CO2 Australia Limited
Wivenhoe Land Restoration Pilot Project

Project Scale
Environmental Account 2021
Account Summary & Information Statement

	CO2 Australia – Wivenhoe Land Restoration Pilot Project Environmental Account
Certification date:	29 September 2021
Project ID:	AfN_PROJ_CO2_01
Project webpage:	https://www.accountingfornature.org/afn-proj-co2-01
Author(s):	Dr Jarrad Cousin
Scale (% of property):	Project scale – representing ~2.5% of the 6,840 ha of land not covered by Lake Wivenhoe in the 17,780 ha Wivenhoe Dam estate owned by Seqwater.
Environmental Assets:	Native Vegetation
Method ID(s):	AfN-PROP-NV-02
Confidence Levels:	Level 1 (high)
Report Citation:	CO2 Australia (2021). *Wivenhoe Land Restoration Pilot Project Environmental Account – Information Statement*. CO2 Australia, Brisbane.
Acknowledgements:	This project represents a collaboration between CO2 Australia, the Queensland Department of Environment and Science (DES), Seqwater and the World Wide Fund for Nature (WWF-Australia). The accredited method used to generate the Native Vegetation Econd™ was authored by Dr Jarrad Cousin and Mr Christopher Ewing of CO2 Australia, and accredited by Accounting for Nature in September 2020. Field-based assessments, undertaken in accordance with the Native Vegetation Method were undertaken by Ms Meghan Farr and Mr Andrew Dawson of CO2 Australia in February 2020.

WHO IS ACCOUNTING FOR NATURE?

Accounting for Nature Ltd is a not-for-profit company with a vision to be a recognised global leader for measuring changes in the health of the environment. Our mission is to provide transparent, affordable and verifiable measures of change in environmental condition of sufficient quality to inform policy and investment decisions - both at an enterprise and at an ecosystem scale. To achieve this, the Accounting for Nature® Certification Framework sets the first globally consistent, scientifically credible Standard for measuring, certifying and communicating changes in the condition of any environmental asset (native vegetation, soil, water and wildlife).

PURPOSE OF THIS DOCUMENT

The Accounting for Nature® Certification Framework specifies that a set of tables and maps be produced, together with an Information Statement, to create an Environmental Account that describes the condition of a range of environmental assets – similar to a financial balance sheet for a company. The Information Statement provides full transparency on how an Environment Account is developed. The Information Statement documents, in non-technical terms, the rationale for the selection of assets, choice of indicators, the origins of the data, the analysis and treatment of data and construction of the Econd™.

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GENERAL INFORMATION

Project name	Wivenhoe Land Restoration Pilot Project
Proponent	CO2 Australia Limited
Location	Lake Wivenhoe, South East Queensland (Figure 1)
Area	170 hectares
Bioregion(s)	South Eastern Queensland bioregion (Brisbane-Barambah Volcanics sub-bioregion)
Environmental asset(s)	Native Vegetation
Site description	The project accounting area is located across seven planting areas (Figure 2) surrounding Lake Wivenhoe. Currently, each of the planting areas is cleared of remnant vegetation; being dominated by pasture grasses associated with historical cattle grazing. The environmental plantings aiming to restore those areas to pre-clearing regional ecosystem vegetation communities.
Current land use(s)	Water catchment reserve

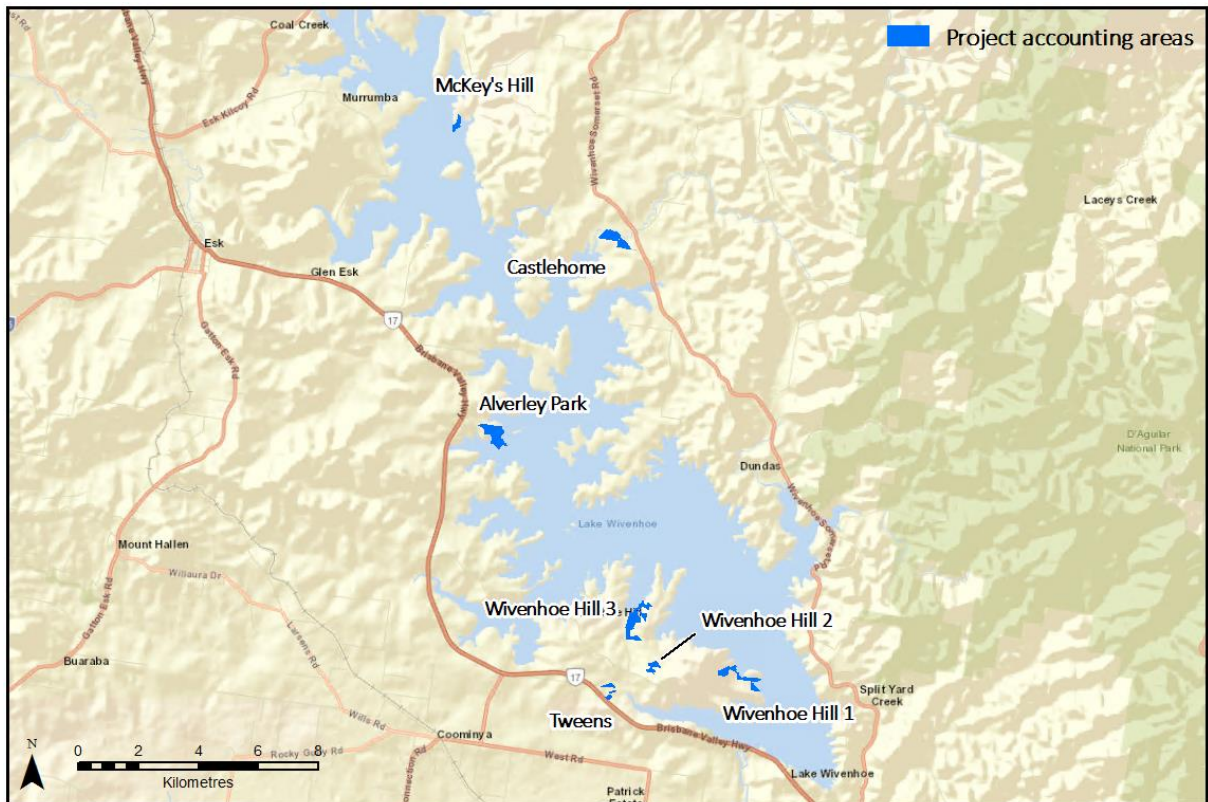*Figure 1: Location of Wivenhoe Land Restoration Pilot Project.*

Figure 2: Wivenhoe Land Restoration Pilot Project – project accounting areas.

ENVIRONMENTAL ACCOUNT INFORMATION

Purpose   The Wivenhoe Land Restoration Pilot Project is funded by the Queensland Government. The project is a collaboration of CO2 Australia, together with the Queensland Department of Environment and Science (DES), Seqwater and the World Wide Fund for Nature (WWF-Australia). The project will involve the planting of more than 150,000 trees across seven planting sites adjacent to Lake Wivenhoe in south-east Queensland; land owned by Seqwater and historically used for grazing purposes. The planting sites, which were initially identified by WWF, are within an important koala habitat corridor in south-east Queensland. At least 90% of the trees planted will be species that provide habitat for the koala including koala primary food trees such as *Eucalyptus tereticornis*, *E. propinqua* and *E. microcorys*. This will increase the amount and quality of habitat for the koala in the corridor and provide connectivity between existing areas of habitat. Furthermore, the project will also reduce the amount of sediment runoff entering Lake Wivenhoe, thereby improving water quality in south-east Queensland's largest water storage. The goal of the project is to monitor and track improvement in biodiversity co-benefits associated with the project through the calculation of Native Vegetation Econds™. Ongoing monitoring of the project will be undertaken to help inform management decisions, including Econd™ surveys by CO2 Australia ecologists in accordance with the AfN-accredited CO2 Australia Native Vegetation Condition Monitoring Method (AfN-PROP-NV-02), monitoring and control of weeds, and the assessment of fire breaks and fuel loads to reduced likelihood of wildfire events impacting on the success of the planting sites and surrounding intact remnant vegetation. There will also be, from time to time, additional co-benefit activities and monitoring, including fauna surveying, radio-tracking/satellite tracking of koalas, flora surveys, soil assessments and water quality sampling. Further opportunities to improve biodiversity co-benefits of the project will continue to be explored.

Scale   Project-scale, with the seven planting areas representing the project accounting area.

Scope   The account aims to assess the change in condition of the native vegetation environmental asset over time, associated with the environmental planting to be established within the project accounting area.

ENVIRONMENTAL ACCOUNT SUMMARY

The account summary for the Wivenhoe Land Restoration Pilot Project is presented in Table 1. It includes Indicator Condition Scores and Native Vegetation Econd™ scores for the whole project, as well as a breakdown of those scores by assessment unit contributing to the whole project Econd™ score.

Table 1: Wivenhoe Land Restoration Pilot Project environmental account Summary Table.

Project	Project area	Indicator Condition Score (/100) Composition			Indicator Condition Score (/100)	2020 NATIVE VEGETATION ECOND™
		Species richness	Structure	Function	Vegetation configuration	
Wivenhoe Land Restoration Pilot Project	169.3 ha	16.4	5.3	52.1	34.1	**27.3**

Asset	Assessment unit	Indicator		Reference benchmark	2020	
					Indicator Condition Score (/100)	Assessment unit Native Vegetation ECOND™
Native Vegetation	Assessment unit 1 BVG 13 – Dry to moist eucalypt woodlands and open forests, mainly on undulating to hilly terrain of mainly metamorphic and acid igneous rocks, Land zones 11 and 12					
		Extent		124.9 ha	-	**27.9**
		Composition	Species richness	100	14.1	
			Structure	100	6.5	
			Function	100	50.4	
		Vegetation configuration		100	40.0	
	Assessment unit 2 BVG 9 – Moist to dry eucalypt open forests to woodlands usually on coastal lowlands and ranges					
		Extent		29.3 ha	-	**24.6**
		Composition	Species richness	100	27.6	
			Structure	100	1.2	
			Function	100	51.6	
		Vegetation configuration		100	16	
	Assessment unit 3 BVG 16 – *Eucalyptus* spp. dominated open forest and woodlands drainage lines and alluvial plains					
		Extent		15.0 ha	-	**27.8**
		Composition	Species richness	100	13.3	
			Structure	100	3.6	
			Function	100	66.9	
		Vegetation configuration		100	20.0	

The projected gain in Econd™ score is presented in Figure 3, against a business-as-usual case. It is anticipated that between the 2020 baseline assessment and 2040, there will be

a +31 change in Econd™ score from the current 27.3/100 up to ~58/100. The trajectory in Econd™ scores over time is based on a conservative assumption of management affording expected improvements in a subset of measurable attributes over time. Conversely, the business-as-usual case assumes a similar landuse (slashing and grazing) with stochastic response to measurable attributes resulting in ~5% change (+/-) around the baseline (2020) Econd™ score.
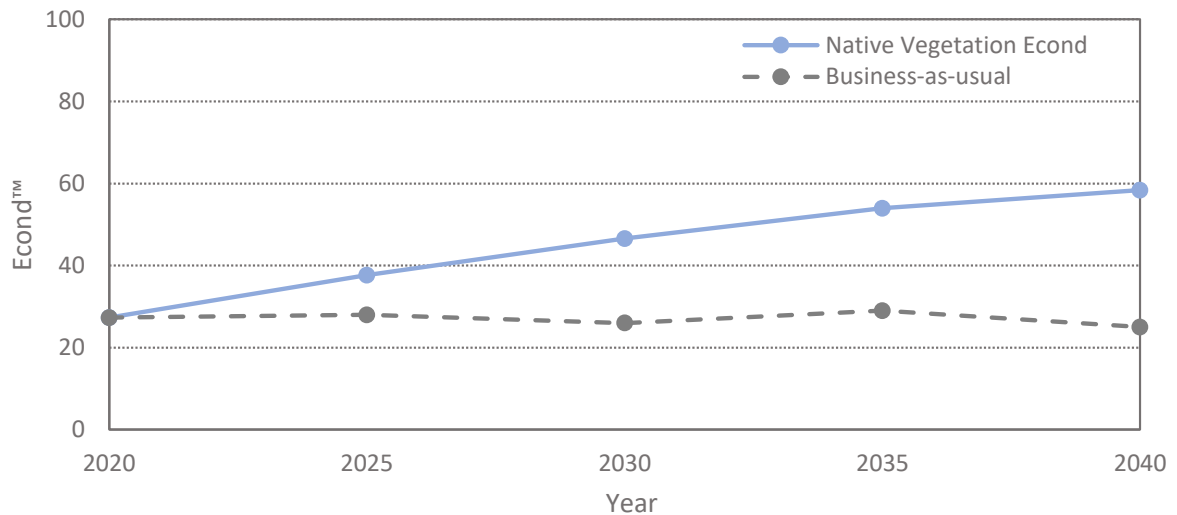

Figure 3: Graph showing forecasted change in Native Vegetation Econd™ between 2020 baseline and 2040.

NATIVE VEGETATION

The results of the field-based assessment of the native vegetation asset identified a project accounting area Econd™ score of 27.3 (/100). Assessment unit scores contributing to the final Econd™ varied between 24.6 (Assessment unit 2) and 27.9 (Assessment unit 1), with the latter contributing the greatest proportional contribution (74%) to the project accounting area (Table 1).

Of the indicators contributing to the project accounting area Econd™, the function component of the composition indicator represented the highest score (~52/100; Figure 4), reflecting the presence of a moderately intact native grassy understorey and leaf litter layer and a relatively low non-native plant cover. As expected, the structure component of the composition indictor scored the lowest (~5/100); reflecting the absence of trees and shrubs in the planting areas. The score of the species richness component of the composition indicator was ~16/100, reflecting the comparatively low species diversity in the historically cleared and grazed planting areas, while the vegetation configuration indicator scored ~34/100 indicating an intermediate cover of remnant and native regrowth vegetation across the project accounting area.
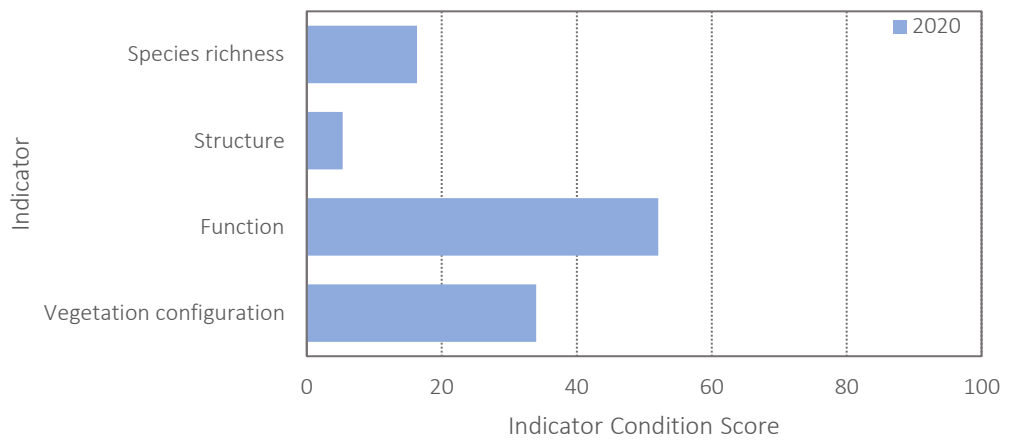
Figure 4: Indicator Condition Score for Native Vegetation contributing to the 2020 Project Environmental Account baseline.

ENVIRONMENTAL ASSETS

The Wivenhoe Land Restoration Pilot Project environmental account is represented by a Native Vegetation environmental asset (Table 2). Additional environmental assets may be considered for inclusion in the future.

The Native Vegetation asset is represented by four Regional Ecosystems (RE) across the project area (Table 2), grouped into three Broad Vegetation Groups (BVG). These BVG represent the assessment unit from which Indicator Condition Scores are calculated prior to generating a single, project-wide Econd™ score. The subsequent section outlines details on stratification, sampling design and indicators used to calculate the Econd™ score.

Table 2: Wivenhoe Land Restoration Pilot Project environmental asset and the Broad Vegetation Groups and Regional Ecosystems contributing to it.

Class	Asset	Broad Vegetation Group (BVG)[a]	Regional Ecosystem (RE)
LAND	Native vegetation	BVG 13	RE 12.9-10.7 *Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora* spp., *E. melanophloia* woodland on sedimentary rocks
		BVG 9	RE 12.12.12 *Eucalyptus tereticornis, Corymbia intermedia, E. crebra +/- Lophostemon suaveolens* woodland on Mesozoic to Proterozoic igneous rocks
		BVG 16	RE 12.3.7 *Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca* spp. fringing woodland
			RE 12.3.3 *Eucalyptus tereticornis* woodland on Quaternary alluvium

[a] Broad Vegetation Group defined at the 1:2,000,000 scale and represents the Assessment Unit for the purposes of calculating Indicator Condition Scores and final Econd™ scores.

ASSET 1: NATIVE VEGETATION

The native vegetation account was developed in accordance with the Accounting for Nature® *CO2 Australia Native Vegetation Condition Monitoring Method* (CO2 Australia 2020; AfN-PROP-NV-02, hereafter referred to as 'Native Vegetation Method'), accredited by the Accounting for Nature Standards & Accreditation Committee on 16 September 2020.

STRATIFICATION

The project accounting area was stratified into assessment units based on the results of field surveys as well as desktop assessment of Queensland digital mapping datasets including pre-clearing Regional Ecosystem (RE) mapping (DES 2018; Figure 5), geology, DEM modelling and historical aerial photography. Results of field-based assessments confirmed that land-use across the seven planting areas constituting the project accounting areas was similar (historically cleared and grazed pasture areas), so assessment units were instead initially stratified across the project area on the basis of the REs likely to have existed prior to clearing. The final extent of pre-clear REs within the project accounting area (Figure 6) was further refined following detailed field-based assessments, based on observed surface geology, topography and remaining mature trees in and immediately adjacent to the planting areas.

The project accounting areas were thus stratified into four (4) pre-cleared REs, themselves grouped into three (3) BVG (1:2,000,000 scale). In accordance with the Native Vegetation Method, the project accounting area assessment units were thus taken to be represented by the three BVG (Table 3), with the sampling design guided by the results of that stratification.

Table 3: Native Vegetation assessment units and their weighting across the Wivenhoe Land Restoration Pilot Project accounting area.

Assessment Unit (AU)	Details	Area (ha)	Weighting
AU 1	BVG 13 – RE 12.9-10.7	124.9	78%
AU 2	BVG 9 – RE 12.12.12	29.3	12%
AU 3	BVG 16 – RE 12.3.7 and RE 12.3.3	15.0	10%
	TOTAL	169.3	100%

Figure 5: Queensland pre-clearing regional ecosystems by biodiversity status (DES 2018) for the Wivenhoe Land Restoration Pilot Project
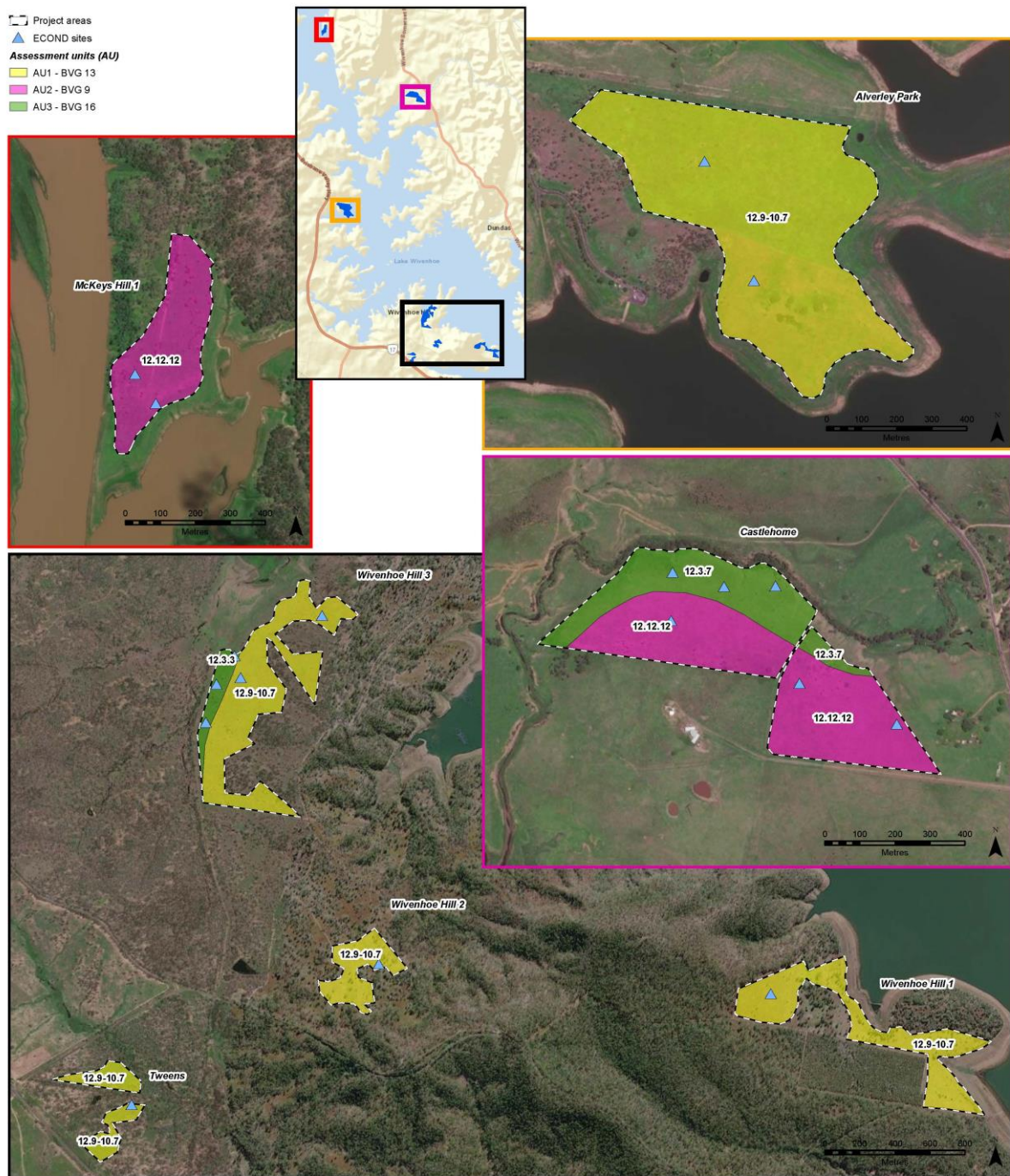
Figure 6: Native Vegetation assessment units and ECOND™ sites in the Wivenhoe Land Restoration Pilot Project.

SAMPLING DESIGN

Following stratification of the project accounting area, a sampling design was implemented in accordance with the Native Vegetation Method. The number of Econd™ monitoring sites established across each of the three assessment units was assigned to ensure survey effort was sufficient to ensure *Level 1 (high)* assurance, as defined in the Native Vegetation Method.

A total of 18 Econd™ monitoring sites were established across the project accounting area (Table 4 and Figure 6), three (3) more than the minimum required to ensure *Level 1 (high)* assurance. The location of each of the 18 Econd™ monitoring sites was established by randomly allocating the allotted number of sites across each corresponding assessment unit, also ensuring at least one monitoring site at each of the seven planting areas supporting the given assessment unit.

Table 4: Native Vegetation assessment units for the Wivenhoe Land Restoration Pilot Project.

Assessment unit	Regional Ecosystem (RE)	Area (ha)	Minimum survey effort[a]	Econd™ monitoring sites established
BVG 13	12.9-10.7	124.9	7	7
BVG 9	12.12.12	29.3	5	5
BVG 16	12.3.7	10.0	3	3
	12.3.3	5.0		3
	TOTAL	169.3	15	18

[a] required in order to achieve *Level 1 (high)* assurance in accordance with the Native Vegetation Method.

Random allocation of Econd™ monitoring sites within any given assessment unit within a planting area was achieved by firstly generating a 50 m x 50 m grid overlaying each of the planting areas. A random number generator was then interrogated to identify a grid intersect at which a monitoring site would be established. Where possible, grid intersects were only considered where a site could be established at least 50 m from disturbed areas (e.g. access tracks, retained cleared areas).

The final location of Econd™ monitoring sites was established as part of the field assessment (Figure 7 and Figure 8), with a couple of the sites required to be moved within 10 – 25 m of the randomly allocated location in order to avoid the vegetation monitoring transect traversing disturbed areas (e.g. access tracks).

Assessment of vegetation condition at the finalised Econd™ monitoring sites was undertaken during March 2020; consistent with the recommended survey timing in the Native Vegetation Method. This timing corresponds to the end of the wet season in south-east Queensland, associated with favourable growth conditions. Rainfall records from the weather station at Wivenhoe Dam (weather station 40763) confirmed 242 mm of rain fell in the two months preceding the vegetation condition assessments (January and February 2020), representing 129% of the long-term average for these months (BoM 2021).

Figure 7: Econd™ monitoring site at the Castlehome planting area (CA11_03) prior to planting of koala food trees.

Figure 8: Econd™ monitoring site at the Wivenhoe Hill 3 planting area (WH31_01) looking east toward Lake Wivenhoe.

INDICATORS

Measurable attributes contributing to the Indicators used to calculate the Native Vegetation Econd™ are listed in Table 5, consistent with the Native Vegetation Method.

The composition indicator comprises a mix of 13 measurable attributes, combined into three sub-indicators represented by species richness, structure and function. Vegetation configuration is represented by a single measurable attribute reflecting extent of remnant (intact) and native regrowth vegetation within 1 km of a given monitoring site.

Table 5: Measurable attributes contributing to Indicators Condition Scores and final Native Vegetation Econd™.

Indicators		Measurable attributes	Attribute score	Indicator Condition Score
Extent		Extent measured as the percentage contribution of the area of a given assessment unit to the project accounting area.		-
Composition	Species richness	Species richness (count) – trees	5	20
		Species richness (count) – shrubs	5	
		Species richness (count) – grasses	5	
		Species richness (count) – forbs/other	5	
	Structure	Large trees (count)	15	30
		Canopy tree height (m)	5	
		Canopy cover (%) – trees	5	
		Canopy cover (%) – shrubs	5	
	Function	Recruitment of dominant canopy species (%)	5	30
		Coarse woody debris (total length of logs)	5	
		Organic litter cover (%)	5	
		Native grass cover (%)	5	
		Non-native plant cover (%)	10	
Vegetation configuration		Remnant (intact) vegetation and native regrowth within 1 km of site	20	20
Final Native Vegetation Econd™				100

EXTENT

Data collection methodology

Vegetation extent was measured for each assessment unit contributing to the project accounting area through a combination of desktop assessment and field-based assessments. These field-based assessments refined the boundary of the REs contributing to the assessment units, with the results mapped and areas calculated in ArcGIS.

Analysis of data

The area of each assessment unit and RE contributing to those assessment units (where more than one RE) was calculated in ArcGIS, based on the results of the field-based assessment across the seven planting areas comprising the project accounting area.

Interpretation of data

The proportional contribution (%) of each of the three assessment unit's areas represents its extent. These extent values will be used to weight the Econd™ scores for each of the assessment units in order to calculate the final project accounting area Econd™.

Reference condition data source

Reference condition for the extent indicator was assumed to be the proportional area of each assessment unit to the total project accounting area. It was assumed that all areas within the extent of the project accounting area were vegetated prior to clearing, with no known grassland or other non-wooded RE known from the area.

Calculation of extent multiplier

The vegetation extent multiplier is represented for each assessment unit as the proportional contribution of that assessment unit's area to the total project accounting area.

Assessment of data quality

There is high confidence in the accuracy, reliability and quality of the data relating to vegetation extent given it is derived from a combination of field-based assessments and GIS mapping.

COMPOSITION

Data collection methodology

Composition data was collected from established Econd™ monitoring sites by tertiary-qualified ecologists sufficiently familiar with the flora of the region. All field-based assessments were undertaken in accordance with the Native Vegetation Method. In addition to visual identification of the species richness attributes, a number of the structural and functional attributes contribution to the composition indicator were collected using manual and electronic tools (refer to Native Vegetation Method), including GPS, tape measures, clinometers etc. Additional/supporting information was also collected as part of the field-based assessment (not contributing to the Econd™ scoring), including monitoring site photos as per the Native Vegetation Method.

All composition data were recorded in the field on a combination of paper and electronic proformas.

Analysis of data

Composition scores were direct field measurements and therefore did not require analysis.

Reference condition data source

Reference conditions for the measurable attributes contributing to the composition indicators were sourced from BioCondition benchmark documentation developed by the Queensland Herbarium (2021) and provided in Appendix A.

BioCondition benchmarks have been compiled by the Queensland Herbarium from quantitative site data from reference sites, data from the Queensland Herbarium's CORVEG database and other relevant data and expert opinion. The benchmark documents are specific to each RE vegetation community and aim to reflect the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes throughout the geographic extent of a given RE.

While BioCondition benchmark were developed specifically to support the BioCondition vegetation condition assessment framework, the survey design outlined in the Native Vegetation Method was developed specifically in order to be able to use BioCondition benchmarks as the reference condition data source.

Calculation of Indicator Condition Scores

The Indicator Condition Score for composition indicators were calculated in accordance with the Native Vegetation Method. Specifically, all data collected from field-based assessments were collated in a scoring workbook developed by CO2 Australia, which includes prompted inputs and automatic calculations. This includes dynamic weightings for the four species richness attributes and accounts for naturally missing attributes, where relevant.

Assessment of data quality

There is a high confidence in the quality of the configuration data as it is derived from field-based assessments and exceeds the minimum survey effort sufficient to ensure

Level 1 (high) assurance, as defined in the Native Vegetation Method. All data was collected by tertiary-qualified ecologists sufficiently familiar with the flora of the region.

CONFIGURATION

Data collection methodology

The spatial configuration of native vegetation for the Project was mapped in accordance with the Native Vegetation Method. Specifically, it considered the extent of remnant (intact) and native regrowth vegetation within a 1 km radius of each of the 18 Econd™ monitoring sites using ArcGIS (Figure 9). The extent of remnant vegetation was largely drawn from the extent identified as Category B vegetation under the Queensland Government's Regulated Vegetation Management Map (RVMM, DNRME 2020). Category C (high value regrowth) areas under the RVMM is not considered an accurate surrogate of the extent of native regrowth vegetation within the landscape as implied under the Native Vegetation Method given the restrictive definition of Category C vegetation under the *Vegetation Management Act 1999* (Qld) (see assessment of data quality below). Instead, the extent of native regrowth vegetation was assessed and mapped in ArcGIS using a combination of Category C mapping, as well as the interrogation of the latest available aerial imagery and results of field-based assessments to ensure it included areas showing native vegetation regrowth, while excluding non-native regrowth vegetation (if present) as well as cleared areas.

Analysis of data

Mapping software (ArcGIS) was used to calculate the configuration of native remnant (intact) vegetation and native regrowth vegetation surrounding each of the 18 Econd™ monitoring sites.

Reference condition data source

Reference condition for the vegetation configuration indicator assumed that intact remnant native vegetation was contiguous within a 1 km radius of each of the 18 Econd™ monitoring sites (100%).

Calculation of Indicator Condition Scores

The Indicator Condition Score for the vegetation configuration indicator was calculated in accordance with the Native Vegetation Method. Specifically, this score was calculated based on the measure of the percentage cover of remnant (intact) and/or native regrowth vegetation within a 1 km radius of the monitoring site.

Assessment of data quality

There is high confidence in the quality of the composition data as it is derived from a combination of Queensland Government RVMM, latest aerial imagery and results of field-based assessments. While Section 20AN of the VMA defines Category C vegetation mapped on the RVMM as areas supporting 'high value regrowth', this mapping is restricted to land of certain tenures, and only refers to areas that have not been cleared for at least 15 years. Referring to just Category C mapped areas would exclude regrowth vegetation <15 years old from consideration as part of the vegetation configuration indicator, as would mapped areas legally cleared for relevant clearing activities. Instead, the use of RVMM mapping, in combination with latest aerial imager and results of field-based assessments afford the greatest confidence in the quality of the composition data.
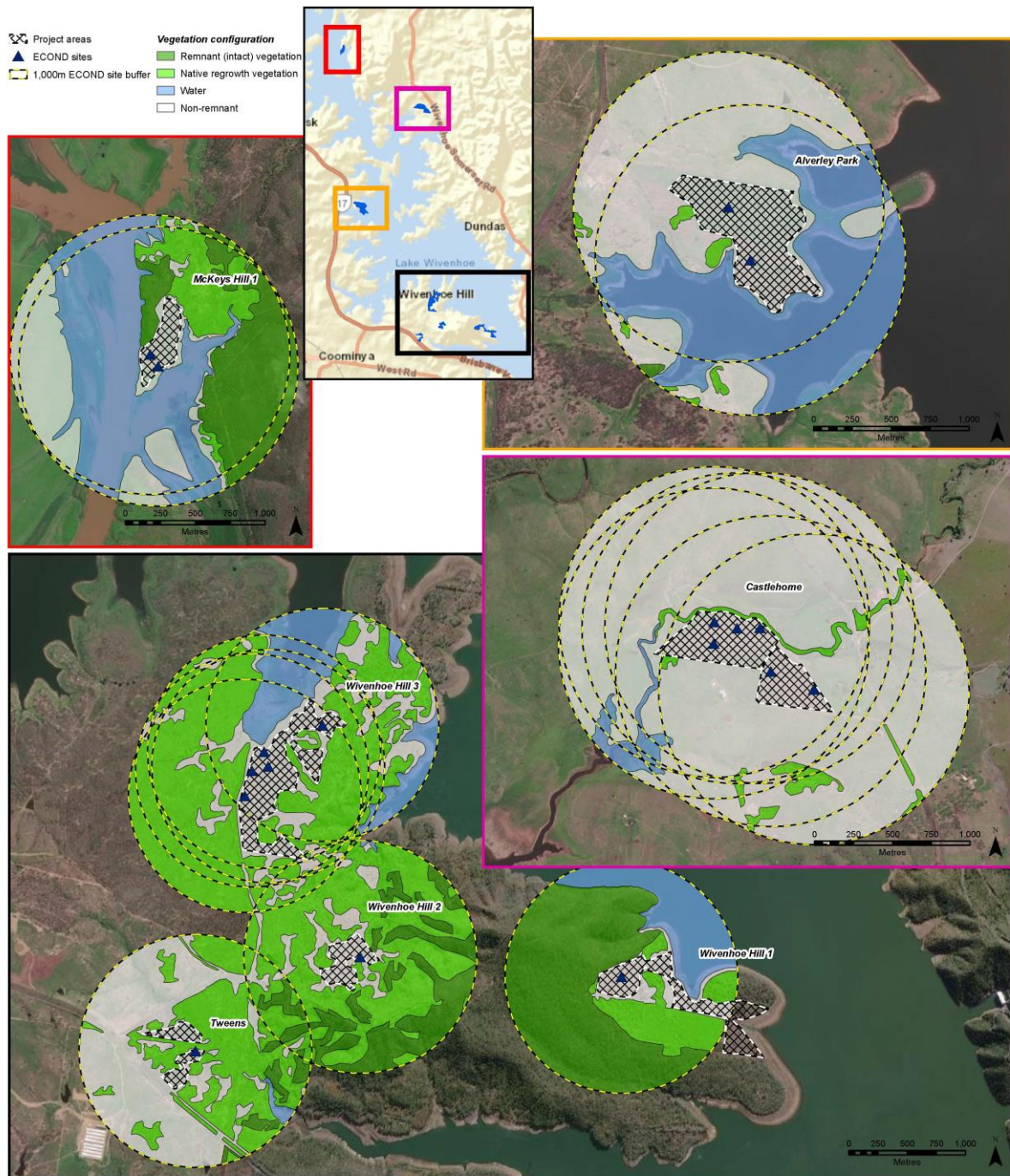
Figure 9: Remnant (intact) and native regrowth vegetation within 1 km of ECOND™ sites in the Wivenhoe Land Restoration Pilot Project.

CALCULATION OF ECONDS™

Calculation of Econd™ for the Native Vegetation asset

All Native Vegetation Econd™ calculations were undertaken in accordance with the Native Vegetation Method (refer to CO2 Australia 2020). The Native Vegetation Econd™ was firstly calculated for each assessment unit, with the area-weighted Econd™ scores for each assessment unit summed to calculate the final project-wide Econd™ (Table 3).

LIMITATIONS

Limitations associated with the calculation of the Econd™ for the environmental account are outlined below in Table 6, with justifications for how they were minimised/addressed incorporated therein.

Table 6: Identified limitations and controls to minimise them.

Indicator	Identified limitation	Control
Composition (Species richness)	Potential for false negatives in species richness assessments, referring to the potential for missing species (often cryptic) that were actually present but not encountered. Implication is to underrepresent the species richness attributes contributing to the Species Richness (composition) indicator.	The Native Vegetation Method outlines the recommended survey time to maximise opportunities to identify/differentiate flowering plants. Field-based assessments were undertaken during March 2020, consistent with the Native Vegetation Method, with greater-than-average rainfall in the preceding two months likely to represent favourable conditions for field-based measurements.
Vegetation configuration	Potential subjectivity afforded by the manual designation of areas as remnant (intact) vegetation and native regrowth vegetation.	The mapping of vegetation configuration categories (remnant and regrowth vegetation) was undertaken combining the interrogation of Queensland Government RVMM, aerial imagery and field-based assessment to confirm the composition of vegetated areas within 1 km of each of the ECOND™ sites.

DETAILED ACCOUNT – NATIVE VEGETATION ASSET TABLE

Table 7: Raw data and measurable attribute scores for the seven sites in Assessment Unit 1.

	SITE	AP11_01		AP11_02		TW11_01		WH11_01		WH21_01		WH31_01		WH31_02	
Indicator	Measurable attribute	RE 12.9-10.7	Benchmark RE 12.9-10.7	RE 12.9-10.7	Benchmark RE 12.9-10.7	RE 12.9-10.7	Benchmark RE 12.9-10.7	RE 12.9-10.7	Benchmark RE 12.9-10.7	RE 12.9-10.7	Benchmark RE 12.9-10.7	RE 12.9-10.7	Benchmark RE 12.9-10.7	RE 12.9-10.7	Benchmark RE 12.9-10.7
Assessment unit 1: BVG 13 – RE 12.9-10.7: *Eucalyptus crebra* +/- *E. tereticornis*, *Corymbia tessellaris*, *Angophora* spp., *E. melanophloia* woodland on sedimentary rocks															
RAW DATA															
Composition / Species richness	Native plant species richness - trees	3	3	1	3	1	3	2	3	2	3	1	3	4	3
	Native plant species richness - shrubs	0	5	1	5	3	5	1	5	1	5	1	5	1	5
	Native plant species richness - grasses	3	8	3	8	6	8	5	8	3	8	5	8	5	8
	Native plant species richness - forbs and other	1	26	5	26	6	26	2	26	4	26	4	26	10	26
Structure	Large trees	0	18	0	18	0	18	0	18	1	18	0	18	0	18
	Tree canopy height	7.6	21	3	21	8.76	21	0	21	25.7	21	5.4	21	8.63	21
	Tree canopy cover (%)	0	40	0	40	0	40	0	40	0	40	0	40	3.9	40
	Shrub layer cover (%)	0	3	0	3	1.5	3	0	3	0	3	0	3	0	3
Function	Recruitment of dominant canopy species (%)	100	100	100	100	100	100	100	100	100	100	0	100	100	100
	Coarse woody debris (m)	0	272	0	272	0	272	0	272	0	272	0	272	0	272
	Native grass cover (%)	81.6	61	27	61	91.6	61	11	61	92	61	23	61	62.4	61
	Litter cover (%)	0.4	20	15.6	20	1	20	23.6	20	5	20	25	20	6	20
	Non-native plant cover (%)	4.25	0	61.7	0	4.95	0	40.25	0	12.7	0	24.35	0	9.7	0
Vegetation configuration	Vegetation cover within 1 km – Remnant (%)	0	-	0.31	-	5.66	-	55.66	-	26.20	-	0	-	0	-
	– Native regrowth (%)	1.26	-	1.68	-	40.72	-	14.18	-	59.14	-	60.09	-	45.86	-
MEASURABLE ATTRIBUTE SCORE[A]															
Composition / Species richness	Native plant species richness - trees	5.00		0.13		0.13		3.87		3.87		0.13		5.00	
	Native plant species richness - shrubs	0		0		3.09		0		0		0		0	
	Native plant species richness - grasses	0.35		0.35		4.54		3.40		0.35		3.40		3.40	
	Native plant species richness - forbs and other	0		0		0		0		0		0		0.42	
Structure	Large trees	0		0		0		0		0.05		0		0	
	Tree canopy height	0.65		0		1.58		0		5.00		0		1.46	
	Tree canopy cover (%)	0		0		0		0		0		0		0	
	Shrub layer cover (%)	0		0		4.94		0		0		0		0	
Function	Recruitment of dominant canopy species (%)	5.00		5.00		5.00		5.00		5.00		0		5.00	
	Coarse woody debris (m)	0		0		0		0		0		0		0	
	Native grass cover (%)	5.00		2.09		5.00		0.07		5.00		1.36		5.00	
	Litter cover (%)	0		5.00		0		5.00		1.59		5.00		2.72	
	Non-native plant cover (%)	10		0		10		0.20		4.86		1.44		6.48	
Vegetation configuration	Vegetation cover within 1 km	0		0		8		16		16		8		8	

[A] Refer to Table 5 for measurable attribute scores and their contribution to the final Native Vegetation Econd™

Table 8: Raw data and measurable attribute scores for the five sites in Assessment Unit 2.

	SITE	CA11_01		CA11_02		CA11_03		MH11_01		MH11_02	
Indicator	**Measurable attribute**	RE 12.12.12	Benchmark RE 12.12.12	RE 12.12.12	Benchmark RE 12.12.12	RE 12.12.12	Benchmark RE 12.12.12	RE 12.12.12	Benchmark RE 12.12.12	RE 12.12.12	Benchmark RE 12.12.12
Assessment unit 2: BVG 9 – RE 12.12.12: *Eucalyptus tereticornis, Corymbia intermedia, E. crebra +/- Lophostemon suaveolens* woodland on Mesozoic to Proterozoic igneous rocks											
RAW DATA											
Composition — Species richness	Native plant species richness - trees	0	4	1	4	1	4	4	4	1	4
	Native plant species richness - shrubs	2	3	2	3	1	3	1	3	1	3
	Native plant species richness - grasses	1	9	1	9	8	9	6	9	3	9
	Native plant species richness - forbs and other	2	28	2	28	11	28	17	28	16	28
Structure	Large trees	0	60	0	60	0	60	0	60	0	60
	Tree canopy height	0	21	5.6	21	4.5	21	8.4	21	7.5	21
	Tree canopy cover (%)	0	31	0	31	0	31	0	31	0	31
	Shrub layer cover (%)	0	5	0	5	0	5	0	5	0	5
Function	Recruitment of dominant canopy species (%)	0	100	100	100	100	100	100	100	0	100
	Coarse woody debris (m)	0	500	0	500	0	500	0	500	30	500
	Native grass cover (%)	31	40	32	40	62	40	32	40	20	40
	Litter cover (%)	34	35	21	35	26	35	7	35	18.8	35
	Non-native plant cover (%)	5.75	0	28.5	0	5.75	0	53.75	0	82	0
Vegetation configuration	Vegetation cover within 1 km – Remnant (%)	0.00	-	0.00	-	0.00	-	21.81	-	24.79	-
	– Native regrowth (%)	5.09	-	4.69	-	2.72	-	11.19	-	10.76	-
MEASURABLE ATTRIBUTE SCORE[A]											
Composition — Species richness	Native plant species richness - trees	0		0		0		5.00		0	
	Native plant species richness - shrubs	3.87		3.87		0.13		0.13		0.13	
	Native plant species richness - grasses	0		0		4.96		3.87		0.13	
	Native plant species richness - forbs and other	0		0		0.48		3.18		2.70	
Structure	Large trees	0		0		0		0		0	
	Tree canopy height	0		0.01		0		1.26		0.59	
	Tree canopy cover (%)	0		0		0		0		0	
	Shrub layer cover (%)	0		0		0		0		0	
Function	Recruitment of dominant canopy species (%)	0		5.00		5.00		5.00		0	
	Coarse woody debris (m)	0		0		0		0		0	
	Native grass cover (%)	4.76		4.83		5.00		4.83		2.75	
	Litter cover (%)	5.00		5.00		5.00		0.65		4.98	
	Non-native plant cover (%)	9.34		0.90		9.34		0		0	
Vegetation configuration	Vegetation cover within 1 km	0		0		0		8		8	

[A] Refer to Table 5 for measurable attribute scores and their contribution to the final Native Vegetation Econd™

Table 9: Raw data and measurable attribute scores for the six sites in Assessment Unit 3.

	SITE	CA12_01		CA12_02		CA12_03		WH32_01		WH32_02		WH32_03	
Indicator	Measurable attribute	RE 12.3.7	Benchmark RE 12.3.7	RE 12.3.7	Benchmark RE 12.3.7	RE 12.3.7	Benchmark RE 12.3.7	RE 12.3.3	Benchmark RE 12.3.3	RE 12.3.3	Benchmark RE 12.3.3	RE 12.3.3	Benchmark RE 12.3.3
Assessment unit 3: BVG 16 – RE 12.3.7: *Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana* +/- *Melaleuca* spp. fringing woodland and RE 12.3.3: *Eucalyptus tereticornis* woodland on Quaternary alluvium													
RAW DATA													
Composition — Species richness	Native plant species richness - trees	3	10	1	10	1	10	0	5	3	5	5	5
	Native plant species richness - shrubs	1	10	2	10	3	10	1	4	3	4	3	4
	Native plant species richness - grasses	6	7	8	7	2	7	7	11	4	11	4	11
	Native plant species richness - forbs and other	6	30	6	30	8	30	3	24	3	24	3	24
Composition — Structure	Large trees	0	220	0	220	0	220	0	24	0	24	0	24
	Tree canopy height	0	16	5.6	16	5.3	16	0	27	5.7	27	9.8	27
	Tree canopy cover (%)	0	30	0	30	0	30	0	53	0	53	7.7	53
	Shrub layer cover (%)	0	18	0	18	0	18	0	1	0	1	0.5	1
Composition — Function	Recruitment of dominant canopy species (%)	100	100	100	100	100	100	0	100	100	100	100	100
	Coarse woody debris (m)	21	667	67	667	0	667	0	445	0	445	91	445
	Native grass cover (%)	74	1	27	1	44	1	81	47	32.6	47	59	47
	Litter cover (%)	15	54	45	54	40	54	13	34	51	34	15	34
	Non-native plant cover (%)	10.25	0	8.5	0	13.25	0	5.25	0	17.25	0	7.25	0
Vegetation configuration	Vegetation cover within 1 km – Remnant (%)	0	-	0	-	0	-	0	-	0	-	0	-
	– Native regrowth (%)	2.13	-	3.23	-	2.76	-	58.96	-	67.48	-	62.94	-

		CA12_01	CA12_02	CA12_03	WH32_01	WH32_02	WH32_03
MEASURABLE ATTRIBUTE SCORE[A]							
Composition — Species richness	Native plant species richness - trees	0.04	0	0	0	3.09	5.00
	Native plant species richness - shrubs	0	0	0.04	0	4.54	4.54
	Native plant species richness - grasses	4.92	5.00	0.02	3.54	0.28	0.28
	Native plant species richness - forbs and other	0	0	0	0	0	0
Composition — Structure	Large trees	0	0	0	0	0	0
	Tree canopy height	0	0.50	0.30	0	0	0.66
	Tree canopy cover (%)	0	0	0	0	0	0.10
	Shrub layer cover (%)	0	0	0	0	0	4.94
Composition — Function	Recruitment of dominant canopy species (%)	5.00	5.00	5.00	0	5.00	5.00
	Coarse woody debris (m)	0	0	0	0	0	0.72
	Native grass cover (%)	5.00	5.00	5.00	5.00	4.43	5.00
	Litter cover (%)	2.22	5.00	5.00	4.22	5.00	4.75
	Non-native plant cover (%)	6.15	7.26	4.61	9.78	3.08	8.15
Vegetation configuration	Vegetation cover within 1 km	0	0	0	8	8	8

[A] Refer to Table 5 for measurable attribute scores and their contribution to the final Native Vegetation Econd™

Table 10: Summary of site Econd™ scores contributing to final project accounting area Native Vegetation Econd™ score. Refer to Table 5 for measurable attribute scores and their contribution to the final Native Vegetation Econd™

Assessment Unit (AU)	Site	Vegetation community	Indicator scores (/100)						Site Econd™ score	Assessment Unit Econd™ score	Native Vegetation Econd™ score[A]
			Extent	Composition			Vegetation configuration				
				Species richness	Structure	Function					
AU 1: BVG 13	AP11_01	12.9-10.7	124.9 ha	8.5	2.2	66.7	0		22.3	27.9	27.3
	AP11_02	12.9-10.7		1.5	0.0	40.3	0		12.4		
	TW11_01	12.9-10.7		24.8	21.7	66.7	40		39.5		
	WH11_01	12.9-10.7		18.5	0.0	34.2	80		30.0		
	WH21_01	12.9-10.7		6.9	16.8	54.8	80		38.9		
	WH31_01	12.9-10.7		13.2	0.0	26.0	40		18.4		
	WH31_02	12.9-10.7		25.3	4.9	64.0	40		33.7		
AU 2: BVG 9	CA11_01	12.12.12	29.3 ha	5.3	0.0	63.7	0		20.2	24.6	
	CA11_02	12.12.12		5.3	0.0	52.4	0		16.8		
	CA11_03	12.12.12		26.6	0.0	81.1	0		29.7		
	MH11_01	12.12.12		65.6	4.2	34.9	40		32.9		
	MH11_02	12.12.12		35.0	2.0	25.8	40		23.3		
AU 3: BVG 16	CA12_01	12.3.7	15.0 ha	12.2	0.0	61.2	0		20.8	27.8	
	CA12_02	12.3.7		12.3	1.7	74.2	0		25.2		
	CA12_03	12.3.7		0.2	1.0	65.4	0		19.9		
	WH32_01	12.3.3		17.7	0.0	63.3	40		30.5		
	WH32_02	12.3.3		16.7	0.0	58.4	40		28.8		
	WH32_03	12.3.3		21.0	19.0	78.7	40		41.5		

[A] The final project accounting area Native Vegetation Econd™ score represents the area-weighted Assessment Unit Econd™ scores

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Queensland Herbarium (2021). *BioCondition Benchmarks.* Available at https://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks (Note: BioCondition benchmarks used to prepare Information Statement and inform the Econd scoring based on superseded version, provided in Appendix A)

Appendix A – Regional Ecosystem BioCondition Benchmarks

The attached Regional Ecosystem BioCondition benchmark documents (Queensland Herbarium 2021) were superseded in June 2021, following the calculation of the Econd scores in early 2021. For continuity, the attached BioCondition benchmarks should be used for subsequent monitoring.

BioCondition Benchmarks for Regional Ecosystem Condition Assessment

Benchmarks are quantitative values for each vegetation condition attribute assessed in BioCondition (Eyre et al. 2015), and are used as a reference for comparison purposes within and between regional ecosystems. Benchmarks are subject to regular review and updates based on additional data.

BioCondition benchmarks are compiled from quantitative site data from reference sites, data from the Queensland Herbarium's CORVEG database and other relevant data and expert opinion, and are specific to each regional ecosystem vegetation community. BioCondition benchmarks aim to reflect the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes throughout the geographic extent of a regional ecosystem. However, data from local reference sites should be collected where possible to account for spatial and temporal (seasonal and annual) variability when undertaking BioCondition assessments.

In some rangeland ecosystems, a wide variation in the values obtained for some attributes can be assessed in BioCondition even within optimal seasonal conditions. Therefore in these ecosystems a range is expressed instead of a single benchmark value. When using rangeland regional ecosystem benchmarks to assess condition, the lower value of the benchmark range can be used as the benchmark, or if assessing a site under good seasonal conditions then use of the average value as the benchmark is recommended.

Definitions

Attribute	Brief description
Recruitment of dominant canopy species	Proportion of the dominant canopy (ecologically dominant layer) species with evidence of recruitment.
Native plant species richness	The number of species expected in four life form groups, i.e. tree, shrub, grass, 'forbs and other' species
Tree strata: • Canopy • Sub-canopy • Large trees	A tree is defined as a woody plant, single stemmed >2 m tall. • *Height* – median height in metres • *Cover* - percentage cover (assessed as opaque crowns) • *DBH (Diameter at Breast Height)* – For large trees only; dbh threshold (cm). • *Typical tree species*
Shrub strata: • Native shrub cover	A shrub is defined as a woody plant, multi-stemmed from base or single stemmed and <2 m tall. • *Cover* - percentage cover (assessed as opaque crowns) • *Typical shrub species*
Ground cover: • Native perennial grass cover • Litter cover	• *Cover* – percentage cover (assessed as projected foliage cover) • *Typical ground cover species*
Coarse woody debris	• Total length in metres of woody debris > 10 cm diameter and > 0.5 m per hectare
Non-native plant cover	• *Cover* – The percentage cover of non-native plants • *Typical non-native species* listed with common names and declared pest status[1]

Conditions of use

BioCondition benchmarks have been developed from information published by the State of Queensland and remain the property of the State of Queensland. BioCondition benchmarks are not to be included on internet sites other than the Queensland Government website.

Users should cite information contained in the BioCondition benchmarks as: Queensland Herbarium (year*) BioCondition benchmarks for Regional Ecosystems, (month, year*) (Department of Environment and Science: Brisbane). * Date shown in footnote of individual descriptions.

While every effort has been made to ensure the information presented is as reliable as possible, the State of Queensland accepts no liability and gives no assurance in respect of its accuracy and shall not be liable for any loss or damage arising from its use. BioCondition benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. BioCondition benchmarks are subject to review and are updated as additional data becomes available.
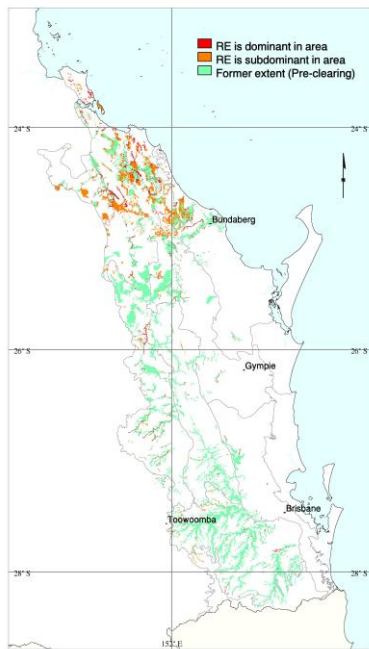
For more information, contact:

Queensland Herbarium, Department of Environment and Science
Brisbane Botanic Gardens (Mt Coot-tha), Mt Coot-tha Road, Toowong QLD 4066

Last reviewed 10/01/2019

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[1] **Declared**—either: a) a plant or animal species listed under the *Biosecurity Act 2014*; or b) an exotic plant that is listed in other nationally recognised weed schemes or a local government pest management plan.
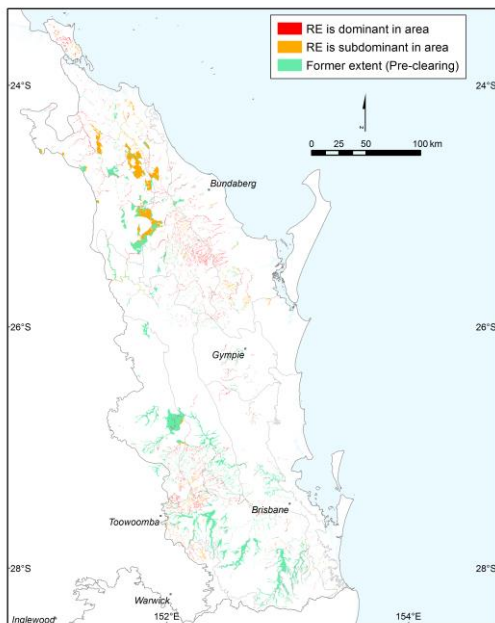
Southeast Queensland

Regional ecosystem: **12.3.3**

Eucalyptus tereticornis woodland on Quaternary alluvium

Annie Kelly

BioCondition attribute			Benchmark
Recruitment of dominant canopy species (%):			100
Native plant species richness:		Tree:	5
		Shrub:	4
		Grass:	11
		Forbs and other:	24
Trees:	Tree canopy	Tree canopy median height (m):	27
		Tree canopy cover (%):	53
	Tree sub-canopy	Tree sub-canopy median height (m):	12
		Tree sub-canopy cover (%):	9
	Large trees	Large eucalypt tree dbh threshold (cm):	47
		Number of large eucalypt trees per hectare:	24
		Large non-eucalypt tree dbh threshold (cm):	na
		Number of large non-eucalypt trees per hectare:	na

Typical tree species: Eucalyptus tereticornis (blue gum), Angophora subvelutina (broad-leaved apple), Lophostemon suaveolens (swamp box), Allocasuarina torulosa (forest oak)

Shrubs:		Native shrub cover (%):	1

Typical shrub species: Acacia disparrima subsp. disparrima (southern salwood), Acacia maidenii (Maiden's wattle)

Ground cover (%):		Native perennial grass cover (%):	47
		Organic litter cover (%):	34

Typical ground cover species: Themeda triandra (kangaroo grass), Heteropogon contortus (black speargrass), Pteridium esculentum (common bracken), Imperata cylindrica (blady grass), Cymbopogon refractus (barbed-wire grass)

Coarse woody debris: Total length (m) of debris ≥ 10cm diameter and ≥0.5m in length per hectare: 445

Non-native plant cover 0

Typical non-native species: Opuntia stricta^ (smooth pest pear), Lantana camara^, Cyanthillium cinereum (vernonia)

Selected typical species are those that characterize the ecosystem, community or stratum at reference sites. Up to five frequently occurring species for each stratum are selected. Users should refer to the regional ecosystem description database (REDD) and/or the technical description for more complete lists of characteristic species. Only the most frequently used common name is given. Other common names may be used in other regions. Declared pest species in Queensland are designated (^).

30/11/2012

Southeast Queensland

Regional ecosystem: 12.3.7

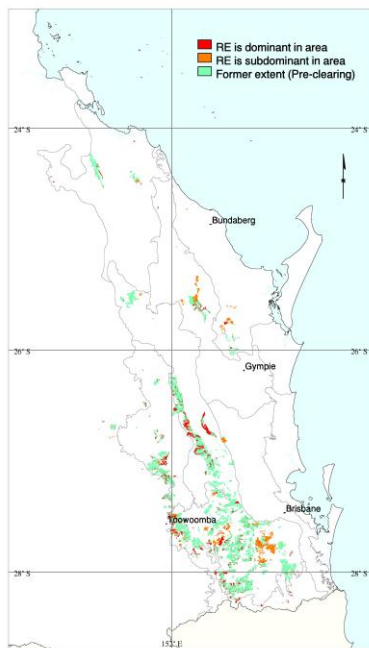**Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca spp. fringing woodland**

Melinda Laidlaw

BioCondition attribute			Benchmark
Recruitment of dominant canopy species (%):			100
Native plant species richness:		Tree:	10
		Shrub:	10
		Grass:	7
		Forbs and other:	30
Trees:	Emergent canopy	Tree emergent canopy median height (m):	na
		Tree emergent canopy cover (%):	na
	Tree canopy	Tree canopy median height (m):	16
		Tree canopy cover (%):	30
	Tree sub-canopy	Tree sub-canopy median height (m):	11
		Tree sub-canopy cover (%):	30
	Large trees	Large eucalypt tree dbh threshold (cm):	53
		Number of large eucalypt trees per hectare:	1
		Large non-eucalypt tree dbh threshold (cm):	23
		Number of large non-eucalypt trees per hectare:	220

Typical tree species: Eucalyptus tereticornis (forest red gum), Melaleuca viminalis, Casuarina cunninghamiana (river sheoak), Waterhousea floribunda (weeping cherry)

Shrubs:	Native shrub cover (%):	18

Typical shrub species: Pittosporum revolutum (yellow pittosporum), Breynia oblongifolia (coffee bush), Mallotus philippensis (red kamala)

Ground cover (%):	Native perennial grass cover (%):	1
	Organic litter cover (%):	54

Typical grass, forbs and other species: Lomandra hystrix (longleaf matrush), Oplismenus aemulus (creeping shade grass), Viola hederacea (ivy-leaf violet)

Coarse woody debris: Total length (m) of debris ≥ 10cm diameter and ≥0.5m in length per hectare: 667

Non-native plant cover 0

Typical non-native species: Celtis sinensis^ (Chinese elm), Dolichandra unguis-cati^ (cats claw creeper), Lantana camara^ (lantana), Digitaria didactyla (blue couch), Bidens pilosa (cobblers pegs)

Benchmark based on: 1 reference site, a technical description and expert opinion   **Benchmark reliability ranking:** moderate

Selected typical species are those that characterize the ecosystem, community or stratum at reference sites. Up to five frequently occurring species for each stratum are selected. Shrub and ground strata may contain recruiting canopy species. 'Eucalypt' refers to species belonging to the genera Eucalyptus, Corymbia, Angophora, Lophostemon and Syncarpia. Users should refer to regional ecosystem technical descriptions for more complete lists of characteristic species. Common names can differ between regions. Declared pest species in Queensland are designated (^).

18/01/2019

Southeast Queensland
Regional ecosystem: 12.9-10.7

Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp., E. melanophloia woodland on sedimentary rocks

Melanie Venz

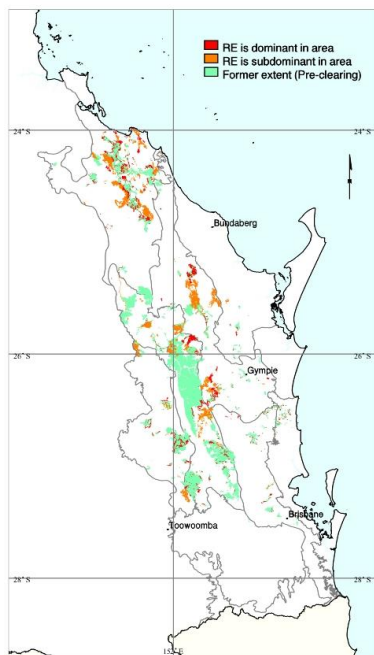| BioCondition attribute			Benchmark
Recruitment of dominant canopy species (%):			100
Native plant species richness:		Tree:	3
		Shrub:	5
		Grass:	8
		Forbs and other:	26
Trees:	Emergent canopy	Tree emergent canopy median height (m):	na
		Tree emergent canopy cover (%):	na
	Tree canopy	Tree canopy median height (m):	21
		Tree canopy cover (%):	40
	Tree sub-canopy	Tree sub-canopy median height (m):	10
		Tree sub-canopy cover (%):	8
	Large trees	Large eucalypt tree dbh threshold (cm):	39
		Number of large eucalypt trees per hectare:	18
		Large non-eucalypt tree dbh threshold (cm):	na
		Number of large non-eucalypt trees per hectare:	na

Typical tree species: Eucalyptus crebra (narrow-leaved red ironbark), Eucalyptus tereticornis (blue gum), Corymbia tessellaris (Moreton Bay ash), Angophora leiocarpa (rusty gum), Corymbia clarksoniana (grey bloodwood)

Shrubs:		Native shrub cover (%):	3

Typical shrub species: Acacia spp., Alphitonia excelsa (soap tree)

Ground cover (%):		Native perennial grass cover (%):	61
		Organic litter cover (%):	20

Typical ground cover species: Themeda triandra (kangaroo grass), Cymbopogon refractus (barbed-wire grass), Heteropogon contortus (black speargrass), Chloris divaricata, Bothriochloa decipiens

Coarse woody debris: Total length (m) of debris ≥ 10cm diameter and ≥0.5m in length per hectare: 272

Non-native plant cover 0

Typical non-native species: Lantana camara^, Opuntia spp., Digitaria didactyla (Queensland blue couch), Dichanthium aristatum (angleton grass), Lantana montevidensis (creeping lantana)

Benchmark based on: 3 reference sites, 6 Corveg sites and expert opinion **Benchmark reliability ranking:** high

Selected typical species are those that characterize the ecosystem, community or stratum at reference sites. Up to five frequently occurring species for each stratum are selected. Shrub and ground strata may contain recruiting canopy species. 'Eucalypt' refers to species belonging to the genera Eucalyptus, Corymbia, Angophora, Lophostemon and Syncarpia. Users should refer to regional ecosystem technical descriptions for more complete lists of characteristic species. Common names can differ between regions. Declared pest species in Queensland are designated (^).

12/06/2013

Southeast Queensland

Regional ecosystem: **12.12.12**

Eucalyptus tereticornis, Corymbia intermedia, E. crebra ± Lophostemon suaveolens woodland on Mesozoic to Proterozoic igneous rocks

Tim Ryan

BioCondition attribute			Benchmark
Recruitment of dominant canopy species (%):			100
Native plant species richness:		Tree:	4
		Shrub:	3
		Grass:	9
		Forbs and other:	28
Trees:	Emergent canopy	Tree emergent canopy median height (m):	na
		Tree emergent canopy cover (%):	na
	Tree canopy	Tree canopy median height (m):	21
		Tree canopy cover (%):	31
	Tree sub-canopy	Tree sub-canopy median height (m):	11
		Tree sub-canopy cover (%):	12
	Large trees	Large eucalypt tree dbh threshold (cm):	45
		Number of large eucalypt trees per hectare:	60
		Large non-eucalypt tree dbh threshold (cm):	na
		Number of large non-eucalypt trees per hectare:	na

Typical tree species: Eucalyptus tereticornis, Corymbia intermedia (pink bloodwood), Eucalyptus crebra (narrow-leaved red ironbark), Lophostemon suaveolens (swamp box)

Shrubs:	Native shrub cover (%):	5

Typical shrub species: Acacia disparrima subsp. disparrima, Acacia leiocalyx, Lophostemon suaveolens (swamp box), Allocasuarina torulosa, Alphitonia excelsa

Ground cover (%):	Native perennial grass cover (%):	40
	Organic litter cover (%):	35

Typical ground cover species: Panicum effusum, Arundinella nepalensis (reedgrass), Cymbopogon refractus (barbed-wire grass), Cyanthillium cinereum, Glycine tabacina

Coarse woody debris: Total length (m) of debris ≥ 10cm diameter and ≥0.5m in length per hectare: 500

Non-native plant cover 0

Typical non-native species: Lantana camara^ (lantana), Gomphocarpus physocarpus (balloon cottonbush), Emilia sonchifolia

Benchmark based on: 21 Corveg sites and expert opinion **Benchmark reliability ranking:** high

Selected typical species are those that characterize the ecosystem, community or stratum at reference sites. Up to five frequently occurring species for each stratum are selected. Shrub and ground strata may contain recruiting canopy species. 'Eucalypt' refers to species belonging to the genera Eucalyptus, Corymbia, Angophora, Lophostemon and Syncarpia. Users should refer to regional ecosystem technical descriptions for more complete lists of characteristic species. Common names can differ between regions. Declared pest species in Queensland are designated (^).

14/03/2014