



Plantation Management Plan

Boddington Water Corporation

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All relevant maps and plans are attached.

The following maps and plans are attached:

Map 1: Location Map

Map 2: Plantable Area Map

References:

- *Code of Practice for Timber Plantations in Western Australia*
- *Guidelines for Plantation Fire Protection*
- *Local Authority Firebreak Orders*
- *FPC Plantation Procedures, Technical Specifications & Work Instructions*
- *Code of Practice for the use of agricultural and veterinary chemicals in Western Australia*
- *Forest Products Act WA (2000)*
- *Carbon Rights Act (2003)*
- *Environmental Protection (Clearing of Native Vegetation) Regulations (2004)*
- *Wildlife Conservation Act (1950)*
- *Environmental Protection and Biodiversity Conservation Act 1999.*
- *Soil and Land Conservation Act*
- *Bush Fires Act (1954)*
- *Occupational Health and Safety*
- *Safety and Health Code for Native Forest / Hardwood Logging and Plantation Logging*

Boddington Water Corp

1. INTRODUCTION

This property is currently owned by the Water Corporation and they are considering establishing approximately 30 ha of pine plantation for the purpose of timber production and carbon abatement through the planting of trees. Land will be secured for a minimum term of 30 years in accordance with the Forest Products Commission Act (2000) under a Sharefarming Agreement. Any documents will be lodged with a Deposited Plan with the Registrar of Titles.

This document outlines the following in relation to this plantation:

1. Introduction
2. Land information
3. Tree Farm Establishment Plan
4. Tree Farm Tending Plan
5. Fire Management Plan
6. Timber Harvesting Plan (interim)
7. Authorisation

2. LAND INFORMATION

2.1 Area

The planting area totals approximately 30 hectares, and it is situated in the Boddington Shire. The property is located approximately 2.5 km north of Boddington on lot 1 as per the attached concept map.

The general area is zoned for the purpose of agricultural. The area is currently used for grazing and parts were previously used for wastewater treatment. It is proposed that the majority of cleared suitable areas be established to softwood plantation during this winter.

The property is in the Murray River water catchment area having an annual rainfall of approximately 700 mm. This is not a Public Drinking Water Source Area (PDWSA)

2.2 Locality Map and access roads

A location map is attached. It can be seen from this plan that the access to the plantation area is via Gold Mine Rd

2.3 Natural features

2.3.1 Significant landscapes, streams, rivers, lakes, ponds, swamps, drains etc

A visual assessment of the property has been completed to identify any significant landscape features.

No significant landscape features have been identified for exclusion from planting. The general landscape features of the property will be maintained.

There is a lower level ephemeral stream with some natural vegetation on the west side of the property. A buffer has been placed on this waterway as shown in the concept map. This area is excluded from the new planting and, if present, the existing vegetation will be allowed to grow on. The salt level adjacent to the creek is also too high for plantation health.

2.3.2 Principal soil types

The principal soil types consist of duplex soils with sandy clay gravels over medium type clays.

2.3.3 Areas of native vegetation with high or low natural integrity

Forest Type – Jarrah/marri/wandoo

Extent – scattered islands throughout the location with some individual paddock trees

Condition – The upper story vegetation is generally OK though minimal understorey is present due to previous grazing.

Pests or diseases – NA

Proposed future management – Minimal management will take place due to the small size of the remnant islands. This will be dependent on Water Corporations plans.

2.3.4 Cultural and heritage values

The following actions have been taken to determine the presence of cultural and heritage sites on the property:

- A search for Heritage Council registered sites has been completed.
- Department of Biodiversity, Conservation and Attractions (DBCA) and/or Department of Indigenous Affairs database's have been checked for registered indigenous sites;
- The owners have been asked to identify cultural sites known to them.

A registered Indigenous Site is present on the property which is known as The Hotham River which runs along the creek line on the western boundary. The creek line is excluded from the proposed planting area and thus the area will not be disturbed. The known site does not have any restrictions on it.

2.3.5 Threatened and Priority Species and Ecological Communities

Where activities related to this tree farm are likely to directly or indirectly affect threatened and priority species of flora, fauna and ecological communities, the following Acts, Regulations and Plans will be complied with:

- *Environmental Protection (Clearing of Native Vegetation) Regulations (2004)*
- *Wildlife Conservation Act (1950)*
- *Environmental Protection and Biodiversity Conservation Act (1999)*

DBCA's IMB database has been checked. A threatened and priority species has been reported within 1 kilometre of the planting area. The registered site is of a threatened bird sighting and is located on the neighbouring property. The proposed planting won't have any effect on the site.

2.4 Improvements

2.4.1 Buildings

No houses or sheds are located on the farm.

2.4.2 Roads, bridges, creek crossings

There is an existing, unsealed road/track system throughout the farm that will allow for adequate access during establishment of the tree farm.

Establishment operations will not involve the requirement to construct or upgrade roads or creek crossings.

New/further road construction is not planned until harvest operations are imminent. Any future road construction within the tree farm areas will be located on the firebreaks as shown on the attached plantable area map.

2.4.3 Fences, gates, powerlines, Communication cables and dams

Fences are located both within and surrounding the property. The fences will be maintained with the aim of grazing livestock through the plantation area once trees are of adequate size. This will keep grass fuel levels down.

Power line easements

There are *no* power lines within the proposed tree farm area.

Communication cables

There are no underground communication cables present within the planting area. An appropriate break will be left unplanted so that the cables are left undisturbed.

Water Supply Pipes

There are no water supply pipes within the proposed planting area.

2.4.4 Sensitive Areas

Identification of sensitive areas has occurred by completing a reconnaissance inspection, speaking with the owner, interpreting aerial photographs and checking relevant databases. Sensitive areas that have been identified within, adjacent to and along the access ways to proposed tree farm areas are included below with the appropriate precaution required to protect them.

Consider:

- Vineyards
- Orchids
- Apiary sites
- Adjacent NP and reserves
- Organic Farms
- Public Drinking Water catchments
- Natural waterways, lakes, swamps etc
- Erosion hazard (E.g. runoff on steep slopes)
- Close Dwellings incl. Neighbours
- School bus stops

Nil sensitive areas have been noted through various checks. Neighbouring properties consist of grazing and cropping paddocks. A water treatment area has been noted to the west.

The status of sensitive areas and the requirement to undertake precautionary measures will be reviewed prior to a spray event, to ensure measures are current and appropriate including the location of neighbouring cereal crops.

3. TREE FARM ESTABLISHMENT PLAN

Tree farms should be located to achieve maximum commercial viability while ensuring that environmental, social, aesthetic and cultural values are not compromised. Appropriate planting design can help to redress environmental problems associated with rising water tables, salinity and erosion.

3.1 Species to be planted and source of stock

The site is to be planted with *Pinus radiata* (Monterey Pine) seedlings sourced from the FPC Manjimup Nursery.

3.2 Areas to be planted, compartment sizes

The plantable area map details the size of the compartments. These sizes are consistent with the *Guidelines for Plantation Fire Protection (FESA 2011)*.

3.3 Access roads and firebreaks

Access roads and firebreaks are shown on the plantable area map attached. External firebreaks are 15 metres wide with 6 metre wide internal firebreaks – *Guidelines for Plantation Fire Protection (FESA 2011)* Firebreak maintenance to local authority standards is the responsibility of the landowner.

3.4 Site preparation and planting technique

The site will be rip mounded with minimal disturbance to topsoil to minimise risk of erosion.

Trees are to be planted by hand

The stocking rate to be applied is 1250 seedlings per ha.

Note: Seedlings will be supplied in boxes. Boxed seedlings will be stored in a shed or under a tarp when in the field, prior to planting. Planting contractors will carry plants from a central plant dump from within the property to sections within the proposed planting area by 4 x 4 utilities and 4 x 4 All-Terrain Vehicle (ATV) motorbikes.

3.5 Direction of planting lines in relation to contours and natural drainage

The planting direction of trees will depend on slope and existing fence lines. The aim of the planting direction will be to keep planting lines straight but taking into account the slope as too not cause erosion.

3.6 Description of weed control methods and buffer zones

Depending on the weed species present and those predicted to germinate during the establishment phase, both broad and strip spray applications using a range of pesticides permitted for forestry use may be utilised.

The status of sensitive areas and the requirement to undertake precautionary measures will be reviewed prior to a spray event, to ensure measures are current and appropriate. (refer to the attached plantable area map).

All prescriptions to be applied will adhere to FPC specifications.

All operations will be carried out by licensed operators.

Expected treatments

Broad spraying and strip spraying will be required to control annual weeds and will be conducted in accordance with FPC's Technical Specification's.

3.7 Control of vermin and declared weeds

The site has been checked for the presence of vermin and declared weeds. Nil were noted onsite

3.8 Clearing of woody vegetation (native or exotic species), including paddock trees to be removed.

No areas of remnant vegetation, notifiable under the Soil and Land Conservation Act of Western Australia are to be cleared as part of the proposed planting.

Management of Logging Residue

Not applicable

4. TREE FARM TENDING PLAN

4.1 Fertilising schedule

Fertiliser is generally applied to softwood plantations at establishment and after first thinning. Forest Products Commission staff will monitor the progress of the tree farm over its lifetime and will prescribe fertiliser applications if nutrient deficiencies are highlighted from the analysis of foliar samples.

4.2 Weed management

Weed status will be monitored on a regular basis in the first year after establishment and on an intermittent basis after that.

It is expected that some second year weed control may be necessary as part of the ongoing maintenance to the tree farm area. All prescriptions to be applied will adhere to FPC specifications.

4.3 Monitoring and contingencies for disease and pests

The FPC is committed to minimising the risk of introduction and spread of pests, diseases and weeds, minimising damage from fire and disturbance activities, and mitigating the adverse effects of weather related events.

Plantings will be monitored on a fortnightly basis during the period September through to January during the first year after establishment and 3-6 monthly in subsequent years. Pests will be controlled as and when required using registered APVMA pesticides and licensed operators operating under all specifications as required by relevant authorities and acts.

4.4 Road and break maintenance

Firebreak maintenance to Local Authority guidelines is the responsibility of the landowner. The landowner will be further encouraged by the FPC to create and maintain permanent firebreaks.

4.5 Grazing strategy

The owners currently do graze livestock. Following establishment, the site is to be assessed after 3 years to determine if the trees are of a height to allow for grazing by livestock. Grazing will assist in keeping fuel levels low.

4.6 Firebreak Pruning

Pruning will be carried out on trees adjacent to firebreaks in order to ensure fire control access standards are maintained, consistent with *Guidelines for Plantation Protection – FESA (2011)*

4.7 Pruning and thinning schedule

Pine Sawlog

It is expected that the tree farm will be thinned twice before final harvest. The stocking of trees will be reduced by approximately 50% at each thinning. The thinnings will be from below, meaning that the remaining trees will be the best performing and will be spaced such that growth may be maximised. The schedule of operations will depend on the rate of growth achieved and the market opportunities available during the life of the plantation.

4.8 Treated Wastewater Irrigation

The Water Corporation, in agreement with FPC, have proposed that they may irrigate part or all of the plantation with treated wastewater in the future if available and necessary, subject to the Corporation providing 12 months notice of intent as a minimum and agreement on location and water volumes.

5. FIRE MANAGEMENT PLAN

The objective of the Fire Management Plan is to establish the infrastructure to prevent fires escaping from or entering tree farms and plantations and for suppression operations in the event of a fire. All fire control activities must adhere to the *Bush Fires Act (1954)*.

5.1 Landowner property details

Name	Water Corporation
Address	629 Newcastle St, Leederville WA 6007
Phone Number	131385
Location Number (s)	As per attached plans
Species of Trees Planted	P radiata
Total Area Planted	Approx. 30ha
Previous Land Use and Condition (i.e. pasture, ex bush, ex plantation)	Primarily grazing
Adjacent Land Use (i.e. farmland, forest, nature res.)	Farmland

5.2 Property details of neighbouring locations

NAME	ADDRESS	PHONE NUMBER	LOCATION NUMBER(S)
Joanne Gibbs	295 Gold Mine rd, Boddington	9883 8063	Lot 2
Simon Kelsall	1056 Bannister- Marradong Road, BANNISTER 6390	9883 9484	Lot 501 and lot 505
ANGLOGOLD ASHANTI AUSTRALIA LTD	298 Gold Mine Road, BANNISTER 6390	9425 4600	Lot 530

5.3 Local fire agencies

AGENCY	ADDRESS	PHONE NUMBER	CONTACT PERSON/ POSITION
FPC Duty Officer		9725 5288	Duty Officer
Shire Office	Boddington	9883 4999	CEO
Chief Fire Control Officer	Boddington	0427 988 705	William Batt
Fire Brigade	Boddington	0427 470 346	Paul Patrick
DBCA District	Jarrahdale	9295 9100	Duty Officer

5.4 Risk of ignition

Potential ignition sources are mainly restricted to lightning strikes, powerlines, adjoining roads, vehicle exhaust sparks and escapes from burning operations on surrounding land.

5.5 Detection of fires

The landowner, neighbours and passers-by, and the existing brigade system will undertake fire detection.

In the event of a fire notification should be made via the 000 emergency number. The FPC Duty Officer should also be notified as soon as practicable.

5.6 Location of fire control equipment

All fire units that may be available are privately owned or Fire Brigade units derived from various locations in the area.

The Shire houses a grader, a loader, contracted water tanker, all available for use in a fire emergency.

The Boddington Bush Fire Brigade is the nearest brigade with a 2.4 urban unit plus other units from neighbouring brigades. Also, numerous 600L fire units would be available owned by private landowners. The Boddington Gold mine also has a fleet of firefighting resources.

The FPC houses 3 x fire trucks and a further selection of fire suppression units (vehicle and trailer mounted) that are manned during the fire season.

The FPC is also an associate member of Forest Industries Federation Western Australia (FIFWA). FIFWA supports the responsible and sustainable management of WA forests and plantations.

The plantations industry has recognised the importance of a unified approach in the control and management of wildfire near or within its plantation estate. Industry managers across various land districts have joined forces to create a specialist firefighting resource complete with its own fire suppression capabilities and intimate local knowledge that a fire managing authority can call upon in a wildfire situation.

This approach is supported by Local Government and State Government fire authorities and culminated in the formation of a Plantation Managers fire Agreement.

The FPC also maintains a duty officer roster over the prescribed fire season. The duty officer is a rotating position and is the principle point of contact for deployed crews. The duty officer will liaise with the incident over crew deployment & experience, shift changes and specialised equipment needs.

5.7 Initial attacks on fires

Initial attack on fires will be by the Bush Fire Brigade system coordinated by the local Fire Control Officer and Shires. DBCA may assist in suppression under the MOU with FPC depending upon other commitments and other operational imperatives.

Initial attack on a fire will depend on head fire rates of spread and fire intensities. It is proposed experienced personnel, DBCA or Brigade will assess each fire, in response to the following values in order of priority.

1. Human life;
2. Community assets, property or special values (including environmental values);
3. Cost of suppression in relation to values threatened.

With fire behaviour and values in mind response strategies should follow this order of priority as a guide;

1. Direct attack on headfires where Head Fire Rate of Spread (HFROS) allows;

2. Indirect attack on headfire by extinguishing flank fire working towards the headfire;
3. Limit fire spread to pre determined internal strategic firebreaks;
4. Limit fire spread to compartment breaks;
5. Limit fire spread to property boundary firebreaks where property is block planted;
6. Fall back to neighbouring properties, roads or where fire can be safely extinguished.

Given the distance of the nearest FPC Office from the property, it is unlikely that an FPC field officer would be able to attend a fire here at short notice. FPC will endeavour to provide assistance as soon as practicable. Local DBCA crews may be able to attend if requested by the local Brigade should resources prove insufficient, and providing there are not already commitments to higher priorities elsewhere.

5.8 Fire breaks

External firebreaks are planned to be 15 metres wide and internal breaks 6 metres wide as shown in the Fire Protection Plan attached. Firebreaks will be constructed and maintained in accordance with Shire Regulations and the *Guidelines for Plantation Fire Protection – FESA (2011)*

5.9 Method of road, track and firebreak maintenance

The FPC will maintain firebreaks in September/October to ensure the appropriate width of mineral earth break is obtained prior to the fire season. Where and when additional work is required, grading will be carried out.

5.10 Water supplies

Water points will be maintained to provide permanent water within a 20 minute turn around time. There are no proposals to construct any new water points as the current number of farm dams is adequate.

5.11 Direction indicators of water points, road signs and other features

All dams and other sources suitable for use as water points will be signposted with directional markers and a canister map will be located at the entrances to the plantation area.

5.12 Measures to protect infrastructure, powerlines, gas pipelines and Communication Cables

Plantation planning and establishment staff must be familiar with and adhere to where applicable, the following guide from: *Guidelines for Plantation Fire Protection - (FESA 2011)*

Plantation separation distances must reflect potential fire behaviour driven by local variations in topography, aspect and slope. The hazard separation zone:

- Between the plantation and an existing or approved habitable building must be a minimum of 100 metres, unless the building has been constructed to an appropriate higher standard.

- Between the plantation and an existing or approved non-habitable structure (ie. sheds and enclosed storage areas) must be minimum of 50 metres.

Guidelines dictate that an easement be left around pipelines, power lines and cables.

5.13 Surrounding fuels

Fuels consisting of a mix of grazing paddocks and native vegetation surround the planting area. There are no plans at this stage to carry out a fuel reduction program on or adjoining the property. Where DBCA adjoin the location, they do have rotational burning programs in place to keep fuel levels to an acceptable level.

6. TIMBER HARVESTING PLAN

6.1 Location of harvesting operation

The harvesting operation will take place over the entire area of the plantation as shown in the attached plantable area map. Extraction tracks and cartage routes will be determined prior to harvesting being due, in consultation with the Shire and in accordance with guidelines set by an industry body.

6.2 Timetable (to be updated at time of operations)

Pine Sawlog

First thinnings will occur when the tree farm is approximately 12 years of age, and approximately 20 years for the second thinning. Final harvest should occur around age 30.

6.3 Harvesting operations

Harvesting will generally be carried out using conventional timber harvesting equipment which currently consists of machine harvesters felling the trees, extraction by forwarders and loading on to trucks.

Pine Sawlog

In the first thinning every 5th row (E row) will be removed to allow access for the harvester. Trees will then be selectively removed to achieve the desired stocking. The second thin will also be a selective process and clearfall, with all the trees being removed.

6.4 Machinery and transport

The length of time until the planned final harvest means that it possible that technological innovations may alter industry standards.

The current standards are as follows;

- Machine harvesters - tracked excavators fitted with a felling/debarking head
- Forwarders - all wheel drive rubber tyred tractor
- Truck configurations - these are variable and are dependent on trafficability and access of sites as well as Local Authority Regulations

6.5 Environmental safeguards

Harvesting operations will comply with all aspects of the *Code of Practice for Timber Plantations in Western Australia*.

Roads will be maintained during harvesting operation to minimize erosion and preserve water quality.

The risk of introducing pests or diseases via harvesting activities will be assessed prior to harvesting and appropriate hygiene measures will be adopted.

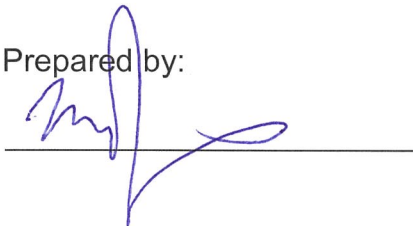
6.6 Safety

All associated operations will be as safe as possible and comply with *Occupational Health and Safety* and the *Safety and Health Code for Native Forest/ Hardwood Logging and Plantation Logging* will be observed.

APPENDIX

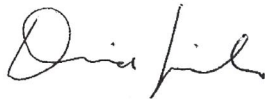
7. AUTHORISATION

Prepared by:



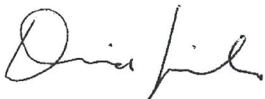
11/5/21

Endorsed by Manager, Strategic Assets:



11/05/21

Approved by Manager, Forest Management:



11/05/21

Boddington Concept Map

