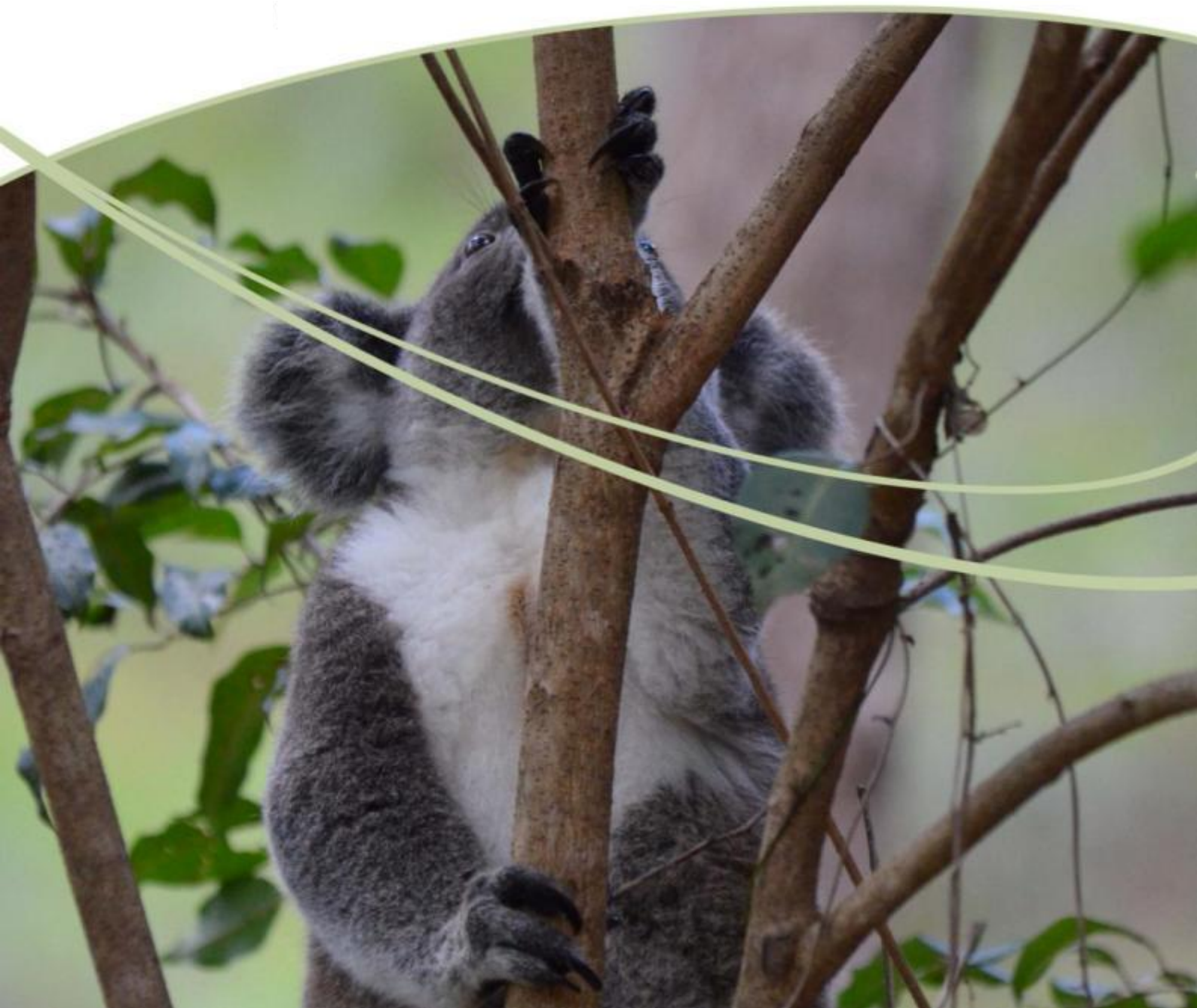
Habitat Rehabilitation Monitoring Report HRU Baseline - Yarrabilba

EPBC Number: 2013/6791
Project Name: Yarrabilba
Proponent's ACN: 103 578 436
Proposed Action: To construct the Yarrabilba residential development and associated infrastructure approximately 40 kilometres south east of Brisbane, Queensland (see EPBC Act referral 3013/6791 and request to vary proposal dated 5 August 2013)
Prepared for: Lend Lease
Prepared by: Dr S. Richardt, Dr M.N. Runkowski, M. Brett & K. Richardt
Date: 30 July 2016



Natura Consulting – Document Control Sheet

Project	
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Revision History

Version:	**Purpose:**	**Issued by:**	**Date**	**Reviewer:**	**Date:**
Draft	Peer review	Kieran Richardt	25/06/2016	Kieran Richardt	25/06/2016
1	Issue	Mark Runkowski	30/06/2016	Dionne Coburn	30/06/2016

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1 Executive summary

Natura Consulting has developed this *Habitat Rehabilitation Monitoring Report* as a baseline for rehabilitation within the Yarrabilba Koala Habitat Areas as prescribed in the *Habitat Rehabilitation and Management Plan* (Natura Consulting, March 2015) and the Approval Conditions set out under the *Environmental Protection and Biodiversity Conservation Act 1999* dated 13 Novemebr 2014.

The intent of this plan is to provide baseline monitoring information to direct the rehabilitation works associated with Koala habitat within the 'Koala habitat areas to be protected and managed' of the Yarrabilba site. These areas are to be rehabilitated, ensuring that Koala habitat outside of the offset sites areas are protected and managed. This report provides baseline data for the rehabilitation of these areas, with 84 sites to be monitored. Each monitoring site is located within a Koala Habitat Rehabilitation Unit (HRU1 to HRU31) including Road Crossing Rehabilitation Units (CRU2, CRU4 to CRU7 and CRU9 to CRU14), with the pre-clearing Regional Ecosystem, management type and corridor type tabulated.

Each rehabilitation unit is to be rehabilitated to a vegetation structure and species composition that is in line with that of the appropriate pre-clearing Regional Ecosystem (RE). This is derived from the vegetation structure and species composition of the appropriate pre-clearing RE. The Final Benchmark for rehabilitation is derived from the definition of remnant vegetation under the *Vegetation Management Act 1999* (canopy is 70% of the height, 50% of the cover and similar species composition of the appropriate pre-clearing RE). Interim Benchmarks are also provided whereby an assessment at regular intervals will be made on the progress of the rehabilitation / revegetation efforts towards achieving this plan's outcomes. For Interim Benchmark years 1 to 10, vegetation structure has been quantified from a cumulative growth curve (CGC). The reference benchmark, Interim Benchmarks and Final Benchmarks have been tabulated for each RE, with the relevant rehabilitation unit also identified. A species list for each RE, including dominant species within each stratum, has also been provided.

Contingency measures and corrective actions have also been provided to account for instances of when Interim Benchmarks are not being met. 'As constructed' data and surveyed boundaries will also be provided for each rehabilitation unit to test and demonstrate compliance with the requirement to maintain and protect existing Koala habitat.

The monitoring methodology that is applied has been detailed, where a minimum of two monitoring sites per rehabilitation unit has been surveyed in order to document and assess rehabilitation through time. All final locations of the 84 monitoring sites have been mapped. Monitoring includes photo point monitoring and transect and quadrat monitoring to monitor changes in species richness, percentage foliage cover for the ground layer, shrub and canopy layers, canopy height, and weed prevalence.

An assessment of site species richness and structure was undertaken to determine the baseline condition against the benchline values. A number of sites already meet the Final Benchmark for some individual parameters. Rehabilitation efforts need to ensure that the full suite of species represented in the pre-RE for each rehabilitation unit are planted where possible, with a strong focus on eradicating exotic weeds, namely a handful of very common Asteraceae species.

A total of 45 (68%) of the sites meet a benchmark for canopy tree cover, 49 (74%) of the sites meet a benchmark for canopy tree height, 64 (97%) of the sites meet a benchmark for small tree cover, 63 (95%) sites meet a benchmark for small tree height, 47 (71%) sites meet a benchmark for shrub cover, 62 (94%) sites meet a benchmark for shrub height, 65 (98%) sites meet a benchmark for ground cover, and 12 (18%) sites meet a benchmark for weed cover of the ground layer.

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Overall, this assessment reveals that rehabilitation works need to prioritise weed control. Furthermore, strategic rehabilitation of the ground, shrub and tree layers will ensure that weeds are outcompeted and shaded out. A number of sites do not yet meet a benchmark for tree and shrub structure, and so these sites will need to be prioritised for rehabilitation within the next 6 months to ensure that they meet the IMO-1 year benchmark.

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2 Introduction

2.1 Background

The Yarrabilba development site is located on the eastern side of Waterford - Tamborine Road, and to the south of Logan Village (refer to Figure 1). It is bounded by rural residential areas to the north, Plunkett Road to the south and the Plunkett Conservation Park to the east. The site consists of approximately 2,200 ha, of which 1,931 ha is controlled by Lend Lease Communities (Yarrabilba) Pty Ltd. The land has been historically used for pine forestry, a military training camp in WWII and for live stock grazing, when first cleared. Yarrabilba is predominately vegetated with areas of regrowth native vegetation, regenerating pines and exotic grasslands. Some limited areas of native remnant and regrowth vegetation exist but they are mostly confined to creeks, drainage channels and wetlands.

The site is currently in the early stages of development with the growth of Yarrabilba projected to span approximately 30 years. The long-term master-planned development incorporates an extensive network of dedicated open space (in excess of 25% of the site). A significant component of the open space is dedicated to the conservation of habitat for Koala (*Phascolarctos cinereus*).

Habitat rehabilitation is intended to improve Koala habitat quality within the site in order to significantly increase the site's Koala carrying capacity in the medium to long term. In addition, the configuration of key elements of the open space system (Fauna Corridor, Greenspace Corridor and Environmental Protection Zone) will enhance the site's contribution to Koala movement opportunities within the context of larger areas of Koala habitat to the east and west of the site (Austecology 2012). Under the development of Yarrabilba, all existing fragments of remnant vegetation which have value for Koalas will be retained (approximately 5.4% of the total site area) (Austecology 2012). The rehabilitation of the Fauna Corridor, Greenspace Corridor and Environmental Protection Zone will significantly expand on these values by providing additional Koala habitat (Natura Consulting 2011).

Natura Consulting has developed this *Habitat Rehabilitation Monitoring Report – Baseline within Koala Habitat Areas* prior to the commencement of habitat rehabilitation in Koala Habitat Areas in the Yarrabilba Residential Development. This report provides baseline data for the rehabilitation of Koala Habitat Areas within the development site, with 84 sites monitored. It is noted, however, that Slash pine (*Pinus elliottii*) control has already occurred throughout 90% of the site.

2.2 Objectives

The intent of this report is to provide baseline data with which to assess the rehabilitation of Koala habitat within the 'Koala habitat to be protected and managed'.

This report is consistent with the *Habitat Rehabilitation and Management Plan* (Natura Consulting 2015), *Offset Management Plan* (Austecology 2015), *Koala Management Plan* (Austecology 2012) and *Fauna Corridor Infrastructure Master Plan* (Natura Consulting 2011). In particular the objectives of this report are to:

- describe the rehabilitation areas and clear and concise rehabilitation outcomes and performance indicators against which achievement of the rehabilitation will be measured
- identify contingency measures and appropriate corrective actions that will be undertaken if the performance indicators or outcomes are not being met
- outline the monitoring methodology including monitoring site locations
- present the baseline monitoring results
- assess whether rehabilitation is on-track to meet the next interim performance indicator

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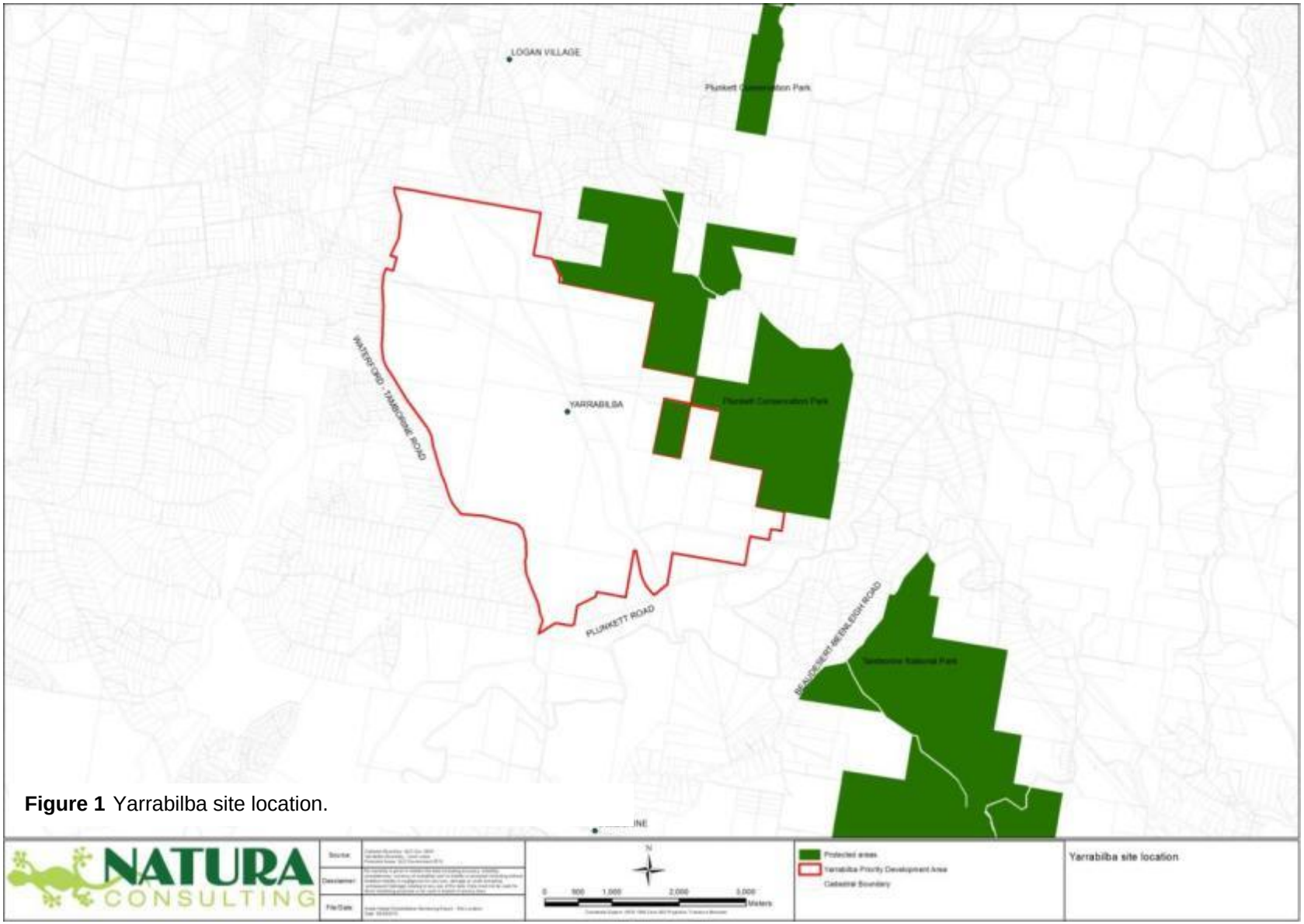

Figure 1 Yarrabilba site location.

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3 Rehabilitation areas

3.1 Purpose of habitat rehabilitation

Koala habitat rehabilitation is to be undertaken within "Existing Assessable Koala Habitat to be protected and managed" within Fauna Corridors, Greenspace Corridors and Environmental Protection Zones. This totals an area of 754,657 m^2 (75.5 ha) within Existing Assessable Koala Habitat areas outside of Offset areas (195 ha), comprising a combined area of 2,736,428 m^2 (273.6 ha).

The Koala habitat rehabilitation area has been divided into Offset Rehabilitation and Habitat Rehabilitation Units and Crossing Rehabilitation Units. This report is relevant to the Habitat Rehabilitation Units and Crossing Rehabilitation Units.

3.2 Habitat Rehabilitation Units (HRU)

Koala habitat rehabilitation is to occur within Habitat Rehabilitation Units as shown in Figure 2. Each rehabilitation unit (HRU1 to HRU31) is a mapped polygon, where the polygon boundaries are the mapped Pre-Clearing Regional Ecosystems. The Regional Ecosystem (RE) code applicable to each unit was determined by overlapping Pre-Clearing Regional Ecosystem mapping (Queensland Government 2015b) with maps of *Existing Assessable Koala Habitat – to be protected and managed* within the Fauna Corridors, Greenspace Corridors and Environmental Protection Zones.

The following table (Table 1) presents a summary of rehabilitation unit attributes, including the:

- area of the rehabilitation unit in square metres
- corridor within which the rehabilitation unit is located
- RE code for pre-clearing vegetation within the rehabilitation unit and the landzone / geology of the rehabilitation unit

It is noted that the minimum rehabilitation unit size is ~2,500 m^2 to reflect the mapping limitation of the Pre-Clearing Regional Ecosystems mapping dataset (Queensland Government 2015). However, there are two rehabilitation units with areas of slightly less than 2,500 m^2, which were retained due to their immediate proximity to adjacent rehabilitation units.

3.3 Crossing Rehabilitation Units (CRU)

Rehabilitation and monitoring is also bein undertaken where road and infrastructure traverses a Habitat Rehabilitation Unit. Crossing Rehabilitation Units have been identified by overlaying the proposed internal road network with the Pre-Clearing Regional Ecosystem mapping (Queensland Government 2015) and Koala Habitat Rehabilitation Unit mapping. Each Crossing Rehabilitation Unit (CRU1 to CRU15) is a mapped polygon. It is noted that these locations are indicative and may change with the final alignment of roads. Table 2 presents a summary of the Crossing Rehabilitation Units, which are subject to rehabilitation actions outlined in this report.

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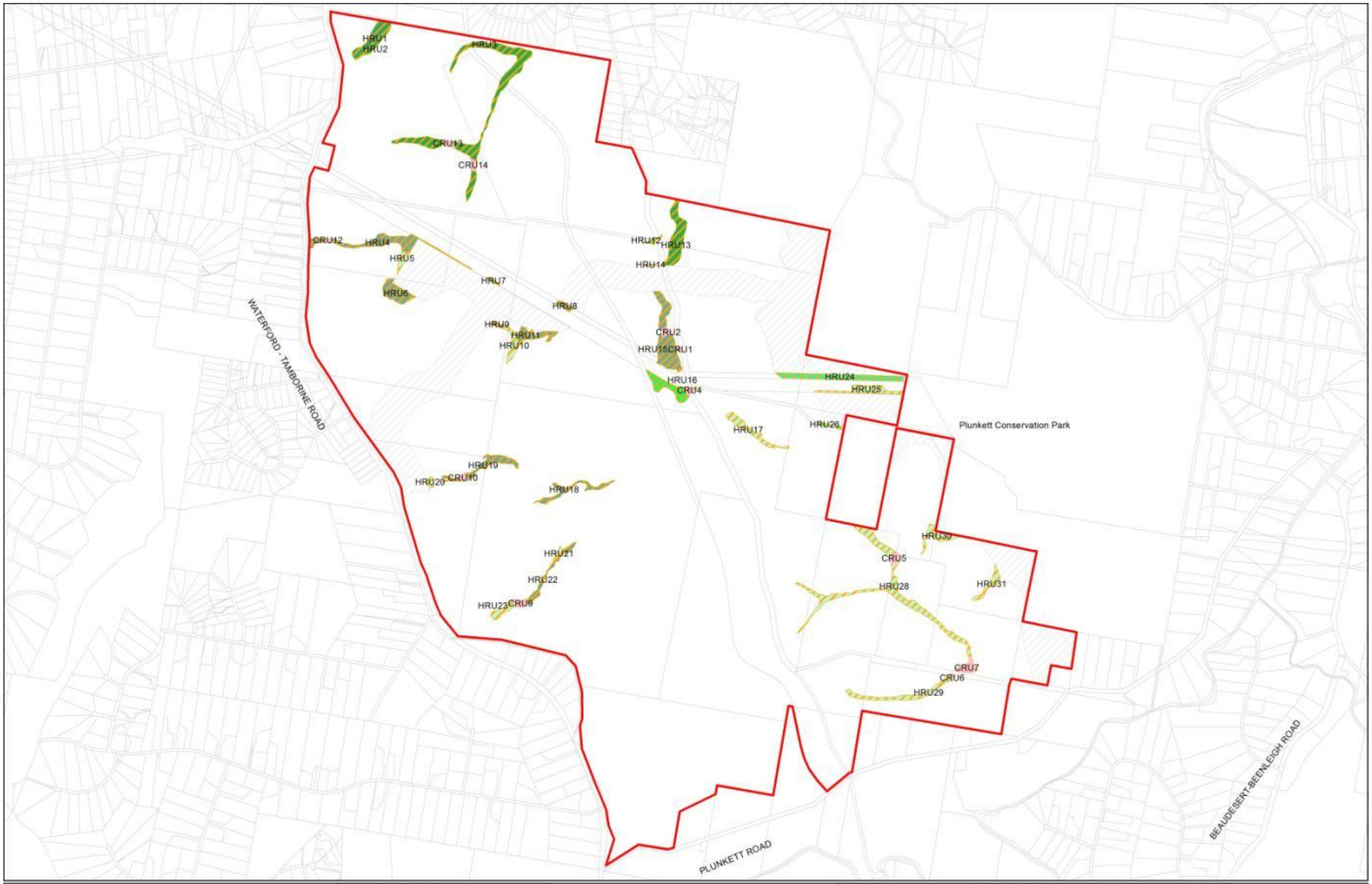

Figure 2: Habitat Rehabilitation Units

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Table 1 Habitat Rehabilitation Units (HRU) within the corridor network

Rehab. Unit	Area (m^2)	Corridor Type	RE Code(s)	Landzone/ Geology
HRU1	31,875	Greenspace Corridor	12.9-10.4/12.9-10.12	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU2	2,947	Greenspace Corridor	12.9-10.4/12.9-10.12/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU3	116,097	Greenspace Corridor	12.3.11/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU4	47,894	Fauna Corridor Greenspace Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU5	6,788	Greenspace Corridor	12.9-10.17/12.9-10.2	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU6	26,102	Greenspace Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU7	1,684	Fauna Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU8	5,206	Fauna Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU9	2,935	Greenspace Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU10	13,511	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU11	19,528	Greenspace Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU12	3,128	Greenspace Corridor	12.9-10.4/12.9-10.12/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU13	42,093	Greenspace Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU14	910	Greenspace Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU15	62,944	Fauna Corridor Greenspace Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU16	29,486	Fauna Corridor Greenspace Corridor	12.3.11	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU17	19,638	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU18	19,604	Fauna Corridor Greenspace Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU19	29,070	Fauna Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU20	3,784	Fauna Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU21	5,688	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU22	14,158	Greenspace Corridor	12.3.11/12.3.6/12.3.7	Recent quaternary alluvial systems – Alluvial river and creek flats
HRU23	15,932	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU24	38,783	Environmental Protection	12.9-10.17/12.9-10.19	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU25	22,618	Environmental Protection	12.9-10.17/12.9-10.2/12.9-10.19	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks

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Rehab. Unit	Area (m^2)	Corridor Type	RE Code(s)	Landzone/ Geology
HRU26	2,818	Environmental Protection	12.9-10.17/12.9-10.19	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU27	15,379	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU28	99,585	Fauna Corridor Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU29	27,237	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU30	15,378	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
HRU31	11,857	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
Total	**754,657**			

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Table 2 Road and infrastructure crossing rehabilitation units (CRU) traversing Habitat Rehabilitation Units (HRU)

Crossing Rehab. Unit	Area (m^2)	Traversing ORU	Corridor Type	RE Code(s)	Landzone/ Geology
CRU1	1,369	HRU15	Greenspace Corridor	12.3.11/12.3.6/12.3.7	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
CRU2	3,670	HRU15	Fauna Corridor Greenspace Corridor	12.3.11/12.3.6/12.3.7	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
CRU4	3,347	HRU16	Greenspace Corridor	12.11.3	Metamorphic rocks - hills and lowlands on metamorphic rocks
CRU5	6,013	HRU28	Fauna Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
CRU6	731	HRU29	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
CRU7	10,045	HRU28	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
CRU9	5,542	HRU22, HRU23	Greenspace Corridor	12.9-10.17/12.9-10.2	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
CRU10	3,555	HRU19	Fauna Corridor	12.3.11/12.3.6/12.3.7	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
CRU12	1,775	HRU4	Greenspace Corridor	12.3.11/12.3.6/12.3.7	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
CRU13	3,766	HRU3	Greenspace Corridor	12.3.11//12.3.7	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
CRU14	3,496	HRU3	Greenspace Corridor	12.3.11//12.3.7	Fine grained sedimentary rocks – Undulating country on fine grained sedimentary rocks
Total	**43,309**				

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3.4 Pre-clearing Regional Ecosystems Rehabilitation Units

A short description of the pre-clearing Regional Ecosystems identified in the Koala Habitat Rehabilitation Units and Crossing Rehabilitation Units is provided in Table 3.

Table 3 Summary of pre-clearing Regional Ecosystems within Offset Rehabilitation Units and Crossing Rehabilitation Units

RE Code	RE short description (extract from Qld Herbarium) RE Description Database	Vegetation Management Act class	Biodiversity status
12.3.6	*Eucalyptus tereticornis, Casuarina cunninghamiana* subsp. *cunninghamiana* +/- *Melaleuca* spp. fringing woodland	Least concern	No concern at present
12.3.7	*Melaleuca quinquenervia* +/- *Eucalyptus tereticornis, Lophostemon suaveolens* open forest on coastal alluvial plains	Least concern	No concern at present
12.3.11	*Eucalyptus tereticornis* +/- *Eucalyptus siderophloia, Corymbia intermedia* open forest on alluvial plains	Of concern	Of concern
12.9-10.2	*Corymbia citriodora* subsp. *variegata* +/- *Eucalyptus crebra* open forest on sedimentary rocks	Least concern	No concern at present
12.9-10.4	*Eucalyptus racemosa* subsp. *racemosa* woodland on sedimentary rocks	Least concern	No concern at present
12.9-10.12	*Eucalyptus seeana, Corymbia intermedia, Angophora leiocarpa* woodland on sedimentary rocks	Endangered	Endangered
12.9-10.17	*Eucalyptus acmenoides, E. major, E. siderophloia* +/- *Corymbia citriodora* subsp. *variegata* woodland on sedimentary rocks	Least concern	No concern at present
12.9-10.19	*Eucalyptus fibrosa* subsp. *fibrosa* woodland on sedimentary rocks	Least concern	No concern at present
12.11.3	*Eucalyptus siderophloia, E. propinqua* +/- *E. microcorys, Lophostemon confertus, Corymbia intermedia, E. acmenoides* open forest on metamorphics +/- interbedded volcanics	Least concern	No concern at present
12.11.5	*Corymbia citriodora* subsp. *variegata, Eucalyptus siderophloia, E. major* open forest on metamorphics +/- interbedded volcanics	Least concern	No concern at present

(Source: QLD Government 2015a)

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4 Rehabilitation performance indicators

In accordance with the *EPBC Act 1999* decision notice, the *Koala Habitat Rehabilitation Management Plan* (Natura Consulting 2015) was formulated reflecting the onsite rehabilitation requirements of Fauna and Green Space Corridors, Regional Ecosystems, drainage lines and post development fauna movement pathways within Offset Areas on the site. This plan identifies Koala habitat rehabilitation benchmarks and determines restoration actions to meet these benchmarks.

Each rehabilitation unit is to be rehabilitated to a vegetation structure and species composition that is in line with that of the appropriate pre-clearing RE (identified in Table 5 and Table 6). The reference benchmark for rehabilitation of each rehabilitation unit is derived from the vegetation structure and species composition of the appropriate pre-clearing Regional Ecosystem (RE) (refer to Table 5 and Table 6). These benchmarks quantify average canopy cover, shrub cover, ground cover, species richness and average height of the canopy and have been sourced from the Queensland Herbarium (Queensland Government 2015). These technical descriptions are a compilation of data from multiple sites for canopy cover, shrub cover, and average stem density for each strata, groundcover and average species richness (Queensland Government 2015). Through establishing these benchmarks, a reasonable comparison can be made between the floristic composition and vegetation structure of a given rehabilitation unit and the appropriate pre-clearing RE.

4.1 Performance indicators

The Final Benchmark for rehabilitation is derived from the definition of remnant vegetation under the *Vegetation Management Act 1999.* Vegetation can be mapped as remnant vegetation and associated essential habitat for Koalas if the canopy is 70% of the height, 50% of the cover and similar species composition of the appropriate pre-clearing RE (Queensland Government 2015). Therefore, the Final Benchmark for rehabilitation is 70% of the reference benchmark cover (for canopy, shrub and ground-layer) and 50% of the reference benchmark height (for canopy and shrub layer) of the appropriate RE.

Six rehabilitation performance indicators were selected:

1. Average canopy cover
2. Average height of canopy
3. Dominant canopy species
4. Average shrub cover
5. Average groundcover
6. Species richness
7. Weed cover

Weed cover needs to be considered for rehabilitation benchmarks for this site, particularly in the canopy where numerous exotic pine trees exist. Throughout the life of the development a weed cover of ≤5% is to be maintained.

The reference and Final Benchmark vegetation structure and species composition for each of the pre-clearing RE's identified within the mapped rehabilitation units is identified in Table 5 and Table 6 respectively. Note that exotic species identified in Table 6 are to assist with identification purposes only and are to be controlled and managed, not planted or assisted.

Rehabilitation units are to be managed and restored until they reach the Final Benchmark condition as identified in Table 4 and Table 5, along with the objectives of the Habitat Rehabilitation and Management Plan. The objectives of this plan are long term and are likely to require more than 15 years to be achieved, within each rehabilitation unit, after implementation is commenced.

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Interim Benchmarks are also provided whereby an assessment at regular intervals can be made on the progress of the rehabilitation / revegetation efforts towards achieving this plan's outcomes. Given this, adaptive management approaches can also be employed to redirect restoration approaches, in the event that Interim Benchmarks are not being met. Table 5 provides a summary of the timeframe to achieve the interim and Final Benchmarks.

For Interim Benchmark years 1 to 10, vegetation structure has been quantified from a cumulative growth curve (CGC), which for biological organisms, including trees and shrubs, is sigmoidal (Fenner School 2015). As the reference benchmarks applied for this report are at the Regional Ecosystem level, and site data and long term tree and shrub growth curves are not available for Yarrabilba, we have derived general growth curves for each Regional Ecosystem. This is based on a sigmoidal growth curve, the average reference benchmark height of the stratum, the minimum height at which regrowth vegetation is considered to be of equivalent height as the RE (50% of reference benchmark height), and the average height of tubestock (20 cm) that is predominately used for revegetation in southeast Queensland.

The Final Benchmark at year 15 is 70% of the reference benchmark cover (for canopy, shrub and ground-layer) and 50% of the reference benchmark height (for canopy and shrub layer) of the appropriate pre-clearing RE. See Appendix A for species composition of Final Benchmark Regional Ecosystems.

4.2 Contingency measures and corrective actions

4.2.1 Meeting benchmarks

During the course of monitoring, if Interim Benchmarks are not being met, the timeframes to achieve the Final Benchmarks will be reviewed and extended, whereby Lend Lease will continue to undertake rehabilitation works with continued monitoring until the Final Benchmarks are met. The review of the success of meeting Interim Benchmarks will be undertaken at each monitoring event and reported on. Where the extension of rehabilitation works is required for particular Rehabilitation Units, discussions will be undertaken with the Department of Environment, to ensure that any additional requirements are also highlighted and addressed.

4.2.2 As constructed data

Constructed data and surveyed boundaries will be provided for each Rehabilitation Unit, within three months of completion of earthworks. This will be undertaken to test and demonstrate compliance within the offset area (195 ha) requirement.

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Table 4 Reference, Interim and Final Benchmark vegetation structure for each pre-clearing RE detailed for rehabilitation units (HRU) and crossing rehabilitation units (CRU)

Benchmark Condition (where rehabilitation units are treated individually, at least 70% of height and 50% of cover values to be attained within first 15 years of commencement of rehabilitation works)											
RE Code	**Name**	**VMA Status**	**Biodiversity**	**Habitat Rehabilitation Unit**				**Crossing Rehabilitation Unit**			
12.3.6	***Melaleuca quinquenervia* +/- *Eucalyptus tereticornis, Lophostemon suaveolens* open forest on coastal alluvial plains**	Least concern	No concern at present	HRU4, HRU6, HRU7, HRU8, HRU9, HRU11, HRU13, HRU14, HRU15, HRU18, HRU19, HRU22							
				Average Canopy Cover (%)	**Average Canopy Height (m)**	**Average T2-T3 Canopy Cover (%)**	**Average T2-T3 Canopy Height (m)**	**Average Shrub Cover (%)**	**Average Shrub Height (m)**	**Average Ground cover (%)**	**Species Richness (av. +/- SD)**
			Interim Benchmark by 1 year	10.0	1.5			1.5	0.5	6.0	
			Interim Benchmark by 2 years	14.0	3.0			2.0	0.8	10.0	
			Interim Benchmark by 3 years	16.0	4.0			2.5	1.2	15.0	
			Interim Benchmark by 5 years	22.0	6.0			3.0	1.4	20.0	
			Interim Benchmark by 10 years	28.0	9.2			4.0	1.5	25.0	
			Final Benchmark by 15 years	**30.5**	**10.7**			**4.5**	**1.6**	**29.2**	**-**
			Reference Benchmark (Pre-Clearing RE)	**60.9**	**15.3**			**8.9**	**2.3**	**58.4**	**33.3 +/- 10.5**
12.3.7	***Eucalyptus tereticornis*, *Casuarina cunninghamiana* subsp. *cunninghamiana* +/- *Melaleuca* spp. fringing woodland**	Least concern	No concern at present	HRU3, HRU4, HRU6, HRU7, HRU8, HRU9, HRU11, HRU13, HRU14, HRU15, HRU18, HRU19, HRU22							
				Average Canopy Cover (%)	**Average Canopy Height (m)**	**Average T2-T3 Canopy Cover (%)**	**Average T2-T3 Canopy Height (m)**	**Average Shrub Cover (%)**	**Average Shrub Height (m)**	**Average Ground cover (%)**	**Species Richness (av. +/- SD)**
			Interim Benchmark by 1 year	5.5	1.6	2.0	0.8	2.5	0.5	6.0	
			Interim Benchmark by 2 years	6.0	2.9	3.0	2.7	3.0	0.8	7.0	
			Interim Benchmark by 3 years	7.0	4.1	4.0	3.7	3.5	1.2	8.0	
			Interim Benchmark by 5 years	9.0	6.2	5.9	5.2	4.0	1.4	10.0	
			Interim Benchmark by 10 years	12.0	10.1	9.3	7.3	6.0	1.5	12.0	
			Final Benchmark by 15 years	**13.3**	**13.6**	**11.5**	**8.2**	**6.6**	**1.6**	**14.4**	**-**
			Reference Benchmark (Pre-Clearing RE)	**26.6**	**19.4**	**15.3**	**9.0**	**13.2**	**2.3**	**28.7**	**52.8 +/- 7.5**

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Benchmark Condition (where rehabilitation units are treated individually, at least 70% of height and 50% of cover values to be attained within first 15 years of commencement of rehabilitation works)											
RE Code	**Name**	**VMA Status**	**Biodiversity**	**Habitat Rehabilitation Unit**				**Crossing Rehabilitation Unit**			
12.3.11	***Eucalyptus tereticornis* +/- *Eucalyptus siderophloia*, *Corymbia intermedia* open-forest on alluvial plains**	Of concern	Of concern	HRU3, HRU4, HRU6, HRU7, HRU8, HRU9, HRU11, HRU13, HRU14, HRU15, HRU16, HRU18, HRU19							
				Average Canopy Cover (%)	**Average Canopy Height (m)**	**Average T2-T3 Canopy Cover (%)**	**Average T2-T3 Canopy Height (m)**	**Average Shrub Cover (%)**	**Average Shrub Height (m)**	**Average Ground cover (%)**	**Species Richness (av. +/- SD)**
			Interim Benchmark by 1 year	7.0	1.6	2.0	0.8	2.0	0.4	1.5	
			Interim Benchmark by 2 years	10.0	3.0	3.0	2.8	4.0	0.7	2.0	
			Interim Benchmark by 3 years	12.0	4.2	4.2	3.8	5.0	1.1	3.0	
			Interim Benchmark by 5 years	18.0	6.4	6.4	5.5	7.0	1.3	4.5	
			Interim Benchmark by 10 years	22.0	10.7	10.7	8.2	9.0	1.5	7.0	
			Final Benchmark by 15 years	**25.6**	**16.7**	**13.9**	**9.6**	**10.9**	**1.9**	**8.5**	**-**
			Reference Benchmark (Pre-Clearing RE)	**51.1**	**23.8**	**23.9**	**11.3**	**21.7**	**2.7**	**17**	**40.6 +/- 8.5**
12.9-10.2	***Corymbia citriodora* subsp. *variegata* +/- *Eucalyptus crebra* open forest on sedimentary rocks**	Least concern	No concern at present	HRU2, HRU5, HRU10, HRU12, HRU17, HRU20, HRU21, HRU23, HRU27, HRU28, HRU29, HRU30, HRU31				CRU5, CRU6, CRU9			
				Average Canopy Cover (%)	**Average Canopy Height (m)**	**Average T2-T3 Canopy Cover (%)**	**Average T2-T3 Canopy Height (m)**	**Average Shrub Cover (%)**	**Average Shrub Height (m)**	**Average Ground cover (%)**	**Species Richness (av. +/- SD)**
			Interim Benchmark by 1 year	6.0	1.6	2.0	0.8	6.0	0.4	6.0	3.0
			Interim Benchmark by 2 years	10.0	2.9	2.9	2.8	6.5	0.7	7.0	4.0
			Interim Benchmark by 3 years	12.0	4.2	4.0	3.8	7.0	1.1	12.0	5.0
			Interim Benchmark by 5 years	18.0	6.3	6.0	5.3	8.5	1.3	18.0	7.0
			Interim Benchmark by 10 years	22.0	10.5	9.6	7.7	11.4	1.5	22.0	9.0
			Final Benchmark by 15 years	**26.8**	**15.5**	**11.9**	**8.9**	**15.1**	**1.8**	**23.6**	**10.8**
			Reference Benchmark (Pre-Clearing RE)	**53.5**	**22.2**	**16.5**	**10.1**	**21.6**	**2.5**	**47.2**	**21.6**

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Benchmark Condition (where rehabilitation units are treated individually, at least 70% of height and 50% of cover values to be attained within first 15 years of commencement of rehabilitation works)												
RE Code	**Name**	**VMA Status**	**Biodiversity**	**Habitat Rehabilitation Unit**				**Crossing Rehabilitation Unit**			
12.9-10.17	***Eucalyptus acmenoides, Eucalyptus major, Eucalyptus siderophloia +/- Corymbia citriodora subsp. variegata* woodland on sedimentary rocks**	Least concern	No concern at present	HRU5, HRU10, HRU17, HRU20, HRU21, HRU23, HRU24, HRU25, HRU26, HRU27, HRU28, HRU29, HRU30, HRU31				CRU5, CRU6, CRU7, CRU9			
				Average Canopy Cover (%)	**Average Canopy Height (m)**	**Average T2-T3 Canopy Cover (%)**	**Average T2-T3 Canopy Height (m)**	**Average Shrub Cover (%)**	**Average Shrub Height (m)**	**Average Ground cover (%)**	**Species Richness (av. +/- SD)**
			Interim Benchmark by 1 year	6.0	1.6	2.0	0.8	6.0	0.6	10.0	
			Interim Benchmark by 2 years	10.0	3.0	3.0	2.8	7.0	1.0	20.0	
			Interim Benchmark by 3 years	12.0	4.2	4.3	3.9	10.0	1.5	25.0	
			Interim Benchmark by 5 years	18.0	6.4	6.5	5.7	14.0	1.8	30.0	
			Interim Benchmark by 10 years	22.0	10.9	11.3	8.9	16.0	2.2	35.0	
			Final Benchmark by 15 years	**27.2**	**18.2**	**15.0**	**10.4**	**20.0**	**2.8**	**43.9**	-
			Reference Benchmark (Pre-Clearing RE)	**54.3**	**26.0**	**30.5**	**12.9**	**40.0**	**4.0**	**87.8**	**36.5 +/- 15.1**
12.9-10.19	***Eucalyptus fibrosa subsp. fibrosa* woodland on sedimentary rocks**	Least concern	No concern at present	HRU24, HRU25, HRU26							
				Average Canopy Cover (%)	**Average Canopy Height (m)**	**Average T2-T3 Canopy Cover (%)**	**Average T2-T3 Canopy Height (m)**	**Average Shrub Cover (%)**	**Average Shrub Height (m)**	**Average Ground cover (%)**	**Species Richness (av. +/- SD)**
			Interim Benchmark by 1 year	6.0	1.6	2.0	0.8	2.5	0.4	2.5	
			Interim Benchmark by 2 years	7.0	3.0	2.9	2.7	4.0	0.7	3.0	
			Interim Benchmark by 3 years	9.0	4.2	4.0	3.7	5.0	1.1	4.0	
			Interim Benchmark by 5 years	12.0	6.3	6.0	5.2	7.0	1.3	6.0	
			Interim Benchmark by 10 years	15.0	10.5	9.6	7.3	9.0	1.5	8.0	
			Final Benchmark by 15 years	**20.9**	**15.8**	**11.9**	**8.2**	**9.6**	**1.7**	**8.2**	-
			Reference Benchmark (Pre-Clearing RE)	**41.8**	**22.5**	**16.4**	**9.0**	**19.1**	**2.4**	**16.4**	**30.1 +/- 4.6**
12.9-10.4	***Eucalyptus racemosa* subsp. *racemosa***	Least concern	No concern at present	HRU1, HRU3							
				Average	**Average**	**Average**	**Average**	**Average**	**Average**	**Average**	**Species**

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Benchmark Condition (where rehabilitation units are treated individually, at least 70% of height and 50% of cover values to be attained within first 15 years of commencement of rehabilitation works)											
RE Code	**Name**	**VMA Status**	**Biodiversity**	**Habitat Rehabilitation Unit**				**Crossing Rehabilitation Unit**			
	woodland on sedimentary rocks			**Canopy Cover (%)**	**Canopy Height (m)**	**T2-T3 Canopy Cover (%)**	**T2-T3 Canopy Height (m)**	**Shrub Cover (%)**	**Shrub Height (m)**	**Ground cover (%)**	**Richness (av. +/- SD)**
			Interim Benchmark by 1 year	6.0	1.6	2.0	0.8	2.5	0.6	6.0	
			Interim Benchmark by 2 years	7.0	3.0	2.5	2.7	4.0	0.9	10.0	
			Interim Benchmark by 3 years	9.0	4.2	3.8	3.7	5.0	1.5	15.0	
			Interim Benchmark by 5 years	12.0	6.3	5.3	5.2	7.0	1.8	20.0	
			Interim Benchmark by 10 years	15.0	10.5	7.4	7.3	9.0	2.1	25.0	
			Final Benchmark by 15 years	**20.9**	**15.8**	**10.4**	**8.2**	**9.6**	**2.6**	**29.2**	-
			Reference Benchmark (Pre-Clearing RE)	**38**	**23.2**	**11.8**	**8.9**	**15.7**	**4.1**	**59.9**	**35.4 +/- 5.2**

Adapted from Queensland Government (2015).* No pre-defined benchmarks for this RE are provided within the RE technical descriptions (Queensland Government 2015) and therefore, these numbers have been based on data collected in the field from previous assessments and reference sites within this RE type.

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5 Monitoring methodology

The following monitoring program was implemented to capture baseline data prior to rehabilitation treatments being applied. Adaptive management strategies will be used where a rehabilitation treatment does not produce the desired result. When this occurs, the treatment will be identified and/or modified.

For this monitoring program, a minimum of two monitoring sites per rehabilitation unit is sufficient to identify any major changes and to provide a 'snap shot' of ecological conditions. Monitoring in this way will allow the ongoing collection of information to demonstrate the effectiveness of habitat rehabilitation efforts, and the frequency of monitoring activities will enable management prescriptions to be adjusted to bring about any necessary changes and corrective actions (adaptive management).

5.1 Sites

Vegetation monitoring for the baseline occurred in a network of 84 sample sites with:

- 2 sample sites Crossing Rehabilitation Units and within Rehabilitation Units <50,000 m^2
- 3 sample sites within Rehabilitation Units >50,000 m^2 but <150,000 m^2
- 4 sample sites within Rehabilitation Units >200,000 m^2

The final location of each monitoring site within its representative rehabilitation unit was identified by GPS coordinates and direction (compass bearing). Monitoring site locations are identified in Figure 3.

Site locations have been permanently marked by two steel pickets with yellow safety caps, placed approximately 100 m apart. Metal tags were attached to each picket, identifying site number and picket number (i.e. 0 m and 100 m). Where there was insufficient space to locate the 100 m transect due to proximity of the site to the edge of the Offset Area, the site was 50 m long.

Some sites were not sampled upon ground-truthing as they were close to each other and so similarly, one was removed to avoid pseudoreplication.

The following methodology will be applied to monitoring at each site.

5.2 Photo point monitoring

For each site, a permanently marked photo point has been established at the first marker picket and photographing towards a second marker picket at 10 m along the relevant compass bearing. A metal tag was attached to the picket, identifying site number and picket number (i.e. 10 m). All photos were taken such that the 0 m picket was located in the bottom left hand corner of the photo.

The photos were saved with the following information recorded for each file:

- site number
- survey (i.e. baseline)
- date

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Figure 3 Koala Habitat Rehabilitation Units monitoring locations.

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5.3 Transect and quadrat monitoring

Quantitative site data, including the attributes of species richness, percentage foliage cover for the ground layer, shrub and canopy layers, canopy height, and weed cover are to be collected from field transects and quadrats established at each of the monitoring sites:

- A 100 m transect was placed between the first and third metal pickets (0 m and 100 m).

- Quadrats were placed along the transect:
  - 50 x 10 m plot positioned at the transect start at 0 m on the left hand side of the transect.
  - 1 x 1 m subplots positioned at 0 m, 10 m, 20 m, 30 m and 40 m. Adjustments were made for each subplot if its positioning is placed over a trunk, fallen tree or roots. Where this occurred, the location of the quadrat along transects was identified such that the quadrat is consistently placed at this location during future monitoring.

Given the above, each monitoring site had the same information collected (detailed in Table 6). This benchmark monitoring process will also be undertaken at 6 months, 1 year, 18 months, 2 years, 2.5 years, 3 years, 4 years, 5 years, 10 years and 15 years. Reporting from each of the monitoring events shall be provided to the Department of Environment within 4 weeks of completion of monitoring.

Table 6 Data collected at monitoring sites

Method of collection	Data collected
50 m x 10 m quadrat (plot)	Species richness, tubestock survival, height of each canopy species
100 m transect	Canopy species cover and height, shrub cover
Five 1 x 1 m quadrats (subplot)	Percentage cover in ground layer (including regenerating native canopy cohorts)

6 Results

6.1 Photo-point monitoring

Photo monitoring results are reported in the following table, showing the variety of vegetation types and their condition. The vegetation varies from exotic grass pasture with sparse regenerating shrubs and trees to eucalypt forest with intact structure and species composition. Note that a number of sites show evidence of dense *Lantana camara* infestations. These sites are typically at an advanced state of natural regeneration with common canopy tree sized eucalypts and abundant acacias.

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Table 7 Photo monitoring images

Site 1 (17/02/2016)	Site 2 (17/02/2016)	Site 3 (17/02/2016)
		
Site 4 (17/02/2016)	**Site 5 (17/02/2016)**	**Site 6 (04/03/2016)**
		

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Site 7 (26/05/2016)

Site 8 (29/01/2016)

Site 9 (29/01/2016)

Site 11 (04/03/2016)

Site 12 (04/11/2015)

Site 13 (04/11/2015)

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Site 14 (04/11/2015)

Site 15 (04/11/2015)

Site 16 (04/11/2015)

Site 17 (04/11/2015)

Site 20 (04/11/2015)

Site 21 (04/11/2015)

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Site 35 (11/11/2015)

Site 36 (11/11/2015)

Site 37 (11/11/2015)

Site 38 (11/11/2015)

Site 39 (11/11/2015)

Site 40 (11/11/2015)

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Site 41 (11/11/2015)

Site 42 (20/01/2016)

Site 43 (20/01/2016)

Site 50 (26/02/2015)

Site 52 (26/01/2016)

Site 70 (24/02/2016)

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Site 71 (24/02/2016)

Site 72 (26/01/2016)

Site 73 (24/02/2016)

Site 77 (20/01/2016)

Site 78 (20/01/2016)

Site 81 (16/03/2016)

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Site 83 (16/03/2016)

Site 84 (16/03/2016)

Site 85 (16/03/2016)

Site 87 (16/03/2016)

Site 89 (02/03/2016)

Site 90 (02/03/2016)

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Site 92 (02/03/2016)

Site 93 (02/03/2016)

Site 94 (02/03/2016)

Site 95 (17/02/2016)

Site 96 (17/02/2016)

Site 105 (22/01/2016)

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Site 106 (22/01/2016)

Site 116 (09/03/2016)

Site 117 (09/03/2016)

Site 118 (09/03/2016)

Site 120 (09/03/2016)

Site 121 (23/02/2016)

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Site 122 (23/02/2016)

Site 125 (26/05/2016)

Site 126 (26/05/2016)

Site 139 (22/02/2016)

Site 140 (22/02/2016)

Site 141 (22/02/2016)

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Site 142 (26/05/2016)	Site 146 (02/03/2016)
	

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6.2 Transect and quadrat monitoring

6.2.1 Species richness

At baseline in May 2016, a total of 339 species were recorded within the 66 monitoring sites in the Koala habitat areas (Habitat Area).

Species richness within sites ranged from 11 to 47 species, with 29.7 species per site observed on average. The largest number of species was observed in sites adjacent to 'Wal's Block' (e.g. Site 116 with 47 species), sites adjacent to the Plunkett Conservation Park in the north-east of the site (e.g. Site 52 with 47 species), as well as sites in the central-west of the site towards Waterford-Tamborine Road (e.g. Site 11 with 46 species, Site 39 with 44 species and Site 83 with 44 species).

The lowest number of species was observed in site 17 (11 species), located in exotic pasture with scattered regenerating eucalypts not far from Waterford-Tamborine Road. Low species richness was also recorded at site 121 (13 species) adjacent to the Plunkett Conservation Park, site 89 (17 species) in the south-west near Waterford-Tamborine Road and site 118 (18 species) in the south-east.

Canopy tree species (T1 stratum) common across the Habitat Area include *Eucalyptus seeana, Eucalyptus tereticornis, Pinus elliottii, Eucalyptus siderophloia* and *Corymbia intermedia* (from highest to lower abundance).

Small tree species (T2-T3) common across the Habitat Area include *Lophostemon suaveolens, Pinus elliottii, Lophostemon confertus, Angophora leiocarpa, Melaleuca quinquenervia, M. linariifolia* and *Alphitonia excelsa* (from highest to lower abundance).

Shrub species (S1 stratum) that were commonly observed across the Habitat Area include *Alphitonia excelsa*, *Lantana camara*, *Acacia leiocalyx, Leptospermum polygalifolium, Acacia concurrens, A. disparrima* subsp*. disparrima and Glochidion ferdinandi* (from highest to lower abundance).

Of the species recorded, 62 are exotic. Several of these were significant across the Offset Area, present at a large number of sites. This includes *Lantana camara* (41 sites), *Pinus elliottii* (38 sites), *Ageratum houstonianum* (26 sites), *Conyza bonariensis* (24 sites), *Lantana montevidensis* (18 sites), *Crassocephalum crepidioides* (18 sites), *Andropohon virginicus* (17 sites) and *Ambrosia artemisifolia* (17 sites).

6.2.2 Tree canopy cover and height (T1)

Of the sites with canopy trees present (T1 stratum), tree canopy cover varied from 0.5% to 40% cover, with average canopy cover 22.49%. Canopy species with high canopy cover were *Pinus elliottii, Eucalyptus siderophloia, E. tereticornis, E. moluccana, Angophora leiocarpa, Corymbia trachyphloia* subsp. *trachyphloia and Eucalyptus resinifera* (in order of highest to lower).

Several of the sites did not have any canopy trees present, including site 6 (HRU3), site 7 (CRU13), site 8 (CRU13), site 9 (CRU13), site 11 (CRU14), site 12 (CRU12), site 13 (CRU12), site 35 (HRU9), site 40 (HRU11), site 52 (HRU13), site 70 (HRU15), site 71 (HRU15), site 72 (HRU15), site 73 (HRU15), site 76 (CRU1), site 83 (HRU20), site 84 (HRU19), site 87 (HRU18), site 88 (HRU18), site 94 (HRU22), site 95 (HRU17), site 118 (HRU28), site 141 (HRU29) and site 142 (HRU29).

Canopy tree height varied from 13.5 m to 25 m, with the average tree height 17.2 m. Canopy species with high average canopy height were *Eucalyptus moluccana*, *E. siderophloia, E. carnea, Angophora leiocarpa* and *Eucalyptus seeana* (in order of highest to lowest average canopy height).

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6.2.3 Small tree cover and height (T2-T3)

Of the sites with small trees present (T2 –T3 stratum), cover varied from 4% to 15.9%, with average cover 10.1%. Small tree species with high average cover were *Pleiogynium timorense* (36% cover, but this was only recorded at 1 site), *Acacia disparrima, Melaleuca linariifolia, Pinus elliottii and Eucalyptus moluccana* (from highest to lower). Small tree height varied from 1 m to 18.4 m high, with an average of 10.2 m.

Only 2 sites did not have any small trees present, including site 125 (HRU31) and site 139 (CRU7).

6.2.4 Shrub cover and height (S1)

Of the sites with shrubs present, shrub cover varied from 0.5% to 16.5% (site 142, HRU29) with an average cover 3.1%. Shrub height varied from 0.5 m to 6.3 m with an average height of 2.8 m. Shrub species with high cover within sites were *Acacia leiocalyx* subsp. *leiocalyx*, *Melaleuca linariifolia*, *Lophostemon suaveolens*, *Eucalyptus* regrowth, *Leptospermum polygalifolium* and *Acacia concurrnes* (in order of highest to lower average cover).

Several of the sites did not have any shrubs present, including site 13 (CRU12), site 35 (HRU9), site 39 (HRU10), site 53 (HRU13), site 77 (HRU16), site 93 (HRU22), site 118 (HRU28).

6.2.5 Ground cover (G1)

All of the sites have living ground layer, varying in average ground cover across the 5 quadrats per site from 4.8% (site 106 – HRU26) to 95.6% (site 139 – CRU7), with an average cover of 46.4%. Ground cover species with high cover within sites were *Imperata cylindrica* (which had > 5 times higher cover across sites than any other species), *Themeda triandra*, *Lomandra longifolia*, *Pteridium esculentum* and the weed grass *Panicum maximum* (in order of highest to lower).

6.2.6 Weed incursion

There were a total of 63 species of weeds identified across the sites. Weeds were present at all but one site (site 126 in HRU31) (98%). In sites where weeds were present, weed cover in the ground layer varied from 0.4% (site 106 – HRU26) to 57.6% (site 139 – CRU7) with average cover 10.3%. Weed species in the ground layer with high cover were *Panicum maximum*, *Ageratum houstonianum*, *Paspalum urvillei*, *Ambrosia artemisiifolia*, *Paspapalum mandiocanum* and *Lantana camara* (from highest to lower abundance). The predominant weed crown cover was *Pinus elliottii*.

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Table 8 Baseline species richness, average canopy height within the canopy (T1), sub-canopy (T2-T3) and shub layer (S1) and total overlapping cover within the canopy (T1), sub-canopy (T2-T3), shub layer (S1) and ground layer (G1)

	Species Richness						Height (m)			Overlapping Crown Cover (m)					Ground Cover (%)	
Site	*Canopy (T1)*	*Sub - Canopy (T2 and T3)*	*Shrubs (S1)*	Ground Layer (G1)	Total	*Total weeds*	*Canopy (T1)*	*Sub - Canopy (T2 and T3)*	*Shrubs (S1)*	*Canopy (T1)*	*Sub - Canopy (T2 and T3)*	*Shrubs (S1)*	*Total Weed Crown Cover*	*Total Native Crown Cover*	*Native Shrub and Ground Layer (S1 -G1)*	*Total Weed Ground Cover*
1	4	4	10	15	33	2	13.8	8.6	1.8	18	40.5	10.5	0	58.5	42.8	2
2	3	3	9	13	28	4	13.5	8.6	1.6	7	42	5	0	49	17.8	3.4
3	1	3	6	17	27	7	14.3	8.0	2.7	26	27	3.5	26	27	60.6	9.8
4	2	2	8	11	23	3	14.8	7.9	1.7	24	50	8.5	0	74	38.4	1.6
5	2	4	8	28	42	12	13.9	7.8	1.6	18	62	8.5	27	53	65.4	7.2
6	2	0	10	37	49	12	0	12.7	5.0	0	13	2	0	13	36.2	42.8
7	2	3	6	24	35	7	0	6.3	3.1	0	37	11	0	37	10.2	10.8
8	0	4	5	25	34	7	0	8.5	2.7	0	25	19	0	25	26.6	2
9	2	3	8	19	32	2	0	9.4	2.0	0	14	12	0	14	50	1.2
11	4	1	8	33	46	15	0	7.8	3.0	0	4.5	4	0	4.5	28.8	6
12	5	3	3	20	31	10	0	9.0	3.0	0	53.8	0.5	5.9	47.9	57.4	12.8
13	0	3	4	15	22	5	0	7.6	0.0	0	48.7	0	0	48.7	82	4
14	3	7	4	18	32	4	19.4	12.4	2.7	8.7	73.3	13.4	11.8	70.2	38	5.2
15	1	9	5	16	31	4	19.9	8.1	4.1	8	71	8	0	79	76	5.6
16	0	5	2	13	20	5	15	9.0	1.6	6.6	30.2	25.5	19.3	17.5	58.4	0
17	0	0	1	10	11	3	17.6	7.6	2.3	11.4	10.6	11.5	5.8	16.2	14.4	1.2
20	1	3	4	11	19	2	20.9	12.3	1.9	50.4	32.9	7.3	4.8	78.5	37.2	0
21	1	2	5	14	22	4	20.4	11.1	4.2	35.2	17	2.9	0	52.2	29.6	8.8
35	0	2	2	15	19	4	0	8.6	0.0	0	52	0	36.1	15.9	39.4	3.2
36	1	0	6	19	26	3	19.4	8.6	4.3	11.6	44.6	13	0	56.2	54	3.2
37	0	0	5	19	24	1	19.4	8.6	1.2	30.9	10.4	8.2	0	41.3	30.4	6.4
38	0	2	4	20	26	3	15.2	7.4	3.1	11	70.1	9.5	3.6	77.5	53.2	6.4
39	3	4	1	35	43	8	16.9	9.5	0.0	29.1	60.2	0	29.1	60.2	69.8	12.8
40	0	1	3	18	22	1	0	10.8	1.4	0	52.6	7.9	6.8	45.8	31.8	0
41	0	0	4	17	21	1	20.1	10.5	1.4	60.8	76.7	11	39.2	98.3	46.6	0
42	5	2	4	18	29	6	21.8	12.3	2.2	23.9	29	19.2	11	41.9	36.8	2.4
43	5	4	6	23	38	5	21.7	13.2	2.5	32.5	23.4	1	13.4	42.5	30.2	9.6
50	0	2	7	32	41	8	15	7.9	1.7	21.5	25.5	2	29	18	64.8	12.8
52	2	5	5	35	47	7	0	9.7	2.5	0	57	2	0	57	46	7.6
53	4	1	6	21	32	5	20.6	12.9	0.0	43	21	0	0	64	31.4	1.6
70	3	2	8	24	37	4	0	10.2	3.6	0	16.5	14.5	1.5	15	25.8	6.8
71	1	2	7	12	22	4	0	8.2	2.8	0	42.9	13	0	42.9	17.4	1.6
72	2	3	9	23	37	2	0	10.1	3.6	0	44.5	19	0	44.5	35.6	6.2
73	4	1	5	29	39	12	0	11.7	2.6	0	85.5	4	5.5	80	30.8	22
76	0	1	6	20	27	7	0	11.0	2.3	0	49.5	7.5	46	3.5	52.4	3.6
77	0	1	0	24	25	2	19.7	9.7	0.0	32	31.5	0	0	63.5	34.4	1.6
78	0	3	1	17	21	2	20	11.8	3.0	7.5	48	3	0	55.5	43.6	1.6
80	2	3	5	12	22	3	21.6	10.2	2.1	53	18.5	10	0	71.5	31	0
81	2	3	9	28	42	17	15.3	7.2	4.4	11	40	21.5	1.5	49.5	4.4	17.6
83	2	2	9	31	44	17	0	12.6	3.1	0	58	2	24	34	34.4	39.2

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Site	Species Richness						Height (m)			Overlapping Crown Cover (m)					Ground Cover (%)	
	Canopy (T1)	*Sub - Canopy (T2 and T3)*	*Shrubs (S1)*	Ground Layer (G1)	Total	*Total weeds*	*Canopy (T1)*	*Sub - Canopy (T2 and T3)*	*Shrubs (S1)*	*Canopy (T1)*	*Sub - Canopy (T2 and T3)*	*Shrubs (S1)*	*Total Weed Crown Cover*	*Total Native Crown Cover*	*Native Shrub and Ground Layer (S1 -G1)*	*Total Weed Ground Cover*
84	5	3	8	25	41	12	0	13.2	2.5	0	72	1.5	19	53	42.8	12.4
85	3	4	6	16	29	8	18	14.0	1.5	10	59.5	1.5	10.5	59	26.8	8.8
87	2	1	2	25	30	10	0	11.9	2.8	0	63.9	2	0	63.9	30	18.4
88	2	2	5	27	36	10	0	12.6	2.7	0	37	4.5	0	37	42.6	9.6
89	0	0	3	14	17	9	20	8.3	5.0	30.5	6.5	2	30.5	6.5	10.4	39
90	3	1	8	25	37	11	16.8	9.2	2.3	26	12.5	3	14	24.5	42.6	38.2
92	3	1	3	16	23	9	16.3	9.4	3.3	17	22	2	16.5	22.5	33.6	39.6
93	0	1	3	17	21	8	20	20.0	0.0	5	3.25	0	5	3.25	51.2	11
94	1	1	7	27	36	11	0	14.9	3.2	0	50.5	7.5	44	6.5	25.2	23
95	3	2	6	16	27	7	0	11.2	1.5	0	25	3.9	8	17	76.4	10.4
96	3	1	6	16	26	6	15.5	11.0	3.3	5	36.8	3.3	0	41.8	62.4	1.6
105	1	5	5	10	21	2	15.3	9.9	1.4	12	31	6	0	43	14.8	0
106	2	6	9	8	25	3	16.2	6.6	2.3	31	35.5	4	4	62.5	6	0.4
116	1	3	5	38	47	16	16.2	10.8	1.5	38	46.5	0.5	0	84.5	55.6	23.6
117	4	1	4	29	38	11	15	10.7	6.2	3.5	21.5	1.2	0	25	75.6	10.8
118	0	0	2	16	18	5	0	10.9	0.0	0	60	0	0	60	63	11.6
120	3	3	4	28	38	11	15.5	10.0	4.9	25.5	22	10.5	0	47.5	68.4	20.4
121	0	1	2	10	13	2	14.5	12.5	3.0	20.5	13	1.5	1	32.5	40.4	0
122	3	2	5	10	20	1	16.1	10.0	1.9	23.5	10.5	7.5	0	34	55.2	0
125	3	1	7	15	26	3	15.5	0.0	2.3	25.5	0	34	0	25.5	31.6	1.2
126	1	1	8	18	28	0	16.1	10.4	1.8	59.5	14	8	0	73.5	31.6	0
139	2	2	1	24	29	13	14	0.0	6.3	6.5	0	2.25	0	6.5	38	57.6
140	0	1	1	27	29	12	15	11.4	1.5	1.5	13.5	0.5	3	12	52	26.4
141	2	1	0	22	25	7	0	10.4	4.2	0	64.5	13	0	64.5	36.4	1.2
142	0	0	2	29	31	10	0	8.9	5.7	0	43	18	0	43	42	18.4
146	2	2	4	14	22	5	15.8	10.2	1.8	26	9	17.5	26	9	41.6	7.6
	1.8	**2.3**	**5.1**	**20.5**	**29.6**	**6.5**	**10.9**	**9.9**	**2.5**	**14.4**	**36.1**	**7.2**	**8.0**	**42.4**	**41.1**	**10.3**

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7 Discussion

An assessment of site species richness and structure was undertaken to determine the baseline condition against the benchline values (refer to table 9).

A number of sites already meet the Final Benchmark for some individual parameters. Sites 1, 78 and 83 (HRU1, HRU16, HRU20) met consistently high benchmarks.

For species richness, all sites except one (site 121 – HRU30) meet a benchmark, however, this may include large numbers of exotic species, with 54 sites having higher than acceptable cover of weeds and only 11 sites reaching the reference Final Benchmark. Rehabilitation efforts need to ensure that the full suite of species represented in the pre-RE for each rehabilitation unit are planted where possible and that weeds are targeted rapidly and strategically.

A total of 45 (68%) of the sites meet a benchmark for canopy tree cover, 49 (74%) of the sites meet a benchmark for canopy tree height, 64 (97%) of the sites meet a benchmark for small tree cover, 63 (95%) sites meet a benchmark for small tree height, 47 (71%) sites meet a benchmark for shrub cover, 62 (94%) sites meet a benchmark for shrub height, 65 (98%) sites meet a benchmark for ground cover, and 12 (18%) sites meet a benchmark for weed cover of the ground layer.

Overall, this assessment reveals that rehabilitation needs to prioritise weed control in order to bring weed cover to below 5% before IMO-1 year in August 2016. Furthermore, strategic rehabilitation of the ground, shrub and tree layers will ensure that weeds are outcompeted and shaded out. It must be noted that *Pinus elliotii* control has already occurred in some sites, which is providing lower cover of this species than observed during preliminary assessments. However, the increased light penetration resulting from this has led to substantial invasion of key exotic weeds such as *Baccharis halimifolia*, *Lantana camara* and *Andropogon virginicus*. It suggested that *P. elliottii* are removed slowly and sequentially so that some form of canopy is retained at each period to reduce invasion of these ground-layer weeds. These three species are perhaps the key weed species for removal at Yarrabilba.

A number of sites (as previously mentioned) are lacking a canopy (T1) layer or have a very poor canopy layer present and so fall far short of the canopy height and cover benchmarks (sites 6, 7, 8, 9, 11, 12, 13, 35, 40, 52, 71, 72, 73, 76, 77, 83, 84, 87, 88, 94, 95, 118, 141 and 142). These sites may require target canopy supplementary planting using RE-aligned species. A number of these sites, seemingly having reduced canopy cover and more light penetration; therefore have reached the reference Final Benchmark levels for shrub and ground cover.

Sites that only meet low benchmarks, IMO-1 or IMO-2, widely across canopy, shrub and ground-layers include sites 13 (CRU12), 35 (HRU9), 77 (HRU16), 93 (HRU22), 118 (HRU28) and 139 (CRU7). These sites will need to be prioritised for rehabilitation within the next 6 months to ensure that all strata meet at least the IMO-1 benchmark by April 2017.

Sites that are in a healthy state, meeting at least FMO-15 or Final Benchmarks across canopy, shrub and ground-layers include sites 1 (HRU1), 14 (HRU4), 20 (HRU6), 21 (HRU6), 41 (HRU11), 42 (HRU8), 43 (HRU8), 78 (HRU16) and 80 (CRU4).

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Table 9 Baseline species species richness, canopy height within the canopy (T1), sub-canopy (T2-T3) and shub layer (S1) and cover within the canopy (T1), sub-canopy (T2-T3), shub layer (S1) and ground layer (G1)

Site	Rehabilitation Unit	Pre-Clearing Regional Ecosystem	Native Species Richness	Canopy Cover (T1)	Canopy Height (T1)	Small Tree Height (T2-T3)	Small Tree Cover (T2-T3)	Shrub Cover (S1)	Shrub Height (S1)	Ground Cover (G1)	Weed Cover (<5%)
1	HRU1	12.9-10.4/12.9-10.12	FMO-15	IMO-10	IMO-10	FINAL	FINAL	FINAL	IMO-5	FINAL	Y
2	HRU1	12.9-10.4/12.9-10.12	FMO-15	IMO-2	IMO-10	FINAL	FINAL	IMO-3	IMO-3	IMO-3	Y
3	HRU3	12.9-10.4/12.9-10.12/12.9-10.2	FMO-15	FMO-15	IMO-10	IMO-10	FINAL	IMO-1	FMO-15	FINAL	N
4	HRU1	12.9-10.4/12.9-10.12	IMO-10	FMO-15	IMO-10	IMO-10	FINAL	IMO-5	IMO-3	FMO-15	Y
5	HRU3	12.9-10.4/12.9-10.12/12.9-10.2	FINAL	IMO-10	IMO-10	IMO-10	FINAL	IMO-5	IMO-3	FINAL	N
6	HRU3	12.3.11/12.3.7	IMO-10	X	X	FINAL	IMO-10	IMO-1	FINAL	FINAL	N
7	CRU13	12.3.11/12.3.7	FMO-15	X	X	IMO-5	FINAL	FMO-15	FINAL	FMO-15	N
8	CRU13	12.3.11/12.3.7	FMO-15	X	X	IMO-10	FINAL	FMO-15	FINAL	FINAL	Y
9	CRU13	12.3.11/12.3.7	IMO-10	X	X	IMO-10	FMO-15	FMO-15	FMO-15	FINAL	Y
11	CRU14	12.3.11/12.3.7	FINAL	X	X	IMO-5	IMO-3	IMO-2	FINAL	FINAL	N
12	CRU12	12.3.11/12.3.6/12.3.7	IMO-10	X	X	IMO-10	FINAL	X	FINAL	FINAL	N
13	CRU12	12.3.11/12.3.6/12.3.8	IMO-5	X	X	IMO-5	FINAL	X	X	FINAL	N
14	HRU4	12.3.11/12.3.6/12.3.7	IMO-10	IMO-1	FMO-15	FINAL	FINAL	FMO-15	FINAL	FINAL	N
15	HRU4	12.3.11/12.3.6/12.3.7	IMO-10	IMO-1	FMO-15	IMO-5	FINAL	IMO-5	FINAL	FINAL	N
16	HRU5	12.9-10.17/12.9-10.2	IMO-5	IMO-1	IMO-10	IMO-10	FINAL	FMO-15	IMO-3	FMO-15	Y
17	HRU5	12.9-10.17/12.9-10.2	IMO-1	IMO-10	FINAL	IMO-5	IMO-5	IMO-3	IMO-10	IMO-1	N
20	HRU6	12.3.11/12.3.6/12.3.7	IMO-5	FMO-15	FMO-15	FINAL	FINAL	IMO-5	FMO-15	FINAL	Y
21	HRU6	12.3.11/12.3.6/12.3.7	IMO-5	FMO-15	FMO-15	FMO-15	FMO-15	IMO-1	FINAL	FINAL	N
35	HRU9	12.3.11/12.3.6/12.3.7	IMO-5	X	X	IMO-10	FINAL	X	X	FINAL	N
36	HRU7	12.3.11/12.3.6/12.3.7	IMO-5	IMO-2	FMO-15	IMO-10	FINAL	FMO-15	FINAL	FINAL	N
37	HRU7	12.3.11/12.3.6/12.3.7	IMO-5	FMO-15	FMO-15	IMO-10	IMO-5	IMO-5	IMO-3	FINAL	N
38	HRU10	12.9-10.17/12.9-10.2	IMO-5	IMO-2	IMO-10	IMO-5	FINAL	IMO-10	FINAL	FINAL	N
39	HRU10	12.9-10.17/12.9-10.2	FINAL	FMO-15	FMO-15	IMO-10	IMO-10	X	X	FINAL	N
40	HRU11	12.3.11/12.3.6/12.3.7	IMO-5	X	X	FMO-15	FINAL	IMO-5	IMO-5	FINAL	Y

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Site	Rehabilitation Unit	Pre-Clearing Regional Ecosystem	Native Species Richness	Canopy Cover (T1)	Canopy Height (T1)	Small Tree Height (T2-T3)	Small Tree Cover (T2-T3)	Shrub Cover (S1)	Shrub Height (S1)	Ground Cover (G1)	Weed Cover (<5%)
41	HRU11	12.3.11/12.3.6/12.3.7	IMO-5	FINAL	FMO-15	FMO-15	FINAL	FMO-15	IMO-10	FINAL	Y
42	HRU8	12.3.11/12.3.6/12.3.7	IMO-10	FMO-15	FMO-15	FINAL	FINAL	FMO-15	FMO-15	FINAL	N
43	HRU8	12.3.11/12.3.6/12.3.7	FMO-15	FMO-15	FMO-15	FINAL	FMO-15	X	FMO-15	FINAL	N
50	HRU12	12.9-10.4/12.9-10.12/12.9-10.2	FINAL	FMO-15	IMO-10	IMO-10	FINAL	X	IMO-3	FINAL	N
52	HRU13	12.3.11/12.3.6/12.3.7	FINAL	X	X	FMO-15	FINAL	IMO-1	FMO-15	FINAL	N
53	HRU13	12.3.11/12.3.6/12.3.7	IMO-10	FINAL	FMO-15	FINAL	FMO-15	X	X	FINAL	N
70	HRU15	12.3.11/12.3.6/12.3.7	FMO-15	X	X	FMO-15	FMO-15	FMO-15	FINAL	FINAL	N
71	HRU15	12.3.11/12.3.6/12.3.7	IMO-5	X	X	IMO-10	FINAL	FMO-15	FINAL	FINAL	N
72	HRU15	12.3.11/12.3.6/12.3.7	FMO-15	X	X	FMO-15	FINAL	FMO-15	FINAL	FINAL	N
73	HRU15	12.3.11/12.3.6/12.3.7	FMO-15	X	X	FINAL	FINAL	IMO-2	FMO-15	FINAL	N
76	CRU1	12.3.11/12.3.6/12.3.7	IMO-5	X	X	FMO-15	FINAL	IMO-5	FMO-15	FINAL	N
77	HRU16	12.3.11	IMO-3	X	X	FMO-15	FINAL	X	X	FINAL	N
78	HRU16	12.3.11	IMO-3	IMO-1	FMO-15	FINAL	FINAL	IMO-1	FINAL	FINAL	Y
80	CRU4	12.3.11	IMO-3	FINAL	FMO-15	FMO-15	FMO-15	IMO-10	FMO-15	FINAL	Y
81	HRU20	12.9-10.17/12.9-10.2	FINAL	IMO-2	FMO-10	IMO-5	FINAL	FMO-15	FINAL	IMO-3	N
83	HRU20	12.3.11/12.3.6/12.3.7	FINAL	X	X	FINAL	FINAL	IMO-1	FINAL	FINAL	N
84	HRU19	12.3.11/12.3.6/12.3.7	FMO-15	X	X	FINAL	FINAL	X	FMO-15	FINAL	N
85	CRU10	12.3.11/12.3.6/12.3.7	IMO-5	IMO-2	FMO-15	FINAL	FINAL	X	IMO-10	FINAL	N
87	HRU18	12.3.11/12.3.6/12.3.7	IMO-5	X	X	FINAL	FINAL	IMO-1	FINAL	FINAL	N
88	HRU18	12.3.11/12.3.6/12.3.7	FMO-15	X	X	FINAL	FINAL	IMO-2	FINAL	FINAL	N
89	HRU23	12.9-10.17/12.9-10.2	IMO-1	FMO-15	FMO-15	IMO-5	IMO-5	X	FINAL	IMO-1	N
90	CRU9	12.9-10.17/12.9-10.2	FINAL	IMO-10	IMO-10	IMO-10	IMO-10	X	IMO-10	IMO-10	N
92	HRU22	12.9-10.17/12.9-10.2	IMO-5	IMO-3	IMO-10	IMO-10	FMO-15	X	FMO-15	IMO-5	N
93	HRU22	12.3.11/12.3.6/12.3.7	IMO-2	X	FMO-15	FINAL	IMO-2	X	X	FINAL	N
94	HRU22	12.3.11/12.3.6/12.3.7	FMO-15	X	X	FINAL	FINAL	IMO-5	FMO-10	FINAL	N
95	HRU17	12.9-10.17/12.9-10.2	IMO-10	X	X	FMO-15	FMO-15	X	IMO-3	FINAL	N

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Site	Rehabilitation Unit	Pre-Clearing Regional Ecosystem	Native Species Richness	Canopy Cover (T1)	Canopy Height (T1)	Small Tree Height (T2-T3)	Small Tree Cover (T2-T3)	Shrub Cover (S1)	Shrub Height (S1)	Ground Cover (G1)	Weed Cover (<5%)
96	HRU17	12.9-10.17/12.9-10.2	IMO-10	X	IMO-10	FMO-15	FINAL	X	FMO-15	FMO-15	Y
105	HRU26	12.9-10.17/12.9-10.19	IMO-3	IMO-3	IMO-10	IMO-10	FINAL	IMO-1	IMO-2	IMO-1	Y
106	HRU26	12.9-10.17/12.9-10.19	IMO-5	FMO-15	FINAL	IMO-5	FINAL	X	IMO-10	X	N
116	HRU28	12.9-10.17/12.9-10.2	FINAL	FMO-15	IMO-10	FMO-15	FINAL	X	IMO-3	FMO-15	N
117	HRU28	12.9-10.17/12.9-10.2	FINAL	X	IMO-10	FMO-15	FMO-15	X	FINAL	FMO-15	N
118	HRU28	12.9-10.17/12.9-10.2	IMO-2	X	X	FMO-15	FINAL	X	X	FMO-15	N
120	CRU8	12.9-10.17/12.9-10.2	FINAL	IMO-10	IMO-10	IMO-10	FMO-15	IMO-3	FINAL	FMO-15	N
121	HRU30	12.9-10.17/12.9-10.2	X	IMO-5	IMO-10	FMO-15	IMO-10	X	FMO-15	IMO-10	Y
122	HRU30	12.9-10.17/12.9-10.2	IMO-2	IMO-10	IMO-5	IMO-10	IMO-5	IMO-2	IMO-5	FMO-15	Y
125	HRU31	12.9-10.17/12.9-10.2	IMO-5	IMO-10	IMO-10	X	X	FMO-15	IMO-10	IMO-5	Y
126	HRU31	12.9-10.17/12.9-10.2	IMO-5	FINAL	IMO-5	FMO-15	IMO-10	IMO-3	IMO-5	IMO-5	Y
139	CRU7	12.9-10.17/12.9-10.2	IMO-10	IMO-1	IMO-10	X	X	X	IMO-5	IMO-10	N
140	CRU7	12.9-10.17/12.9-10.2	IMO-10	X	IMO-10	X	IMO-10	X	IMO-3	FMO-15	N
141	HRU29	12.9-10.17/12.9-10.2	IMO-10	X	X	FMO-15	FINAL	IMO-3	FINAL	IMO-10	Y
142	HRU29	12.9-10.17/12.9-10.2	FMO-15	X	X	IMO-10	FINAL	IMO-10	FINAL	IMO-10	Y
146	HRU21	12.9-10.17/12.9-10.2	IMO-5	IMO-10	IMO-10	IMO-10	IMO-5	IMO-10	IMO-5	IMO-10	N
Total Meeting a Benchmark			**65**	**45**	**49**	**63**	**64**	**47**	**62**	**65**	**12**

Note: the site meets the following benchmarks: IMO - 1 year; IMO – 2 year, IMO – 3 year, IMO- 4 year, IMO – 5 year, IMO – 10 year, FMO – 15 year, FINAL Benchmark condition, and X – does not meet any benchmark i.e. poorer than IMO-1 year condition.

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9 Appendices

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Appendix A Benchmark species lists for each pre-clearing RE

Species	Regional Ecosystem									
	12.3.6	**12.3.7**	**12.3.11**	**12.9-10.2**	**12.9-10.4**	**12.9-10.12****	**12.9-10.17**	**12.9-10.19**	**12.11.3**	**12.11.5**
Canopy Layer (T1)										
Allocasuarina torulosa	X			X						
Alphitonia excelsa	X			X						
Alstonia constricta				X						
Angophora leiocarpa			X	**X**		**X**	**X**	**X**	**X**	X
Angophora woodsiana			X							X
Brachychiton populneus				X						
Banksia oblongifolia	X									
Casuarina cunninghamiana subsp. cunninghamiana		**X**								
Corymbia citriodora subsp. variegata			X	**X**		X	**X**	X	X	X
Corymbia henryi										X
Corymbia intermedia	**X**	X	**X**		**X**	**X**	**X**	**X**	X	**X**
Corymbia tessellaris		X	X	X						X
Corymbia trachyphloia subsp. trachyphloia					**X**					
Dendrophthoe vitellina			X							
Eucalyptus acmenoides							**X**	X	**X**	X
Eucalyptus biturbinata									**X**	
Eucalyptus carnea							**X**	X	**X**	**X**
Eucalyptus crebra				**X**						**X**
Eucalyptus fibrosa subsp. fibrosa								**X**		
Eucalyptus helidonica										X
Eucalyptus latisinensis	X									
Eucalyptus longirostrata								X		
Eucalyptus major								**X**	**X**	
Eucalyptus melanoleuca								X		
Eucalyptus melanophloia				X						
Eucalyptus microcorys	X				X				**X**	X
Eucalyptus moluccana				X			X			
Eucalyptus montivaga								X		
Eucalyptus pilularis					**X**					
Eucalyptus portuensis								**X**		
Eucalyptus propinqua					X				**X**	X

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Species	Regional Ecosystem									
	12.3.6	**12.3.7**	**12.3.11**	**12.9-10.2**	**12.9-10.4**	**12.9-10.12****	**12.9-10.17**	**12.9-10.19**	**12.11.3**	**12.11.5**
Eucalyptus racemosa subsp. racemosa						X				
Eucalyptus resinifera					X					X
Eucalyptus seeana			X			**X**				X
Eucalyptus siderophloia			**X**	X		X	X		X	**X**
Eucalyptus sideroxylon								X		
Eucalyptus tereticornis	**X**	**X**	**X**	X		X	X		X	X
Eucalyptus tindaliae			X		**X**			X		**X**
Euroschinus falcatus var. falcatus		X								
Glochidion ferdinandi	X									
Glochidion sumatranum	X									
Lophostemon confertus	**X**				X				**X**	X
Lophostemon suaveolens		X	**X**							
Melaleuca bracteata		X								
Melaleuca fluviatilis		X								
Melaleuca quinquenervia	**X**		**X**							
Melaleuca salicina	X									
Parsonsia straminea	X									
Syncarpia glomulifera					**X**					
Waterhousea floribunda		X								
Sub-canopy (T2-T3)										
Acacia blakei subsp. blakei								X		
Acacia blakei subsp. diphylla								X		
Acacia concurrens			X							X
Acacia disparrima subsp. disparrima	X	X	**X**	X					**X**	**X**
Acacia fimbriata										X
Acacia glaucocarpa				X						
Acacia leiocalyx							X	X		
Acacia loroloba								X		
Acacia maidenii				X						
Acacia melanoxylon					X					
Alectryon reticulatus										
Allocasuarina luehmannii				X						
Allocasuarina littoralis	X		**X**		X			**X**		X
Allocasuarina torulosa				X	**X**			X	**X**	**X**

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Species	Regional Ecosystem									
	12.3.6	12.3.7	12.3.11	12.9-10.2	12.9-10.4	12.9-10.12**	12.9-10.17	12.9-10.19	12.11.3	12.11.5
Alphitonia excelsa	**X**		X	X	**X**		**X**		X	
Amyema miquelii									X	
Angophora leiocarpa			X	**X**			X	X		X
Angophora subvelutina		X			X					X
Angophora woodsiana			X					X		X
Backhousia myrtifolia										
Banksia integrifolia			X							
Banksia oblongifolia					X					
Aphananthe philippinensis		X								
Casuarina cunninghamiana subsp. cunninghamiana		**X**								
Casuarina glauca			X							
Celastrus subspicata				X						
*Cinnamomum camphora**			X							
Corymbia citriodora subsp. variegata				**X**			**X**	X	X	X
Corymbia henryi										X
Corymbia intermedia	X		**X**	X	**X**		**X**	X	X	X
Corymbia tessellaris		X	X	X						X
Cryptocarya triplinervis		X								
Cryptocarya triplinervis var. triplinervis		X								
Cupaniopsis anacardioides		X								
Diospyros australis		X								
Diplatia furcata		X								
Dockrillia bowmanii		X								
Drypetes deplanchei		X								
Elaeocarpus obovatus		X	X						X	
Endiandra discolor					X					
Endiandra sieberi					X					
Erythrina vespertilio									X	
Eucalyptus acmenoides							**X**		X	
Eucalyptus carnea									X	**X**
Eucalyptus crebra				**X**						X
Eucalyptus exserta								X		
Eucalyptus fibrosa subsp. fibrosa							X	**X**		
Eucalyptus helidonica										X

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Species	Regional Ecosystem									
	12.3.6	12.3.7	12.3.11	12.9-10.2	12.9-10.4	12.9-10.12**	12.9-10.17	12.9-10.19	12.11.3	12.11.5
Eucalyptus longirostrata								X		
Eucalyptus major				X				**X**		
Eucalyptus melanoleuca								X		
Eucalyptus melanophloia				X						
Eucalyptus microcorys					X				X	
Eucalyptus moluccana				X			X	X		
Eucalyptus montivaga								X		
Eucalyptus pilularis					X					
Eucalyptus propinqua									**X**	X
Eucalyptus resinifera					X					X
Eucalyptus seeana										X
Eucalyptus siderophloia			X	**X**	X		**X**		**X**	X
Eucalyptus sideroxylon								X		
Eucalyptus tereticornis			X	X			X			X
Eucalyptus tindaliae					X					X
Euroschinus falcatus var. falcatus		X								
Ficus adenosperma		X								
Ficus coronata			X							
Flindersia schottiana					X					
Geijera salicifolia		X								
Glochidion ferdinandi			X		**X**					
Glochidion sumatranum	X		X							
Jagera pseudorhus			X							X
Leptospermum polygalifolium										X
Lophostemon confertus				X	**X**			X	**X**	**X**
Lophostemon suaveolens	**X**	X	**X**		X	X	X		X	**X**
Macaranga tanarius		X								
Maclura cochinchinensis		X								
Mallotus philippensis		X							X	
Melaleuca bracteata		X								
Melaleuca fluviatilis		X								
Melaleuca linariifolia		X	X							
Melaleuca quinquenervia	**X**		**X**			X				
Melaleuca salicina			X		X					

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Species	Regional Ecosystem									
	12.3.6	12.3.7	12.3.11	12.9-10.2	12.9-10.4	12.9-10.12**	12.9-10.17	12.9-10.19	12.11.3	12.11.5
Melaleuca saligna										X
Melaleuca viminalis		X								
Notelaea longifolia			X	X						
Notelaea 50acrocarpa var. microcarpa		X								
Olea paniculata									X	
Pandorea pandorana									X	
Parsonsia straminea			X							
*Pinus elliottii**			X							
Pleiogynium timorense		X								
Polyscias elegans									X	
Rhodosphaera rhodanthema									X	
Syncarpia glomulifera					**X**					
Syzygium oleosum					X					
Waterhousea floribunda		X								
Shrub Layer (S1)										
Abutilon auritum		X								
Acacia amblygona				X						
Acacia binervata									X	
Acacia blakei subsp. diphylla								X		
Acacia complanata							**X**	**X**		
Acacia concurrens			X	X					X	**X**
Acacia decora				X						
Acacia disparrima subsp. disparrima	**X**	**X**	**X**	**X**	X		X	**X**	**X**	**X**
Acacia falcata				X	X			X		X
Acacia fimbriata			X	X				X		X
Acacia glaucocarpa				X						
Acacia implexa				X			X			
Acacia irrorata				X					**X**	
Acacia ixiophylla								X		
Acacia juncifolia								X		
Acacia leiocalyx		X	**X**	**X**	X		**X**	**X**		X
Acacia leiocalyx subsp. leiocalyx	X						**X**			
Acacia leptocarpa	X									
Acacia loroloba				X				X		

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Species	Regional Ecosystem									
	12.3.6	**12.3.7**	**12.3.11**	**12.9-10.2**	**12.9-10.4**	**12.9-10.12****	**12.9-10.17**	**12.9-10.19**	**12.11.3**	**12.11.5**
Acacia maidenii		X	X	X	X			X	X	X
Acacia melanoxylon	X		X		X				X	
Acacia neriifolia				X						
Acacia oshanesii					X					
Acacia penninervis								X		
Acacia sertiformis								X		
Acalypha nemorum									X	
Acrotriche aggregata					X				X	
Alchornea ilicifolia		X								
Alchornea thozetiana		X								
Alectryon diversifolius				X						
Alectryon tomentosus		X								
Allocasuarina littoralis	X		X	X				**X**	X	X
Allocasuarina torulosa				X	X		X	X	**X**	X
Alphitonia excelsa	**X**		X	**X**	**X**		X	**X**	X	**X**
Alstonia constricta		X		X				X		
Alyxia ruscifolia								X		
Angophora leiocarpa			X	X			X			
Angophora subvelutina		X								
Angophora woodsiana										X
Aphananthe philippinensis		X								
*Argemone mexicana**		X								
*Asparagus africanus**			X							
Astrotricha latifolia				**X**				**X**	X	
Babingtonia similis										X
*Baccharis halimifolia**			X						X	
Banksia integrifolia			X							
Banksia oblongifolia					X					
Banksia spinulosa					X					
Banksia spinulosa var. collina								X		
Banksia spinulosa var. spinulosa					X					
Bertya cunninghamii		X								
Brachychiton populneus				X					X	
Brachychiton populneus subsp. *trilobus*									X	X

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Species	Regional Ecosystem									
	12.3.6	12.3.7	12.3.11	12.9-10.2	12.9-10.4	12.9-10.12**	12.9-10.17	12.9-10.19	12.11.3	12.11.5
Brachychiton rupestris				X						
Breynia oblongifolia		X	X	X					X	
Bursaria spinosa								X	X	
Cassinia compacta								X		
Cassinia quinquefaria								X		
Cayratia clematidea		X								
Celastrus subspicata								X		
Choretrum candollei				X				X		
*Cinnamomum camphora**			X						X	
Citrus australis				X						
*Citrus limon**		X								
Clematis glycinoides									X	
Clerodendrum floribundum			X		X			X	X	
Commersonia bartramia	X									
Corymbia citriodora subsp. variegata								X	X	X
Corymbia intermedia	X		X	X			X	X	X	X
Corymbia tessellaris			X	X						X
Corymbia trachyphloia subsp. trachyphloia								X		
Cupaniopsis anacardioides	X	X								
Cupaniopsis parvifolia		X		X						
Cryptocarya triplinervis		X								
Cyclophyllum coprosmoides	X						X			
Daviesia arborea									X	
Daviesia ulicifolia				X				X		
Daviesia villifera								X		
Denhamia pittosporoides								X		
Derris involuta									X	
Diospyros australis		X								
Diospyros geminata		X								
Diplatia furcata		X								
Dockrillia bowmanii		X								
Dodonaea lanceolata var. subsessilifolia		X								
Dodonaea triangularis								X		
Dodonaea triquetra			X		X				X	X

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Species	Regional Ecosystem									
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Drypetes deplanchei									X	
Elaeocarpus reticulatus					X					
Elaeodendron australe									X	
Endiandra discolor					X					
Eremophila debilis				X						
Erythrina vespertilio									X	
Eucalyptus acmenoides								X	X	
Eucalyptus carnea									X	X
Eucalyptus crebra				**X**						X
Eucalyptus exserta	X							X		
Eucalyptus fibrosa subsp. fibrosa								X		
Eucalyptus helidonica										X
Eucalyptus major				X				X		
Eucalyptus melanoleuca								X		
Eucalyptus microcorys									X	X
Eucalyptus moluccana				X						
Eucalyptus montivaga								X		
Eucalyptus propinqua									X	X
Eucalyptus seeana										X
Eucalyptus siderophloia			X						X	X
Eucalyptus sideroxylon								X		
Eucalyptus tereticornis			X	X					X	X
Eucalyptus tindaliae										X
Eucalyptus tindaliae										X
Excoecaria dallachyana		X								
Exocarpus cupressiformis									X	
Exocarpus latifolius					X					
Ficus coronata		X								
Ficus fraseri		X								
Ficus opposita		X								
Flindersia australis				X						
Gahnia sieberiana					X					
Glochidion ferdinandi		X	X		**X**				X	
Glochidion lobocarpum		X								

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Glochidion sumatranum	X		X		**X**					
*Gomphocarpus physocarpus**				X						
Goodenia ovata								X		
Grevillea banksii	X		X							
Grevillea robusta			X							
Hakea eriantha								X		
Hakea florulenta			X							
Hakea plurinervia					X					
Hodgkinsonia ovatiflora										X
Hovea acutifolia					X				X	
Hovea lorata				X						
Hovea pannosa								X		
Hibiscus heterophyllus					X				X	
Indigofera australis				X					X	
Jacksonia scoparia				X				X		X
Jagera pseudorhus										X
*Lantana camara**	**X**	**X**	**X**	**X**	**X**		X	X	**X**	**X**
Leptospermum polygalifolium	**X**		**X**					X		
Leptospermum semibaccatum					X					
Leptospermum trinervium					X					
Leucopogon juniperinus								X	X	
*Ligustrum sinense**			X						X	
Livistona australis					X					
Livistona decora	X									
Lophostemon confertus				X	**X**		**X**	X	**X**	**X**
Lophostemon suaveolens	**X**	X	**X**		X					X
Maclura cochinchinensis		**X**	X							
Mallotus philippensis		X								
Maytenus cunninghamii				X						
Maytenus bilocularis								X		
Maytenus silvestris									X	
Melaleuca bracteata		X								
Melaleuca linariifolia	X	X	X							
Melaleuca linariifolia var. trichostachya		X								

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Melaleuca nodosa										X
Melaleuca quinquenervia	X		X							
Melaleuca salicina			X						X	X
Melaleuca viminalis		X								X
Melastoma malabathricum subsp. malabathricum					X					
Melia azedarach		X								
Monotoca scoparia								X		
Murraya paniculata			X							
Myoporum montanum				X					X	
Myrsine variabilis			X					X	X	
Neolitsea australiensis		X								
Notelaea linearis								X		
Notelaea microcarpa								X		
*Ochna serrulata**					X		X			
Olea paniculata									X	
Olearia nernstii									X	
*Opuntia tomentosa**		X								
Ozothamnus diosmifolius										X
Pandorea pandorana									X	
Parsonsia straminea		X	X							
Passiflora aurantia								X		
*Passiflora suberosa**							**X**			
*Passiflora subpeltata**	X	X							X	
Persoonia iogyna									X	
Persoonia media									X	
Persoonia sericea				X				X		
Persoonia stradbrokensis			X		X					
Persoonia virgata					X					
Phyllanthus microcladus		X								
*Pinus elliottii**			X							
Pittosporum angustifolium				X						
Pittosporum ferrugineum		X								
Pittosporum revolutum			X							
Plantago debilis		X								

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Pleiogynium timorense		X								
Podolobium ilicifolium									X	
Polyscias elegans	X	X							X	X
Pomaderris queenslandica								X		
Psychotria daphnoides									X	
Psychotria loniceroides										X
Psydrax odorata								X		
Psydrax odorata forma buxifolia				X						
Pultenaea euchila				X						
Pultenaea microphylla								X		
Pultenaea paleacea			X							
Pultenaea spinosa										X
Pultenaea villosa					X			X		
Sarcochilus sp.									X	
*Schinus terebinthifolius**	X									
Senecio amygdalifolius									X	
Senna pendula var. glabrata	X		X		X					
Sida hackettiana			X							
*Sida rhombifolia**	X									
Smilax australis									X	
Solanum densevestitum									X	
Solanum ellipticum				X				X		
*Solanum mauritianum**	X									
*Solanum seaforthianum**				X						
Solanum stelligerum									X	X
*Solanum torvum**		X								
Stephania japonica			X							
Streblus brunonianus		X								
Swainsona galegifolia				X						
Syncarpia glomulifera					X					
Syzygium australe		X								
Tinospora smilacina		X								
Toona ciliata		X								
Trema tomentosa		X	X						X	X

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*Triumfetta rhomboidea**										X
Trochocarpa laurina									X	X
Trophis scandens subsp. scandens			X							
*Urena lobata**		X								
Wikstroemia indica				X					X	
Xanthorrhoea johnsonii				X				X		
Zieria collina									X	
Ground Layer (G)										
Abilgaardia vaginata	X		X							
Acacia amblygona								X		
Acacia concurrens	X		X							
Acacia disparrima subsp. disparrima	X	X	X		X					
Acacia ixiophylla								X		
Acacia leiocalyx	X		X					X		
Acacia loroloba								X		
Acacia maidenii		X					X			
Acacia melanoxylon					X					
Acacia penninervis					X					
Achyranthes aspera		X								
Acrotriche aggregata					X					
Adiantum aethiopicum		X								
Adiantum hispidulum		X								
*Ageratina riparia**			X							
*Ageratum houstonianum**	X	X	X				X			
Ajuga australis		X								
Alchornea ilicifolia		X								
Alchornea thozetiana		X								
Alloteropsis semialata	X		X		X		X		X	
Alphitonia excelsa	X	X	X				X			
Alstonia constricta		X								
*Alternanthera brasiliana**	X									
Alternanthera nana		X								
Alyxia ilicifolia subsp. magnifolia					X					
Alyxia ruscifolia subsp. ruscifolia		X								

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*Amaranthus spinosus**		X								
*Ambrosia artemisiifolia**			X							
Angophora subvelutina		X								
Aristida calycina								X		X
Aristida calycina var. calycina			X						X	
Aristida lignosa								X		
Aristida personata		X								
Aristida queenslandica								X		
Aristida queenslandica var. dissimilis								X		
Aristida vagans		X		X			X	X		
Aristida warburgii			X							
*Aristolochia elegans**		X								
Aristolochia pubera		X	X							
Arundinella nepalensis		X	X		X			X	X	
*Asclepias curassavica**		X	X							
*Asparagus africanus**	X									
*Aster subulatus**	X									
Astrotricha latifolia					X			X		
Austrodanthonia sp.									X	
Austrostipa pubescens								X		
Austrostipa sp.									X	
Austrostipa rudis subsp. rudis								X		
*Axonopus compressus**		X								
*Axonopus fissifolius**		X								
*Baccharis halimifolia**	X				X					
Baloskion pallens			X							
Banksia robur	X									
Baumea articulata	X									
Baumea juncea	X									
Baumea rubiginosa	X									
*Bidens bipinnata**		X								
*Bidens pilosa**	X	X	X							
Billardiera scandens	X				X					
Billardiera scandens var. scandens					X					

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Blechnum carilagineum					X					
Blechnum indicum			X							
Boerhavia dominii		X								
Boronia glabra								X		
Bothriochloa decipiens				X						X
Bothriochloa decipiens var. decipiens		**X**								
Breynia oblongifolia	X	X	X		X		X	X		
Bridelia leichhardtii		X								
Brunoniella australis	X	X	X				X	X		
Bryophyllum sp.	X									
Bursaria spinosa								X		
Bursaria spinosa subsp. spinosa								X		
Caladenia catenata			X							
Calochlaena dubia			X		**X**			X		
Calotis dentex								X		
Capillipedium parviflorum									X	
Capillipedium spicigerum	X	X	X	X					X	X
Carex appressa									X	
Carex breviculmis									X	
Cassytha glabella	X				X					
Cassytha pubescens		X	X		X					
Casuarina cunninghamiana subsp. cunninghamiana		X								
Cayratia clematidea			X							
Centella asiatica	X	X	X							
Centipeda minima		X								
*Centratherum punctatum subsp. punctatum**	X									
Chamaecrista mimosoides		X								
Chamaecrista nomame			X							
*Chamaesyce hirta**		X								
Chamaesyce macgillivrayi		X								
Cheilanthes distans								X		
Cheilanthes sieberi	X	X	X				X	X		
Cheilanthes tenuifolia	X									
Chloris divaricata				X						

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*Chloris gayana**	X		X							
Chorizema parviflorum			X							
Christella dentata		X								
Christella hispidula		X								
Chrysocephalum apiculatum			X							
Chrysopogon filipes		X								
Chrysopogon oliganthus		X								
Chrysopogon sylvaticus							X	X	X	
*Cinnamomum camphora**					X					
*Cirsium vulgare**		X								
Cissus antarctica		X								
Clematis glycinoides		X								
Commelina diffusa	X	X	X					X		
Commelina lanceolata	X		X							
*Conyza sumatrensis**		X								
Corybas barbarae			X							
Corymbia tessellaris			X							
*Crassocephalum crepidioides**	X		X				X			
Crassula sieberiana subsp. sieberiana								X		
Crotalaria montana			X							
*Crotalaria spectabilis**		X								
Cryptocarya triplinervis var. triplinervis		X								
Cryptostylis erecta					X					
Cupaniopsis anacardioides			X							
Cupaniopsis parviflora		X								
Curculigo ensifolia			X							
Cyanthillium cinereum	X	X	X				X	X		
Cyclophyllum coprosmoides			X				X	X		
*Cyclospermum leptophyllum**		X								
Cymbopogon bombycinus		X								
Cymbopogon refractus		X	X	**X**	X		X	X	X	X
Cynodon dactylon var. dactylon	X	X								
Cyperus bowmanii							X			
Cyperus difformis	X	X								

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Cyperus enervis									X	
Cyperus fulvus		X								
Cyperus gracilis		**X**							X	
Cyperus haspan	X									
Cyperus javanicus	X	X								
Cyperus laevis									X	X
Cyperus pilosus	X	X								
Cyperus polystachyos	X									
Cyperus tetraphyllus									X	
Cyperus trinervis	X	X					X			
*Dactyloctenium aegyptium**		X								
Daviesia acicularis								X		
Daviesia umbellulata			X		X					
Desmodium brachypodum					X					
Desmodium gunnii			X				X			
Desmodium rhytidophyllum		X	X		X		X	X		
Desmodium varians			X							
Dianella brevipedunculata			X				X			
Dianella caerulea	X	X	X		X		X	X		
Dianella longifolia								X		
Dianella longifolia var. stupata								X		
Dianella rara			X							
Dianella revoluta			X					X		
Dichelachne micrantha									X	X
Dichondra repens		X								
Digitaria breviglumis							X			
*Digitaria ciliaris**		X								
*Digitaria didactyla**		X								
Digitaria longiflora			X							
Digitaria parviflora	X		X		X		**X**	X	X	X
Digitaria ramularis		X								
*Digitaria violascens**		X								
Diplocyclos palmatus subsp. palmatus		X								
Dipodium variegatum					X					

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Dodonaea triangularis								X		
Dodonaea triquetra					X					
Doodia caudata								X		
Doodia heterophylla					X					
*Drymaria cordata**		X								
Drypetes deplanchei		X								
Echinochloa telmatophila			X							
Echinopogon caespitosus var. caespitosus	X									
Eclipta prostrata		X								
Einadia hastata								X		
Elattostachys nervosa		X								
Eleocharis acuta	X									
*Eleusine indica**		X								
*Emilia sonchifolia**	X	X	X				X			
Endiandra sieberi					X					
Enneapogon lindleyanus								X		
Enteropogon paucispiceus								X		
Enteropogon unispiceus							X			
Entolasia stricta	X		X	**X**	X		**X**	**X**	**X**	**X**
Epacris microphylla			X							
Eragrostis brownii		X	X				X			X
Eragrostis spartinoides		X	X	X					X	X
*Eragrostis tenuifolia**		X								
Eremochloa bimaculata	X		X	**X**	X		X	X	X	X
Eriachne glabrata								X		
Eriachne pallescens	X									
Eriocaulon australe			X							
Erythrina vespertilio		X								
Euroschinus falcatus var. falcatus		X								
Eustrephus latifolius	X	X	X		X		X	X		
Evolvulus alsinoides		X								
Ficus fraseri		X								
Ficus opposita		X								
Ficus rubiginosa			X							

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Fimbristylis cinnamometorum	X		X							
Fimbristylis depauperata							X			
Fimbristylis dichotoma	X	X	X		X			X		X
Flemingia parviflora		X	X				X			
Gahnia aspera	X		X		X		X	X		
Galactia tenuiflora		X	X					X		
Geitonoplesium cymosum	X	X	X		X					
Geodorum densiflorum	X	X	X		X					
Glochidion ferdinandi	X	X	X				X			
Glochidion sumatranum	X		X							
Glycine clandestina	X		X		X			X		
Glycine clandestina var. clandestina		X			X		X			
Glycine clandestina var. sericea			X							
Glycine cyrtoloba							X			
Glycine tabacina		X								
Glycine tomentella		X	X							
*Gomphocarpus physocarpus**	X	X	X				X	X		
Gonocarpus chinensis subsp. verrucosus	X		X				X			
Gonocarpus micranthus subsp. ramosissimus			X							
Goodenia bellidifolia			X							
Goodenia bellidifolia subsp. argentea								X		
Goodenia delicata								X		
Goodenia hederacea								X		
Goodenia ovata								X		
Goodenia rotundifolia			X		X		X	X		
Grevillea leiophylla			X							
Grevillea robusta		X								
Grewia latifolia		X								
Gymnanthera oblonga		X								
Gymnostachys anceps					X			X		
Hakea florulenta	X		X							
Haloragis heterophylla							X			
Hardenbergia violacea								X		
*Heliotropium amplexicaule**		X								

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Heteropogon contortus	X	X	X	**X**						X
Hibbertia aspera					X					
Hibbertia scandens			X		X					
Hibbertia stricta								X		
Hibbertia vestita	X				X					
Homoranthus virgatus	X									
Hovea acutifolia					X					
Hybanthus enneaspermus		X								
Hybanthus monopetalus								X		
Hybanthus stellarioides			X		X		X	X		
Hydrocotyle tripartita	X		X							
Hypericum gramineum	X		X							
Hypochaeris microcephala var. albiflora		X								
*Hypochaeris radicata**					X					
Hypoxis pratensis	X		X							
Imperata cylindrica	**X**	X	**X**	**X**	**X**		X	X	**X**	**X**
Indigofera australis								X		
*Ipomoea cairica**		X								
Ischaemum australe var. australe	X									
*Jacaranda mimosifolia**			X							
Jacksonia scoparia								X		
Jagera pseudorhus		X			X					
Jasminum didymium subsp. racemosum								X		
Jasminum simplicifolium		X						X		
Juncus continuus		X								
Juncus kraussii	X									
Juncus polyanthemus			X							
Juncus usitatus	X									
Lagenophora moorei		X								
Lagenophora stipitata	X		X							
*Lantana camara**	X	X	X		X		X	X		
*Lantana montevidensis**		X								
Leersia hexandra		X								
Lepidosperma laterale	X		X		X			X	X	X

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Species	Regional Ecosystem									
	12.3.6	12.3.7	12.3.11	12.9-10.2	12.9-10.4	12.9-10.12**	12.9-10.17	12.9-10.19	12.11.3	12.11.5
Lepidosperma lateral var. laterale								X		
Lepironia articulata	X									
Leptospermum polygalifolium			X							
Leptospermum semibaccatum					X					
Leucopogon leptospermoides					X					
Leucopogon pimeleoides					X					
*Ligustrum sinense**			X							
Lindernia crustacea			X							
Lindsaea incisa			X		X					
Lissanthe strigosa								X		
Lissanthe strigose subsp. subulata								X		
Livistona australis					X					
Lobelia purpurascens	X	X	X		X		X			
Lomandra confertifolia			X		X					
Lomandra confertifolia subsp. pallida			X				X	**X**		
Lomandra filiformis			X					X		
Lomandra filiformis subsp. filiformis								X		
Lomandra hystrix	X	**X**								
Lomandra laxa			X		X		X			
Lomandra longifolia	**X**	X	**X**		X		X			
Lomandra multiflora			X					X		
Lomandra multiflora subsp. multiflora					X		X	X		
Lomatia silaifolia			X		X			X		
Lophostemon suaveolens		X	X					X		
Ludwigia octovalvis		X								
*Macfadyena unguis-cati**		X								
Maclura cochinchinensis		X	X							
Macroptilium atropurpureum		X								
Macrotyloma axillare			X							
Mallotus philippensis		X								
*Malvastrum americanum var. americanum**		X						X		
Malvastrum coromandelianum		X								
Marsdenia brevis								X		
Marsdenia fraseri								X		

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Maytenus disperma		X								
*Mecardonia procumbens**		X								
*Megathyrsus maximus**	X	X	X						X	X
Melaleuca bracteata		X								
Melastoma malabathricum			X							
Melastoma malabathricum subsp. malabathricum	X									
Melia azedarach		X								
Melichrus urceolatus								X		
*Melinis minutiflora**									X	**X**
*Melinis repens**		X								X
Microlaena stipoides			X				X		X	X
Microlaena stipoides var. stipoides		X						X	X	
Mitrasacme alsinoides			X							
Monotoca scoparia					X			X		
Murdannia graminea	X		X				X			
Murraya paniculata		X								
Notelaea ovata			X							
Nyssanthes diffusa		X								
*Ochna serrulata**	X		X		X					
Olea paniculata		X								
Olearia nernstii								X		
Opercularia diphylla								X		
Oplismenus aemulus	X	**X**	X		X		X		X	
Oplismenus imbecillis			X		X				X	X
*Opuntia tomentosa**		X					X	X		
Ottochloa gracillima	**X**	X	**X**				**X**		X	
Ottochloa nodosa		X			**X**				X	
Oxalis chnoodes	X									
*Oxalis corniculata**		X			X					
Oxalis perennans			X							
Oxalis radicosa	X									
Oxalis rubens					X			X		
Panicum effusum			X	**X**	X		**X**		X	X
Panicum simile			X		X					

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	12.3.6	12.3.7	12.3.11	12.9-10.2	12.9-10.4	12.9-10.12**	12.9-10.17	12.9-10.19	12.11.3	12.11.5
Parsonsia eucalyptophylla	X									
Parsonsia straminea	X	X	X							
Paspalidium distans	X		X				X			
Paspalidium gausum			X							X
Paspalidium gracile	X		X						X	X
*Paspalum conjugatum**									X	
*Paspalum dilatatum**		X			X				X	
Paspalum longifolium	X									
Paspalum scrobiculatum	X		X						X	
*Paspalum urvillei**	X									
*Passiflora edulis**	X									
*Passiflora foetida**			X							
*Passiflora suberosa**	X	X	X		X		X			
*Passiflora subpeltata**	X	X	X					X	**X**	
Patersonia sericea var. sericea								X		
Pavetta australiensis var. australiensis		X								
Pennisetum alopecuroides		X								
Peripleura hispidula		X								
Persicaria hydropiper		X								
Persoonia cornifolia					X					
Persoonia media			X							
Persoonia sericea								X		
Persoonia virgate					X					
Petrophile canescens								X		
Philydrum lanuginosum	X									
Phyllanthus gunnii								X		
Phyllanthus mitchellii								X		
Phyllanthus virgatus	X	X	X		X		X	X		
Pimelea linifolia			X		X					
Plantago debilis		X								
Platylobium formosum					X					
Plectranthus parviflorus		X						X		
Pleiogynium timorense		X								
Poa cheelii									**X**	

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	12.3.6	12.3.7	12.3.11	12.9-10.2	12.9-10.4	12.9-10.12**	12.9-10.17	12.9-10.19	12.11.3	12.11.5
Poa sieberiana								X		
Polycarpaea corymbosa var. minor		X								
Polygala linariifolia							X			
*Polygala paniculata**			X							
Polymeria calycina	X	X	X		X					
Pomax umbellata					X			X		
Poranthera microphylla			X							
*Portulaca oleracea**		X								
*Praxelis clematidea**							X			
Pseuderanthemum variabile			X					X		
Psychotria loniceroides					X					
Pteridium esculentum	X	X	**X**		**X**					
Pterostylis nutans			X							
Pterostylis ophioglossa								X		
Pultenaea microphylla	X							X		
Pultenaea petiolaris								X		
Pultenaea retusa					X					
Pultenaea spinosa			X							
Pycnospora lutescens		X	X							
Rhynchosia minima		X								
*Richardia brasiliensis**		X	X							
*Rivina humilis**		X	X							
Rostellularia adscendens			X							
Rostellularia obtusa			X							
Rubus parvifolius			X							
Sacciolepis indica	X	X	X							
*Salvia coccinea**		X								
Sarga leiocladum			X						X	
Sarga plumosum		X								
*Schefflera actinophylla**			X							
*Schinus terebinthifolius**			X							
Schizaea bifida					X					
Schoenus apogon			X							
Scleria brownii		X								

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	12.3.6	12.3.7	12.3.11	12.9-10.2	12.9-10.4	12.9-10.12**	12.9-10.17	12.9-10.19	12.11.3	12.11.5
Scleria levis			X		X					
Scleria tricuspidata	X									
Scleria mackaviensis		X							X	X
Scleria sp.									X	
Scleria spacelata					X			**X**	X	
Scleria tricuspidata							X			
*Scoparia dulcis**	X									
Senna floribunda		X								
*Senna pendula var. glabrata**		X	X							
Seringia corollata								X		
*Sida cordifolia**		X								
Sida filiformis								X		
Sida hackettiana		**X**								
*Sida cordifolia**	X									
*Sida rhombifolia**		**X**	X							
Sigesbeckia orientalis		X	X					X		
Smilax australis		X	X							
Smilax glyciphylla			X		X					
Solanum americanum	X	X			X					
Solanum ellipticum								X		
*Solanum mauritianum**		X	X							
Solanum nemophilum								X		
Solanum nigrum	X	X	X							
*Solanum seaforthianum**	X	X	X							
Solanum stelligerum								X		
*Sonchus oleraceus**	X	X	X							
Sorghum x almum	X									
Sporadanthus caudatus			X							
Sporobolus creber		X								X
Sporobolus elongatus		X								
Sporobolus laxus		X								
Stellaria media		X								
Stephania japonica	X	X	X		X					
Stylidium laricifolium								X		

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Syagrus romanzoffiana		X								
Syzygium australe		X								
Themeda triandra	**X**	X	**X**	**X**	**X**		**X**	**X**	**X**	**X**
*Tradescantia fluminensis**		X								
Trema tomentosa	X	X								
Tricoryne elatior			X							
*Tridax procumbens**		X								
Triglochin procerum	X									
Trophis scandens subsp. scandens		X	X							
Turraea pubescens		X								
*Urochloa decumbens**									X	X
*Urochloa mutica**			X							
Velleia spathulata	X									
*Verbena bonariensis**	X									
Viola banksii			X							
Viola hederacea			X		X					
Wahlenbergia gracilis		X					X			
Westringia eremicola								X		
Wikstroemia indica					X					
Xanthorrhoea johnsonii								**X**		
Xanthorrhoea latifolia					X		X			
*Xanthium occidentale**		X								
Xanthosia pilosa					X					
Xyris juncea	X									
Zieria minutiflora					X					
Zornia dyctiocarpa var. dyctiocarpa		X								

Source: Adapted from Queensland Government (2015). Note: * exotic species; **X =** dominant species; **Species list was not available for RE 12.9-10.12; Koala habitat and rehabilitation units (RU) and crossing rehabilitation units (CRU) within the each RE: **12.3.6**: ORU2, ORU4, ORU5, ORU7, CRU1, CRU2, CRU3, CRU15; **12.3.7**: ORU2, ORU4, ORU5, ORU6, ORU7, CRU3, CRU11, CRU15; **12.3.11**: ORU2, ORU4, ORU5, ORU6, ORU7, CRU3, CRU11, CRU15; **12.9-10.2**: ORU1, ORU3, ORU4, ORU8, ORU12, ORU13, ORU14, ORU15, ORU17, ORU20, **12.9-10.17**: ORU1, ORU3, ORU4, ORU8, ORU9, ORU10, ORU11, ORU12, ORU13, ORU14, ORU15, ORU16, ORU17, ORU18, ORU20, **12.9-10.19**: ORU9, ORU14, ORU16; **12.11.3:** ORU19, ORU21, ORU22, **12.11.5**: ORU19, ORU21, ORU22, ORU2

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