Forest Types of southern inland and southeast Queensland

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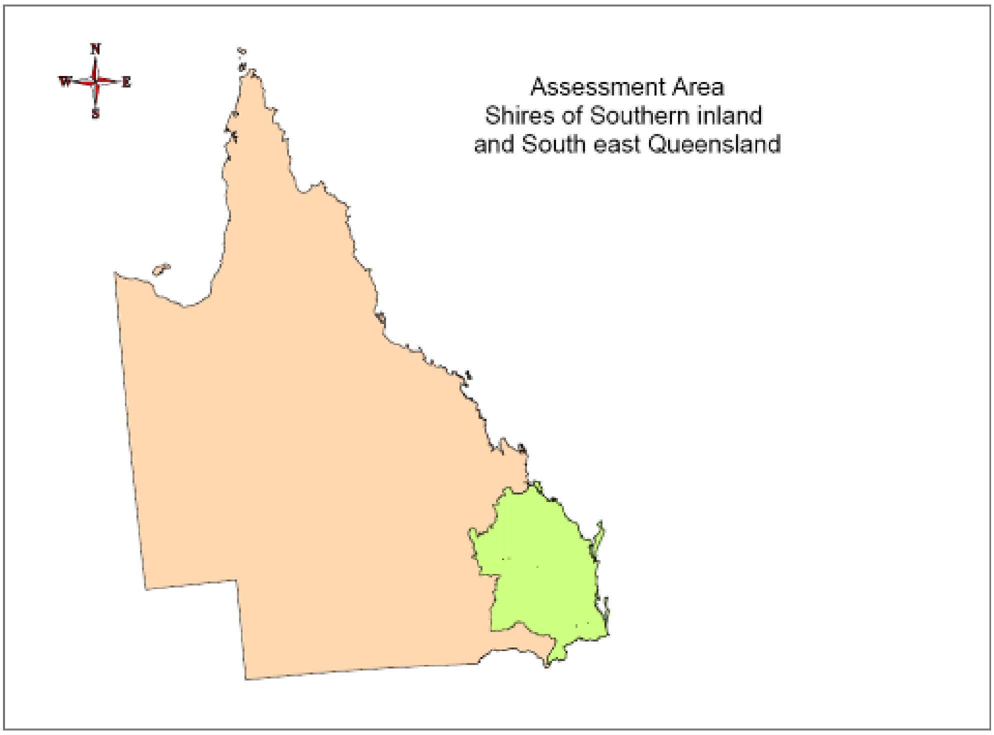
Native forestry is an important industry in southern and southeast Queensland. There is a significant resource on freehold land. For the most part, it is an industry that combines with extensive grazing.

This booklet lists and describes some 19 forest types.

The resource

An assessment of Regional Ecosystems was conducted in the shires of southern inland and southeast Queensland. RE describing a given forest type were combined and a relative assessment of the pre-clear estimates and the current remnant vegetation was made. These were further reduced to show the extent of these forest types in the region on freehold titles of greater than 20 hectares.

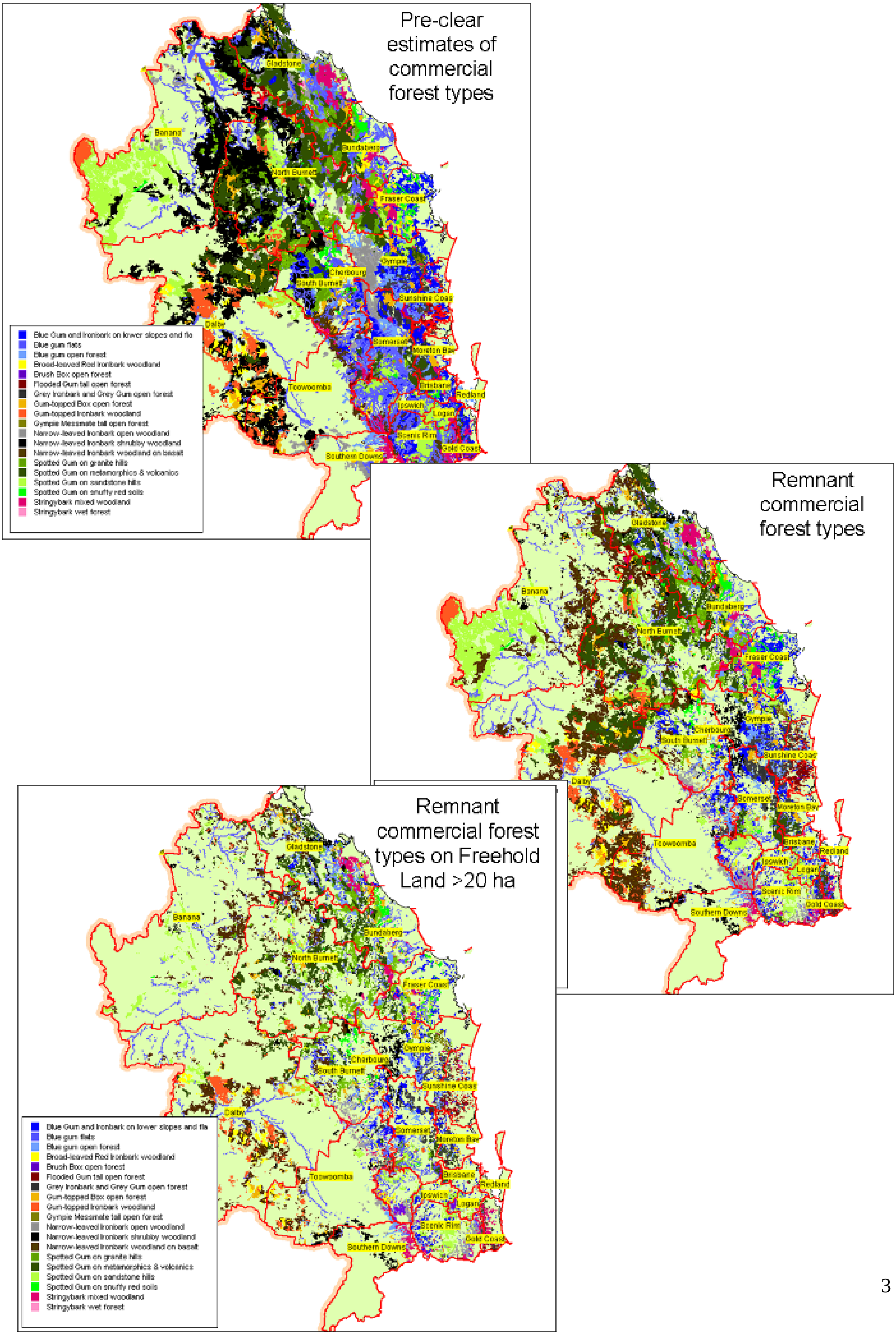


Pre-clear estimates of commercial forest types

The pre-clear estimates of commercial forest types show that combined, they total about 8.4 million ha or about 50% of the 16.78 million ha of the region. This compares with about 4.12 million ha as currently mapped as remnant vegetation, roughly half of the preclear estimate. Commercial forest types, as mapped as remnant vegetation cover approximately 24.5% of the region.

There is about 1.77 million ha of commercial, remnant forest existing on freehold land greater that 20 ha. This is about: -

- 43% of the total remnant area of commercial forest types,
- 21% of the total pre-clear estimate of commercial forest types and
- 10.5% of the region


Pre-clear estimates of commercial forest types
Gladstone
Banana
Bundaberg
North Burnett
Fraser Coast
Gympie
Cherbourg
South Burnett
Sunshine Coast
Dalby
Somerset
Moreton Bay
Toowoomba
Brisbane
Redland
Ipswich
Logan
Scenic Rim
Gold Coast
Southern Downs
Blue Gum and Ironbark on lower slopes and fla
Blue gum flats
Blue gum open forest
Broad-leaved Red Ironbark woodland
Brush Box open forest
Flooded Gum tall open forest
Grey Ironbark and Grey Gum open forest
Gum-topped Box open forest
Gum-topped Ironbark woodland
Gympie Messmate tall open forest
Narrow-leaved Ironbark open woodland
Narrow-leaved Ironbark shrubby woodland
Narrow-leaved Ironbark woodland on basalt
Spotted Gum on granite hills
Spotted Gum on metamorphics & volcanics
Spotted Gum on sandstone hills
Spotted Gum on snuffy red soils
Stringybark mixed woodland
Stringybark wet forest
Remnant commercial forest types
Gladstone
Banana
Bundaberg
North Burnett
Fraser Coast
Gympie
Cherbourg
South Burnett
Sunshine Coast
Dalby
Somerset
Moreton Bay
Toowoomba
Brisbane
Redland
Ipswich
Logan
Scenic Rim
Gold Coast
Southern Downs
Remnant commercial forest types on Freehold Land >20 ha
Gladstone
Banana
Bundaberg
North Burnett
Fraser Coast
Gympie
Cherbourg
South Burnett
Sunshine Coast
Dalby
Somerset
Moreton Bay
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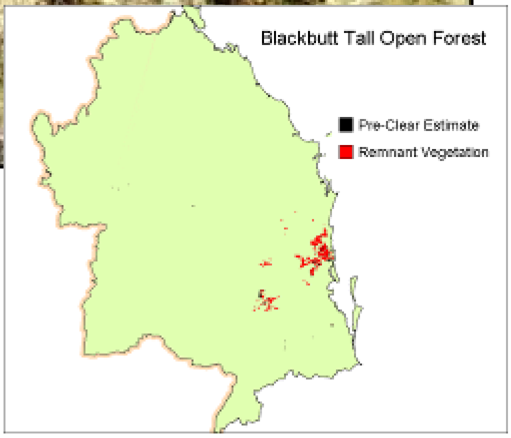
Spotted Gum on granite hills
Spotted Gum on metamorphics & volcanics
Spotted Gum on sandstone hills
Spotted Gum on snuffy red soils
Stringybark mixed woodland
Stringybark wet forest

1. Blackbutt tall open forest



Forest Structure	Tall open forest
Landform	Coastal foothills to mountain ranges
Geology	Sandstone and granites.
Dominant commercial Species	Blackbutt
Associated commercial species	Turpentine, tallowwood, red mahogany, grey gum,
Associated non-commercial species	Smudgee.
Shrub layer	Black wattle, red ash, cheese tree, ash quandong.
Ground layer	kangaroo grass, blady grass, barbed-wire grass, bracken fern.
Regional Ecosystems	12.9-10.14, 12.12.2, (major)
Forest Products	Sawlog, girders, poles, fencing products.

Soil	Sandy to loamy texture contrast soils (soloths,solodics & podzolics).
Water availability	Low
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Saline and sodic sub-soils can develop on sandstones.
Erosion potential	Hillslope : moderate, Gully: high, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 300 - 400 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form to 200 stems / ha	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. salvage sawlog, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Hot fire (20 – 40 year interval) may be required for regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees. Hot fire may be required to stimulate germination.	Strategic use of fire to reduce fuel loads. Fire frequency changes according to desired outcome (3 to 5 year interval maintains grassy understory; 5 to 20 year interval allows shrubby understory to develop.

Relative forest productivity	This is a relatively minor forest type in terms of area but a highly productive forest type capable of producing 5 to 6 m^3 / ha / yr.
Enterprise mixes	Extensive development for horticulture and pine plantation. Some development for grazing. Urban development locally significant. Large areas of remnant forest.
Land use and management recommendations	Sown pasture development suitable on lower slopes and hollows. Plantation development limited to more fertile soils in higher rainfall areas.
Land use limitations	Topography can limit development potential on upper slopes and ridges.
Regeneration Potential	Blackbutt commonly regenerates from seedling recruitment but coppice and lignotuberous regeneration can be locally important. Careful grazing and fire management (eg. exclusion at key periods) will enhance regeneration.
Conservation features and related management	Lantana will readily invade remnant, regrowth and plantation blackbutt forests. This forest type may contain a high number of rare and threatened plant species which require appropriate fire management. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn. Needs disturbance to maintain RE structure (eucalypt overstorey with open understorey of predominantly non-rainforest species). Any moist sclerophyll that is relatively open with a mixture of grasses and shrubs should be a priority for fire management to retain RE structure.

2. Blue Gum flats

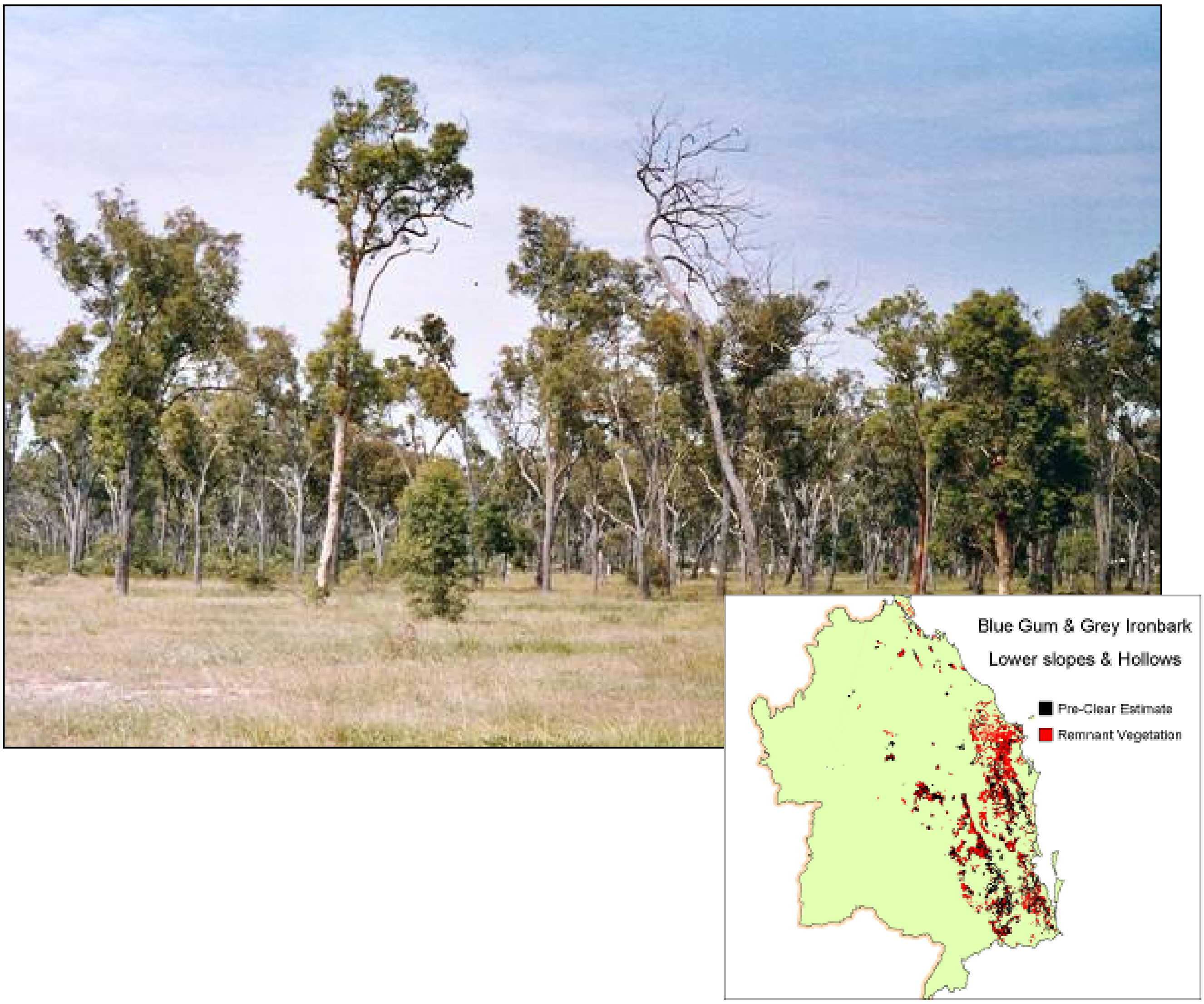
Forest Structure	Tall open forest (higher rainfall) to open woodland (lower rainfall)
Landform	Level alluvial plains (moderately extensive).
Geology	Alluvium. Cainozoic alluvial plains and piedmont fans.
Dominant commercial Species	Blue gum
Associated commercial species	Moreton bay ash, gum-topped box
Associated non-commercial species	Rough-barked apple, broadleaf apple, swamp mahogany, pink bloodwood, weeping bottle brush, river oak.
Shrub layer	Usually absent but can include Qld ebony, current bush, yellow wood, quinine.
Ground layer	Blue grasses, speargrass, kangaroo grass, wiregrasses, blady grass, swamp foxtail, paspalum and sown pastures.
Regional Ecosystems	12.3.3, 11.3.4, (major) 12.3.7, 11.3.23, 11.3.25 (minor).
Forest Products	Sawlog, salvage timber, girders (only on productive sites). Some fencing products from durability class 1 associated species.

Soil	Uniform and gradational; clays, alluvial loams and alluvial black earths.
Water availability	High to medium (depending on soil depth).
Drainage	Poor internal and external drainage (can become waterlogged).
Salinity/Sodicity	Can contain saline and sodic sub-soils (depending on parent material).
Erosion potential	Hillslope : low, Gully: low, Stream bank: moderate to high on incised streams

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Generally not applicable given species mix. Limited to small saw log, salvage log, some fencing.	Salvage harvest to remove defective trees. Some opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Predominantly sawlog and salvage. Girders possible on productive sites and longer harvest interval.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a relatively minor forest type in terms of remnant area, but has significant regeneration potential. Productivity is significantly impacted by forest condition and rainfall. Tree form can be a particular problem in regrowth and overharvested forests.
Enterprise mixes	Beef cattle, cropping, horticulture.
Land use and management recommendations	Extensively cleared for grazing and cropping. Suitable for timber plantation. Economics of competing land use can outweigh native forest returns especially in a regrowth scenario.
Land use limitations	Flats become waterlogged during prolonged wet weather.
Regeneration Potential	Regeneration from lignotubers difficult in areas that have been cleared for a long time. Seedling recruitment is episodic being associated with abnormally wet years and restricted by availability of seed trees. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	While blue gum is common, few extensive, intact remnants remain. Tree hollows often found in large, old blue gums are important nesting sites and provide habitat for birds and marsupials. Many of the freshwater wetlands in the coastal Burnett are associated with this land type. Blue gum regenerates readily in the absence of grazing and regular fire. Regrowth can be encouraged to allow remnants to expand and establish connection with other areas of remnant vegetation. Burning should aim to produce fine scale mosaics of unburnt areas.

3. Blue Gum and grey ironbark Lower Slopes and Hollows



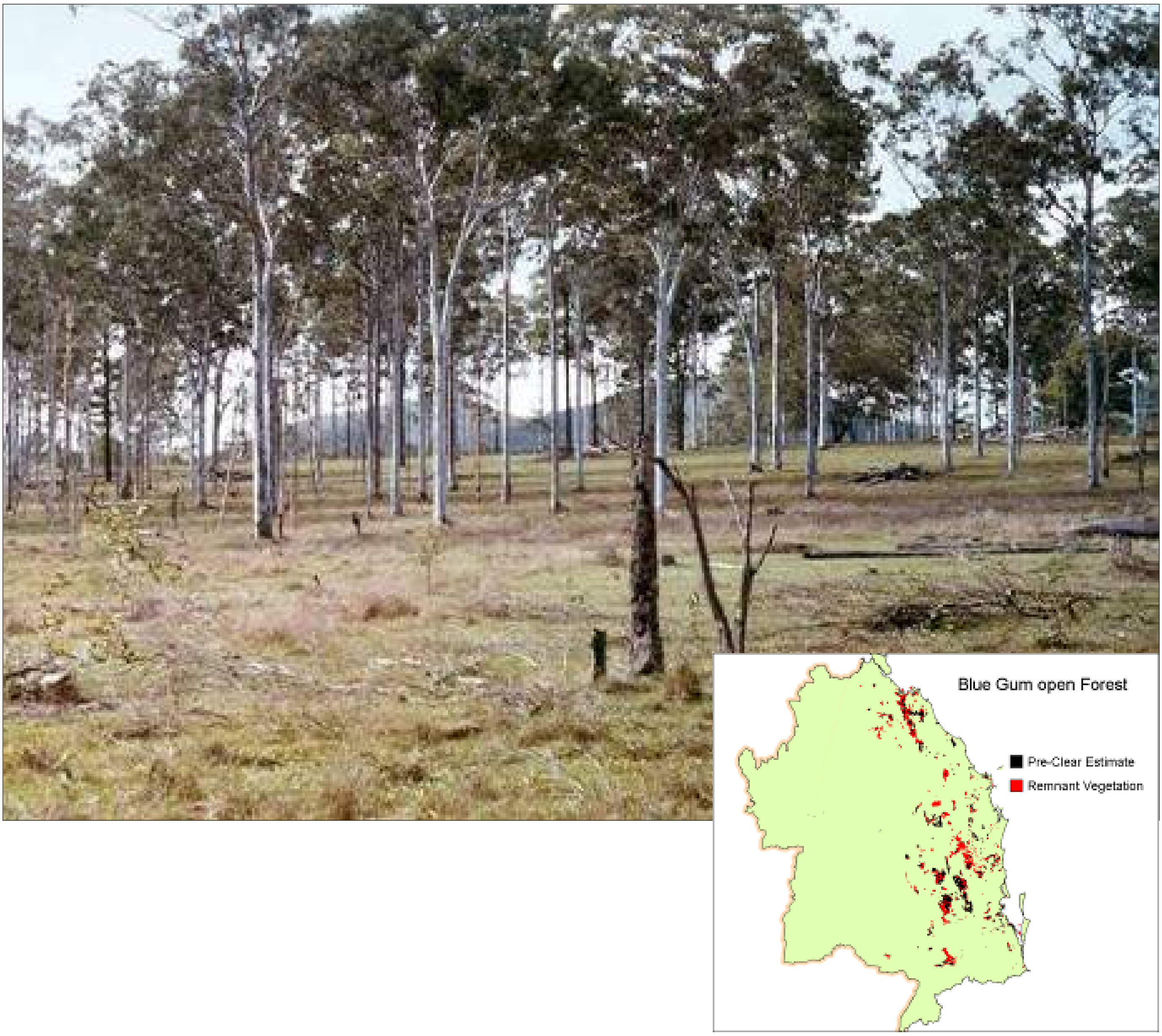
Forest Structure	Tall woodland to tall open forest
Landform	Level alluvial plains, shallow drainage depressions and lower slopes.
Geology	Cainozoic alluvial plains and drainage lines along coastal plains south of Bundaberg.
Dominant commercial Species	Blue gum, grey ironbark
Associated commercial species	Moreton bay ash, flooded gum, broad-leaved white mahogany, Queensland peppermint.
Associated non-commercial species	Smooth-barked apple, swamp mahogany, pink bloodwood, brown bloodwood, swamp paper-bark, broad-leaved paper-bark.
Shrub layer	Black wattle, hickory wattle, forest she-oak, black she-oak, red ash, cheese tree.
Ground layer	Kangaroo grass, blady grass, , reed grass, poverty grass, golden beard grass, lespedeza.
Regional Ecosystems	12.3.11, 12.9-10.7, 12.11.14, 12.12.3 (major)
Forest Products	Sawlog, girders, poles, piles, fencing products.

Soil	Gradational and texture contrast alluvial sandy loams, loams and clay loams.
Water availability	High to medium (depending on soil depth).
Drainage	Poor internal and external drainage on clay soils.
Salinity/Sodicity	Can contain saline and sodic sub-soils (depending on parent material).
Erosion potential	Hillslope : low, Gully: moderate, Stream bank: moderate to high on incised streams

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Generally not applicable given species mix. Limited to small saw log, salvage log, some fencing.	Salvage harvest to remove defective trees. Some opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Predominantly sawlog and salvage. Girders possible on productive sites and longer harvest interval.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a relatively minor forest type in terms of remnant area, but has significant regeneration potential. Productivity is significantly impacted by forest condition and rainfall. Tree form can be a particular problem in regrowth and overharvested forests.
Enterprise mixes	Beef cattle, cropping, horticulture.
Land use and management recommendations	Extensively cleared for grazing, cropping, horticulture and urban development. Suitable for timber plantation. Economics of competing land use can outweigh native forest returns especially in a regrowth scenario.
Land use limitations	Flats become waterlogged during prolonged wet weather.
Regeneration Potential	Regeneration from lignotubers difficult in areas that have been cleared for a long time. Seedling recruitment is episodic being associated with abnormally wet years and restricted by availability of seed trees. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	While blue gum is common, few extensive, intact remnants remain. Tree hollows often found in large, old blue gums are important nesting sites and provide habitat for birds and marsupials. Blue gum and grey ironbark regenerate readily in the absence of grazing and regular fire. Regrowth can be encouraged to allow remnants to expand and establish connection with other areas of remnant vegetation. Regrowth has commercial timber potential. Burning should aim to produce fine scale mosaics of unburnt areas.

4. Blue Gum open forest



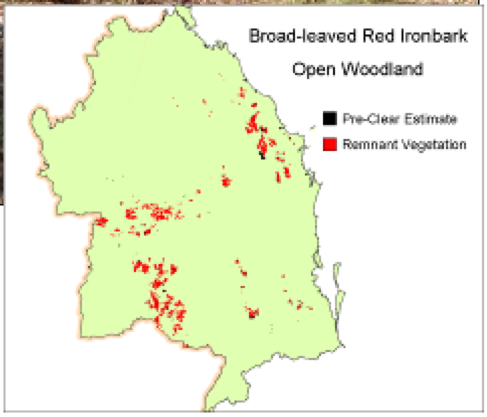
Forest Structure	Open forest (higher rainfall) to woodland (lower rainfall)
Landform	Generally lower slopes and ridges, some at high altitude, some on plateaux.
Geology	Majority on granites, some on laterized basalt and metamorhics.
Dominant commercial Species	Blue gum
Associated commercial species	Moreton bay ash, yellow stringybark, narrow-leaved ironbark, red bloodwood
Associated non-commercial species	Rough-barked apple, broadleaf apple, pink bloodwood, black wattle, mountain oak.
Shrub layer	Usually absent but can include grasstree, dogwood, leptospernum.
Ground layer	Speargrass, kangaroo grass, cane grass, wiregrasses, blady grass.
Regional Ecosystems	12.12.12, 12.12.23, 12.5.2, 11.8.2a (major) 12.11.9, 12.11.15, 11.11.4a (minor.
Forest Products	Sawlog, salvage timber, girders (only on productive sites). Fencing products from durability class 1 associated species.

Soil	Generally duplex soils (Yellow podzolics and soloths); kraznozems associated with 12.5.2.
Water availability	Medium
Drainage	Slowly permeable, subsoil can impede drainage
Salinity/Sodicity	Non-sodic and non-saline
Erosion potential	Hillslope : moderate, Gully: moderate, Stream bank: low (not associated with creeks and rivers)

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Generally not applicable given species mix. Limited to small saw log, salvage log, some fencing.	Salvage harvest to remove defective trees. Some opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Predominantly sawlog and salvage. Girders possible on productive sites and longer harvest interval.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a moderately important forest type in terms of area. A well managed forest will produce a range of products in a 15 to 25 year cycle.
Enterprise mixes	Beef cattle (generally breeding and growing).
Land use and management recommendations	Extensive grazing. An important land type for native forest production. Sown pasture development suitable on lower slopes and hollows. Plantation development limited to more fertile soils in higher rainfall areas.
Land use limitations	Significant eucalypt and wattle regrowth following disturbance. Moderate to high erosion risk during pasture establishment or following prolonged heavy grazing. Blue couch dominates in heavily grazed areas.
Regeneration Potential	Regeneration commonly from lignotubers. Seedling recruitment is episodic, being associated with abnormally wet years and restricted by availability of seed trees. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	Extensively cleared for native pasture in some areas; relatively intact in others. These land types are generally grassy woodlands that provide habitat for larger marsupials. Hollow bearing habitat trees are important nesting sites for birds and arboreal mammals. Landscape health can be enhanced through appropriate fire regimes, silviculture and grazing management that allows regrowth to develop into effective wildlife corridors.

5. Broad-leaved Red Ironbark woodland



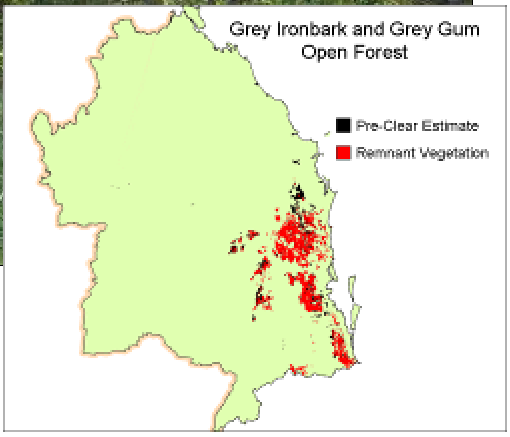
Forest Structure	Tall woodland to open forest
Landform	Crests and upper slopes of gravelly ridges
Geology	Predominantly on sedimentary and metamorhic rocks, some on granite.
Dominant commercial Species	Broad-leaved red ironbark
Associated commercial species	Stringybark, spotted gum, narrow-leaved ironbark, red bloodwood, gum-topped box
Associated non-commercial species	Smooth-barked apple, brown bloodwood
Shrub layer	Supple jack, black wattle, flatstem wattle.
Ground layer	Kangaroo grass, reed grass, poverty grass, wiry panic, grasstree.
Regional Ecosystems	12.9-10.19, 11.7.7 (major) 12.11.19 , 12.12.25, 12.7.1 (minor)
Forest Products	Sawlog, girders, poles, fencing products.

Soil	Gravely texture contrast soils (duplexes).
Water availability	Low
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Saline and sodic sub-soils can develop on sandstones.
Erosion potential	Hillslope : moderate, Gully: high, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a relatively minor forest type in terms of area and productivity. A well managed forest in higher rainfall areas will achieve adequate growth rates. Productivity drops off significantly with a reduction in forest condition.
Enterprise mixes	Some development for grazing. Large areas of remnant forest.
Land use and management recommendations	This forest type has a moderate to high erosion risk so snig and access tracks, log dumps and firebreaks need to be carefully sited and constructed and regularly maintained.
Land use limitations	Not suitable for development for grazing or agriculture due to topography and soil fertility restraints.
Regeneration Potential	Regeneration commonly from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	This forest type has not been extensively developed for grazing or cropping and contains many intact remnants. These remnants provide valuable corridors through the landscape for transitional and migratory birds and mammals. They support sugar gliders, arboreal marsupials, smaller macropods, hollow breeding birds, birds of prey and micro-bats. Retention of ground litter provides important habitat for ground dwelling reptiles. The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn.

6. Grey Ironbark and Grey Gum open forest



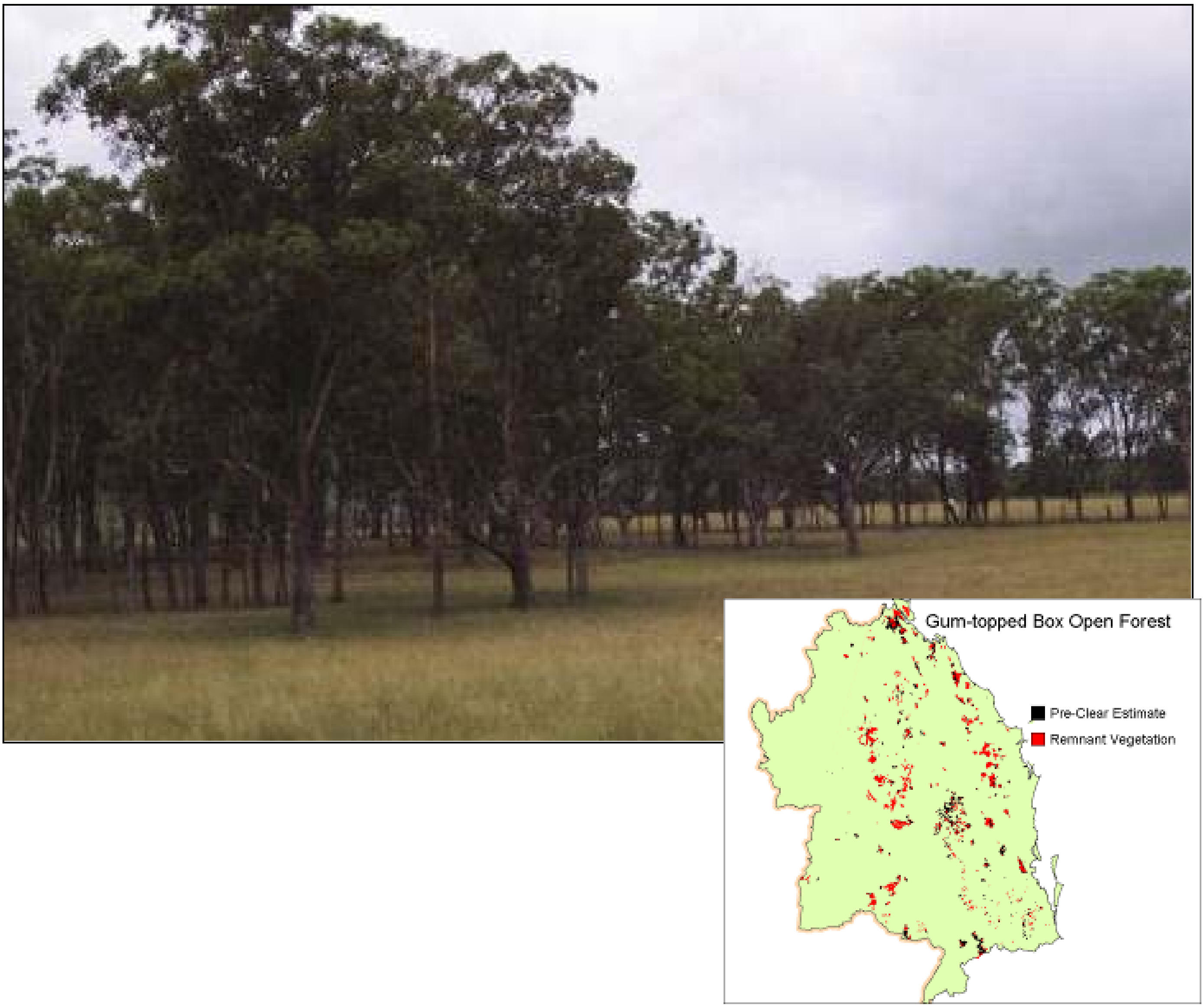
Forest Structure	Tall open forest
Landform	Hills and ranges
Geology	Predominantly on sedimentary and metamorhic rocks; some on granite; minor occurrence on laterite.
Dominant commercial Species	Grey ironbark, grey gum
Associated commercial species	Stringybark, tallowwood, pink bloodwood, brush box
Associated non-commercial species	Mountain oak, black sheoak.
Shrub layer	Hickory wattle, black wattle, red ash. Hoop pine understory can develop in the absence of fire.
Ground layer	kangaroo grass, blady grass, lomandra, swordsedges.
Regional Ecosystems	12.9-10.17, 12.11.3, 12.12.15, 12.5.6, 12.9-10.17d (major) 12.11.3a, 12.12.15b (minor)
Forest Products	Sawlog, girders, poles, fencing products.

Soil	Loamy texture contrast soils (duplexes).
Water availability	Medium to low (depending on soil depth).
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Saline and sodic sub-soils can develop on sandstones.
Erosion potential	Hillslope : moderate, Gully: high, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a moderately important forest type in terms of area and productivity.
Enterprise mixes	Some development for grazing, horticulture, sugarcane. Large areas of remnant forest.
Land use and management recommendations	Sown pasture development suitable on lower slopes and hollows. Plantation development limited to more fertile soils in higher rainfall areas.
Land use limitations	Topography limits development potential.
Regeneration Potential	Regeneration commonly from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	Remnants subject to weed invasion by lantana. Hoop pine scrub understory will develop in the absence of fire. This forest type may contain a high number of rare and threatened plant species which require appropriate fire management. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn. The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture.

7. Gum-topped Box open forest



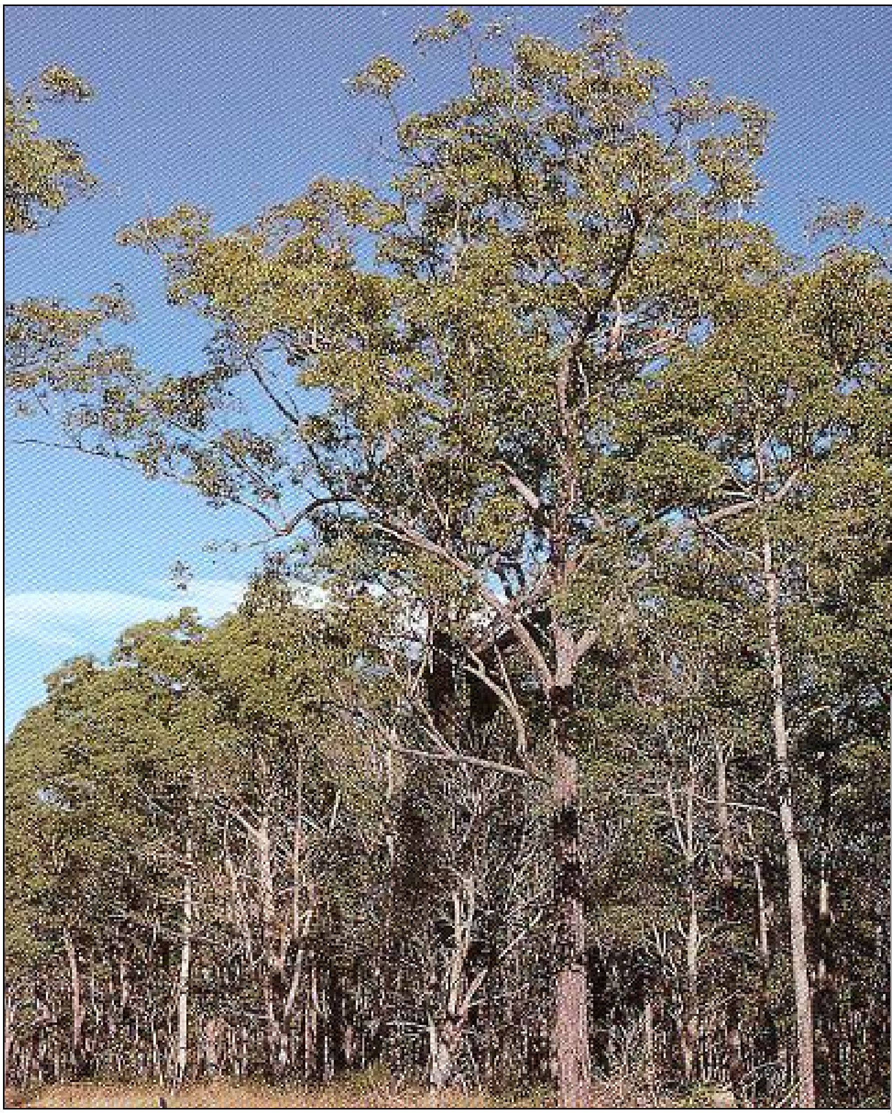
Forest Structure	Open forest to woodland
Landform	Lower slopes and flats
Geology	Sedimentary, metamorhic and granite.
Dominant commercial Species	Gum-topped box
Associated commercial species	Spotted gum, grey ironbark, blue gum, narrow-leaved ironbark, red bloodwood, broad-leaved red ironbark.
Associated non-commercial species	
Shrub layer	Generally absent but a hickory wattle, supplejack or current bush understory can develop in the absence of fire.
Ground layer	Generally sparse coverage of poverty grass and barbed-wire grass.
Regional Ecosystems	12.9-10.3, 12.11.18, 12.12.28, 11.3.26,11.9.13, (major) 12.8.14a, 11.11.4c, 11.12.2b, 12.12.28X1, 11.11.3c (minor)
Forest Products	Sawlog, poles, piles, rounds, firewood.

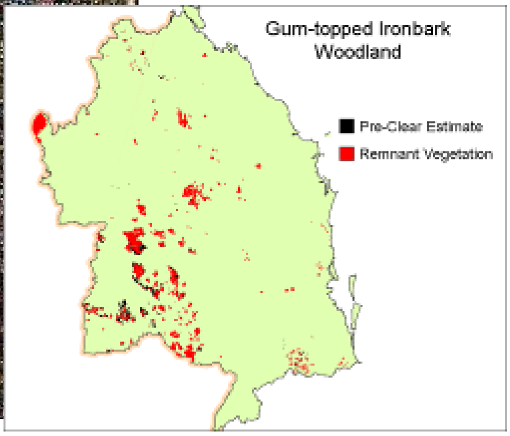
Soil	Loamy texture contrast soils (duplexes).
Water availability	Medium to low (depending on soil depth).
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Non-saline but sodic sub-soils.
Erosion potential	Hillslope : moderate, Gully: high, Stream bank: high on incised streams.

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a relatively minor forest type in terms of area. While productivity can be moderate to good in higher rainfall sites it is a forest type that is particularly impacted by management. Poor forest condition as due to poor silviculture results in a high proportion of defective trees.
Enterprise mixes	Extensively cleared for grazing; mostly breeder operations.
Land use and management recommendations	Development restricted to selective clearing for grazing or thinning for timber production. Due to erosion potential, farm dams, roads, access tracks and log dumps require careful construction and maintenance. Pasture development represents a high erosion risk.
Land use limitations	Erosive subsoils represent a high risk to development.
Regeneration Potential	Regeneration commonly from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	Remnant woodlands are important habitat for gliders, possums, koalas, tree creepers, speckled warblers, powerful owls and ground foraging birds. These woodlands provide important corridors through the landscape for both resident and dispersing fauna given that they tend to grow on the lower slopes linking riparian areas to upland forests. Frequent fires reduce the shrubby understorey, but variable fire regimes encourage mosaics. The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture.

8. Gum-topped Ironbark woodland





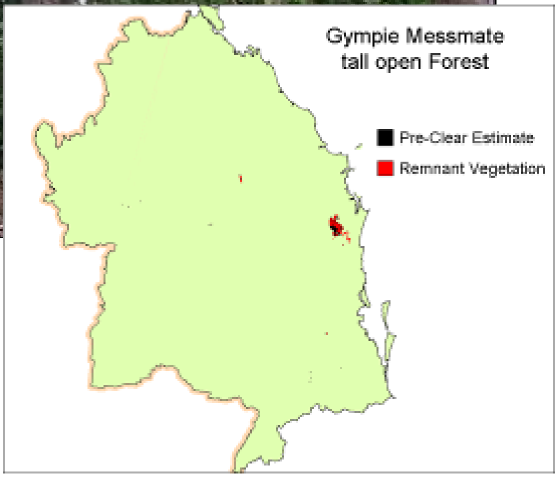
Forest Structure	Open to shrubby woodland
Landform	Rocky ridge crests, plateaux, jump-ups and mountain ranges
Geology	Predominantly on granite and rhyolite.
Dominant commercial Species	Gum-topped ironbark,
Associated commercial species	Narrow-leaved ironbark, yellow stringybark, queensland peppermint, spotted gum
Associated non-commercial species	Brown bloodwood
Shrub layer	Thready-barked she-oak, leptospermum, supplejack, wattle
Ground layer	Grasstree, reed grass, wiry panic, wiregrass.
Regional Ecosystems	12.12.9, 12.8.20, 11.10.4, 11.7.4 (major) 12.9-10.5b, 12.5.1a (minor)
Forest Products	Sawlog, salvage, fencing products.

Soil	Shallow rocky soils (lithosols)
Water availability	Low
Drainage	Free draining
Salinity/Sodicity	Non-saline and non-sodic; can act as re-charge areas affecting down-slope salinity
Erosion potential	Hillslope : high, Gully: moderate, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing. Marginal returns on investment.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a minor forest type in area and of low productivity.
Enterprise mixes	Some development for grazing. Large areas of remnant forest.
Land use and management recommendations	This forest type should not be cleared. Access tracks, snig tracks, fire breaks and log dumps require careful planning and regular maintenance.
Land use limitations	Topography and fertility limits development potential.
Regeneration Potential	Regeneration commonly from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful fire management (eg. exclusion at key periods).
Conservation features and related management	This forest type has not been extensively developed for grazing or cropping and contains many intact remnants. These remnants provide valuable corridors through the landscape for transitional and migratory birds and mammals. They support sugar gliders, arboreal marsupials, smaller macropods, hollow breeding birds, birds of prey and micro-bats. Retention of ground litter provides important habitat for ground dwelling reptiles. The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn.

9. Gympie Messmate tall open forest



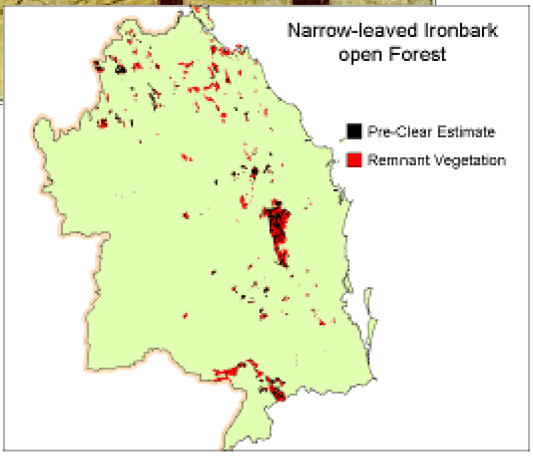
Forest Structure	Tall open forest
Landform	Ridges and slopes
Geology	Metamorphosed sediments and interbedded volcanics (especially phyllite)
Dominant commercial Species	Gympie messmate
Associated commercial species	Grey gum, spotted gum, flooded gum, yellow stringybark, turpentine
Associated non-commercial species	Pink bloodwood
Shrub layer	Black wattle, red ash, Brisbane golden wattle, poison peach.
Ground layer	Barbed-wire grass, blue flax lilies, lomandra.
Regional Ecosystems	12.11.16 , 12.5.1b
Forest Products	Sawlog, girders, poles, fencing products.

Soil	Grey sandy loam to clay loam texture contrast soils.
Water availability	Medium to low (depending on soil depth).
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Non-sodic and non-saline.
Erosion potential	Hillslope : moderate, Gully: moderate, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 300 - 400 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form to 200 stems / ha	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. salvage sawlog, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Hot fire (20 – 40 year interval) may be required for regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees. Hot fire may be required to stimulate germination.	Strategic use of fire to reduce fuel loads. Fire frequency changes according to desired outcome (3 to 5 year interval maintains grassy understory; 5 to 20 year interval allows shrubby understory to develop.

Relative forest productivity	This is a relatively minor forest type in terms of area but a productive forest type in higher rainfall areas.
Enterprise mixes	Some development for grazing, horticulture, sugarcane. Large areas of remnant forest.
Land use and management recommendations	Areas outside of state forests have been extensively cleared for agriculture. Sown pasture development suitable on lower slopes and hollows. Plantation development limited to more fertile soils in higher rainfall areas.
Land use limitations	Topography limits development potential.
Regeneration Potential	Gympie messmate commonly regenerates from seedling recruitment but coppice and lignotuberous regeneration can be locally important. Careful grazing and fire management (eg. exclusion at key periods) will enhance regeneration.
Conservation features and related management	Lantana will readily invade remnant, regrowth and plantation blackbutt forests. This forest type may contain rare and threatened plant species which require appropriate fire management. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn. Needs disturbance to maintain RE structure (eucalypt overstorey with open understorey of predominantly non-rainforest species). Any moist sclerophyll that is relatively open with a mixture of grasses and shrubs should be a priority for fire management to retain RE structure.

10. Narrow-leaved Ironbark open forest



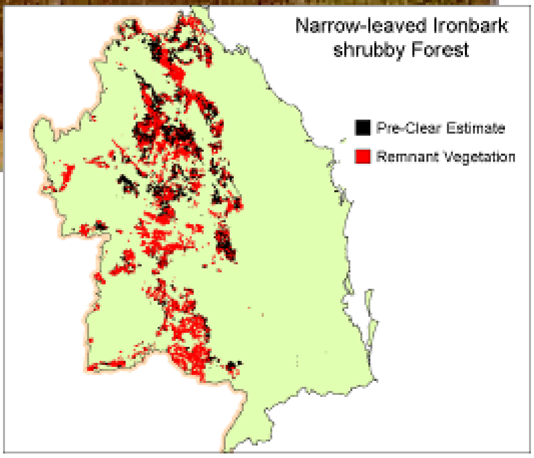
Forest Structure	Woodland
Landform	Rolling hills and ranges
Geology	Predominantly on sedimentary and metamorhic rocks, some on granite.
Dominant commercial Species	Narrow-leaved ironbark
Associated commercial species	Blue gum, moreton bay ash, spotted gum
Associated non-commercial species	Gum-topped bloodwood, long-fruited bloodwood, silver-leaved ironbark, rough-barked apple, smooth-barked apple.
Shrub layer	Black wattle, corkwood wattle, red ash, quinine
Ground layer	kangaroo grass, blue grasses, black speargrass, wiregrasses, barbed-wire grass.
Regional Ecosystems	12.11.7, 12.12.7, 11.9.9, 11.9.9a (major) 11.3.36, 11.5.2 (minor)
Forest Products	Sawlog, poles, piles, fencing products.

Soil	Loamy texture contrast soils (duplexes) derived from the sedimentary, metamorphic and granite geologies.
Water availability	Medium to low on duplexes (depending on soil depth).
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Saline and sodic sub-soils can develop on sandstones.
Erosion potential	Hillslope : moderate, Gully: moderate, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form to 100 stems / ha.	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a major forest type in terms of area but low to moderate in terms of productivity. Productivity declines rapidly with rainfall. Forest condition impacts productivity considerably but can be compensated by the fact that this is an important forest type for fencing material.
Enterprise mixes	The RE's contained within this forest type have generally been significantly developed for extensive grazing.
Land use and management recommendations	Sown pasture development suitable on lower slopes and hollows in higher rainfall areas.
Land use limitations	Topography and fertility limit development potential.
Regeneration Potential	This forest type has a high regeneration capacity, commonly from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	These are generally grassy woodlands that provide habitat for larger marsupials. Hollow bearing habitat trees are important nesting sites for birds and arboreal mammals. Landscape health can be enhanced through appropriate fire regimes, grazing management an allowing regrowth to develop into effective wildlife corridors. This forest type may contain a high number of rare and threatened plant species which require appropriate fire management. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture.

11. Narrow-leaved Ironbark shrubby Forest



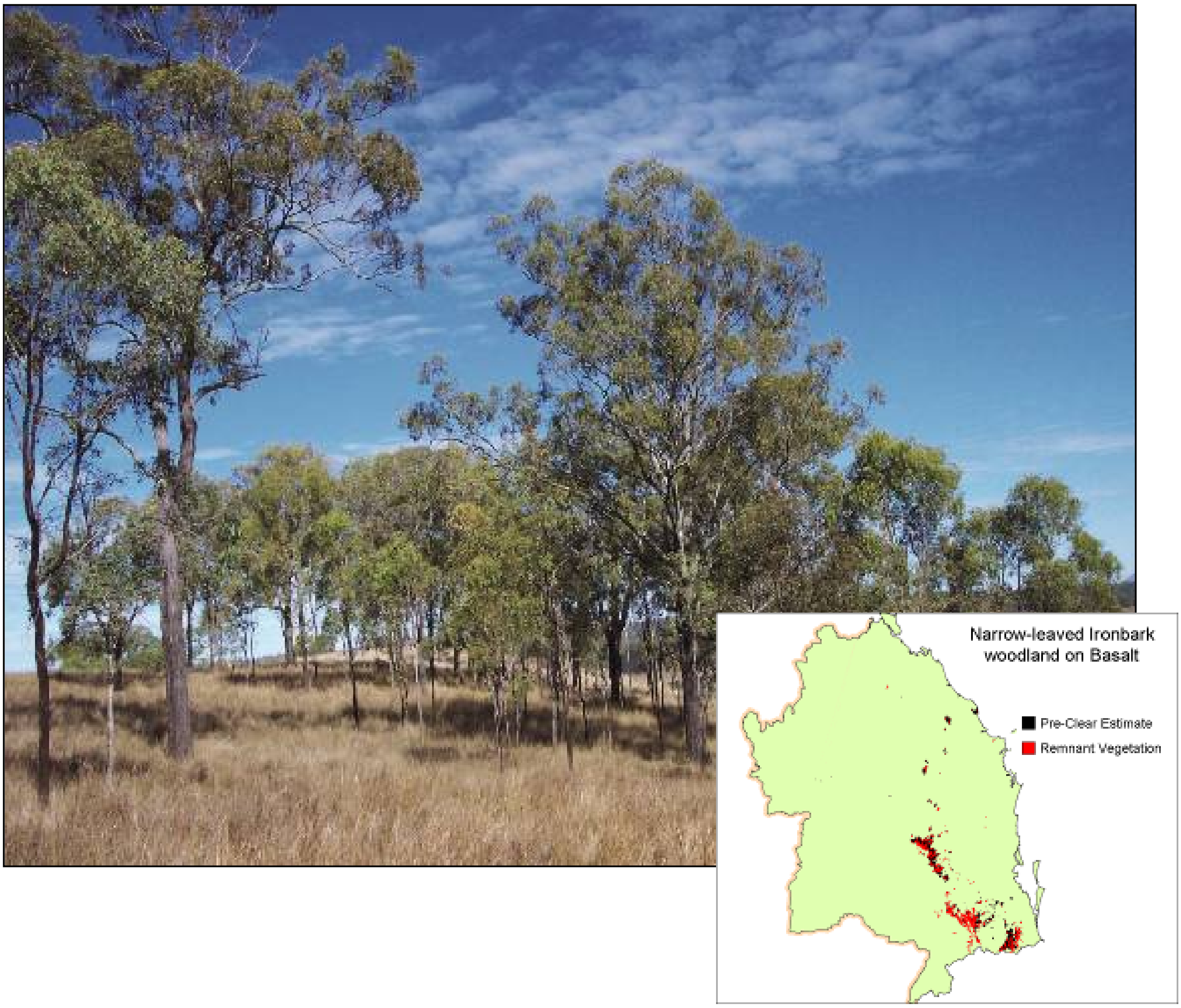
Forest Structure	Shrubby woodland
Landform	Rolling hills and ranges
Geology	Predominantly on sedimentary and metamorhic rocks, some on granite.
Dominant commercial Species	Narrow-leaved ironbark
Associated commercial species	Blue gum, moreton bay ash, spotted gum
Associated non-commercial species	Gum-topped bloodwood, long-fruited bloodwood, silver-leaved ironbark, rough-barked apple, smooth-barked apple.
Shrub layer	Black wattle, corkwood wattle, red ash, quinine, dogwood, grasstree.
Ground layer	Generally a shrubby understorey; kangaroo grass, blue grasses, black speargrass, wiregrasses, barbed-wire grass.
Regional Ecosystems	11.10.7, 11.11.15, 11.12.1, 11.5.1, 11.5.4 (major) 11.10.7a, 11.11.15a, 11.12.1a, 11.3.29, 11.5.9, 11.5.9b (minor)
Forest Products	Sawlog, poles, piles, fencing products.
Soil	Loamy texture contrast soils (duplexes) derived from the sedimentary, metamorphic and granite geologies.

Water availability	Medium to low on duplexes (depending on soil depth).
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Saline and sodic sub-soils can develop on sandstones.
Erosion potential	Hillslope : moderate, Gully: moderate, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form to 100 stems / ha.	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a major forest type in terms of area but low in terms of productivity. Productivity declines rapidly with rainfall. Forest condition impacts productivity considerably but can be compensated by the fact that this is an important forest type for fencing material.
Enterprise mixes	The RE's contained within this forest type have generally been significantly developed for extensive grazing.
Land use and management recommendations	Unsuitable for sown pasture development. Suitable for low input legume establishment.
Land use limitations	Topography and fertility limit development potential.
Regeneration Potential	This forest type has a high regeneration capacity, commonly from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	These are generally grassy woodlands that provide habitat for larger marsupials. Hollow bearing habitat trees are important nesting sites for birds and arboreal mammals. Landscape health can be enhanced through appropriate fire regimes, grazing management an allowing regrowth to develop into effective wildlife corridors. This forest type may contain a high number of rare and threatened plant species which require appropriate fire management. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture.

12. Narrow-leaved Ironbark on Basalt



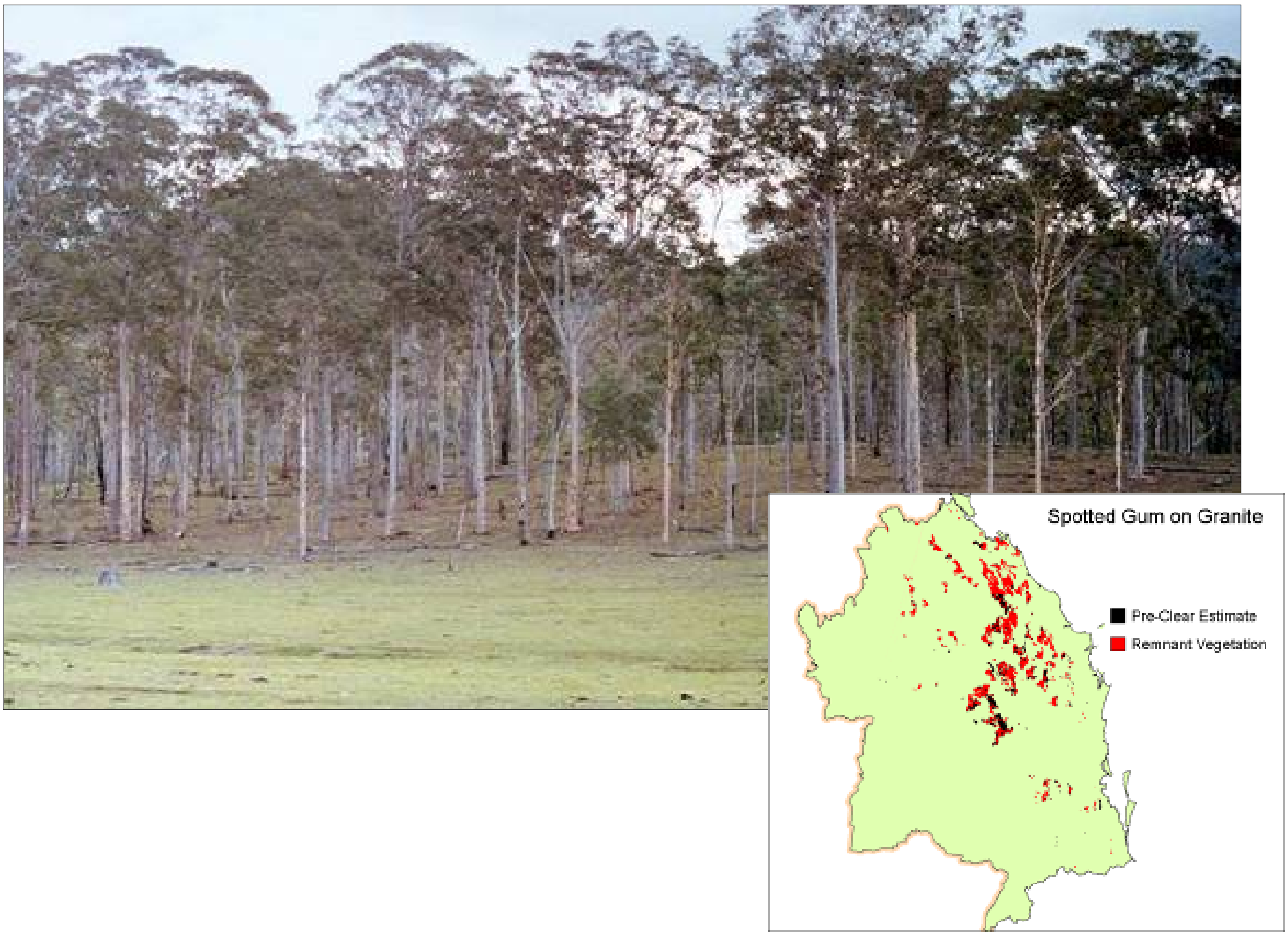
Forest Structure	Woodland
Landform	Rolling hills and ranges
Geology	Predominantly on sedimentary and metamorhic rocks, some on granite and basalt.
Dominant commercial Species	Narrow-leaved ironbark
Associated commercial species	Blue gum, moreton bay ash
Associated non-commercial species	Silver-leaved ironbark, mountain coolabah, yellow box.
Shrub layer	Black wattle, corkwood wattle, red ash, quinine
Ground layer	kangaroo grass, blue grasses, wiregrasses, barbed-wire grass.
Regional Ecosystems	12.8.16, 12.8.17 (major)
Forest Products	Sawlog, fencing products.

Soil	Clay gradational soils derived from basalt.
Water availability	Medium to high.
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Non-saline and non-sodic.
Erosion potential	Hillslope : low, Gully: moderate, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form to 100 stems / ha.	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a minor forest type in terms of area and low to moderate in terms of productivity. Productivity declines rapidly with rainfall. Forest condition impacts productivity considerably but can be compensated by the fact that this is an important forest type for fencing material.
Enterprise mixes	The RE's contained within this forest type have generally been significantly developed for extensive grazing.
Land use and management recommendations	Sown pasture development suitable on lower slopes and hollows in higher rainfall areas.
Land use limitations	Topography and fertility limit development potential.
Regeneration Potential	This forest type has a high regeneration capacity, commonly from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	These are generally grassy woodlands that provide habitat for larger marsupials. Hollow bearing habitat trees are important nesting sites for birds and arboreal mammals. Landscape health can be enhanced through appropriate fire regimes, grazing management an allowing regrowth to develop into effective wildlife corridors. This forest type may contain a high number of rare and threatened plant species which require appropriate fire management. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture.

13. Spotted Gum on Granite



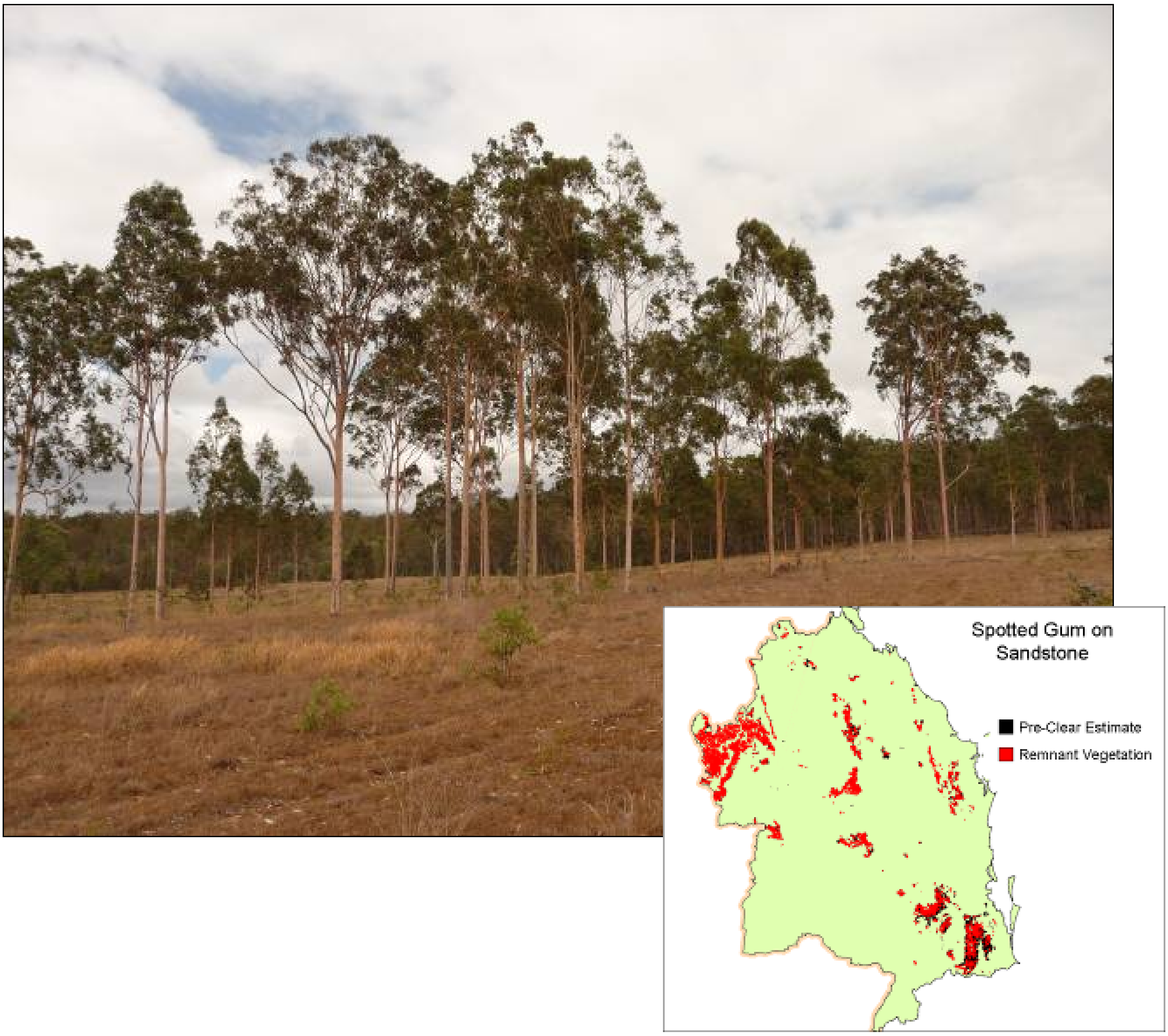
Forest Structure	Tall open forest to tall woodland
Landform	Lower slopes to crests of hills and ranges
Geology	Granite formations.
Dominant commercial Species	Spotted gum, narrow-leaved ironbark
Associated commercial species	Stringybark, grey ironbark, Queensland peppermint, blue gum, pink bloodwood, turpentine.
Associated non-commercial species	Southern long-fruited bloodwood.
Shrub layer	Hickory wattle, black wattle, supplejack, dogwood.
Ground layer	kangaroo grass, blady grass, pitted bluegrass, barbed-wire grass, reed grass, wiregrass.
Regional Ecosystems	12.12.5, 12.12.6 (major) 12.12.3 (minor)
Forest Products	Sawlog, girders, poles, piles, fencing products.
Soil	Sandy to loamy texture contrast soils (duplexes).
Water availability	Medium to low (depending on soil depth).

Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Generally non-saline; sodic sub-soils can develop.
Erosion potential	Hillslope : moderate, Gully: high, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a moderate forest type in terms of area but can be highly productive (but lower potential than the other spotted gum forest types). Productivity declines with rainfall. Forest condition impacts productivity considerably but this forest type generally has a high capacity for regeneration. Spotted gum regrowth is generally of good form.
Enterprise mixes	Moderate development for grazing in higher rainfall areas and lower slopes. Large areas of remnant and regrowth forest particularly on upper slopes.
Land use and management recommendations	Sown pasture development suitable on lower slopes and hollows in higher rainfall areas. Plantation development limited to more fertile soils in higher rainfall areas.
Land use limitations	Topography limits development potential on upper slopes and ridges. On country with dispersive sub-soils, tracks, snig tracks, fire breaks and log dumps need to be carefully sited and constructed and regularly maintained.
Regeneration Potential	This forest type readily regenerates from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods). Natural regeneration can be encouraged onto cleared land adjacent to existing forest or scattered remnant trees.
Conservation features and related management	This land type provides habitat for rare flora (*Persoonia spp.* and cycads) and valuable resources for forest dependent fauna such as possums, gliders, forest owls, micro-bats, insectivorous birds and arboreal and ground dwelling reptiles. Retaining adequate numbers of habitat trees is important for forest health and biodiversity. The careful use of fire (especially following disturbance such as thinning or harvesting) allows forest regeneration and can be proactively used to promote biodiversity values within the land type and across the landscape. The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture.

14. Spotted Gum on Sandstone



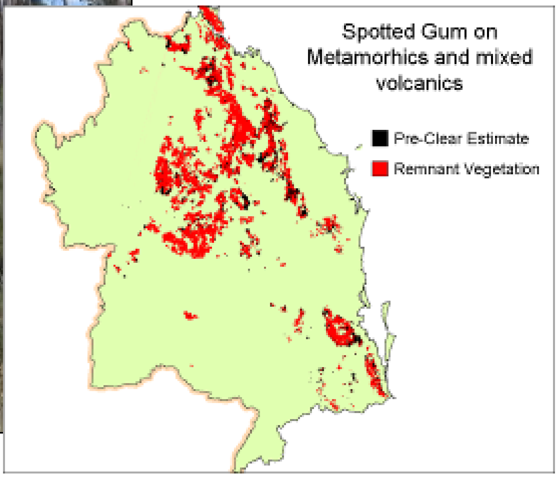
Forest Structure	Tall open forest to tall woodland
Landform	Lower slopes to crests of hills and ranges
Geology	Coarse grained sedimentary rocks.
Dominant commercial Species	Spotted gum, narrow-leaved ironbark
Associated commercial species	Grey ironbark, Queensland peppermint, grey gum, gum-topped box, blue gum, pink bloodwood
Associated non-commercial species	Smooth-barked apple, southern long-fruited bloodwood.
Shrub layer	Hickory wattle, black wattle, supplejack, dogwood.
Ground layer	kangaroo grass, blady grass, pitted bluegrass, barbed-wire grass, wiregrass.
Regional Ecosystems	12.9-10.2, 12.9-10.17b, 12.9-10.5a, 11.10.1 (major) 12.9-10.19a, 12.9-10.5 (minor)
Forest Products	Sawlog, girders, poles, piles, fencing products.

Soil	Sandy to loamy texture contrast soils (duplexes).
Water availability	Medium to low (depending on soil depth).
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Generally non-saline; sodic sub-soils can develop.
Erosion potential	Hillslope : moderate, Gully: high, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is an important forest type both in terms of area and productivity. Productivity declines with rainfall. Forest condition impacts productivity considerably but this forest type generally has a high capacity for regeneration.
Enterprise mixes	Moderate development for grazing in higher rainfall areas and lower slopes. Large areas of remnant and regrowth forest particularly on upper slopes.
Land use and management recommendations	Sown pasture development suitable on lower slopes and hollows in higher rainfall areas. Plantation development limited to more fertile soils in higher rainfall areas.
Land use limitations	Topography limits development potential on upper slopes and ridges. On country with dispersive sub-soils, tracks, snig tracks, fire breaks and log dumps need to be carefully sited and constructed and regularly maintained.
Regeneration Potential	This forest type readily regenerates from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods). Natural regeneration can be encouraged onto cleared land adjacent to existing forest or scattered remnant trees.
Conservation features and related management	This land type provides resources for forest dependent fauna such as possums, gliders, forest owls, micro-bats, insectivorous birds and arboreal and ground dwelling reptiles. Retaining adequate numbers of habitat trees is important for forest health and biodiversity. The careful use of fire (especially following disturbance such as thinning or harvesting) allows forest regeneration and can be proactively used to promote biodiversity values within the land type and across the landscape. The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture.

15. Spotted Gum on Metamorhics and mixed volcanics



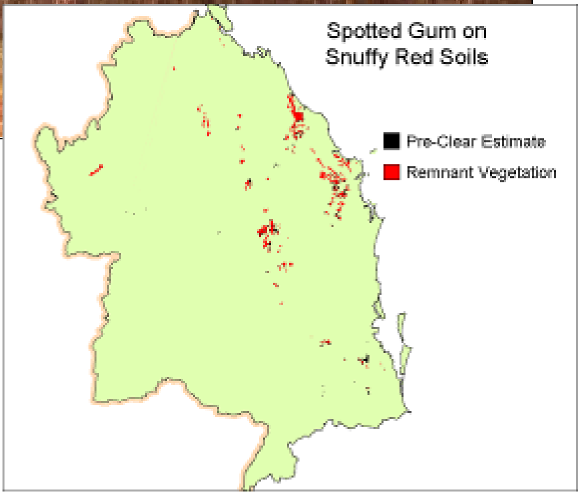
Forest Structure	Tall open forest to tall woodland
Landform	Lower slopes to crests of hills and ranges
Geology	Metamorphosed sediments, some on laterite, ryolite and trachyte.
Dominant commercial Species	Spotted gum, narrow-leaved ironbark
Associated commercial species	Grey ironbark, Queensland peppermint, grey gum, gum-topped box, blue gum, pink bloodwood, brush box
Associated non-commercial species	Smooth-barked apple, southern long-fruited bloodwood.
Shrub layer	Hickory wattle, black wattle, supplejack, dogwood, bull-oak.
Ground layer	kangaroo grass, blady grass, pitted bluegrass, barbed-wire grass, reed grass, wiregrass, zamia.
Regional Ecosystems	12.11.6, 12.11.5, 11.11.3, 11.11.4, 11.7.6 (major) 12.8.24 (minor)
Forest Products	Sawlog, girders, poles, piles, fencing products.

Soil	Sandy to loamy texture contrast soils (duplexes).
Water availability	Medium to low (depending on soil depth).
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Generally non-saline; sodic sub-soils can develop.
Erosion potential	Hillslope : moderate, Gully: high, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is an important forest type in terms of area and productivity. Productivity declines with rainfall. Forest condition impacts productivity considerably but this forest type generally has a high capacity for regeneration. Spotted gum regrowth is generally of good form.
Enterprise mixes	Moderate development for grazing in higher rainfall areas and lower slopes. Large areas of remnant and regrowth forest particularly on upper slopes.
Land use and management recommendations	Sown pasture development suitable on lower slopes and hollows in higher rainfall areas. Plantation development limited to more fertile soils in higher rainfall areas.
Land use limitations	Topography limits development potential on upper slopes and ridges. On country with dispersive sub-soils, tracks, snig tracks, fire breaks and log dumps need to be carefully sited and constructed and regularly maintained.
Regeneration Potential	This forest type readily regenerates from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods). Natural regeneration can be encouraged onto cleared land adjacent to existing forest or scattered remnant trees.
Conservation features and related management	This land type provides habitat for forest dependent fauna such as possums, gliders, forest owls, micro-bats, insectivorous birds and arboreal and ground dwelling reptiles. Retaining adequate numbers of habitat trees is important for forest health and biodiversity. The careful use of fire allows forest regeneration and can be proactively used to promote biodiversity values within the land type and across the landscape. The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture.

16. Spotted Gum on snuffy red soils



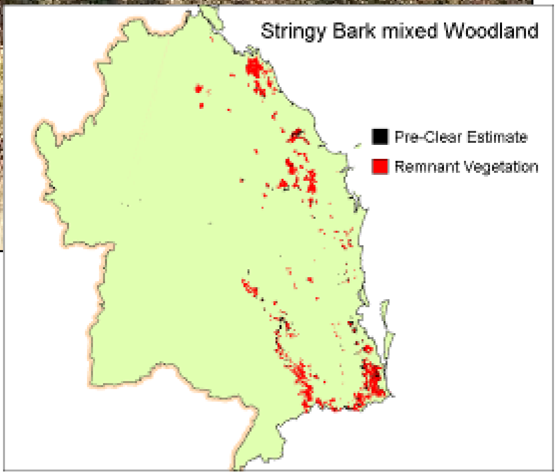
Forest Structure	Tall open forest to tall woodland
Landform	Broad crests of hills and ranges and plateaux
Geology	Laterite derived from mixed geology.
Dominant commercial Species	Spotted gum, narrow-leaved ironbark
Associated commercial species	Stringybark, broad-leaved red ironbark, Queensland peppermint, grey gum, gum-topped box, pink bloodwood
Associated non-commercial species	Smooth-barked apple, southern long-fruited bloodwood.
Shrub layer	Hickory wattle, black wattle, dogwood.
Ground layer	kangaroo grass, blady grass, pitted bluegrass, barbed-wire grass, wiregrass.
Regional Ecosystems	12.5.1, 12.5.7 (major) 11.5.9a (minor)
Forest Products	Sawlog, girders, poles, piles, fencing products.

Soil	Snuffy red soils (deep uniform to gradational loams).
Water availability	Medium (depending on soil depth).
Drainage	Free draining throughout the soil profile.
Salinity/Sodicity	Generally non-saline and non-sodic but act as recharge areas that can lead to salinity on adjoining toe slopes.
Erosion potential	Hillslope : low, Gully: moderate, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is a minor forest type in terms of area but can be highly productive. Forest condition impacts productivity considerably but this forest type generally has a high capacity for regeneration. Spotted gum regrowth is generally of good form.
Enterprise mixes	Moderate development for grazing in higher rainfall areas and lower slopes, especially where parent geology includes basic volcanics.
Land use and management recommendations	Sown pasture development suitable on plateaux in higher rainfall areas. Suitable for plantation development on fertile sites in higher rainfall areas.
Land use limitations	This soil type generally becomes powdery when over-worked with machinery and traffic. Tracks, snig tracks, fire breaks and log dumps need to be carefully sited and constructed and regularly maintained.
Regeneration Potential	This forest type readily regenerates from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods). Natural regeneration can be encouraged onto cleared land adjacent to existing forest or scattered remnant trees.
Conservation features and related management	This forest type provides habitat for forest dependent fauna such as possums, gliders, forest owls, micro-bats, insectivorous birds and arboreal and ground dwelling reptiles. Retaining adequate numbers of habitat trees is important for forest health and biodiversity. The careful use of fire (especially following disturbance such as thinning or harvesting) allows forest regeneration and can be proactively used to promote biodiversity values within the land type and across the landscape. The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture.

17. Stringybark mixed woodland



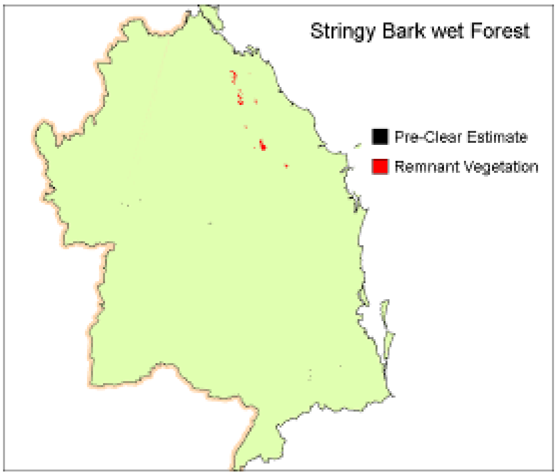
Forest Structure	Open forest to woodland
Landform	Slopes on undulating to steep terrain, usually adjacent to coastal lowlands.
Geology	Predominantly on granite and sandstones, significant representation on basalt, metamorphosed sediments and trachyte.
Dominant commercial Species	Yellow stringybark
Associated commercial species	Grey gum, gum-toped box, pink bloodwood, Queensland peppermint, blue gum, yellow box.
Associated non-commercial species	Brown bloodwood, smooth-barked apple.
Shrub layer	Forest sheoak, black sheoak, supplejack.
Ground layer	kangaroo grass, grasstree, poverty grass.
Regional Ecosystems	12.8.14, 12.9-10.21, 12.12.11, 12.9-10.17 (major) 12.8.25, 12.11.17, 12.9-10.17c (minor)
Forest Products	Sawlog, girders, poles, fencing products.

Soil	Sandy to loamy texture contrast soils derived from granite, sandstones, metamorphics and trachyte; loamy to clay loam soils derived from basalt.
Water availability	Medium to low (depending on soil depth and parent material).
Drainage	Free draining topsoil, subsoil can impede drainage
Salinity/Sodicity	Saline and sodic sub-soils can develop on sandstones.
Erosion potential	Hillslope : moderate, Gully: high, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 180 to 200 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. Small saw log, salvage log, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Reduce fire frequency and intensity to facilitate regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees.	Strategic use of fire to reduce fuel loads and stimulate germination. Fire frequency changes according to desired outcome.

Relative forest productivity	This is not a major forest type in terms of area and but is quite productive in a well managed state. Forest condition impacts productivity considerably but this forest type generally has a high capacity for regeneration.
Enterprise mixes	Some development for grazing. Large areas of remnant forest.
Land use and management recommendations	Sown pasture development suitable on lower slopes and hollows. Plantation development limited to more fertile soils in higher rainfall areas.
Land use limitations	Topography and fertility limits development potential.
Regeneration Potential	Regeneration commonly from lignotubers and seedling recruitment. Both forms of regeneration will be enhanced by careful grazing and fire management (eg. exclusion at key periods).
Conservation features and related management	Remnants subject to weed invasion by lantana. Relatively uncleared, these land types provide valuable resources for forest dependent fauna such as possums, gliders, forest owls, microbats, insectivorous birds and arboreal and ground dwelling reptiles. Retaining adequate numbers of habitat trees is important in maintaining habitat for these species. Frequent fire regimes can reduce the shrubby understorey.

18. Stringybark wet forest

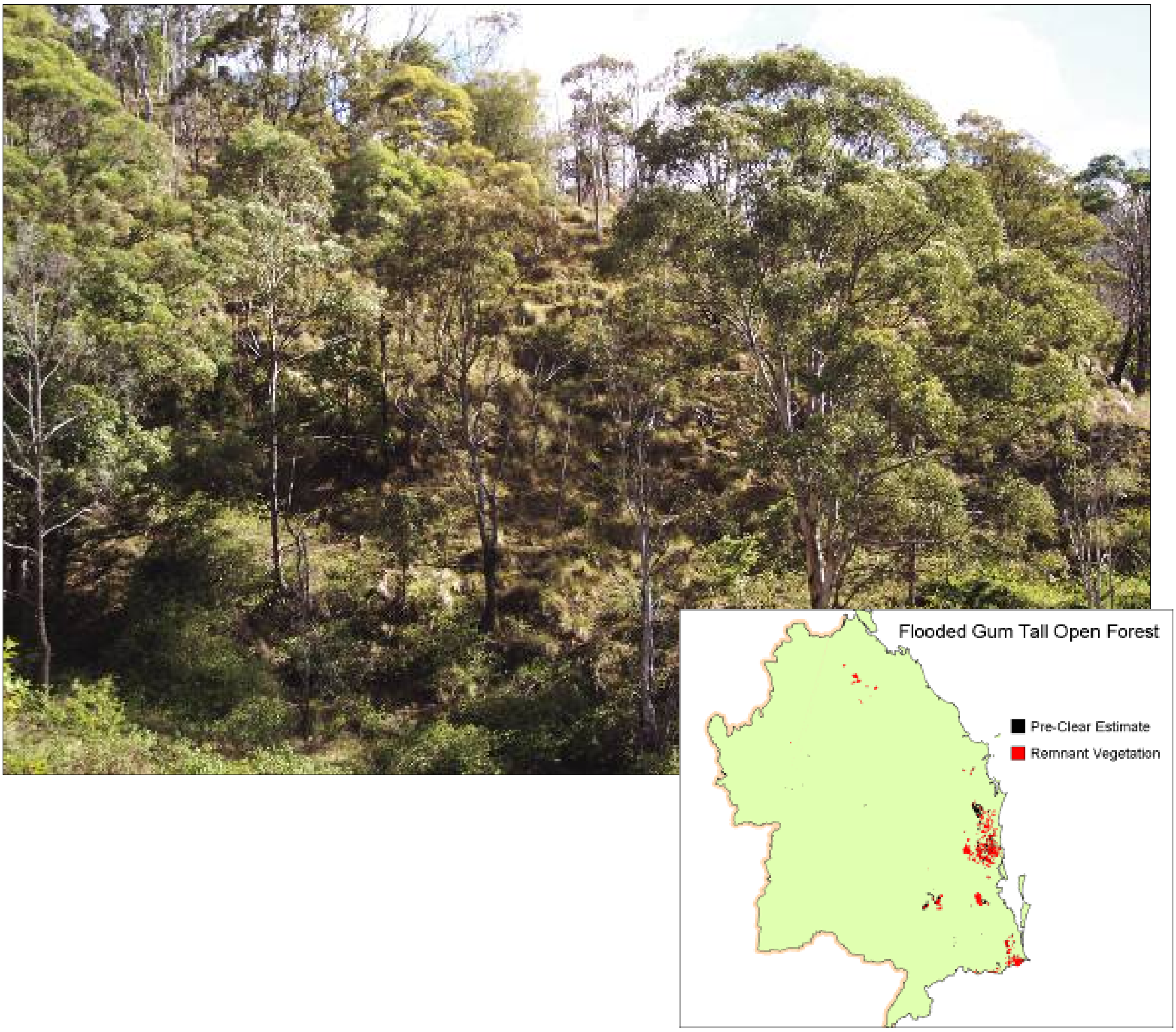


Forest Structure	Tall open forest
Landform	Rugged high altitude ranges
Geology	Granite.
Dominant commercial Species	Stringybark, turpentine
Associated commercial species	Narrow-leaved ironbark, grey gum, red mahogany, pink bloodwood
Associated non-commercial species	Brown bloodwood.
Shrub layer	Hickory wattle, forest sheoak, red ash, supplejack.
Ground layer	kangaroo grass, blady grass, grasstree, zamia.
Regional Ecosystems	12.12.4 (9,500 ha : 95% remnant)
Forest Products	Sawlog, poles, marine piles, fencing products.
Soil	Shallow sandy texture contrast soils and lithosols.
Water availability	Low
Drainage	Free draining
Salinity/Sodicity	Non-sodic, non-saline.
Erosion potential	Hillslope : high, Gully: moderate, Stream bank: low (N/A to this forest type).

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	N/A	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	N/A	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	N/A	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees. Hot fire may be required to stimulate germination.	Strategic use of fire to reduce fuel loads. Fire frequency changes according to desired outcome (3 to 5 year interval maintains grassy understory; 5 to 20 year interval allows shrubby understory to develop.

Relative forest productivity	This is a minor forest type in terms of area. It is moderately to highly productive in a well managed state.
Enterprise mixes	Very little development. Native forestry is major land use.
Land use and management recommendations	Native forest production.
Land use limitations	Topography limits development potential.
Regeneration Potential	Regeneration commonly from lignotubers and seedling recruitment.
Conservation features and related management	Remnants subject to weed invasion by lantana. This forest type may contain a high number of rare and threatened plant species which require appropriate fire management. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn. Needs disturbance to maintain RE structure (eucalypt overstorey with open understorey of predominantly non-rainforest species). Any moist sclerophyll that is relatively open with a mixture of grasses and shrubs should be a priority for fire management to retain RE structure.

19. Flooded gum tall open forest



Forest Structure	Tall to very tall open forest
Landform	Lower slopes and valley floors in high rainfall areas or plateaux at high altitude
Geology	Basic to neutral volcanics.
Dominant commercial Species	Flooded gum
Associated commercial species	Sydney bluegum, tallowwood, pink bloodwood, brush box, red mahogany, turpentine
Associated non-commercial species	Mountain oak
Shrub layer	Cheese tree, red ash, silver sycamore.
Ground layer	Ferns, scleria, tall sawsedge, Molucca raspberry, rare grasses.
Regional Ecosystems	12.3.2, 12.8.8, 12.11.2, 12.12.20, 12.12.15a, 12.5.6a (major) 12.9-410.14a, 12.12.2b (minor)
Forest Products	Sawlog, girders, poles, fencing products.

Soil	Loams and clay loam gradational and uniform soils.
Water availability	Medium to high (depending on soil depth).
Drainage	Free draining top
Salinity/Sodicity	Non-sodic, non-saline.
Erosion potential	Hillslope : moderate, Gully: low, Stream bank: moderate on incised streams

Silvicultural treatments	*Regrowth Forest*	*Over-harvested forest*	*Well managed, advanced growth forest*
Thinning	Stage 1.Thin to 300 - 400 stems / ha based on species and form. Stage 2. Once av. DBH>30cm, thin on form to 200 stems / ha	Selective thinning of mixed age classes based on species, form and spacing.	Generally thinning regeneration several years following harvest. Thinning based on species, form and spacing.
Harvest	Stage 1. Generally not applicable Stage 2. salvage sawlog, light poles, piles, fencing.	Salvage harvest to remove defective trees. Good opportunity to generate income to offset the critical selective thinning.	Selective removal of 1/3 of standing volume on a 15 to 25 year harvest cycle. Full range of products available.
Fire	Hot fire (20 – 40 year interval) may be required for regeneration. Increase frequency to reduce understory.	Post harvest / thinning fire to remove fuel loads should be or low intensity to prevent damage of retained trees. Hot fire may be required to stimulate germination.	Strategic use of fire to reduce fuel loads. Fire frequency changes according to desired outcome (3 to 5 year interval maintains grassy understory; 5 to 20 year interval allows shrubby understory to develop.

Relative forest productivity	This is a minor forest type in terms of area. It is a highly productive forest type.
Enterprise mixes	Some development for grazing, horticulture, sugarcane. Large areas of remnant forest particularly in state forests, reserves and national parks.
Land use and management recommendations	Sown pasture development suitable on lower slopes and hollows. Cleared areas suitable for plantation development.
Land use limitations	Topography can limit development potential on upper slopes and ridges.
Regeneration Potential	This forest type commonly regenerates from seedling recruitment but coppice and lignotuberous regeneration can be locally important. Careful fire management (eg. exclusion at key periods) will enhance regeneration.
Conservation features and related management	Lantana will readily invade remnant, regrowth and plantation forests. This forest type may contain a high number of rare and threatened plant species which require appropriate fire management. Spring burns (traditionally used in SEQ ecosystems) have an associated risk due to changing weather conditions post-burn. Needs disturbance to maintain RE structure (eucalypt overstorey with open understorey of predominantly non-rainforest species). Any moist sclerophyll that is relatively open with a mixture of grasses and shrubs should be a priority for fire management to retain RE structure.