



GMC ENVIRONMENTAL CONSULTING

HW10 Pacific Highway Upgrade, Woolgoolga to Ballina – Koala Revegetation, Section 10

2019/20 Annual Inspection Report



Version:	Version 1.0
Released:	25 September 2020
Document Owner:	Guy Corbett
Review Date:	Nil

Contents

1. Koala Revegetation Works description	3
1.1 Planting areas	3
1.2 Koala tree species	3
1.3 Planting regime	3
1.4 Planting management	4
1.5 Project progress summary to date	4
2. Revegetation Inspection Report Details	5
3. 2017-20 Project Revegetation Planting	6
3.1 Project seed/plant source	6
3.2 Project Revegetation Planting	7
4. Annual Inspection - Observations	12
5. Project Weed Issues	13
5.1 Project Weed Species	13
5.2 Project Weed Control Strategies Utilised 2019-20	13
5.3 Project Weed Control – Grazing Trials – 2020	14
6. 2019-20 Maintenance Activities	16
6.1 Replanting	16
6.2 Weed Control	16
6.3 Wallaby Grazing Control	16
7. Upcoming Works – Current till November 2020	17
7.1 Maintenance Activities	17
7.2 Replacement Tree Replanting	17
7.3 Final Project Replanting Requirements	17
8. Appendix 1 - 2020 Annual Inspection Record Sheets	20
9. Appendix 2 – Project Weed Species	21
10. Document Control	30

1. Koala Revegetation Works description

The NSW Government committed to plant 130 hectares of new habitat for the koala along Section 10 of the W2B highway alignment. These planting areas consisted of various combinations of cleared land used for grazing or sugar cane production. A Koala Revegetation Strategy was developed and identified approximately 130 hectares of cleared land for new Koala habitat across 21 sites.

The three main objectives of this revegetation include:

- Establish new habitat for Koala using preferred Koala food trees to compensate for habitat loss.
- Improve habitat connectivity within the fragmented landscape.
- To guide movement of Koalas towards the road connectivity structures that will be provided to ensure safe passage for dispersing Koalas.

An overview of the Koala Revegetation areas is provided in Figures 3 - 6. An additional planting area was included in 2018. This area is illustrated in Figure 6 is 0.44 hectares and located along Wardell Rd, Wardell.

The current progress of the project is summarised in Section 1.5.

1.1 Planting areas

A total of 22 sites have been identified for the Koala Revegetation Works. An overview of the Koala Revegetation Works is provided in Figures 3 - 6. Planting areas within the sites range in size from around 0.22 hectares to 7.1 hectares.

The planting areas have been identified into five broad categories reflecting the physical nature of the sites:

- Type A: flat low-lying topography - pastoral grasses.
- Type B: flat low-lying topography - cane fields (high water table).
- Type C: lower to mid slopes - pastoral grasses.
- Type D: flat low-lying topography - sandy soils with pastoral grasses.
- Type E: flat low-lying topography to upper slopes - planting between existing vegetation.

1.2 Koala tree species

A combination of primary/secondary Koala food trees and some shelter trees was planted out in the revegetation areas. Tree species proposed across the varied planting areas reflect site specific soil types, drainage conditions and topographical positions.

Swamp Mahogany (*Eucalyptus robusta*) and Broad-leaved Paperbark (*Melaleuca quinquenervia*) are planted on lower slopes and flats as these species are particularly suited to poorly-drained, and seasonally-inundated, boggy areas. Forest Red Gum (*Eucalyptus tereticornis*), Forest Oak (*Allocasuarina torulosa*), Flooded Gum (*Eucalyptus grandis*), Small-leaved Red Gum (*Eucalyptus seeana*) and Red Mahogany (*Eucalyptus resinifera*) are planted on lower slopes on fertile soils. Tallowwood (*Eucalyptus microcorys*), and Forest Oak (*Allocasuarina torulosa*) are planted on mid-upper slopes.

A 'cover crop' of fast-growing Acacias was also planted within eucalypts in locations of drier, rocky or sandy soils growing on mid-upper slopes. The purpose of the Acacia species is to develop microbial (nitrogen fixing) communities within the soil through symbiont mycorrhiza and increase the growth rate of Eucalypt species. Acacia species include *Acacia irrorate*, *Acacia melanoxylon* and *Acacia fimbriata*.

1.3 Planting regime

Seedlings were sourced locally (local provenance). A stocking rate of 300-400 trees per hectare after 10 years post establishment is proposed. Koala food and shelter tree species are planted at a density of around 625 plants per hectare.

1.4 Planting management

An initial planting density of 650 plants per hectare, with 5 per cent replacement of Koala food tree tube-stock annually for three years due to losses is proposed. Replacement of Acacia cover-crop species is not proposed. After three years, the stand of planted eucalypts should be considered “established” and any further losses regarded as part of natural stand thinning due to competition with other planted trees. A stocking rate of 300-400 trees per hectare is expected after several decades following plantation establishment.

1.5 Project progress summary to date

- 17 March 2017 - 2017 project planting commenced
 - 18 October 2017- 2017 project planting completed (113 hectares / 79,129 plants)
 - 19 October 2017 - Project maintenance commenced
 - June 2018 - First Annual Inspection Report
 - 21 August 2018- Additional project planting area completed – Wardell Rd (0.44 hectares / 385 plants)
 - December 2018 - Woolgoolga to Ballina Pacific Highway upgrade Koala Revegetation Strategy Addendum Roads and Maritime Services | December 2018 - Identification of additional revegetation areas – 17.8 hectares / 12,015 plants - made up of:
 - Area 1 – Kays Rd (Chainage 156300) – 6.6 hectares / 4,455 plants
 - Area 2 – Hillside Lane (Chainage 152300) – 11.2 hectares / 7,560 plants.
- Note** - Additional planting area was planned to be planted in late 2019 but the Kays Rd & Hillside Lane sites were not available due to on-going alignment works.
- April 2020 - Nursery order of 12,015 plants for final 17.8 hectares of revegetation works
 - 27 June to 8 July 2019 - Second Annual Inspection Report.
 - 20 July to 22 July 2020 - Third Annual Inspection Report (this report).
 - August/September 2020 – Planned dates to prepare & plant final koala revegetation planting areas – Kays Rd and Hillside Lane.
 - November 2020 – Completion of 3-year contracted maintenance program



2. Revegetation Inspection Report Details

Site Revegetation Inspection -

- *Completed By:*
Guy Corbett – Bach.App.Sci. (Resource Management) & Grad.Dip. (Catchment Management) – Director GMC Environmental Consulting PTY LTD
- *Inspection Dates:*
20 July to 23 July 2020
- *Aim:*
Koala Revegetation Monitoring -

The koala revegetation monitoring was generally undertaken as per the Ballina Koala Revegetation Strategy and Koala Management Plan, specifically section 8.6 Monitoring.

The BKRSKMP asked for monitoring of the success of the revegetation to occur across all field sites monitoring one plot per two hectares of revegetation on each occasion. Monitoring should occur at the same period each year. Each site should be marked with a star picket and flagging tape and the location should also be recorded with a GPS. Annual monitoring should occur at each site from year 1, where the following variables are recorded within a 50 x 20 m (0.1 ha) quadrat. Annual monitoring will occur at each site where the following variables are recorded:

- Density of Koala food trees and shelter trees, their average height and number of visible dead stems.
- Presence and dominance of any environmental weeds, including exotic grasses.
- Presence and condition of Acacia cover-crop, if planted.
- One photo taken at the star picket, facing south (on an 180^o degree bearing).

These observations will identify if any large infestations of environmental weeds are occurring and their location, if any large-scale plant deaths have occurred and if any other environmental issues are developing, such as sheet or gully erosion.

The survey method utilised for this report was undertaken as per the BKRSKMP **except** that the observations were increased to cover 100% of each revegetation area (in most instances) rather than a plot every 2 hectares of 0.1ha. This was undertaken by the surveyor to provide a more complete picture of the revegetation works progress across all planting sites completed to date.

Timing -

Annual monitoring of the success of the plantings will occur at each site. Monitoring will occur at the same period each year. The monitoring should continue for at least five years, and/ or until plantings across 90% of plots have an average height of eight metres (unless otherwise agreed with the EPA).

Inspection Sheets –

Completed 2020 Project Site Revegetation Inspection FoTFNSW are provided in Appendix 1 of this report.

Site Revegetation Inspection Report -

- *Completed by:*
Guy Corbett.
- *Date:*
23 July 2020
- *Aim:*

The results of the annual field surveys to be summarised in an annual report provided within two months of the completion of the field surveys. The monitoring should continue for at least five years, and/ or until plantings across 90% of plots have an average height of eight metres.

3. 2017-20 Project Revegetation Planting**3.1 Project seed/plant source****Seed Collection -****2017 Seed collection**

All seed was collected by Mullum Creek Native Nursery.

Eucalyptus robusta, *Eucalyptus tereticornis*, *Eucalyptus Seeana*, *Eucalyptus resinifera*, and *Melaleuca quinquenervia* seed was collected around Meerschaum Vale along Wardell Road, Old Bagotville Road, Bogotville Road, and around Wardell along Lumleys Lane, River Drive and around Pimlico along Pimlico Road. This seed was collected from 2010 and stored at the Mullum Creek Nursery. Further project seed was collected from June 2016 onwards to add to the existing seed.

Eucalyptus grandis, *Eucalyptus microcory's* and *Allocasuarina torulosa* was collected from June 2016 onwards for the project. These were collected from the Bagotville/Wardell area at the same locations as above.

A. melanoxydon, *A. irrorata* and *A. fimbriata* seed was collected from June 2016 in the Brunswick Heads/Tweed area.

2018 Seed collection

All seed collected by Eastern Forest Nursery.

Seed supply from Northern NSW regional zone.

2020 Seed collection

All seed collected by Eastern Forest Nursery.

Seed supply from Northern NSW regional zone.

Plant Supply -**2017 Project Plant Supply Nursery**

All project plants were propagated, grown and sourced from Mullum Creek Nursery – 110 Yankee Creek Rd Mullumbimby NSW.





Figure 1. Project plant propagation

2018 Project Plant Supply Nursery

All project plants were propagated, grown and sourced from Eastern Forest Nursery – 848 Bruxner Highway Gundurimba (via Lismore) NSW.

2020 Project Plant Supply Nursery

All project plants were propagated, grown and sourced from Eastern Forest Nursery – 848 Bruxner Highway Gundurimba (via Lismore) NSW.



Figure 2. Eastern Forest Nursery

3.2 Project Revegetation Planting

2017 Planting

The project revegetation planting was undertaken from March 2017 through to October 2017. The total area planted was 113 hectares with around 79,000 trees planted as summarised in Table 1. Tree species and numbers of trees planted (not including replanting activities) is summarised in Table 2. The planting areas are illustrated in Figures 3 to 6.

It should be noted that while generally the original planting program was followed, because of the identification of Hairy Joint Grass species in some of the planting areas, some planned revegetation planting was not undertaken. The main areas affected by Hairy Joint Grass presence is in Planting Areas 16, 17.1, and 18.2-4.

2018 Planting

The project revegetation planting was undertaken from 15 August 2018 to 21 August. The total area planted was 0.44 hectares with around 385 trees planted as summarised in Table 1. Tree species and numbers of trees planted (not including replanting activities) is summarised in Table 3. The planting areas are illustrated in Figure 7.

Table 1. Project 2017/18 Revegetation Planting and Hectares Planted and Planned 2020 Plantings

Planting Dates	Koala Food Trees / Other Plants	Cover Crop	Area
2017 Planting	72,171	6,958	113 Ha
2018 Planting	385		0.44 Ha
Planned 2020 Planting Remaining	11,125	890	17.8 Ha
Total at Completion	83,681	7,848	131.24 Ha

Table 2. Project 2017 Revegetation Species Planted

Project Planted Species	Number Planted
<i>Eucalyptus robusta</i>	20,861
<i>Melaleuca quinquenervia</i>	3,911
<i>Eucalyptus tereeticornis</i>	19,891
<i>Eucalyptus seeana</i>	139
<i>Eucalyptus resinifera</i>	3,306
<i>Eucalyptus grandis</i>	2,868
<i>Eucalyptus microcorys</i>	17,980
<i>Allocasuarina torulosa</i>	3,215
<i>Acacia irrorata</i>	3,559
<i>Acacia fimbriata</i>	3,050
<i>Acacia melanoxylon</i>	349
Number of trees (not including replanting activities)	79,129

Table 3. Project 2018 Revegetation Species Planted

Project Planted Species	Number Planted
<i>Eucalyptus robusta</i>	55
<i>Melaleuca quinquenervia</i>	45
<i>Banksia aemula</i>	45
<i>Baekea frutescens</i>	55
<i>Lomandar longifolia</i>	85
<i>Dianella caerulea</i>	50
<i>Baloskion tetraphyllum</i>	50
Number of trees (not including replanting activities)	385



Figure 3. Planting Areas along Thurgates Lane, Wardell



Figure 4. Planting Areas along Lumleys Lane Wardell



Figure 5. Planting Areas around Bagotville

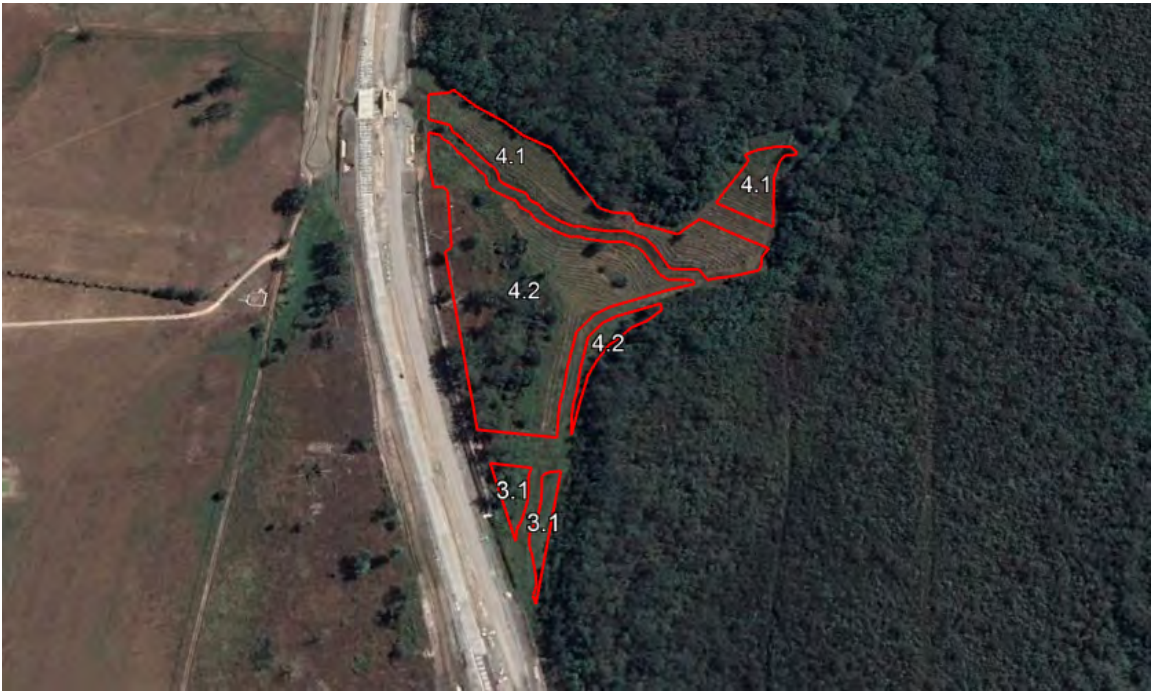


Figure 6. Planting Areas Bingal Creek



Figure 7. 2018 Planting Areas Wardell Road

4. Annual Inspection - Observations

As detailed in Section 1 of this report, an annual inspection of all the project revegetation planting areas was undertaken. As part of this inspection, an inspection record and site photo were recorded for each planting area. These inspection records are provided in Appendix 1 of this report.

A summary of the main observations from these inspections are discussed below:

Plant Survival and Growth

Generally, plant survival across the whole project continues to be very good. The trees across most planting sites are growing very well with average heights ranging between 4m to 5m. The tallest tree observed and measured was approximately 8 metres in height. In most instances' trees have increased in height around 1 to 3 metres in size since the 2019 inspection. While increasing in height, the trees are also increasing in foliage width and density to the point that in a number of instances the canopy has started to close in. Observation during the annual inspection indicated there is a no replacement planting required.

Across the project to date there has been approximately 6% project replanting due to natural causes and a further 8% replanting due to external pressures outside of the control of the project. Since the last inspection no further plant replacements have been required. Section 6.1 of this report details replanting activities that have been undertaken to date.

The main issues identified again in this year's inspection in some parts of the project affecting plant survival and growth continues to be weed/grass competition.



Figure 8. Tree Growth Across Project

Weed Competition

The BKRSKMP asks that where woody weeds are present, weeds should be reduced to a density of less than 5% across the revegetation site, while exotic grasses should not be visibly affecting the growth of tube-stock. Weed competition is discussed fully in Section 5 of this report, but generally, weed competition is now much less of an issue than previous inspections, but where continual slashing and row mowing is not occurring, long and thick pasture grass competition starts competing with planted trees but also becomes an access and fire risk issue. Grass control trials and grass control for longer term management of the planting sites is discussed in Section 5.3.

Most tree heights across all planting zones are now above weed height and thus not competing as much for sunlight.



Figure 10. Grass Burden within Planting Areas

5. Project Weed Issues

5.1 Project Weed Species

The mid-North Coast climate is very suitable for the growth of competitive weed and grass species especially in disturbed or cultivated soils.

A summary and photographic record of the main competitive weed / grass species the project has been managing is provided in Appendix 2.

5.2 Project Weed Control Strategies Utilised 2019-20

At Project inception it was planned to mulch each tree with project site won-mulch. Prior to revegetation works it was identified that the proposed mulch would not be available. To manage post planting weed issues, GMC and Pacific Complete agreed to a revised maintenance weed strategy involving post planting weed maintenance consisting of herbicide spraying and increased site mowing/slashing.

During 2019-20, weed/grass suppression activities have focused on continuous tractor slashing of tree rows and in some instances followed by row spray with a non-selective herbicide.

Weed control methodology used in 2019-20:

Row Mowing and Row Spraying Chemical Control –

- Type – Row mowing (Tractor/Razorback Mower) Chemical row spraying around planted trees

- Chemical – Basta - Active Ingredient: Glufosinate Ammonium – Target: Non-Selective Grasses/Weeds

Access Issues

Access into some planting sites for maintenance activities because of road works has continued to be an issue. The main areas of issue are –

- Planting areas 13.1-3
- Planting Area 3-4

Maintenance activities in these areas continues to be restricted to manual activities due to restricted access but tree establishment and growth generally is not being affected with tree heights now exceeding weed/grass heights.

5.3 Project Weed Control – Grazing Trials – 2020

During 2020, GMC with assistance from local landowners and approval from TFNSW, small scale grazing trials were conducted in two koala revegetation planting areas – 11.3 and 12.2. The trials were to assess if stock grazing is an effective grass/weed management strategy around the establishing trees.

The grazing trial consisted of sheep grazing in planting area 11.3 and cattle grazing in 12.2. Photos of grazing areas are provided below.

Generally, the trials were successful in reducing weed/grass impacts around the establishing trees without too much evidence of tree damage, but other issues were identified. The main points identified from the trial sites:





1. Sheep & and cattle grazing did reduce weed/grass build up without significant tree damage
2. Sheep grazing was successful on the higher ground of planting area 11.3 but most of the planting zones are wet/inundated soils which will require greater grazing management to limit soil compaction and tree damage
3. Regular and consistent management of cattle grazing is required to limit over grazing and damage to establishing trees
4. It was observed (visual only) that soil compaction was occurring in heavily trafficked areas around some established trees from grazing animals. Higher levels of compaction were observed in wetter or saturated soils. Compacted soils around establishing trees can affect plant growth and viability. As most of the project planting areas are in areas with moist/saturated soils, soil compaction will be an issue that will be required to be managed if livestock grazing is continued to be utilised to manage grass growth within the trees lots.

Grazing Trial Conclusion:

With the conclusion of contracted maintenance activities within the currently planted koala revegetation areas to occur in November 2020, there is a need for TFNSW to manage weed/grasses to allow continued good tree growth but to also manage the inherent risk of bushfire and access issues (This is only required in the interim until properties are on sold with a Biodiversity Stewardship Property Management Plan). Fire risk to neighbouring properties has been expressed as an issue by some property owners.

The grazing trial undertaken showed that stock grazing did reduce weed/grass levels, but it also resulted in some tree damage as well as the potential for soil compaction under the establishing trees. To manage these issues with grazing it will require continuous stock management and movement to ensure that overgrazing, soil compaction and tree damage does not occur. This level of grazing management would require either a contractor to supply and manage grazing under set criteria's or a contracted manager to manage land holder access to planting areas again within set grazing criteria.

In comparison to regular scheduled tractor slashing and herbicide spraying to control weed/grass levels within the project tree lots, successful grazing will require continuous stock management under clear grazing criteria.

	
<p>PA11.3 Sheep Grazing Trial Area</p>	<p>PA11.3 Sheep Grazing Trial Area</p>
	
<p>PA11.3 Sheep Grazing Trial Area</p>	<p>12.2 Cattle Grazing Trial Area</p>

6. 2019-20 Maintenance Activities

6.1 Replanting

During 2019-20, no additional re-planting activities were undertaken as most planting sites as the sites are reaching a growth and maturity to enable them to be identified as 'Established'. A summary of project replanting since the commencement of the project is detailed below.

Project Replanting:

Replanting has occurred because of:

Natural causes – weed completion, saturated ground, inappropriate species planting and general losses

External Pressures – Unplanned cattle grazing, floods and bush fire.

Natural Cause Replanting:

The Project has been undertaking natural cause plant replacement. To date approximately 5,500 plants have been replanted which is about 6% replacement. Of these replacements, approximately 1000 were replanted during 2018-19. The main reasons for replacement have been weed completion, saturated soils and species selection.

Weed Competition:

Weed competition is discussed in Section 5 of this report.

Saturated Soils:

The Project area is generally in lower slope areas and are subject to prolonged saturated soils. Some tree species have responded well to these conditions - *E. robust* & *M. quinquenervia*, and some responding well with time – *E. tereeticornis*, but some species especially the acacias have not responded well to poorly drained saturated soils but have done well in elevated slopes.

Species Selection:

The main species suffering from poor site selection is *Allocasuarina torulosa* – Forest Oak. Forest Oak is generally an upper slope species. This species was planted in most of the lower slope areas of the project and the plant species has not survived well in these lower saturated soil situations

External Pressure Replanting:

The Project has been undertaking external pressure plant replacement as required. To date approximately 6,500 plants have been replanted which is about 8% replacement. The main areas for replacement have included:

- Planting Areas 1 & 2 – Bushfire
- Planting Areas 6 – 8 – Unplanned Cattle Grazing
- Planting Areas 10.1 & 11.1 – Unplanned Cattle Grazing
- Planting Areas 13.1-3 – Unplanned Cattle Grazing
- Planting Areas 19 -21 – Flooding

6.2 Weed Control

Project weed control issues and controls is detailed in Section 5 of this Report.

6.3 Wallaby Grazing Control

Wallaby Fence

22km of wallaby fence was installed project wide to protect planted trees from wallaby grazing.

With most planting zones tree heights now average between 4-5m in height, as such the risk of wallaby grazing in these zones is minimal. Wallaby fence removal has now been completed in most planting areas.

The only areas where fence removal has not occurred is in Planting Area 5's as the trees in these zones are still quite small (sandy soils) and thus still vulnerable to wallaby grazing. Final fence removal will occur prior to November 2020.

7. Upcoming Works – Current till November 2020

Upcoming Project works for 2020 include final row slashing and row spraying prior to contracted project maintenance works completion in November 2020.

7.1 Maintenance Activities

Final weed /grass control will be undertaken prior to November 2020. GMC has a full-time site team undertaking these maintenance works.

Post-November 2020, TFNSW will need to develop on-going grass/weed management strategies to ensure continued tree growth as well as reducing biomass bush fire risks and maintaining access issues to the planting sites. In Section 5.3 of this report, some discussion has been provided in relation to possible biomass management strategies. This report concluded that a strategy of programmed tractor slashing/herbicide spraying would provide better commercial and plantation tree establishment success than controlled grazing.

In Appendix 1, 2020 Annual Inspection Record Sheets, photos have been provided of planting areas where insufficient grass/weed control has resulted in large amount of biomass which poses a continued risk to site access and bush fire risk to near neighbours.

7.2 Replacement Tree Replanting

From the annual inspection no additional tree replacements have been identified.

7.3 Final Project Planting Requirements

As detailed in Section 3 of this report, of the planned 130 hectares to be revegetated as part of this project only 113 hectares was available for planting.

TFNSW has finalised the availability and planning for an additional 17.8 hectares of land to complete the remaining planting works. It is expected that this additional area will be available for planting in August/September 2020.

The details of the additional planting areas include:

- Table 4 – Additional planting areas details and plant species
- Figure 11 – Kays Rd Planting Area
- Figure 12 – Hillside Lane Planting Area

Table 4. 2020 Additional Planting Areas

Plant Supply List - Additional Koala Tree Planting Areas - Wardell

Planting Area	Area	Koala Trees at 625/hect	Acacia Cover Crop at 8%	Total Trees
Area 1 - Kays Rd Chainage 156300	6.6 Hec	4125	330	4,455
Area 2 - Hillside Chainage 152300	11.2 Hec	7000	360	7,360
Total	17.8 Hec	11,125	890	12,015

Species	Kays Rd	Lumleys	Total Project Plantings	Percentage
<i>Eucalyptus robusta</i>	980	1663	2,643	22%
<i>Mealeuca Quinquenervia</i>	446	756	1,202	10%
<i>Eucalyptus tereticornis</i>	891	1512	2,403	20%
<i>Eucalyptus Resinifera</i>	446	756	1,202	10%
<i>Eucalyptus grandis</i>	446	756	1,202	10%
<i>Eucalyptus microcorys</i>	891	1512	2,403	20%
<i>Acacia imrorata</i> (cover crop)	178	302	481	4%
<i>Acacia fimbriata</i> (cover crop)	178	302	481	4%
<i>Acacia melanoxylon</i> (cover crop)	0	0	0	0%
Total	4,455	7,560	12,015	100%

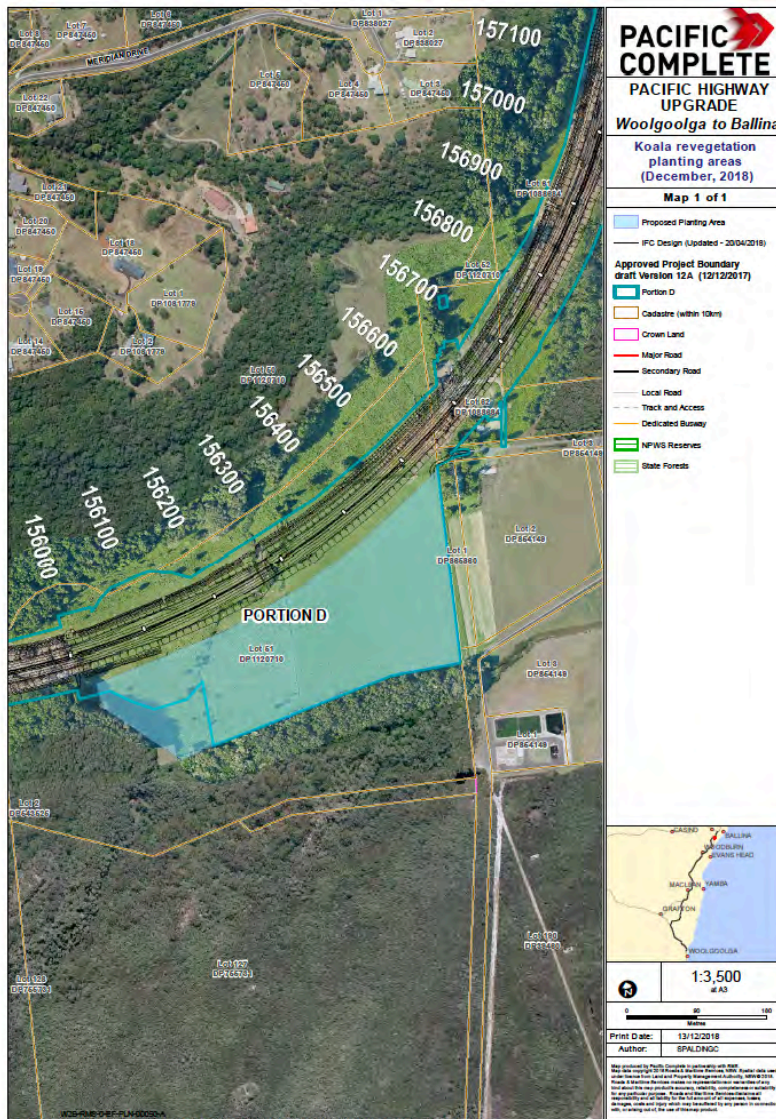


Figure 11 – Kays Rd Additional Planting Area

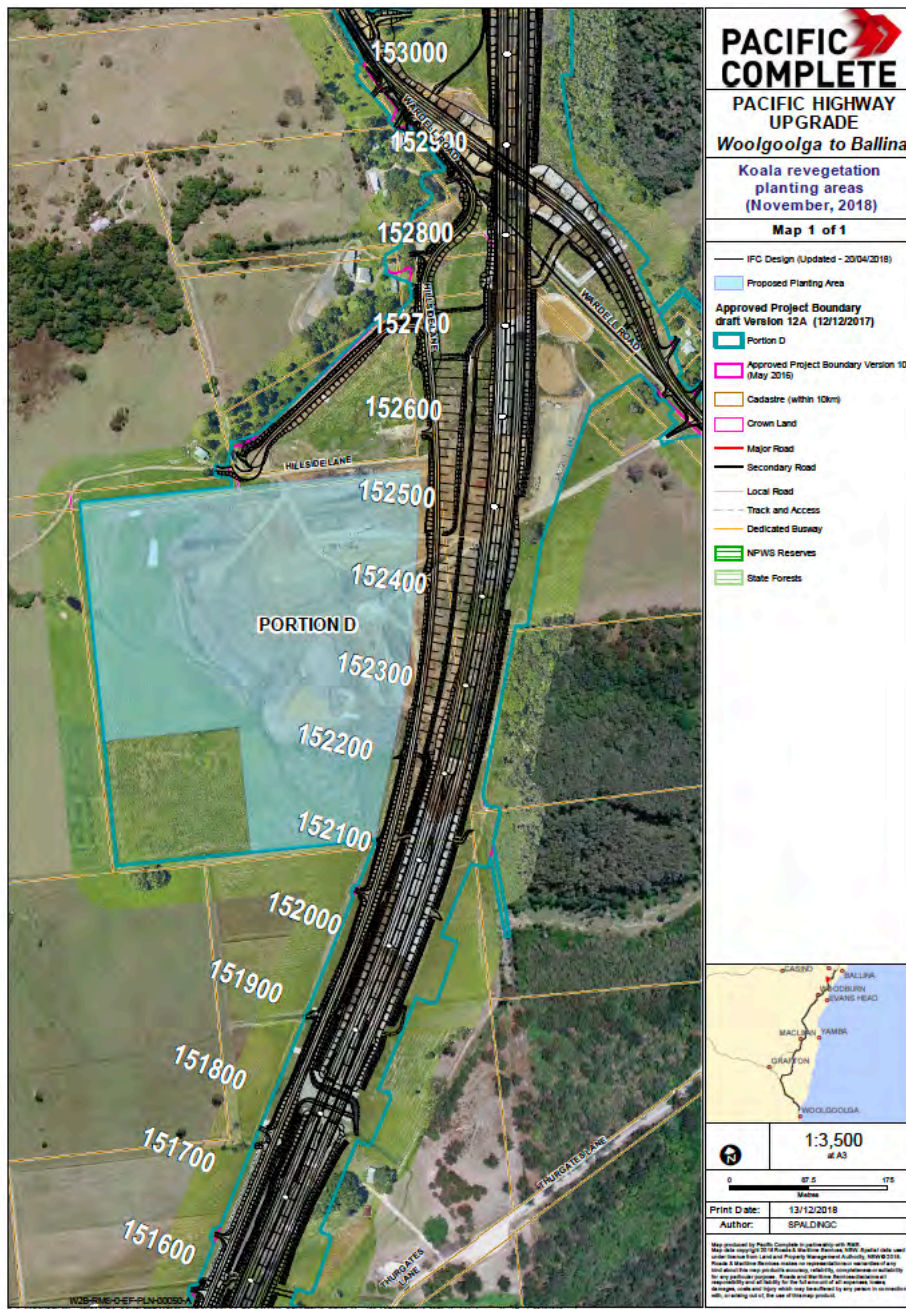


Figure 12 – Hillside Lane Additional Planting Area

8. Appendix 1 - 2020 Annual Inspection Record Sheets

9. Appendix 2 – Project Weed Species

Biden pilosa (Farmer's Friend) (Cobblers Peg)



Conyza albida (Fleabane)



Sida rhombifolia (Paddy's Lucerne)



Verbena bonariensis (Purpletops)



Keinus communis (Castor Oil Plant)



Baccharis halimifolia (Groundsel Bush)



Trifolium repens (White Clover)



Cassia bicapsularis (Butterfly Bush)



Taraxacum officinale (Dandelion)



Polygonum aviculare (Wire Weed)



Portulaca oleracea (Pigweed)



Persicaria capitata (Knotweed)



Hypochoeris radicata (Catsear)



Gomphocarpus fruticosus (Cotton Bush)



Ageratum houstonianum (Blue Billy Goat weed)



Jacobaea vulgaris (Ragwort)



Senecio madagascariensis (Fire weed)



Tradescantia fluminensis (Wondering Jew)



Cuphea carthagensis (Colombian wax weed)



Cyperus polystachyos (Bunchy Sedge)



Phragmites spp (Reeds)



Setaria sphacelate (Setaria)



Ludwigia octovalvis - (Willow Primrose)





10. Document Control

Author (To whom any changes are to be recommended)			
Project Systems Supervisor		Guy Corbett	
Stakeholders and other contributors			
Project Director		Guy Corbett	
Reviewed by			
Project Director		Guy Corbett	23/7/20
Client - RMS		Simon Wilson	14/9/20
Approved by			
Project Director		Guy Corbett	23/7/20
History			
Date	Author	Version	Nature of change
23/7/20	Guy Corbett	Draft	
25/9/20	Guy Corbett	1.0	Simon Wilson edits
Related documents			
Title		Review Date	
Review Requirements			
Nil.			
Controlled document location			
WBKR Project QA System			
This document is an GMC Key Document			

WBKR QA Form – Annual Inspection Report - 2020



Site 1									
Planting Area:	19.1	GPS Location:	-28.55.651S/153.27.265E	Quadrant Area:	4hec	Planting Date:	23/3/17	Date:	20 July 2020
Density of Trees:	1/16m2	Average Tree Height:	5m	No. of Visible Dead Stems:	3				
Environmental Weeds:	Weed/grasses well under control. Remaining issue is volunteer sugar cane. Weed control via row slashing.								
Acacia Survival:	Very few acacias evident								
Comments:	Continued strong survival and growth. Trees have grown about 1.5-2m over the last 12 months Wallaby fencing has been removed.								
Site 2									
Planting Area:	19.2	GPS Location:	-28.55.910S/153.27.359E	Quadrant Area:	2 hec	Planting Date:	24/3/17	Date:	20 July 2020
Density of Trees:	1/16m2	Average Tree Height:	3 - 5m	No. of Visible Dead Stems:	1				
Environmental Weeds:	Verbena and Ageratum still present but generally well controlled with row slashing .								
Acacia Survival:	Very few acacias evident								
Comments:	Slower growth than PA19.1 as this is a wetter area. 1.5m growth over the last 12 months. No replanting activities planned for this area. Wallaby fence has been removed from PA.								



Good stem growth - PA19.1



Canopy closure commencing - PA19.1





PA19.1 from Lumleys Lane



Good tree structure PA19.1

WBKR QA Form – Annual Inspection Report - 2020



Site 3									
Planting Area:	19.3	GPS Location:	-28.55.873S/153.27.418E	Quadrant Area:	0.3hec	Planting Date:	24/3/17	Date:	20 July 2020
Density of Trees:	1/16m2	Average Tree Height:	3-5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Generally very good weed control with only some Verbena observed. Row slashing being utilised for weed control.								
Acacia Survival:	Very few acacias evident								
Comments:	Good tree survival and tree growth similar to PA19.2. Trees have grown about 1.5-2m over the last 12 months Wallaby fencing has been removed from PA.								
Site 4									
Planting Area:	19.5	GPS Location:		Quadrant Area:	4.5 hec	Planting Date:	17/3/17	Date:	20 July 2020
Density of Trees:	1/16m2	Average Tree Height:	5m	No. of Visible Dead Stems:	1				
Environmental Weeds:	Volunteer cane is the main weed issues. Row slashing being utilised to allow sunlight into rows and remove cane.								
Acacia Survival:	Very few acacias evident								
Comments:	Tree growth and survival in this PA is very good. Trees have grown about 1.5-2m over the last 12 months Wallaby fence removed. Nil replacements required.								



PA19.5 Staff pole at 5m



PA19.5 tree growth



Volunteer sugar cane in PA19.5



PA19.5 Staff pole at 5m

WBKR QA Form – Annual Inspection Report - 2020



Site 5									
Planting Area:	19.6	GPS Location:	-28.55.958S/153.27.585E	Quadrant Area:	2.7	Planting Date:	21/3/17	Date:	20 July 2020
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Good weed control via row slashing								
Acacia Survival:	Very average acacia survival								
Comments:	Trees have grown about 1.5-2m over the last 12 months No replanting activities planned for this area. Wallaby fencing has been removed.								
Site 6									
Planting Area:	20.1	GPS Location:	28.55.57S/153.27.35E	Quadrant Area:	1.5 hec	Planting Date:	28/3/17	Date:	20 July 2020
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	6				
Environmental Weeds:	Good weed control via row slashing Wallaby fence removed								
Acacia Survival:	Very average survival								
Comments:	Very strong tree growth in this area since the last report - approx 3m of growth in last 12 months. Weed control working well.								

WBKR QA Form – Annual Inspection Report - 2020



Site 7									
Planting Area:	21.1	GPS Location:	28.55.55S/153.27.13E	Quadrant Area:	3 hec	Planting Date:	29/3/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	3				
Environmental Weeds:	Sugar cane								
Acacia Survival:	Some survived but generally very poor survival rate								
Comments:	Sugar cane is difficult to control when it is next to an established tree because of the issue of chemical over-spray. The trees in this area are now well above grass and weed heights and are looking well established. Row slashing required in this area.								
Site 8									
Planting Area:	21.3	GPS Location:	28.56.1S/153.27.4E	Quadrant Area:	3hec	Planting Date:	28/4/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture grass and Billy Goat Weed								
Acacia Survival:	Very poor								
Comments:	This is a very wet zone but the trees especially on the western side are starting to establish and form very well especial E. robusta. The trees look very healthy and are growing well. With the high soil moisture levels the trees are about half the height at present compared to better draining areas.								



PA21.3 Saturated soils but trees starting to come along well now esp. *E. robusta*



PA 20.1



PA20.1



Weed Control PA 20.1

WBKR QA Form – Annual Inspection Report - 2020



Site 9									
Planting Area:	11.8	GPS Location:	28.55.40S/153.26.47E	Quadrant Area:	1 hec	Planting Date:	4/4/17	Date:	23/7/20
Density of Trees:	1/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Setaria Grass under trees but continuous spraying and slashing keeping it under control. Wallaby fence removed.								
Acacia Survival:	Excellent survival in higher areas but poorer growth in lower inundated zones								
Comments:	Very wet soils with poor drainage. Trees established and growing well especially in elevated and drier areas Weed control generally effective.								
Site 10									
Planting Area:	11.7	GPS Location:	28.55.41S/153.26.47E	Quadrant Area:	1.1 hec	Planting Date:	10/4/17	Date:	23/7/20
Density of Trees:	1/4m2	Average Tree Height:	3.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Setaria Grass under trees but continuous spraying and slashing keeping it under control. Wallaby fence removed.								
Acacia Survival:	Very good survival and growth at higher areas out of inundation								
Comments:	Very wet soils with poor drainage compared with PA11.8. Trees well established but a lot slower growth than those areas with better drainage. Weed control generally effective via row slashing. Trees have grown about 1.5m over the last 12 months								



Looking west from Alignment over PA11.3



PA 11.3 Grazing trial with sheep



PA 11.3 Grazing trial with sheep



Looking south over PA's 11.6/7/3

WBKR QA Form – Annual Inspection Report - 2020



Site 11									
Planting Area:	14.2	GPS Location:	28.55.47S/153.26.46E	Quadrant Area:	1.4 hec	Planting Date:	6/4/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Continuous weed control effectively suppressing weeds. Row slashing still occurring. Wallaby fence has been removed.								
Acacia Survival:	Good acacia survival in elevated areas but poor survival in lower wet areas								
Comments:	This is a wetter slower draining area and as a result tree growth is slower here than in other more elevated planting areas. Good continuous weed suppression has resulted in good tree establishment and survival. Trees have increased in size about 1.5m over last 12 months.								
Site 12									
Planting Area:	14.1	GPS Location:	28.55.50S/153.26.46E	Quadrant Area:	2 hec	Planting Date:	6/4/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Continuous weed control effectively suppressing weeds. Row slashing still occurring. Wallaby fence has been removed.								
Acacia Survival:	Very poor survival as planting area in lower ground and constantly inundated								
Comments:	This is a wetter slower drawing area and as a result tree growth is slower here than in othe more elevated planting areas. Good continuous weed suppression has resulted in good tree establishment and survival. Trees have increased in size about 1.5m over last 12 months.								



WBKR QA Form – Annual Inspection Report - 2020



Site 13									
Planting Area:	14.4	GPS Location:	28.55.50S/153.26.46E	Quadrant Area:	0.6 hec	Planting Date:	7/4/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Weeds generally below tree foliage now so weed impact reduced. Groundsel control will be required along tree rows. Row mowing still occurring. Wallaby fence has been removed.								
Acacia Survival:	Average acacia survival in higher areas but not in lower areas								
Comments:	Generally a lower wetter area that has meant lower tree heights than other higher better draining areas. While growth rates are slower, the trees have generally added 2m in height in 12 months and look well established. Continued good survival and establishment.								
Site 14									
Planting Area:	14.3	GPS Location:	28.55.49S/153.26.50E	Quadrant Area:	0.9 hec	Planting Date:	7/4/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	2.8m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Weeds generally below tree foliage now so weed impact reduced. Groundsel control will be required along tree rows. Row mowing still occurring. Wallaby fence has been removed.								
Acacia Survival:	No acacias as area very wet and continually inundated								
Comments:	Generally a lower wetter area that has meant lower tree heights than other higher better draining areas. While growth rates are slower, the trees have generally added 1m in height in 12 months and look well established. Continued good survival and establishment.								

WBKR QA Form – Annual Inspection Report - 2020



Site 15									
Planting Area:	15.3	GPS Location:	28.55.50S/153.26.49E	Quadrant Area:	1 hec	Planting Date:	7/4/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Weeds generally below tree foliage now so weed impact reduced. Groundsel control will be required along tree rows. Row mowing still occurring. Wallaby fence has been removed.								
Acacia Survival:	Good acacia survival - Area is in higher ground								
Comments:	Generally a lower wetter area that has meant lower tree heights than other higher better draining areas. While growth rates are slower, the trees have generally increased about 1 to 1.5m in height in 12 months and look well established. Continued good survival and establishment. Acacias flowering well.								
Site 16									
Planting Area:	13.5	GPS Location:	28.55.51E/153.26.38S	Quadrant Area:	1.2 hec	Planting Date:	5/10/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	5.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Tree foliage well above weed height so relatively unaffected by weeds now. Row mowing still occurring. Wondering dew still main weed in this wet area. Wallaby fence has been removed.								
Acacia Survival:	Average acacia survival								
Comments:	Very strong tree growth especially now that pasture grasses and Wondering Dew weed control is now being effectively managed. Tree growth is strongest on higher well draining ground with growth rates reducing to about half in wetter soil areas of the site. Generally very good establishment and growth. Trees grown about 2m in last 12 months								



PA 14.3



PA 15.1 Acacia Tree





PA 14.4 Tree growth



PA 13.5 Tree Growth



WBKR QA Form – Annual Inspection Report - 2020



Site 17									
Planting Area:	13.4	GPS Location:	28.55.53S/153.26.45E	Quadrant Area:	5.1 hec	Planting Date:	5/10/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Weed control working well with slashing. Some additional control required with creeping vine starting to cover some trees. Wallaby fence has been removed.								
Acacia Survival:	Very poor survival due to very wet ground and continual soaked soil.								
Comments:	Soils have dried out from last year and as such the weed burden especially wondering dew is more under control. E. Robusta really doing well with the most rigorous and strong growth. Additional growth of 1.5m in the last 12 months across the site.								
Site 18									
Planting Area:	11.6	GPS Location:	28.55.38S/153.26.35E	Quadrant Area:	1.5 hec	Planting Date:	10/4/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	5m	No. of Visible Dead Stems:	2				
Environmental Weeds:	Weed control very effective								
Acacia Survival:	Excellent acacia survival and growth on higher areas but less in wetter areas								
Comments:	Very good tree growth and establishment of eucalyptus and acacias. Weed control very effective as canopy starting to close up. Trees have grown about 2m over the last 12 months. Wallaby fence still in place.								

WBKR QA Form – Annual Inspection Report - 2020



Site 19									
Planting Area:	11.3	GPS Location:	28.55.38S/153.26.35E	Quadrant Area:	3.8 hec	Planting Date:	4/4/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	5m	No. of Visible Dead Stems:	2				
Environmental Weeds:	Setaria grass - grazing trial with sheep has been undertaken in this area over the last 12 months. Discussions on trial detailed in cover report								
Acacia Survival:	Very good survival and growth in higher areas and less so in lower areas								
Comments:	Excellent establishment and growth for eucalyptus, acacias and forest oak. Setaria grass remains a nuisance The trees are continuing to grow very well in this area especially on the eastern side of the site. Trees have grown about 1.5m over the last 12 months.								
Site 20									
Planting Area:	10.3/4, 11.4	GPS Location:	28.55.43S/153.26.25E	Quadrant Area:	3 hec	Planting Date:	5/4/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Sugar cane, very hard to control under trees but controlled within rows by row slashing where canopy closure allows.								
Acacia Survival:	Very good survival and growth - acacias up to 5 m								
Comments:	Continued excellent growth rates . Elevated position has resulted in very fast growth rates and good establishment. Trees have grown about 1m over the last 12 months.								



PA13.4 - Creeper growth in trees



PA10.3/4-11.4 Canopy starting to form



PA11.3 Forest Oak



PA11.6



PA11.3



PA11.3

WBKR QA Form – Annual Inspection Report - 2020



Site 21									
Planting Area:	10.5 - 11.5	GPS Location:	28.55.47S/153.26.35E	Quadrant Area:	0.5 hec	Planting Date:	5/4/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4.5m	No. of Visible Dead Stems:	1				
Environmental Weeds:	Pasture grasses. Generally really good control through slashing								
Acacia Survival:	Good acacia survival and growth as planting is on a slope								
Comments:	Flatter slower draining soil area which has shown across the project slows tree growth compared to elevated sites. Good tree establishment and growth. Trees have grown about 2m over the last 12 months. Wallaby fence removed.								
Site 22									
Planting Area:	12.1	GPS Location:	28.55.56S/153.26.46E	Quadrant Area:	0.4 hec	Planting Date:	18/10/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	1.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture grass								
Acacia Survival:	Average acacia growth and survival which matches eucalyptus species								
Comments:	Very tough environment on this site as it used to be an old quarry site. Very little top soil and generally a rocky base. As such tree establishment and growth have been slow. This area could receive another round of replacement plantings to boost tree numbers.								

WBKR QA Form – Annual Inspection Report - 2020



Site 23									
Planting Area:	12.2	GPS Location:	28.55.56S/153.26.46E	Quadrant Area:	1.8 hec	Planting Date:	25/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Setaria Grass - grazing trial with cattle has been undertaken in this area over the last 12 months. Discussions on trial detailed in cover report								
Acacia Survival:	Nil survival								
Comments:	Good growth and establishment at the base of the slope but slower growth on the rocky slopes. Trees have grown about 1.5m over the last 12 months. Positional photo not possible as cattle grazing in area								
Site 24									
Planting Area:	12.3	GPS Location:	28.55.37S/153.26.20E	Quadrant Area:	0.2 hec	Planting Date:	25/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Setaria Grass								
Acacia Survival:	Nil								
Comments:	Some growth and establishment. Trees have grown about 1.5m over the last 12 months. Positional photo not possible as cattle grazing in area								

WBKR QA Form – Annual Inspection Report - 2020



Site 25									
Planting Area:	10.1	GPS Location:	28.55.45S/153.26.13S	Quadrant Area:	2.5 hec	Planting Date:	10/4/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Good weed suppression - no dominant weeds								
Acacia Survival:	Good acacia survival and growth								
Comments:	Lower area so slower drainage and wetter soils. Plant establishment is very good and trees look very healthy and strong. Low weed competition through tractor slashing. Trees have grown about 2m over the last 12 months. Wallaby fence removed.								
Site 26									
Planting Area:	11.1	GPS Location:	28.55.45S/153.26.13E	Quadrant Area:	1 hec	Planting Date:	11/4/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture grasses, Billy Goat weed, cobbbers peg								
Acacia Survival:	Good survival								
Comments:	Good establishment and growth especially in the higher well drained areas. Continuous weed control underneath the trees has been effective with most of the trees above grass height. Trees have grown about 1.5m over the last 12 months. Wallaby fence removed.								

WBKR QA Form – Annual Inspection Report - 2020



Site 26									
Planting Area:	11.2	GPS Location:	28.55.45S/153.26.13E	Quadrant Area:	1.7	Planting Date:	10/4/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture grasses, Billy Goat weed, cobbbers peg								
Acacia Survival:	Acacia survival and growth good.								
Comments:	Good establishment and growth especially in the higher well drained areas. Continuous weed control underneath the trees has been effective with most of the trees above grass height. Trees have grown about 1m over the last 12 months. Wallaby fence removed.								
Site 27									
Planting Area:	10.2	GPS Location:	28.55.41S/153.26.8E	Quadrant Area:	2 hec	Planting Date:	10/4/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Good weed suppression - no dominant weeds								
Acacia Survival:	Average acacia survival - wetter paddock than 11.1/2								
Comments:	Lower area so slower drainage and wetter soils. Plant establishment is very good and trees look very healthy and strong. Low weed competition managed with tractor slashing. Trees have grown about 1.5m over the last 12 months. Wallaby fence removed.								



PA 11.2



Acacia Tree PA 11.2



PA 10.2



View of PA 11.1 & 10.2 from Wardell Rd

WBKR QA Form – Annual Inspection Report - 2020



Site 28									
Planting Area:	9.1-3	GPS Location:	28.55.50S/153.26.7E	Quadrant Area:	2.5 hec	Planting Date:	29/3/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Weeds well under control - canopy closing in in places								
Acacia Survival:	Good acacia survival and growth on upper slopes but less so in wetter areas								
Comments:	Eucalyptus and acacias doing very well both with establishment and growth rates. Good continuous weed suppression activities keeping competition low. Trees have grown about 2m over the last 12 months.								
Site 29									
Planting Area:	13.3	GPS Location:	28.55.56.85S/153.26.27.60E	Quadrant Area:	1 hec	Planting Date:	20/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Nil dominant weeds Wallaby fence removed								
Acacia Survival:	Very good survival								
Comments:	Access not available due to alignment works. Trees well established and growing well in very wet soils. Nil effective weed competition affecting trees. Nil replacements required.								



PA9.2 - Acacia



PA9's looking towards Wardell Rd



Weed control PA9's



PA9's looking from Wardell Rd

WBKR QA Form – Annual Inspection Report - 2020



Site 30										
Planting Area:	13.2	GPS Location:	28.55.54.38S/153.26.30.44E	Quadrant Area:	0.75 hec	Planting Date:	19/9/17	Date:	22/7/20	
Density of Trees:	1/16/m2	Average Tree Height:	3.5m	No. of Visible Dead Stems:	0					
Environmental Weeds:	Nil dominant weeds Wallaby fence still in place									
Acacia Survival:	Ok on edges but no survival in middle inundated areas									
Comments:	Access not available due to alignment works. Trees well established and growing well in very wet soils. Nil effective weed competition affecting trees. Nil replacements required.									
Site 31										
Planting Area:	13.1	GPS Location:	28.55.50.69S/153.26.33.88E	Quadrant Area:	0.5 hec	Planting Date:	9/9/17	Date:	22/7/20	
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0					
Environmental Weeds:	Nil dominant weeds Wallaby fence still in place									
Acacia Survival:	Good acacia survival									
Comments:	Access not available due to alignment works. Trees well established and growing well in very wet soils. Nil effective weed competition affecting trees. Nil replacements required.									



Looking at PA13's from the Alignment



PA10/11's from the Alignment



PA16.4 Long / thick pasture grass



PA14/15's from the Alignment

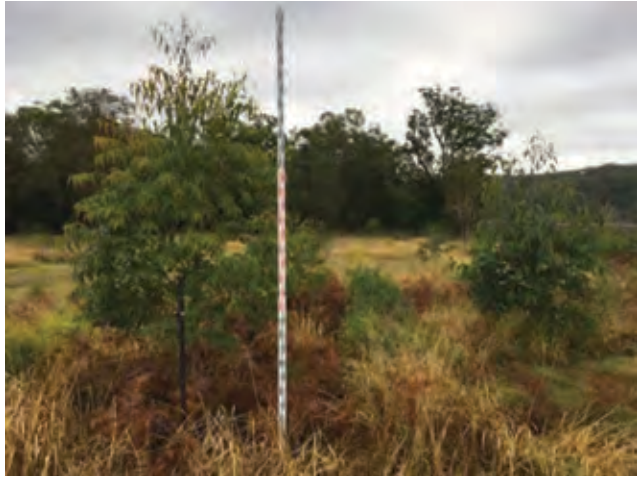

WBKR QA Form – Annual Inspection Report - 2020



Site 32									
Planting Area:	5.5	GPS Location:	28.56.50S/153.26.4E	Quadrant Area:	0.6 hec	Planting Date:	1/6/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	2m	No. of Visible Dead Stems:	5				
Environmental Weeds:	Pasture grasses - under control Wallaby fence still in place.								
Acacia Survival:	Poor survival								
Comments:	PA is located on sandy soils. As such, with the soils poor nutrient and moisture holding capabilities, tree growth is very slow compared to the rest of the project. Weed control working well.								
Site 33									
Planting Area:	5.6-8	GPS Location:	28.56.47S/153.26.2E	Quadrant Area:	1.5 hec	Planting Date:	27/6/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	5				
Environmental Weeds:	Pasture grasses - under control Wallaby fence removed.								
Acacia Survival:	Average survival								
Comments:	PA5.6 and to a lesser extent PA5.8 are located on sandy soils. As such, with the soils poor nutrient and moisture holding capabilities, tree growth is very slow compared to the rest of the project. Weed control working well.								

WBKR QA Form – Annual Inspection Report - 2020



Site 34									
Planting Area:	5.1	GPS Location:	28.56.47S/153.26.2E	Quadrant Area:	0.5 hec	Planting Date:	27/6/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture grasses - under control Wallaby fence still in place.								
Acacia Survival:	Only a few observed								
Comments:	PA is located on sandy soils. As such, with these poor nutrient and moisture holding capabilities, tree growth is very slow compared to the rest of the project.								
Site 35									
Planting Area:	6.1	GPS Location:	28.56.54S/153.25.51E	Quadrant Area:	3 hec	Planting Date:	1/5/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	1				
Environmental Weeds:	Pasture grasses - battling to keep under control increased continual spraying and slashing required. Wallaby fence not removed								
Acacia Survival:	Good acacia survival								
Comments:	Very wet soils at the bottom of the slope. The acacias in the area are growing very well and are around 4m tall. Trees have grown about 1.5m over the last 12 months No replacement planting required.								



Looking down towards alignment from PA 7.3



PA6.1 Plant recovery after dry/hot period in 2019



PA6.1 Weed control



PA6.2 Acacia growth

WBKR QA Form – Annual Inspection Report - 2020



Site 36									
Planting Area:	6.2	GPS Location:	28.56.53E/153.25.47S	Quadrant Area:	3 hec	Planting Date:	2/5/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3.5m	No. of Visible Dead Stems:	1				
Environmental Weeds:	Pasture grasses - continual spraying and slashing keeping grass and weeds under control. Wallaby fence removed.								
Acacia Survival:	Good survival								
Comments:	Very good tree growth and establishment by both eucalyptus and acacias especially on southern side (away from photo spot). Weed control effective through grass slashing. No replacement planting required.								
Site 37									
Planting Area:	7.2	GPS Location:	28.56.48S/153.25.45E	Quadrant Area:	2.7 hec	Planting Date:	8/5/17	Date:	21/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Seteria grass - is very thick and long (>1m). Discussion on future maintenance of koala re-vegetation tree lots with report body. Wallaby fence removed								
Acacia Survival:	Very good survival								
Comments:	Good tree growth and establishment by both eucalyptus and acacias. Weed control effective but needs to be on-going. No replacement planting required.								



WBKR QA Form – Annual Inspection Report - 2020



Site 38									
Planting Area:	7.3	GPS Location:	28.56.49S/153.25.40E	Quadrant Area:	2.4 hec	Planting Date:	5/5/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Seteria grass - is very thick and long (>1m). Discussion on future maintenance of koala re-vegetation tree lots with report body. Wallaby fence removed								
Acacia Survival:	Good survival								
Comments:	Very wet soils from moisture coming off the hill. Tree growth slower than PA 6's but establishment very good. Trees have grown about 0.5m over the last 12 months. Nil replacement planting required.								
Site 39									
Planting Area:	6.4	GPS Location:	28.56.52S/153.25.36E	Quadrant Area:	0.7 hec	Planting Date:	3/5/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	20				
Environmental Weeds:	Pasture grasses - continual slashing keeping grass and weeds under control. Wallaby fence removed.								
Acacia Survival:	Very few - quite a wet paddock								
Comments:	Very good growth following previous year drought impact. Trees have grown about 2.0m over the last 12 months.								

WBKR QA Form – Annual Inspection Report - 2020



Site 40									
Planting Area:	6.5	GPS Location:	28.56.46S/153.25.55E	Quadrant Area:	2.4 hec	Planting Date:	3/5/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	5				
Environmental Weeds:	Pasture grasses - continual slashing keeping grass and weeds under control. Wallaby fence removed.								
Acacia Survival:	Very good								
Comments:	Very good tree growth and establishment by both eucalyptus and acacias. Weed control effective but needs to be on-going. Slow growth in this lower/wetter soil area								
Site 41									
Planting Area:	8.1/2	GPS Location:	28.56.40S/153.25.56E	Quadrant Area:	4.4 hec	Planting Date:	9/5/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	5.5m	No. of Visible Dead Stems:	3				
Environmental Weeds:	Seteria grass - is very thick and long (>1m). Discussion on future maintenance of koala re-vegetation tree lots with report body. Wallaby fence removed								
Acacia Survival:	Very good								
Comments:	Very good tree growth and establishment by both eucalyptus and acacias. Trees have grown about 2.0m over the last 12 months. Canopy starting to close over in places. Weed control only just effective and needs to be on-going.								



PA 8.1/2



PA8.1/2



Accacia Growth PA8.1/2

WBKR QA Form – Annual Inspection Report - 2020



Site 42									
Planting Area:	8.3	GPS Location:	28.56.40S/153.25.52E	Quadrant Area:	2.4 hec	Planting Date:	11/5/17	Date:	22/1/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	1				
Environmental Weeds:	Pasture grasses - Seteria grass - is very thick and long (>1m). Discussion on future maintenance of koala re-vegetation tree lots with report body. Wallaby removed.								
Acacia Survival:	Below average								
Comments:	Very good tree growth and establishment by both eucalyptus and acacias. Weed control only just effective and needs to be on-going.								
Site 43									
Planting Area:	7.1	GPS Location:	28.56.51S/153.25.30E	Quadrant Area:	7 hec	Planting Date:	10-14/10/17	Date:	21/7/20
Density of Trees:	1/16m2	Average Tree Height:	3m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture grasses								
Acacia Survival:	Below average								
Comments:	Trees have established and starting to grow really well in the upper slopes area. The main issues in regard to tree maintenance is restricted access. The cattle are now having less of a physical impact on the trees. The cattle grazing is keeping grass under control.								



PA 6/7/8 looking south along the Alignment

WBKR QA Form – Annual Inspection Report - 2020



Site 46									
Planting Area:	8.4	GPS Location:	28.56.40S/153.25.45E	Quadrant Area:	2.7 hec	Planting Date:	28/8/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4.5m	No. of Visible Dead Stems:	1				
Environmental Weeds:	Seteria grass - is very thick and long (>1m). Discussion on future maintenance of koala re-vegetation tree lots with report body.								
Acacia Survival:	Very good								
Comments:	Very good growth and establishment in this higher free draining site. Trees have grown about 1.0m over the last 12 months. Canopy starting to close over in places. Wallaby fence removed.								
Site 47									
Planting Area:	8.5	GPS Location:	28.56.40S/153.25.45E	Quadrant Area:	2 hec	Planting Date:	28/8/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	5m	No. of Visible Dead Stems:	2				
Environmental Weeds:	Seteria grass - is very thick and long (>1m). Discussion on future maintenance of koala re-vegetation tree lots with report body.								
Acacia Survival:	Very good								
Comments:	Very good growth and establishment in this higher free draining site. Trees have grown about 1.0m over the last 12 months. Canopy starting to close over in large sections of this area. Wallaby fence removed.								

WBKR QA Form – Annual Inspection Report - 2020



Site 44									
Planting Area:	16.1/2	GPS Location:	28.55.34S/153.26.53E	Quadrant Area:	1.4 hec	Planting Date:	27/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Trees have grown about 1.5m over the last 12 months.								
Acacia Survival:	Good survival								
Comments:	Very good tree growth and establishment. Trees have grown about 1.0m over the last 12 months. Trees are now all of greater height than the surrounding grass. Wallaby fence removed around 16.2 but still in place around 16.1.								
Site 45									
Planting Area:	16.3/4	GPS Location:	28.55.23S/153.26.54E	Quadrant Area:	3 hec	Planting Date:	7/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Seteria grass - is very thick and long (>1m). Discussion on future maintenance of koala re-vegetation tree lots with report body. Trees have grown about 1.5m over the last 12 months.								
Acacia Survival:	Good								
Comments:	Very good tree growth (>5m in places). The trees have established very well in this area with very good tree growth especially near the creek line. Wallaby fence removed.								



PA16.5 Heavy grass burden under planted trees



PA16.1





Acacia PA16.2



PA16.3/4

WBKR QA Form – Annual Inspection Report - 2020



Site 46									
Planting Area:	16.5	GPS Location:	28.55.34S/153.26.53E	Quadrant Area:	1.9 hec	Planting Date:	3/10/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	1.8m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Seteria grass - is very thick and long (>1m). Discussion on future maintenance of koala re-vegetation tree lots with report body.								
Acacia Survival:	Very good								
Comments:	<p>The trees have established very well in this area but because of poor access to the site, Seteria grass is competing with the trees. Most of the trees are getting to heights greater than the grass, but when access is available a heavy slash and herbicide spray is required.</p> <p>Wallaby fence removed.</p>								
Site 47									
Planting Area:	16.6/7	GPS Location:	28.55.34S/153.26.53	Quadrant Area:	2.5 hec	Planting Date:	3/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Seteria grass - not much can be undertaken to control grasses because of the very steep rocky slope this area is in.								
Acacia Survival:	Average								
Comments:	<p>This area has continued to grow well over the last 12months as it was previously thought this area had failed as a tree replanting area. The trees are well over the seteria grass. Trees have grown about 1.5m over the last 12 months.</p>								

WBKR QA Form – Annual Inspection Report - 2020



Site 48									
Planting Area:	17.2	GPS Location:	28.55.33S/153.26.53E	Quadrant Area:	0.5 hec	Planting Date:	3/10/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Setaria grass Wallaby fence removed								
Acacia Survival:	Low survival - very wet planting area								
Comments:	Good growth and establishment. Setaria Grass continues to affect tree growth even with continuous spraying. Trees have grown about 1.0m over the last 12 months.								
Site 47									
Planting Area:	17.3/4	GPS Location:	28.55.34S/153.26.53E	Quadrant Area:	1 hec	Planting Date:	18/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	3				
Environmental Weeds:	Setaria grass Wallaby fence removed								
Acacia Survival:	Average survival								
Comments:	Good growth and establishment at the base of the slope but slower growth on the rocky slopes. Trees have grown about 1.5m over the last 12 months.								

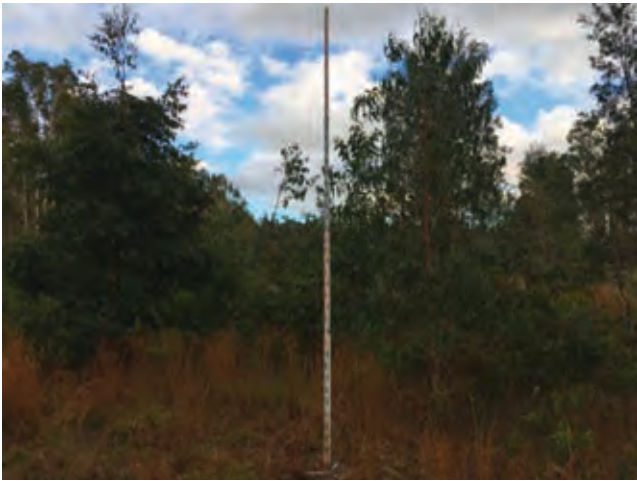

WBKR QA Form – Annual Inspection Report - 2020



Site 46									
Planting Area:	18.1	GPS Location:	28.55.36S/153.26.58E	Quadrant Area:	0.5 hec	Planting Date:	20/10/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture grasses								
Acacia Survival:	Poor survival								
Comments:	Weed control through row slashing. Trees have grown about 1.5m over the last 12 months. Good establishment with nil need for replanting								
Site 47									
Planting Area:	3/4	GPS Location:	28.57.26S/153.25.42E	Quadrant Area:	3.7 hec	Planting Date:	18/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture Grasses								
Acacia Survival:	Average survival								
Comments:	Nil vehicle access to area off alignment. Trees have grown about 2m over the last 12 months. Good establishment with nil need for replanting								

WBKR QA Form – Annual Inspection Report - 2020



Site 46									
Planting Area:	2.1	GPS Location:	28.58.46S/153.26.9E	Quadrant Area:	0.4 hec	Planting Date:	21/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	2 m	No. of Visible Dead Stems:	2				
Environmental Weeds:	Trees well above grass ground cover and not influencing growth								
Acacia Survival:	None visible								
Comments:	Good tree growth and establishment - additional paper bark establishment from seed following bush fires discussed in previous report. Nil replacements required. Trees have grown about 1.5m over the last 12 months. Wallaby fence removed.								
Site 47									
Planting Area:	2.2	GPS Location:	28.58.47S/153.26.9	Quadrant Area:	1.2 hec	Planting Date:	21/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	0.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Bush fire burnt out area in early 2020								
Acacia Survival:	Below average								
Comments:	Bush fire went through site in early 2020. Planted trees were affected but inspection identified that a large amount of regrowth is naturally occurring post the fires. The large amount of natural re-growth it is not envisioned that replanting required. Wallaby fence removed.								

WBKR QA Form – Annual Inspection Report - 2020



Site 46									
Planting Area:	2.3	GPS Location:	28.58.40S/153.26.7E	Quadrant Area:	0.7 hec	Planting Date:	21/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture grasses - all under control								
Acacia Survival:	Good								
Comments:	Wet sandy soil has slowed growth rates but trees have established well. Nil issues identity and nil replanting required. Wallaby fence removed.								
Site 47									
Planting Area:	1.2	GPS Location:	28.58.47S/153.26.928.58.41S	Quadrant Area:	1.2 hec	Planting Date:	21/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	3m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Pasture grasses - all under control								
Acacia Survival:	Below average								
Comments:	Wet sandy soil has slowed growth rates but trees have established well. Nil issues identity and nil replanting required. Wallaby fence removed.								

WBKR QA Form – Annual Inspection Report - 2020



Site 46									
Planting Area:	1.1	GPS Location:	28.58.53S/153.26.5E	Quadrant Area:	0.5 hec	Planting Date:	21/9/17	Date:	22/7/20
Density of Trees:	1/16/m2	Average Tree Height:	4m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Grasses and weeds well under control								
Acacia Survival:	Average survival								
Comments:	Continued good solid growth and establishment. Weed/grasses under control. No replanting required. Wallaby fence removed.								
Site 47									
Planting Area:	Wardell Rd	GPS Location:	28.56.35S/153.26.36E	Quadrant Area:	0.5 hec	Planting Date:	21/8/18	Date:	22/7/20
Density of Trees:	1/4 & 16m2	Average Tree Height:	1.5m	No. of Visible Dead Stems:	0				
Environmental Weeds:	Bracken and pasture grasses								
Acacia Survival:	Not applicable								
Comments:	Good growth but area need 900mm core flute guards to control wallaby damage. Guards are now starting to be removed and bracken control is limited to around individual plants only.								