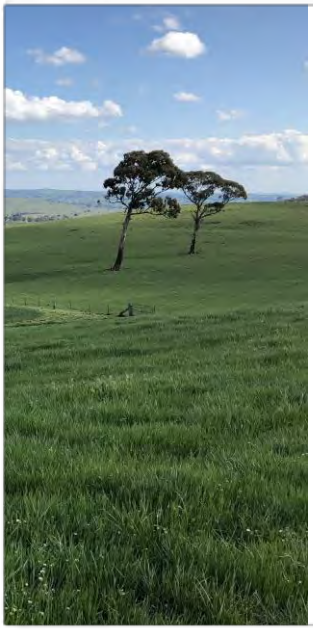
Biodiversity Offset Report

Flyers Creek Wind Farm

October 2021

Project Number: 18-558



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Acronyms and abbreviations

BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BBAI	Bird and Bat Impact Assessment
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BOM	Australian Bureau of Meteorology
CEEC	Critically Endangered Ecological Community
DBH	Diameter at Breast Height
DP&E	Department of Planning and Environment (NSW)
EEC	Endangered Ecological Community
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwth)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
FM Act	*Fisheries Management Act 1994* (NSW)
GHG	Greenhouse Gases
ha	hectares
HBT	Hollow-bearing Tree
km	kilometre
kv	kilovolt
LRET	Large-scale renewable energy target
m	M
MNES	Matters of National environmental significance under the EPBC Act (*c.f.*)
NSW	New South Wales
REAP	Regional Environmental Action Plan (NSW)
OEH	Office of Environment and Heritage, formerly Department of Environment, Climate Change and Water (NSW)
PCT	Plant Community Type
SSD	State Significant Development
SEARS	Secretary's Environmental Assessment Requirements
SAII	Serious and Irreversible Impact
SEPP	State Environmental Planning Policy (NSW)
sp/spp	Species/multiple species
TEC	Threatened Ecological Community

Executive Summary

Flyers Creek Wind Farm Pty Ltd (Flyers Creek Wind Farm) is planning for the construction and operation of the Flyers Creek Wind Farm (the Development, ~21 km south of Orange in Central West NSW. The proposed Development is classified as a State Significant Development (SSD) under the State and Regional Development State Environmental Planning Policy (SEPP). Approval for the construction and operation of the Flyers Creek Wind Farm was granted by the NSW Planning Assessment Commission on 14th March 2014.

The Project Approval (MP_08_0252) contained a number of conditions regulating biodiversity matters. This Biodiversity Offset Report addresses the Project Approval conditions D5 and D6: Biodiversity Offset Package and calculates the Biodiversity Offset Credit Liability in accordance with the Biodiversity Assessment Methodology 2017 under the NSW Biodiversity Offsets Scheme.

Comprehensive mapping and field surveys of the development site to determine Plant Community Types, Planted Vegetation and Scattered Paddock trees were completed in accordance with the requirements of the BAM 2017. 37 Vegetation Integrity Plots were undertaken throughout the site within the six plant community types detected within the development site. Four targeted survey periods over different seasons were undertaken to search for candidate threatened species.

Two species credit species, the Squirrel Glider (*Petaurus norfolcensis*) and Superb Parrot (*Polytelis Swainsona*) were observed within the development site during site surveys. Known records of Superb Parrot from prior surveys also occur within the development site.

Impacts to native vegetation and threatened species habitat have been avoided where possible through detailed site design and micro-siting, however some native vegetation was unable to be avoided.

31 ha of native vegetation in the form of low to moderate condition woodlands or derived grasslands would be removed by the development. The majority of the native vegetation to be impacted is degraded and fragmented through a long history of agricultural practices including vegetation clearing, pasture improvement and grazing.

For impacts unable to be avoided, the development site involves the removal of the following plant community types;

- Clearing of 0.52 ha of PCT 266 - *White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion* in low condition and not requiring offsets.
- Clearing of 4.43 ha of PCT 268 - *White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion* generating 49 Ecosystem credits.
- Clearing of 22.97 ha of PCT 277 - *Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion* generating 339 Ecosystem credits,
- Clearing of 0.51 ha of PCT 278 - *Riparian Blakely's Red Gum – box – shrub -sedge-grass tall open forest of the central NSW South Western Slopes Bioregion* generating 22 Ecosystem credits,
- Clearing 0.17 ha of PCT 766 - *Carex Sedgeland of the slopes and tablelands of the semi-arid (warm) climate zone* generating 3 Ecosystem credits.

- Clearing 2.40 ha of PCT 1330 - *Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion* resulting in the generation of 76 Ecosystem credits.
- Clearing of 53 Paddock Trees likely derived from PCT 266, PCT 268 and PCT 277 resulting in the generation of an additional 53 Ecosystem credits.

11.15 ha of Squirrel Glider Habitat in the form of moderate condition woodland would be impacted by the proposal generating 194 Species Credits for the Squirrel Glider. 23.00 ha of moderate condition woodland representing Superb Parrot habitat would be impacted resulting in the generation of 348 Species Credits.

Prescribed impacts and indirect impacts have been assessed. Impacts could occur to the habitat connectivity for the Squirrel Glider and a Squirrel Glider Management Plan will be implemented. Other prescribed impacts and indirect impacts are considered to be minor in nature and no biodiversity offsets are considered necessary.

As set out in Condition D6 of the Project Approval, the retirement of the credits generated must be carried out within two years of the commencement of construction in accordance with the NSW Biodiversity Offsets Scheme.

1. Introduction

Flyers Creek Wind Farm Pty Ltd (Flyers Creek Wind Farm) is planning for the construction and operation of the Flyers Creek Wind Farm (the Development), ~ 21 km south of Orange in Central West NSW. The Development is classified as a State Significant Development (SSD) under the State and Regional Development State Environmental Planning Policy (SEPP). Approval for the construction and operation of the Flyers Creek Wind Farm was granted by the NSW Planning Assessment Commission on 14th March 2014.

The Project Approval (MP_08_0252) contained a number of conditions regulating biodiversity matters (Appendix A). This Biodiversity Offset Report addresses Project Approval conditions D5 and D6: Biodiversity Offset Package as stated below:

D5 - Prior to the commencement of construction, the proponent must:

a. *Update the baseline mapping of the vegetation and key habitat within the final disturbance area, and*

b. *Calculate the biodiversity offset credit liability in accordance with the Biodiversity Assessment Methodology under the NSW Biodiversity Offsets Scheme, in consultation with OEH and to the satisfaction of the Secretary.*

D6 - Within two years of the commencement of construction, the proponent must retire the required biodiversity credits to the satisfaction of OEH. The retirement of the credits must be carried out in accordance with the NSW Biodiversity Offsets Policy for Major Projects.

Reference should also be made to the Secretary's agreement of 13th August 2021 where:;

The planning secretary agrees that;

a. *no more than 28.1 hectares of Critically EEC may be cleared for the project*
b. *no more than 189 hollow bearing trees may be removed for the project*

The Biodiversity Conservation Service (BCS) provided feedback on the reporting structure for the Biodiversity Offset Package on the 21st of June 2021 (DOC21/497289) (Appendix A). This Offset Report has been prepared in consideration of this feedback. BCS provided feedback on this Offset Report on October 5, 2021. The updates in this report (Version 1.1) address BCS's feedback.

This Biodiversity Offset Report follows the Biodiversity Assessment Methodology (BAM) 2017 using the 12-month transitional arrangements allowed for SSD in accordance with Clause 6.31 of the Biodiversity Conservation Regulation 2017. The BAM provides the methodology for the credit offset requirements under the NSW Biodiversity Offsets Scheme (BOS).

1.1 The Development

The development includes the construction and operation of a wind farm consisting of 38 wind turbines and associated infrastructure ~21km south of Orange in Central West New South Wales. The development occurs between the townships of Carcoar and Cadia.

Key features of the development include but are not limited to installation and construction of;

- 38 wind turbines;
- access tracks and local road infrastructure upgrades;
- Substation and O&M facility;

- Turbine hard stands;
- Met masts; and,
- electrical connections between the turbines (underground cable and above and below ground powerlines); and.
- an on-site substation (inclusive of switch room, control room and auxiliary services building).

A 132 kilovolt transmission line and switching station to connect the Development from the substation to the grid network also forms part of the Development. Biodiversity Offsets associated with this transmission line and switching station have been assessed in a separate report – (Flyers Creek Wind Farm Transmission Line BDAR – Minor Modification 5, NGH 2021).

The following terms are used in this document in accordance with the BAM:

- **Development footprint** – The area of land that is directly impacted by the development. This includes all infrastructure listed in Table 1. The development footprint is approximately 182 ha.
- **Development site** – The development site is a 100 to 250 m wide corridor, within which, and following detailed design, the development footprint will be sited together with areas of land that are subject to potential direct and indirect impacts from the development. This equates to approximately 817 ha and is the study area for this Report.
- **Subject land** – The combined areas of the development site and development footprint, and an area where the BAM has been applied.
- **Locality** - The buffer area defined as all land within 1500m of the outside edge of the boundary of the development site.

1.2 The Development Site

1.2.1 Site Location

The locality of the development site is described as the area of Flyers Creek, around 25 km south of Orange and around 10 km south west of Millthorpe, within the Blayney Shire Local Government Area. (Figure 1-1). The Development Site occurs within the following lots;

Lot number	Plan label
66, 72, 78, 83, 201, 202, 206, 208	DP750359
8, 52, 53, 62, 63, 67, 75, 94, 95, 96, 161, 162, 163, 180, 181	DP750358
533	DP749105
6	DP550053
1	DP396680
841	DP1130733
1	DP1089162
3	DP1089147
421	DP1084679
1	DP1079963
425, 427	DP1067009
5, 6	DP1031238
7002	DP1019823

The Development Site also includes sections of the Blayney Shire Council Road reserves on Halls Road, Errowanbang Road and Gap Road.

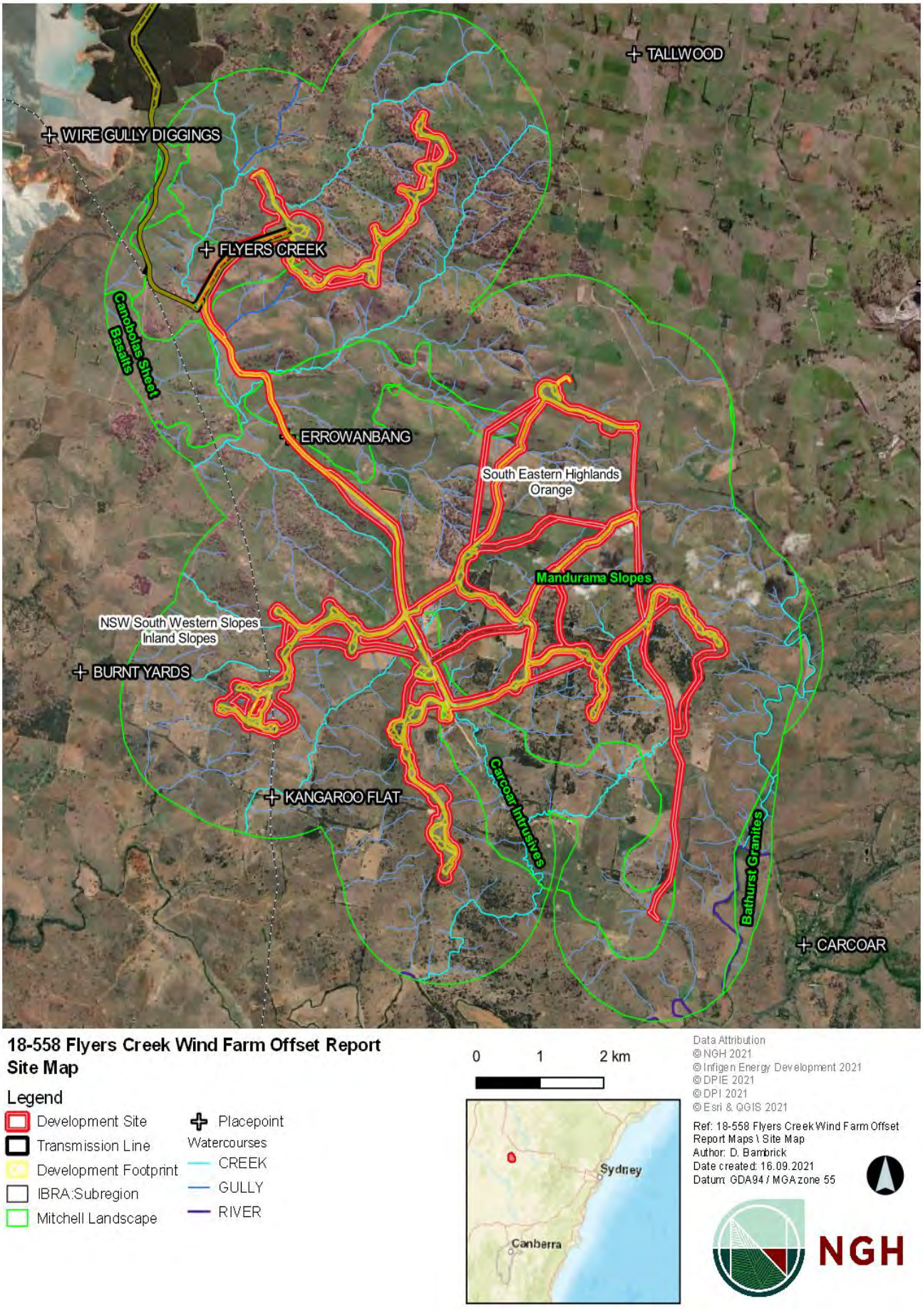

Figure 1-1 Location of the Development

1.2.2 Site Description

The Development site occurs within the rolling hills of the South Eastern Highlands and the South Western Slopes. The majority of the development occurs in private property (Zoned RU1) which has been historically cleared of native vegetation and cultivated for improved pasture and forage cropping. Agriculture is the dominant land use in the area with livestock grazing occurring on a regular basis.

Scattered trees of Yellow Box (*Eucalyptus melliodora*), Blakely's Red Gum (*Eucalyptus blakeyi*), long leaved box (*Eucalyptus goniocalyx*) and Red Stringy Bark (*Eucalyptus macrorhyncha*) remain within the paddocks as isolated paddock trees or small patches on hilltops. The groundcover is predominantly exotic through pasture improvement practices. Disturbance tolerant native grasses persist in low condition in some areas (Figure 1-2).

Larger patches of remnant vegetation occur to the south-west of the development site with relatively intact connectivity to vegetation along Halls Road and Gap Road. Dominant vegetation includes Blakely's Red gum (*E. Blakeyi*), Yellow Box (*E melliodora*), Candle Bark (*Eucalyptus rubida*) Broad leaved peppermint (*Eucalyptus Dives*). Some scattered patches of White box (*Eucalyptus albens*) woodland occur to the south west.

Figure 1-2 Largely cleared development site with scattered paddock trees a common feature.

Figure 1-3 larger stands of vegetation in the south-west of the development site

1.3 Identification of assessment method

The development conforms to the definition of a site-based development under the BAM 2017 and this has been used for determining offsets for the Development. Scattered paddock trees have been assessed using the streamlined assessment module (Paddock tree assessment) and incorporated within this Offset Report (0).

1.4 Study Aims

This Biodiversity Offset Package Report has been prepared by NGH on behalf of the Proponent (Flyers Creek Wind Farm Pty Ltd) to satisfy the requirements of the Flyers Creek Wind Farm Project Approval Conditions D5 and D6: Biodiversity Offset Package.

This report has been prepared by an accredited BAM assessor to determine the Biodiversity Credit Offset liability for the development, defined by the NSW Biodiversity Offsets Scheme (BOS) and Biodiversity Assessment Method 2017 (BAM), as set out under the *Biodiversity Conservation Act 2016* (BC Act).

2. Landscape Features

2.1 Site context components

A landscape assessment was completed for the development. The landscape assessment was completed in accordance with Section 4.2 of the BAM. The landscape assessment was carried out within the 1500m buffer around the development site. The 1500m buffer area is around 11,134 ha in area.

2.2 IBRA Bioregions and subregions

The landscape occurs within the New South Wales South West Slopes (Inland Slopes) and South East Highlands (Orange) IBRA Bioregions. The majority of the 1500m landscape occurs within the South East Highlands IBRA Bioregion and Orange Subregion and this was entered into the BAM Calculator (BAM-C) for the Biodiversity Offsets.

2.3 Native Vegetation

An assessment of native vegetation in the 1500 m buffer area was undertaken using aerial imagery, Central Tablelands State Vegetation Mapping VIS 4778 (DPIE,2017), NSW Woody Vegetation layer (DPIE, 2015) and field assessments. Approximately 23.11% (2,572.82 ha) of native vegetation occurs in the surrounding 1500 m buffer area. The total buffer area is 11,134.67 ha (Figure 2-3).

The vegetation, in the landscape surrounding the development site is predominantly open woodland comprised of Blakely's Red Gum (*Eucalyptus blakelyi*), Yellow Box (*Eucalyptus melliodora*) and White Box (*Eucalyptus albens*). Some small areas of Apple Box (*Eucalyptus bridgesiana*), Ribbon Gum (*Eucalyptus viminalis*), Snow Gum (*Eucalyptus pauciflora*) and River Oak (*Casuarina cunninghamiana*) are also present.

Derived grasslands of the NSW South Western Slopes and South East Highlands are also mapped as occurring within the landscape.

2.4 NSW landscapes (Mitchell Landscapes)

An assessment of available data (NSW (Mitchell) Landscapes – V 3.1) (DPIE, 2017) found the 1500m landscape area supports four NSW Landscapes (Mitchell landscapes). These are detailed below in Table 2-1. The *Mandurama Slopes* Mitchell Landscape is the most dominant within the Development site and this was entered into the BAM-C.

Table 2-1: NSW (Mitchell) Landscapes

Mitchell Landscape	Corresponding Ecosystem Meso grouping	Extent (ha)	% in 1500m area
Bathurst Granites	South East Highlands Northern Granites	168.12	1.5%

Canobolas Sheet Basalts	South East Highlands Canobolas	290.26	2.6%
Carcoar Intrusives	South East Highlands Orange	1321.89	11.8%
Mandurama Slopes	South East Highlands Orange	9354.34	84.0%

2.5 Cleared Areas

An assessment of cleared areas in the 1500 m buffer area was undertaken using aerial imagery, State Vegetation Mapping (DPIE, 2017), NSW Landuse Mapping (DPIE, 2020)) and field assessments. Approximately 76.9% (8561.8 ha) of the 1500m buffer area comprises cleared vegetation, predominantly cropping, modified pastures and occasional roads and residences.

The methodology used to determine exotic and non-native areas in the development site included a combination of photographs, floristic plots and interpretation of aerial imagery. A Land Category Assessment was completed and is summarised in Section 3.1.

Figure 2-1 Example of cleared areas in the development site.

2.6 River and Streams

Hydrological features include named and unnamed watercourse and farm dams. Sixteen named watercourses occur within the 1500m landscape. These are detailed below in Table 2-2.

Table 2-2: Named watercourses within 1500m area

Named Watercourse	Strahler Stream Order	Detail
Belubula River	6	Perennial
Burnt Yards Creek	2	Non-Perennial
Coldwater Creek	3	Non-Perennial
Cheesemans Creek	1	Non-Perennial
Cowigra Creek	5	Perennial
Dirt Hole Creek	4	Non-Perennial
Dirty Creek	3	Non-Perennial
Flyers Creek	6	Perennial
Gooleys Creek	3	Non-Perennial
Kangaroo Flat Creek	2	Non-Perennial
Mackenzies Waterholes Creek	4	Non-Perennial
Slatterys Creek	4	Perennial
Tommy Taylors Creek	1	Non-Perennial
Jarvis Gully	2	Non-Perennial
Soda Gully	1	Non-Perennial
Wire Gully	1	Non-Perennial

Figure 2-2 Dirty Creek in the development site

2.7 Wetlands

Two very small area of mapped wetland occur within the 1500m landscape area. These are both detailed as 'reservoirs' and are utilised as farm dams. Around 28 ha of 'hydroarea' is mapped within the 1500m area, these areas are comprised predominantly of farm dams. The nearest mapped wetland areas occur over 2km from the development site. Mapped Reservoir wetland within the 1500m area encompass a combined area of around 2.8ha.

2.8 Connectivity Features

Although over 80% of the 1500m area is mapped as cleared woodland connectivity is present. Scattered, planted and remnant woodland trees within the landscape creates both contiguous and continuous connectivity. Within a broader context, the 1500m area forms part of landscape connectivity between key areas of remnant native vegetation including the Mount Canobolas State Conservation Area, Glenwood State Forest and Canobolas State Forest in the north and Mount Macquarie State Forest, Neville State Forest, Roseberg State Forest, Pennsylvania State Forest and Copperhannia Nature Reserve in the south.

Watercourse and hydro-areas within the 1500m also form part of landscape connectivity to features in the broader landscape such as Carcoar Lake in the south-east.

Habitat features within the 1500m area also include ridgelines and rocky areas. A diverse structure of habitat is present within the 1500m area. This is not unexpected given the size and location of

the development site. The connectivity of features present within the 1500m and development site are likely to facilitate the movement of threatened fauna species. Features within the landscape may also facilitate connectivity of threatened entities such as threatened flora and ecological communities.

An assessment of the East Asian – Australasian Flyway Partnership registered flyway sites found no registered flyway sites within the 1500m area (EAAFP, 2021).

2.9 Areas of Geological Significance

A search of the Geological Sites of NSW (Cartoscope, 2021) found no major geological sites within the landscape. The nearest geological site (Canowindra, NSW) is around 40km from the 1500m area.

The landscape is mapped as Ordovician sedimentary & volcanic rock and Ordovician silicic-intermediate Intrusives (Geological Survey of NSW, 2021).

2.10 Areas of Outstanding Biodiversity Value

No areas of Outstanding Biodiversity Value occur within the locality.

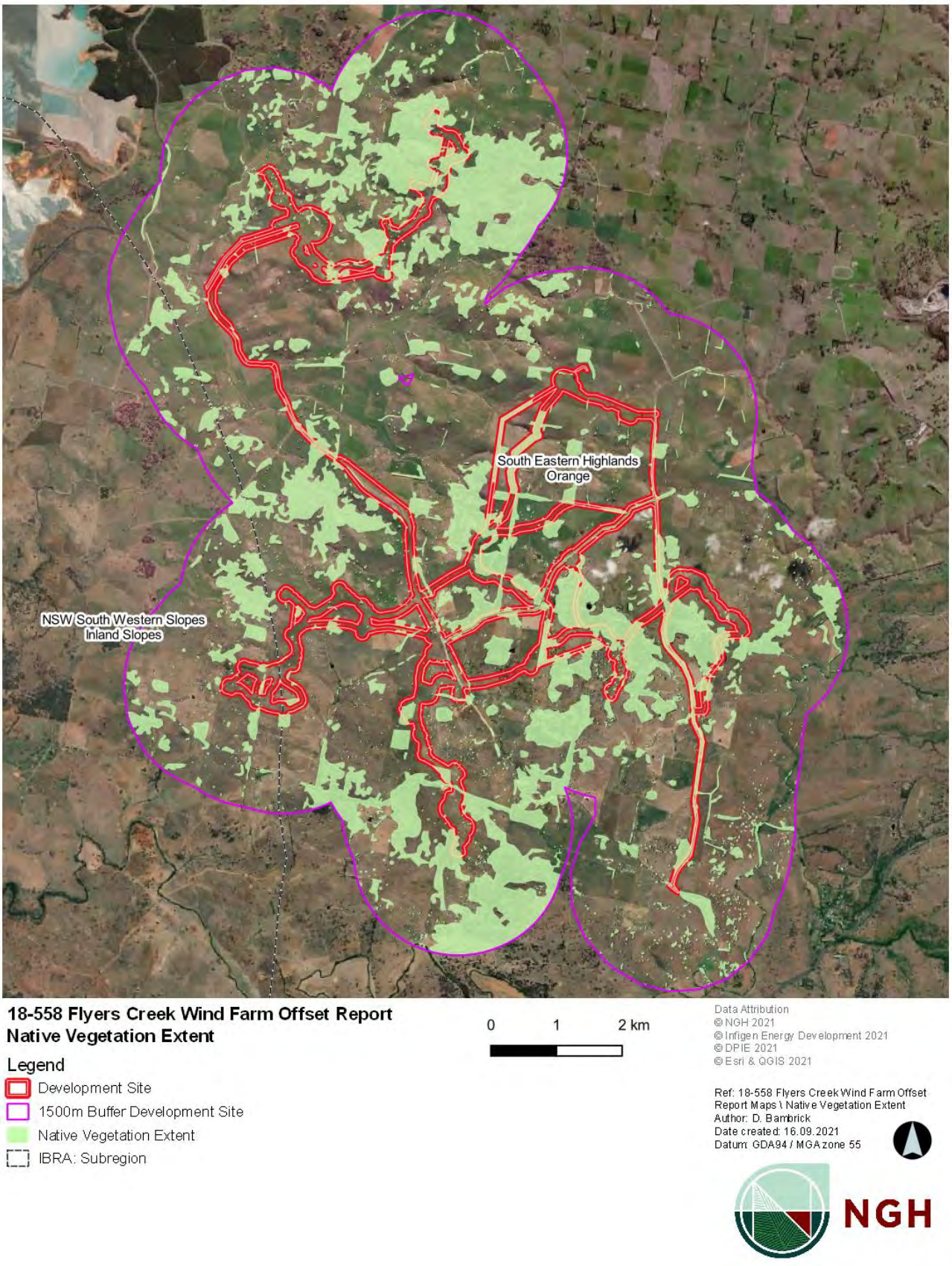

Figure 2-3 Native vegetation extent with landscape

3. Native Vegetation

3.1 Land Category Assessment

A land category assessment was undertaken by NGH (Appendix B). Areas of extensive and continued agricultural use were deemed highly modified and determined to be Category 1-Exempt Land. Category 1-Exempt land is defined by the Local Land Service Act 2013 (LLS Act) as land that is

- Land cleared of native vegetation as at 1 January 1990 or lawfully cleared after 1 January 1990,
- Low Conservation Grasslands (following commencement of the new framework on 25th August 2017,
- Land (not being grasslands) containing only low conservation groundcover (following commencement of the new framework on 25th August 2017),
- Native vegetation identified as regrowth in a Property Vegetation Plan under the repealed Native Vegetation Act 2003 or
- Land biodiversity certified under the BC Act.

Assessment of Biodiversity Values on Category 1-Exempt Land is not required under the BAM 2017 and assessment of direct impacts, including clearing of vegetation and loss of habitat on these areas has been excluded. Additional prescribed impacts have still been addressed on Category 1-Exempt Land (Section 5.1).

175.62 ha of native vegetation occurs in the development site is provided in Figure 3-1 below
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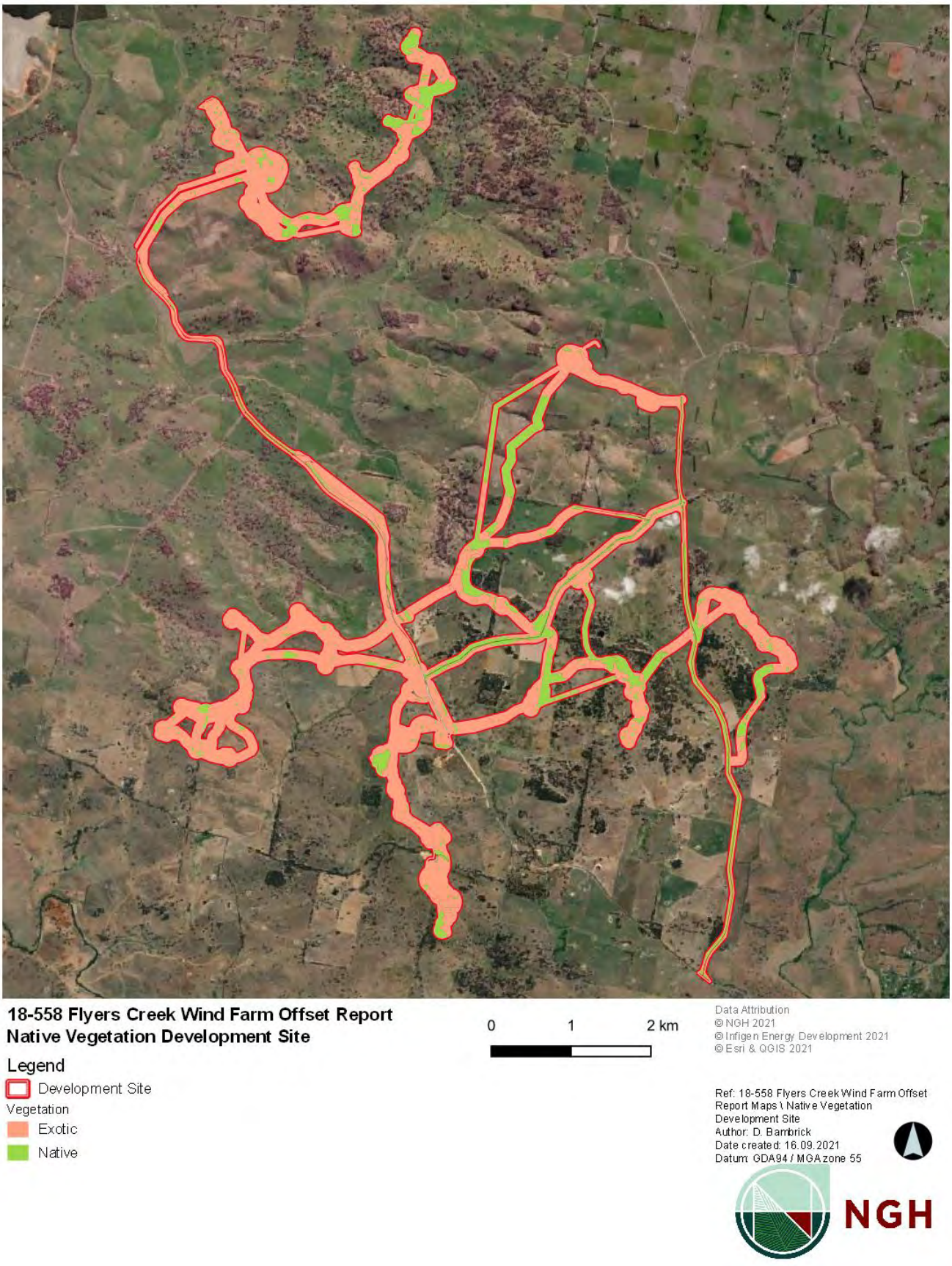

Figure 3-1 Native vegetation in the development site

3.2 Plant Community Types (PCTs)

3.2.1 Methods to assess PCTs

A site assessment was completed to determine PCTs present in the development site and is detailed below.

3.2.2 PCTs identified on the development site

Based on the field surveys six PCTs occur within the development site as shown in Figure 3-11 to Figure 3-16 including:

- PCT 277 – Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion.
- PCT 266 - White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.
- PCT 268 - White Box - Blakely's Red Gum - Long-leaved Box - Norton's Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion.
- PCT 278 – Riparian Blakely's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South Western Slopes Bioregion.
- PCT 766 – Carex Sedgeland of the slopes and tablelands
- PCT 1330 - Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion.

A description of each of the PCTs identified in the development site follow in Table 3 1 below which includes justification of PCT selection.

Table 3-1 PCT 266

PCT 266 - White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.		
Vegetation formation	Grassy Woodlands	
Vegetation class	Western Slopes Grassy Woodlands	
Vegetation type	**PCT ID**	266
	Common Community Name	White Box grassy woodland
Condition zones in development site	This community occurs as one zones: 266_Low condition	

Approximate extent within the development site	2.66 ha of PCT 266_low condition occurs in the development site.	
Species relied upon for PCT identification	***Species name***	***Relative abundance***
	Eucalyptus albens – White Box	Remnant canopy tree present. Dominated by White Box.
	Rytidosperma sp.- Wallaby Grass	<1%
	Rumex brownii – Swamp Dock	<1%
Justification of evidence used to identify the PCT	PCT 266 was identified as occurring onsite by: • using State Vegetation Mapping, • occurring within the correct IBRA subregion, • Dominance of *Eucalyptus albens* in the canopy • topographical locations, and The understory was highly disturbed from grazing with a low native plant cover across the entirety of this PCT. Dominant weeds included: Paterson's Curse (**Echium plantagineum*), Saffron Thistle (**Carthamus lanatus*), Barley Grass (**Hordeum sp.*), Ryegrass (*Lolium sp.*) and Medic (*Medicago sp.*). Based on these conclusions PCT 266 was selected as the most appropriate PCT.	
TEC Status	This PCT forms part of the **BC Act** listed *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions*, referred to from this point onwards as 'Box-Gum Woodland'. This TEC is listed as Critically Endangered under the BC Act. This PCT, due to the presence of an exotic dominated understory (more than 50%) does not meet the condition thresholds for the **EPBC Act** equivalent of this TEC (DEH, undated).	
Estimate of percent cleared in NSW	94%	

Examples	 Figure 3-2 PCT 266 Woodland

PCT 277 Blakelys Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion		
Vegetation formation	Grassy Woodlands	
Vegetation class	Western Slopes Grassy Woodlands	
Vegetation type	**PCT ID**	277
	Common Community Name	**Blakely's Red Gum - Yellow Box grassy tall woodland**
Approximate extent within the development site	82.43 ha as moderate condition woodland 27.75 ha as a derived native grassland 1.20 ha as planted vegetation best representing this community	

Species relied upon for PCT identification	***Species name***	***Relative abundance***
	Yellow Box – Eucalyptus melliodora *Blakely's Red Gum– Eucalyptus blakelyi* *Long-leaved Box– Eucalyptus goniocalyx*	Dominant canopy species
	Oxalis perennans	<1%

	Rytidosperma spp.	0-10%
	Lomandra multiflora	<1%
	Hydrocotyle laxiflora	<1%
	Desmodium varians	<1%
	Geranium solanderi	<1%
	Rumex brownii	<1%

Justification of evidence used to identify the PCT

PCT 277 was identified as occurring onsite by:

- using existing State Vegetation Mapping,
- occurring within the correct IBRA subregion,
- topographical locations of undulating slopes
- presence of remnant canopy species of *Eucalyptus melliodora* and *Eucalyptus blakelyi*
- Several remnant native groundcover species observed in this PCT were consistent with the species common to this PCT

Based on these conclusions PCT 277 was selected as the most appropriate PCT.

TEC Status

Sections of this PCT in moderate to good condition forms part of the **BC Act** listed *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions*. This TEC is listed as Critically Endangered under the BC Act.

Sections of this PCT in moderate condition met the condition thresholds for the **EPBC Act** equivalent of this TEC.

Estimate of percent cleared in NSW

94%

Examples


Figure 3-3 PCT 277 Woodland

Figure 3-4 PCT 277 Derived Grassland

PCT 268 - White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.

Vegetation formation	Grassy Woodlands	
Vegetation class	Western Slopes Grassy Woodlands	
Vegetation type	**PCT ID**	268
	Common Community Name	White Box - Blakely's Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland.
Condition zones in development site	This community occurs as two zones: • Remnant woodland • Derived grassland community	
Approximate extent within the development site	20.99 ha of PCT 268 woodland 6.86 ha of PCT 268 derived grassland community	

Species relied upon for PCT identification	***Species name***	***Relative abundance***

	Eucalyptus blakelyi– Blakely's Red Gum *Eucalyptus melliodora* – Yellow Box *Eucalyptus goniocalyx* – Long-leaf Box *Eucalyptus macrorhyncha* – Red Stringybark	Remnant canopy trees present. Dominated by E Blakelyi/ E melliodora
	Hibbertia obtusifolia	0-10%
	Bothriochloa macra	<1%
	Oxalis perennans	<1%
	Lomandra filiformis	<1%
	Rytidosperma auriculatum	0-10%
	Bulbine bulbosa	<1%
	Lomandra multiflora	<1%
Justification of evidence used to identify the PCT	PCT 268 was identified as occurring onsite by: • using State Vegetation Mapping, • occurring within the correct IBRA subregion, • Dominance of *Eucalyptus blakelyi, E. goniocalyx and E. macrohyncha* in the canopy. • topographical locations on undulating landscapes. • Native groundcover and shrub species observed in this PCT were consistent with the species common to this PCT. Based on these conclusions PCT 268 was selected as the most appropriate PCT.	
TEC Status	Sections of this PCT in moderate condition forms part of the **BC Act** listed *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions*, referred to from this point onwards as 'Box-Gum Woodland'. This TEC is listed as Critically Endangered under the BC Act. Sections of this PCT in moderate condition met the condition thresholds for the **EPBC Act** equivalent of this TEC.	
Estimate of percent cleared in NSW	63%	

Examples	 Figure 3-5 PCT 268 Woodland  Figure 3-6 PCT 268_Derived Grasslands

PCT 278 – Riparian Blakely's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South Western Slopes Bioregion		
Vegetation formation	Grassy Woodlands	
Vegetation class	Western Slopes Grassy Woodlands	
	PCT ID	278

Vegetation type	**Common Community Name**	Riparian Blakely's Red Gum tall open forest
Condition zones in development site	This community occurs as two zones: • Remnant woodland in low condition • Remnant woodland in moderate condition	
Approximate extent within the development site	0.41 ha in low condition 2.00 ha in moderate condition	

Species relied upon for PCT identification	***Species name***	***Relative abundance***
	Eucalyptus blakelyi – Blakely's Red Gum	Remnant canopy trees present.
	Microlaena stipoides	0-20%
	Juncus usitatus	0-10%
	Carex appressa	0-10%
	Dichondra repens	<1%
	Eleocharis acuta	<1%
	Rumex brownii	<1%
	Hydrocotyle laxiflora	<1%
	Poa sieberiana	<1%
	Carex inversa	<1%

Justification of evidence used to identify the PCT	PCT 278 was identified as occurring onsite by: • using State Vegetation Mapping, • occurring within the correct IBRA subregion, • topographical locations in gullies and creek flats • dominance of *Eucalyptus blakelyi* in the canopy • Native groundcover and shrub species observed in this PCT were consistent with the species common to this PCT Based on these conclusions PCT 278 was selected as the most appropriate PCT.
TEC Status	This PCT forms part of the **BC Act** listed *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern*

	Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions, referred to from this point onwards as 'Box-Gum Woodland'. This TEC is listed as Critically Endangered under the BC Act. Sections of this PCT in moderate condition met the condition thresholds for the **EPBC Act** equivalent of this TEC.
Estimate of percent cleared in NSW	94%
Examples	 Figure 3-7 PCT 278 Woodland

PCT 766 – Carex sedgelands of the slopes and tablelands		
Vegetation formation	Freshwater wetlands	
Vegetation class	Montane Bogs and Ferns	
Vegetation type	**PCT ID**	766
	Common Community Name	Carex sedgelands of the slopes and tablelands.
Approximate extent within the development site	This PCT occurs as one condition zone. 2.85 ha of PCT 766 occurs within the development site along ephemeral drainage lines.	

Species relied upon for PCT identification	***Species name***	***Relative abundance***
	Tall Sedge – *Carex appressa*	45% in drainage line
	Couch – *Cynodon dactylon*	40% in drainage line
	Juncus sp.	<1%
	Swamp Dock – *Rumex brownii*	<1%
	Kidney Weed – *Dichondra repens*	<1%
	Geranium molle	<1%
Justification of evidence used to identify the PCT	PCT 766 was identified as occurring onsite by: • Its location along drainage lines • Dominance of *Carex appressa* • Lack of overstory vegetation • occurring within the correct IBRA subregion, Based on these conclusions PCT 766 was selected as the most appropriate PCT.	
TEC Status	This vegetation community does not form part of a TEC.	
Estimate of percent cleared in NSW	94%	

Examples	 Figure 3-8 PCT 766

PCT 1330 - Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion.		
Vegetation formation	Grassy Woodlands	
Vegetation class	Southern Tableland Grassy Woodlands	
Vegetation type	**PCT ID**	1330
	Common Community Name	Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion.
Condition zones in development site	This community occurs as three zones: • Remnant woodland in Low Condition, • Remnant woodland in Moderate Condition • Derived grassland community	
Approximate extent within the development site	4.18 ha of PCT 1330 in low condition occurs within the development site.	
Species relied upon for PCT identification	***Species name***	***Relative abundance***

	Eucalyptus rubida – Candle Bark	Remnant canopy trees present.
	Eucalyptus melliodora – Yellow Box	
	Eucalyptus blakelyi – Blakely's Red Gum	
	Eucalyptus bridgesiana – Apple Box	
	Eucalyptus viminalis – Ribbon gum	
	Eucalyptus dives – Broad leaved peppermint	
	Microlaena stipoides – Weeping Meadow grass	0-10%
	Bothriochloa macra – Red Grass	0-10%
	Austrostipa scabra - Spear grass	0-10%
	Oxalis perennans - Oxalis	< 1%
	Rytidosperma sp.- Wallaby Grass	0-10%
	Themeda triandra – Kangaroo Grass	0-10%
	Rumex brownii – Swamp Dock	< 1%
Justification of evidence used to identify the PCT	PCT 1330 was identified as occurring onsite by: • using State Vegetation Mapping, • occurring within the correct IBRA subregion, • Dominance of *Eucalyptus blakelyi, Eucalyptus melliodora* and *Eucalyptus bridgesiana* in the canopy. The presence of • topographical locations on undulating terrain. • Remnant understory grasses consistent with understory species for this PCT. The derived grassland occurs along roadside as a result of previous clearing. The zone contains a disturbed understory and regenerating canopy however *Acacia dealbata* has regenerated as a dominant species. Based on these conclusions PCT 1330 was selected as the most appropriate PCT.	
TEC Status	Parts of this PCT forms part of the **BC Act** listed *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions*, referred to from this point onwards as 'Box-Gum Woodland'. This TEC is listed as Critically Endangered under the BC Act.	

	Some moderate condition remnants meet the condition thresholds for the **EPBC Act** equivalent of this TEC.
Estimate of percent cleared in NSW	94%
Examples	 Figure 3-9 PCT 1330 Derived Grassland -Acacia colonising  Figure 3-10 PCT 1330_Woodland

Figure 3-11 Plant community types in the development site (map 1)

Figure 3-12 Plant community types in the development site (map 2)

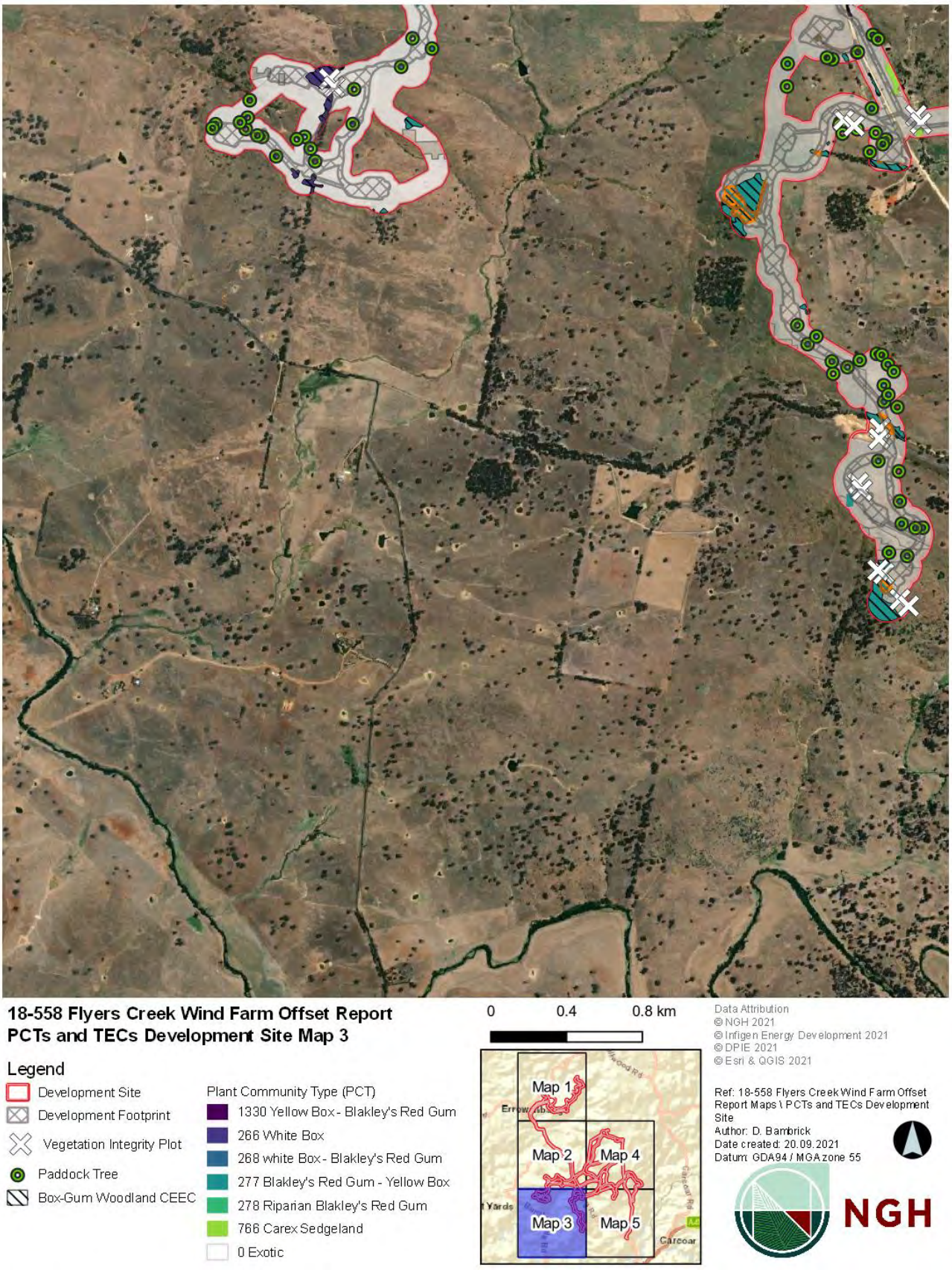

Figure 3-13 Plant community types in the development site (map 3)

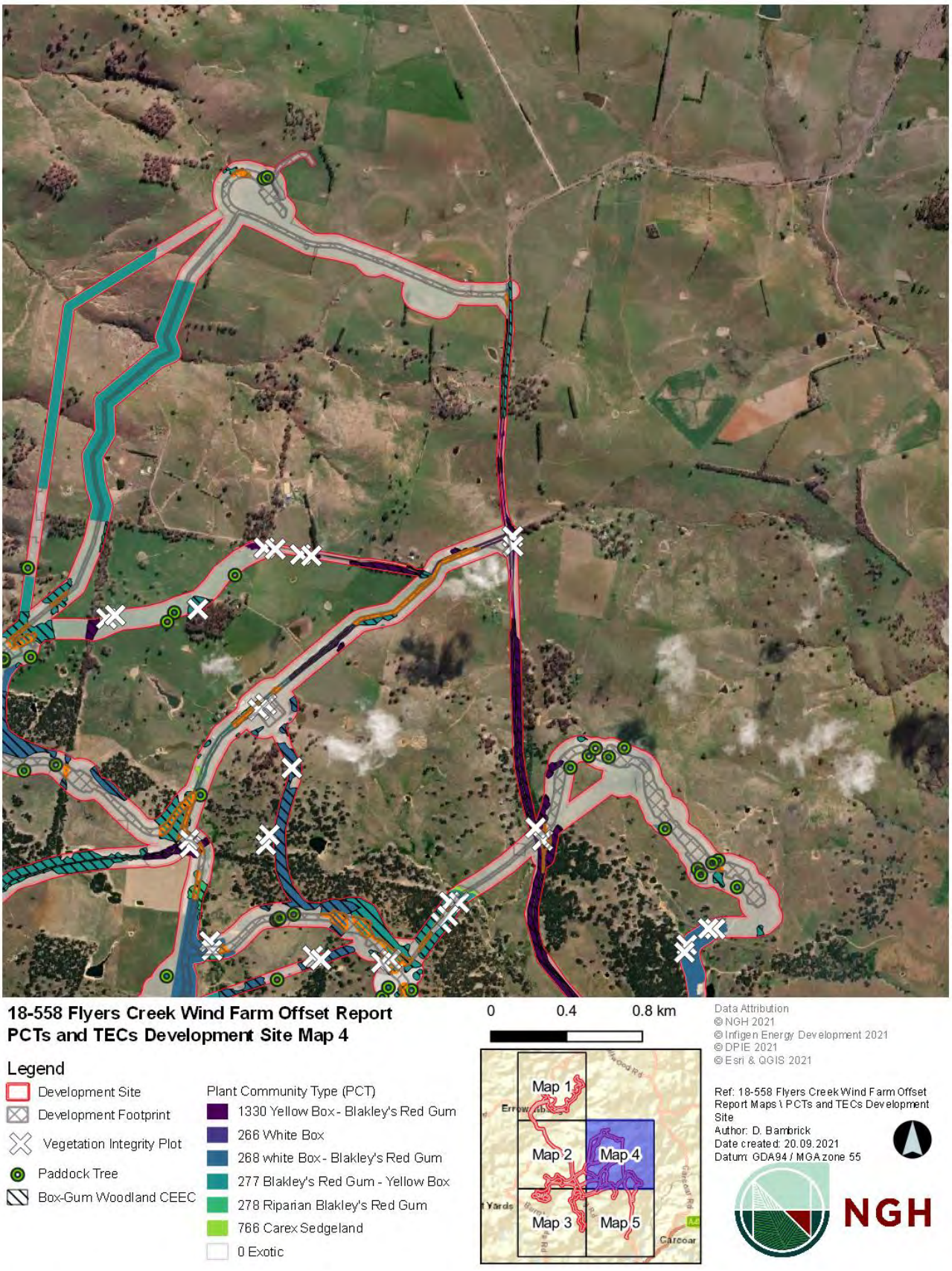

Figure 3-14 Plant community types in the development site (map 4)

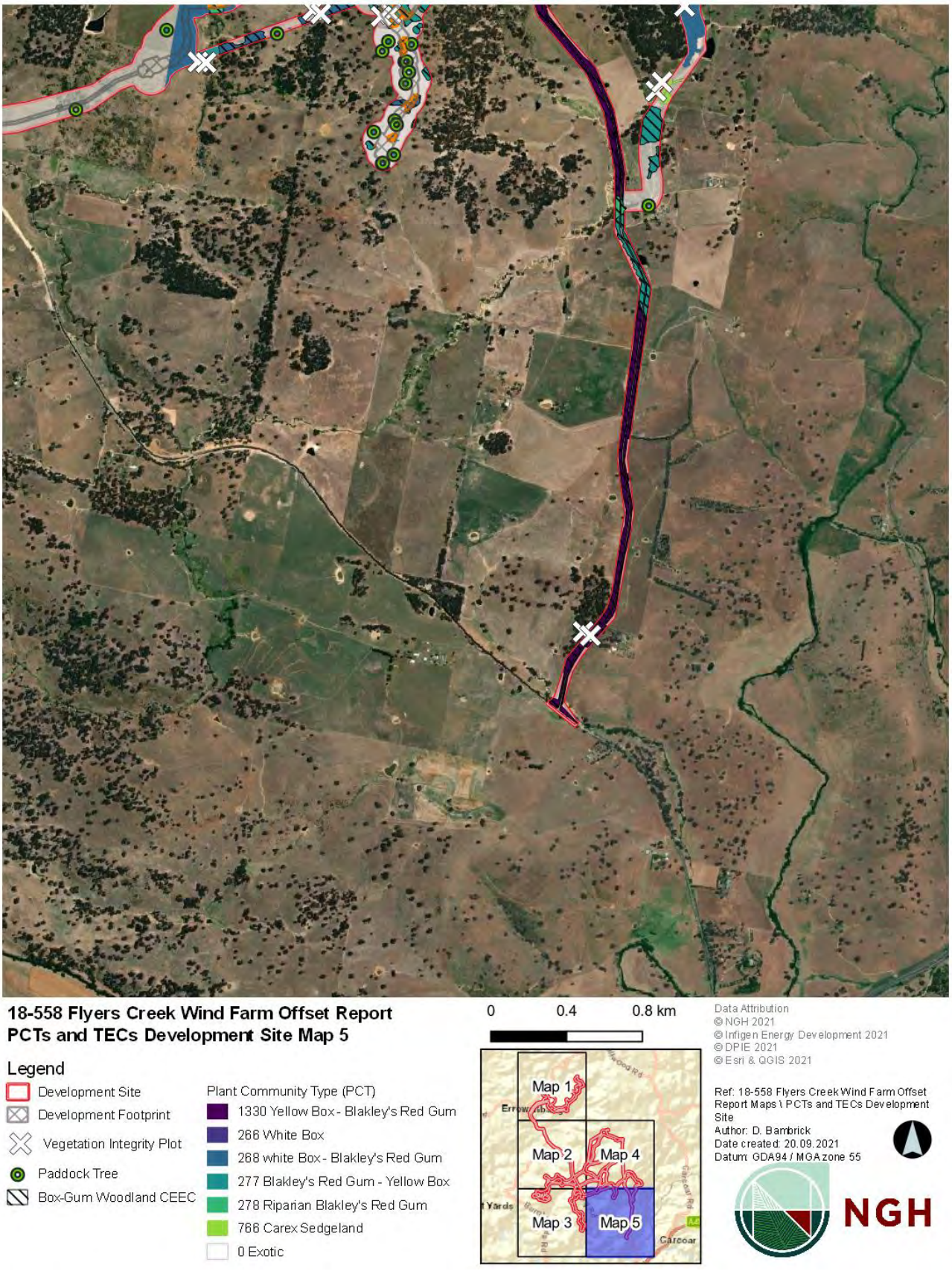

Figure 3-15 Plant community types in the development site (map 5)

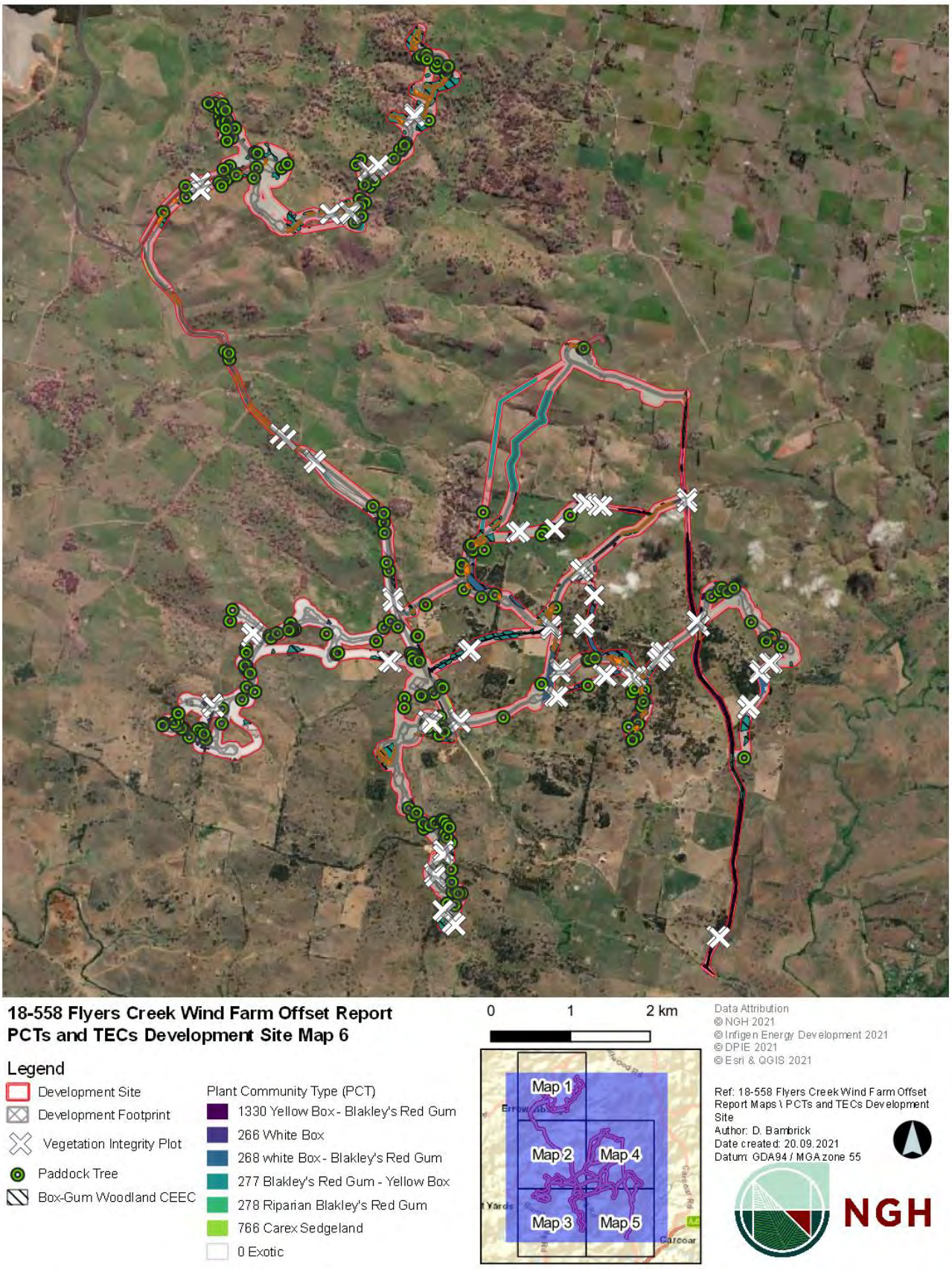

Figure 3-16 Plant community types in the development site (map 6)

3.3 Vegetation Integrity Assessment

3.3.1 Vegetation zones and survey effort

Six PCTs were identified in the development site. Each PCT was stratified into zones representing a similar broad condition state. These zones were based on the overstorey condition, understorey condition, and observed land management practices.

Fifty-two vegetation integrity plots were undertaken throughout the development site over a period of three site visits (Spring 2018, Summer 2019 and Summer 2020 following a change in design). Seventeen of these plots occurred in category 1 – exempt land or occurred outside the development site and were not used. The remaining plots were added to the calculator. Plot data and plot photos entered into the BAM-C can be found in Appendix C.

Table 3-2 Vegetation zones within the development site

Zone ID	PCT ID	Condition	TEC (refer to section 3.3.4)	Development Site Area (Ha)	No. of Plots Required	No. of Plots undertaken	Patch Size (Ha)
1	**1330**	**Derived Grassland**	Nil	1.76	1	1	100 Ha+
2	**1330**	**Poor Condition**	Box Gum woodland	4.16	2	2	100 Ha+
3	**1330**	**Moderate Condition**	Box Gum woodland	22.59	4	4	100 Ha+
4	**266**	**Poor Condition**	Box Gum woodland	2.66	2	2	100 Ha+
5	**268**	**Derived Grassland**	Nil	6.86	3	3	5 -25 Ha
6	**268**	**Moderate Condition**	Box Gum woodland	20.98	4	4	100 Ha+
7	**277**	**Derived Grassland Good Condition**	Box Gum woodland	0.37	1	1	100 Ha+
8	**277**	**Derived Grassland Low Condition**	nil	27.36	4	5	25 -100 Ha
9	**277**	**Moderate Condition**	Box Gum woodland	82.43	5	10	100 Ha+
10	**277**	**Planted**	Nil	0.27	1	1	< 5 Ha
11	**277**	**Planted Roadside**	Nil	0.93	1	1	100 Ha+
12	**278**	**Low Condition**	Box Gum woodland	0.41	1	1	100 Ha+
13	**278**	**Moderate Condition**	Box Gum woodland	2.00	2	1	100 Ha+
14	**766**	**Moderate Condition**	Nil	2.84	2	2	100 Ha+

3.3.2 Vegetation Integrity Assessment Results

The plot data from the vegetation integrity survey plots was entered into the BAM Calculator (Case number 0001690) by an accredited assessor (L. Hamilton BAAS19039). The results of the vegetation integrity assessment and the vegetation integrity score is shown in Table 3-3.

Table 3-3 Current Vegetation Integrity Score for each Vegetation Zone within the development site

Zone ID	PCT/Zone	Composition score	Structure score	Function score	Vegetation Integrity Score
1	1330_Derived Grassland	12	37	58.8	**29.6**
2	1330_Poor Condition	18.8	35.1	90.2	**39**
3	1330_Moderate Condition	57.7	62.5	75.3	**64.8**
4	266_Poor Condition	3.5	14.2	36.8	**12.3**
5	268_Derived Grassland	29.9	37.1	0.1	**4.9**
6	268_Moderate Condition	49.9	51.6	79.2	**58.8**
7	277_Derived Grassland Good Condition	66.6	67.4	17.3	**42.6**
8	277_Derived Grassland Low Condition	23.7	63.8	1.4	**12.8**
9	277_Moderate Condition	20.9	18.4	60.4	**28.5**
10	277_Planted	36.7	63	45.5	**47.2**
11	277_Planted Roadside	20.4	0.6	15.2	**5.7**
12	278_Low Condition	4.9	16.9	47.5	**15.8**
13	278_Moderate Condition	66.3	83.3	61.3	**69.7**
14	766_Moderate Condition	23.6	48.4	n/a	**33.8**

3.3.3 Paddock Trees

221 Paddock trees occur within the development site. These trees are defined as trees located on Category 2 land and surrounded by Category 1 Land (as determined by NGH's Land Category Assessment, Appendix B).

Each paddock tree was assigned the PCT from which it is most likely derived, predicted from tree species, landscape location and proximity to known PCT vegetation zones. Paddock trees were mapped in the field using a handheld GIS Tablet and were visually assessed from the ground to determine whether any hollows were present. The Diameter at Breast Height (DBH) of the tree was assessed and assigned a paddock tree class relevant to the large tree benchmark for the associated PCT as per the BAM-C. Any unsurveyed paddock trees were assumed full credit requirement.

53 paddock trees occur within the construction disturbance footprint (development footprint) and would be impacted by the development. These paddock trees are likely derived from remnants of;

- PCT 277 – *Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion*
- PCT 266 – *White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion*
- PCT 268 – *White Box – Blakely's Red Gum – Long-leaved Box – Norton's Box – Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion.*

An inventory of the paddock trees within the development site is shown in 0. Paddock Trees that would be impacted are shown in Table 3-4

Table 3-4 Paddock trees within the development footprint

PCT	Species	DBH Category	Hollows	Class of Paddock Tree	Number of Paddock Trees cleared
266	*Eucalyptus albens*	>50cm	Yes	Class 3	1
266	*Eucalyptus albens*	>50cm	No	Class 3	1
266	*Eucalyptus albens*	20cm - 50cm	No	Class 2	1
266	*Eucalyptus melliodora*	>50cm	No	Class 3	4
268	*Eucalyptus macrorhyncha*	>50cm	Yes	Class **3**	3
268	*Eucalyptus macrorhyncha*	>50cm	No	Class 3	1
268	*Eucalyptus goniocalyx*	>50cm	No	Class 3	1
268	*Eucalyptus dives*	>50cm	No	Class 3	1
268	*Eucalyptus sp.*	>50cm	No	Class 3	1
277	*Eucalyptus blakelyi*	>50cm	Yes	Class 3	2
277	*Eucalyptus blakelyi*	>50cm	No	Class 3	1
277	*Eucalyptus blakelyi*	20cm - 50cm	No	Class 2	3

277	*Eucalyptus melliodora*	>50cm	Yes	Class 3	9
277	*Eucalyptus melliodora*	>50cm	No	Class 3	15
277	*Eucalyptus melliodora*	20cm - 50cm	No	Class 2	3
277	*Eucalyptus goniocalyx*	>50cm	Yes	Class 3	1
277	*Eucalyptus sp.*	>50cm	Yes	Class 3	2
277	*Eucalyptus sp.*	>50cm	No	Class 3	3
				TOTAL:	**53**

3.3.4 Threatened Ecological Communities

The presence of Blakely's Red Gum, Yellow Box and White Box tree species within the development site is associated with the threatened ecological community - *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions* (Box-gum Woodland).

An assessment of each of the vegetation zones was undertaken to determine if the condition met the condition threshold for the TEC under the BC Act and/or EPBC Act. The assessments can be found in the tables below (Table 3-5 and Table 3-6).

Zones 1, 5, 8, 10 and 11 do not meet the criteria in the NSW scientific determination for Box-gum Woodland due to either the characteristic tree species not dominant in the overstory or the understory is degraded from intense grazing or roadworks and unlikely to have maintained a soil seedbank. These zones also had low vegetation integrity scores.

The remaining zones meet the definition of the NSW Scientific determination for Box-gum Woodland. The total area of these zones is 23.8 ha.

Some paddock trees are also likely remnant of the Box-gum Woodland TEC. Characteristic species of Blakely's Red Gum, Yellow Box and White Box are scattered around the development site as scattered trees. It is likely these trees formed part of a Box-gum Woodland prior to clearing. These trees are now surrounded by Category 1 Exempt-Land (Appendix B) comprising of exotic groundcover from continuous grazing. Due to the high disturbance in the understory and low canopy cover these areas are unlikely to respond to natural regeneration and are not considered to form part of the TEC.

Table 3-5 Condition threshold assessment for the state listed White Box - Yellow Box - Blakely's Red Gum Grassy Woodlands and derived native grasslands.

Zone	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	Zone 12	Zone 13
	PCT 1330	PCT 1330	PCT 1330	PCT 266	PCT 268	PCT 268	PCT 277	PCT 277	PCT 277	PCT 277	PCT 277	PCT 278	PCT 278
BC Requirement	**Derived Grassland**	**Poor Cond.**	**Mod Cond.**	**Poor Cond.**	**Derived Grassland**	**Mod. Cond.**	**DG – Good**	**DG - Low**	**Mod Cond.**	**Planted**	**Planted Roadside**	**Low Cond.**	**Mod Cond**
Is, or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red Gum?	Overstory absent but likely to have contained Blakely's Red Gum and Yellow Box based on trees in the locality.	Yes, Blakely's Red gum and Yellow Box one of the most common overstory species.	Yes, Blakely's Red gum and Yellow Box one of the most common overstory species.	Yes, White Box one of the most common overstory species	White Box and Blakely's Red gum one of the most common overstory species.	White Box and Blakely's Red gum one of the most common overstory species.	Overstory absent but likely to have contained Blakely's Red Gum and Yellow Box based on trees in the locality.	Overstory absent but likely to have contained Blakely's Red Gum and Yellow Box based on trees in the locality.	Yes, Blakely's Red gum and Yellow Box one of the most common overstory species.	**No – planted vegetation contains a mix of Eucalypt species.**	Planted vegetation contains juvenile Yellow Box and Blakely's Red Gum.	Yes, Blakely's Red gum the most common overstory species.	Yes, Blakely's Red gum the most common overstory species.
The site is mainly grassy.	Perennial exotic grasses dominate.	Perennial exotic grasses dominate.	Yes, Native Grassy understory	Yes, Grassy understory	Yes, Grassy understory	Yes, Native Grassy understory	Yes, Native Grassy understory	Yes, Grassy understory	Yes, Native Grassy understory	Exotic grasses dominate.	Perennial exotic grasses dominate.	Perennial exotic grasses dominate.	Yes, Native Grassy understory
The site is within the	Yes, the site is located within the NSW South Eastern Highlands Bioregion.												

Zone	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	Zone 12	Zone 13
	PCT 1330	PCT 1330	PCT 1330	PCT 266	PCT 268	PCT 268	PCT 277	PCT 277	PCT 277	PCT 277	PCT 277	PCT 278	PCT 278
BC Requirement	**Derived Grassland**	**Poor Cond.**	**Mod Cond.**	**Poor Cond.**	**Derived Grassland**	**Mod. Cond.**	**DG – Good**	**DG - Low**	**Mod Cond.**	**Planted**	**Planted Roadside**	**Low Cond.**	**Mod Cond**
distributed area.													
There are no characteristic native species in the understorey, and the site is unlikely to respond to assisted natural regeneration	Understory heavily modified from road construction works and unlikely to contain a native soil seed bank. (VIS score 29.6) **Not the TEC**	Some native species in the understory **Forms part of the Box Gum Woodland TEC**	Characteristic native species in the understory **Forms part of the Box Gum Woodland TEC**	Some native species in the understory **Forms part of the Box Gum Woodland TEC**	Understory heavily disturbed and modified from intense grazing. No overstory and unlikely to respond to natural regeneration (VIS score 4.9) **Not the TEC**	Characteristic native species in the understory **Forms part of the Box Gum Woodland TEC**	Characteristic native species in the understory **Forms part of the Box Gum Woodland TEC**	Understory heavily disturbed and modified from intense grazing. No overstory and unlikely to respond to natural regeneration (VIS score 12.8) **Not the TEC**	Characteristic native species in the understory **Forms part of Box Gum Woodland TEC**	Vegetation heavily modified. Zone forms a planted windbreak **Not the TEC**	Understory heavily modified from road construction works and unlikely to contain a native soil seed bank. (VIS score 5.7) **Not the TEC**	Some native species in the understory **Forms part of Box Gum Woodland TEC**	Characteristic native species in the understory **Forms part of Box Gum Woodland TEC**

Table 3-6 Condition threshold assessment for the federally listed White Box - Yellow Box - Blakely's Red Gum Grassy Woodlands and derived native grasslands.

Zone	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	Zone 12	Zone 13
	PCT 1330	PCT 1330	PCT 1330	PCT 266	PCT 268	PCT 268	PCT 277	PCT 277	PCT 277	PCT 277	PCT 277	PCT 278	PCT 278
EPBC Requirement	**Derived Grassland**	**Poor Cond.**	**Mod Cond.**	**Poor Cond.**	**Derived Grassland**	**Mod. Cond.**	**DG – Good**	**DG - Low**	**Mod Cond.**	**Planted**	**Planted Roadside**	**Low Cond.**	**Mod Cond**
Is, or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red Gum.	Overstory absent but likely to have contained Blakely's Red Gum and Yellow Box based on trees in the locality.	No, Blakely's Red Gum codominant with long leaved box and Broad leaved peppermint.	Yes, Blakely's Red gum and Yellow Box one of the most common overstory species.	Yes, White Box one of the most common overstory species	Overstory absent but likely to have contained Blakely's Red Gum and Yellow Box based on trees in the locality.	White Box and Blakely's Red gum one of the most common overstory species.	Overstory absent but likely to have contained Blakely's Red Gum and Yellow Box based on trees in the locality.	Overstory absent but likely to have contained Blakely's Red Gum and Yellow Box based on trees in the locality.	Yes, Blakely's Red gum and Yellow Box one of the most common overstory species.	No – planted vegetation contains a mix of Eucalypt species. **Not the federally listed TEC**	Planted vegetation contains juvenile Yellow Box and Blakely's Red Gum.	Yes, Blakely's Red gum the most common overstory species.	Yes, Blakely's Red gum the most common overstory species.
Does the patch have a predominantly native understory?	Perennial exotic grasses dominate**.** **Not the federally listed TEC**	Perennial Exotic grasses dominate. **Not the federally listed TEC**	Yes, Native Grassy understory of *Themeda triandra* or *Rytidosperma* spp.	No, dominated by exotic species in understory **Not the federally listed TEC**	Yes, Grassy understory of *Bothriochloa macra* and *Microlaena stipoides*	Yes, Grassy understory	Yes, Grassy understory dominated by *Rytidosperma spp.*	Yes, Grassy understory with *B. macra.*	Yes, Grassy understory	n/a	Perennial exotic grasses dominate. **Not the federally listed TEC**	Perennial exotic grasses dominate. **Not the federally listed TEC**	Yes, Grassy understory of *M. stipoides and* rushes

Zone	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	Zone 12	Zone 13
	PCT 1330	PCT 1330	PCT 1330	PCT 266	PCT 268	PCT 268	PCT 277	PCT 277	PCT 277	PCT 277	PCT 277	PCT 278	PCT 278
EPBC Requirement	Derived Grassland	Poor Cond.	Mod Cond.	Poor Cond.	Derived Grassland	Mod. Cond.	DG – Good	DG - Low	Mod Cond.	Planted	Planted Roadside	Low Cond.	Mod Cond
Is the patch 0.1 ha or greater in size.	**n/a**	**n/a**	Yes -	**n/a**	Yes – Grassland patch over 6ha.	**Yes**	Yes	Yes	Yes	**n/a**	**n/a**	**n/a**	Yes
There are 12 or more native understorey species present.	**n/a**	**n/a**	**9 species in 0.04 ha.** **(Assume yes as a precaution)**	**n/a**	No – low forb diversity. Heavily grazed. Only disturbance tolerant forbs present.	No – low forb diversity No important species.	**Yes – 9 species/004 ha. Important species present.** **(Assumed yes as a precaution)**	No – low forb diversity. No important species.	No – low forb diversity. No important species.	**n/a**	**n/a**	**n/a**	9 common forbs. No important species.
Is the patch 2 ha or greater in size.	n/a	n/a	**Yes – 2.01 ha for the smallest patch.**	n/a	n/a	Yes – patch greater than 6 ha	n/a	Yes, some patches greater than 6 ha	Yes, some patches greater than 6 ha	n/a	n/a	n/a	Yes – patch greater than 6 ha

Zone	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	Zone 12	Zone 13
	PCT 1330	PCT 1330	PCT 1330	PCT 266	PCT 268	PCT 268	PCT 277	PCT 277	PCT 277	PCT 277	PCT 277	PCT 278	PCT 278
EPBC Requirement	**Derived Grassland**	**Poor Cond.**	**Mod Cond.**	**Poor Cond.**	**Derived Grassland**	**Mod. Cond.**	**DG – Good**	**DG - Low**	**Mod Cond.**	**Planted**	**Planted Roadside**	**Low Cond.**	**Mod Cond**
Is there natural regeneration of the dominant overstory species?	n/a	n/a	Yes – regeneration of overstory species present. **Meets condition for federally listed TEC**	n/a	No regeneration of overstory species.	Yes – regeneration of overstory species present. **Meets condition for federally listed TEC**	n/a	No regeneration of overstory species.	Yes – regeneration of overstory species present. **Meets condition for federally listed TEC**	n/a	n/a	n/a	Yes – regeneration of overstory species present. **Meets condition for federally listed TEC**
Does the patch have an average of 20 or more mature trees/ha	n/a	n/a	n/a	n/a	No – patch is a derived grassland.	n/a	n/a	No – patch is a derived grassland.	N/A	n/a	n/a	n/a	n/a
Conclusion	Does not meet criteria for federally listed TEC	Does not meet criteria for federally listed TEC	Forms part of the Box Gum Woodland TEC	Does not meet criteria for federally listed TEC	Does not meet criteria for federally listed TEC	Forms part of the Box Gum Woodland TEC	Forms part of the Box Gum Woodland TEC	Does not meet criteria for federally listed TEC	Forms part of the Box Gum Woodland TEC	Does not meet criteria for federally listed TEC	Does not meet criteria for federally listed TEC	Does not meet criteria for federally listed TEC	Forms part of the Box Gum Woodland TEC

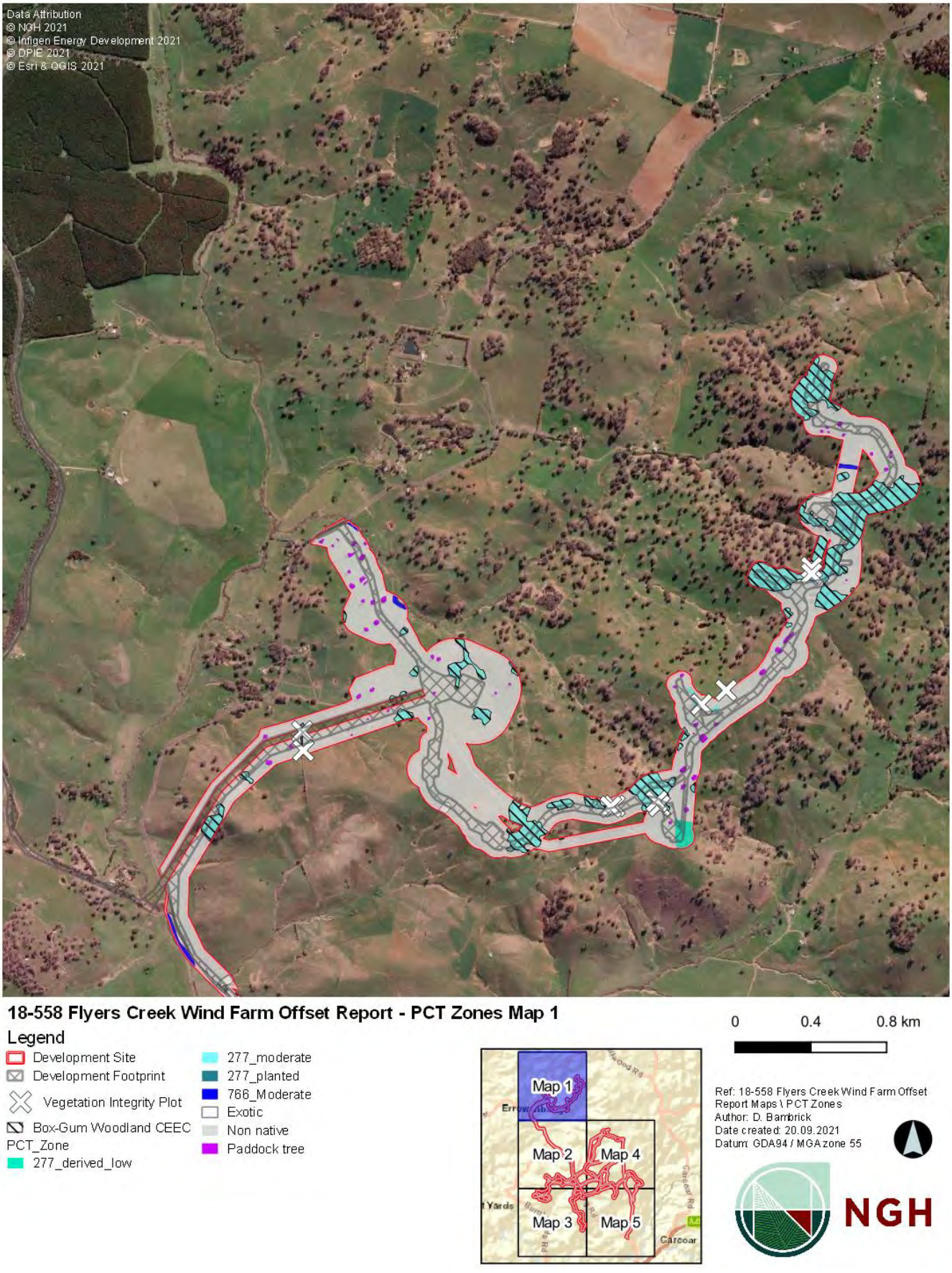

Figure 3-17 Plant Community Type Zones and paddock trees (map 1)

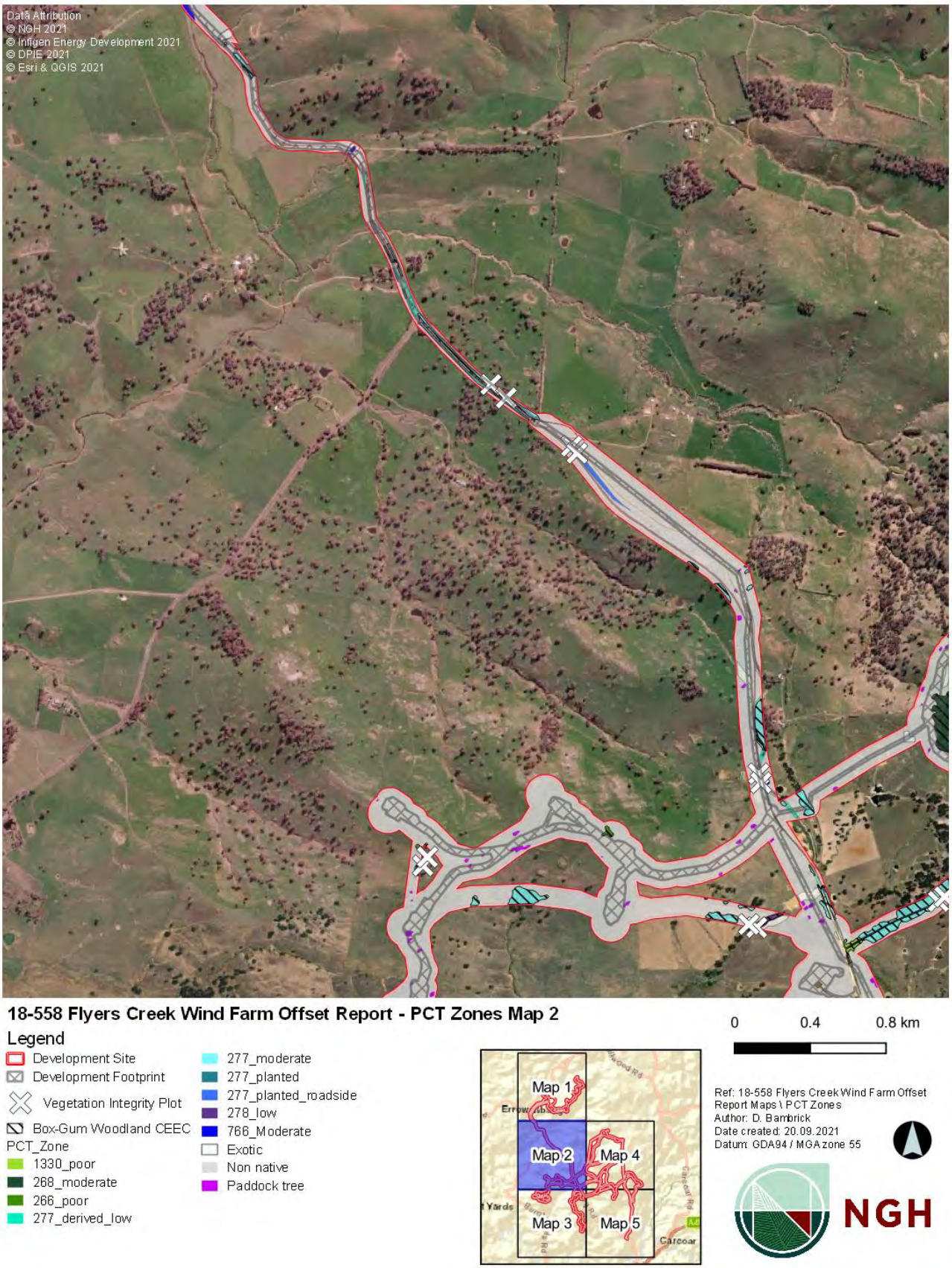

Figure 3-18 Plant Community Type Zones and paddock trees (map 2)

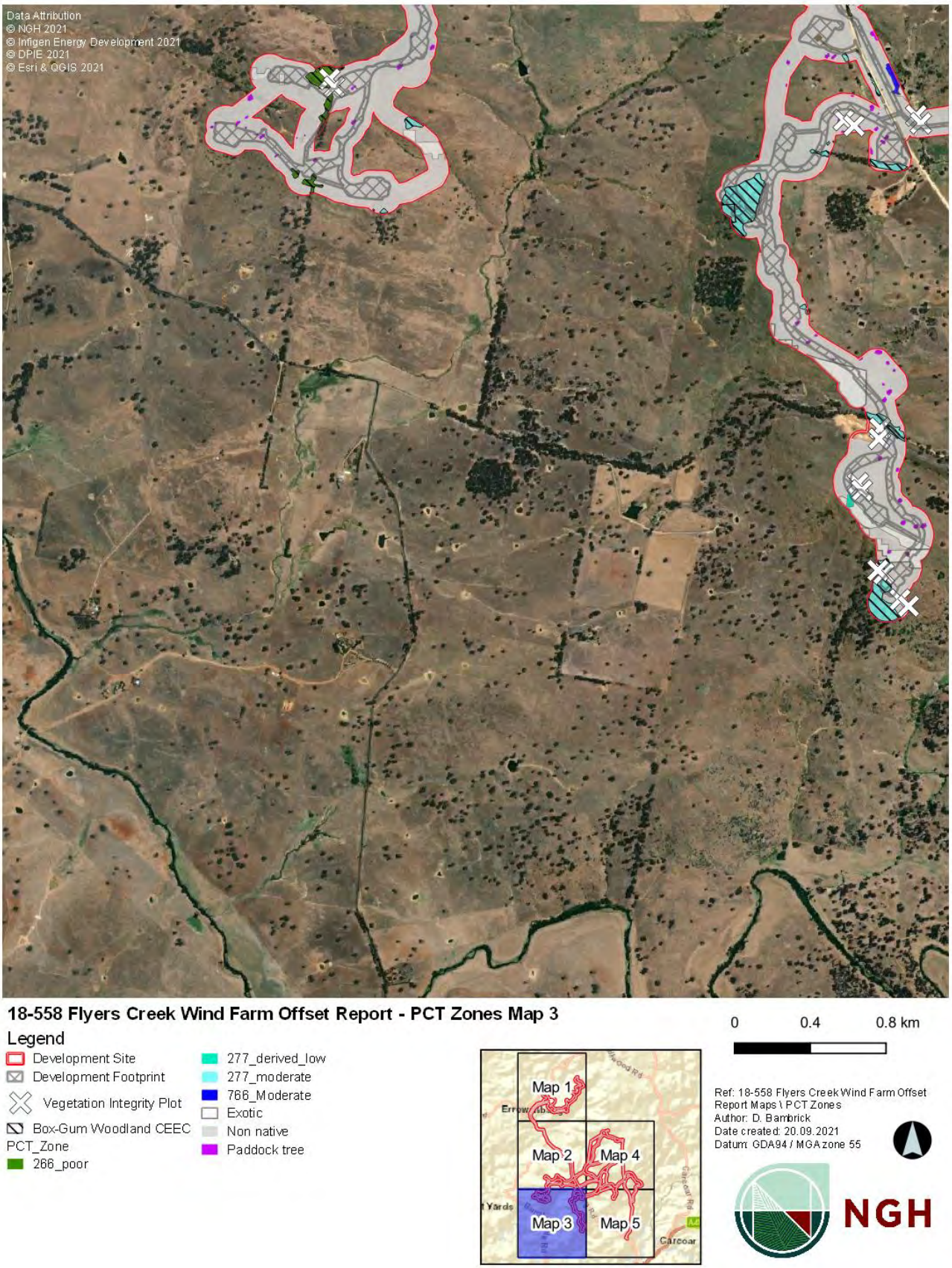

Figure 3-19 Plant Community Type Zones and paddock trees (map 3)

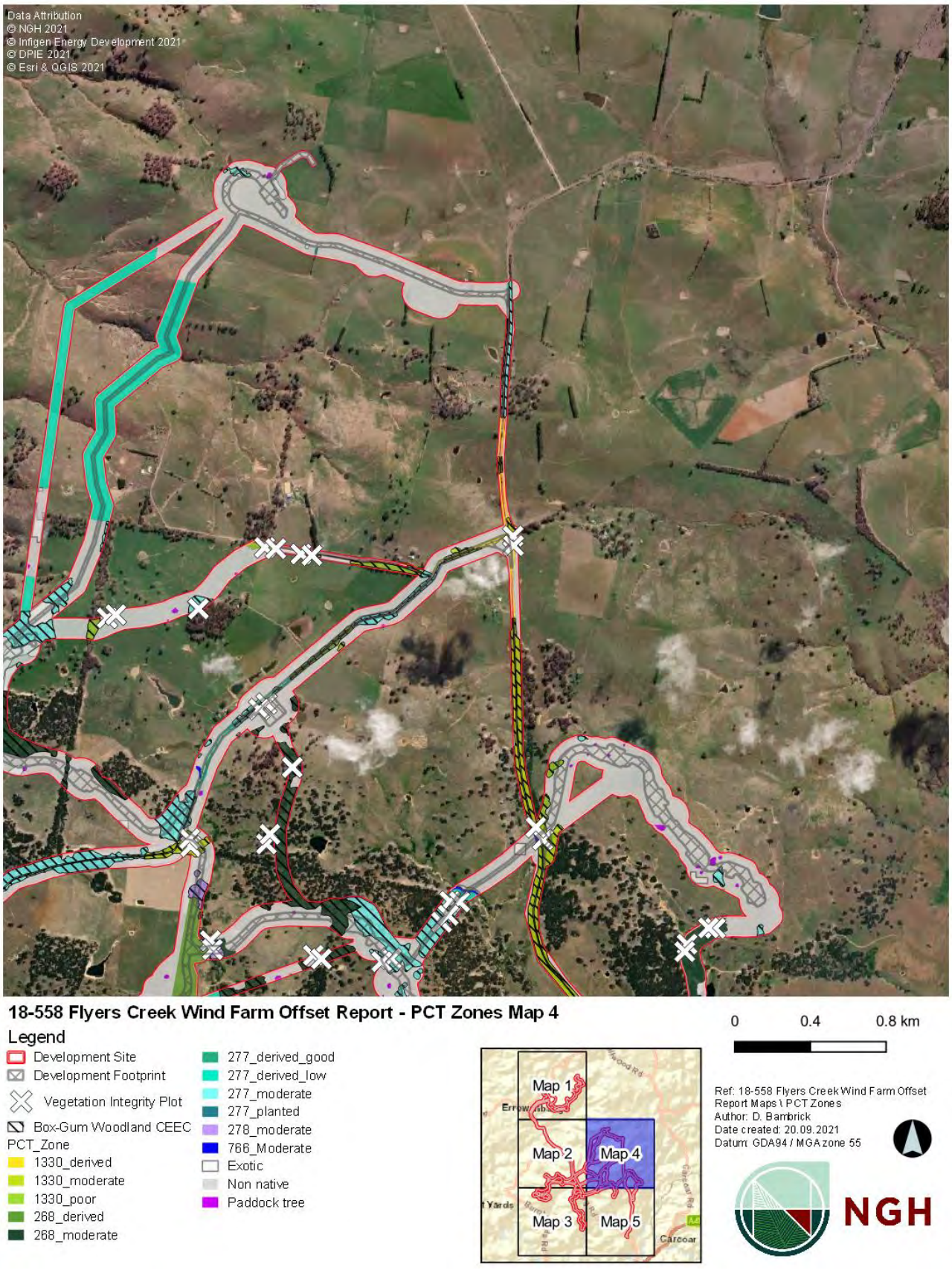

Figure 3-20 Plant Community Type Zones and paddock trees (map 4)

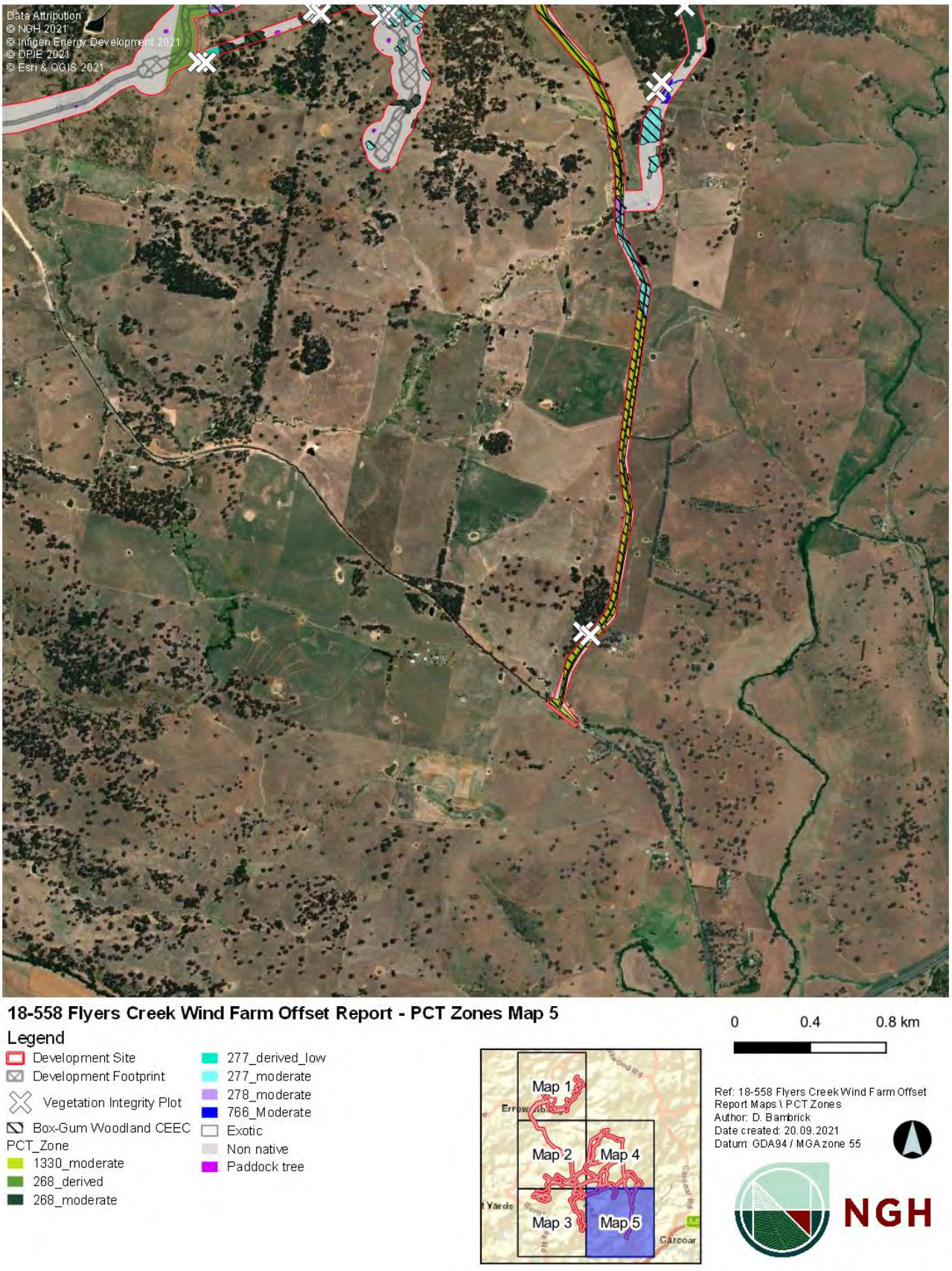

Figure 3-21 Plant Community Type Zones and paddock trees (map 5)

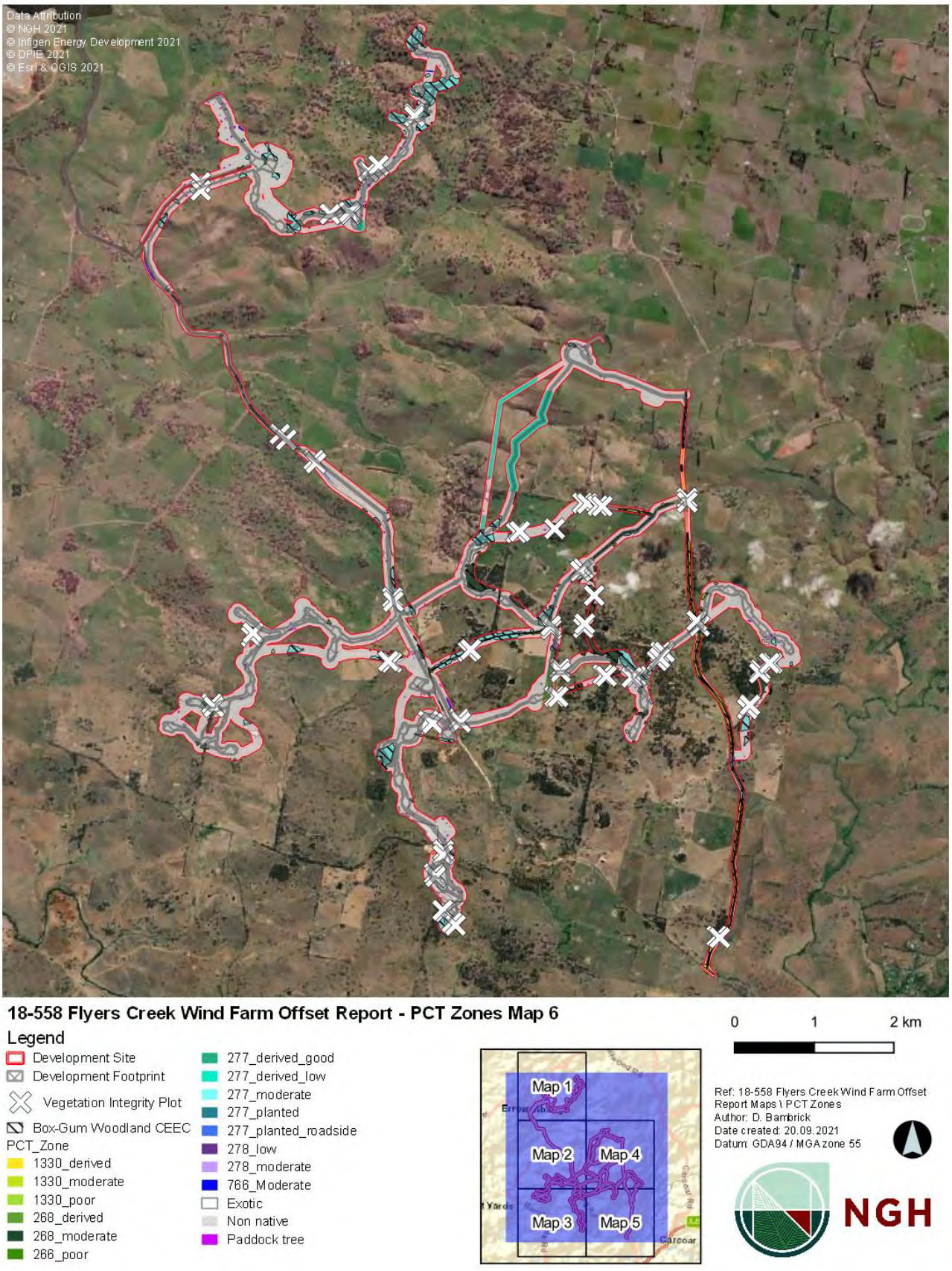

Figure 3-22 Plant Community Type Zones and paddock trees (map 6)