

CODE OF PRACTICE FOR TIMBER PLANTATIONS IN WESTERN AUSTRALIA



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Note: All words in this Code that are shown in **bold** are defined in the glossary (p. viii).

Changes to the Code

Any changes to this Code must be done through the consultative process established to produce this document.

Formal committee structures established within industry will be the forums for any changes or recommendations to this Code.

In considering changes to the Code during a review process, FIFWA will consider the views of the following interest groups in respect of adopting any updates:

- the plantation growers, harvesters and processors;
- growers, industry and relevant regional-planning groups;
- relevant government agencies; and
- local government authorities.

This Code replaces the AFG's *Code of Practice for Timber Plantations in Western Australia 1997*. The Code complements related Acts, regulations, management plans, other relevant codes of practice, state policies, local government planning schemes, and state and national statements that relate directly or indirectly to plantations.

This Code *does not cover* the management of native forests, plant nurseries or orchards.

This Code will take effect from the date of its publication. It is not intended that it will apply retrospectively to plantations already established.

This Code will be reviewed by FIFWA every five years or as required.

Breaches of the Code

Any alleged breaches of the Code should, in the first instance, be referred to the plantation's owner or manager for attention. This should be done by the local government authority or government agency with authority under a relevant Act, regulation or planning scheme.

Where a written referral has been made, the plantation owner or manager has an obligation under this Code to respond to the notice within a reasonable timeframe.

Alleged breaches that relate to a failure to comply with Federal or State law that are not rectified within a reasonable timeframe following a notice issued by a local government authority or other government agency should be referred to the relevant government agency for attention.

The plantation owner or manager may address an alleged breach that is referred to them by providing the relevant agency with a notice of response and a certificate of compliance.

Following rectification action taken by the plantation owner or manager, if required, compliance certifies that the alleged breach has been dealt with, and that the development is compliant or has been brought into compliance with the Code.

Compliance certification can be obtained by the plantation owner or manager providing a certificate from one of the following entities:

1. An internal audit carried out by accredited auditors in response to the alleged breach.
2. An external independent audit carried out to satisfy compliance with relevant Federal or State legislation. For example, the *Management Investment Act 1988*, if applicable.
3. Independent certification undertaken by a person who is duly qualified to provide certification of compliance.

Where compliance is subsequently certified by one of the above entities and provided to the relevant government agency, no further action is required.

Documentation of Operational Procedures

Plantation managers with a resource in excess of 1,500 hectares should develop internal written procedures based on the goals and guidelines of this Code.

Acknowledgments

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Glossary of Terms

The following definitions apply to the interpretation of terms used in this Code:

Aerial spraying contractor: the aerial spraying contractor engaged by the target property owner to apply pesticides or fertilisers to the target property by means of aircraft.

Batter: the inclination or shape of a roadside cutting or soil fill beside a road.

Borrow pit: an excavation, usually close to a road, that is used to provide material to construct a road or approaches to a bridge.

Buffer: a strip of land abutting a feature including (1) the **riparian zone** of a **watercourse**; (2) an area of environmental significance that provides a **buffer zone** between the **plantation** and the feature; or (3) a dwelling, urban or special rural area.

Catchment: a discrete area of land that drains water into a **watercourse** or water body. A water catchment may be a series of subcatchments feeding a major river or a single subcatchment feeding a watercourse.

Competency: a concept that focuses on what is expected of an employee in the workplace rather than on the learning process. It embodies the ability to transfer and apply skills and knowledge to new situations and environments. Competency will normally be supported by accreditation from a recognised training authority or recognition by an appropriate professional body.

Cross slope: the formation of a road surface to provide a slope or camber so that water will drain from it.

Crown (in relation to a road): the highest point of a road that is shaped to allow drainage of water from it.

Declared animal: a declared animal under the *Agricultural and Related Resources Protection Act 1976*.

Declared plant: a declared plant under the *Agriculture and Related Resources Protection Act 1976*.

Disease: any disease or pathogen that attacks an animal or plant and includes any plant, fungus, bacteria, virus, nematode or other biological entity that may be found in or on a plant or animal, and genetic diseases and defects.

Drainage line: depressions that have evidence of periodically flowing water with a defined channel appearing at least intermittently. Visible water flow would be expected after storm events.

Environmental value: human and environmental uses of water and land resources.

Erosion hazard: a circumstance likely to increase the potential for erosion.

Establishment: a period of **plantation** development during which **site preparation**, weed control, planting, fertilising, infill planting and seedling protection takes place. Nominally, this is a period up to two years.

Exotic: introduced, not native to the area.

Extraction track: usually a **temporary track** used to haul wood products out of the **plantation area** to a landing area.

Field specification: the formal field specifications developed following appropriate consultation between the owner or manager of a **sensitive property**, the owner of the **target property** and the **pilot** engaged by the aviation contractor for application of insecticides on the target property to ensure protection to a neighbouring sensitive property.

Field supervisor: an employee or representative of the owner of the **target property** who is responsible for supervising and coordinating the aerial spray operation in the field. The field supervisor maintains sole communication with the **pilot** and acts as ground observer during the operation.

Filter strip: a piece of well vegetated land used specifically to filter out sediments and specific chemicals from water before entering a water body.

Fire management plan: specified procedures for preventing and controlling fires in a **plantation**.

Flume: an artificial channel of non-erodible material located below a culvert to prevent erosion of the **batter**.

Hygiene: biosecurity actions that decrease the risk of undesirable **pests, diseases** and weeds from being introduced, enabled to survive, spread or intensified.

Incident: An incident involves a significant chemical, oil or fuel spill in a place of environmental sensitivity or where there are implications for human health. An incident may also be a serious accident, an exotic **pest, disease** or weed incursion or natural disaster.

Incident management plan: a plan that details the procedure to minimise any detrimental impact of an **incident**.

Integrated pest management: a system or systems that utilise two or more methods to control **pests** in a synergistic way to achieve the objective.

Integrated weed management: a system that utilises two or more methods of weed control in a synergistic way to achieve the objective.

Native vegetation: native vegetation with an indigenous understorey.

Native vegetation (clearing of): to clear means to cause or permit the indigenous undergrowth, bush, or trees on the land to be removed or destroyed, or so damaged as to eventually be destroyed, or to cause the removal from the land of vegetation not under cultivation.

Neighbour: a landowner with a common boundary to the **target property** or who is situated across the road from the target property. This may not necessarily be the owner of a **sensitive property**.

Permanent road: a formed road located within a **plantation** that is required over the life of the plantation.

Pest plant: a plant prescribed by local laws made by a local government.

Pests: includes insects, weeds, fungi and animals that cause injury to **plantations**.

Pilot: the pilot of the aircraft engaged to apply the insecticides on behalf of the **aerial spraying contractor**.

Plantation: a stand of trees of ten hectares, or larger, that has been established by sowing or planting of either native or **exotic** tree species selected and managed

intensively for their commercial and/or **environmental value**. A plantation includes roads, **tracks**, firebreaks and small areas of **native vegetation** surrounded by plantations. Implicit in this definition is the recognition that plantations will be harvested.

Plantation area: that part of a **plantation** that is established to plantation trees.

Plantation establishment: the act of creating a new **plantation** whether it be by the planting of seedlings, clonal material or through the management of coppice shoots originating from a previous crop.

Plantation harvest plan: a plan developed before harvesting a **plantation** detailing the time of harvest, procedure for harvesting (including measures to protect local environmental and social values) and the route by which the products will be transported to a processor

Plantation management activities: all those acts undertaken in order to properly regulate and control the growth and harvesting of the plantation.

Plantation management plan: specified details of the development and management of a plantation. A plantation management plan many include plantation maps, establishment, maintenance, and fire management procedures. (Refer to Appendix 1.)

Plantation manager: the person or organisation that has responsibility for the implementation and control of all aspects of **plantation** management.

Plantation map: a map that details location of compartments on a property, cadastral and topographical features, infrastructure, firebreaks, water points, power lines, entry points and permanent access roads and **tracks**

Private land: freehold land.

Public-drinking-water source area: existing and future drinking water sources, identified by proclaiming underground **water pollution** control areas, water reserves or **catchment** areas under the *Country Areas Water Supply Act 1947* or the *Metropolitan Water Supply, Sewerage and Drainage Act 1909*.

Public land: land not granted or contracted to be granted in fee simple.

Public road: a sealed or unsealed trafficable roadway that is the responsibility of a local government or the Department of Main Roads.

Raw water: surface or groundwater to be used as drinking water but which has not received any treatment.

Rehabilitation: the restoration and revegetation of a site disturbed by **plantation** activities.

Reservoir: an artificial construction in the landscape for containing water.

Riparian zone: the zone adjacent to or surrounding a water body where **riparian vegetation** and natural ecosystems benefit from and are influenced by the passage and storage of water.

Riparian vegetation (phreatophytic vegetation): vegetation growing in a **riparian zone**. This vegetation relies on near-surface groundwater or seasonal inundation to survive.

Rock spillway: a placement of rocks below a culvert outlet designed to prevent erosion of the **batter**.

Rotation: a planned period of years between the planting of a **plantation** and its harvesting.

Run-off (related to road construction): a short, graded channel angled away from a road designed to divert water from the road into undisturbed ground.

Sensitive property: a property on which there is sensitive environmental value (e.g. a water supply source or conservation-valued water body) or a registered commercial activity that is sensitive to exposure to insecticides. For example, commercial marron farms, commercial fish farms, commercial vineyards, commercial strawberry farms or organic farming enterprises.

Significant feature: a place of recognised natural, historic, indigenous or environmental importance.

Silviculture: the theory and practice of managing **plantations** for wood production.

Site preparation: the preparation of a site in order to establish a **plantation**.

Soil damage: Soil damage occurs where:

- the 'A' soil horizon (topsoil) is wholly or partly removed; and/or
- the 'A' soil horizon (topsoil) is mixed with the 'B' horizon (sub-soil usually containing clay) and/or severe compaction occurs. (This normally means compaction that will affect germination or plant growth.)

Specifications: detailed methods that are developed to suit regional requirements and specific conditions to achieve a nominated goal.

Stringers and girders: beams or logs used to form the span of a bridge.

Temporary track or road: a road constructed within the **plantation** specifically for use in a particular operation. The road is usually not formed or surfaced and is closed after the operation is complete.

Tending: the treatment of a **plantation** to maintain, improve and protect the stand.

Thinning: the removal and/or killing of a portion of the trees in a **plantation** to procure a specific product and/or to increase the growth rate on selected retained trees.

Track: a **permanent road** that is not surfaced and that provides access to a **plantation** for **tending**, fire-related activities and extraction.

Vegetated buffer: an area of land adjacent to the planted area of a plantation on which native or other vegetation is retained for environmental purposes.

Vegetation: plants of any kind.

Waste material (logging debris): non-merchantable material that remains on a site after logging operations.

Watercourse: is defined in the *Rights in Water and Irrigation Act 1914* (as amended) as:

- any river, creek, stream or brook in which water flows;
- any collection of water (including a reservoir) into, through or out of which anything coming within paragraph (a) flows; or
- any place where water flows that is prescribed by local by-laws to be a watercourse.

This includes the bed and banks of anything referred to in paragraphs (a), (b) or (c).

Water pollution: occurs when waste products or other substances (e.g. effluent, litter, refuse, sewage or contaminated runoff) change the physical, chemical, biological or thermal properties of the water, adversely affecting water quality, living species and beneficial uses (*National Water Quality Management Strategy 1994*).

Water quality values: are those values that pertain to the purity of the water and which can be adversely affected by environmental contaminants.

Wetland: area of seasonal, intermittent or permanent waterlogged soils or inundated land, whether natural or otherwise, fresh or saline. In the context of the code, however, the types of wetlands that require consideration are Ramsar Convention,¹ Australian Nature Conservation Agency's Directory of Important Wetlands in Australia,² National Estate listings,³ Conservation Category or Resource Enhancement⁴ wetlands. The recommended management measures in this code do not apply to multiple use wetlands. Contact the Department of Environment's regional office (see Appendix 4) for management categories, boundaries and locations of wetlands.

References

1. UNESCO 1971, Article 1, Part 1, *Convention on Wetlands of International Significance*. Published in Australia, 1976, for Department of Foreign Affairs, Australian Government Publishing Service, Treaty Series 1975, No 48.
2. Usback, S. and James, R. (eds.) 1993, *A Directory of Important Wetlands in Australia*, Australian Nature Conservation Agency, Canberra.
3. Australian Heritage Commission 1990, *Criteria for the Register of the National Estate, Australian Heritage Commission Background Notes*.
4. Contact the Department of Environment regional office for information regarding the location and status of 'Conservation Category' and 'Resource Enhancement' wetlands.

Section 1: Scope of the Code of Practice

1.1 Introduction

The plantation estate in Western Australia is comprised of over 80,000 hectares of *Pinus radiata* and *Pinus pinaster* plantations located in areas extending from north of Perth to Esperance in the south east. It also includes over 300,000 hectares of hardwood plantations, primarily Tasmanian blue gum (*E globulus* Labill). In addition to the large-scale plantations, there are large areas of other commercial tree plantings across all regions of WA, several species of which have non-wood products such as oil, nuts, carbon credits and biomass.

The sector contributes significantly to the economies of local communities as well as providing employment throughout the state.

Tree **plantations** in Western Australia have an important role in providing a sustainable resource for economic development, as well as providing a means of improving farmland degraded by salinity and erosion caused by over-clearing.

Plantings commonly referred to as *agroforestry* or *farm forestry* are included within the definition of plantations within this code.

Plantations offer a viable resource in addition to that sourced from native forests for the supply of wood products to both domestic and international markets.

The purpose of this Code is to provide goals and guidelines to **plantation managers** so that plantation operations in Western Australia are conducted in a manner that is in accordance with accepted principles for good plantation management, whilst recognising that a primary aim of plantations is to be economically competitive and sustainable. Principles for good plantation management are described in *Forest Practices Related to Wood Production in Plantations: National Principles (1996)* and *National Water Quality Management Strategy: Policy and Principles (1994)*.

Achieving the goals and observing the guidelines defined in this Code are tasks for all parties associated with a particular plantation. These parties may include the owner of the land on which a plantation is growing, the owner of the plantation, the manager of the plantation, and the employees and contractors employed to work in the plantation. Key responsibilities will generally rest with the plantation manager.

The function of the Code may be summarised as follows:

- The Code is a guide for the development of **plantation management plans** that form the basis of **plantation management activities** including, **tending**, fire management and harvesting operations.
- The Code does not include detailed prescriptions for works. It is acknowledged that these should generally reflect individual objectives and circumstances. Prescriptions also vary between growers and are contingent on individual plantation characteristics, these being the responsibility of individual plantation managers.
- The Code applies to both public and private plantation growers on all land tenures.
- The Code has been consolidated by the Forest Industries Federation (WA) Inc. through extensive consultation and involvement with industry stakeholders. It is based on earlier versions of the Code produced by Australian Forest Growers WA and Commercial Plantations WA.
- This Code is not a prerequisite of quality or environmental management systems, or the reverse. The Code is designed to complement such systems.
- The term *must* is used to indicate a legislative or regulatory requirement or a core requirement of the Code. The term *should* is used to indicate a desirable but not mandatory procedure.

1.2 The Need for a Code of Practice

The purpose of this Code is to provide goals and guidelines to **plantation managers** so that operations in **plantations** in Western Australia are economically competitive and sustainable and are consistent with other resource management objectives.

The Code of Practice also facilitates assessment of State timber plantation practices by the Commonwealth Government. This was a prerequisite to ensure that controls on the export of unprocessed wood from public and private plantations are removed.

The Western Australian Planning Commission and Local Town Planning Schemes can rely upon the adoption of and adherence to this Code of Practice by plantation managers as an integral part of the planning and land-use process whether or not formal planning approval is required.

Local Governments can rely on adherence to this Code where planning approval for the **establishment** of a plantation is not required under a Town Planning Scheme (i.e. is a permitted land use).

Compliance with this Code of Practice will provide:

- the plantation industry with confidence to secure export opportunities for plantation products without additional licences or approvals;
- plantation managers with a single reference document encompassing all relevant rules and regulations relating to plantations in Western Australia; however, plantation managers should be aware that this Code might not reflect the current status of regulations as they may change over time;
- increased confidence for investors dealing with plantation managers;
- a professional, credible and sustainable industry by ensuring growers apply best practice; and
- an environmentally conscious market with sustainably produced timber products.

Section 2: Plantation Management Principles

This Code of Practice is guided by various national and general principles. It has been established to provide a framework for a consistent and scientific approach to sustainable management of **plantations**.

2.1 National Principles

The *National Principles in Forest Practices Related to Wood Production in Plantations: National Principles* (March 1996) are reproduced verbatim in the italicised text below.

2.1.1 Principles of Environmental Care

- a. *Native forest should not be cleared for plantation establishment where this would compromise regional conservation and catchment management objectives. In some circumstances it may be appropriate to clear forests that have been severely degraded by impacts such as disease, weed invasion, wind and fire so as to enable rehabilitation through replanting.*
- b. *Values such as intensive recreation, high scenic quality, significant geomorphic, biological, or cultural heritage sites, should be recognised in the planning of plantation forest operations.*
- c. *Plantation management should comply with State and regional conservation and catchment management objectives, relevant planning schemes and legislation.*
- d. *Water quality (physical, chemical, or biological) should be protected by measures controlling change resulting from plantation activities*
- e. *Water yield should be managed as required by careful planning of operations.*
- f. *Soil stability should be protected by measures, which regulate site disturbance.*
- g. *Soil, water catchment, cultural and landscape values should be protected by the careful location, construction, and maintenance of roads and tracks, and regulation of their use.*
- h. *Fauna, floristic, and landscape values should be protected by the careful planning of plantation layout establishment operations and the reservation and protection of appropriate areas of native vegetation; such values should be recognised in subsequent plantation management.*
- i. *Plantations and adjacent native forests should be protected from the adverse effects of fire and from the introduction and spread of plant, insect and animal pests and plant diseases.*
- j. *Operators will be trained in the principles of environmental care.*

2.1.2 Safety

All plantation establishment, management and utilisation activities must be conducted to comply with relevant occupational health and safety legislation and policy. In particular, all operators should be trained to designated standards in the safe and efficient use of equipment and machinery, and be responsible for safe working practices.

2.1.3 Planning

State and Local Governments should, with appropriate public involvement, pursue planning policies that provide secure zoning for commercial planting with the objective that tree planting and subsequent harvesting for commercial wood production should be an 'as of right' use.

State Governments will establish a sound legal basis for separating the forest asset component from the land asset for tree plantings. The Commonwealth Government will consider similar action re taxation, capital valuation etc.

Plantation strategic planning should be developed in conjunction with regional development plans.

The environmental, social and economic effects of all plantation operations envisaged for an area must be considered during the planning process.

Individual plantation operations must be conducted in accordance with relevant codes of practice.

2.1.4 Access

Planning of road systems in plantations should be based on both the economic principle of minimising the combined cost of roading and extraction and on the Principles of Environmental Care.

Road design will be to standards consistent with the purpose for which the road is to be used, and capable of carrying the anticipated traffic with reasonable safety.

Construction and maintenance of roads and associated works must be undertaken in a manner, which will ensure compliance with the Principles of Environmental Care.

Roads will be closed in wet conditions when unacceptable damage would occur or when such other conditions may warrant.

2.1.5 Establishment and Maintenance

Plantation establishment methods should be economically and environmentally appropriate for the particular requirements of the species to be planted and the specific site conditions.

Establishment of plantations may involve introduction of selected species, provenances or populations to increase productivity or value. However management of these plantations should aim to constrain or prevent the introduction of these species into surrounding areas.

Intensive management practices, such as site preparation, fertilising, weed control, pest and disease control and other operations must be carried out in accordance with codes of practice, and consistent with the Principles of Environmental Care.

2.1.6 Timber Harvesting

Timber harvesting will be planned and carried out under codes of practice to meet the Principles of Environmental Care.

The harvesting plan will consider factors such as harvesting unit size, slope and location of harvesting units; design and location of landings and snig tracks; harvesting equipment; areas excluded from logging; and areas specified for protection and reforestation.

Harvesting operations should not be conducted in a manner which compromises the Principles of Environmental Care, or where the safety of workers is at unacceptable risk.

Soil and water values should be protected by progressive rehabilitation and drainage of snig tracks, temporary roads, log dumps and any other earthworks associated with harvesting operations.

2.1.7 Forest Protection

Fire protection planning should be undertaken on a regional basis in co-ordination with relevant land management agencies and with local bush fire control organisations.

Plantation health surveillance should be undertaken on a regular basis.

Where weeds, pests or diseases cause significant damage, decline, or deaths of trees, prompt specialist advice should be sought to address the problem.

Use of chemicals, such as herbicides and pesticides, and other pest control methods in plantation operations must be in accordance with State policies, procedures and approved usage.

2.1.8 Monitoring and Review

Where practicable, plantation operations should be supervised and monitored by qualified persons and be subject to audit.

2.2 General Principles

2.2.1 Economic Benefits of Plantations

The economic viability of **plantations** and the ability to meet national and regional goals for plantation timber products will depend, in part, on the scale of investment in the plantation industry. Likewise, investor confidence is influenced by return on investment as well as the security of the investment, both of which can affect the scale and viability of the industry.

The development and sustainability of plantations is therefore contingent on the inherent economics of the industry. It is influenced by costs of production as well as plantation productivity.

The contribution to employment and the social fabric of local communities is likely to increase as the hardwood plantations mature and generate further harvesting, processing and value-adding opportunities.

It is therefore important to ensure that this Code maintains a careful balance between economic, environmental and social factors in considering issues relevant to the plantation industry.

2.2.2 Environmental Benefits of Plantations

This Code recognises the benefits that **plantations** provide as a means of reversing land degradation such as salinisation and water logging caused by rising water tables.

In particular, it is important to recognise the multiple benefits that plantations can provide in relation to environmental and commercial objectives, through the integration of plantations with other agricultural systems. However, decisions to integrate plantations with other agricultural systems, or to establish plantations on a broad scale, are ones that rest with the landowner in consultation with the **plantation manager**. These decisions must also be consistent with local government planning schemes.

2.3 Water Resources and Salinity

There are a variety of land and environmental benefits associated with tree planting that have the potential to contribute to the security and quality of water resources, and in particular, to contribute to the State Government's objectives on salinity management.

The establishment of plantations on cleared farmland complements the objectives of the State Government's salinity strategy, in particular the promotion of tree planting for the control of groundwater levels.

If located and managed appropriately, plantations can benefit water resources by:

- improving water quality in catchments affected by saline surface water; e.g. the Denmark River catchment;
- reversing dryland salinity and waterlogging by controlling groundwater levels;
- assisting in the control of soil erosion;
- reducing nutrient inputs compared to other crops; and
- reducing applications of pesticides in comparison to general agriculture.

Section 3: Acts and Regulations Relevant to Plantation Management

Legislative controls on **plantation management activities** in Western Australia are found in relevant Commonwealth and State Acts and regulations along with the associated policies, guidelines and related codes of practice.

3.1 State Government Legislation

Title of Act or regulation	Relevance of legislation to plantations	Responsible agency
<i>Aboriginal Heritage Act 1972</i>	Protects Aboriginal cultural material, Aboriginal sites and declared protected areas.	Department of Indigenous Affairs
<i>Aerial Spraying Control Act 1966</i>	Controls the spraying of agricultural chemicals including the regulation of contractor procedures, spray drift and equipment requirements.	Department of Agriculture
<i>Agricultural and Veterinary Chemicals (Western Australia) Act 1995</i>	The Act covers the use and control of pesticides, including the requirement to use pesticides in accordance with label requirements or 'off label' permits for unregistered pesticide.	Department of Agriculture
<i>Agriculture and Related Resources Protection Act 1976</i>	Control of declared animals (vermin) and declared plants (e.g. noxious weeds), spraying restrictions, fencing and accreditation for use and storage of 1080 poison.	Department of Agriculture
<i>Bush Fires Act 1954</i>	Plantation design, compartment size and layout, firebreak design and minimum firebreak widths, water point requirements, fire equipment requirements, public utility firebreak easements, burning off, restricted and prohibited burning seasons, permit to set fire to bush, plantation pruning and overhang, planting within town site influence zones.	Fire and Emergency Services Authority
<i>Carbon Rights Legislation Act 2003</i>	This Act was passed to amend the <i>Conveyancing Act 1919</i> , the <i>Forestry Act 1916</i> and the <i>Electricity (Pacific Power) Act 1950</i> , to recognise the rights associated with carbon sequestration and claiming of carbon credits.	Department of Environment (DoE)
<i>Conservation and Land Management Act 1984</i>	Sets objectives for plantations on State forest and timber reserves, State managed business undertakings for tree plantations including timber share farming agreements, registration of owner's identification code for private land and log timber intended to be delivered to a sawmill.	Department of Conservation and Land Management

Title of Act or regulation	Relevance of legislation to plantations	Responsible agency
<i>Country Areas Water Supply (CAWS) Act 1947</i>	This Act covers the protection of water quality for country surface water and groundwater sources used for public drinking water supply. The regulations and by-laws only relate to proclaimed catchment areas or water reserves. The by-laws of the Act give the department, or its delegated representative, the power to take steps to protect raw drinking water sources and to control activities within catchment areas. Regulations require licences for the removal of native vegetation within proclaimed clearing control areas unless a valid permit issued under the EP Act applies and the area has not previously been compensated.	Department of Water
<i>Dangerous Goods (Transport) Act 1998</i>	Ensures the safe transportation of dangerous goods by vehicles, and the licensing of vehicles and people responsible for the transport of dangerous goods.	Department of Consumer and Employment Protection
<i>Dividing Fences Act 1961</i>	Adjoining land owners are required to share the cost of erection and maintenance of dividing fences. The Act provides the process for owners of land to serve notices for erection and maintenance of fences, the means of recovery of costs, and the formula for cost sharing between tenants and landlords.	Department of Agriculture
<i>Environmental Protection Act 1986 (EP Act)</i>	Environmental impact assessment of any proposals that may significantly affect the environment may be required. Environmental protection policies and pollution prevention via various regulatory processes. The <i>Environmental Protection (Clearing of Native Vegetation) Regulations 2004</i> replaces the existing law relating to clearing under the <i>Soil and Land Conservation Act 1945</i> . Examples of clearing that will require a permit are paddock trees greater than a hectare and any native vegetation in a public-drinking-water source areas.	Department of Environment
<i>Exotic Diseases of Animals Act 1993</i>	The eradication of major exotic animal diseases.	Department of Agriculture
<i>Explosives and Dangerous Goods Act 1961</i>	Regulates the classification, marking, storage, carriage and sale of dangerous goods.	Department of Consumer and Employment Protection
<i>Fish Resources Management Act 1994</i>	This Act is to regulate the modification of naturally flowing watercourse by way of dams, weirs or reservoirs and to protect natural watercourses from pollution.	Department of Fisheries
<i>Health Act 1911</i>	Use and application of pesticides in plantations, from the ground or from the air, licensing of pesticide operators, transport and storage of pesticides. Restrictions on pesticide use and application techniques within public-drinking-water source areas.	Health Department
<i>Heritage of Western Australia Act 1990</i>	Protects places of significant cultural heritage.	Western Australian Heritage Commission

Title of Act or regulation	Relevance of legislation to plantations	Responsible agency
<i>Land Drainage Act 1925</i>	An Act to provide for the drainage of land, the use of drains and drainage water, and the constitution of drainage districts for other purposes.	Department of Water
<i>Local Government Act 1995</i>	Subdivision 4 of the Act provides for the impoundment of straying stock. Regulations have been made under this section, and local governments have the power under the Act to make local laws regarding straying stock.	Department of Local Government
<i>Metropolitan Water Supply, Sewerage & Drainage Act (MWSS&D Act) 1909</i>	The Act covers the protection of water quality for Perth metropolitan surface water and groundwater sources used for public drinking water supply. The regulations and by-laws only relate to proclaimed underground water-pollution control areas, public-drinking-water source areas or water reserves. The by-laws of this Act give the DoE, or its delegated representative, the power to take steps to protect raw water sources and to regulate activities within catchment areas.	Department of Water
<i>Occupational Safety and Health Act 1984</i>	Employee and employer obligations and duties relating to safety, training and workplace practices.	Department of Consumer and Employment Protection
<i>Plant Diseases (Regulations) Act 1968</i>	Regulates the movement of plant species and timber products into the WA from interstate and within the state.	Department of Agriculture
<i>Poisons Act 1964</i>	An Act to regulate and control the possession, sale and use of poisons including the application and management of pesticides.	Department of Health
<i>Rights in Water and Irrigation Act 1914 (RIWI Act)</i>	The Act covers riparian rights, irrigation districts management, the licensing of bores for aquifers and abstraction of water from rivers and watercourses. Licenses are only required in proclaimed areas. In addition, all artesian wells need to be licensed.	
<i>Soil and Land Conservation Act 1945</i>	The conservation of land resources and the mitigation of the effects of salinity, erosion and flooding. Drainage and pumping of water from owner's land to other land or water course.	Department of Agriculture
<i>Stock Diseases Act</i>	The prevention, control and eradication of animal diseases not included in the <i>Exotic Diseases of Animals Act 1993</i> .	Department of Agriculture
<i>Town Planning and Development Act 1928</i>	Preparation and administration of district planning schemes and scheme amendments to incorporate zones, provisions, policies and strategies relevant to timber plantations. (Schemes and amendments are prepared by local governments, assessed by the Western Australian Planning Commission and approved by the Minister for Planning). Approval for subdivision or for the lease of portions, lots or locations for periods in excess of ten years on freehold land is done by the Commission. Assessment of development applications for plantation establishment (where required under the district planning scheme) is done by the local government.	Western Australian Planning Commission
<i>Tree Plantation Agreements Act 2003</i>	An Act to provide for the making and effect of certain agreements and for the creation and effect of certain interests in land, in relation to tree plantations and related matters.	Department of Agriculture

Title of Act or regulation	Relevance of legislation to plantations	Responsible agency
<i>Waterways Conservation Act 1976 (WC Act) and the Swan River Trust Act 1988 (SRT Act)</i>	Under the provisions of these Acts, the DoE has a waterways management and protection function and associated powers in respect of designated waterways (i.e. Swan River, Avon River, Peel Inlet, Leschenault Inlet, Albany Waterways, and Wilson Inlet) and adjoining land in management areas declared under the Acts. This adjoining land extends to the entire catchments of the Avon River, Albany Waterways and Wilson Inlet.	
<i>Wildlife Conservation Act 1950</i>	Issue of damage licences for management of native fauna damaging plantations, taking of protected flora and fauna, protection of rare flora and fauna. Taking of protected flora for sale from private property requires a commercial producer's licence.	Department of Conservation and Land Management

3.2 Commonwealth Government Legislation

Title of Act or regulation	Relevance of legislation to plantations	Agency responsible
<i>Australian Heritage Council Act 2003</i>	Repealed and replaced by the 2003 Act. Assesses whether a place should be included in the National Heritage List or Commonwealth Heritage List or the Register of the National Estate	Australian Heritage Council
<i>Civil Aviation Regulations (various)</i>	Limitations on obstacles surrounding airstrips. Limitations on construction of airstrips or runways within five nautical miles of existing aerodromes.	Civil Aviation Authority
<i>Managed Investments Act 1988 and the Trade Practices Act 1974</i>	Public accountability of commercial forest operations. Several State and Commonwealth Acts and codes cover capital raising and formation provisions for plantation investment companies including joint venture arrangements between plantation companies and landowners.	Australia Securities and Investment Commission and the Australian Competition and Consumer Commission
<i>Environmental Protection and Biodiversity Conservation Act 1999</i>	Environmental impact assessments for proposals that may significantly affect a matter of national environmental significance, or for Commonwealth proponents or on Commonwealth lands. Defines threatened species and communities and threatening processes.	Department of Environment and Heritage
<i>Native Title Act 1993</i>	Defines procedural rights for native title.	Department of Indigenous Affairs
<i>Quarantine Act 1908 and the Customs Act 1901</i>	Import of plants and forest products into Western Australia from overseas.	Australian Quarantine and Inspection Service

3.3 Reference Documents

Reference documents guiding **plantation management activities** include the following:

- *Forest Practices Related to Wood Production in Plantations: National Principles (1996)* as amended;
- *Intergovernmental Agreement on the Environment (1992)* as amended;
- *National Competency Standards, Policy and Guidelines (1992)* as amended;
- *National Forest Policy Statement (1992, 1995)* as amended;
- *State Plantations Impact Study (1990)* as amended;
- *Plantations for Australia – The 2020 Vision (2002)* as amended
- *Wood and Paper Industry Strategy (1995)* as amended;
- *State Salinity Strategy (2000)* as amended;
- *State Greenhouse Strategy*; and
- Department of Environment Publications: water quality protection note: *Vegetation Buffers to Sensitive Water Resources*.

Section 4: Goals and Guidelines for Plantation Management

4.1 Explanation

The following terms are used in this section:

- *Goal*: a desired outcome (economic or environmental).
- *Guideline*: a recommended approach for achieving goals. Guidelines can be either quantitative or qualitative.
- *Specifications*: detailed methods that are developed to suit regional requirements and specific conditions to achieve a nominated goal.

This Code provides goals and guidelines to follow when preparing **specifications** for **establishment**, management and harvesting of **plantations**.

4.2 Management Plans

Goal

Establish and manage **plantations** according to **management plans**.

Guidelines

- A plantation must be managed according to a management plan, as outlined in Appendix 1.
- **Plantation managers** with plantations spread over a number of properties may develop generic plans that apply to a number of properties. Where this occurs, the properties to which the generic plan applies must be clearly identified along with appropriate property-related details being provided for each property.
- **Plantation maps** are dynamic and may be updated from time to time to reflect changes in the plantation.
- Plantation managers may require town-planning approval for plantations before settlement and before specific management planning and mapping has been completed. This situation could arise where the land in question is in a special control area and/or is listed as a discretionary use under a local town-planning scheme. In such cases, the plantation manager may submit a draft plantation management plan and plantation map for the purposes of gaining the necessary planning approvals;
- Management of a plantation over time may vary from that specified in the original plantation management plan to account for new techniques and procedures as well as to respond to new threats to the plantation. Plantation management plans should therefore be seen as indicative rather than absolute in terms of actual plantation management. Changes to the plantation management plan that have the potential to impact on water quality in public-drinking-water source areas should be discussed with the

regional office of the Department of the Environment (or its delegated agent).

- In a zone where approval to establish a plantation is not necessary, the plantation manager should submit a plantation management plan and plantation map to the relevant local government for record purposes.

An example of a plantation-management-plan protocol is presented in Appendix 1.

4.3 Plantation Location, Planning and Design

Goals

- Establish **plantations** on cleared agricultural land or on land previously **growing a plantation**.
- Locate and design plantations to achieve commercial viability and maintain **environmental values**.
- Locate and design plantations, where possible, to meet desirable environmental outcomes including groundwater control and landscape protection.
- Establish plantations on properties where cadastral boundaries have been confirmed.

Guidelines

Plantations should be designed taking into account the following:

- Clearing of **native vegetation** for plantation **establishment** is contrary to the policy of the Western Australian government. Clearing of native vegetation for the establishment of plantations generally requires a clearing permit under the *Environmental Protection Act 1986*. Clearing for plantation establishment is assessed against the ten clearing principles outlined in Schedule 5 of the Act. These consider biodiversity values, land degradation and water quality issues.
- A clearing permit does not remove the obligation to obtain Ministerial consent to disturb declared rare flora under the *Wildlife Conservation Act 1950*.
- Removal of native vegetation in proclaimed clearing control **catchment** areas also requires a clearing permit under the *Environmental Protection Act 1986*. Holding such a clearing permit provides an exemption from a clearing licence under Part IIA of the *Country Areas Water Supply Act 1947*, unless compensation has previously been paid. Where the clearing is exempt under the *Environmental Protection Act 1986* or the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*, or where compensation has been paid, a CAWS clearing licence is required. Removal of native vegetation in public-drinking-water source areas requires approval from the Department of Environment under the *Metropolitan Water Supply, Sewerage*

and *Drainage Act 1909* or the *Country Areas Water Supply Act 1947*, as well as a clearing permit under the *EP Act*;

- Existing native vegetation should be retained adjacent to **watercourses**, **wetlands** and reservoirs.
- The provisions of the *Aboriginal Heritage Act 1972* and the *Native Title Act 1993* must be adhered to.
- Plantation managers should determine if there are special local government Town Planning Scheme requirements regarding the removal of native vegetation.
- Approval to lease land that is part only of a lot and where the term of the lease exceeds 10 years is required pursuant to section 20 of the *Town Planning and Development Act 1928* and the *Local Government Act 1995*.
- Plantations must be designed in accordance with the provisions of the *Bushfires Act 1954*, as amended by the *Bushfires Amendment Act 1987*; the Fire and Emergency Services Authority of WA's *Guidelines for Plantation Fire Protection 1998* (as amended) and relevant local government firebreaks notices.
- Location of plantations near airports, or the construction of airfields in or near plantations, must adhere to the civil aviation regulations.
- The plantation manager should establish whether sites of significant landscape value and cultural heritage value exist through consultation with the relevant authorities and assess whether development will impact on such values.
- Water quality should be protected by careful planning and control of the location and timing of machine operations during **site preparation** and harvesting. This should be done with the aim of not permitting disturbance of the watercourse or wetland and minimising the chance of soil or chemicals being transported to the watercourse or wetland. Non planted buffers of 6 meters should be maintained from the edge of a watercourse.
- Plantations should be designed in accordance with the road design principles outlined in section 4.5.
- Plantations should not be established on slopes in excess of one in three. Slope limits of one in seven should be applied in areas where the **erosion hazard** is high. The clearing provisions of the *Environmental Protection Act 1986* consider the impact of clearing on land degradation issues such as erosion. Where existing plantations occur on steep slopes, they may be harvested and replanted, provided that soil stability is not compromised. Note: the establishment of plantations may be considered on steep slopes that are already cleared and subject to erosion since this may actually improve soil stability.
- The taking or diversion of surface water and abstraction of groundwater for commercial irrigation purposes from areas that are proclaimed under the *Rights in Water and Irrigation Act 1914* is subject to licensing by the Department of Environment.

4.4 Plantations within Public-drinking-water Source Areas

Goals

- No detrimental impact on **raw water** quality because of activities in **plantations** situated in public-drinking-water source areas.
- **Water quality values** to be protected within water resources including groundwater, **watercourses**, springs, **wetlands** and reservoirs. The water quality issues relevant to forestry activities are pathogens, turbidity and erosion, nutrients and chemical spills.

Guidelines

- The quality of public-drinking-water sources is protected by proclaiming underground **water pollution** control areas, **catchment** areas or water reserves under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* (MWSS&D) and *Country Areas Water Supply Act 1947* (CAWS) and managing land use activities in accordance with the associated by-laws.
- The regulations under the *Environmental Protection Act 1986* and by-laws under the MWSS&D and the CAWS Acts enable the Department of Environment to control potentially polluting activities, to regulate land use, inspect premises and to take steps to prevent or clean up pollution in **public-drinking-water source areas**.
- To protect the quality of public-drinking-water source areas, the Department of Environment has defined three levels of priority classification in the water-quality protection note 'Land Use Compatibility in Public Drinking Water Source Areas'. This note provides information on land use and activities that may affect the quality of the State's water resources.
- The Department of Environment recognises that many plantations were established in public-drinking-water source areas before the current strategy to protect water resources was implemented. The plantation manager will negotiate with the Department (on a case-by-case basis and including on-site inspections as necessary) to develop appropriate management practices to minimise the impact on water resources, while taking into consideration the primary commercial objectives of the plantations.
- In public-drinking-water source areas, the preparation of management plans for new or replacement plantations should be developed in consultation with the Department of Environment or its delegated representative to set out measures for protecting water values as well as ensuring commercial viability.
- In public-drinking water source areas, **vegetated** (e.g. pasture) **buffer** zones adjacent to watercourses and reservoirs are necessary to maintain water quality. Refer to the Department of Environment's water quality protection note: *Vegetation Buffers to Sensitive Environments*.
- The application of chemicals, including fertiliser and pesticides, in public-drinking-water source areas should be in accordance with Health Department, Department of Environment, and Environmental Protection Authority policies and guidelines. The interpretation of policies and

guidelines should be achieved by consultation between the relevant government agency and the plantation manager.

- If a plantation within a public-drinking-water source area is to be harvested and not re-established, a plan addressing subsequent land use activities (where the development of such activities is the responsibility of the plantation grower) should be developed in consultation with the Department of Environment. Whilst reversion to the pre-plantation land use is acceptable, any changes to the use of the land before the **establishment** of the plantation should be compatible with water source objectives for that catchment.
- Harvesting of plantations established for commercial reasons on land that was previously cleared pasture will not be restricted, either within or outside the influence of a public-drinking-water source area, provided that adequate measures to protect water quality are incorporated in the plantation harvest plan and on-ground operations. Thinning to protect the water yield may be a part of the plantation management plan for plantations within a public-drinking-water source area.

4.5 Roads

4.5.1 Plantation Roads

4.5.1.1 General

Goal

Ensure that access within **plantations** is of an adequate standard to ensure that **plantation establishment, tending, fire management and harvesting** can be carried out efficiently and safely, without adverse impact on **environmental values**.

Guidelines

- Roads and **tracks** of a suitable standard should be established before they are required to be used, to allow consolidation of the running surface.
- **Temporary roads** established for a specific operation should be closed and rehabilitated unless they serve an ongoing purpose.
- All roads should be adequately drained and stabilised to improve pavement strength.
- Roads should be located on alignments and grades that provide the required standard of access without compromising road safety, water quality and other environmental values.
- New roads should be kept to the minimum necessary to satisfy management requirements, be located in an appropriate position (e.g. avoiding **watercourse** crossings where possible), be constructed under suitable weather conditions with an appropriate lead time to allow consolidation.
- New roads specific to the harvesting operation should be outlined in the **plantation harvest plan**.

For additional information on environmental measures, see the Department of Environment's water quality protection note: *Roads to Sensitive Environments*.

4.5.1.2 Road Location

Goal

Locate roads to provide adequate and safe access within the plantation whilst minimising the risk of soil erosion and the degradation of water quality.

Guidelines

Roads should be planned, where possible, such that they:

- are constructed on the contour to minimise the need for drainage works;
- require the minimum amount of vegetation clearing necessary for road construction, safe operation and maintenance;
- minimise the spread of diseases, pathogens and declared weeds;
- minimise the number of **watercourse** crossings and other interference with natural drainage;
- are located outside the **riparian zones** of watercourses and wetlands, except for waterway crossings; and
- minimise the amount of earthworks by running along ridges and spurs, and avoiding steep side slopes and areas prone to slippage.

4.5.1.3 Road Design

Goal

Roads are designed to carry the level of traffic anticipated in **plantations** throughout the **rotation**, and beyond if necessary, with reasonable safety.

Guidelines

- New or upgraded roads should be designed to accommodate the anticipated frequency, type and speed of traffic, soil and subgrade conditions, road drainage and water quality requirements, and landscape and **environmental values**.
- **Permanent roads** should be constructed on alignments with ruling grades that generally do not exceed one in ten, steeper grades being permissible for short sections with appropriate drainage controls to minimise erosion. **Temporary roads** may be constructed on alignments with ruling grades steeper than one in ten, provided erosion controls are implemented.

4.5.1.4 Road Construction

Goal

Plan and construct roads well in advance of harvesting operations and to coincide with favourable weather conditions.

Guidelines

- Road construction should be undertaken when soil is not saturated in order to minimise the risk of erosion. Sufficient moisture needs to be present or added to enable stabilisation of the road surface and road subgrade.
- **Hygiene** practices should be implemented where necessary to prevent the spread of soil-borne pathogens and declared weeds. Information is available from the WA Department of Agriculture or the Department of Conservation and Land Management.
- Logs, stumps and other debris should not be buried in the load-bearing portion of the road.
- Embankments and fills should be stabilised using accepted engineering practices.
- When constructing **permanent roads**, topsoil should be stockpiled and returned to **batters** and embankments ready for **rehabilitation** works.
- Drainage structures should be installed concurrently with the formation of the road. Sections of partly constructed road to be left over winter or for other extended periods should be drained by out-sloping or cross-drains.

4.5.1.5 Road Drainage

Goal

Road drainage does not cause excessive erosion or have a detrimental impact on water quality.

Guidelines

- Roads should be constructed to facilitate and control **run-off**.
- Drainage structures should be spaced according to the road grade and soil type, and must conform to accepted standards.
- Drainage from roads should discharge onto rocked spillways or into the plantation or undisturbed vegetation. Direct discharge of water containing soil matter into **watercourses**, **wetlands** or reservoirs should be avoided.
- All culverts, drains and silt traps should be kept clear of soil and debris likely to obstruct the flow of water and, as a minimum, they should be cleaned out before the wet season and following significant storm events.
- Discharge points from roads should be provided before the road enters **riparian zones** or **buffer** strips.

4.5.1.6 Road Batters

Goal

Maintain the integrity of roads by appropriate design and maintenance of **batters**.

Guidelines

- **Batters** should be sloped and stepped if necessary to avoid rilling and slumps.
- Topsoil should be returned to batter surfaces and revegetated.
- Catch drains above battered banks exceeding three metres in height should be installed to reduce erosion of the batter.

Retaining walls and other structures should be used where necessary to maintain the integrity of the batter.

4.5.1.7 Watercourse and Drainage line Crossings

Goal

Minimise the number of **watercourse** crossings. Where it is necessary for a road to cross a watercourse, ensure that it is via a bridge, culvert or ford. Design of such should meet the transport needs and minimise impacts on water quality and **riparian vegetation**.

Guidelines

Crossings should account for the volume of the flow, particularly taking into consideration the impact of clear felling and **site preparation** practices on **run-off** into drainage channels.

Construction should ensure that:

- Disturbance to the watercourse bed and banks is minimised.
- Fill or spoil material is not pushed into watercourse, nor into a position where it can move into a watercourse.
- Cement and raw concrete are not spilt into running watercourses as they can be toxic to aquatic fauna or flora.
- Bridges should be designed to prevent overtopping during one in ten-year flood events and be protected by debris traps in areas of regular flooding.
- Fords may be constructed on roads where use is infrequent or water flow is light.
- Permanent culverts should be designed to cope with peak flows (e.g. a one in ten-year flood event). Water that is diverted by a culvert must be returned to its natural course by a **flume**, rocked spillway or other hard-surfaced construction to minimise erosion. Culverts should be aligned across watercourses such that the construction does not prevent the movement of aquatic fauna up-stream.
- Excavations for bridges, placement of sills or abutments should not alter natural watercourse flow, and the positioning of **stringers or girders** should be above the high water mark. Earth embankments constructed for bridge approaches should be protected from erosion by revegetation, retaining walls, bulkheads or rock surfaces. Topsoil should be stockpiled for re-distribution to assist **rehabilitation**.

- Temporary bridges and culverts should be removed promptly after use and the approaches rehabilitated.
- A permit is required to interfere with the bed and banks of watercourses proclaimed under the *Rights in Water and Irrigation Act 1914*. Contact Department of Environment regional offices for information proclaimed areas and permit applications.

4.5.1.8 Road Maintenance

Goal

Maintain road surfaces and drainage installations in order to protect the road foundation and form, and to provide for continuous safe drainage.

Guidelines

- Roads should be maintained to provide for the safe operation of vehicles; ensure the integrity of the surface remains intact; ensure that drainage is not impeded; and to ensure that systems are not allowed to deteriorate such that erosion may occur.
- Vegetation on the verges of roads should be managed to maintain visibility and to prevent drainage systems becoming blocked.
- The condition of the roads and associated drainage should be regularly assessed.
- Drainage structures should be maintained regularly.
- Road maintenance programs should be undertaken at least annually, including inspection of culverts and silt traps. If necessary, they should be de-silted prior to commencement of the wet season.

4.5.1.9 Road Closures

Goal

Effective measures are in place to facilitate prompt closure of unpaved roads when damage conditions occur or when they are no longer required for management purposes.

Guidelines

- Roads should be closed to heavy traffic and be rebuilt if structural damage to the road occurs.
- Roads that are to be permanently closed should be ripped then rehabilitated either by planting with a commercial species or appropriate alternative **vegetation**.
- Roads should be closed to heavy and light traffic, or suitably upgraded, when water quality values are threatened in neighbouring watercourses. Measures should be taken to minimise adverse impacts on water quality.

4.5.2 Public Roads

Goal

Maintain the integrity of the public road system used for the haulage of wood products whilst ensuring public safety.

Guidelines

- Timber haulage vehicles must comply with the *Road Traffic Act 1974* and the *Local Government Act 1995*.
- Haulage operators should obtain multi-combination vehicle permits where necessary.
- Routes to be used by vehicles carting logs or woodchips to their destination should be shown on the **plantation harvest plan** or associated document. Where appropriate, notification to the relevant local government should be made in the form shown in Appendix 2.
- Where local roads have been designated by the relevant local government to be below standard appropriate for the haulage vehicle being used, traffic management measures are to be implemented following consultation with the local government to minimise damage to the road and to ensure safety requirements are met.
- **Plantation managers** should be aware that local governments may require some modification or restrictions to the proposed haul route to ensure the safety of other road users.
- Where more than one plantation manager proposes to use a particular road as a haulage route at the same time, the owners in consultation with the local government should coordinate activities to minimise damage to the road network and to ensure a safe work environment is achieved.
- Plantation managers should (where practical) join regional road advisory committees to assist in road-traffic planning processes and to coordinate regional road issues including lobbying State and Federal Governments for funding for road upgrades and maintenance, and to coordinate harvesting and road haulage activities.
- The plantation manager should ensure that roads used as haulage routes are reinstated following harvest to at least the condition existing before harvesting. This should be done provided that pre-harvest joint inspection of the condition of the roads to be used as a haulage route is conducted between the grower and the responsible local government.
- Following the completion of harvest a further joint inspection of the relevant local roads, used as a haulage route should be conducted by the same parties.
- The plantation manager is only responsible for reinstatement and/or repairs in respect to any damage, excluding fair wear and tear, caused to roads that is directly related to the haulage of harvested logs, wood chips or other tree products from land on which the harvest has taken place.

4.5.2.1 Pits Supplying Materials for Road, Bridge or Log-landing Construction

Goal

Locate gravel pits, **borrow pits** and disposal pits to minimise the impact on water quality, and not affect other **environmental values**.

Guidelines

- Gravel pits and borrow pits should be located at a suitable distance from **watercourses** and **riparian zones** (preferably at mid- or upper-slope) so as not to damage the watercourse and riparian values.
- Where the development of a gravel pit or borrow pit involves the clearing of native vegetation, a clearing permit under the *Environmental Protection Act 1986* is required, unless an exemption applies. Preference should be given to establishing quarries, gravel pits or borrow pits on cleared or highly degraded land.
- **Hygiene** practices must be implemented to prevent the spread of soil-borne pathogens and weeds. For more information, contact CALM.
- **Run-off** from disturbed surfaces (e.g. gravel pits and quarries) should, where possible, be directed into areas of undisturbed vegetation and not allowed to run into wetlands, watercourses or drainage channels unless soil matter has settled out (i.e. discharged into silt traps or sumps).
- Gravel pits and borrow pits should be rehabilitated within one year of the pit becoming redundant or exhausted. Banks should be **battered**, compacted areas ripped and topsoil returned before the site is revegetated.
- Borrow pits located in public-drinking-water source areas should be managed in accordance with the Department of Environment's water quality protection note: *Extractive Industries within Public Drinking Water Source Areas*.
- **Plantation management plans** should take into account gravel resources on a property to ensure, if possible, that gravel reserves are accessible for future road requirements.

4.6 Silviculture of Plantations

4.6.1 Site Assessment

Goal

Assess potential sites for **plantation establishment** in accordance with accepted site-selection methods to ensure that limitations to growth are identified.

Using the assessment system identify sites that require modification (i.e. ripping, mounding and draining) to ensure acceptable establishment and growth, as well as predicting wind and water **erosion hazards**.

Guidelines

- All land proposed for plantation development should be subjected to site assessment to determine suitability.
- Plantation sites should have soils of adequate depth and rainfall sufficient to sustain a plantation for the **rotation**.
- Site surveys should be carried out with trained staff using accepted standards.
- Saline soils should be assessed using an electrical conductivity meter or by soil-sampling techniques and managed accordingly. The risk to plantation growth and survival posed by rising saline groundwater should be considered.

4.6.2 Species Selection

Goal

Establish **plantations** with species or hybrids selected for their rate of growth, quality of wood or other products with suitability to the site.

Guidelines

- At the discretion of the plantation manager, plantations should be established with species selected for their vigour, type of wood or other products, adaptability to particular sites, productivity, form and resistance to **pests**.
- Plantation species will commonly be **exotic** to the locality and need not be native.
- Plantations should be managed primarily to yield economic volumes of wood or other merchantable products; however, plantations could be established for other than commercial reasons.

4.6.3 Site Preparation

Goal

Use appropriate **site preparation** procedures to achieve desired **establishment** standards whilst taking due consideration for protection of soil and water qualities.

Guidelines

- Site preparation activities must adhere to the requirements of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* and the *Soil and Land Conservation Act 1945*.
- Burning of debris during initial clean-up should be carried out in accordance with local government fire-control by-laws and firebreak notices.
- Operation of site preparation equipment should avoid riparian zones.
- Sites should be prepared by ripping, cultivating and mounding as required to improve establishment and achieve stocking levels that are acceptable to the **plantation manager**.

- Cultivation and mounding should be aligned parallel to site contours to minimise the risk of erosion and to facilitate the orderly transfer of excess surface water from the site into natural or constructed drainage channels. Grade banks should be considered and constructed at appropriate intervals to transfer excess surface water from the site into areas of undisturbed vegetation, filter strips or back into the plantation as appropriate.
- On steep slopes (i.e. greater than one-in-three), broad-scale cultivation should be avoided.
- For second **rotation establishment**, the **plantation manager** may wish to retain thinnings and harvesting debris on the site after logging to conserve nutrients and reduce erosion.
- Where burning of harvesting debris is the chosen option, burning should be implemented to minimise erosion risk, avoid damage to vegetation outside the operational area (e.g. **riparian zones**) and conducted in accordance with fire-prevention requirements.

4.6.4 Fertilising

Goal

Apply nutrients and trace elements to correct deficiencies and to stimulate growth to ensure **plantation** productivity and economic viability are maintained. The use of fertilisers should not adversely affect **environmental values**.

Guidelines

- Plantations should be monitored for nutrient and trace-element deficiencies and fertilisers applied as found necessary by the **plantation manager**.
- Fertilisers, particularly nitrogen, are best applied when soils are moist rather than saturated.
- Treated municipal wastewater should only be applied to plantations where the soils and substrates have been demonstrated to be suitable for such disposal, and where approval from the Health Department and the Department of Environment has been granted.
- The use of fertilisers in **public-drinking-water source areas** must be in accordance with Department of Environment and Environmental Protection Authority policies and guidelines, the *Country Areas Water Supply Act 1947*, the *Metropolitan Water Supply, Sewerage and Drainage Act 1909*, and related environmental protection policies for water source **catchments**.
- Methods to minimise nutrient transport off site should be applied.

4.6.5 Weed Control

Goals

- a. Control competing vegetation in **plantations** at the **establishment** phase to ensure good initial survival of trees and at later stages to promote efficient and economic growth as well as unimpeded access in plantations.
- b. Use herbicides to control weeds within accepted guidelines and prevent off-target movement.
- c. Use herbicides to control weeds with due consideration for the preservation of environmental values.
- d. Ensure that any plantation species that have the potential to become weeds are prevented from spreading outside the plantation.

Guidelines

- Weeds should be controlled using appropriate methods at the time of establishment or at any other time during the life of the plantation as deemed appropriate by the **plantation manager**.
- Chemicals used to control weeds must be used in accord with the Department of Health guidelines on the use of chemicals in rural areas contained in the *Health Act (1911)*, *Health (Pesticides) Regulations 1956*, and the *Agricultural & Related Resources Protection (Spraying Restrictions) Regulations (1989)*.
- Plantation growers should abide by the provisions of the *Code of Practice for the Use of Agricultural and Veterinary Chemicals in Western Australia*.
- The application of herbicides in **public-drinking-water source areas** should conform to the Health Department's PSC 88 (*Use of Herbicides in Water Catchment Areas*) and the Department of Environment and Environmental Protection Authority's relevant statutory regulations.
- Aerial application of herbicides must adhere to the provisions of the *Aerial Spraying Control Act 1966*.
- Rates and methods of application should be in accordance with approved procedures as described in the Australian Materials Safety Data Sheets and specifications as on the product label.
- Particular care should be taken to prevent herbicides being washed or leached into **watercourses, wetlands** or reservoirs.
- Unwanted vegetation, including **declared plants**, and plantation species invading other areas, should be controlled by methods that do not adversely affect **environmental values**. **Integrated weed management** systems should be considered.
- Disposal of all chemical containers should be as specified by the chemical manufacturer and comply with the *Health (Pesticides) Regulations 1956*.
- Where a new incursion of a weed is suspected, the location should be reported to the Department of Agriculture.

- Only herbicides that are registered for use in plantations or have been permitted for use by the National Registration Authority under the national ‘off label’ permit scheme should be used.
- **Exotic** trees or plants should not be allowed to spread into neighbouring native forest or woodland from plantations. If this occurs, practical measures should be taken, to remove such plants or trees. Where plantation trees have established on neighbouring properties the owner should be notified before their removal.
- Only licensed operators (holders of current accreditation or certification) should be employed to apply herbicides. Operators must be familiar with the relevant requirements of this Code.

4.6.6 Control of Insects

Goals

- a. Minimise the impact of insect damage to **plantations** by the use of insecticide sprays and biological or physical control techniques to ensure that plantations are not adversely affected and remain commercially viable.
- b. Use insecticides within accepted guidelines and prevent off-target effects.
- c. Use insecticides with due consideration for the preservation of environmental values.
- d. Use insecticides with due consideration for neighbouring activities that may be sensitive to insecticides.

Guidelines

- Plantations should be monitored regularly for insect **pests**, particularly at times when insect pests are known to be active.
- The **plantation manager** should, where practicable, implement control measures when threshold levels are reached and or when the level of damage is considered to be unacceptable.
- Aerial spraying activities are to be managed according to an aerial spray application management plan (Appendix 3) which outlines a process of communication between plantation managers and neighbours, to ensure that neighbours: (1) are aware of planned spray activities; (2) have the opportunity to comment on the development of a spray plan; and (3) take any precautionary measures they choose.
- Insecticides should not be applied by air unless all adjacent landholders have been notified.
- Aerial application of insecticides must adhere to the provisions of the *Aerial Spraying Control Act 1966* and the *Health (Pesticide) Regulations 1956*.
- Particular care should be taken to avoid insecticides being washed or leached into water bodies.

- The application of insecticides in **public-drinking-water source areas** must be in accordance with the Department of Health, Department of Water, Department of Environment, and Environmental Protection Authority policies and guidelines. This includes the Department of Water's state-wide policy *Pesticide Use in Public Drinking Water Source Areas*.
- Chemicals used to control insect pests must be used in accordance with the Public Health Guidelines on the use of chemicals in rural areas contained in the *Health Act 1911* and *Health (Pesticides) Regulations 1956*.
- Plantation growers must abide by the provisions of the 'Code of practice for the use of agricultural and veterinary chemicals in Western Australia'.
- **Integrated pest management** systems should be considered to help reduce insect populations and to complement other insect control techniques.
- Where insecticides are used they must be registered by the National Registration Authority or used under permit according to the national 'off label' permit scheme.
- Rates and methods of application of insecticides must be in accordance with approved industry **specifications** and the product label specification.
- Measures to prevent the introduction of **exotic** insects such as the Sirex wasp (*Sirex noctilio*) into Western Australia should be addressed by the implementation of a management plan developed by the plantation manager. Early warning systems to identify outbreaks of exotic insects should be implemented, and control systems for immediate deployment should be in place.
- The plantation industry through the Forest Health Advisory Committee (FHAC) should undertake pest risk assessments for potential harmful exotic organisms and develop risk management plans to mitigate against the introduction of exotic organisms.
- Disposal of all chemical containers should be as specified by the chemical manufacturer and in accordance with the *Health (Pesticides) Regulations 1956*.
- Only licensed operators (holders of current accreditation or certification) will be employed to apply insecticides.
- Plantation growers are encouraged to become members of the Industry Pest Management Group. This group is dedicated to developing best management practice for the assessment and management of plantation pests.

4.6.7 Control of Vertebrate Pests

Goal

Control vertebrate **pests** in **plantations** using accepted methods.

Guidelines

- Control of animals (native and feral) must adhere to *the Wildlife Protection Act 1950* and the *Agriculture and Related Resources Protection Act 1976*.

- Native vertebrates that impinge on the productivity of plantations should be controlled under damage permits issued (if required) by the Department of Conservation and Land Management using methods stipulated on the permit.
- Chemicals used to control pests must be used in accord with the Department of Health guidelines on the use of chemicals in rural areas contained in the *Health Act 1911* and *Health (Pesticides) Regulations 1956*.
- Rabbits should be controlled before the **establishment** of plantations and in existing plantations, if the **plantation manager** considers control necessary.
- The application of pesticides in **public-drinking-water source areas** must be in accordance with the Health Department, Department of Environment and Environmental Protection relevant statutory regulations.
- Other pests should be controlled in plantation areas using methods recommended by the Agricultural Protection Board of Western Australia.
- Damage to plantations or seed orchards by birds may be addressed by the use of deterrents or a combination of control strategies. Where control of protected species becomes necessary, permits must be obtained from the Department of Conservation and Land Management.

4.6.8 Disease Control and General Plantation Health

Goal

Manage **diseases** in **plantations** to maintain the plantations in good health.

Guidelines

- Health and vigour should be monitored and promoted through appropriate management practices to reduce disease impacts in the plantation estate.
- Plantations should be monitored periodically for outbreaks of pathogens and remedial action taken where feasible.
- Special measures may need to be implemented at a regional scale to manage future threats to the health of plantations. Where practicable, this should be achieved through cooperation and collaboration within the industry.
- It is preferable that nursery stock should be grown in nurseries accredited under the Nursery Industry Association of Australia scheme.
- **Hygiene** techniques should be implemented, where appropriate, to stop the spread of any declared or exotic pest, disease or weed within a plantation.
- If the introduction of an **exotic** pest, disease or weed is suspected that triggers ‘incursion’ response, the relevant authority should be notified.
- An emergency response plan and appropriate resources for its implementation should be available in the event of a disease outbreak.

4.6.9 Thinning and Pruning

Goal

Manage **plantations** to achieve specific objectives by the use of appropriate silvicultural strategies.

Guidelines

- Plantations should be thinned, where required, to maintain stand health and to increase yields of high-value products where this is an objective of the manager and is considered to be economically desirable.
- Plantations may be pruned to meet specified sawn timber objectives or for access, fire control and visibility.
- It is recommended that records of pruning and **thinning** operations be maintained.

4.7 Timber Harvesting

4.7.1 Planning

Goals

- a. Provide Local Governments with information relating to the use and management of local roads.
- b. Minimise adverse impact on the integrity of public roads and other road users.
- c. Harvest **plantations** based on a **plantation harvest plan** (as outlined in Appendix 1), with the aim of maximising timber recovery without detrimental impacts on the environment.

Guidelines

- Notify local governments of the schedule of harvesting and the intention to use public roads at least 18 months before intended harvesting operations if practicable. The initial advice does not necessarily require the preparation of a detailed plantation harvest plan and is primarily for local government planning and budgetary purposes. For details refer to Appendix 2A.
- Where appropriate, the plantation harvest plan must comply with the provisions of the *Occupational Safety and Health Act 1988* and associated regulations, the *Conservation and Land Management Act 1984*, the *Forest Management Regulations 1993*, the *Bush Fires Act 1954*, the *Soil and Land Conservation Act 1945*, the *Environmental Protection Act 1986*, the *Metropolitan Water Supply, Sewerage and Drainage Act 1909*, the *Country Areas Water Supply Act 1947*. Also, they must comply with any planning requirements of local governments, if required, and the *Safety Code for Western Australian Logging Operations* as a condition of establishment of a plantation.

- Where a number of plantations are proposed to be harvested over a one-year period, the **plantation manager** may develop a single plantation harvest plan designed to cover all those plantations instead of developing plans for individual plantations.
- In circumstances where harvesting is necessary following a natural disaster (wind, fire, drought etc.) the plantation manager will make special representation to the local government to facilitate harvesting and transport procedures.

4.7.2 Felling Operations

Goal

Felling operations are carried out by competent operators using appropriate equipment to maximize utilisation with due care for safety and the environment.

Guidelines

- Felling should be carried out in accordance with the **plantation harvest plan**.
- As a general principle, trees should not be felled across wetlands, **watercourses**, **riparian zones** and **drainage lines**. All tops, and other debris generated by the felling operation should be cleared from culverts, road drains, sumps, roads, and firebreaks.

4.7.3 Processing and Extraction

Goal

Process and extract timber from **plantations** by deploying experienced and adequately trained operators using appropriate equipment suited to the plantation conditions so as to achieve acceptable standards of utilisation, safety, environmental care and economic efficiency.

Guidelines

- Special attention should be given to the location of entry points from the plantation onto public roads for reasons of safety and road maintenance.
- Harvesting machinery should not enter **riparian zones** or designated **buffers**.
- Harvesting debris should not be placed in wetlands, **watercourses**, buffers and **drainage lines** in the course of harvesting operations. Any debris blocking more than 10% of the cross-sectional area of a drainage line or watercourse should be removed, as it may affect water levels and cause erosion or flooding.
- All culverts and road drains should be kept clear of soil or logging debris that may prevent the flow of water.

- **Hygiene** measures should be employed, where appropriate, to reduce the spread of **pests, diseases** and weeds to the standards consistent with best practice.

4.7.4 Log Landings and Processing Sites

Goal

Log landings and forestry product processing sites are located, constructed, maintained and rehabilitated with regard to the efficiency of the operations and the principles of environmental care outlined in section 2.1.1.

Guidelines

- Log landings and processing sites should be located within the **plantation** where possible.
- Log landings and processing sites should not be located on areas that are likely to impact on the integrity of **watercourses, wetlands** and **drainage lines**.
- Log landings and processing sites should be located away from dwellings.
- Non-permanent log landings and processing sites should be rehabilitated such that they can be re-established to plantation.
- In public-drinking-water source areas, the end land use for non-permanent log landings and processing sites should be consistent with the protection planning for the water source.
- Drainage-control measures should be employed where necessary to protect water bodies.

4.7.5 Haulage

Goal

Haul timber from plantations using experienced and adequately trained operators utilising appropriate equipment to achieve acceptable standards of safety, environmental care and economic efficiency.

Guideline

- Comply with the *Road Haulage Code of Conduct*.

4.7.6 Fire Prevention and Suppression

4.7.6.1 Fire Prevention

Goal

Prevent wildfires entering or escaping from **plantations** consistent with State and Local Government requirements.

Guidelines

- A **fire management plan** should be available for each plantation. (Refer to Appendix 1.)
- The size of plantation compartments and firebreak **specifications** should comply with the *Bush Fires Act (1954)*, the *Guidelines for Plantation Fire Protection* issued by the Fire and Emergency Services Authority of Western and local government firebreak notices.
- Vehicles and machinery travelling in plantations during the fire season should comply with Australian Standard 1687 and the *Bush Fires Act 1954*.
- Firebreaks, water points and plantation compartments should be shown on the **plantation map**.
- Firebreaks, roads and **tracks** should be maintained free of flammable material provided measures to minimise erosion and preserve water quality are implemented.
- Roads and internal breaks within plantations should be maintained in a trafficable condition and must allow through traffic.
- Prescribed burning should be considered at a regular interval in native forests adjacent to plantations to reduce fuel loads as a means of protecting the plantation and the native vegetation from wildfire. **Plantation managers** should cooperate with local government, relevant landowners and authorities in burning for fuel reduction.
- Grazing should be considered, where appropriate, to reduce fuel loads in plantations. Grazing in **public-drinking-water source areas** should be consistent with water quality protection objectives and should be treated in accordance with normal grazing practices
- Softwood plantations should be pruned as required in strategic locations for fire protection and to allow easy access in the event of a fire in accordance with local government firebreak notices.

4.7.6.2 Fire Suppression

Goal

Identify and control fires that start in **plantations** or threaten plantations in the shortest time possible.

Guidelines

- Fire suppression activities must adhere to the *Bush Fires Act 1954* (as amended).
- Personnel employed in **tending** and harvesting operations should be trained in fire control to a level that meets the minimum standards prescribed by the Fire and Emergency Services Authority of Western Australia (FESA).
- This Code promotes coordination and cooperation between plantation managers, CALM, FESA, local government authorities and local volunteer fire brigades in fire prevention, detection and suppression activities.

- Plantation owners are required to pay the prescribed emergency services levy to the local government authority annually, according to the *Emergency Services Levy Act 2002*. This amends the *Fire and Emergency Services Authority of Western Australia Act 1998*.
- A sufficient number of water points must be established and maintained in or nearby to plantations.
- Plantation owners and managers should participate in local fire brigades to assist in fire prevention planning and control activities.
- The use of fire retardants in **public-drinking-water source areas** must be in accordance with the Department of Environment and Environmental Protection Authority regulations.

4.8 Storage and Handling of Chemicals, Fuels and Oils

Goal

Prevent **incidents** involving the storage, transport and handling of chemicals, fuels and oils used in activities associated with **plantation** activities.

Guidelines

- Transport, storage and handling of fuels and oils should be in accordance with the relevant State statutory requirements.
- Disposal of pesticide containers should be in accordance with the instructions on the label and in accordance with *Health (Pesticides) Regulations 1956* and not to be disposed of in proclaimed public-drinking-water source areas.
- The discharge of hydraulic fluids, engine oil or fuel onto the ground should be avoided. If an accident occurs, clean-up systems should be applied immediately. Chemical drums should be located such that there is no possibility of contamination of waterways. Waste oil, empty drums, discarded machinery parts and other waste should be immediately removed from the plantation at the completion of servicing.
- To avoid spills of fuel and oil reaching **watercourses, wetlands** and reservoirs, refuelling of machinery should be undertaken away from these areas.

4.9 Incident Management

Goal

Response procedures that address the environmental, economic and human health affects of **incidents** relating to activities in or associated with **plantations**.

Guidelines

- Plantation growers should prepare and maintain an effective **incident management plan** to respond to incidents that are likely to impact on the

local environment. This may be in the form of a generic plan that can be activated in the event of any type of incident.

- Plantation growers should prepare and maintain procedures to effectively minimise the detrimental impacts of incidents that may have a localised affect on the environment, human health or the economy.
- Designated plantation staff should be trained and equipped to effectively deal with foreseeable incidents.
- Any spill of pesticide, fuel or other chemical to the environment in a **public-drinking-water source area** should be reported on discovery to the Water Corporation.
- Procedures that define the action to be taken in the event of an incident should also specify remedial action and **rehabilitation** procedures after the event.

4.10 Agriculture Protection and Neighbour Relations

Goals

- a. Prevent unauthorised or **disease**-carrying domestic stock from residing in **plantations**.
- b. Manage **declared plants** and pest weeds in plantations to meet legal obligations and manage other environmental weeds to minimise threats to neighbouring properties and natural areas, including forests, **wetlands** and **watercourse** corridors.
- c. Ensure measures are in place to prevent plantations becoming a refuge for feral animals.
- d. Foster good relations between **plantation managers**, local government and neighbours.
- e. Provide all neighbours with adequate notice of any proposed aerial spraying. (See sections 4.6.6 and Appendix 3.)

Guidelines

- Managers of plantations should maintain boundary fences in a stock-proof condition in accordance with the provisions of the *Dividing Fences Act 1961*, as amended.
- Any unauthorised stock in plantations may be removed in accordance with the provisions of the *Local Government Act 1995*. In instances where the owner of the stock is known, the plantation manager should notify the owner to arrange for the stock to be removed. Where ownership of the stock is not known, efforts should be made to identify the owner before the stock is removed.
- Plantation managers or owners should cooperate with State agencies and Local Governments to control pests, **diseases** and weeds.

- Plantation managers or owners should make themselves known to neighbours.
- Plantation managers or owners should erect notice boards at the entrance to plantations stating the name of the owner, the name of the plantation manager, the name of the plantation and a contact telephone number.

4.11 Research and Development

Goal

Maintain an adequate research capacity to improve economic efficiency of **plantations**, develop new technologies and to ensure that plantation objectives are met.

Guidelines

- **Plantation managers** (where practical) should maintain a research capacity or support external research agencies such as CSIRO, Cooperative Research Centres and local research cooperatives.

4.12 Safety

Goal

Carry out **plantation** operations as safely as practical and in accordance with all relevant regulations detailed in occupational health and safety legislation.

Guidelines

- **Plantation establishment**, management, harvesting and fire protection activities must comply with the *Occupational Safety and Health Act 1988* and associated regulations.
- Minimum safety requirements as stated in the Safety Code for Western Australian Logging Operations should be observed.
- Operators should be trained and certified to accepted standards in the safe use of equipment, materials and machinery.
- Managers, contractors and workers should be jointly responsible for determining and implementing safe work practices.
- All operators must wear specified, personal safety equipment for the operation.

4.13 Competency and Training

Goal

Employ competent personnel to operate in **plantations** and carry out the duties prescribed in accordance with best practice for plantation management.

Guidelines

- Training of personnel engaged in plantation activities is the collective responsibility of **plantation managers**, contractors and subcontractors.
- Training should be based on the provisions of **competency-based training (CBT)** adopted in *National Competency Standards, Policy and Guidelines 1992* to ensure recognition for practitioners against the Australian Qualifications Framework.
- Personnel required to operate in plantations should be competent to carry out the tasks according to accepted competency standards.
- Training should be available to all personnel involved in plantations according to the need to ensure competency.
- Personnel required to operate in plantations located in **public-drinking-water source areas** should be aware of requirements for management of these areas.

4.14 Plantation Investment

Goal

Ensure that investors are aware that **plantations** are managed according to best practice.

Guidelines

- Information provided to prospective investors must be in accordance with the *Trade Practices Act 1974*, corporations law and the *Managed Investments Act 1998*.
- Investors should be made aware of environmental requirements for plantation development and management, adherence to the Code and the obligations of their managers to maintain environmental standards.

Appendix 1: Protocols for Management Plans

A. Plantation Management Plan

A **plantation management plan** is prepared to provide relevant information in respect of the way in which plantations are developed and managed, and to demonstrate the means by which the principles of environmental care, cultural and fire management objectives are achieved.

Plantation management plans are dynamic documents and may change from time to time as a result of new information, new or revised laws, or for strategic or operational imperatives.

A plantation management plan should take account of the scale of operations and may include the following:

1. a plantation map;
2. an establishment plan;
3. a maintenance plan; and
4. a fire management plan.

1. Plantation Map

A map of the plantation should provide the following:

- land owner and plantation manager details;
- an area statement showing plantation categories and areas;
- a locality plan and access roads;
- cadastral information;
- hazards;
- improvements:
 - buildings;
 - roads, tracks, firebreaks, bridges, creek crossings;
 - fences, gates, utilities, water points;
- natural features:
 - **watercourses and wetlands;**
 - areas of **native vegetation;**
 - **significant features.**

2. Establishment Plan

This should outline the following topics and how they are to be managed:

- areas of **native vegetation**;
- setback distances to watercourses, wetlands, reservoirs and significant features;
- statutory setback distances to dwellings and gazetted infrastructure;
- management of harvest residue;
- control of **declared animals, declared plants and pest plants**;
- areas to be planted, compartment sizes;
- species to be planted;
- direction of planting lines in relation to contours and natural drainage;
- description of soil preparation methods;
- pest and weed control prescription;
- planting prescription;
- access and firebreaks; and
- fertilising prescription.

3. Maintenance Plan

This should outline the following management activities to be conducted during the rotation of the plantation and how they intend to be managed:

- **native vegetation** management;
- pruning and thinning regimes;
- control of **declared animals, declared plants and pest plants**;
- weed and pest control prescription;
- fertilising prescription;
- access and firebreak maintenance;
- grazing strategy;
- inventory;
- bio-security issues;
- infrastructure maintenance; and
- **significant feature** management.

4. Fire Management Plan

The fire management plan should contain the following details

- contact names and telephone numbers;
- names and addresses of local fire control agencies;
- locality plans showing access roads, firebreaks, water points etc.;
- methods of access and firebreak maintenance;
- specific measures to protect services; e.g. power lines and gas pipelines;
- a fire fighting equipment register for the locality and details of cooperative arrangements;
- direction indicators to water points, road signs and other features; and
- a fuel reduction program, if applicable.

B. Plantation Harvest Plan

As a separate plan to the **plantation management plan**, a harvest plan is generally produced later in accordance with the haulage-management notification provisions outlined in Appendix 3.

This plan provides the relevant information for how the plantation is to be harvested. Harvest plans are dynamic documents and may change from time to time as a result of new information, new or revised laws, or for strategic or operational imperatives.

A **plantation harvest plan** should contain the following:

- harvest manager details;
- forest owner details;
- landowner details;
- a map of the harvest area;
- locations of plantation roads and **tracks** to be used and signage required;
- the proposed harvesting system to be used;
- the establishment system to apply in the next rotation;
- dates during which harvesting is to occur;
- haulage routes to be used on public roads;
- fire protection preparedness, response and restrictions;
- wet weather restrictions to minimise soil damage;
- safeguards to protect **significant features**;
- minimum safety requirements; and
- hygiene measures.

Appendix 2: Plantation Timber Haulage Notification to Local Governments (and Other Relevant Parties Where Specified)

Introduction

Local governments are seeking an assurance from **plantation managers** that the haulage of plantation logs or chips does not adversely affect local roads within their control. They also seek to minimise conflicts with other road users.

Plantation managers are seeking to utilise the safest and most effective truck configuration for haulage to achieve maximum economy and to limit the number of truck movements on any road.

It is therefore important that a process be put in place that will enable the local road system to be managed in a coordinated and safe manner that enables issues of concern to all parties to be addressed in a timely and efficient way. It is considered that this can best be done by establishing a uniform, documented approach to the planning and implementation of mutually agreed actions.

It is the responsibility of the plantation manager or harvesting manager to complete all sections of the attached forms included in the Haulage and Haul Road (Route) Agreement and add any necessary information as required. On reaching agreement for the haul route and the truck configuration, the plantation manager is to ensure copies of the signed document are given to each party, including the harvest or haulage contractor as specified in the **plantation harvest plan**.

This document forms part of the plantation harvest plan.

The post-harvest-inspection part of the form is necessary for the completion of the job and will form the basis for future trust and confidence between local governments, other relevant parties and the plantation industry. It will also facilitate cooperative negotiations on other haul routes.

Notification of Intention to Harvest and Haul

The process requires notification to be given to enable decisions to be taken by the relevant parties at appropriate stages both before and after the harvest taking place.

For example, notification is important for local government budgetary purposes, and to ensure the timely inspection of the condition of local roads that form part of haulage routes.

Primary Notification (Appendix 2A)

A primary notification to local authorities by the end of February each year must provide a revised harvest and haul plan for the current calendar year and a proposed harvest and haul plan for the following year.

This is intended to assist local governments to plan so that their works programs and budgets take account of any works associated with harvesting and to work with the plantation manager in resolving any issues of mutual concern.

Secondary Notification (Appendix 2B)

The secondary notification to local authorities must be given when applying for multi-combination-vehicle permits prior to harvest operation commencement. Should vehicles not requiring special permits be used for the haulage operation, the harvest manager should advise the relevant local authority as a matter of courtesy.

The purpose of the secondary notification is to:

1. Confirm the commencement date for harvesting.
2. Enable the local government and the plantation manager or harvesting manager to complete a report on the state of the local roads being used for harvest haulage purposes.
3. Agree on the arrangements to be put in place to facilitate the haulage being undertaken in a safe and efficient manner.
4. Permit any other nominated agency to undertake an inspection of the haul route; e.g. MRWA.

Harvesting under Abnormal Circumstances

In the event of a natural disaster (wind, fire or disease) that causes damage to all or part of a plantation, making it necessary to salvage the crop, the plantation manager should notify the local government and other relevant parties as soon as possible to make arrangements for the salvage process.

Post-harvest Notification

The post-harvest notification is for ensuring that the local government and the plantation manager undertake an inspection of the road immediately following the harvest and, where necessary, to rectify any extraordinary damage caused to the local roads by the haulage operation

Photographs could be taken to record the condition of the roads before and after haulage operations.

Appendix 2A: First Notification to Local Governments

Chief Executive Officer

Address

For the attention of:

Dear ,

SUBJECT: Notification of Intention to Harvest and Haul Logs on Shire Roads.

In accordance with the 'Code of Practice for Timber Plantations in Western Australia', *company name* herewith submits the *company name* haulage operations within the shire for the calendar year(s).

Please note that the list of plantations and subsequent roads are not definitive as throughout the year other growers may request harvest for various reasons outside the control of *company name*. Some of the plantations listed may not be harvested as indicated due to reasons both within and outside of *company name's* control. Consequently, this is the best estimate of those plantations likely to be harvested during the calendar year(s).

In most cases, *company name* will be seeking shire endorsement for the operation of multi-combination haulage (MCV) vehicles (pocket road trains, B-Double and truck and trailer configurations) to make the best economics of the haulage operation. In each instance, *company name* will consult with the shire before haulage operations and come to an agreement on the conditions for permits for the vehicle usage.

A *company name* representative will be in contact with your nominated representative to carry out pre-haulage inspections of shire controlled roads. Shire endorsement of conditions of haulage on these roads is required before Main Roads will issue a permit for MCV operations. *Company name* will be employing experienced contractors to carry out harvesting and haulage operations. Contractors will operate licensed, permitted MCVs with accredited drivers and documented operating systems. *Company name* will remain the responsible entity for conditional use of the shire roads, and as such, will sign off against the operating conditions of the permitted usage.

We trust that this assists your Shire on the planning and implementation of road works programs. Should you require any further information, please contact _____ on _____.

Yours sincerely,

Appendix 2A: First Notification to Local Governments

Shire of					
Notification of Haulage for 200...					
Plantation name	Location Number	Harvest Area (ha)	Total Harvest Volume (tonnes)	Haul Route	Approximate Timing

Appendix 2B: Haulage and Road (Route) Agreement

HAULAGE AND ROAD (ROUTE) AGREEMENT

Local Government: _____

Haulage and Haul Road (Route) Agreement

1. Plantation Name _____
2. Date of Inspection _____
3. Destination _____
4. Contractor (1)_____ (2)_____
5. Total Tonnes to be Harvested _____ Tonnes
6. Proposed Commencement Date _____
7. Duration of Operation _____
8. Delivery Schedule _____ per day
9. Type of Truck Configuration _____

Description of proposed haul routes and present status

Name of Road	Current Status (Class)	Comments

Agreement on Haul Route _____ Contractor
 _____ Local Government
 _____ Plantation Manager

11. Works to be undertaken prior to haulage

Name of Road	Plantation Manager	Local Government

12. Extra mass permit required _____ Yes/No

13. Date received and sighted _____

14. Other known road users

Names	Type	Details of Interaction including Timing	Notify: Yes/No

15. Post-harvest inspection report

Name of Road	Condition Now	Works Required	By Whom?

Works completed _____ exit _____ Yes/No

Completed and exited:

_____ Contractor _____ date

_____ Local Government _____ date

_____ Plantation Manager _____ date

Appendix 3: Aerial Spray Application Management Plan

1. Preamble

The plantation forest industry recognises that aerial application of insecticides to plantations might pose a threat to sensitive industries (e.g. fish farming, viticulture and berry farming) that occur adjacent to or near plantations targeted for spraying. However, it should be recognised that an outbreak of insect pests in a plantation has the potential to severely reduce growth and may cause mortality of the trees.

The objective of this management plan is to set the guidelines for the safe use of insecticides in plantations such that a owner/manager of a **sensitive property**, and other stakeholders are aware of the process that a **target property** owner/manager will follow before initiating action to control insect pests by aerial spraying.

The specifications for the application of insecticides by air will be documented in the attached *Field Specifications for Aerial Application of Insecticides to Plantations Located Adjacent to a Sensitive Property* (hereafter known as the field specifications).

The nature of plantations once they reach a height of 8 metres or more, precludes the use of ground-based equipment to apply insecticides. Aerial spraying is the only available technology that offers a viable means of controlling pest-insects in plantations. The plantation industry along with all other dry land farmers recognises the shortcomings of this technology and is actively researching alternative technologies. Toward this end, the industry has cooperated to form the Industry Pest Management Group (IPMG) whose objective is to develop pest management practices.

The insecticides selected by the industry are those that are commonly used by other primary producers and have been shown to be extremely effective against the target insects. Only insecticides that are registered or subject to an off-label permit (issued by the National Registration Authority) for forest use will be used.

The plantation industry will take all precautions to avoid drift that might impact on neighbouring properties. The owner or manager of the target property will respond to genuine concerns from all **neighbours** and take tangible actions to avoid impacts on all neighbours. However, a target property owner/manager retains the right to act, within the constraints of legislation governing the application of insecticides by air, to take any action necessary to prevent damage to his or her plantation by insects (refer to The 'Breaches of Code' section, Disputes).

This plan will be adopted by all growers in the plantation industry and should form the basis for adoption by other industries that apply pesticides by air. This document will provide the guidelines for notification, liaison and the negotiation

process with Neighbours of Target Properties to ensure all genuine and sensitive issues are addressed in a consistent and acceptable manner.

2. Notifications

The requirements of the plantations industry to notify **neighbours** of an intended aerial spraying operation will follow a tiered approach as follows:

2.1 Standard Notification

This to be provided to the neighbour by the owner or manager of a **target property** no less than two weeks and no more that three months from the date that application of insecticide is anticipated. A written standard notification will be sent to each neighbour by mail or facsimile.

The standard notification will include:

- a preamble or overview of the insect problem, nature of the damage and likely impact on the tree crop;
- the identity of the target property;
- a description of insect **pest**;
- the identity of insecticides proposed for use;
- an estimate of the date of application; and
- weather conditions, including wind direction and speed, under which application is proposed.

The standard notification will invite concerned neighbours and owners of sensitive properties to contact the target property owner/manager for more information.

Simple agreements in relation to areas to be sprayed, wind direction and wind strength may be reached between the neighbour and the target property owner/manager following a standard notification.

2.2 Field Specifications

A **field specification** sheet (attached) is designed for a neighbour with a sensitive property. The field specifications will be prepared by the target property owner/manager following consultation with the owner or manager of a sensitive property and input from the **pilot**, with the primary objective of ensuring that sensitive activities on the property are not affected by spray drift. This approach will also ensure the owner or manager of a sensitive property is aware of planned spray activities, has an opportunity to comment on the development of the spray plan and can take any precautionary measures they choose.

The field specification must include the following detail:

Section 1: Details of parties involved in the development of the field specifications.

Section 2: Application conditions, including chemicals to be used, weather conditions, field communications and special protective measures.

Section 3: Record of application.

An owner or manager of a sensitive property who does not share a boundary with the target property may request a field specification be developed if, in the view of the sensitive property owner/manager, there is a risk posed by the aerial application of insecticides to an activity on his or her property. The onus is on the sensitive property owner/manager to request the development of a field specification

A register of sensitive properties at a district or local government level will allow a target property owner/manager to easily identify such properties. The maintenance of the register should be the responsibility of each local government.

2.3 Provision of Additional Information

The IPMG must provide a set of documents that will be provided to all plantation growers for dissemination to neighbours on request. Information in these documents must include but not limited to:

- material safety data sheets for insecticides and additives;
- relevant information from the department of health;
- information on insect pests of plantations;
- information on the efficacy of spray operations and impact of insecticides on both pest and beneficial insects;
- information on the impact of pest insects on plantation growth;
- data on aerial spray drift and appropriate management options; and
- tolerance levels for activities sensitive to insecticides.

2.4 Pre-application Contact

The owner or manager of the target property must make reasonable attempts to contact all neighbours and owners or managers of sensitive properties, by personal visit or phone, no less than 24 hours before an impending aerial spray operation.

Neighbours may choose to be excluded from a 24-hour notification. In this event a record of the arrangement must be kept by the target property owner/manager.

If the owner or manager of a sensitive property cannot be contacted, the matter should be referred to the regional protection manager at the Department of Agriculture who should be invited to observe the operations to ensure compliance with the field specifications.

3. Standards for the Application of Insecticides

3.1 Prescriptions

The plantation industry will develop standard prescriptions for the application of insecticides by aircraft that comply with accepted good practice and statutory requirements.

3.2 Pilot Accreditation

Aerial spraying contractors and pilots are to be accredited under the AAAA Operation Spraysafe scheme, and pilots must hold a current licence issued under the *Aerial Spraying Control Act 1966*.

3.3 Wind Speed

Aerial spraying will be carried out at wind speeds of 5 to 15 kph with maximum gusts up to 20 kph.

3.4 Public-drinking-water Source Areas

In public-drinking-water source areas: *Statewide Policy No. 2 Pesticide Use in Public Drinking Water Source Areas*.

(See drinkingwater.environment.wa.gov.au. Select Publications > Policies.)

4. Disputes

Where the **field specification** prepared by the target property owner is not considered by the owner or manager of a **sensitive property** to comply with the *Code of Practice for the Use of Agricultural Chemicals in Western Australia*, the sensitive property can refer the matter to the Regional Protection Manager, Department of Agriculture for arbitration.

When a **neighbour** or a member of the community has reason to believe that they have been adversely affected by aerial spraying they may fill out an Agricultural Spray Incident Report Form available from local government and Department of Agriculture Offices. These forms should be lodged with the nearest Regional Protection Manager, Department of Agriculture who may refer it to Registrar of the Agricultural Disputes Act for further action.

Field Specifications for the Aerial Application of Insecticides to Plantations Located Adjacent to a Sensitive Property¹

Section 1: Details of Parties Involved in the Development of Field Specifications

1.1 Owner or Manager of the Sensitive Property

Name: _____

Location numbers: _____

Phone: _____ Mobile: _____

Fax: _____ Email: _____

Nature of sensitive activity to be protected. (Details of activity that is sensitive to pesticide contamination and reasons why the activity is sensitive):

1.2 Owner or Manager of the Target Property

Personal or company name: _____

Property name: _____

Location numbers: _____

Phone: _____ Mobile: _____

Fax: _____ Email: _____

Name of field supervisor: _____

1.3 Pilot

Name: _____

Aerial Spraying Contractor name: _____

Phone: _____ Mobile: _____

Fax: _____ Email: _____

¹ The field specification section of this document should not be separated from the preceding section

Section 2: Target Application Conditions

Proposed Date of Application

_____ day of _____ in the year _____.

Latest date of proposed spraying: _____

Target pest(s):

Common name(s): _____

Scientific name(s): _____

Chemical(s) to be Used

Before spraying commences, the landowner must be informed of the identity of the chemicals and any adjuvants to be used, and the application rate.

Insecticides

1. Brand name: _____ Rate (L/ha): _____

Active ingredient: _____

2. Brand name: _____ Rate (L/ha): _____

Active ingredient: _____

3. Brand name: _____ Rate (L/ha): _____

Active ingredient: _____

Additives

Name: _____ Rate (L/ha): _____

Name: _____ Rate (L/ha): _____

Total output: _____ (L/ha)

Reactive strips placed : Yes No

Agreed placement positions for strips: refer to attached map.

Target Weather Conditions

Wind Direction

Target property location no(s)_____

(Circle one or more) N NNE NE ENE E ESE SE SSE S SSW SW WSW W
WNW NW NNW

Target property location no(s)_____

(Circle one or more) N NNE NE ENE E ESE SE SSE S SSW SW WSW W
WNW NW NNW

Target property location no(s)_____

(Circle one or more) N NNE NE ENE E ESE SE SSE S SSW SW WSW W
WNW NW NNW

Note: *Plans must be attached to this document showing locations of the target properties to be sprayed and the location of the sensitive property.*

Wind speed

(maximum)_____kph (Minimum)_____kph

Temperature

(maximum)_____°C (Minimum)_____°C

Relative Humidity

(Range)_____% to _____%

Spray Drift Awareness Zones

(The following is an extract from the *Code of Practice for the Use of Agricultural Chemicals in Western Australia*)

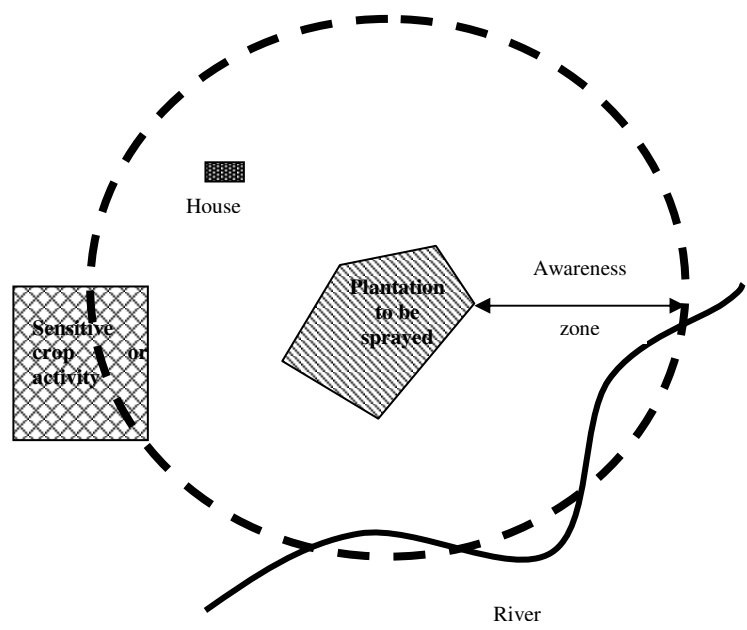
A spray-drift awareness zone (SDAZ) is a means of identifying and mapping all potentially sensitive areas around each paddock to be treated with chemicals. It is, in effect, a method of conducting a spray-drift risk assessment for your property.

Bear in mind that each part of the property to be treated will have a slightly different SDAZ as the focus of the zone shifts from paddock to paddock across the property.

Under most circumstances, the awareness zone for ground spraying could extend up to 1 km from the paddock to be treated. For aerial application, it is likely to extend well beyond that distance.

The SDAZs should take into account all buildings, crops or areas outside the paddock to be sprayed that may be potentially sensitive to spray drift; e.g. schools, dwellings, wetlands, aquaculture ponds, organic farms etc.

However, remember that the SDAZ is an *awareness* zone. It does not necessarily mean that spray drift damage will always occur within that zone, depending on the sensitivity of the crop or area, the weather and application conditions at the time of spraying, and the size of the Zone. Also, the presence of any physical or vegetative buffers downwind of the spraying operation will reduce the risk of damage.



Awareness zone establishment and sensitive-area identification.

Special conditions to be observed to ensure protection of sensitive property:

(Details must be supported by attached plans showing the location of any areas where spraying is to be excluded or where special care is warranted)

Field communications

Radio communication is to be maintained between the pilot and the field supervisor at all times during the aerial spraying operation. Communication is also to be maintained between the owner or manager of the sensitive property and the field supervisor. Any communication with the pilot is to be done through the field supervisor.

Agreed field communication between:

1. The field supervisor and the pilot (communications with the pilot can only be through the field supervisor):

Radio band and channel _____

2. The owner or manager of the sensitive property and the field supervisor:

Specify _____

If none to any of the above is available, what alternative arrangements are to be followed to maintain communications?

Nominated surrogate for owner or manager of the sensitive property (name and contact details):

Section 3: Record of Application

To be completed by the field supervisor after spraying is completed. Copies are to be provided to owner or manager of the sensitive property and to the pilot.

Actual Date of Application

_____ day of _____ in the year _____

Actual Weather Conditions

Wind Direction

Target property location no(s) _____

(Circle one or more) N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW
NW NNW

Target property location no(s) _____

(Circle one or more) N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW
NW NNW

Target property location no(s) _____

(Circle one or more) N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW
NW NNW

Wind Speed

(maximum) _____ kph (Minimum) _____ kph

Temperature

(maximum) _____ °C (Minimum) _____ °C

Relative Humidity

(Range) _____ % to _____ %

Reactive strips placed : Yes No

Results/Observations of strips: _____

Other relevant comments and observations:

Appendix 4: Location of Regional Offices

For the location of Department of Environment regional offices and management boundaries, refer to their web site www.environment.wa.gov.au then select *General regional info*.