

PLANTATION MANAGEMENT PLAN

FOR

AUSTRALIAN BLUEGUM PLANTATIONS





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Introduction

Australian Bluegum Plantations (ABP) is a forestry business created in 2009 by Global Forest Partners (GFP) to acquire, manage, and harvest *Eucalyptus globulus* (Tasmanian blue gum) plantations in Victoria (Vic), South Australia (SA) and Western Australia (WA). Plantations are grown on short rotation cycles (usually 10-15 years) predominantly for the woodchip market to be exported and manufactured into high quality pulp for paper products and rayon. The ABP forest estate consists of plantations growing on ABP owned land, leased land and external plantations managed by ABP under a management agreement. It is divided into two operating regions: The Green Triangle (Vic and SA) and Albany (WA). The total plantation area as of 31 December 2017 is 98,380 hectares which includes 9,304 hectares of native vegetation.

This plantation management plan details the management objectives for the economic, social and environmental values associated with the forest estate; it describes the history and features of ABP's Forest Management Unit (FMU); the silvicultural and harvesting systems used; and the risk management procedures. The management plan is supported by various operating procedures as referenced throughout this document. It is reviewed and updated periodically as required.

Management objectives

Our mission

ABP is committed to excellence in growing, harvesting and marketing sustainable plantation resources.

Our values

- Make safety our mindset
- Pursue and reward innovation at every stage of the supply chain
- Deliver value to our customers in both product and experience
- Promote a culture dedicated to continually improving economic, social and environmental returns

ABP's objective is to establish and grow trees applying best practice silvicultural management to produce maximum economic return whilst contributing positively to local communities and the environment in the regions where ABP operates. This will be achieved through:

- Maintaining an ongoing research and development strategy to continually improve silvicultural and harvesting practices.
- Providing and maintaining a safe working environment for staff, contractors and visitors.
- Maintaining, protecting, and enhancing (where feasible to do so) areas of natural forest and/or High Conservation Value (HCV).
- Maintaining natural values, particularly in High Conservation Value (HCV) areas, using management tools such as stock exclusion, fencing, prescribed burning, pest control programs, soil rehabilitation and/or revegetation. Management should be undertaken in consultation with relevant stakeholders to ensure the best environmental and social outcomes.
- Conserving other biodiversity values such as soil and water quality, wetlands and riparian zones.

- Identifying and protecting Indigenous sites and places of significance in consultation with local communities.
- Developing and managing good relationships with stakeholders and the community.

ABP Estate

Forest estate

The ABP estate is summarised below:

Type	Area (ha) *
<i>Eucalyptus globulus</i> plantations	87,866
Remnant vegetation	9,304
Wetlands & wet areas	717
Environmental projects	493
Total area:	98,380

* Area figure as at 31 December 2017.

The estate areas are maintained in the 'Estate Data' register located in SinglePort/Forestry/Land and Estate/Estate Information and via the link below. The register breaks the areas down into freehold, leased, management agreements, and recently harvested.

<http://singleport/forestry/Shared%20Documents/Forms/Land%20%20Estate.aspx>

The ABP estate is made up of plantations which meet core criteria for growing commercial plantations. This estate also includes other important environmental, social, cultural heritage and nationally significant biodiversity values.

The regions

The regions included within the ABP estate are:

1. The South West of Victoria and South East of South Australia which make up the Green Triangle (GT) region and;
2. The South West and Great Southern region of Western Australia which make up the Albany region.

The following table lists the distance from port, the nearest port and rainfall for each region.

State	Management Unit	Region	Distance from Port (within)	Nearest Port	Rainfall (annual above)
Victoria	Green Triangle	South West	200 kms	Portland or Geelong	650mm
South Australia	Green Triangle	South East	200 kms	Portland	600mm
Western Australia	Albany	South West & Great Southern	180 kms	Albany or Bunbury	650mm

Plantations are established on previously cleared agricultural and ex pine forestry sites. The majority of these plantations are surrounded by agricultural land, however there are plantation blocks that are neighboured by areas of native vegetation and reserves. Areas of remnant vegetation within plantation blocks are excluded from any plantation works, to ensure their existing condition is maintained or enhanced.

Land-use history

European

In the Green Triangle region, the majority of the agricultural land was cleared after World War 1, with the region being allocated as Returned Soldier Settlement blocks. The agricultural land in the region has been predominantly used for grazing and cropping for the past 90 years.

In WA, the majority of the land was cleared post 1950 after World War II. The dominant land use for agricultural land is generally grazing and cropping. After World War II large areas of the land were opened up for agriculture under schemes such as soldier and war service settlements.

Indigenous

There were three main indigenous language groups that inhabited the Green Triangle area prior to European settlement. These are the Tjapwurong, Gunditjmara, and the Bunganditj language groups. Indigenous people inhabited this area until European settlement in 1840.

The south west of Western Australia has a unique and important cultural heritage, consisting of many significant sites. Regional landscapes have been populated for at least 50,000 years and the indigenous culture and relationships between groups, families and land are rich and complex. The region provides the home for the Noongar people.

At acquisition and prior to harvesting, relevant cultural heritage databases are consulted for each property. Further consultation may be required if a site is identified during this process. Cultural heritage sites are recorded in the Natural Values Management and Monitoring Registers.

Native vegetation and ecosystems

A high level evaluation of the different vegetation types within ABP's estate was undertaken using the National Vegetation Information System (NVIS) data. The NVIS is an ongoing collaborative initiative between the Australian and state and territory governments to manage national vegetation data to help improve vegetation planning and management within Australia. It aims to provide consistent and comparable data across all jurisdictions and is the only nationally available source of data for native

vegetation. Each state and territory has developed an NVIS-compatible database which is populated with its native vegetation data. It now contains over 9000 distinct vegetation types which have been grouped into 26 Major Vegetation Groups (MVGs) and 67 Major Vegetation Sub-groups. In broad terms, the MVGs are based on typical aggregations of the structure (especially height and cover), growth form and floristic composition (vascular plant species) in the dominant stratum of each vegetation type in the NVIS database (Department of Environment and Water 2007). The allocation of NVIS vegetation types to MVGs and MVSs has been validated by NVIS partners in each state and territory.

The ABP estate has been overlaid with the data for the MVGs, which can be viewed in Appendix 1 and 2. The Appendices include the MVGs with the greatest coverage in the regions and a link to the related fact sheets which includes information on representative species by state, distribution and major threats.

Hydrological flows and regional catchment goals

Since 2004 there have been several studies into the effects of plantations on water flows and usage (see Parsons *et. al.* (2007) for a review). Below is a summary of what is currently known about plantations and water:

- Timber plantations, like all forms of agricultural crops, intercept and use water.
- Trees have a longer growing season, more foliage and deeper roots than pasture or crops.
- Timber plantations can improve water quality, and assist in reversing salinity and erosion.
- The effect on stream flow of converting agricultural land to timber plantation is related to the catchment area affected.
- In smaller catchments, it is difficult to detect an impact when less than 20% of the catchment is planted.
- In major plantation regions, plantations occupy between 1% and 6% of large catchments.

Parsons *et. al.* (2007) identify some key management actions that could help minimise reforestation water use, including:

- Establishing plantations further away from streams (ABP implements setbacks);
- Establishing plantations in strips across the contour (ABP uses this management strategy at some sites);
- Dispersing plantations across the landscape and keeping them to less than 20% of a catchment area (local government planning).

Whilst information and predictive modelling is improving, there are still many topics that warrant further research. ABP is committed to keeping abreast of scientific information relating to plantations and water use and any recommended management tools to mitigate potential negative impacts on stream flows and groundwater.

ABP's estate is located across several catchments in each of the regions. Refer to Appendix 3 and 4 for an overlay of catchments and the ABP estate. Regional catchment strategies were reviewed and any applicable regional catchment goals, along with ABP's compliance, are recorded in the relevant Natural Values Management and Monitoring Registers.

The development of plantations in catchments has the ability to improve water quality and degradation.

In Western Australia the Denmark River has had significant improvement in water quality since 1987, which has been attributed to the establishment of commercial tree plantations and revegetation works in the catchment. "The river is now fresh enough for drinking." (Ward, B., Sparks, T., and Blake, G., 2011)

Natural values

Properties acquired by ABP may contain natural values of unique importance for example High Conservation Values (HCV); threatened plants, animals and communities, Indigenous and cultural heritage and wetlands. In accordance with the company's environmental objectives, legal and other requirements and certification, ABP have developed a Natural Values Management Plan (MP-2058) which describes how to identify, assess, manage and monitor these special values. In summary, values are identified and assessed prior to establishment using a variety of sources in particular national and state databases and consultation with stakeholders. Where available, Recovery Plans, Approved Conservation Advices and similar material are collected and the information from these considered when determining management and monitoring prescriptions.

Following identification and assessment, management and monitoring programs are determined through consultation with key stakeholders and operations staff. Subsequently these are documented in the relevant Natural Values Management and Monitoring Register. Key measures used to manage HCV include establishment of exclusion zones and setbacks; fencing and stock exclusion; weed and pest control programs and extensive training and awareness programs with staff and contractors.

Environment and hazard maps and historical plantation maps show location of HCV areas and other sites of significance.

Opportunities sometimes arise to participate in agency and non-government biodiversity rehabilitation programs that aim to enhance, restore and protect remnant vegetation and natural ecosystems. If considered practicable, landscape restoration is carried out using endemic seed and seedlings. Prescribed burning may be undertaken in cases where it has been recommended as part of a HCV assessment or a stakeholder such as Department of Parks and Wildlife (DPaW) or Department of Environment, Land, Water and Planning (DELWP) have approached ABP.

In most instances remnant vegetation and selected isolated paddock trees are retained on ABP properties and appropriate buffers applied. The only exception is if remnants are deemed hazardous, in this circumstance they will be assessed and removed under standard regulatory processes. Off-site impacts are managed through careful consideration of other values and mitigating actions captured in standard operating procedures.

Estate maps

There are various maps used to manage the ABP estate which include regional, plantation, environment and hazard; and HCV. These are housed in the GIS.

Non-Timber Forest Products

Non-timber forest products are defined as 'All forest products except timber, including other materials obtained from trees such as resins and leaves, as well as any other plant and animal products'.

The plantation estate has a range of Non-Timber Forest Products (NTFP) which can benefit ABP and stakeholders. These are:

Agistment of plantations. Neighbours and other community members approach ABP to seek approval to agist livestock. Approval is granted if there is a need for reducing fuel loads and the

property does not contain HCVs that are threatened by grazing. If approval is granted, an Access Agreement is provided and signed by the agistee and ABP. The Access Agreement contains important information on financial, legal, health and safety, and environmental considerations. The agreement is entered into the Master List on SinglePort. The number of hectares and head of livestock is inventoried. Monitoring occurs during routine plantation health surveillance.

Hay cutting. Permitting the harvesting of hay reduces fuel loads and makes use of a non-plantable areas. Hay harvesters must provide their own safe plant and equipment. Hay cutting is also managed through the signing of an Access Agreement and entered into the Master List.

Seed Orchard. The seed orchard is located in Albany WA and is 8.56 hectares in size. The seed orchard consists of *Eucalyptus globulus* trees. ABP maintains a Seed Database which includes information on (among others) seedlot, weight of seed harvested, number of seed, and value. The Seed Database is managed by the R&D Manager. The seed orchard is also monitored annually for genetic gain, flower count, pollination etc.

Forest management prescriptions

In establishing and managing plantations, a number of key tasks need to be undertaken to ensure a successful and viable outcome. The key tasks in establishing and managing plantations are listed below with reference to the appropriate operating procedures. The referenced procedures are all available on the SinglePort Intranet in 'Controlled documents'.

Evaluation and mapping (OP-7006)

This procedure describes the criteria for selecting land to establish plantations including soil types and depth, rainfall, and special values. It describes the mapping process for capturing features and applying setbacks.

Land Preparation (OP-7009)

The procedure describes clean-up and cultivation operations. Clean-up involves infrastructural removal, hazardous tree management, slash and stump management. The cultivation section describes the operational and contractor considerations for cultivating the soil and forming mounds or chopper rolling ready for planting.

Seedling Quality Assurance Manual (OP-7051)

A procedure which covers all aspects of seed propagation, soil medium, seedling trays, seedling quality and specifications.

Planting (OP-7015)

An operational procedure describing the considerations for planting including seedling delivery, selection of dump sites, seedling care and protection, and planting out.

Weed and Pest Control (OP-7018)

A procedure which covers all aspects of applying an integrated approach to pest and weed management including research into non-chemical alternative methods of control.

Weed and Pest Control Reference Guide

A chart detailing different chemical prescriptions for the different spray operations used in a typical pulpwood rotation.

Nutrition (OP-7021)

A procedure which describes the considerations required before undertaking a fertiliser program, the typical applications, and the operational and contractor considerations.

Plantation Surveillance (OP-7030)

A procedure which details the various forms of monitoring programs undertaken such as foliar sampling, survival counts, routine health monitoring, wilding spread monitoring.

Inventory (OP-7024)

This procedure describes how and when the plantation resource is measured to determine standing volume and provide estimates of future yield.

Green Triangle Fire Management Plan (OP-2006)

A management plan to detail the fire protection and fire readiness for each fire season in the GT region.

Western Australian Fire Management Plan (OP-2003)

A management plan to detail the fire protection and fire readiness for each fire season in the Albany region.

Management of Contractors and Suppliers (MP-3000) and individual work instructions (WI-3000-3006)

A management procedure to describe the contractor management system including pre-contract assessments, contractor induction, monitoring and review. Special work instructions are provided to contractors and detail the operational prescriptions and environmental safeguards that must be complied with.

Emergency Planning and Response (MP-2009)

This procedure details the emergency planning process and the emergency response details for the potential emergency situations that ABP personnel and contractors may encounter.

Natural Values Management Plan (MP-7020)

This management plan describes the systematic process for identifying, assessing, managing and monitoring natural values inherent on the properties ABP manages.

ABP Koala Management Plan

This management plan supports the authorisation to disturb koalas and sets out the requirements for training and induction of staff; planning and undertaking plantation management operations; addressing the welfare of impacted koalas; and review of this plan. All relevant staff and contractors in GT must be trained in this plan.

Harvesting

All ABP properties will be mechanically harvested. The method of harvesting may vary depending on the destination of the product. Trees will either be harvested, debarked, cut to length and transported in log form or will be harvested, debarked, chipped onsite and transported to a receival facility. The annual harvest is determined by resource availability and market access. Long term sustainable wood supply volume predictions are determined through annual Woodstock modelling.

For further information refer to:

- Harvest Operations (OP-7403)
- Harvest Planning (OP-7400)
- Parts I and II Chain of Custody for Forest Management and Chip Terminals (OP-7433)
- ABP Due Diligence System (OP-2706)

Risk management

Risk management is carried out on all operations to identify and evaluate risks and to develop effective and efficient control measures for significant risks. More information on risk management can be found in the HSEC Management Guide.

Risk management ensures operations are conducted in a way that ensures protection of the environment; safety of staff, contractors and the community; and sustainable economic returns for investors. It also ensures regulatory requirements are met. Contractors have their own operating and safety systems which are assessed at the initiation of their contract and audited regularly.

Security management

Plantations are a worksite and access to them needs to be controlled. Plantation Supervisors are responsible for managing security/access issues on their plantations. Plantation fences shall be maintained and gates shall be chained and padlocked. In certain circumstances gates may be unlocked. Any thefts, damage, trespass, presence of stock or other illegal activity shall be reported to the relevant authority.

Research and development

ABP maintains an active Research and Innovation Program that broadly aims to deliver sustainable forest management practices and innovations that improve market competitiveness and ultimately customer value. ABP actively seeks opportunities for innovation and improvement within its supply chain and collaborates with academic, consultative and industry partners in delivering the R&D program that involves strategic investments in genetics, nutrition, silviculture, koala research, wood quality and pest and disease management. The R&D strategy aims to ensure sustainable best practice that optimises productivity and growth of ABPs plantations.

Refer to the ABP Research and Development Strategy at Forestry/Research and Development/R&D Administration for more information.

Socio-economic impacts

Results from recent studies demonstrate that development of plantations can contribute to stable economic growth in regional areas (Plantations in Australia 2010, Australian Bureau of Agricultural and Resource Economics and Sciences 2015). In the Albany region over 263,400 ha of *E. globulus* occur in the region (Australian Bureau of Agricultural and Resource Economics and Sciences 2015), along with softwood plantations and a smaller area of sandalwood and oil mallee plantations. Bluegum plantations were established in the GT region as a new industry, with plantation area growing from 675 ha in 1991 to 148,900 ha in 2006 (Plantation in Australia 2010), with 170,700ha of *E. globulus* in 2014 (Australian Bureau of Agricultural and Resource Economics and Sciences 2015). By 2006, approximately 240 people were employed directly in the GT forest industry (Schirmer *et. al.*, 2009). Plantations have been established on agricultural land leased or purchased from landholders (Schirmer, 2009).

During the mature phases of a plantation estate, employment in the plantation sector increases rapidly. A large proportion of this employment is generated in the harvesting, transport and processing of wood products. The presence of processing facilities in regional areas can help to reduce or prevent population decline by providing an alternative source of employment (Plantations in Australia, 2010).

Long-term socio-economic studies show the following trends (Plantations in Australia, 2010):

- Employment and local economies (WA): 0.45 jobs/100 ha in hardwood industry, compared to 1.45 in softwood, almost entirely related to processing industry
- Compared to other land uses: before the farm gate (ie before you cut trees down), blue gums 0.20 jobs/100 ha compared to beef (0.22), cropping (0.23) and sheep (0.33), so forestry *slightly* below other rural industries but not significantly different. However past the farm gate, forestry adds another 0.30 – 0.45 jobs in harvesting and haulage, compared to the other farming pursuits with 0.01 – 0.03 jobs/100 ha because agricultural raw product leaves the state before it is value-added.
- Type of jobs: more Full Time Equivalent (FTE) jobs in forestry than the *entire* labour force and almost identical to agriculture at 75% (albeit silvicultural contractors – planting, nurseries – have 60-70% casual workers).
- Location of jobs: as land use changes to plantations, the jobs move to regional centres from rural land or small towns with < 1000 people.
- Net population change: depends on land tenure and tree ownership.
 - Establish own plantations: no change to population – they continue to live on their land
 - Lease land to company: net change over time, negative 3%
 - Sell land to company: net change over time, negative 7 – 19%
- Does plantation expansion affect rural population numbers at a LGA scale? Data says that other factors have a stronger affect, such as proximity to coast and cities, farm amalgamation and sea-changers. Inland areas are in decline because they aren't near cities or the beach.
- Types of people in the community: Where property leased, 10% turnover; where property sold, 75% turnover. Residents have mixed views on this ambivalent views towards this from, "My best friend has moved and I'm devastated," to, "Thank goodness that mongrel's gone."

- Effect on rural service provision and community groups: generally says that there is a drop off but less than 30% in most instances and this likely to happen anyway, with other influences.
 - Schools: enrolments drop off before plantations arrive as older residents are more likely to sell/lease and move off
 - rural fire brigades: 40% no change, 30% change location, 30% stop membership
 - Service groups: 68% no change, 32% cease membership
 - Sporting groups: 45% no change, 33% change location, 22% stop membership
- Rural land price: plantation land price increases are in line with increases in other areas. Rainfall and distance-to-coast are better indicators of increasing land value than presence/absence of plantations
- Effect on traditional rural industries: Whilst there was a strong trend of people getting out of sheep farming to sell/lease land for plantations during the plantation expansion phase / the Managed Investment Scheme (MIS) years of late 1990's to 2008. The trend has ceased with rationalisation, plantation estate's reaching economies of scale and recovery of Agricultural markets.

A 2017 study of the impacts of the Western Australian and Green Triangle (GT) forestry industries found:

- "In 2015-16 the forestry industry directly contributed about \$162 million to Gross Regional Product (GRP) in the Great Southern and Esperance regions and 1,396 million in the Green Triangle " (Schirmer, Mylek, Magnusson, Yabsley, and Morison, 2017, p. vi).
- In the first half of 2017 the forestry industry contributed around 4,570 and 2,344 jobs to the WA and GT economies respectively up to and including primary processing. In WA, of 4,570 jobs two thirds were generated in the processing of wood and paper products and over 30% by the growing and harvest of plantations. In GT, 53% of the 2,344 jobs were generated in the processing of wood and paper products and almost one third were generated by harvest and haulage. "This highlights the importance of establishment of local processing facilities to generating regional economic activity from in the industry" (Schirmer *et al.*, 2017, p. vi).
- "The WA forestry industry generates more full time jobs than other industries" (Schirmer *et al.* 2017, p. viii).
- Factors which made it challenging to recruit staff into the forestry industry included lack of available workers with appropriate skills; lack of certainty about the future of the industry; lack of suitable local workers; the large time and investment required to build workers skills; workers not wishing to shift to local areas; other businesses being able to offer higher wages or better working conditions and negative perceptions of the industry (Schirmer *et al.*, 2017).
- "Regions with higher dependence on the forestry industry are just as or likely to rate community as highly liveable, friendly, safe and aesthetically pleasant as those living in nearby communities with less dependence on the forestry industry" (Schirmer *et al.* 2017, p. ix).
- 76% of residents in the Great Southern and Esperance regions, 87% in the South Australian GT and 75% in the Victorian GT felt the forest industry had positive impacts on local employment (Schirmer *et al.*, 2017).

- The most common negative impacts identified were related to road impacts, bushfire risk and landscape aesthetics (Schirmer *et al.*, 2017).

Research on the socio-economic impacts of plantations is ongoing. ABP will keep abreast of any research and review its policies and procedures in light of new information, as and where required.

The Stakeholder Communication and Consultation Policy and Procedure (OP-2803) outlines ABP’s approach to stakeholder engagement. The policy is available on the ABP website.

Monitoring

Monitoring the economic, safety, social and environmental components of ABP’s activities is conducted in accordance with the Monitoring Schedule located at SinglePort/Forestry/HSEC/Registers.

ABP will report publically on the ABP website the results of a key selection of economic, social and environmental indicators on an annual basis.

Training and review

Initial training in the management plan occurs as part of inductions. Any further training in the management plan as a result of reviews/updates will be undertaken by the Environmental Manager or another suitable ABP representative.

This management plan will be reviewed in its entirety every five years. Other updates will be done as required. Please refer to the Management Review section of the HSEC Management System Guide. Any results from forest surveillance, operational and/or environmental monitoring will be taken into account as part of this review. The review table below shows date of review, the reviewers, a summary of changes/additions made as a result of the review, current version number and approval history.

Date	Reviewed by	Summary of changes/additions	Version	Approved
15/05/2014	HSEC Coordinator; HSEC Officer	Security management, p.10; Natural values, p. 7, para 5, Estate areas updated, soil objective added, NTFP added.	4.0	Regional Manager WA; Regional Manager GT
17/06/2014	HSEC Coordinator; HSEC Officer	NTFP amended, Prescribed burning added.	5.0	Regional Manager GT; Regional Manager WA
30/11/2015	HSEC Coordinator	Minor amendments- areas updated, monitoring indicators reviewed, link to monitoring schedule.	6.0	Regional Manager GT; Regional Manager WA
25/1/2017	Management review committee		7.0	Regional Manager WA; Regional Manager GT

14/2/2018	Management review committee	Update of Estate data information; inclusion of summary on socio-economic impact studies in GT and WA done by Jackie Schirmer from University of Canberra	8.0	General Manager Forestry
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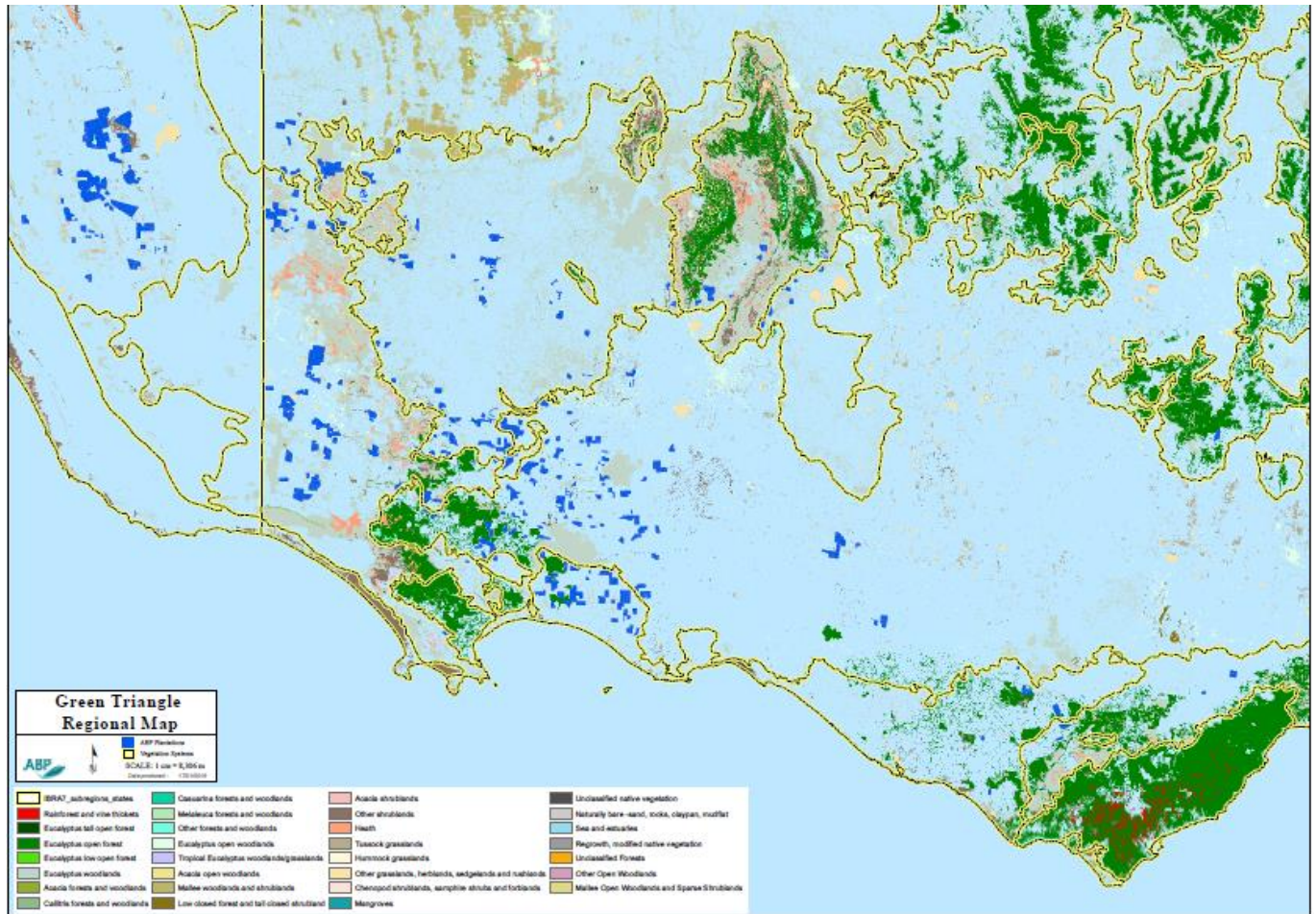
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APPENDIX 1. Major Vegetation Groups of the Green Triangle Region



In decreasing area of coverage within the Green Triangle FMU, the MVGs within or adjacent to the estate include:

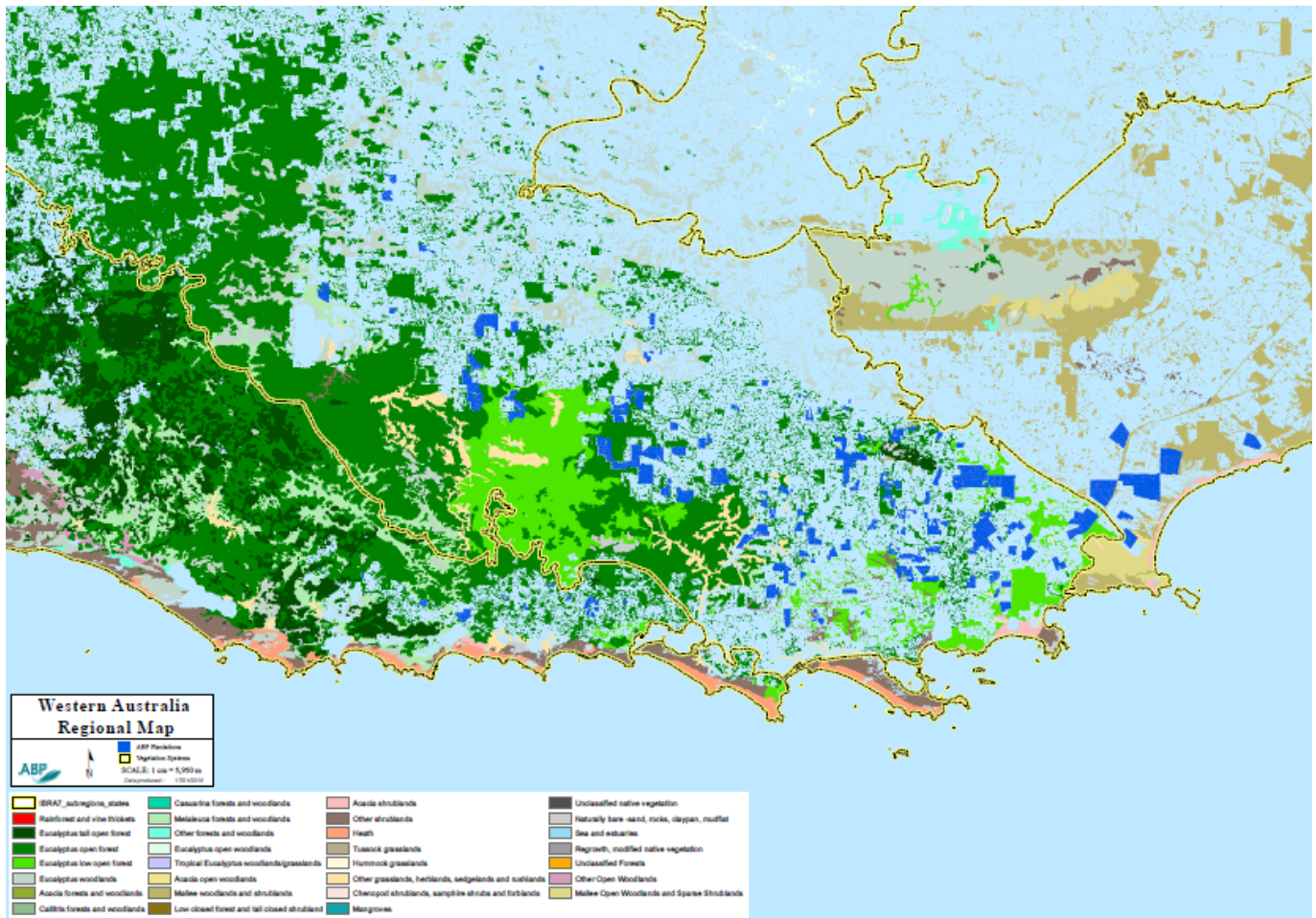
Eucalyptus Woodlands

<http://www.environment.gov.au/system/files/resources/2edcda80-d9b7-49d4-9e97-36236b91e9f9/files/mvg5-nvis-eucalypt-woodlands.pdf>

Eucalypt Low Open Forest

<http://www.environment.gov.au/system/files/resources/2edcda80-d9b7-49d4-9e97-36236b91e9f9/files/mvg4-nvis-eucalypt-low-open-forest.pdf>

APPENDIX 2. Major Vegetation Groups of the Albany Region



In decreasing area of coverage within the Albany FMU, the MVGs within or adjacent to the estate include:

Eucalypt Open Forests

<http://www.environment.gov.au/system/files/resources/2edcda80-d9b7-49d4-9e97-36236b91e9f9/files/mvg3-nvis-eucalypt-open-forest.pdf>

Eucalypt Low Open Forest

<http://www.environment.gov.au/system/files/resources/2edcda80-d9b7-49d4-9e97-36236b91e9f9/files/mvg4-nvis-eucalypt-low-open-forest.pdf>

APPENDIX 4. Water Catchments of the Albany Region

