open forest of *Eucalyptus shirleyi* (silver-leaved ironbark) and *Corymbia peltata* (rustyjacket) +/- *E. crebra* (narrow-leaved ironbark) (sens. lat.) +/- *Corymbia* spp. +/- *Acacia leptostachya* (slender wattle). *E. melanophloia* can sometimes occur. *E. crebra* may also occur as an emergent. A sub-canopy containing *E. shirleyi*, *Alphitonia excelsa*, *Acacia* spp. and *Persoonia falcata* (geebung) can occur. *E. shirleyi* can occur as a dense sub-canopy under *C. peltata*. The shrub layer varies from absent to mid-dense with an variable species mix including *E. shirleyi*, *Denhamia cunninghamii* (yellowberry bush), *Acacia leptostachya*, *Petalostigma banksii* (smooth-leaved quinine), *Persoonia falcata*, *Alphitonia* spp. and *Acacia* spp. *Xanthorrhoea johnsonii* (grass-tree) can also occur in a lower shrub layer. The dense grassy ground layer is dominated by *Heteropogon* spp., *Schizachyrium fragile* (firegrass) and *Themeda triandra* (kangaroo grass). Occurs predominantly on sandy shallow soils derived from granitic or rhyolite geologies on rolling low hills to hills. Not a Wetland. (BVG1M: 17b).

9.12.4b: Low open woodland of *Eucalyptus shirleyi* (silver-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood) +/- *Bursaria incana* (prickly pine). The mid-layer is generally absent but scattered *Denhamia* spp. can occur. The dense grassy ground layer is dominated by *Heteropogon contortus* (black speargrass). Occurs predominantly on sandy shallow soils derived from granite or rhyolite on rolling low hills to hills. Not a Wetland. (BVG1M: 17b).

9.12.4c: Low woodland to low open woodland of and *Eucalyptus shirleyi* (silver-leaved ironbark) and/or *E. melanophloia* (silver-leaved ironbark) and *Callitris intratropica* (cypress pine) +/- *Corymbia peltata* (rustyjacket) +/- *C. leichhardtii* (yellowjacket) +/- *Acacia* spp. A sparse sub-canopy layer can include canopy species, *Dolichandrone alternifolia* (lemonwood), *Alphitonia pomaderroides* and *Petalostigma pubescens* (quinine). The shrub layer contains juvenile canopy species +/- *Xanthorrhoea johnsonii* (grass-tree). Dominants in the grassy ground can include *Schizachyrium fragile* (firegrass), *Themeda triandra* (kangaroo grass) or *Heteropogon* spp. Occurs predominantly on sandy shallow soils derived from granite or rhyolite on rolling low hills to hills. Not a Wetland. (BVG1M: 20a).

Short description:	<i>Eucalyptus shirleyi</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia peltata</i> and/or <i>Callitris intratropica</i> low open woodland on igneous rocks
Supplementary descriptions:	Perry et al. (1964): Georgetown Unit 1; Perry et al. (1964): Kilbogie; Perry et al. (1964): Leichhardt Unit 1
Subregions:	4, 2, (5), (3), (6), (11.1), (7.4), (11.5), (7.6), (2.6), (7.5), (11.3), (10.3), (2.9)
Protected areas:	Blackbraes NP, Ravenshoe FR 1, Dalrymple NP, Baldy Mountain FR, Paluma Range NP
Extent in reserves:	Low
Wetland:	Not a Wetland
Special values:	9.12.4: Habitat for the near threatened species <i>Acacia jackesiana</i> .
Comments:	9.12.4: Occurs extensively though the central and south-eastern bioregion. 9.12.4a: Occurs extensively though the central and south-eastern bioregion. 9.12.4b: Occurs in scattered patches in the southern bioregion. Vulnerable to the weed species <i>Vachellia farnesiana</i> (mimosa). 9.12.4c: Occurs in patches through-out the central bioregion.
Estimated extent:¹	Pre-clearing 268000 ha; Remnant 2021 267000 ha
VM class:	Least concern
Biodiversity status:	No concern at present
Biodiversity status notes:	

Regional ecosystem 9.12.5

Description: Open woodland to woodland of *Eucalyptus quadricostata* (square-fruited bloodwood) +/- *Corymbia peltata* (rustyjacket) +/- *C. erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum). There can be a sparse sub-canopy which can include *Alphitonia excelsa* (soapbush), *Bursaria incana* (prickly pine), *Persoonia falcata* and *Grevillea* spp. There is a sparse to open shrub layer containing *Xanthorrhoea johnsonii* (grasstree), *Acacia leptostachya* (slender wattle) and *Denhamia cunninghamii* (yellowberry bush). The ground layer is either grassy with *Themeda triandra* (kangaroo grass) and *Heteropogon contortus* (black speargrass) or dominated by *Triodia* spp. (spinifex). Occurs on gravelly shallow soils derived from acid igneous geologies on hills and mountains. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus quadricostata* +/- *Corymbia peltata* open woodland on igneous hills and steep hills

Supplementary descriptions:

Subregions: 4, (10.3)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.12.5: Potential habitat for NCA listed species: *Aristida thompsonii*, *Borya inopinata*, *Kunzea calida*.

Comments: 9.12.5: Occurrence is limited to the Lolworth Range in the in the south of the bioregion.

Estimated extent:¹ Pre-clearing 91000 ha; Remnant 2021 91000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.6

Description: Low open woodland to low woodland of *Eucalyptus microneura* (Georgetown box) +/- *Terminalia* spp. +/- *Corymbia* spp. The mid layers are generally absent or open, though in some cases shrublands can occur with *E. microneura* emergents. The ground is sparse to mid-dense and grassy. Occurs on rolling hills of acid or intermediate igneous geologies. Not a Wetland. (BVG1M: 13b).

Vegetation communities in this regional ecosystem include:

9.12.6a: Low open woodland to low woodland of *Eucalyptus microneura* (Georgetown box) +/- *Terminalia* spp. +/- *Corymbia pocillum*. In taller communities a sub-canopy of canopy species +/- *Erythroxylum ellipticum* (kerosene wood) can occur. The shrub layer varies from a sparse to mid-dense and includes canopy species, *Dolichandrone alternifolia* (lemonwood), *Gardenia vilhelmii* (breadfruit), *Carissa lanceolata* (currantbush) and *Lysiphyllum* spp. The dense grassy ground layer is dominated by *Aristida* spp., *Heteropogon contortus* (black speargrass) and *Schizachyrium* spp. (firegrass). In some areas *Terminalia platyptera* (yellow-wood) may be codominant. *Cochlospermum gillivraei* (kapok) and *Terminalia aridicola* (arid peach) can occur on rocky outcrops. Occurs on rolling rhyolite or granitic hills. Not a Wetland. (BVG1M: 13b).

9.12.6b: Low open woodland to low woodland of *Eucalyptus microneura* (Georgetown box) +/- *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *Terminalia platyptera* (yellow-wood). The mid layer varies from absent to an open shrub layer that can include juvenile canopy species, *Carissa lanceolata* (currantbush), *Melaleuca citrolens* (scrub teatree), *Atalaya hemiglaucula* (whitewood), *Denhamia cunninghamii* (yellowberry bush), *Gardenia vilhelmii* (breadfruit) and *Petalostigma* spp. There is a sparse to grassy ground layer dominated by *Schizachyrium* spp., *Aristida* spp. and *Heteropogon contortus* (black speargrass). Occurs on granitic or rhyolite hills. Not a Wetland. (BVG1M: 13b).

9.12.6c: Low woodland to low open woodland of *Melaleuca citrolens* (scrub teatree) +/- *Eucalyptus microneura* (Georgetown box) +/- *Terminalia* spp. *E. microneura* can also be an emergent. There is usually no mid layer though scattered *Carissa lanceolata* (currantbush) can occur. The sparse to moderate ground layer is grassy and dominated by *Aristida* spp. and *Heteropogon contortus* (black speargrass). Occurs on rolling granitic or rhyolite hills. Not a Wetland. (BVG1M: 21b).

9.12.6d: Open shrubland of *Petalostigma banksii* (smooth-leaved quinine) with emergents of *Eucalyptus microneura* (Georgetown box) or *Eucalyptus tetrodonta* (Darwin stringybark). May also contain patches of *Acacia leptostachya* (slender wattle). Occurs on rolling granitic or rhyolite hills. Not a Wetland. (BVG1M: 13b).

9.12.6e: Low woodland of *Eucalyptus prosecta*. The shrub is absent to open and dominated by *Petalostigma banksii* (smooth-leaved quinine). There is a grassy ground layer. Occurs on edges of creek lines and breakaways on low granitic or rhyolite hills and rises. Not a Wetland. (BVG1M: 18d).

Short description: *Eucalyptus microneura* +/- *Terminalia* spp. +/- *Corymbia* spp. low open woodland on igneous hills

Supplementary descriptions:

Subregions: 1, 2, (2.6), (5), (2.4), (2.9)

Protected areas: Bulleringa NP, Canyon RR, Littleton NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.12.6: Potential habitat for NCA listed species: *Euphorbia carissoides*, *Macropteranthes montana*.

Comments: 9.12.6: Widespread in the west of the bioregion.
9.12.6a: Occurs from Georgetown to Bulleringa in the west of the bioregion.
9.12.6b: Occurs between Einasleigh and Chillagoe in the central west of the bioregion.
9.12.6c: Occurs east of the Newcastle Range in the west of the bioregion.
9.12.6d: Occurs in a restricted range east of Croydon in the far west of the bioregion.
9.12.6e: Occurs in isolated patches near Georgetown in the west of the bioregion.

Estimated extent:¹ Pre-clearing 232000 ha; Remnant 2021 231000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.7

Description: Woodland to low open woodland of *Eucalyptus cullenii* (Cullen's ironbark) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *C. leichhardtii* (yellowjacket) +/- *Corymbia erythrophloia* (red bloodwood). The mid-layer is generally absent but a sub-canopy and/or shrub layer can occur. The ground layer is sparse to dense and dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on predominantly felsic volcanic rocks, on rolling to steep hills. Not a Wetland. (BVG1M: 13a).

Vegetation communities in this regional ecosystem include:

9.12.7a: Woodland to open woodland of *Eucalyptus cullenii* (Cullen's ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *C. dallachiana* (Dallachy's gum). An open to mid-dense sub-canopy can occur and includes a variety of species. The shrub layer is absent to open and dominated by *Denhamia cunninghamii* (yellowberry bush), *Alphitonia pomaderroides* (soapbush), *Petalostigma* spp., and *Acacia* spp. The ground layer is sparse to dense and dominated by *Heteropogon contortus* (black speargrass), *H. triticeus* (giant speargrass), *Themeda triandra* (kangaroo grass) and *Sarga plumosum* (plume sorghum) with a *Xanthorrhoea* sp. (grasstree) occurring in some areas. Occurs on rhyolite hills. Not a Wetland. (BVG1M: 13a).

9.12.7b: Woodland to low open woodland of *Eucalyptus cullenii* (Cullen's ironbark) and/or *E. crebra* (narrow-leaved ironbark) and *Corymbia leichhardtii* (yellowjacket) +/- *C. erythrophloia* (red bloodwood) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Eucalyptus shirleyi* (silver-leaved ironbark) or *E. melanophloia* (silver-leaved ironbark) +/- *E. pachycalyx* (pumpkin gum). An open sub-canopy often occurs with canopy species, *Terminalia* spp. and *Grevillea glauca* (bushman's clothes peg). The shrub layer is open with mixed species including *Acacia* spp., *Denhamia cunninghamii*, *G. glauca*, *G. pteridifolia* (toothbrush grevillea), *Planchonia careya* (cocky apple) and *Petalostigma banksii* (smooth-leaved quinine). A lower shrub layer of *Jacksonia thesioides* and *Xanthorrhoea johnsonii* (grasstree) can also occur. The mid-dense to sparse ground layer is grassy and dominated by *Heteropogon* spp. (speargrass). Occurs on steep rocky rhyolite hills. Not a Wetland. (BVG1M: 13a).

9.12.7c: Woodland to open woodland of *Eucalyptus cullenii* (Cullen's ironbark) and *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Corymbia hylandii* (Hyland's bloodwood). The very sparse mid layer is dominated by *Erythrophleum chlorostachys* (Cooktown ironwood), *Terminalia* spp. and *Petalostigma banksii* (smooth-leaved quinine). The mid-dense ground layer is a grassy and dominated by *Heteropogon triticeus* (giant speargrass), *H. contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *Sarga plumosum* (plume sorghum). Occurs on rolling rhyolite hills. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus cullenii* +/- *Corymbia leichhardtii* +/- *C. erythrophloia* woodland on igneous rocks

Supplementary descriptions:

Subregions: 2, 3, (6), (2.6), (5), (2.4), (7.9), (7.8), (7.7), (7.4)

Protected areas: Canyon RR, Chillagoe-Mungana Caves NP, Mount Lewis NP, Bulleringa NP, Mount Windsor NP, Forty Mile Scrub NP, Daintree NP (CYPAL), Danbulla NP, Dinden West FR

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.12.7: Habitat for near threatened and threatened flora species.
9.12.7a: Potential habitat for the vulnerable plant species *Cycas platyphylla*.

Comments: 9.12.7: The southern end of this regional ecosystem may overlap 9.12.1. Occurs extensively throughout the central and northern bioregion.
9.12.7a: Occurs in the central and northern bioregion from the Newcastle Range across to Mareeba and Palmer River.
9.12.7b: Occurs from the Featherbed Range down to Mt. Garnet in the central bioregion.
9.12.7c: Discrete grasslands of *Themeda arguens* can occur on low rhyolite hills north of Chillagoe. Occurs mainly west of Ngarrabullgan (Mt Mulligan) in the central bioregion.

Estimated extent:¹ Pre-clearing 610000 ha; Remnant 2021 605000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.8

Description: Semi-evergreen vine thicket with occasional emergents. Occurs on hills and steep slopes with skeletal soils and frequent surface boulders. Not a Wetland. (BVG1M: 7a).

Vegetation communities in this regional ecosystem include:

9.12.8a: Semi-evergreen vine thicket (5-10m) commonly containing *Gossia bidwillii* (Python tree), *Gyrocarpus americanus* (helicopter tree), *Drypetes deplanchei* (yellow tulipwood), *Canarium australianum* (scrub turpentine), *Ficus* spp. (figs), *Brachychiton* spp., *Alectryon connatus*, *Pleiogynium timorense* (Burdekin plum), *Strychnos lucida* (strychnine bush), *Cupaniopsis anacardioides*, *Callitris intratropica* (cypress pine), *Cochlospermum gillivraei* (kapok) and *Acacia* spp. An emergent layer (10-14m) is sometimes present and can include *G. americanus*, *Brachychiton* spp., *Eucalyptus crebra* (narrow-leaved ironbark) and *Callitris intratropica*. An open to dense shrub layer commonly includes *Sersalisia sericea*, *Carissa ovata* (currant bush), *Capparis* spp. (native orange), *Erythroxylum australe* (cocaine tree) and *Larsenaikia ochreatea* (native Gardenia). The ground layer is often bare with a wide range of scattered grasses and forbs. Occurs on granitic or rhyolite outcrops and associated slopes and outwash. Not a Wetland. (BVG1M: 7a).

9.12.8b: Scattered semi-evergreen vine thicket species on granite boulders and rock pavements. Occurs on granitic or rhyolite boulders and rock pavements. Not a Wetland. (BVG1M: 7a).

Short description:	Semi-evergreen vine thicket on rocky outcrops and shallow soils of igneous rocks
Supplementary descriptions:	Godwin and Jago (1998): Ca6;
Subregions:	2, 4, 6, 3, (5), (11.1), (1), (7.6)
Protected areas:	Girringun NP, Chillagoe-Mungana Caves NP, Mount Lewis NP, Pinnacles NP
Extent in reserves:	High
Wetland:	Not a Wetland
Special values:	9.12.8: Potential habitat for NCA listed species: <i>Dubouzetia saxatilis</i> , <i>Graptophyllum excelsum</i> , <i>Ipomoea saintroanensis</i> , <i>Panicum chillagoanum</i> .
Comments:	9.12.8: Occurs on granite outcrops through-out the bioregion. Prone to invasion by <i>Cryptostegia grandiflora</i> (rubber vine). 9.12.8a: Occurs through-out the bioregion. 9.12.8b: Occurs through-out the bioregion.
Estimated extent:¹	Pre-clearing 11000 ha; Remnant 2021 11000 ha
VM class:	Least concern
Biodiversity status:	No concern at present
Biodiversity status notes:	

Regional ecosystem 9.12.9

Description: Low open forest to low woodland of *Macropteranthes montana* +/- *Melaleuca citrolens* (scrub teatree) +/- *Terminalia* spp. The mixed open shrub layer often includes juvenile canopy species, *Carissa lanceolata* (currantbush) and *Vachellia bidwillii* (corkwood wattle). There is a mid-grassy ground layer dominated by *Aristida* spp., *Eragrostis* spp. and *Schizachyrium* spp. Occurs on flat to undulating terrain. Not a Wetland. (BVG1M: 21b).

Short description:	<i>Macropteranthes montana</i> low open forest on igneous geologies
Supplementary descriptions:	
Subregions:	2, 1, (6), (2.6), (3)
Protected areas:	Bulleringa NP, Chillagoe-Mungana Caves NP
Extent in reserves:	Low
Wetland:	Not a Wetland
Special values:	9.12.9: Habitat for the vulnerable plant species <i>Macropteranthes montana</i> .
Comments:	9.12.9: Generally as thickets surrounded by other regional ecosystems, most commonly 9.12.7. Occurs mostly northeast of Chillagoe in the central bioregion.
Estimated extent:¹	Pre-clearing 3000 ha; Remnant 2021 3000 ha
VM class:	Of concern
Biodiversity status:	Of concern
Biodiversity status notes:	

Regional ecosystem 9.12.10

Description: Open woodland to woodland of *Corymbia confertiflora* (broad-leaved carbeen) and *Eucalyptus crebra* (narrow-leaved ironbark) +/- *C. erythrophloia* (red bloodwood) or *C. clarksoniana* (Clarkson's bloodwood) +/- *E. microneura* (Georgetown box). Isolated canopy species can occur in the sub-canopy. The shrub layer is absent to very sparse and can contain juvenile canopy species, *Grevillea striata* (beefwood), *Atalaya hemiglaucula* (whitewood) and *Carissa lanceolata* (currantbush). The ground layer varies from mid-dense to dense and is dominated by *Heteropogon contortus* (black speargrass) and *Aristida* spp. (three-awned grasses). Occurs on rolling igneous hills. Not a Wetland. (BVG1M: 13c).

Short description: *Corymbia confertiflora* and *Eucalyptus crebra* +/- *C. clarksoniana* open woodland on rolling igneous hills

Supplementary descriptions:

Subregions: 2, 4, (5)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.12.10: Occurs west of the Lynd Junction in the central bioregion.

Estimated extent:¹ Pre-clearing 7000 ha; Remnant 2021 7000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.12.11

Description: Very open woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark) and/or *E. whitei* (White's ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *C. clarksoniana* (Clarkson's bloodwood). *C. erythrophloia* and/or *C. dallachiana* are always present as subdominants. A sparse sub-canopy layer of the canopy species +/- *Grevillea glauca* (bushman's clothes peg) +/- *Brachychiton* spp. may be present. The absent to open shrub-layer includes *Denhamia cunninghamii* (yellowberry bush), *Gardenia vilhelmii* (breadfruit), *Petalostigma banksii* (smooth-leaved quinine), *Bursaria incana* (prickly pine), *Grevillea parallela* (silver oak) and *Carissa* spp. The ground layer is dominated by the grasses *Heteropogon contortus* (black speargrass) and *Aristida* spp. Occurs on rolling hills to steep hills on acid igneous rocks. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* and/or *E. whitei* +/- *Corymbia erythrophloia* open woodland on steep to rolling hills on igneous rocks

Supplementary descriptions:

Subregions: 2, (1), (4), (5), (2.9)

Protected areas: Rungulla NP, Rungulla RR

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.12.11: Distinguished from 9.12.1 which tends to be on intermediate volcanics. Occurs from the southern Newcastle Range to Chudleigh Park in the central west of the bioregion. Degraded by grazing pressure.

Estimated extent:¹ Pre-clearing 161000 ha; Remnant 2021 160000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.12

Description: Open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) and *Corymbia erythrophloia* (red bloodwood) +/- *E. microneura* (Georgetown box) +/- *Corymbia* spp. Scattered canopy species and *Terminalia* sp. can occur in the sub-canopy. The mixed shrub layer varies from sparse to open and can include juvenile canopy species, *Vachellia bidwillii* (corkwood wattle), *Carissa lanceolata* (currantbush), *Petalostigma banksii* (smooth-leaved quinine), *Denhamia cunninghamii* (yellowberry bush) and *Atalaya hemiglauca* (whitewood). The ground layer is grassy and dominated by *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *Aristida* spp. Occurs on undulating hills to hills of acid and intermediate igneous rocks. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* and *Corymbia erythrophloia* +/- *E. microneura* open woodland on igneous rocks

Supplementary descriptions:

Subregions: 2, (5)

Protected areas: Canyon RR

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.12.12: Occurs in low hills adjacent to the Newcastle Range in the west of the bioregion. Degraded by grazing pressure. Prone to invasion by *Themeda quadrivalvis*.

Estimated extent:¹ Pre-clearing 162000 ha; Remnant 2021 161000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.13

Description: Low woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark) (sens. lat.) +/- *Corymbia peltata* (rustyjacket) +/- *C. pocillum* +/- *Callitris intratropica* (cypress pine). The mid layer is sparse to scattered *Petalostigma banksii* (smooth-leaved quinine) and *Acacia* spp. The ground layer is grassy. Occurs on steep, rocky hills on igneous rocks. Not a Wetland. (BVG1M: 13c).

Vegetation communities in this regional ecosystem include:

9.12.13a: Woodland to open woodland of *Eucalyptus crebra* (sens. lat.) (narrow-leaved ironbark) +/- *Corymbia peltata* (rustyjacket) +/- *C. pocillum* +/- *Erythrophleum chlorostachys* (Cooktown ironwood). The mid layer is absent to scattered shrubs of juvenile canopy species and *Petalostigma banksii* (smooth-leaved quinine). The ground layer is grassy. Occurs on rugged rhyolite hills. Not a Wetland. (BVG1M: 13c).

9.12.13b: Low open woodland to low woodland of *Eucalyptus crebra* (narrow-leaved ironbark) (sens. lat.) and *Corymbia pocillum*. The mid layer is sparse to scattered shrubs of *Vachellia bidwillii* (corkwood wattle) and *Cycas* spp. The sparse to mid-dense ground layer is dominated by *Themeda triandra* (kangaroo grass). Occurs on rocky igneous hills. Not a Wetland. (BVG1M: 13c).

9.12.13c: Woodland to open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) (sens. lat.) +/- *Callitris intratropica* (cypress pine) +/- *Corymbia peltata* (rustyjacket) +/- *C. dallachiana* (Dallachy's gum). The mid layer varies from absent to a shrub layer of *Callitris intratropica*, *Melaleuca citrolens* (scrub teatree) and *Acacia* spp. The sparse ground layer is grassy. This community can also occur as a shrubland of *Callitris intratropica* with emergents. Occurs on rugged hills. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* +/- *Corymbia peltata* +/- *C. pocillum* +/- *Callitris intratropica* low woodland on hills and steep hills on igneous rocks

Supplementary descriptions:

Subregions: 2, 2.9

Protected areas: Canyon RR

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.12.13: Potential habitat for NCA listed species: *Acacia armitii*, *Cycas cairnsiana*.

Comments: 9.12.13: Occurs on the Newcastle Range in the west of the bioregion. Degraded by grazing pressure.
9.12.13a: Occurs on the Newcastle Range in the west of the bioregion.
9.12.13b: Occurs on the southern Newcastle Range in the west of the bioregion.
9.12.13c: Occurs on the Newcastle Range in the west of the bioregion.

Estimated extent:¹ Pre-clearing 18000 ha; Remnant 2021 18000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.14

Description: Low open woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark) (sens. lat.) and *E. similis* +/- *Callitris intratropica* (cypress pine), +/- *Corymbia erythrophloia* (red bloodwood) +/- *C. polycarpa* (long-fruited bloodwood) +/- *Terminalia aridicola* (arid peach). The mid layer is absent to sparse and can contain juvenile canopy species, *Acacia julifera* (catkin wattle), *Petalostigma* spp. and *Grevillea glauca* (bushman's clothes peg). The grassy ground layer is dominated by a *Schizachyrium* spp. (firegrass) and *Heteropogon contortus* (black speargrass). Occurs on undulating low hills and rises with rocky outcrops. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* and *E. similis* +/- *Callitris intratropica* low open woodland on hills on igneous rocks

Supplementary descriptions: Perry et al. (1964): Leichhardt Unit 1

Subregions: 2, (2.9)

Protected areas: Blackbraes NP

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.12.14: Potential habitat for NCA listed species: *Cycas couttsiana*.

Comments: 9.12.14: The rocky outcrops commonly have *Acacia julifera* shrubland, *E. similis* and some deciduous low woodland species present. Occurs near the Chudleigh Plateau in the west of the bioregion.

Estimated extent:¹ Pre-clearing 21000 ha; Remnant 2021 21000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.15

Description: Low open woodland to low woodland of *Eucalyptus staigeriana* (lemon-scented ironbark) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Eucalyptus cullenii* (Cullen's ironbark) +/- *Terminalia* spp. +/- *Corymbia erythrophloia* (red bloodwood) or *C. hylandii* (Hyland's bloodwood). There is a sparse to mid-dense shrub layer of *Petalostigma banksii* (smooth-leaved quinine), *Grevillea* spp. and occasionally *Xanthorrhoea johnsonii* (grass-tree). The ground layer is dominated by *Heteropogon* spp. (speargrass), *Themeda triandra* (kangaroo grass) and *Schizachyrium fragile* (firegrass). Occurs on hills with acid igneous geology. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus staigeriana* +/- *Erythrophleum chlorostachys* low open woodland on hills on igneous rocks

Supplementary descriptions:

Subregions: 2, 3, (3.1)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.12.15: Potential habitat for NCA listed species: *Euphorbia carissoides*.

Comments: 9.12.15: Patches of 9.12.36 can occur around rocky outcrops within 9.12.15. Occurs from the Featherbed Range to Maitland Downs in the north of the bioregion.

Estimated extent:¹ Pre-clearing 41000 ha; Remnant 2021 41000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.16

Description: Open woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark) and *Corymbia dallachiana* (Dallachy's gum) woodland +/- *C. erythrophloia* (red bloodwood). The shrub layer is often absent to very scattered juveniles of the canopy species. The dense grassy ground cover is dominated by *Dichanthium* spp., *Aristida* spp. and *Themeda triandra* (kangaroo grass). Occurs on flat to undulating plains and valley floors on Carboniferous basalt loams. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* and *Corymbia dallachiana* +/- *C. erythrophloia* open woodland on pre-Cainozoic basalt loams and flats to undulating plains

Supplementary descriptions:

Subregions: 4
Protected areas: Paluma Range NP
Extent in reserves: Low
Wetland: Not a Wetland
Special values:
Comments: 9.12.16: Occurs in a restricted area west of the Harvey Range in the south of the bioregion.
Estimated extent:¹ Pre-clearing 4000 ha; Remnant 2021 4000 ha
VM class: Of concern
Biodiversity status: Of concern
Biodiversity status notes:

Regional ecosystem 9.12.17

Description: Woodland to open forest of *Eucalyptus atrata* (Herberton ironbark) +/- *Corymbia citriodora* subsp. *citriodora* (lemon-scented gum) +/- *E. portuensis* (white mahogany) or *E. mediocris* +/- *E. cloeziana* (Gympie messmate). The shrub layer varies from absent to scattered *Petalostigma pubescens*, *Grevillea glauca* (bushman's clothes peg), *Persoonia falcata* (geebung) and *Callitris intratropica* (cypress pine). *Callitris intratropica* may occur in the canopy layer in the northern end of this community. The sparse to mid-dense ground layer is dominated by a variety of species including *Themeda triandra* (kangaroo grass), *Aristida* spp., *Heteropogon contortus* (black speargrass), *Sarga plumosum* (plume sorghum) and *Xanthorrhoea johnsonii* (grass-tree). The subdominants in this community can vary in density and species composition. Occurs on steep hills & slopes of mountains. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus atrata* +/- *Corymbia citriodora* subsp. *citriodora* +/- *E. portuensis* woodland on mountains and hills on igneous rocks

Supplementary descriptions:

Subregions: 6, 3, (7.4), (7.9)
Protected areas: Mount Lewis NP, Hann Tableland NP, Mount Windsor NP, Baldy Mountain FR
Extent in reserves: Low
Wetland: Not a Wetland
Special values: 9.12.17: Potential habitat for NCA listed species: *Goodenia stirlingii*, *Coleus amoenus*.
Comments: 9.12.17: Occurs adjacent to the Wet Tropics bioregion in the central and northern of the bioregion.
Estimated extent:¹ Pre-clearing 19000 ha; Remnant 2021 18000 ha
VM class: Least concern
Biodiversity status: No concern at present
Biodiversity status notes:

Regional ecosystem 9.12.18

Description: Open woodland to woodland of *Eucalyptus crebra* (sens. lat.) (narrow-leaved ironbark) or *E. exilipes* (fine-leaved ironbark) +/- *Corymbia citriodora* subsp. *citriodora* (lemon-scented gum) +/- *C. peltata* (rustyjack) +/- *C. trachyphloia* (brown bloodwood) +/- *Callitris intratropica* (cypress pine). A distinct sub-canopy layer including *E. shirleyi* (silver-leaved ironbark), *Alphitonia excelsa* (soapbush) and *Bursaria incana* (prickly pine) can occur. The shrub layer is a mid-dense to sparse and includes *Denhamia* spp., *Acacia* spp., *Petalostigma banksii* (smooth-leaved quinine), *Persoonia falcata* and *Xanthorrhoea johnsonii* (grass-tree). The ground layer is sparse and dominated by *Themeda triandra* (kangaroo grass), *Heteropogon contortus* (black speargrass) and sometimes *Triodia pungens* (spinifex). Occurs on undulating hills and rises with a thin sand sheet overlying granite. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* or *E. exilipes* +/- *Corymbia citriodora* subsp. *citriodora* +/- *C. peltata* open woodland on granites with thin sand sheet

Supplementary descriptions:

Subregions: 4, 2.9, (2), (5)

Protected areas: Blackbraes NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.12.18: Habitat for the vulnerable species *Acacia crombiei*.

Comments: 9.12.18: Occurs on low granite hills east of Chudleigh Plateau in the south west of the bioregion.

Estimated extent:¹ Pre-clearing 22000 ha; Remnant 2021 22000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.19

Description: Mixed woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. granitica* (granite ironbark) +/- *Corymbia citriodora* subsp. *citriodora* (lemon-scented gum) +/- *E. portuensis* (white mahogany) +/- *E. exserta* (Queensland peppermint) +/- *C. leichhardtii* (yellowjacket). An open sub-canopy layer can occur and include canopy species, *Melaleuca* spp., *C. abergiana* (range bloodwood) and *Lophostemon suaveolens* (swamp mahogany). The open to mid-dense shrub layer includes *Petalostigma pubescens* (quinine), *Acacia* spp., *Melaleuca* spp., *Grevillea glauca* (bushman's clothes peg), *Bursaria incana* (prickly pine) and *Xanthorrhoea johnsonii* (grass-tree). The dense grassy ground layer is dominated by *Themeda triandra* (kangaroo grass), *Heteropogon triticeus* (giant speargrass), *Arundinella setosa* and *Sarga plumosum* (plume sorghum). Occurs on hills and rugged hilly ranges on acid and intermediate igneous rocks. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* or *E. granitica* +/- *Corymbia citriodora* subsp. *citriodora* +/- *E. portuensis* mixed woodland on igneous hills

Supplementary descriptions:

Subregions: 4, (11.1), (7.5)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.12.19: Old growth of this regional ecosystem is significant for a number of species including arboreal mammals.

Comments: 9.12.19: This community is closely associated with 9.12.2 but is in areas with lower rainfall. Occurs in the south-east of the bioregion. Some logging of *Corymbia citriodora* and *Eucalyptus portuensis*.

Estimated extent:¹ Pre-clearing 41000 ha; Remnant 2021 41000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.20

Description: Woodland to low woodland of *Eucalyptus pachycalyx* (pumpkin gum) +/- *E. cloeziana* (Gympie messmate) +/- *Corymbia leichhardtii* (yellowjacket) +/- *Callitris intratropica* (cypress pine) +/- *E. portuensis* (white mahogany) +/- *E. cullenii* (Cullen's ironbark) or *E. atrata*. The mid-dense shrub layer includes juvenile canopy species, *Grevillea glauca* (bushman's clothes peg), *Persoonia falcata* and *Xanthorrhoea johnsonii* (grass-tree). The medium to dense grassy ground layer is mostly dominated by *Themeda triandra* (kangaroo grass). Occurs on steep rugged hills on igneous hills. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus pachycalyx* +/- *E. cloeziana* +/- *Corymbia leichhardtii* woodland on steep igneous hills

Supplementary descriptions:

Subregions: 6, (3), (2), (7.4)

Protected areas: Evelyn Creek CP, Baldy Mountain FR

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.12.20: This regional ecosystem is habitat for a number of vulnerable species including *Corymbia rhodops*, *Grevillea glossadenia* and *Acacia purpureopetala*.

Comments: 9.12.20: A naturally restricted regional ecosystem. Occurs close to the Wet Tropics bioregion boundary in the central east of the bioregion.

Estimated extent:¹ Pre-clearing 17000 ha; Remnant 2021 17000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.21

Description: Open woodland to woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. drepanophylla* (grey ironbark) and *Corymbia clarksoniana* (Clarkson's bloodwood) or *C. erythrophloia* (red bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *Eucalyptus platyphylla* (poplar gum). An open sub-canopy of canopy species can occur. The shrub layer is absent to scattered *Melaleuca viridiflora* (broad-leaved paperbark), *Bursaria incana* (prickly pine) and *Vachellia bidwillii* (corkwood wattle). The often grassy ground layer is dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on flat to undulating country on igneous geology. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus crebra* or *E. drepanophylla* and *Corymbia* spp. open woodland on flat to undulating country on igneous rocks

Supplementary descriptions:

Subregions: 4, (7.5)

Protected areas: Paluma Range NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values:

Comments: 9.12.21: Is distinguished from RE 9.12.22 and RE 9.12.2 by the different mix of dominant species and by a different landform. Occurs near Harvey Range in the south of the bioregion. Subject to minor clearing.

Estimated extent:¹ Pre-clearing 10000 ha; Remnant 2021 10000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.12.22

Description: Woodland of *Eucalyptus drepanophylla* (grey ironbark), *Corymbia clarksoniana* (Clarkson's bloodwood) or *C. intermedia* (pink bloodwood), *C. dallachiana* (Dallachy's gum) +/- *E. platyphylla* (poplar gum) +/- *E. portuensis* (white mahogany) +/- *E. tereticornis* (bluegum). An open to mid-dense sub-canopy can include *Planchonia careya* (cocky apple), *Acacia flavescens* (yellow wattle), *Bursaria incana* (prickly pine), *Vachellia bidwillii* (corkwood wattle) and *Grevillea parallela* (silver oak). *Capparis canescens* (wild orange), *Larsenaikia ochreatea* (native gardenia) and *Acacia* spp. occur in a scattered shrub layer. The ground layer is dense grassy and dominated by *Themeda triandra* (kangaroo grass), *Heteropogon contortus* (black speargrass) and *H. triticeus* (giant speargrass). *C. erythrophloia* (red bloodwood) may be found in the western area of this community. Occurs in steep rugged hills and valleys on igneous steep rugged ranges. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus drepanophylla*, *Corymbia clarksoniana* or *C. intermedia* and *C. dallachiana* woodland on steep rugged igneous ranges

Supplementary descriptions:

Subregions: 4, (11.1), (7.5)

Protected areas: Paluma Range NP, Pinnacles NP, Girringun NP

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.12.22: Potential habitat for NCA listed species: *Scleromitron polycladum*.

Comments: 9.12.22: Is distinguished from RE 9.12.21 and RE 9.12.2 by the different mix of dominant species and by a different landform. Occurs adjacent to the Wet Tropics boundary. Subject to clearing and vulnerable to invasion by the weed species *Lantana camara*. .

Estimated extent:¹ Pre-clearing 65000 ha; Remnant 2021 65000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.23

Description: Low open woodland to woodland of *Eucalyptus drepanophylla* (grey ironbark) or *E. crebra* (narrow-leaved ironbark), *Corymbia leichhardtii* (yellowjacket) and *C. lamprophylla* (shiny-leaved bloodwood) +/- *C. dallachiana* (Dallachy's gum). An open low sub-canopy can occur and include canopy species, *Bursaria incana* (prickly pine), *Persoonia falcata* and *Grevillea glauca* (bushman's clothes peg). The shrub layer is absent to open and is dominated by *Acacia leptostachya* (slender wattle), *Petalostigma pubescens* (quinine) and *Grevillea glauca*. *Acacia wickhamii* subsp. *cassitera*, *Dodonaea lanceolata* (currantbush) and *Xanthorrhoea johnsonii* (grass-tree) may also be present in a distinct lower shrub layer. The ground layer is dominated by *Triodia* spp. (spinifex) or *Themeda triandra* (kangaroo grass). Occurs on hills on igneous rocks. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus drepanophylla* or *E. crebra*, *Corymbia leichhardtii* and *C. lamprophylla* low open woodland on igneous rocks

Supplementary descriptions:

Subregions: 4

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.12.23: Potential habitat for NCA listed species: *Acacia longipedunculata*, *Corchorus subargenteus*, *Marsdenia brevifolia*, *Solanum graniticum*.

Comments: 9.12.23: Occurs south of Paluma in the south-east of the bioregion.

Estimated extent:¹ Pre-clearing 39000 ha; Remnant 2021 39000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.24

Description: Woodland to open woodland of *Eucalyptus drepanophylla* (grey ironbark) or *E. crebra* (narrow-leaved ironbark) and/or *E. xanthoclada* (yellow-branched ironbark) and *Corymbia peltata* (rustyjacket) +/- *C. clarksoniana* (Clarkson's bloodwood). The shrub layer is absent to mid-dense and include a range of species. The sparse to dense ground layer is often dominated by *Heteropogon contortus* (black speargrass). Occurs on undulating low hills to hills on igneous rocks. Not a Wetland. (BVG1M: 13c).

Vegetation communities in this regional ecosystem include:

9.12.24a: Woodland to open woodland of *Eucalyptus xanthoclada* (yellow-branched ironbark), *Corymbia peltata* (rustyjacket) +/- *C. clarksoniana* (Clarkson's bloodwood). A sub-canopy often occurs and can contain *Persoonia falcata*, *Alphitonia excelsa*, *Grevillea* spp., *Petalostigma* spp., *Melaleuca nervosa* (woodland paperbark) and *Bursaria incana* (prickly pine). A mid-dense shrub layer can contain a range of species including *Denhamia cunninghamii* (yellowberry bush), *Larsenaikia ochreatea* and *Xanthorrhoea johnsonii* (grass-tree). The sparse to mid-dense grassy ground cover is dominated by *Heteropogon contortus* (black speargrass) and *Aristida* spp. In some cases the ironbark species can include *E. crebra* (narrow-leaved ironbark) or *E. whitei* (White's ironbark). Occurs on igneous hills and associated slopes. Not a Wetland. (BVG1M: 13c).

9.12.24b: Woodland to low open woodland of *Corymbia peltata* (rustyjacket) and *Eucalyptus drepanophylla* (grey ironbark) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *C. erythrophloia* (red bloodwood) +/- *E. melanophloia* (silver-leaved ironbark). An open sub-canopy layer can contain canopy species, *Melaleuca nervosa* (woodland paperbark), *Bursaria incana* (prickly pine), *Grevillea glauca* (bushman's clothes peg) and *Petalostigma pubescens* (quinine). The shrub layer is absent to scattered canopy species and the dense grassy ground layer is dominated by *Heteropogon contortus* (black speargrass). Occurs on low to rolling rocky igneous hills. Not a Wetland. (BVG1M: 13c).

9.12.24c: Open woodland to woodland of *Eucalyptus drepanophylla* (grey ironbark) or *E. crebra* (narrow-leaved ironbark), *Corymbia dallachiana* (Dallachy's gum) and *C. peltata* (rustyjacket) +/- *E. persistens* (box) +/- *Corymbia erythrophloia* (red bloodwood). Occurs on low rolling igneous hills. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus drepanophylla* or *E. crebra* and/or *E. xanthoclada* and *Corymbia peltata* woodland on igneous rocks

Supplementary descriptions:

Subregions: 4, (11.1), (10.3)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.12.24: Occurs in patches through-out the southern bioregion.
9.12.24a: Occurs east and west of Charters Towers in the south of the bioregion.
9.12.24b: Occurs from Mt Zero to Mingela in the south east of the bioregion. Prone to invasion by *Melinis repens* (Red Natal grass).
9.12.24c: Occurs south east of Greenvale in the central south bioregion.

Estimated extent:¹ Pre-clearing 49000 ha; Remnant 2021 49000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.25

Description: Low open woodland of *Eucalyptus exserta* (Queensland peppermint) and *Lysicarpus angustifolius* (Budgeroo). There is no mid layer though scattered *Acacia* spp. and *Grevillea* spp. can occur. The very sparse ground layer is dominated by *Triodia bitextura* (spinifex) +/- *Aristida* spp. and *Cymbopogon* spp. Occurs in small patches surrounded by RE 9.12.5 on sandy soils on acid igneous geologies. Not a Wetland. (BVG1M: 19d).

Vegetation communities in this regional ecosystem include:

9.12.25x1: Low open woodland of *Eucalyptus exserta* (Queensland peppermint) and *Lysicarpus angustifolius* (Budgeroo). There is no mid layer though scattered *Acacia* spp. and *Grevillea* spp. can occur. The very sparse ground layer is dominated by *Triodia bitextura* (spinifex) +/- *Aristida* spp. and *Cymbopogon* spp. Occurs in small patches surrounded by RE 9.12.5 on sandy soils on acid igneous geologies. Not a Wetland. (BVG1M: 19d).

Short description: *Eucalyptus exserta* and *Lysicarpus angustifolius* low open woodland with *Triodia bitextura* ground layer on sandy soils on igneous rocks

Supplementary descriptions:

Subregions: 4, (2)

Protected areas: Forty Mile Scrub NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.12.25: Potential habitat for NCA listed species: *Borya inopinata*, *Kunzea calida*.
9.12.25x1: Potential habitat for NCA listed species: *Borya inopinata*, *Kunzea calida*.

Comments: 9.12.25: Occurs in small patches surrounded by RE 9.12.5. Vegetation on small areas of Tertiary remnant sandsheet may be included in this regional ecosystem. Occurs on the Mount Stewart Range in the south of the bioregion.
9.12.25x1: Occurs in small patches surrounded by RE 9.12.5. Vegetation on small areas of Tertiary remnant sandsheet may be included in this regional ecosystem. Occurs on the Mount Stewart Range in the south of the bioregion.

Estimated extent:¹ Pre-clearing 1000 ha; Remnant 2021 1000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.12.26

Description: Woodland to open forest of *Eucalyptus moluccana* (gum-topped box) +/- *E. crebra* (narrow-leaved ironbark) and/or *E. granitica* (granite ironbark) +/- *Corymbia dallachiana* (Dallachy's gum). A very open sub-canopy of canopy species can occur. There is no shrub layer and the dense grassy ground layer is dominated by *Themeda triandra* (kangaroo grass) and *Heteropogon contortus* (black speargrass) with *Cyperus* spp. (sedges) often present. Occurs on lower slopes and valleys of a low hilly landscape. Not a Wetland. (BVG1M: 13d).

Short description: *Eucalyptus moluccana* +/- *E. crebra* and/or *E. granitica* woodland on igneous rocks

Supplementary descriptions:

Subregions: 4, 6, (7.5), (7.6)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.12.26: Occurs in small areas close to the boundary of the Wet Tropics bioregion in the south of the bioregion. Subject to minor clearing and vulnerable to invasion by the weed species *Lantana camara*.

Estimated extent:¹ Pre-clearing 3000 ha; Remnant 2021 3000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.12.27

Description: Low open woodland to woodland of *Eucalyptus melanophloia* (silver-leaved ironbark) or *E. shirleyi* (silver-leaved ironbark) +/- *Corymbia erythrophloia* (red bloodwood) +/- *Acacia* spp. A sub-canopy of taller shrub-layer species may be present. The shrub layer can be absent to scattered individuals of a wide mixture of species including *Petalostigma banksii* (smooth-leaved quinine), *Terminalia* spp., *Alphitonia pomaderroides* (soapbush), *Gardenia vilhelmii* (breadfruit), *Denhamia cunninghamii* (yellowberry bush) and *Grevillea glauca* (bushman's clothes peg) as well as canopy species. The ground layer is dense grassy and dominated by *Schizachyrium* spp., and *Heteropogon contortus* (black speargrass). Occurs on rolling hills and slopes with shallow soils on acid igneous geology, often with boulders to the surface. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus melanophloia* and/or *E. shirleyi* +/- *Corymbia erythrophloia* low open woodland on igneous rocks

Supplementary descriptions:

Subregions: 2, 1, (2.6), (6), (5), (3), (2.4), (2.9), (2.5)

Protected areas: Littleton NP, Canyon RR, Bulleringa NP, Littleton RR

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.12.27: Potential habitat for NCA listed species: *Eriocaulon carsonii* subsp. *orientale*, *Euphorbia carissoides*, *Macropteranthes montana*, *Solanum angustum*.

Comments: 9.12.27: In small areas in the north *Eucalyptus tetrodonta*, *Erythrophleum chlorostachys* and *Corymbia erythrophloia* may be present. Occurs extensively in the north and west of the bioregion.

Estimated extent:¹ Pre-clearing 411000 ha; Remnant 2021 410000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.28

Description: Low open woodland of *Eucalyptus melanophloia* (silver-leaved ironbark), often with *E. crebra* (narrow-leaved ironbark) emergents. The mid layer is generally absent but scattered shrubs of *Petalostigma banksii* (smooth-leaved quinine), *Persoonia falcata* and *Acacia* spp. may be present. The sparse ground layer is grassy and dominated by *Aristida* spp. and *Heteropogon contortus* (black speargrass). Occurs on shallow to medium, alkaline, yellow-grey bleached duplex soils on low hills. Not a Wetland. (BVG1M: 13a).

Short description: *Eucalyptus melanophloia* low open woodland, often with *E. crebra*, on low hills on igneous rocks

Supplementary descriptions:

Subregions: 4, (11.3), (11.5), (11.1), (11.4)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.12.28: This community has affinities with the Brigalow Belt RE 11.12.2. Occurs near the Burdekin Dam in the far south east of the bioregion.

Estimated extent:¹ Pre-clearing 34000 ha; Remnant 2021 33000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.29

Description: Low open woodland to low woodland of *Eucalyptus similis* (yellowjacket) and *E. shirleyi* (silver-leaved ironbark) +/- *E. crebra* (narrow-leaved ironbark) (sens. lat.) +/- *Acacia julifera* (catkin wattle) +/- *Erythrophleum chlorostachys* (Cooktown ironwood). The shrub layer is absent to scattered shrubs including juveniles of the canopy species, *Petalostigma banksii* (smooth-leaved quinine), *Grevillea glauca* (bushman's clothes peg) and *Terminalia aridicola* (arid peach). The ground layer is grassy and dominated by *Aristida* spp. Occurs on rolling low hills with granite boulders and rocky outcrops on the foothills. Not a Wetland. (BVG1M: 13c).

Short description: *Eucalyptus similis* and *E. shirleyi* +/- *E. crebra* low open woodland on low granite hills with rocky outcrops

Supplementary descriptions:

Subregions: 2, (2.9)

Protected areas: Canyon RR

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.12.29: *Acacia julifera* and some deciduous low woodland species are frequent. Occurs north of the Chudleigh Plateau in the south west of the bioregion.

Estimated extent:¹ Pre-clearing 5000 ha; Remnant 2021 5000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.12.30

Description: Mixed woodland to open forest of *Corymbia leichhardtii* (yellowjacket) and *Eucalyptus cloeziana* (Gympie messmate) +/- *Eucalyptus* spp. and *Corymbia* spp. as subdominants. The shrub layer is sparse to mid-dense with a shrubland of *Acacia* spp. sometimes occurring. The ground layer is grassy. Occurs on rocky hills to steep hills on igneous geologies. Not a Wetland. (BVG1M: 13a).

Vegetation communities in this regional ecosystem include:

9.12.30a: Woodland to open forest of *Corymbia leichhardtii* (yellowjacket) and *Eucalyptus cloeziana* (Gympie messmate) +/- *E. portuensis* (white mahogany) +/- *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *E. cullenii* (Cullen's ironbark) +/- *Callitris intratropica* (cypress pine). Some canopy species can occur as emergents. The sparse to mid-dense shrub layer is dominated by juvenile canopy species, *Persoonia falcata*, *Grevillea glauca* (bushman's clothes peg) and *Allocasuarina inophloia* (stringybark sheoak) and a lower shrub with *Jacksonia thesioides* and *Xanthorrhoea johnsonii* (grass-tree) can occur. The sparse to mid-dense ground layer is dominated by *Themeda triandra* (kangaroo grass). Rocky rhyolite hills to steep hills. Not a Wetland. (BVG1M: 13a).

9.12.30b: Shrubland of *Acacia leptostachya* (slender wattle) +/- *A. umbellata* +/- *Callitris intratropica* (cypress pine) emergents. There is no mid layer or ground layer. Occurs on shallow soils on rock pavements within

9.12.30a. Not a Wetland. (BVG1M: 24a).

Short description: *Corymbia leichhardtii* and *Eucalyptus cloeziana* mixed woodland on igneous hills

Supplementary descriptions:

Subregions: 6, (3), (7.4), (7.6)

Protected areas: Evelyn Creek CP, Baldy Mountain FR

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.12.30: Habitat for the vulnerable species *Homoranthus porteri*.

Comments: 9.12.30: Occurs extensively near the Wet Tropics boundary in the central bioregion. Clearing is occurring in some vegetation communities within this regional ecosystem.
9.12.30a: In some areas this community is dominated by *E. shirleyi* and *Allocasuarina inophloia*. Occurs extensively near the Wet Tropics boundary in the central bioregion.
9.12.30b: Occurs extensively near the Wet Tropics boundary in the central bioregion.

Estimated extent:¹ Pre-clearing 20000 ha; Remnant 2021 20000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.31

Description: Woodland of *Eucalyptus leptophleba* (Molloy red box), *Corymbia clarksoniana* (Clarkson's bloodwood) and *E. crebra* (narrow-leaved ironbark) or *Eucalyptus cullenii* (Cullen's ironbark). A sub-canopy can occur and include canopy species and *Grevillea glauca* (bushman's clothes peg). The shrub layer can be absent to open. The dense ground layer is grassy. Occurs on acid igneous hills often on Quaternary weathered rock debris over the igneous geology. Not a Wetland. (BVG1M: 9b).

Vegetation communities in this regional ecosystem include:

9.12.31a: Woodland of *Eucalyptus leptophleba* (Molloy red box) and *Corymbia clarksoniana* (Clarkson's bloodwood) with *E. crebra* (narrow-leaved ironbark) or *E. cullenii* (Cullen's ironbark) and *C. dallachiana* (Dallachy's gum) often codominant. An open sub-canopy can occur and include canopy species, *Grevillea glauca* (bushman's clothes peg), and *Acacia* spp. The open shrub layer includes *Grevillea* spp., *Planchonia careya* (cocky apple), *Melaleuca nervosa* (woodland paperbark), *Petalostigma pubescens* (quinine) and *Acacia* spp. The dense ground layer is grassy and dominated by *Themeda triandra*, *Heteropogon triticeus* (giant speargrass), *H. contortus* (black speargrass) and *Mnesithea rottboellioides* (northern canegrass). Occurs on acid igneous hills. Not a Wetland. (BVG1M: 9b).

9.12.31b: Woodland to open forest of *Eucalyptus crebra* (narrow-leaved ironbark) and *Corymbia clarksoniana* (Clarkson's bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *E. leptophleba* (Molloy red box) +/- *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *C. tessellaris* (Moreton Bay ash). An open to mid-dense sub-canopy layer can contain canopy species, *Melaleuca viridiflora* (broad-leaved paperbark) and *Grevillea* spp. The low shrub layer is open to scattered and often contains *Persoonia falcata*, *M. nervosa*, *Grevillea* spp. and *Denhamia cunninghamii* (yellowberry bush). The ground layer is grassy and dominated by *Themeda triandra* (kangaroo grass), *Heteropogon triticeus* (giant speargrass) and *Mnesithea rottboellioides* (northern canegrass). Occurs on acid igneous hills. Not a Wetland. (BVG1M: 9b).

Short description: *Eucalyptus leptophleba*, *Corymbia clarksoniana* and *E. crebra* +/- *C. dallachiana* woodland on igneous rocks

Supplementary descriptions:

Subregions: 3, 2, (7.4), (7.7)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.12.31: Potential habitat for NCA listed species: *Peristylus banfieldii*, *Spathoglottis paulinae*.

Comments: 9.12.31: Occurs around and to the north of Mareeba in the central bioregion.
9.12.31a: Occurs between Mareeba and Maitland Downs in the north of the bioregion.
9.12.31b: Occurs on hills south of Mareeba in the central east of the bioregion.

Estimated extent:¹ Pre-clearing 11000 ha; Remnant 2021 10000 ha

VM class: Least concern

Biodiversity status: Of concern

Biodiversity status notes: Subject to clearing and grazing.

Regional ecosystem 9.12.32

Description: Woodland to open woodland of *Eucalyptus persistens* (box) +/- *E. crebra* (narrow-leaved ironbark). Scattered *E. persistens* can occur in the sub-canopy. The absent to open shrub layer can contain a mixture of species including *Denhamia cunninghamii* (yellowberry bush), *Carissa* spp., *Atalaya hemiglauc*a (whitewood), *Eremophila mitchellii* (false sandalwood) and *Erythroxylum australe* (cocaine tree). The ground layer is sparse to dense grassy and can include *Aristida* spp., *Themeda triandra* (kangaroo grass) and occasionally *Triodia* spp. (*spinifex*). Occurs on shallow soils on, generally rhyolitic, low hills. Not a Wetland. (BVG1M: 19d).

Vegetation communities in this regional ecosystem include:

9.12.32x1: Low woodland to low open woodland of *Eucalyptus tardecidens* (box) or *E. chlorophylla* +/- *Corymbia* spp. +/- *E. cullenii* (Cullen's ironbark) +/- *Melaleuca* spp. A sparse sub-canopy can include canopy species, *Melaleuca* spp. or *Terminalia* spp. The shrub layer is sparse to open and can include *Petalostigma* spp., *Melaleuca stenostachya* (teatree), *Denhamia cunninghamii* (yellowberry bush), *Acacia* spp. and *Santalum lanceolatum* (sandalwood). The ground layer can vary from mainly bare soil and rock to a dense cover of grasses including *Heteropogon contortus* (black speargrass), *Aristida* spp. and *Themeda triandra* (kangaroo grass).

Occurs on rolling low hills to steep hills. Not a Wetland. (BVG1M: 19d).

9.12.32x2: *Melaleuca borealis* shrubland to tall shrubland. Commonly with *Eucalyptus persistens* and / or *Callitris intratropica* as emergents. No mid layer and a sparse grassy ground layer often dominated by *Schizachyrium fragile*. Occurs on low hills, commonly on edge of Tertiary plateaus. Not a Wetland. (BVG1M: 19d).

Short description: *Eucalyptus persistens* woodland on rhyolites and granites

Supplementary descriptions:

Subregions: 4, 2, (11.1), (6), (11.5), (11.3), (5), (11.4)

Protected areas: Forty Mile Scrub NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values: 9.12.32: Potential habitat for NCA listed species: *Macropteranthes montana*.
9.12.32x1: Potential habitat for NCA listed species: *Acacia guymeri*, *Acacia purpureopetala*, *Cucumis costatus*.

Comments: 9.12.32: Occurs in the central and south-eastern bioregion.
9.12.32x1: Occurs extensively from Chillagoe to Lakeland Downs in the north of the bioregion. Subject to degradation from high total grazing pressure.
9.12.32x2: May also occur on weathered lithosols overlying granite. Occurs sporadically across the bioregion. Common on western edge of 40 mile scrub national park.

Estimated extent:¹ Pre-clearing 78000 ha; Remnant 2021 76000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.33

Description: Low open woodland to open woodland of *Eucalyptus microneura* (Georgetown box) and / or *Eucalyptus distans*. In some patches *Corymbia pocillum* may dominant the canopy. The shrub layer is most frequently absent, though clumped shrublands of *Acacia leptostachya* (slender wattle) or *Petalostigma banksii* (smooth-leaved quinine) can occur. Occurs on rolling hills on predominantly igneous rocks. Not a Wetland. (BVG1M: 13b).

Vegetation communities in this regional ecosystem include:

9.12.33a: Low open woodland or scattered individuals of *Eucalyptus microneura* (Georgetown box) and / or *E. distans* +/- *Corymbia pocillum* +/- *E. melanophloia* (silver-leaved ironbark) +/- *Corymbia* spp. The mid layer is generally absent, but scattered canopy species, *Petalostigma banksii* (smooth-leaved quinine) +/- *Gardenia vilhelmii* (breadfruit) may occur. There are sometimes patches of *P. banksii* shrubland with emergent canopy species. The sparse to dense ground layer is grassy and dominated by *Schizachyrium* spp. (firegrass), *Aristida* spp. and *Heteropogon contortus* (black speargrass). Occurs on rolling hills on igneous rocks. Not a Wetland. (BVG1M: 13b).

9.12.33b: Low woodland to woodland of *Acacia julifera* subsp. *Gilbertensis* (slender wattle) +/- *Eucalyptus microneura* (Georgetown box) +/- *Corymbia pocillum* +/- *Erythrophleum chlorostachys* (Cooktown ironwood) emergents. The sparse mid layer is shrubs of *Petalostigma banksii* (smooth-leaved quinine) and other mixed species. The sparse ground layer is grassy. Occurs on rocky outcrops within 9.12.33. Not a Wetland. (BVG1M: 24a).

9.12.33c: Open woodland of *Corymbia pocillum* +/- *Eucalyptus microneura* (Georgetown box) +/- *E. distans* +/- *E. chartaboma* (Queensland flaky-bark) +/- *Erythrophleum chlorostachys* (Cooktown ironwood). A very sparse shrub layer of *Petalostigma banksii* (smooth-leaved quinine) +/- *Acacia julifera* (catkin wattle) is present. The sparse ground layer is dominated by *Sarga plumosum* (plume sorghum) and *Schizachyrium fragile* (firegrass). Occurs on hilly terrain with shallow soil on granite and sandy outwash from granite or rhyolite hills. Not a Wetland. (BVG1M: 13b).

Short description: *Eucalyptus microneura* +/- *Corymbia pocillum* low open woodland on igneous rocks

Supplementary descriptions:

Subregions: 1, 2.9, (2.4), (2.5), (2.6)

Protected areas: Littleton NP, Littleton RR

Extent in reserves: High

Wetland: Not a Wetland

Special values:

Comments: 9.12.33: This regional ecosystem is distinguished from 9.12.6 by the structure and the subdominant species. Occurs extensively in the west of the bioregion.
9.12.33a: Occurs extensively near Croydon in the far west of the bioregion.
9.12.33b: Occurs north of Croydon in the far west of the bioregion.
9.12.33c: Occurs in the far west of the bioregion.

Estimated extent:¹ Pre-clearing 263000 ha; Remnant 2021 263000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.34

Description: Semi-evergreen vine thicket with *Araucaria cunninghamii* (hoop pine) emergents. Sparse vegetation growing in cracks in small areas of cliffs include *Rhodomyrtus trineura*, *Dubouzetia saxatilis* and *Polycarpaea spirostylis*. Occurs on south facing steep slopes of hills of granodiorite and rhyolite geology. Not a Wetland. (BVG1M: 7a).

Short description: Semi-evergreen vine thicket with *Araucaria cunninghamii* on steep hills on igneous rocks

Supplementary descriptions:

Subregions: 4, (11.1), (11.2)

Protected areas: Pinnacles NP, Paluma Range NP

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.12.34: Potential habitat for NCA listed species: *Bulbophyllum globuliforme*, *Dubouzetia saxatilis*, *Scleromitrium polycladum*.

Comments: 9.12.34: Occurs near the bioregional boundary in the south east of the bioregion.

Estimated extent:¹ Pre-clearing 10000 ha; Remnant 2021 10000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.12.35

Description: Open woodland of *Corymbia leichhardtii* (yellowjacket), *Araucaria cunninghamii* (Hoop pine), *C. lamprophylla*, *Pleiogynium timorense* (Burdekin plum), *Cochlospermum gillivraei* and *Lophostemon grandiflorus* (Northern swamp box). *A. cunninghamii* often occurs as an emergent. The mid layer varies from scattered individuals to a mid-dense shrub layer and can include *Acacia leptostachya* (slender wattle). The ground layer is usually dominated by *Triodia* spp. (*spinifex*). Occurs on steep granite or rhyolite hills. Not a Wetland. (BVG1M: 13a).

Short description: *Corymbia leichhardtii*, *C. lamprophylla*, *Pleiogynium timorense* +/- *Araucaria cunninghamii* open woodland on igneous hills

Supplementary descriptions:

Subregions: 4, (7.5)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.12.35: Potential habitat for NCA listed species: *Corchorus subargenteus*, *Marsdenia brevifolia*.

Comments: 9.12.35: Occurs south west of Hidden Valley in the south east of the bioregion.

Estimated extent:¹ Pre-clearing 29000 ha; Remnant 2021 29000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.36

Description: Deciduous low woodland to low open woodland of *Cochlospermum gregorii* (kapok) or *C. gillivraei* (kapok) +/- *Corymbia erythrophloia* (red bloodwood). The shrub layer is often sparse though a shrubland of *Acacia leptostachya* (slender wattle) or *Petalostigma banksii* (smooth-leaved quinine) can occur. The grass layer varies from sparse to mid-dense. Occurs on rocky outcrops and tops of hills with granitic or rhyolite boulders to the surface. Not a Wetland. (BVG1M: 27c).

Vegetation communities in this regional ecosystem include:

9.12.36a: Low open woodland to low woodland of *Cochlospermum gregorii* or *C. gillivraei* (kapok) +/- *Terminalia* spp. +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Corymbia erythrophloia* (red bloodwood) +/- *Brachychiton* spp. The subdominants can include vine thicket species such as *Ficus opposita* (sandpaper fig), *Drypetes deplanchei* (yellow tulipwood), *Sersalisia sericea* (wild prune, mongo) and *Homalium brachybotrys*. A sparse to open mixed shrub layer can include canopy species, *Persoonia falcata*, *Petalostigma banksii* (smooth-leaved quinine), *Grevillea mimosoides* and *Acacia* spp. The ground layer is often dominated by *Aristida* spp., *Schizachyrium* spp. and *Heteropogon contortus* (black speargrass). Occurs on rocky outcrops and tops of hills with granitic or rhyolite boulders to the surface. Not a Wetland. (BVG1M: 27c).

9.12.36b: Low open woodland to low woodland of *Acacia leptostachya* (slender wattle) +/- *Eucalyptus microneura* (Georgetown box) +/- *Cochlospermum gregorii* or *C. gillivraei* (kapok) +/- *Corymbia erythrophloia* (red bloodwood) or *C. pocillum* +/- *Erythrophleum chlorostachys* (Cooktown ironwood). *Eucalyptus microneura* often occurs as an emergent. The shrub layer is of scattered plants and can include *Grevillea* spp., *Acacia* spp. and *Petalostigma banksii* (smooth-leaved quinine). The sparse to dense grassy ground layer is dominated by *Aristida* spp. and *Schizachyrium fragile* (firegrass). Occurs on steep rocky granitic or rhyolite hills. Not a Wetland. (BVG1M: 24a).

9.12.36c: Low open woodland to shrubland of *Acacia leptostachya* (slender wattle) and/or *Petalostigma banksii* (smooth-leaved quinine) +/- *Corymbia erythrophloia* (red bloodwood). *Erythrophleum chlorostachys* (Cooktown ironwood) and/or *Corymbia erythrophloia* may occur as emergents. Scattered *P. banksii* can occur in the shrub layer. The sparse ground layer is grassy and dominated by *Aristida* spp. and *Heteropogon contortus* (black speargrass). Occurs on granitic or rhyolite hills. Not a Wetland. (BVG1M: 24a).

Short description:	<i>Cochlospermum gregorii</i> or <i>C. gillivraei</i> deciduous low woodland on rocky outcrops
Supplementary descriptions:	Perry et al. (1964): Leichhardt Unit 1; Perry et al. (1964): Georgetown Unit 1; Perry et al. (1964): Belmore Unit 1 and Unit 2
Subregions:	2, 5, (1), (3), (2.6), (6), (4)
Protected areas:	Canyon RR, Undara Volcanic NP, Bulleringa NP, Forty Mile Scrub NP
Extent in reserves:	Medium
Wetland:	Not a Wetland
Special values:	9.12.36: Potential habitat for NCA listed species: <i>Acacia guymeri</i> , <i>Cycas cairnsiana</i> , <i>Euphorbia carissoides</i> , <i>Macropteranthes montana</i> . 9.12.36a: Habitat for the vulnerable plant species <i>Cycas cairnsiana</i> .
Comments:	9.12.36: This regional ecosystem occurs within RE 9.12.1, RE 9.12.6 and RE 9.12.15. Occurs throughout the central west and northern bioregion. 9.12.36a: Occurs extensively from Lyndhurst to Kondaparinga in the central and northern bioregion. 9.12.36b: In the northern part of the Newcastle Range, this community can occur as a woodland of the subdominants with <i>Acacia leptostachya</i> as a mid layer. Occurs mainly on and around the northern Newcastle Range in the west of the bioregion. 9.12.36c: Occurs mainly east of Einasleigh in the central bioregion.
Estimated extent:¹	Pre-clearing 186000 ha; Remnant 2021 185000 ha
VM class:	Least concern
Biodiversity status:	No concern at present
Biodiversity status notes:	

Regional ecosystem 9.12.37

Description: Woodland to low woodland of *Acacia shirleyi* (lancewood) +/- *Corymbia pocillum* +/- *Eucalyptus microneura* (Georgetown box). Isolated emergents of *A. shirleyi* can also occur. The shrub layer ranges from absent to open and can include *A. shirleyi*, *Petalostigma banksii* (smooth-leaved quinine), *Gardenia vilhelmii* (breadfruit) and *Melaleuca* spp. The sparse grassy ground layer is and dominated by *Schizachyrium* spp. (firegrass) The subdominants species occur only occasionally. Occurs on shallow soils on rocky outcrops of igneous hills. Not a Wetland. (BVG1M: 24a).

Short description: *Acacia shirleyi* +/- *Corymbia pocillum* +/- *Eucalyptus microneura* woodland on igneous rocks

Supplementary descriptions: Perry et al. (1964): Belmore Unit 1

Subregions: 1, 2, 2.6, 2.9, (2.4), (2.5)

Protected areas: Canyon RR, Bulleringa NP, Littleton NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.12.37: Occur close to the Gulf Plains boundary from Croydon to Bolwarra in the north west of the bioregion.

Estimated extent:¹ Pre-clearing 25000 ha; Remnant 2021 25000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.38

Description: Woodland to low woodland of *Acacia shirleyi* (lancewood) +/- *Eucalyptus shirleyi* (silver-leaved ironbark) with a usually absent shrub layer and sparse ground layer. Occurs on tops of rugged igneous hills. Not a Wetland. (BVG1M: 24a).

Vegetation communities in this regional ecosystem include:

9.12.38a: Woodland to low open woodland of *Acacia shirleyi* (lancewood) +/- *Eucalyptus shirleyi* (silver-leaved ironbark) +/- *Erythrophleum chlorostachys* (Cooktown ironwood) +/- *Corymbia pocillum* +/- *Eucalyptus microneura* (Georgetown box). The shrub layer varies from absent to scattered juveniles of the canopy species, *Alphitonia pomaderroides* (soapbush), *Petalostigma banksii* (smooth-leaved quinine) and *Gardenia vilhelmii* (breadfruit). The sparse to dense grassy ground layer is dominated by *Aristida* spp. and *Schizachyrium* spp., while sometimes including *Triodia* spp. (spinifex). Occurs on rugged rhyolite or granitic hills and outcrops. Not a Wetland. (BVG1M: 24a).

9.12.38b: Woodland to open forest of *Acacia shirleyi* (lancewood) +/- *Corymbia peltata* (rustyjacket) +/- *E. shirleyi* (silver-leaved ironbark). A sub-canopy and/or shrub layer can contain *A. shirleyi*, *Petalostigma banksii* (smooth-leaved quinine) and *Alphitonia excelsa*. The sparse to mid-dense grassy ground layer is dominated by *Aristida* spp. Occurs on low rhyolite or granitic hills. Not a Wetland. (BVG1M: 24a).

Short description: *Acacia shirleyi* +/- *Eucalyptus shirleyi* woodland on igneous rocks

Supplementary descriptions:

Subregions: 2, (4), (2.6), (1), (6)

Protected areas: Bulleringa NP, Canyon RR

Extent in reserves: High

Wetland: Not a Wetland

Special values: 9.12.38: Some vegetation communities within this regional ecosystem contain near threatened and threatened species and have old growth values.

Comments: 9.12.38: Occurs in two distinct communities in the north-west and the south-east of the bioregion.
9.12.38a: Occurs from Newcastle Range to Bulleringa NP. in the central west and north of the bioregion.

9.12.38b: Occurs south east of Greenvale in the south central bioregion.

Estimated extent:¹ Pre-clearing 97000 ha; Remnant 2021 97000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.39

Description: Low open woodland to low woodland of *Melaleuca viridiflora* (broad-leaved paperbark) +/- *Eucalyptus tereticornis* (bluegum) +/- *E. granitica* (granite ironbark) +/- *Corymbia intermedia* (pink bloodwood) +/- *E. exserta* (Queensland peppermint). Emergents of *E. tereticornis* and various *Corymbia* spp. often occur. The shrub layer is often absent though scattered *M. viridiflora* can occur. The ground layer is grassy and usually dominated by *Themeda triandra* (kangaroo grass), *Heteropogon triticeus* (giant speargrass) and *H. contortus* (black speargrass). Occurs on undulating low hills on uplands of igneous ranges. Not a Wetland. (BVG1M: 21a).

Short description: *Melaleuca viridiflora* +/- *Eucalyptus tereticornis* +/- *E. granitica* +/- *Corymbia intermedia* low open woodland on igneous uplands

Supplementary descriptions:

Subregions: 4

Protected areas: Pinnacles NP, Paluma Range NP

Extent in reserves: Medium

Wetland: Not a Wetland

Special values: 9.12.39: Some vegetation communities within this regional ecosystem contain near threatened and threatened species and have old growth values.

Comments: 9.12.39: Occurs close to the boundary of the Brigalow Belt west of Townsville.

Estimated extent:¹ Pre-clearing 4000 ha; Remnant 2021 4000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.12.40

Description: Low open woodland to low woodland of *Melaleuca citrolens* (scrub teatree) +/- *Terminalia platyptera* (yellow-wood) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *Erythrophleum chlorostachys* (Cooktown ironwood). The sparse shrub layer consists of *Petalostigma banksii* (smooth-leaved quinine), *M. citrolens* and *Gardenia vilhelmii* (breadfruit). The ground layer is frequently bare, with patches of short grasses including *Eriachne* spp., *Aristida* spp. and *Schizachyrium* spp. (firegrass). This community also occurs as short open tussock grassland wooded with low trees and shrubs of *Melaleuca citrolens* +/- *Terminalia* spp. Occurs on gentle slopes, footslopes, rolling hills and colluvial low slopes. Not a Wetland. (BVG1M: 21b).

Short description: *Melaleuca citrolens* +/- *Terminalia platyptera* +/- *Corymbia dallachiana* low open woodland on rolling igneous hills

Supplementary descriptions: Godwin and Jago (1998): Cc1, Dc2

Subregions: 2, 2.9, 3, (2.5), (2.6), (7.4)

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values:

Comments: 9.12.40: Occurs north of Chillagoe in the central north of the bioregion.

Estimated extent:¹ Pre-clearing 12000 ha; Remnant 2021 12000 ha

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

Regional ecosystem 9.12.42

Description: Mixed tussock grassland dominated by *Schizachyrium fragile* (firegrass) and *Dichanthium sericeum* +/- *Sarga* sp. +/- *Heteropogon contortus* (black speargrass). Very sparsely wooded with low trees and shrubs including *Corymbia* spp., *Cochlospermum* spp. and *Terminalia aridicola* (arid peach). Occurs on undulating hills on pre-Cainozoic mafic igneous rocks. Not a Wetland. (BVG1M: 30b).

Short description: *Schizachyrium fragile* and *Dichanthium sericeum* grassland on undulating hills on pre-Cainozoic mafic igneous rocks

Supplementary descriptions:

Subregions: 3

Protected areas:

Extent in reserves: No representation

Wetland: Not a Wetland

Special values: 9.12.42: A naturally restricted regional ecosystem.

Comments: 9.12.42: Small outcrops are dominated by *Schizachyrium fragile* and lower areas are dominated by *Dichanthium sericeum*. Occurs in a restricted range north of Chillagoe in the north of the bioregion. The naturalised species *Mitracarpus hirtus** occurs in this community. Prone to invasion by the weed *Themeda quadrivalvis* (grader grass).

Estimated extent:¹ Pre-clearing 500 ha; Remnant 2021 500 ha

VM class: Of concern

Biodiversity status: Endangered

Biodiversity status notes: Rare ecosystem < 1000ha pre-clearing extent and prone to invasion by the weed *Themeda quadrivalvis* (grader grass) and *Mitracarpus hirtus*.

Regional ecosystem 9.12.43

Description: Granite and rhyolite boulders and pavements with scattered Poaceae or low open forest of *Callitris intratropica* (cypress pine) +/- vine thicket species. Occurs on granite and rhyolite boulder fields on steep side slopes and rocky hills. Not a Wetland. (BVG1M: 29b).

Vegetation communities in this regional ecosystem include:

9.12.43a: Scattered clumped grasses which can include *Schizachyrium fragile* (firegrass), *Themeda triandra* (kangaroo grass), *Heteropogon contortus* (black speargrass) *Cymbopogon bombycinus* (lemon-scented grass) +/- *Cyperus* spp., *Drynaria* spp., *Plectranthus* spp. and *Isotoma* spp. Occurs in cracks and shallow hollows on bare rock. Not a Wetland. (BVG1M: 29b).

9.12.43b: Low open forest to low woodland of *Callitris intratropica* (cypress pine) +/- *Cochlospermum gillivraei* (kapok) +/- *Terminalia* spp. Commonly includes vine-thicket species *Homalium brachybotrys*, *Erythrina vespertilio* (batswing coral tree), *Ficus* spp., *Sersalisia sericea*, *Strychnos lucida* (strychnine bush) and *Drynaria* spp. Vines present may include *Smilax australis*. The sparse to mid-dense grassy ground cover can include *Aristida* spp., *Heteropogon* spp. *Themeda triandra* (kangaroo grass) and *Cymbopogon* spp. Occurs on edges of, and in patches across, boulder fields and pavements. Not a Wetland. (BVG1M: 29b).

Short description: Granite and rhyolite boulders and pavements edged with patches of *Callitris intratropica* +/- vine thicket species

Supplementary descriptions:

Subregions: 3, 2, (7.9)

Protected areas: Mount Lewis NP

Extent in reserves: Low

Wetland: Not a Wetland

Special values:

Comments: 9.12.43: Occurs mainly north-west of Mt. Carbine in the north of the bioregion.

9.12.43a: On rock margins of the Featherbed Volcanics patches of *Triodia microstachya* and *Acacia chisholmii* may be present. Occurs mainly north-west of Mt. Carbine in the north of the bioregion.

9.12.43b: Occurs from Kondaparinga to Maitland Downs in the north of the bioregion.

Estimated extent:¹ Pre-clearing 7000 ha; Remnant 2021 7000 ha

VM class: Of concern

Biodiversity status: Of concern

Biodiversity status notes:

Regional ecosystem 9.12.44

Description: Low woodland to low open woodland of *Eucalyptus tardecidens* (box) or *E. chlorophylla* +/- *Corymbia* spp. +/- *E. cullenii* (Cullen's ironbark) +/- *Melaleuca* spp. A sparse sub-canopy can include canopy species, *Melaleuca* spp. or *Terminalia* spp. The shrub layer is sparse to open and can include *Petalostigma* spp., *Melaleuca stenostachya* (teatree), *Denhamia cunninghamii* (yellowberry bush), *Acacia* spp. and *Santalum lanceolatum* (sandalwood). The ground layer can vary from mainly bare soil and rock to a dense cover of grasses including *Heteropogon contortus* (black speargrass), *Aristida* spp. and *Themeda triandra* (kangaroo grass). Occurs on rolling low hills to steep hills. Not a Wetland. (BVG1M: 19d).

Short description: *Eucalyptus tardecidens* or *E. chlorophylla* +/- *Corymbia* spp. +/- *E. cullenii* low woodland on steep to rolling igneous hills and rises

Supplementary descriptions:

Subregions:

Protected areas:

Extent in reserves:

Wetland: Not a Wetland

Special values: 9.12.44: Potential habitat for NCA listed species: *Acacia guymeri*, *Acacia purpureopetala*, *Cucumis costatus*.

Comments: 9.12.44: Occurs extensively from Chillagoe to Lakeland Downs in the north of the bioregion. Subject to degradation from high total grazing pressure.

Estimated extent:¹

VM class: Least concern

Biodiversity status: No concern at present

Biodiversity status notes:

¹ Estimated extent is from the current released version of the pre-clearing and remnant regional ecosystem mapping. Figures are rounded for simplicity. For more precise estimates, including breakdowns by tenure and other themes see remnant vegetation in Queensland (<https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/remnant-vegetation/>)

² Superseded: Revision of the regional ecosystem classification removed this regional ecosystem code from use. It is included in the regional ecosystem description database because the RE code may appear in older versions of RE mapping and the Vegetation Management regulation.