

Detailed and Targeted Flora and Vegetation Survey, Springhill Rd (SLK 0.1 to 6.61) Cuballing

2024



Prepared for the Shire of Cuballing
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Executive summary

The Shire of Cuballing engaged Ecoedge Environmental Services (Ecoedge) in July 2024 to undertake a detailed and targeted flora and vegetation survey of vegetation along Springhill Road from Austral Street to the Wandering-Narrogin Road (SLK 0.1 to 6.61). The length of the road was approximately 6.95 kilometres. Mainly, the survey area extended about 6 metres on either side of the current bitumen surface except in a few places where it extended further, for instance, near the Darcy Street intersection and adjacent to Rosedale Nature Reserve.

The survey was required to support a proposal to widen the section of road.

The flora and vegetation survey was undertaken on 3 and 4 October 2024, in accordance with the Environmental Protection Authority Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016). The survey was conducted by Principal Botanist R. Smith and Senior Botanist C. Spencer.

One hundred and forty-one vascular flora taxa were identified during the survey with 47 (33.3%) being introduced species.

No flora listed as Threatened under the EPBC Act 1999 or under the BC Act 2016 or Priority flora were found.

Thirty-four plant taxa were identified as potentially occurring within the survey area in a pre-survey likelihood of occurrence assessment, with the occurrence of thirty-two of these regarded as “Possible” based on preferred habitat.

The post-survey likelihood of occurrence assessment determined that all thirty-four taxa were unlikely to occur, mainly because they weren’t found having been searched for thoroughly at an appropriate time of year. The survey was carried out at a time when five taxa would not have been flowering and thus easily identified. However, the use of fruit or other methods of identification means that the residual risk of any of them being missed during the survey is considered to be very low.

The Declared Pest plants, **Asparagus asparagoides* (bridal creeper) (two locations) and *Moraea flaccida* (One leaf cape tulip) (five locations) were found in the survey area.

Five vegetation units were recognised within the survey area:

Units A and B, comprising Wandoo-dominated woodlands with *Allocasuarina huegeliana* (Rock sheoak) as a small tree in the understorey. Unit A was found on sandy loams and had a mainly herbaceous understorey, whereas unit B was found on gravelly loam, higher in the landscape, and had a higher proportion of shrubs in the understorey. Vegetation unit D comprises an open woodland of *Eucalyptus rudis* along drainage lines with a mainly weedy understorey. Unit E is similarly mainly introduced forbs and grasses in the understorey but is

dominated by *E. loxophleba* (York gum). Finally, unit E represents a highly degraded part of the survey area where it is apparent that partial or complete clearing of the road verge has taken place in the past. Vegetation comprises the small trees *Acacia acuminata* and *Allocasuarina huegeliana* or, in places, planted eucalypts such as **E. camaldulensis*.

Approximately 95% of the vegetation is in a Degraded to Completely Degraded condition with most of this occurring in the southern part of the survey area adjacent to cleared agricultural land. Most of the Good Very Good condition comprising about 3% of the vegetation is restricted to the part of the survey area adjacent to two reserves.

A floristic analysis (MVA) was carried out on five quadrats installed within the survey area that compared them to quadrats from the Biological Survey of the Agricultural Zone. The MVA and a comparison of the vegetation units described for the survey area showed that the vegetation was typical of widespread types within the Wheatbelt.

Three patches of the “Eucalypt woodlands of the WA Wheatbelt” ecological community that met the threshold criteria of the EPBC-listed Wheatbelt Woodland TEC and State P3 PEC were identified. Even though all of the patches within the survey area were below the threshold minimum area the inclusion of similar vegetation in adjacent reserves meant they exceeded the thresholds. The total area of the TEC within the three patches that was within the bounds of the survey area was 0.675 ha.

Vegetation unit D has species (e.g. *E. rudis*, *Acacia saligna*) typical of damplands or creeklines in the survey area. This unit is found at the crossing of Fourteen Mile Brook in the southern part of the survey area.

Only one vegetation association mapped by Beard occurs in the survey area: Association 1023 ‘Medium woodland; York gum, wandoo & salmon gum (*E. salmonophloia*)’. Association 1023 falls below the Commonwealth 30% retention target across all levels, with the Shire of Cuballing retaining 18.87% of pre-European extent of the association. At a very broad level the survey area vegetation matches association 1023, but no salmon gum was found.

There are no ESAs mapped within the survey area, with the nearest one 3.6 kilometres to the west.

Contents

Executive summary.....	3
Statement of limitations	9
Reliance on data	9
Report for the benefit of the client.....	9
1 Introduction and background.....	10
1.1 Scope and objective	13
1.2 Desktop study	13
1.3 Field survey	13
2 Methods.....	14
2.1 Desktop assessment	14
2.1.1 Significant flora likelihood of occurrence	14
2.2 Field survey	14
2.3 Floristic Analysis.....	15
2.3.1 Method	15
2.4 Survey limitations	17
3 Desktop assessment results	18
3.1 Climate	18
3.2 Biogeographic region and location	18
3.3 Landform and soils.....	19
3.4 Vegetation description according to pre-European mapping datasets	22
3.4.1 Vegetation associations	22
3.4.2 Assessment of remaining extent against pre-European extent	22
3.5 Threatened and Priority ecological communities.....	25
3.6 Threatened and Priority flora	28
3.7 Wetlands and watercourses	31
3.8 Environmentally Sensitive Areas.....	33
4 Field survey results	35
4.1 Flora	35
4.2 Threatened and Priority flora	35
4.2.1 Post Survey Likelihood of occurrence.....	36
4.2.2 Significant weeds	37
4.3 Vegetation units.....	40

4.4	Vegetation condition	44
4.5	Floristic Analysis.....	46
4.5.1	Multivariate Analysis.....	46
4.5.2	Comparison with Wheatbelt Eucalypt Communities Classification	47
4.6	Threatened Ecological Communities	51
4.6.1	Wheatbelt Woodland TEC PEC	51
5	Discussion and conclusions	58
5.1	Significance of flora.....	58
5.2	Post-survey likelihood of occurrence	58
5.3	Significant weeds	58
5.4	Significance of vegetation.....	58
5.5	Wetland and watercourse vegetation	58
5.6	Vegetation Complexes and Associations	58
5.7	Environmentally sensitive areas	58
6	References	59
	Appendix 1. Threatened and Priority flora likelihood of occurrence assessment rationale...64	
	Appendix 2. Vegetation condition scale (EPA, 2016)..... Error! Bookmark not defined.	
	Appendix 3. Sample sites of the survey area.....	
	Appendix 4. Quadrat data.....	
	Appendix 5. Flora taxa amalgamated in or omitted from the statistical analysis.....	
	Appendix 6. Categories of Threatened ecological communities under the EPBC Act.....	
	Appendix 7. Categories of threatened and priority ecological communities under the BC Act.	
	Appendix 8. Definitions of conservation codes for Threatened and Priority flora.	
	Appendix 9. Categories of Threatened species under the EPBC Act.	
	Appendix 10. Online data base searches.....	
	Appendix 11. Threatened and Priority flora pre and post survey likelihood of occurrence table.	
	Appendix 12. List of vascular flora found within the survey area.	
	Appendix 13. Vegetation units found within the survey area.....	
	Appendix 14. Vegetation condition found within the survey area.	
	Appendix 15. Excerpts from analysis dendrograms.	
	Appendix 16. DBCA TEC PEC report forms.....	

Table of Tables

Table 1. Limitations of the field survey with regard to assessment adequacy and accuracy. 17	
Table 2. Soil mapping phases for the survey area (McArthur et al. 1977).	20
Table 3. Vegetation associations within the survey area compared to the Commonwealth retention targets (GoWA 2019a).	23
Table 4. Threatened and Priority ecological communities occurring and potentially occurring within 15 km study area (DBCA 2024a, DCCEEW 2024).	25
Table 5. Pre-survey likelihood of occurrence according to conservation status.....	29
Table 6. Taxa which would have been out of their flowering period at the time of survey. ..	36
Table 7. Summary of the Post survey Likelihood of occurrence assessment.....	36
Table 8. Vegetation units within the survey area.....	41
Table 9. Summary of vegetation condition classes within the survey area.	44
Table 10. Proportions of the vegetation units within condition classes.	45
Table 11. Summary of Wheatbelt TEC assessment results of the three patches within the survey area.....	52

Table of Figures

Figure 1. Regional context of the survey area.	11
Figure 2. Location of the survey area.	12
Figure 3. Climate statistics for BoM Narrogin weather station #10614 showing historical results of mean rainfall and temperatures and for 2024 (BoM 2025).	18
Figure 4. Soil units mapped for the survey area (McArthur et al. 1977).	21
Figure 5. Vegetation associations mapped within the survey area (Beard et al. 2013).	24
Figure 6. Threatened and Priority ecological communities within the 15 km desktop study area (DBCA 2024a, DCCEEW 2024).	26
Figure 7. Threatened and Priority ecological communities potentially occurring within the survey area (DBCA 2024a, DCCEEW 2024).	27
Figure 8. Known occurrences of Threatened and Priority flora within the study area (DBCA 2024c).	30
Figure 9. Location of watercourses in proximity to the survey area (Crossman & Li 2015). ..	32
Figure 10. The survey area in relation to ESAs (DWER 2021).	34
Figure 11. Location of environmental weeds within the survey area.	38
Figure 12. Location of environmental weeds in the survey area.	39
Figure 13. Location of EPBC TEC and State-listed PEC Eucalypt Woodlands of the Western Australian Wheatbelt recorded within the survey area.	54
Figure 14. Location of EPBC TEC and State-listed PEC Eucalypt Woodlands of the Western Australian Wheatbelt recorded within the survey area.	55
Figure 15. Location of EPBC TEC and State-listed PEC Eucalypt Woodlands of the Western Australian Wheatbelt recorded within the survey area.	56
Figure 16. Location of EPBC TEC and State-listed PEC Eucalypt Woodlands of the Western Australian Wheatbelt recorded within the survey area.	57

Statement of limitations

Reliance on data

In preparing this report, Ecoedge has relied on data, surveys, analyses, designs, plans, and other information provided by the Client and other individuals and organisations, most of which are referenced in the report. Unless stated otherwise in the report, Ecoedge has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report are based in whole or in part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Ecoedge will not be liable for incorrect conclusions resulting from any incorrect data, information, or conditions that are incorrect, concealed, withheld, unavailable, misrepresented, or not fully disclosed to Ecoedge.

Report for the benefit of the client

The report has been prepared for the benefit of the Client and no other party. Ecoedge assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including, without limitation, matters arising from any negligent act or omission of Ecoedge or for any loss or damage suffered by any other party relying on the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

1 Introduction and background

Ecoedge Environmental Services (Ecoedge) was engaged by the Shire of Cuballing in July 2024 to undertake a detailed and targeted flora and vegetation survey of Springhill Road, Cuballing, from SLK 0.1 to 6.61, located within the Shire of Cuballing (**Figure 1**).

The total survey area is approximately 6.61 kilometres (km) in length and covers approximately 15 hectares (ha), including the road (**Figure 2**). The survey area is located on the southwestern outskirts of the town of Cuballing and is predominantly surrounded by rural land used for agricultural purposes.

The Shire of Cuballing are planning an upgrade of Springhill Road to support its future use as a freight route and require this survey to inform project planning and environmental approvals that may be associated with the project.

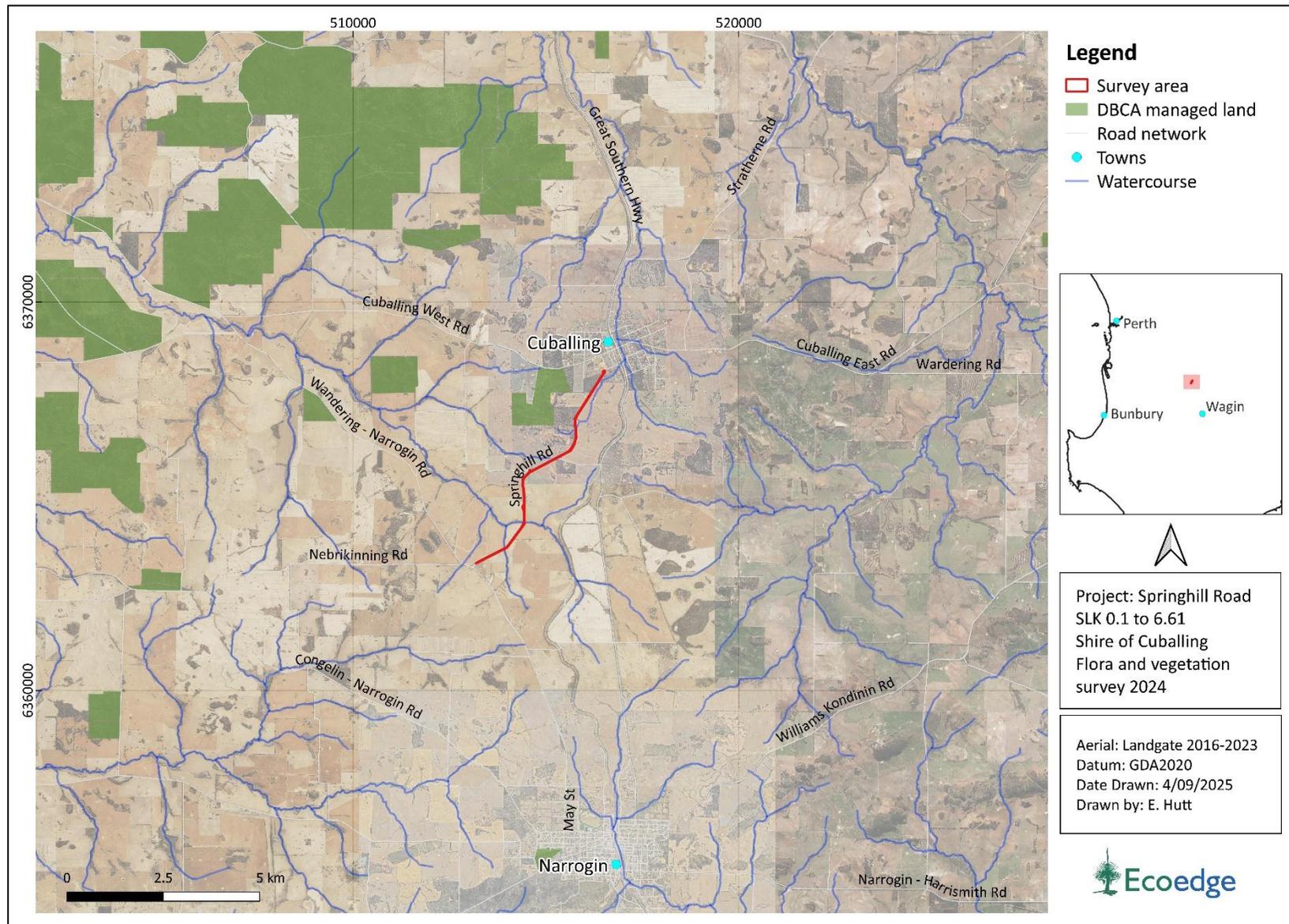


Figure 1. Regional context of the survey area.

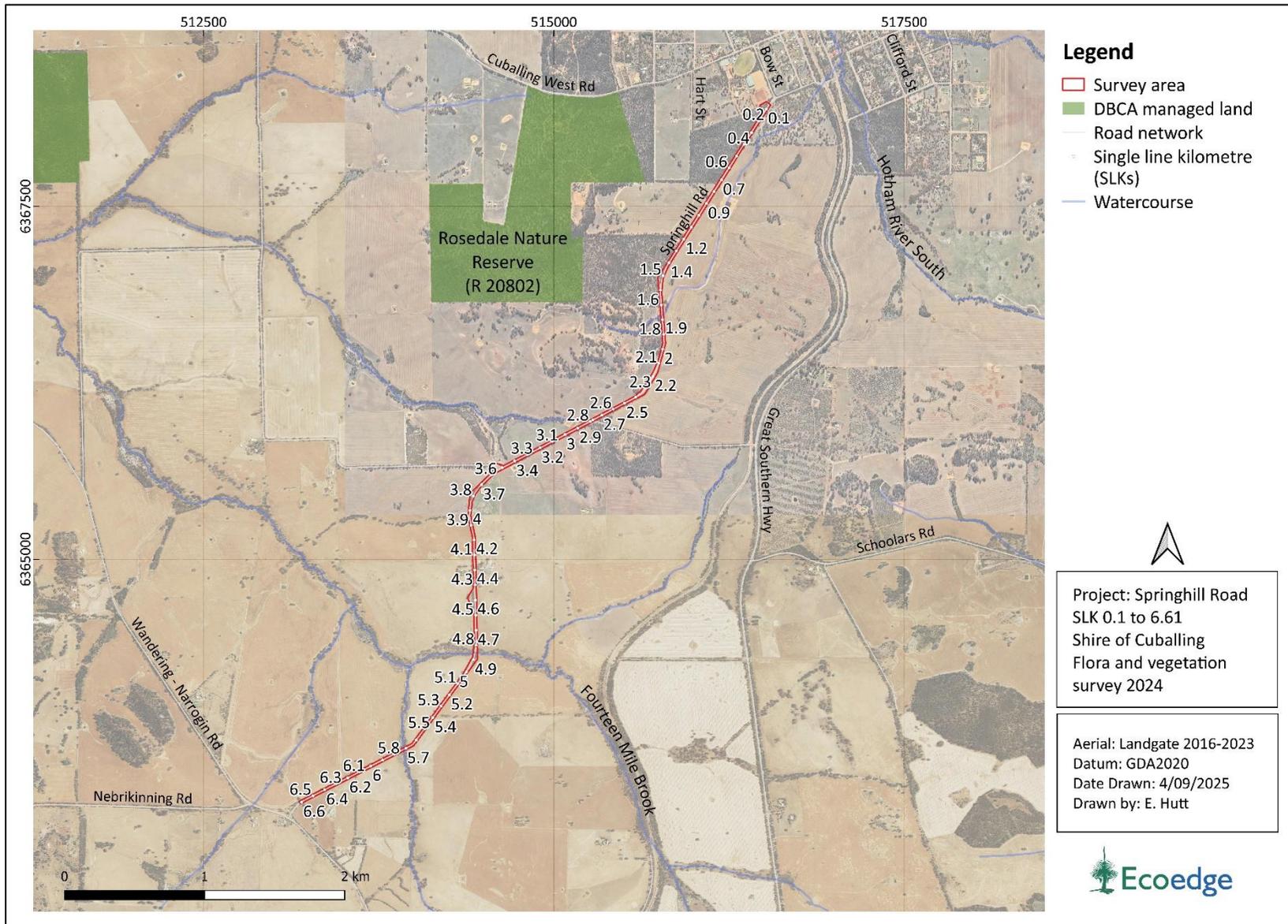


Figure 2. Location of the survey area.

1.1 Scope and objective

The objective of the survey was to provide a report on the outcomes of a detailed and targeted flora and vegetation survey, delineating key flora and vegetation features and constraints for the proposal.

The scope of the survey comprised two main parts, a desktop study and a field survey.

1.2 Desktop study

A desktop study over a 15 km radius of the survey area was required prior to the field survey work to identify all features and constraints, which were in, or nearby the survey area, such as significant flora, significant vegetation/ecological communities, unusual or rare soil/landscape systems, surface water values, conservation estate, poorly represented vegetation associations and or vegetation complexes and environmentally sensitive areas (ESA).

1.3 Field survey

The detailed and targeted field survey was required to ground-truth outcomes of the desktop assessment with a focus on the delineation of all significant flora and significant vegetation, vegetation condition, mapping of Weeds of National Significance (WoNS), Declared pest plants listed under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) and mapping of riparian vegetation.

The survey and report were required to be undertaken in accordance with the Environmental Protection Authority (EPA) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016) and other State and Commonwealth guidelines for threatened species and communities, such as approved conservation advice for *Environmental Protection and Biodiversity Act 1999* (EPBC Act) threatened species and communities.

2 Methods

2.1 Desktop assessment

Prior to the field survey, a desktop assessment was undertaken to provide contextual information on the flora and vegetation within the survey area. The desktop studies (desktop study area of 15 km radius from the survey area) included a review of the following information.

- Regional landform and soils mapping (McArthur et al. 1977).
- Beard's pre-European vegetation association mapping dataset (DPIRD-006) (Beard et al. 2013).
- WA Threatened and Priority Ecological Communities DBCA database extracts from the Department of Biodiversity, Conservation and Attractions (DBCA 2024a) and TEC and PEC listings (DBCA 2023b, DBCA 2023c).
- Federal Protected Matters Search Tool results (DCCEEW 2024).
- Threatened and Priority flora Naturemap search results (DBCA 2024b).
- Extract from the Department's Threatened Flora database and the Western Australian Herbarium database (DBCA 2024c).
- Wheatbelt Wetlands Stage 1 dataset DBCA-021 (DBCA 2021).
- Environmentally sensitive areas distribution maps and data (DWER 2021).
- Surface Hydrology Lines (National) (Crossman & Li 2015).
- Index of Biodiversity Surveys for Biodiversity Assessments Database Search (DWER 2024)¹

2.1.1 Significant flora likelihood of occurrence

Prior to undertaking the survey, an assessment of the likelihood of occurrence of Threatened and Priority flora occurring or potentially occurring within the survey area was undertaken. An assessment of the likelihood of this flora occurring within the survey area post-survey was also undertaken. The rationale for both the pre- and post-survey likelihood assessments is provided in **Appendix 1**.

2.2 Field survey

The flora and vegetation survey of the 15.81 ha survey area (including roads) comprising 44.28 ha of vegetated areas was undertaken on 3 and 4 October 2024 by Colin Spencer (flora permit FB62000169-3) and Russell Smith (flora permit FB62000500).

The timing of the field visits was within the optimum time for field identification of most of the species likely to be found in the area.

The targeted Threatened and Priority flora survey comprised of traverses approximately 20m wide, with potential habitat such as areas of better-quality vegetation, damplands and drainage lines searched more thoroughly in accordance with EPA (2016) and technical

¹ An Index of Biodiversity Surveys for Assessment data base search was conducted post survey – no survey reports relevant to the survey area were found in the database.

guidance statements, such as the Commonwealth of Australia (2013) *Survey Guidelines for Australia's Threatened Orchids*.

The detailed component of the survey (expanded upon in **section 2.3.1**) entailed the installation of five 10 m x 10 m quadrats in vegetation units in good or better condition. The amount of vegetation in Good-or-better condition within the survey area was insufficient for more than one quadrat to be placed within each vegetation unit, apart from near the junction of Springhill Road and Darcy Street.

Vegetation units were described using the NVIS system (Level 5; NVIS 2017) based on information collected on dominant species, and soil data collected at 272 sampling sites across the survey area (five Wheatbelt TEC relevés, 79 mapping notes, 13 floristic relevés, 167 vegetation condition records and five 10 m x 10 m quadrats).

Vegetation condition was assessed in accordance with the Keighery Vegetation Condition Scale (**Appendix 2**).

Flora species not identified in the field were either photographed or collected for later identification.

The location of the floristic quadrats, relevés, vegetation mapping notes including track files are shown in **Appendix 3**.

2.3 Floristic Analysis

The aim of the floristic analysis is to determine the degree of similarity of the five quadrats installed in the Springhill Road survey to quadrat data from the Biological Survey of the Agricultural Zone (Lyons et. al. 2009). Twenty-seven of the total of 682 floristic quadrats installed as part of the BSAZ occur within 30 km of the survey area which improves the likelihood of good floristic matches. More generally, the vegetation units described for the Springhill Road survey area can be compared to the vegetation communities and sub-communities defined for the Wheatbelt in Harvey and Keighery (2012).

Data was collected and analysed in accordance with methodology described in Gibson et al. 1994 and the DBCA (2023d) Methods for Survey and Identification of Western Australian TECs to avoid producing unreliable and potentially misleading results. The method is described as follows:

2.3.1 Method

Data collection

Five 10 m x 10 m quadrats (CUBA01-CUBA05) were installed within Good-or-better condition vegetation and not in an ecotone or transition community to ensure, that the data was of similar quality, in terms of native species diversity and absence of weeds to the reference data sets.

All vascular flora was recorded and identified from within these quadrats. The results of the quadrat data are shown in **Appendix 4**.

Data preparation

The survey quadrat data and the Lyons et al. (2009) data sets were reconciled with the current nomenclature of the WA Plant census using the latest data from the WA Herbarium. This step was necessary because of the ongoing changes in nomenclature due to continued research into the taxonomy of Western Australian plants and plants in general.

All singletons were removed from the datasets prior to analysis, as per Gibson et al. (1994). All unidentified taxa were removed from all data sets prior to analysis.

Quadrat data was reconciled with the reference data sets by, in some cases, differentiating species to infra-specific levels, for example by differentiating *Melaleuca viminea* to *Melaleuca viminea* subsp. *viminea*, or in other cases by reducing some infra-specific levels to their relevant species name for example from *Chamaescilla corymbosa* subsp. *corymbosa* to *Chamaescilla corymbosa*.

In other instances, taxa were reconciled by combining two very similar species 'as one' where confusion is known to have occurred in the field and identifications, such as for the combination of *Thysanotus manglesianus* and *T. patersonii* to form the "*Thysanotus manglesianus/patersonii*" complex. Species were also grouped as a collective where a taxon had not been identified to a sub species level at the time of the original survey, such as subsp. of *Acacia pulchella*. These are referred collectively as the *Acacia pulchella* group.

All taxa amalgamated in groups or complexes or omitted from the data for statistical analysis are shown in **Appendix 5**.

Data analysis

Following the data matching process, quadrat data was then combined with the complete reference data sets and subject to multivariate analysis (MVA) using PATN statistical software. All singleton (taxa occurring in only one quadrat) were removed before the analysis. Sites were classified according to similarities in species composition using the Bray-Curtis similarity measure with the resulting resemblance matrix then subject to a hierarchical group-average cluster analysis (Unweighted pair group method with arithmetic mean method UPGMA) to 'cluster' or group the quadrats with other similar reference site quadrats.

In total 765 quadrats and 1,919 taxa were included in the MVA.

2.4 Survey limitations

Potential limitations with regard to the survey are addressed in **Table 1**.

Table 1. Limitations of the field survey with regard to assessment adequacy and accuracy.

Aspect	Constraint	Comment
Scope	Not a constraint	The survey scope was prepared in consultation with the client and was designed to comply with EPA requirements.
Proportion of flora identified	Minor	The survey was conducted in early October 2024, within the optimal survey time for the Wheatbelt, allowing for the identification of almost all taxa.
Climatic and seasonal effects	Minor	2024 rainfall data is not available for Cuballing, but rainfall till the end of September at the nearest rainfall station was only 75% of the long-term mean. Nevertheless, there were no signs that the dry year to date had any effect on flowering.
Availability of contextual information	Not a constraint	A high-level regional survey of the Wheatbelt (the BSAZ) is available for floristic quadrat comparisons.
Completeness of the survey	Not a constraint	All the survey area was easily accessible.
Skill and knowledge of the botanists	Not a constraint	The senior botanist has 35 years' experience in flora surveys in the south-west of W.A.
Recent disturbance (fire, grazing, clearing etc.)	Not a constraint	There were no recent disturbances at the site, such as fire which affected the survey.
Data collection for floristic analysis	Minor	Quadrats were sampled only once, but this was during the optimum time for species flowering and identification. All species were identified. However, the reference set quadrats were often sampled over multiple seasons resulting in potentially higher number of taxa per quadrat thereby reducing the comparability of survey and reference set data. Quadrats were located in Good and Very Good condition vegetation compared to the Very Good/Excellent reference quadrats. This may result in fewer taxa per survey area quadrat reducing the comparability of survey and reference set data.
Data preparation for floristic analysis	Minor	Survey data nomenclature was matched with all reference data nomenclature.
Floristic statistical analysis:	Minor	The analysis was undertaken with PATN using similar statistical analysis methods as prescribed in Gibson et al. 1994 and recommended in DBCA (2023d).

3 Desktop assessment results

3.1 Climate

The survey area is located within the Wheatbelt region which forms part of the Southern and South-Western Flatlands Natural Resource Management (NRM) climate cluster as categorised by Hope et al. (2015). This region is classified as Temperate with distinctly dry (and hot) summers as defined by the modified Koppen system adapted for the Australian climate by Stern et al. (2000) and applied by the Bureau of Meteorology (2025). This translates to a temperate, seasonally dry climate, characterised by hot summers and mild winters, with the majority of annual precipitation occurring during the winter months.

The closest BoM weather station with an extended and reliable history is located at Narrogin (Station number 10614). Climate statistics from 1891-2024 and for the year 2024 for this station are shown in **Figure 3**.

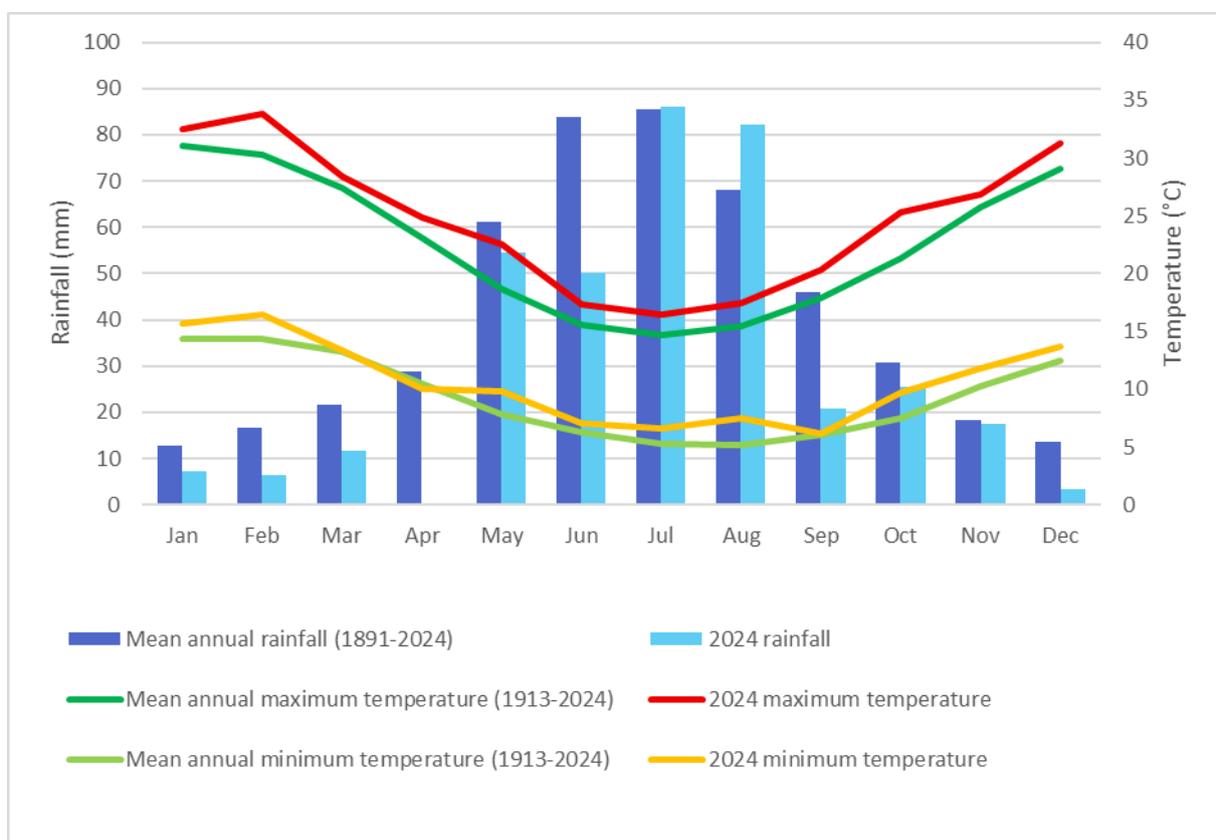


Figure 3. Climate statistics for BoM Narrogin weather station #10614 showing historical results of mean rainfall and temperatures and for 2024 (BoM 2025).

3.2 Biogeographic region and location

The survey area is situated within Katanning (AVW02) subregion of the Avon Wheatbelt (AVW) biogeographic region as defined in the Interim Biogeographical Regionalisation for Australia (IBRA) (Commonwealth of Australia 2016).

3.3 Landform and soils

The survey area lies within the Southern Zone of Rejuvenated Drainage, a geomorphic region forming part of the ancient Yilgarn Craton. This craton is composed primarily of Archaean granite and gneiss, with minor dolerite intrusions and greenstone belts. The zone features undulating terrain ranging from 200 to 400 m above sea level, shaped by erosional dissection of lateritic plateau. This process has produced gently inclined rises, low hills, lateritic remnants with breakaways and broad valleys. Soils within this zone include gravelly duplex profiles in the uplands, shallow stony and gravelly sands on breakaways and sodic dispersive duplex soils on the valley floors (Tille, Mathwin & George 2001).

Within this context, the zone has been further classified into several soil landscape systems, with the survey area occurring within the Dryandra system (257Dy) of the upper Murray Valley. The Dryandra system is characterised by gently undulating terrain with residual mesas and mafic dykes. Soils include deep sandy duplexes, loamy duplexes and brown loamy earths supporting wandoo sheoak woodlands (Tille, Mathwin & George 2001).

The soil-landscape systems of the zone have been divided into subsystems and further divided into soil phases. The soil phases occurring within the survey area are described in **Table 2** and mapped in **Figure 4**.

Table 2. Soil mapping phases for the survey area (McArthur et al. 1977).

System	Soil phase	Description
Dryandra System (257Dy)	257DyNO	Norrine subsystem - a complex of lateritic residuals and associated pediment; gravely sand, sand, duplex yellow soils and duricrust.
	257DyNB	Noombling subsystem - long gentle and undulating hillslopes and divides. Colluvium / weathered granite, gneiss and some dolerite. Yellow/brown and grey deep sandy duplexes, brown deep loamy duplexes, sandy gravels and shallow duplexes. Marri-wandoo / jam-sheoak.
	257DyNBr	Noombling, rocky phase - long gentle and undulating hillslopes and divides with common (15-20%) rock outcrops. Bare rock, stony soils and yellow/brown and grey deep sandy duplexes.
	257DyBK	Biberkine subsystem - valley floors & footslopes with gently undulating rises & low hills. Alluvium and colluvium over granite etc. Yellow brown sandy duplexes, wet and semi-wet soils & brown deep loamy duplexes. Wandoo-flooded gum with jam-sheoak-teatree.

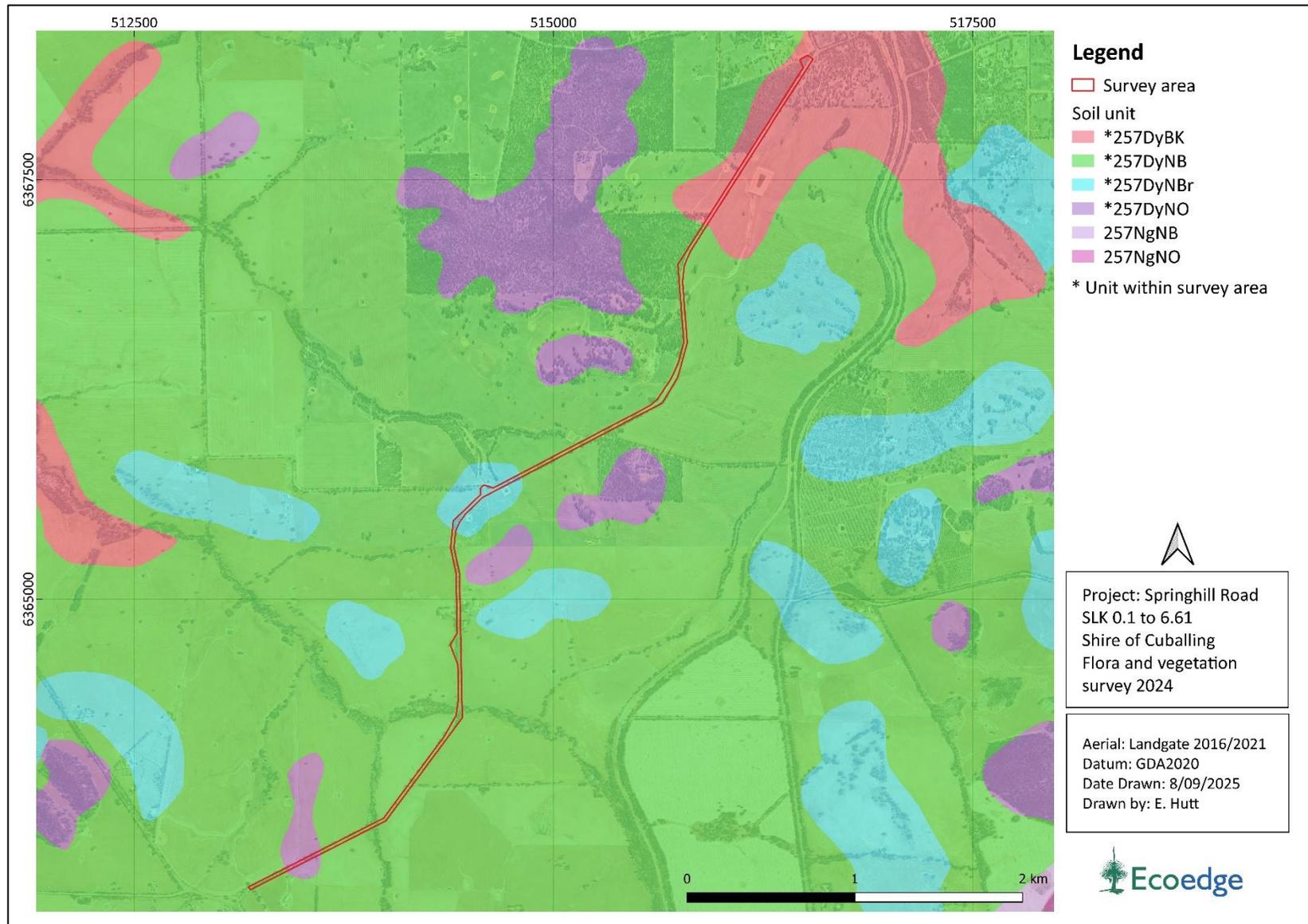


Figure 4. Soil units mapped for the survey area (McArthur et al. 1977).

3.4 Vegetation description according to pre-European mapping datasets

3.4.1 Vegetation associations

A systematic survey of native vegetation in Western Australia was undertaken by J. S. Beard (along with others) during the 1970s, which described vegetation systems in the southwest of Western Australia at a scale of 1:250,000. Beard’s vegetation maps attempted to depict the vegetation as it might have been prior to European settlement in terms of type and extent (Beeston et al. 2001). The Beard Vegetation Association dataset, also referred to as the pre-European native vegetation extent dataset, was digitised by Shepherd et al. (2002).

Beard vegetation associations have been described to a minimum standard of Level 3 “Broad Floristic Formation” for the National Vegetation Inventory System (NVIS) (state-wide to regional scale)².

One Beard vegetation association was mapped across the survey area: Association 1023 ‘Medium woodland; York gum, wandoo & salmon gum (*E. salmonophloia*)’ (Figure 5).

3.4.2 Assessment of remaining extent against pre-European extent

In 2001, the Commonwealth of Australia stated national targets and objectives for biodiversity conservation, which recognised that the retention of 30%, or more, of the pre-clearing extent of each ecological community, was necessary if Australia’s biological diversity was to be protected (Environment Australia 2001).

In its report on the statewide vegetation statistics incorporating the Comprehensive, Adequate and Representative (CAR) reserve analysis, the Government of Western Australia (GoWA) provides information on the pre-European and current extent of the ecological communities of Western Australia and reports on the status of the CAR reserve system for Western Australia (GoWA 2019a). This system is also based on the National retention target of 30% overall. Only reserves managed by DBCA under the *Conservation and Land Management Act 1984* are considered for inclusion in the “CAR Reserve Analysis”. In Western Australia these statistics have been based on Beard’s (2013) vegetation associations and Webb et al.’s (2016) updated vegetation complexes.

The percentage remaining of the pre-European extent vegetation and the percentage of current extent in DBCA managed land for the one vegetation association described for the survey area are present in **Table 3**.

Association 1023 falls below the Commonwealth 30% retention target across all levels, with the Shire of Cuballing retaining 18.87% of pre-European extent vegetation.

Status of the Commonwealth retention target	>30%	<30%	<10%
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² Beard’s vegetation mapping units are referred to as ‘associations’ however these do not correspond to the NVIS Level 5 ‘Associations’. The NVIS system was developed long after Beard’s work was completed, and while both classification systems use the same term, NVIS ‘Associations’ describe vegetation in more detail than do Beard’s.

Table 3. Vegetation associations within the survey area compared to the Commonwealth retention targets (GoWA 2019a).

Beard vegetation association	Pre-European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in All DBCA-Managed Land (proportion of Pre-European Extent)
Association 1023 'Medium woodland; York gum, wandoo & salmon gum (<i>E. salmonophloia</i>)'				
Statewide	1,601,605.76	172,875.16	10.79	1.18
IBRA region: Avon Wheatbelt (AVW)	1,522,680.40	165,123.60	10.84	1.13
IBRA subregion: Katanning (AVW02)	1,123,736.23	138,408.96	12.32	1.27
Shire of Cuballing	97,360.06	18,370.50	18.87	4.77

* Excludes Crown Freehold Department Interest Lands managed under Section 8(a) of the CALM Act.

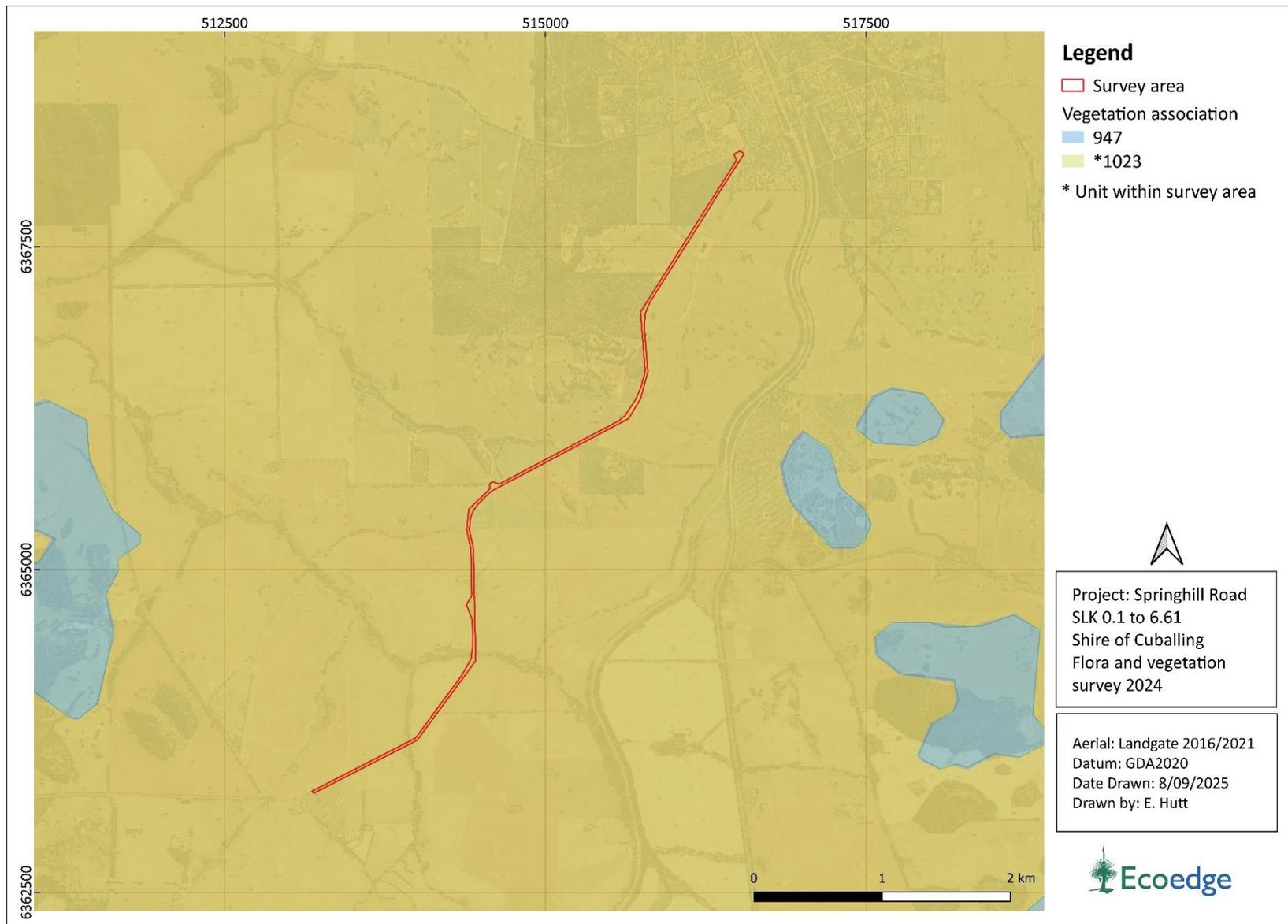


Figure 5. Vegetation associations mapped within the survey area (Beard et al. 2013).

3.5 Threatened and Priority ecological communities

Ecological communities are defined by Western Australia as “...naturally occurring biological assemblages that occur in a particular type of habitat. They are the sum of species within an ecosystem and, as a whole, they provide many of the processes which support specific ecosystems and provide ecological services.” (DEC 2013).

Under Section 27 of the *Biodiversity Conservation Act 2016* (BC Act), the Western Australian Minister for Environment may list communities considered to be under significant threat as TECs. These TECs can be listed under one of three conservation categories: Critically Endangered (CR), Endangered (EN), and Vulnerable (VU). The BC Act also provides for listing communities as collapsed ecological communities.

Possible TECs that do not meet survey criteria may be added to the DBCA’s PEC lists under Priorities 1, 2 or 3 (referred to as P1, P2, and P3). Ecological communities that are adequately known, are rare but not Threatened, meet criteria for Near Threatened, or have been recently removed from the Threatened list, are placed in Priority 4 (P4). These ecological communities require regular monitoring. Conservation-dependent ecological communities are placed in Priority 5 (P5) (DEC 2013).

The current listing of TECs and PECs is specified in DBCA (2023a, 2023b). The conservation categories for these TECs and PECs are defined in **Appendix 6**.

TECs can also be listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). There are three categories of TEC under the EPBC Act: Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) (DCCEEW 2022). These are defined in **Appendix 7**.

The desktop assessment, which included a Protected Matters Search (DCCEEW 2024) and review of DBCA TEC and PEC database extracts (DBCA 2024a), found two EPBC Act and two State listed PECs within the 15 km study area. Of these, the federally listed TEC ‘Eucalypt woodlands of the Western Australian Wheatbelt’ was mapped as occurring within the survey area.

Outcomes of these searches are presented in **Table 4**. The results of the DBCA records are shown in **Figure 6** and **Figure 7**.

Table 4. Threatened and Priority ecological communities occurring and potentially occurring within 15 km study area (DBCA 2024a, DCCEEW 2024).

Community name and description	Status (WA)	Status (EPBC Act)
Eucalypt woodlands of the Western Australian Wheatbelt	P3	T (CR)
York Gum Woodlands of the wheatbelt	P3	T (CR)

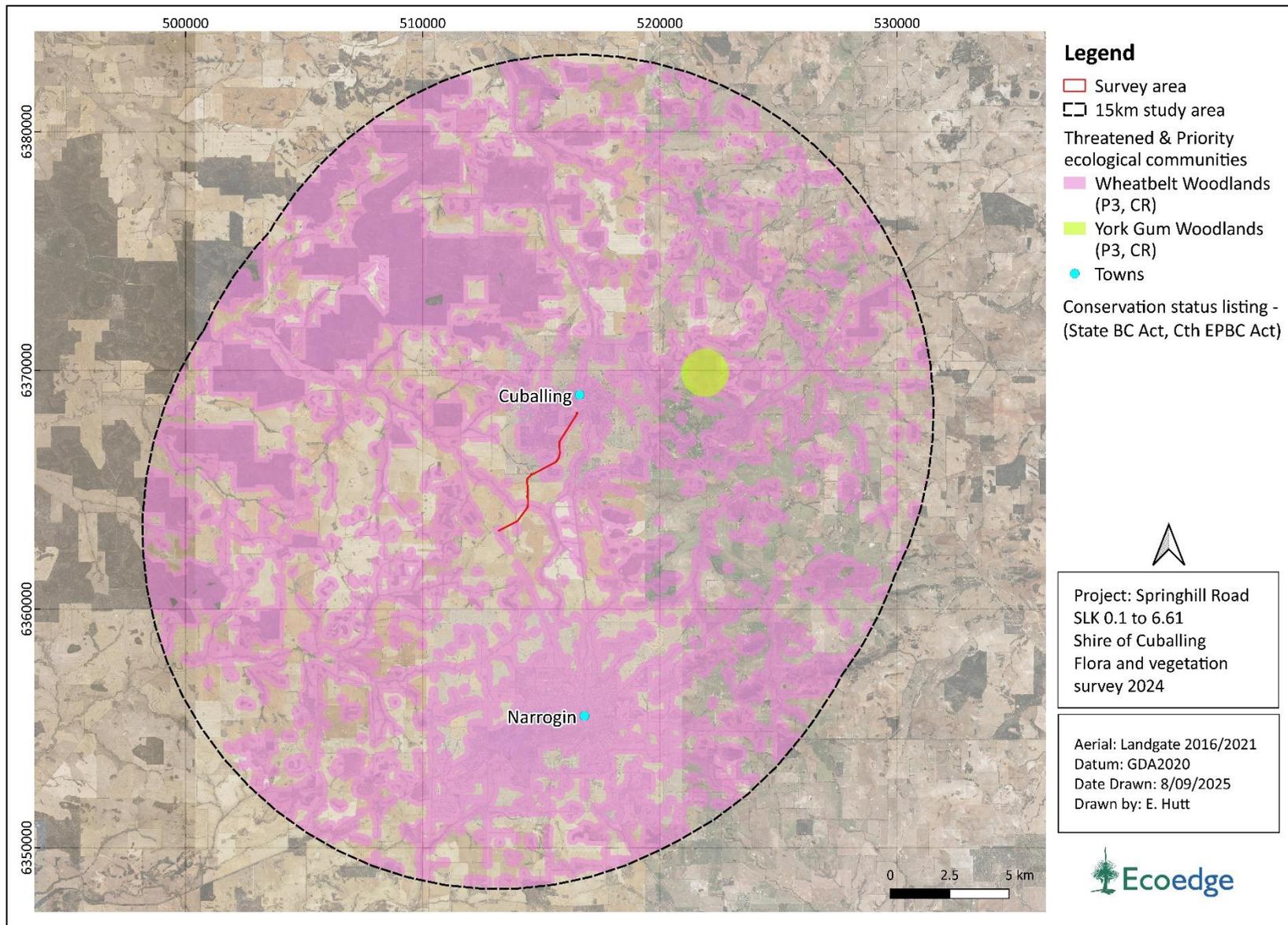


Figure 6. Threatened and Priority ecological communities within the 15 km desktop study area (DBCA 2024a, DCCEEW 2024).

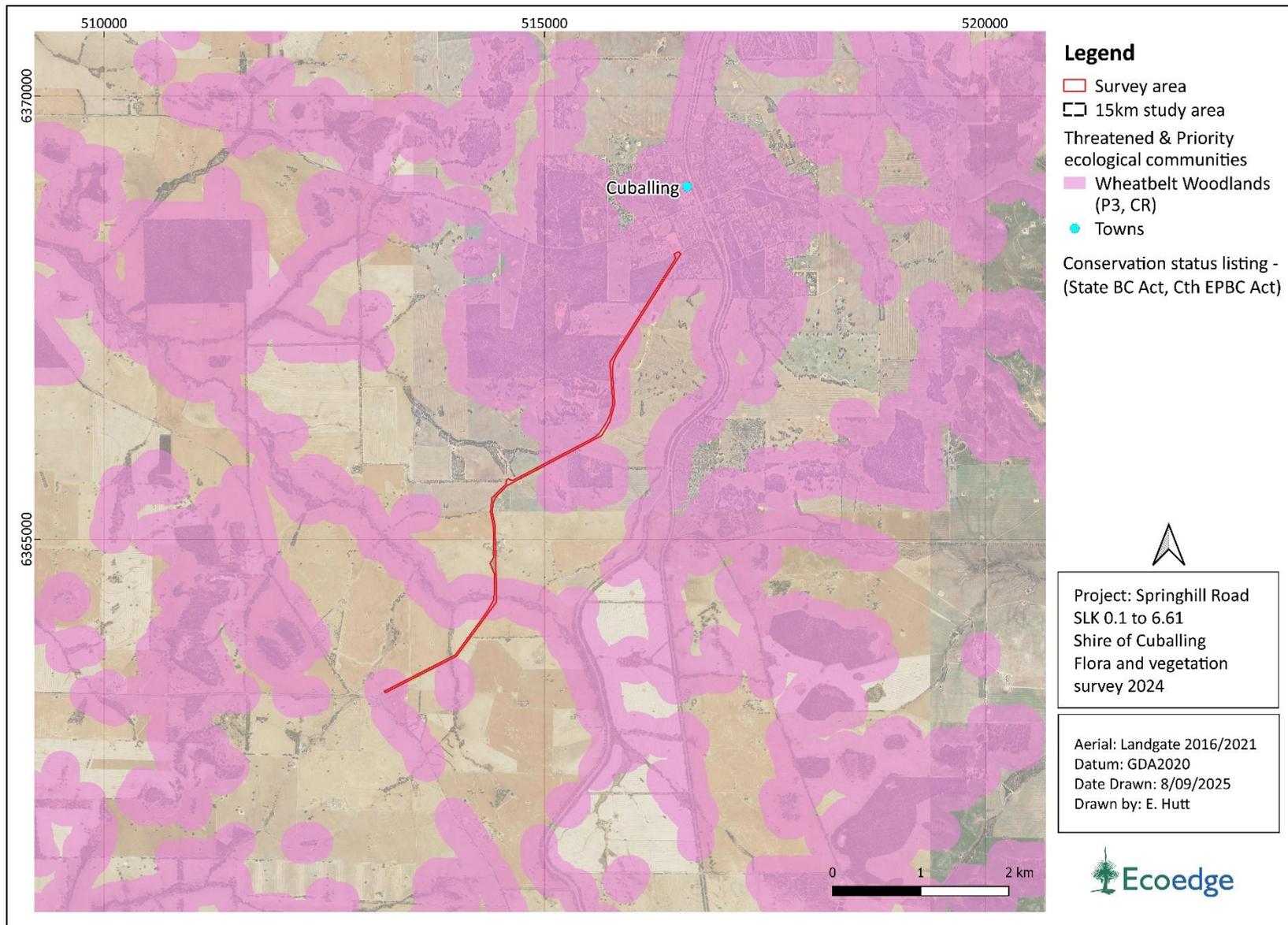


Figure 7. Threatened and Priority ecological communities potentially occurring within the survey area (DBCA 2024a, DCCEEW 2024).

3.6 Threatened and Priority flora

Species of flora and fauna are defined as having a Threatened or Priority conservation status where their extant populations are restricted geographically and/or under threat of possible extinction. The DBCA recognises these threats and consequently applies regulations toward population and species protection.

Threatened extant flora species are listed under Section 19 of the BC Act and are ranked according to their level of threat using the International Union for Conservation of Nature (IUCN) Red List categories and criteria of; Critically Endangered (CR), Endangered (EN), and Vulnerable (VU). It is an offence to “take” or damage Threatened flora without Ministerial approval. Section 5 of the Act defines “to take” as “... to gather, pluck, cut, pull up, destroy, dig up, remove, harvest or damage flora by any means”.

Priority flora is under consideration for future declaration as “Threatened flora”, dependent on more information. Species classified as Priority One to Three (referred to as P1, P2 and P3) are in need of further survey to determine their status, while Priority Four (P4) species are adequately known rare or Threatened species that require regular monitoring.

Threatened flora lists are formally reviewed annually with the current listing updated in July 2025 (DBCA 2025). The Priority flora list is subject to ongoing review with updates regularly published on the Western Australian Herbarium FloraBase website.

Categories of Threatened and Priority flora defined by the BC Act are presented in **Appendix 8** (DBCA 2019).

Threatened flora may also be protected under the EPBC Act and be listed in one of six categories; the definitions of these categories are summarised in **Appendix 9** (DCCEEW 2020).

A list of Threatened and Priority species has been generated from a PMST query (DCCEEW 2024) (**Appendix 10**), NatureMap search (DBCA 2023b), and DBCA and WA Herbarium Threatened and Priority flora data downloads (DBCA 2024c). Threatened or Priority flora occurring or predicted to occur within the study area are provided in a likelihood of occurrence table in **Appendix 11. Figure 8** and Error! Reference source not found. shows the location of Threatened and Priority flora in the study area.

The data searches resulted in thirty-four significant flora being identified as occurring or potentially occurring within this search area. All but two of these species (*Andersonia longifolia*, *Roycea pycnophylloides*) were identified as possibly occurring within the survey area based on the likelihood of occurrence assessment methodology **Appendix 1**. A breakdown of the likelihood of occurrence according to conservation status is provided in **Table 5**, with the complete assessment provided in **Appendix 11**.

Table 5. Pre-survey likelihood of occurrence according to conservation status.

Likelihood of occurrence	Total no	Presumed Extinct	Priority 1	Priority 2	Priority 3	Priority 4	Threatened
Recorded	0	0	0	0	0	0	0
Likely	0	0	0	0	0	0	0
Possible	33	0	0	7	8	7	10
Unlikely	2	0	0	1	0	0	1
Total	34	0	0	8	8	7	11

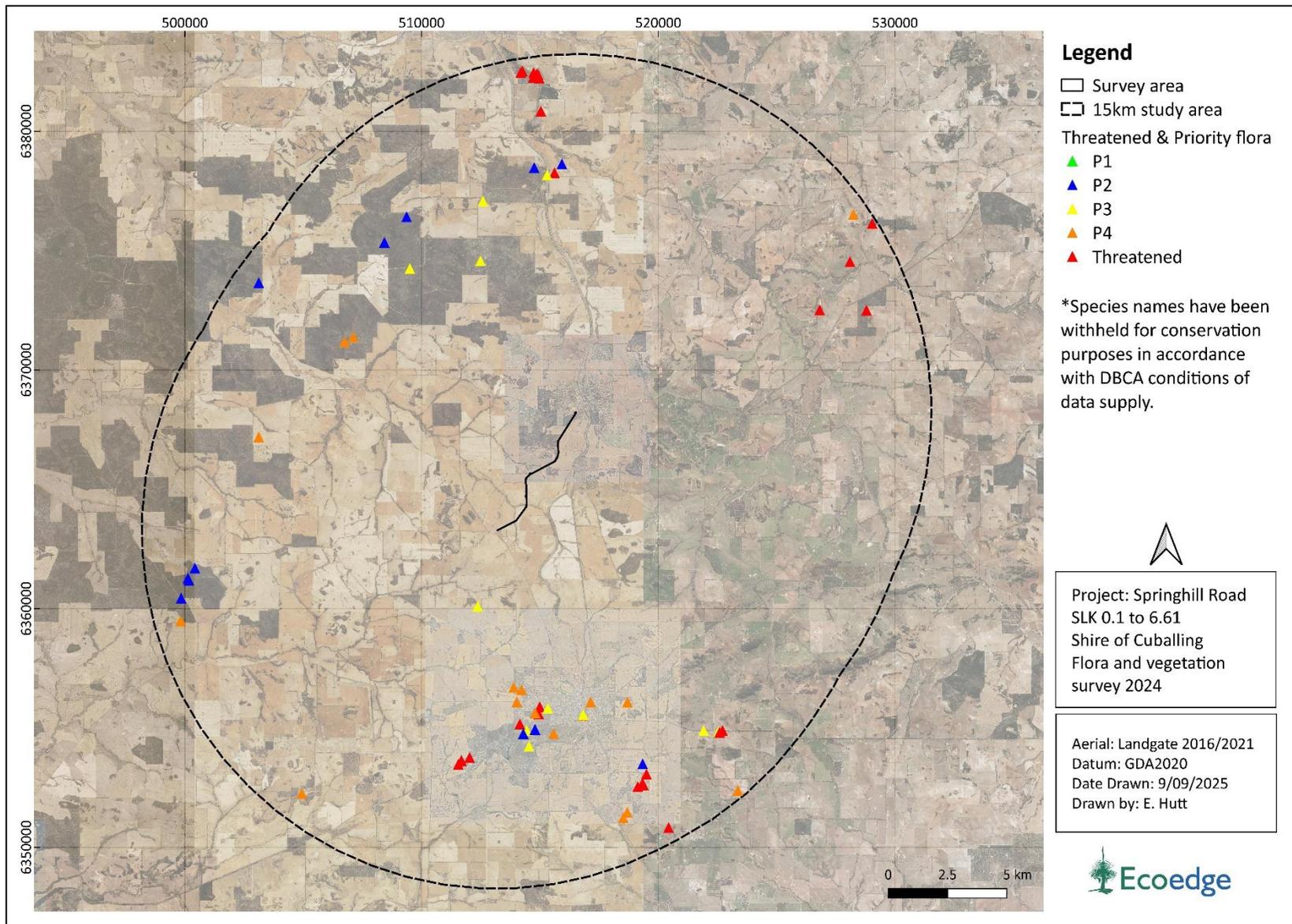


Figure 8. Known occurrences of Threatened and Priority flora within the study area (DBCA 2024c).

3.7 Wetlands and watercourses

There are no formally mapped wetlands within the survey area according to the Wheatbelt Wetlands Stage 1 dataset (DBCA-021) as shown in Error! Reference source not found.. This dataset is incomplete as it has been assessed at a broadscale using desktop data only; therefore some wetlands may not have been identified, and it does not assign conservation significance to wetlands.

There are several watercourses which intersect the survey area, with Fourteen Mile Brook and one of its tributaries crossing in the southern portion and an unnamed tributary of Hotham River South intersecting in the northern section (Crossman & Li 2015) (**Figure 9**).

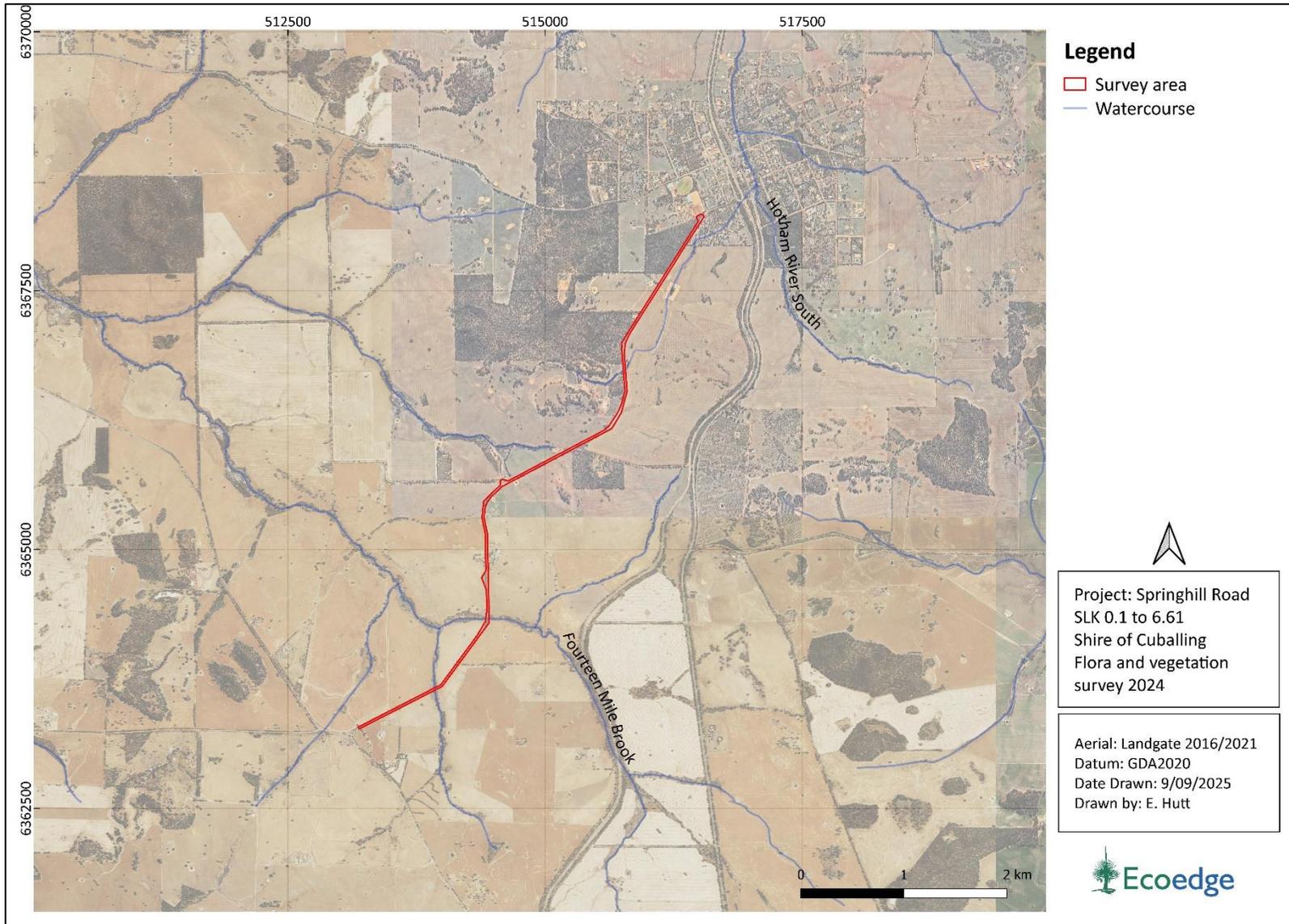


Figure 9. Location of watercourses in proximity to the survey area (Crossman & Li 2015).

3.8 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are protected under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004. They are selected for their environmental values at state or national levels (GoWA 2005). They include:

- Defined wetlands and riparian vegetation within 50 m
- Areas covered by TECs
- Area of vegetation within 50 m of Threatened flora
- Bush Forever sites
- Declared World Heritage property sites.

There are no ESAs mapped within the survey area. The closest ESA is approximately 3.6 km to the west of the survey area and is associated with R 53974, an unnamed nature reserve (DWER 2021). Further ESAs within the study area also appear to correspond with the location of nature reserves and national parks (Error! Reference source not found.)

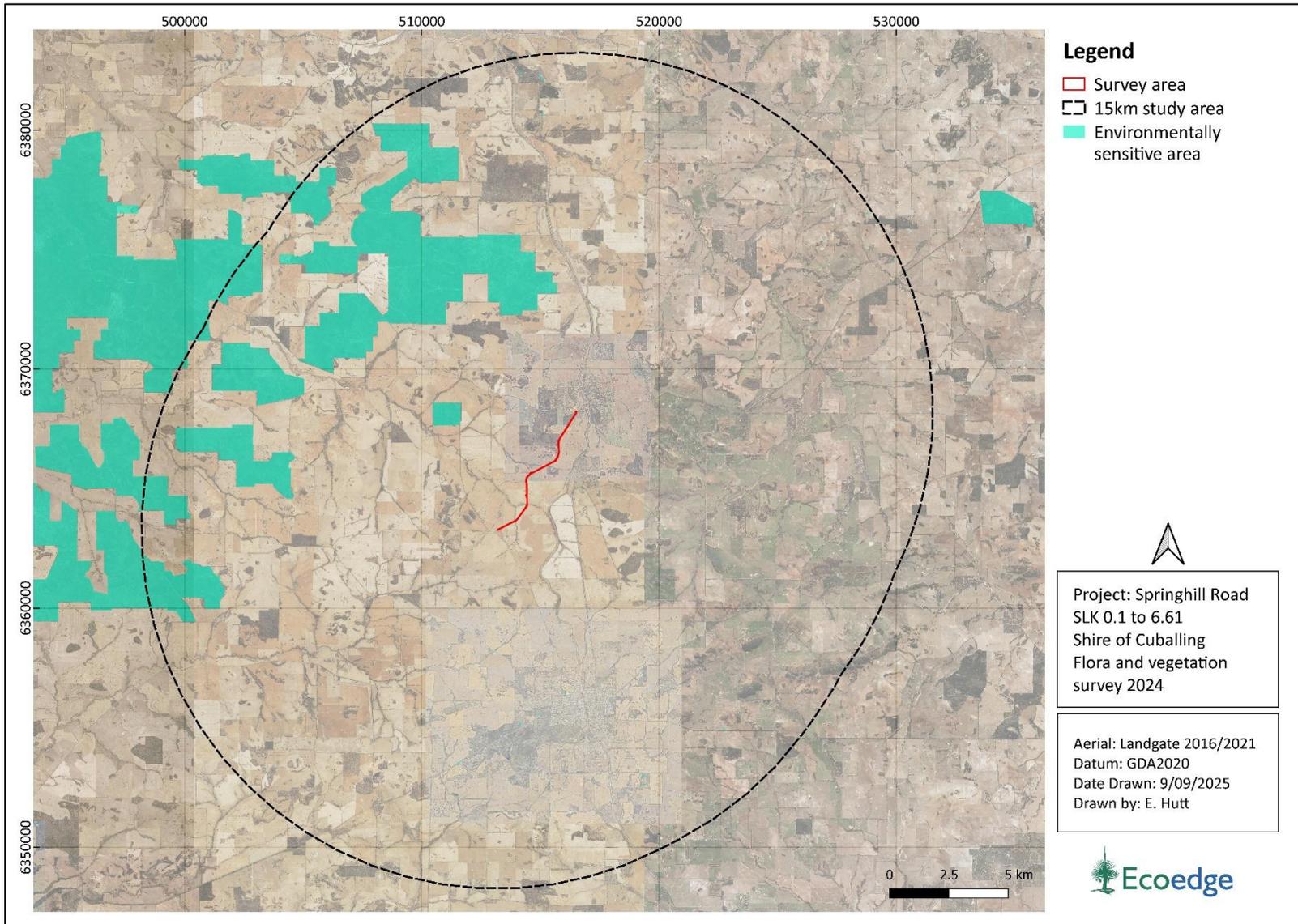


Figure 10. The survey area in relation to ESAs (DWER 2021).

4 Field survey results

4.1 Flora

One hundred and forty-one vascular flora taxa were identified during the survey, with 47 (33.3%) being introduced species. The most numerous families were the Poaceae family (23 species, 19 introduced), Asteraceae (15 species, 5 introduced), and Fabaceae family (15 species, 5 introduced).

A complete list of the flora found within the survey area is provided in **Appendix 12**.

4.2 Threatened and Priority flora

No flora listed as Threatened under the EPBC Act 1999 or under the BC Act 2016 or Priority flora were found.

4.2.1 Post Survey Likelihood of occurrence

The desktop data searches resulted in thirty-four significant flora being identified as potentially occurring within this search area (DBCA 2024c, DCCEEW 2025). None of these taxa were known to occur within the survey area, but all except two (*Andersonia longifolia*, *Roycea pycnophylloides*) were considered to Possibly occur, based on the likelihood of occurrence assessment methodology **Appendix 1**.

The post survey LOO rated all the thirty-four potentially occurring Threatened or Priority species as being “unlikely” to occur. For all except one taxon potentially suitable habitat was present but the taxon was not observed and for one species no suitable habitat was present.

Five taxa were outside of the optimum identification period (i.e. flowering period) at the time of survey (**Table 6**). Three of them were probably identifiable without flowers, for instance if they had distinguishing fruit or habit. One of the species that may not have been identifiable at the time of survey is *Andersonia longifolia*, however, this taxon is only known from the Blackwood Plateau south of Busselton and is very unlikely to occur in the survey area.

Darwinia sp. *Dryandra* may have been identifiable at the time of survey, but this is not certain. However, it is sufficiently distinct in its habit and non-flowering features that it would have been flagged as of interest. There were no shrubs found within the survey area that could possibly have been this species.

Consequently, the risk of conservation significant taxa outside of their optimum identification period being missed is low.

Table 6. Taxa which would have been out of their flowering period at the time of survey.

Taxon	Priority	Flowering Period	Identifiable without flowers
<i>Andersonia longifolia</i>	P2	Mar-May	Yes?
<i>Babingtonia maleyae</i>	P2	Jan - Feb	Yes
<i>Anthotium odontophyllum</i>	P3	Nov	Yes
<i>Darwinia</i> sp. <i>Dryandra</i> (G.J. Keighery 9295)	P4	May or Jul or Nov	Yes?
<i>Acacia brachypoda</i>	T (VU)	May to Jul	Yes

A summary of this provided in with the full results provided in **Appendix 11**.

Table 7. Summary of the Post survey Likelihood of occurrence assessment.

Post survey likelihood	Number
Recorded	0
Likely	0
Possible	0
Unlikely	34
Total	34

4.2.2 Significant weeds

The Declared Pest plant, **Asparagus asparagoides* (bridal creeper) was found at two locations in the survey area. Bridal creeper is also recognised as a Weed of National Environmental Significance (WoNS).

Several small populations of *Moraea flaccida* (one leaf cape tulip) were recorded within the survey area. *Moraea flaccida* is listed as a Declared Pest Plant under the *Biosecurity and Agriculture Management Act 2007*.

Neither **Bridal creeper* nor one leaf cape tulip are currently assigned a control category under the act. This means there is no obligation for the control of the species unless there is an endorsed plan for its management in effect³.

The location of these occurrences is shown in **Figure 11** and **Figure 12**.

³ Department of Department of Agriculture, Fisheries and Forestry 2025. Profiles of Weeds of National Significance. <https://weeds.org.au/weeds-profiles/>

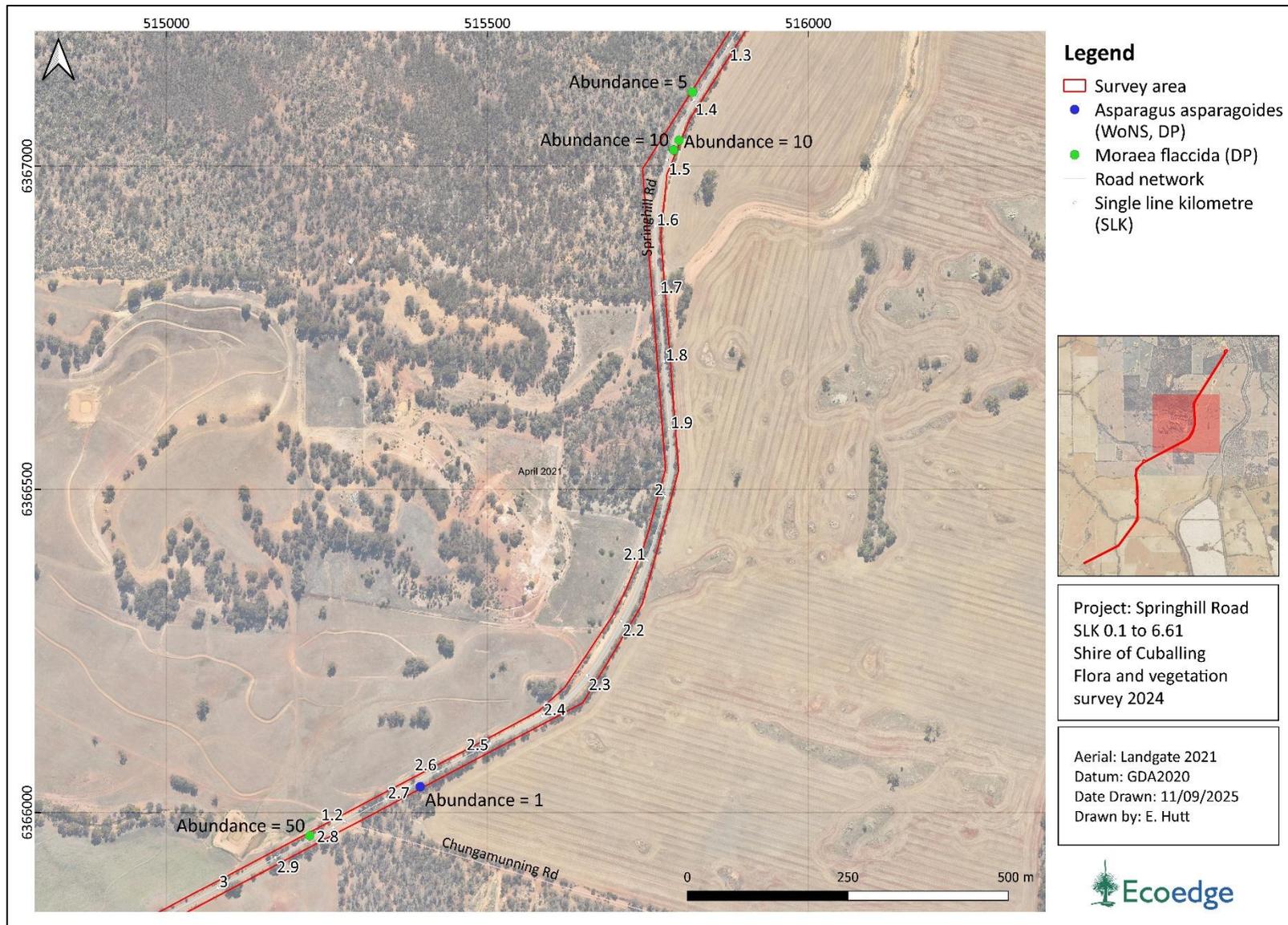


Figure 11. Location of environmental weeds within the survey area.

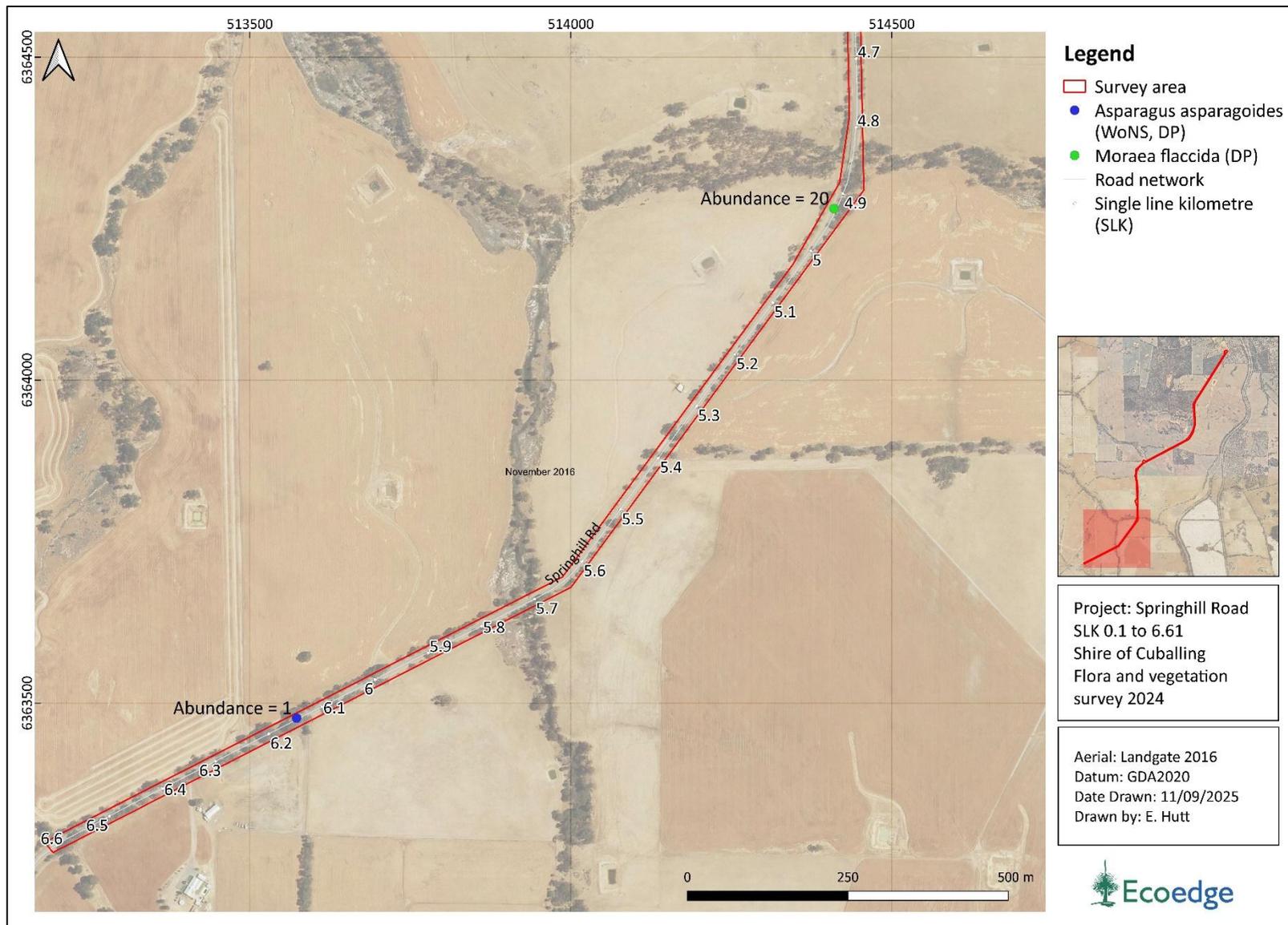


Figure 12. Location of environmental weeds in the survey area.

4.3 Vegetation units

Five vegetation units were recognised within the survey area and are described in **Table 8**. The vegetation units are mapped in **Appendix 13**.

Two of the units, units A and B, comprise Wandoo-dominated woodlands with *Allocasuarina huegeliana* (Rock sheoak) as a small tree in the understorey. Whereas unit A is situated on sandy-loam with an understorey dominated by forbs and grasses, unit B is higher in the landscape on gravelly clay-loam and has an understorey dominated by low shrubs as well as forbs and grasses.

Vegetation unit D comprises an open woodland of *Eucalyptus rudis* (Flooded gum) along drainage lines. There are scattered tall shrubs of *Acacia acuminata* and *Acacia saligna* over an understorey of introduced forbs and grasses. Unit E is similarly dominated by introduced forbs and grasses in the understorey but is dominated by *E. loxophleba* (York gum) with scattered tall shrubs of *Acacia acuminata* and *Acacia saligna*.

Unit E represents a highly degraded part of the survey area where it is apparent that partial or complete clearing of the road verge has taken place in the past. Vegetation comprises the small trees *Acacia acuminata* and *Allocasuarina huegeliana* or, in places, planted eucalypts such as **E. camaldulensis*. The understorey is comprised of a range of introduced grasses and forbs, with occasional clumps of the native grass **Austrostipa trichophylla*.

Table 8. Vegetation units within the survey area.

Photograph	Description	Area (ha)
	<p>Vegetation Unit A: Mid woodland of <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> over low open forest of <i>Allocasuarina huegeliana</i> over forbland including <i>Borya sphaerocephala</i>, <i>Caladenia flava</i> subsp. <i>sylvestris</i>, <i>Chamaescilla corymbosa</i>, <i>Dichopogon preissii</i>, <i>Desmocladius asper</i>, <i>Drosera subhirtella</i>, *<i>Hypochaeris glabra</i>, <i>Lawrencella rosea</i>, <i>Opercularia vaginata</i>, <i>Podolepis gracilis</i>, <i>Rhodanthe laevis</i>, *<i>Romulea rosea</i>, <i>Sowerbaea laxiflora</i>, <i>Stypandra glauca</i>, *<i>Ursinia anthemoides</i> and open grassland of <i>Austrostipa elegantissima</i>, *<i>Briza maxima</i> and <i>Neurachne alopecuroidea</i> on orange brown sandy-loam.</p>	0.705
	<p>Vegetation unit B. Mid woodland of <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> over very open low woodland of <i>Acacia acuminata</i> and <i>Allocasuarina huegeliana</i> over open low shrubland of <i>Gastrolobium parviflorum</i> over open low shrubland of <i>Acacia pulchella</i> var. <i>pulchella</i>, <i>Bossiaea eriocarpa</i>, <i>Dampiera lavandulacea</i>, <i>Gompholobium marginatum</i>, <i>Goodenia pulchella</i> and <i>Xanthorrhoea gracilis</i> over open forbland including <i>Agrostocrinum scabrum</i>, <i>Desmocladius asper</i>, <i>Glischrocaryon aureum</i>, *<i>Hypochaeris glabra</i>, <i>Lomandra micrantha</i> subsp. <i>teretifolia</i>, *<i>Lysimachia arvensis</i>, <i>Rhodanthe manglesii</i>, *<i>Romulea rosea</i>, <i>Sowerbaea laxiflora</i>, open sedgeland of <i>Lepidosperma</i> spp. and very open grassland of <i>Austrostipa elegantissima</i>, <i>Austrostipa trichophylla</i>, *<i>Avena barbata</i>, *<i>Briza maxima</i> and <i>Neurachne alopecuroidea</i> on orange-brown gravelly clay-loam.</p>	3.509

Photograph	Description	Area (ha)
	<p>Vegetation unit D. Mid open woodland of <i>Eucalyptus rudis</i> over isolated tall shrubs of <i>Acacia acuminata</i> and <i>Acacia saligna</i>, over sedgeland of <i>*Juncus acutus</i> and introduced grasses (including <i>*Avena barbata</i>, <i>*Briza maxima</i> and <i>*Ehrharta longifolia</i>) and forbs on grey-brown clay-loam along drainage lines.</p>	0.227
	<p>Vegetation unit E. Mid open woodland of <i>Eucalyptus loxophleba</i> over isolated small trees of <i>Allocasuarina huegeliana</i> over open tall shrubland of <i>Acacia acuminata</i>, <i>Acacia saligna</i> over introduced grasses including <i>*Avena barbata</i>, <i>*Bromus diandrus</i>, <i>*Ehrharta longiflora</i> over grey-brown gritty sandy loam.</p>	0.361

Photograph	Description	Area (ha)
	<p>Vegetation unit F. Tall open shrubland of <i>Acacia acuminata</i> and/or <i>Allocasuarina huegeliana</i> over grassland of <i>Austrostipa trichophylla</i>, *<i>Avena barbata</i>, *<i>Lolium rigidum</i>, *<i>Vulpia fasciculata</i> with isolated *<i>Moraea miniata</i> forbs on orange-brown gravelly loam. [Occasionally there are planted species of amenity eucalypts, such as <i>E. camaldulensis</i> in this unit].</p>	<p>0.423</p>

4.4 Vegetation condition

Approximately 95% of the vegetation is in a Degraded to Completely Degraded condition, with most of this occurring in the southern part of the survey area adjacent to cleared agricultural land. Most of the Good to Very Good condition, comprising about 3% of the vegetation is restricted to the part of the survey area adjacent to two reserves.

A breakdown of the condition of the vegetation within the survey area is provided in **Table 9** and shown in **Appendix 14**. A breakdown of vegetation condition per vegetation unit is provided **Table 10**.

Table 9. Summary of vegetation condition classes within the survey area.

Condition	Area (ha)	%
Very Good	0.34	2.14
Good	0.13	0.84
Degraded	4.56	28.85
Completely Degraded	10.77	68.17
Total area	15.81	100.00

Table 10. Proportions of the vegetation units within condition classes.

Veg. Unit	Condition	Area (ha)	%
A	Very Good	0.289	40.99
	Good	0.048	6.81
	Degraded	0.354	50.21
	Completely Degraded	0.014	1.99
	Sub-total	0.705	100.00
B	Very Good	0.05	1.42
	Good	0.084	2.39
	Degraded	3.375	96.18
	Sub-total	3.509	100.00
D	Degraded	0.227	100.00
	Sub-total	0.227	100.00
E	Completely Degraded	0.361	100.00
	Sub-total	0.361	100.00
F	Degraded	0.386	91.25
	Completely Degraded	0.037	8.75
	Sub-total	0.423	100.00
Total Vegetation		5.225	

4.5 Floristic Analysis

4.5.1 Multivariate Analysis

Floristic analyses were undertaken to determine relationships between quadrats assessed within the survey areas and quadrats from the Biological Survey of the Agricultural Zone (BSAZ) dataset. Unfortunately, floristic community types have not been assigned to individual quadrats from the BSAZ, so comparisons need to be on a quadrat-by-quadrat basis. Excerpts from the analysis dendrograms are presented in **Appendix 15**.

Quadrats CUBA01, CUBA02 and CUBA03, all situated in vegetation unit A, formed part of a small cluster with quadrats NR07 and NR22 from the BSAZ. BSAZ quadrat NR22 was situated about 9 km north of Cuballing in the Yornaning reserve in a Salmon gum (*Eucalyptus salmonophloia*)-Wandoo (*E. wandoo*) over *Allocasuarina huegeliana* (Rock sheoak) woodland. Quadrat NR07 was situated about 38 km southwest of Cuballing in a Wandoo over *A. huegeliana* woodland.

Other species that the three Cuballing quadrats had in common with the two BSAZ sites were the small tree *Acacia acuminata*, the forbs *Borya sphaerocephala*, *Gonocarpus nodulosus*, *Podolepis gracilis* and *Poranthera microphylla* and the grasses *Austrostipa elegantissima* and *Neurachne alopecuroidea*.

Cuballing quadrat CUBA04 (vegetation unit B) clustered with four quadrats from the BSAZ dataset, viz. DA06, WK01, DA11 and JB19. These BSAZ sites range from near Duranillin, 79 km southwest of Cuballing to near Bolgart, 182 km north northwest of Cuballing. All quadrats within this small cluster were situated in Wandoo woodland over a sparse shrub layer (*Bossiaea eriocarpa* and *Hakea lissocarpha* were common between several of the quadrats) over a forb and grass layer including *Centrolepis drummondiana*, *C. pilosa*, *Desmocladus asper*, *Drosera glanduligera* and *Lagenophora huegelii*, *Austrostipa elegantissima*, *A. trichophylla* and *Neurachne alopecuroidea*.

Quadrat CUBA05 (vegetation unit B) from the Cuballing formed part of a small sub-group with two quadrats from the BSAZ, NR20 and DA13. Quadrat DA13 was at Muradup 115 km southwest of Cuballing while NR20 was in Yornaning reserve about 9 km north of Cuballing. In common with CUBA05 the two BSAZ quadrats occur in somewhat weed-invaded Wandoo-*Allocasuarina huegeliana* woodland with the native grass *A. elegantissima* and the introduced grasses **Briza maxima* and **Ehrharta longifolia* being common to all three sites.

4.5.2 Comparison with Wheatbelt Eucalypt Communities Classification

The Wheatbelt Baseline Project Benchmarking Wheatbelt Vegetation (Harvey and Keighery 2012) provides a comprehensive classification of 29 Eucalyptus species into 18 eucalypt woodland communities (12 of these, the mallets, have been considered one community group), and 62 sub-communities. Eucalypt woodland communities were defined primarily by the dominant Eucalyptus species; the sub-communities were defined by commonly observed structural formations, common co-dominant tree species, common understorey genera or species, landform features or geographic distribution.

The work by Harvey and Keighery (2012) provided a structural – dominance classification of woodland communities and sub- communities. Although it was informed by quadrat-based floristic surveys such as the BSAZ the communities and sub-communities are not explicitly linked to a floristics-based classification of Wheatbelt woodlands.

An attempt is made below to assign the Cuballing survey area vegetation units to sub-communities or communities described by Harvey and Keighery. Within the Springhill Road survey area only vegetation units A and B had vegetation of sufficient quality for the installation of floristic quadrats.

Both the MVA and the comparison of vegetation units with the communities of Harvey and Keighery (2012) showed that the vegetation in the survey area is typical of widespread types within the Shire of Cuballing (e.g. Ecoedge 2019a, 2019b, 2020).

Vegetation Unit (Quadrats)	Vegetation Unit Description	Harvey and Keighery Sub-community	Description
A (CUBA01, CUBA02, CUBA03)	Mid woodland of <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> over low open forest of <i>Allocasuarina huegeliana</i> over forbland including <i>Borya sphaerocephala</i> , <i>Caladenia flava</i> subsp. <i>sylvestris</i> , <i>Chamaescilla corymbosa</i> , <i>Dichopogon preissii</i> , <i>Desmocladius asper</i> , <i>Drosera subhirtella</i> , <i>*Hypochaeris glabra</i> , <i>Lawrencella rosea</i> , <i>Opercularia vaginata</i> , <i>Podolepis gracilis</i> , <i>Rhodanthe laevis</i> , <i>*Romulea rosea</i> , <i>Sowerbaea laxiflora</i> , <i>Stypandra glauca</i> , <i>*Ursinia anthemoides</i> and open grassland of <i>Austrostipa elegantissima</i> , <i>*Briza maxima</i> and <i>Neurachne alopecuroidea</i> on orange brown sandy-loam.	Wandoo over Herbs (EwanHerbs)	<i>Borya sphaerocephala</i> , <i>Desmocladius</i> spp., <i>Lomandra</i> spp., <i>Austrostipa</i> spp., <i>Rytidosperma</i> spp., <i>Neurachne alopecuroides</i> , <i>Gahnia</i> sp., <i>Dampiera</i> spp. and <i>Chamaescilla corymbosa</i> Scattered shrubs including <i>Hakea lissocarpa</i> .

Vegetation Unit (Quadrats)	Vegetation Unit Description	Harvey and Keighery Sub-community	Description
B (CUB04, CUBA05)	Mid woodland of <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> over very open low woodland of <i>Acacia acuminata</i> and <i>Allocasuarina huegeliana</i> over open low shrubland of <i>Gastrolobium parviflorum</i> over open low shrubland of <i>Acacia pulchella</i> var. <i>pulchella</i> , <i>Bossiaea eriocarpa</i> , <i>Dampiera lavandulacea</i> , <i>Gompholobium marginatum</i> , <i>Goodenia pulchella</i> and <i>Xanthorrhoea gracilis</i> over open forbland including <i>Agrostocrinum scabrum</i> , <i>Desmocladius asper</i> , <i>Glischrocaryon aureum</i> , <i>*Hypochaeris glabra</i> , <i>Lomandra micrantha</i> subsp. <i>teretifolia</i> , <i>*Lysimachia arvensis</i> , <i>Rhodanthe manglesii</i> , <i>*Romulea rosea</i> , <i>Sowerbaea laxiflora</i> , open sedgeland of <i>Lepidosperma</i> spp. and very open grassland of <i>Austrostipa elegantissima</i> , <i>Austrostipa trichophylla</i> , <i>*Avena barbata</i> , <i>*Briza maxima</i> and <i>Neurachne alopecuroidea</i> on orange-brown gravelly clay-loam.	Wandoo and Jam (EwanJam)	<i>Acacia acuminata</i> , scattered <i>Hakea lissocarpha</i> , <i>Loxocarya</i> spp., <i>Lepidosperma</i> spp., <i>Harperia</i> sp., <i>Neurachne alopecuroidea</i>
D	Mid open woodland of <i>Eucalyptus rudis</i> over isolated tall shrubs of <i>Acacia acuminata</i> and <i>Acacia saligna</i> , over sedgeland of <i>*Juncus acutus</i> and introduced grasses (including <i>*Avena barbata</i> , <i>*Briza maxima</i> and <i>*Ehrharta longifolia</i>) and forbs on grey-brown clay-loam along drainage lines.	<i>Eucalyptus rudis</i> (Flooded Gum) (Erud)	<i>Acacia acuminata</i> , <i>Allocasuarina huegeliana</i> , <i>Melaleuca viminea</i> , <i>Lepidosperma</i> aff. <i>tenue</i> , <i>Borya nitida</i> .

Vegetation Unit (Quadrats)	Vegetation Unit Description	Harvey and Keighery community	Sub-community	Description
E	Mid open woodland of <i>Eucalyptus loxophleba</i> over isolated small trees of <i>Allocasuarina huegeliana</i> over open tall shrubland of <i>Acacia acuminata</i> , <i>Acacia saligna</i> over introduced grasses including * <i>Avena barbata</i> , * <i>Bromus diandrus</i> , * <i>Ehrharta longiflora</i> over grey-brown gritty sandy loam.	<i>Eucalyptus loxophleba</i> gum)	(York)	<i>Acacia acuminata</i> , <i>Allocasuarina huegeliana</i> , herbs and grasses.
F	Tall open shrubland of <i>Acacia acuminata</i> and/or <i>Allocasuarina huegeliana</i> over grassland of <i>Austrostipa trichophylla</i> , * <i>Avena barbata</i> , * <i>Lolium rigidum</i> , * <i>Vulpia fasciculata</i> with isolated * <i>Moraea miniata</i> forbs on orange-brown gravelly loam.			[This is probably a degraded area of several of the above communities where most of the tree layer has been removed]

4.6 Threatened Ecological Communities

4.6.1 Wheatbelt Woodland TEC PEC

The survey area intersected three patches of vegetation meeting the key DotE (2015) diagnostics of location, key species (and structure) and roadside area thresholds of the EPBC-listed Wheatbelt Woodland (Eucalypt woodlands of the WA Wheatbelt) TEC and State P3 PEC. However, in accordance with the DotE (2015) advice, only Degraded to Good and better portions of these patches meet the minimum condition thresholds to be regarded as occurrences of the TEC PEC. The location of these patches and the TEC PEC occurrences is shown in **Figure 13** to **Figure 16**.

Summary details of the three patches and assessments made within them are given in **Table 11**. As can be seen from the table the area of TEC within the survey area falls below the minimum area required (2 ha or more), but together with the adjacent vegetation outside the survey area (which was assessed as meeting the criteria) the patch size in each case greatly exceeds the minimum area.

The total area of the TEC within the survey is 0.675 ha.

The TEC PEC report forms for the Wheatbelt TEC occurrences are provided in **Appendix 16**.

Table 11. Summary of Wheatbelt TEC assessment results of the three patches within the survey area.

Patch Number	Vegetation unit	Area inside the survey area (ha)	Area outside the survey area (est. ha)	Condition of Patch within survey area	Est. condition of patch outside survey area	Assessment points within survey area	Comments
1	A (Key indicator: <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>)	0.337	15.3	Very Good: 0.289 ha Good: 0.048 ha	Good to Very Good Cover of exotic species: >70%	Mapping Notes: 1 Condition records: 4 Quadrats: 3	Category B: Patches likely to correspond to a condition of Good AND retains important habitat features. Wheatbelt TEC: The area of the patch within the survey area is below the minimum area (2 hectares or more) but together with the adjacent reserve vegetation the minimum DoT (2015) condition and area thresholds (2 ha) are well exceeded.
2	B (Key indicator: <i>Eucalyptus wandoo</i>)	0.306	173.0 +	Very Good: 0.050 ha Good: 0.062 ha Degraded to Good: 0.194 ha	Good to Very Good Cover of exotic species: 30-50%	Mapping Notes: 2 Condition records: 16 Quadrats: 1	Category B: Patches likely to correspond to a condition of Good AND retains important habitat features. Wheatbelt TEC: The area of the patch within the survey area is

	subsp. <i>wandoo</i>)					Wheatbelt TEC Assess: 2	below the minimum area (2 hectares or more) but together with the adjacent reserve vegetation the minimum DotE (2015) condition and area thresholds are well exceeded.
3	B (Key indicator: <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>)	0.032	13.6	Degraded to Good: 0.032 ha	Degraded to Good, Good, Very Good Cover of exotic species: <30%	Mapping Notes: 1 Condition records: 3 Quadrats: 1 Wheatbelt TEC Assess: 1	Category B: Patches likely to correspond to a condition of Good AND retains important habitat features. Wheatbelt TEC: The area of the patch within the survey area is below the minimum area (2 hectares or more) but together with the adjacent reserve vegetation the minimum DotE (2015) condition and area thresholds are well exceeded.
Total		0.675					

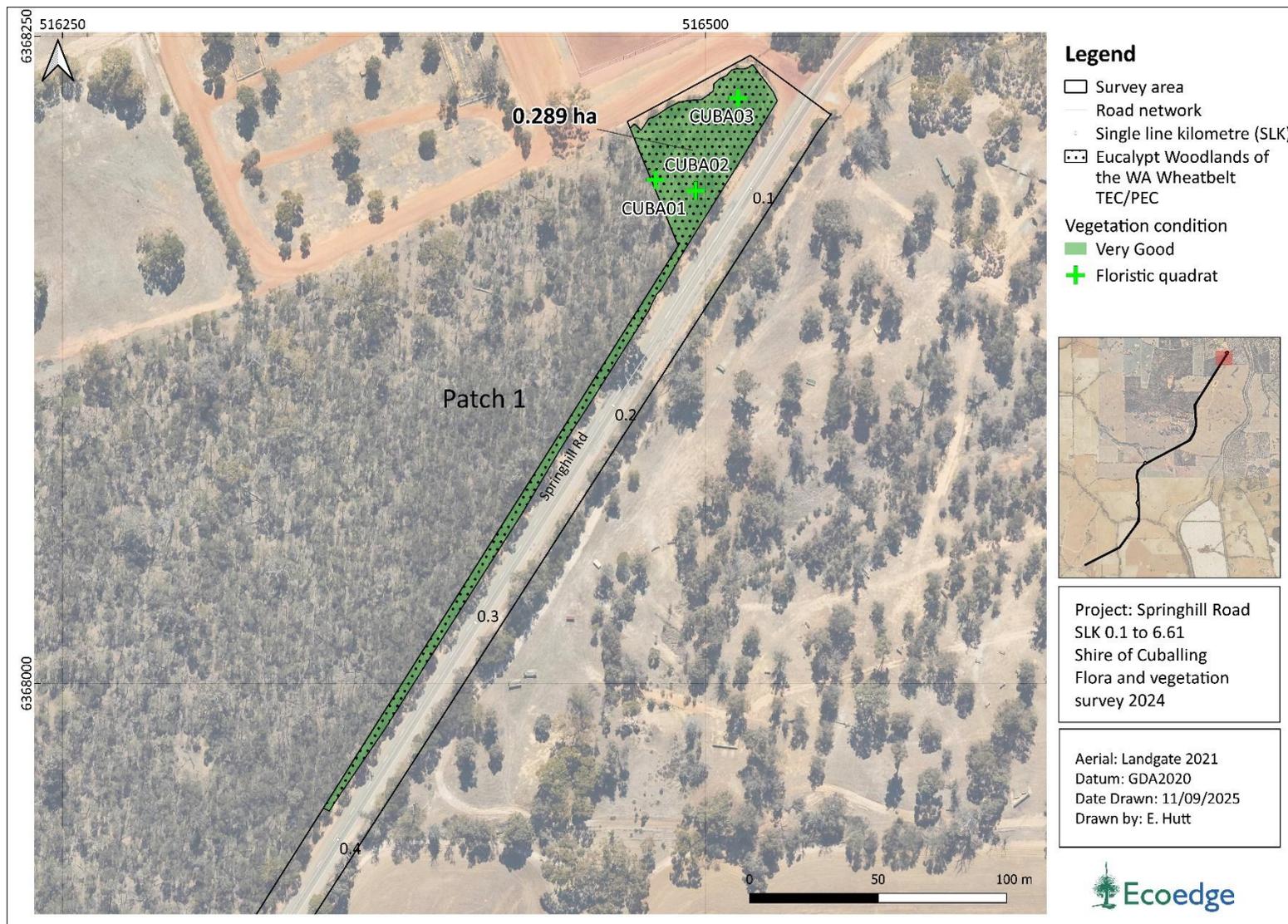


Figure 13. Location of EPBC TEC and State-listed PEC Eucalypt Woodlands of the Western Australian Wheatbelt recorded within the survey area.

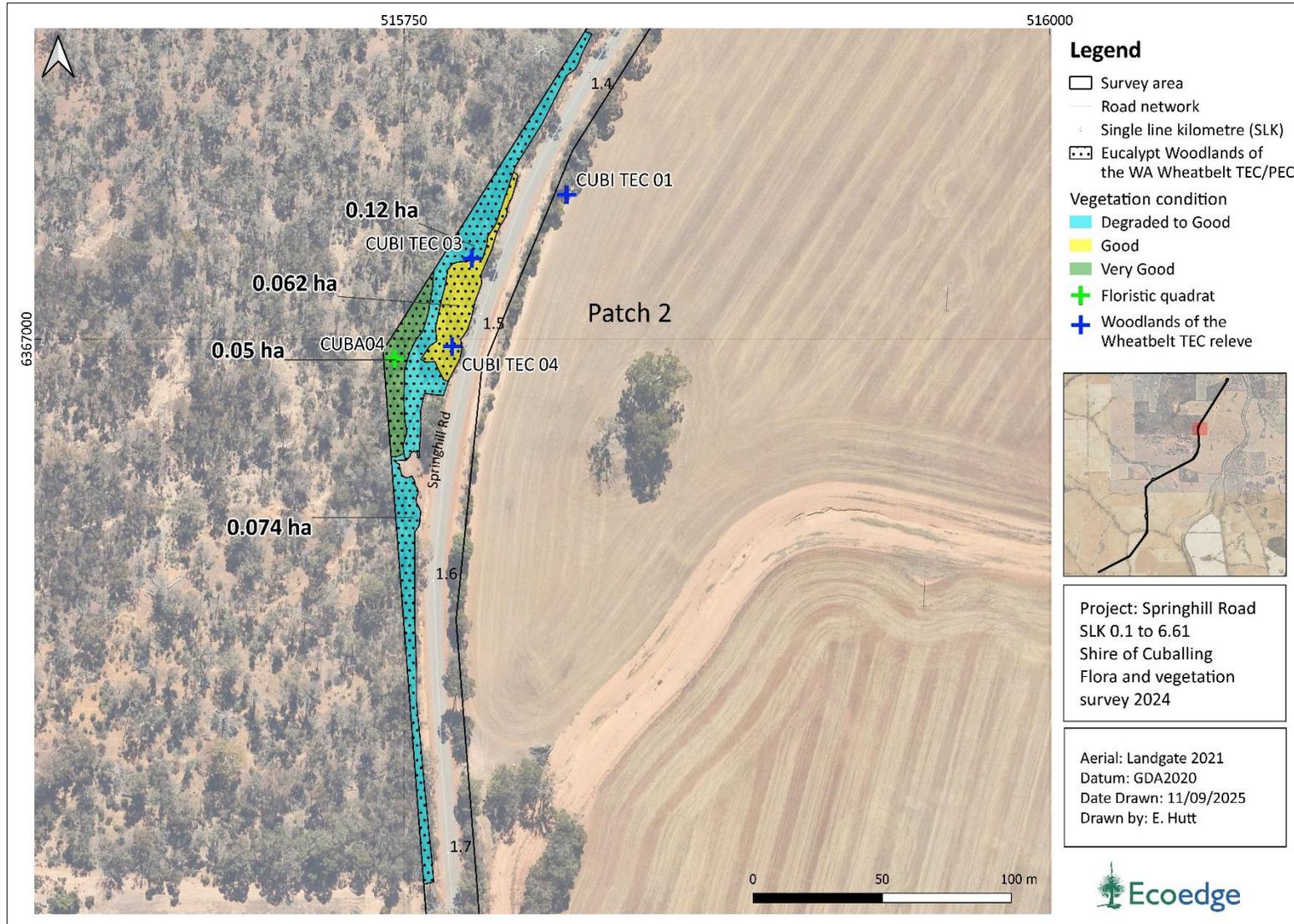


Figure 14. Location of EPBC TEC and State-listed PEC Eucalypt Woodlands of the Western Australian Wheatbelt recorded within the survey area.

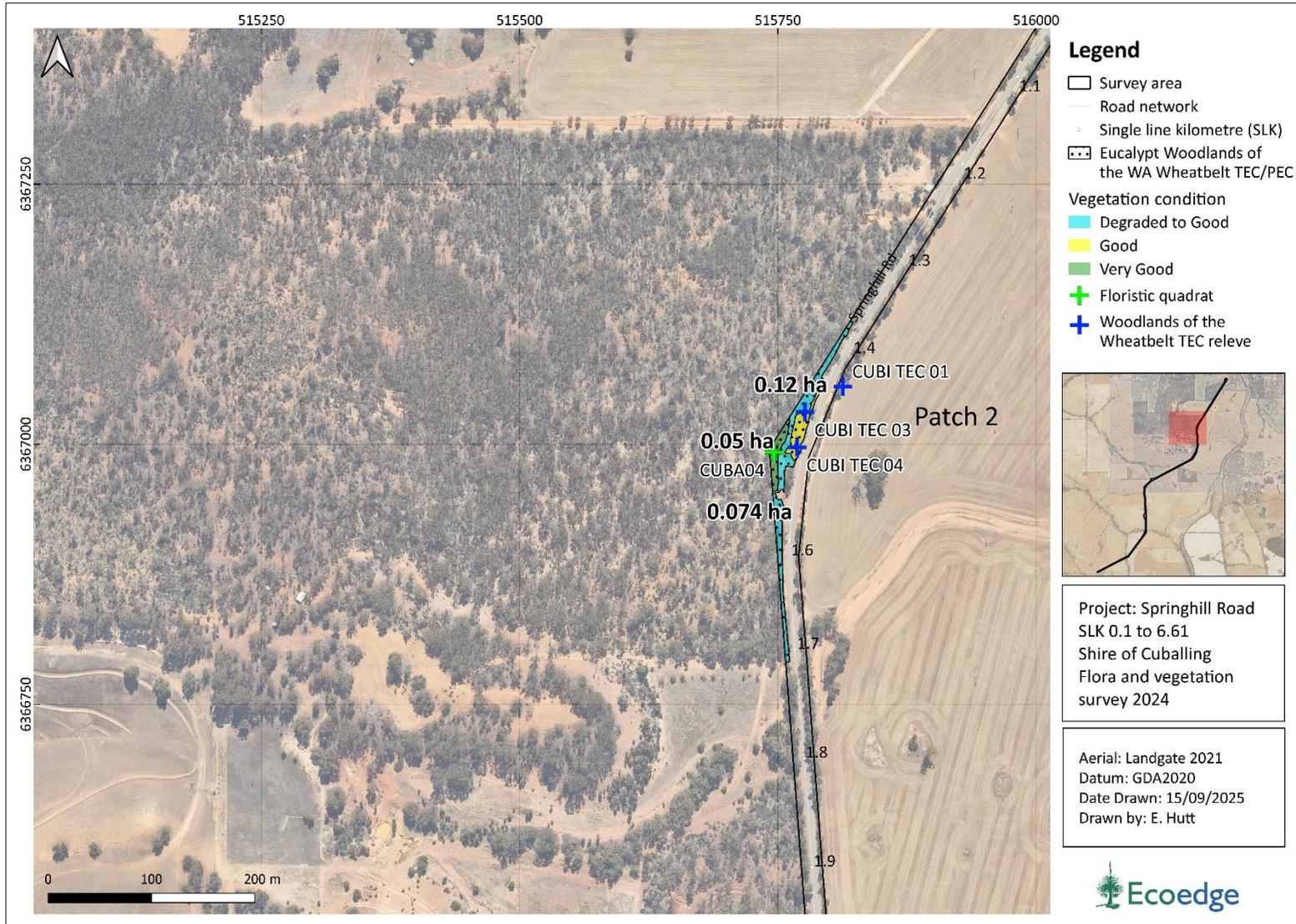


Figure 15. Location of EPBC TEC and State-listed PEC Eucalypt Woodlands of the Western Australian Wheatbelt recorded within the survey area.

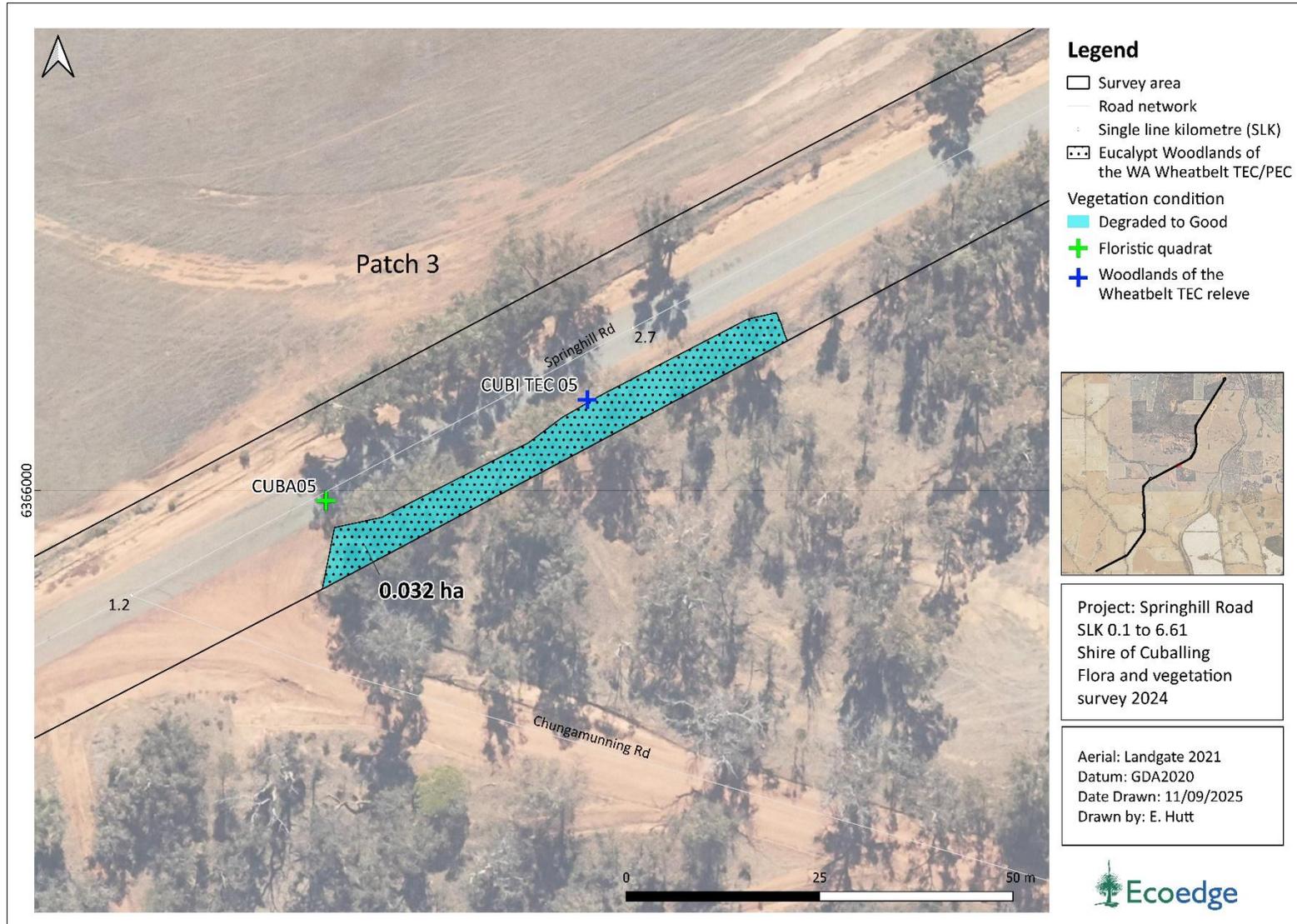


Figure 16. Location of EPBC TEC and State-listed PEC Eucalypt Woodlands of the Western Australian Wheatbelt recorded within the survey area.

5 Discussion and conclusions

5.1 Significance of flora

No flora listed as Threatened under the *EPBC Act 1999* or under the BC Act 2016, or Priority flora were found within the survey area in the survey area.

5.2 Post-survey likelihood of occurrence

A total of 34 conservation-significant flora species were identified as potentially occurring during the desktop analysis. None were recorded during the field survey, and all but two were assessed as having a Possible likelihood of occurrence. Post-survey assessment rated all 34 species as “unlikely” to occur, with no individuals observed and suitable habitat absent for one taxon. Although five species were outside their optimum identification period during the survey, most were still likely identifiable, and none were observed. Therefore, the likelihood of missing conservation-significant flora due to survey timing is considered low.

5.3 Significant weeds

The Declared Pest plants, **Asparagus asparagoides* (bridal creeper) (two locations) and *Moraea flaccida* (One leaf cape tulip) (five locations) were found at two locations in the survey area. Neither of these is assigned a control category under the BAM Act.

5.4 Significance of vegetation

The EPBC-listed Wheatbelt Woodland (Eucalypt woodlands of the WA Wheatbelt) TEC and State P3 PEC occurs in three patches within the survey area (in Degraded to Good, Good and Very Good condition), which total 0.675 ha (**Table 11**). While the areas lying within the survey area itself don't exceed the minimum area, inclusion of adjacent reserve (unvested Crown land) vegetation leads them to greatly exceed this minimum area threshold.

5.5 Wetland and watercourse vegetation

Vegetation unit D has species (e.g. *E. rudis*, *Acacia saligna*) typical of a creeklines in the survey area. This unit is found at the crossing of Fourteen Mile Brook in the southern part of the survey area. All of vegetation unit D was scored as Degraded condition.

5.6 Vegetation Complexes and Associations

Only one vegetation association mapped by Beard occurs in the survey area: Association 1023 'Medium woodland; York gum, wandoo & salmon gum (*E. salmonophloia*)'. Association 1023 falls below the Commonwealth 30% retention target across all levels, with the Shire of Cuballing retaining 18.87% of pre-European extent of the association.

The vegetation in the survey area is mainly wandoo-dominated woodland, with smaller areas of *E. loxophleba* (York gum) woodland and *E. rudis* (flooded gum). At the very broad level of Beard's mapping, it matches association 1023, though no salmon gum was found during the survey.

5.7 Environmentally sensitive areas

There are no ESAs mapped within the survey area, with the nearest one 3.6 km to the west.

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Appendix 1. Threatened and Priority flora Likelihood of occurrence assessment methodology.

Rating	Presurvey rationale	Post survey rationale
Recorded		Taxon was or has been recorded in the survey area.
Likely	Known to occur within two kilometres (km) of the survey area with suitable habitat known or predicted to occur within the survey area.	<p>The taxon is known to occur within one km of the survey area and very suitable habitat was present, but the taxon was not observed for one of the following reasons.</p> <ul style="list-style-type: none"> L1. The taxon was dormant at the time of survey and could therefore not be located. L2. The habitat was compromised, for example due to a recent fire. L3. The taxon is non- descript and or very small and difficult to find because, for example, it occurs in large areas of rocky granite outcrops, or within an expanse of open water. L4. The taxon is non-descript and or very small and may be overlooked.
Possible	Known to occur within a two-ten km of the survey area with suitable habitat known or predicted to occur within the survey area.	<p>The taxon is known from within a two to 10 km radius of the survey area, and suitable habitat for the species was present, but despite a thorough search being carried out, the species was not observed. The taxon may however be present for any of the following reasons.</p> <ul style="list-style-type: none"> P1. The taxon was dormant at the time of survey and could therefore not be located. P2. The taxon was not flowering at time of survey and could have been overlooked P3. The habitat was compromised, for example, due to a recent fire. P4. The taxon is non- descript and or very small and difficult to find because, for example, it occurs in large areas of rocky granite outcrops, or within an expanse of open water. P5. The taxon is non-descript and or very small and may have been overlooked. P6. Portions of the survey area with potential habitat could not be accessed, for example due to access restrictions.

Appendix 1. Threatened and Priority flora Likelihood of occurrence assessment methodology.

Unlikely	Known or predicted to occur within ten km, but no suitable habitat is known or predicted to occur within the survey area.	<p>The taxon was not found and is unlikely to be present for one or more of the following reasons:</p> <p>U1. A thorough search for the taxon was conducted and no suitable habitat was present given that the taxon is known to be generally restricted to a clearly defined habitat type.</p> <p>U2. Suitable or potential habitat was present and appropriately searched, but the taxon was not observed.</p> <p>U3. Suitable or potential habitat was present, but these areas were too degraded for the taxon to occur, for example, due to weed invasion and/or clearing.</p>
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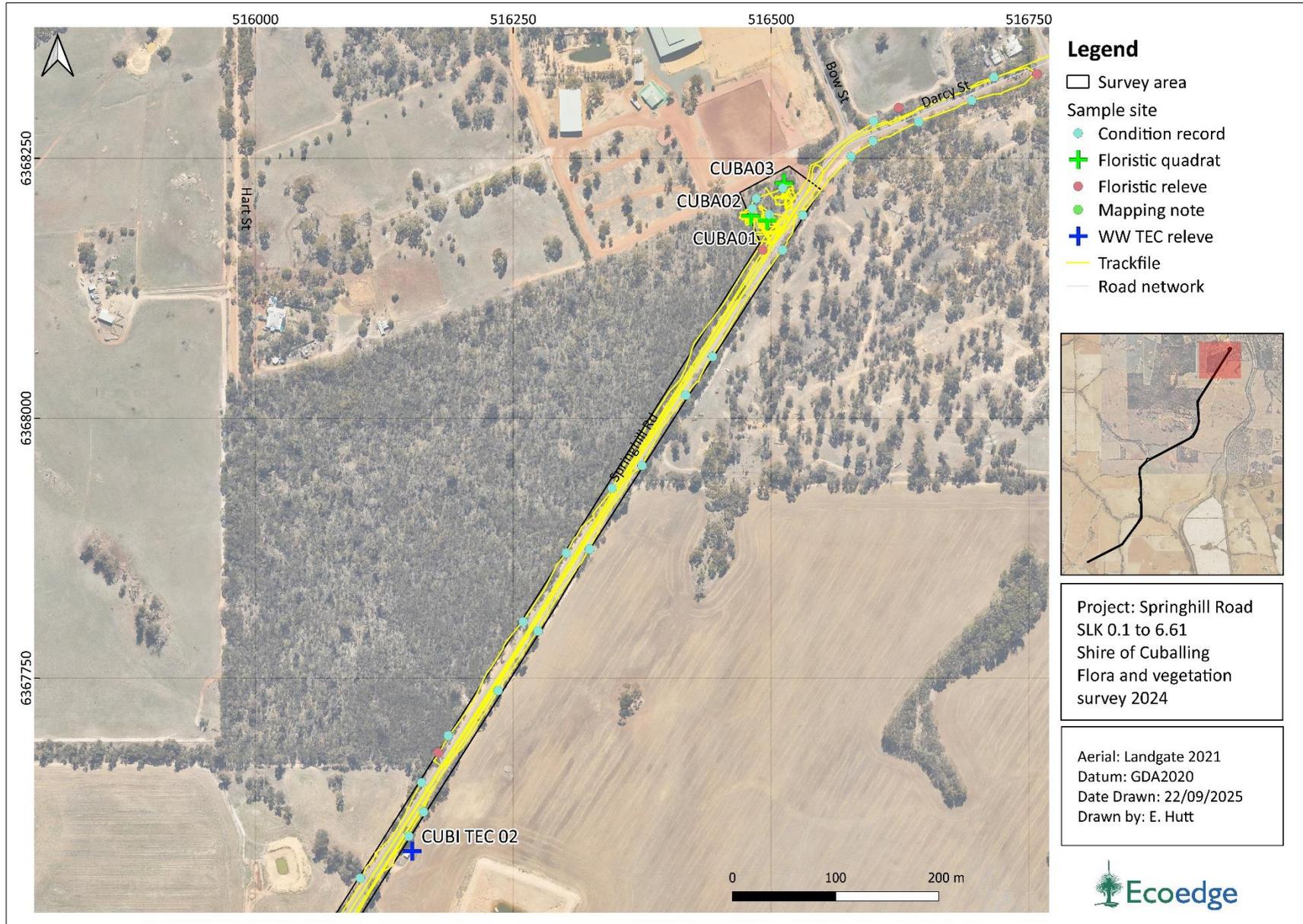
Example of application of pre and post-survey likelihood of occurrence

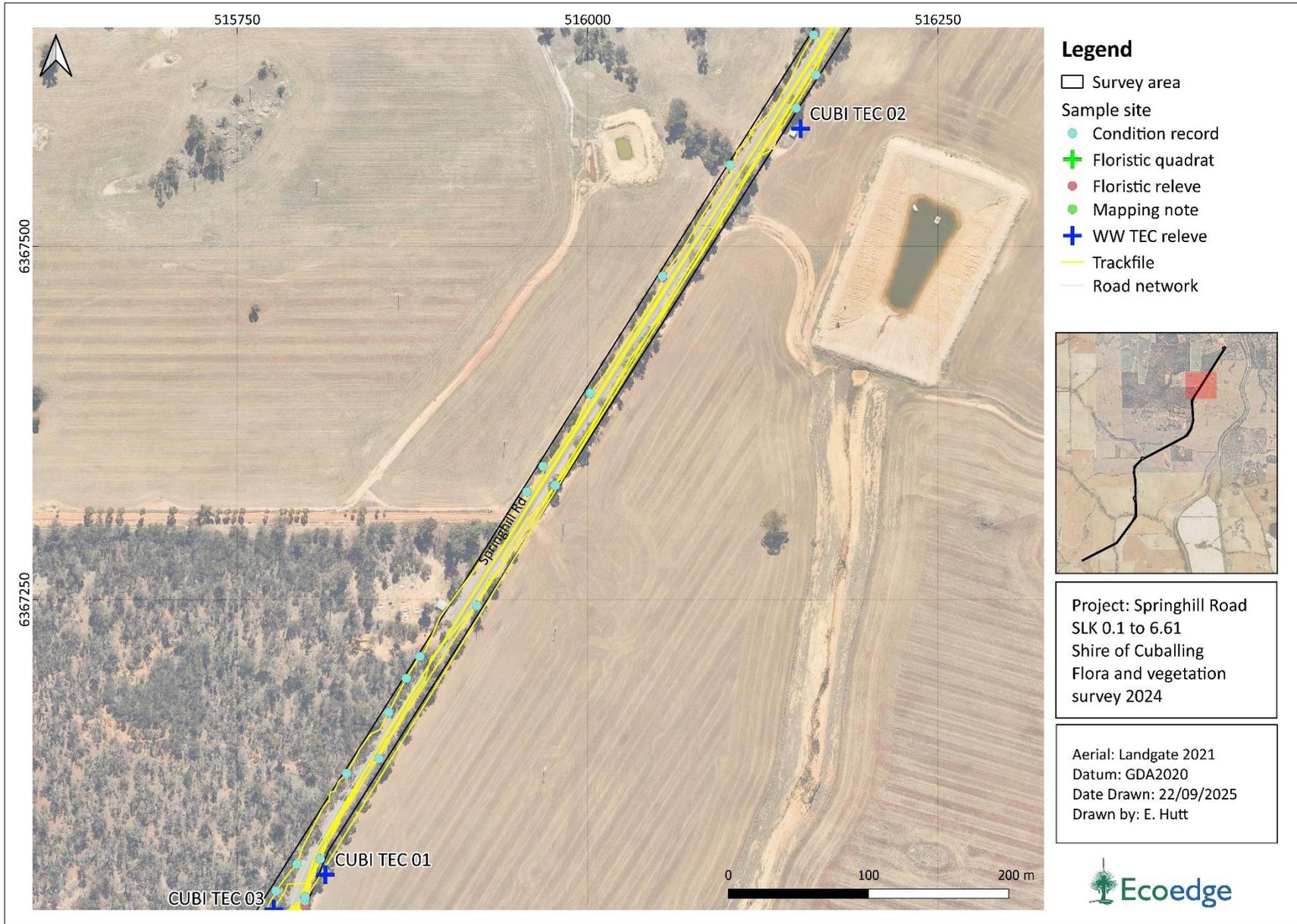
Taxon	Cons Status	Flowering	Description	Pre survey likelihood	Post Survey Likelihood
<i>Drakaea elastica</i>	T (EN)	Sep -Oct	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red, green, yellow. White or grey sand. Low-lying situations adjoining winter-wet swamps.	Likely	Unlikely (U3)

Appendix 2. Vegetation condition scale (EPA 2016).

Vegetation Condition	South West and Interzone Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.

Appendix 3. Sample sites of the survey area.





Legend

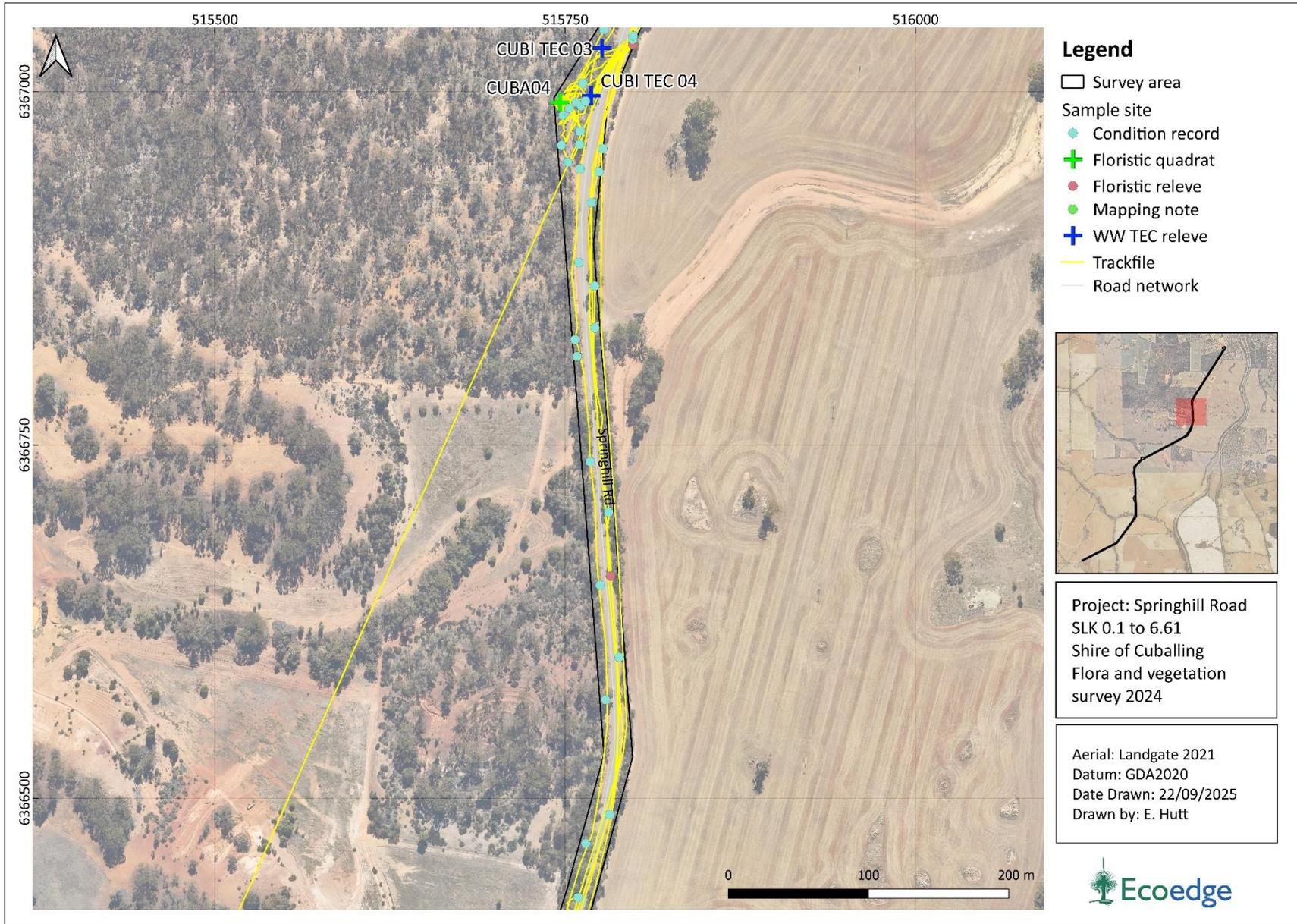
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- Sample site
- Condition record
- ✚ Floristic quadrat
- Floristic releve
- Mapping note
- ✚ WW TEC releve
- Trackfile
- Road network

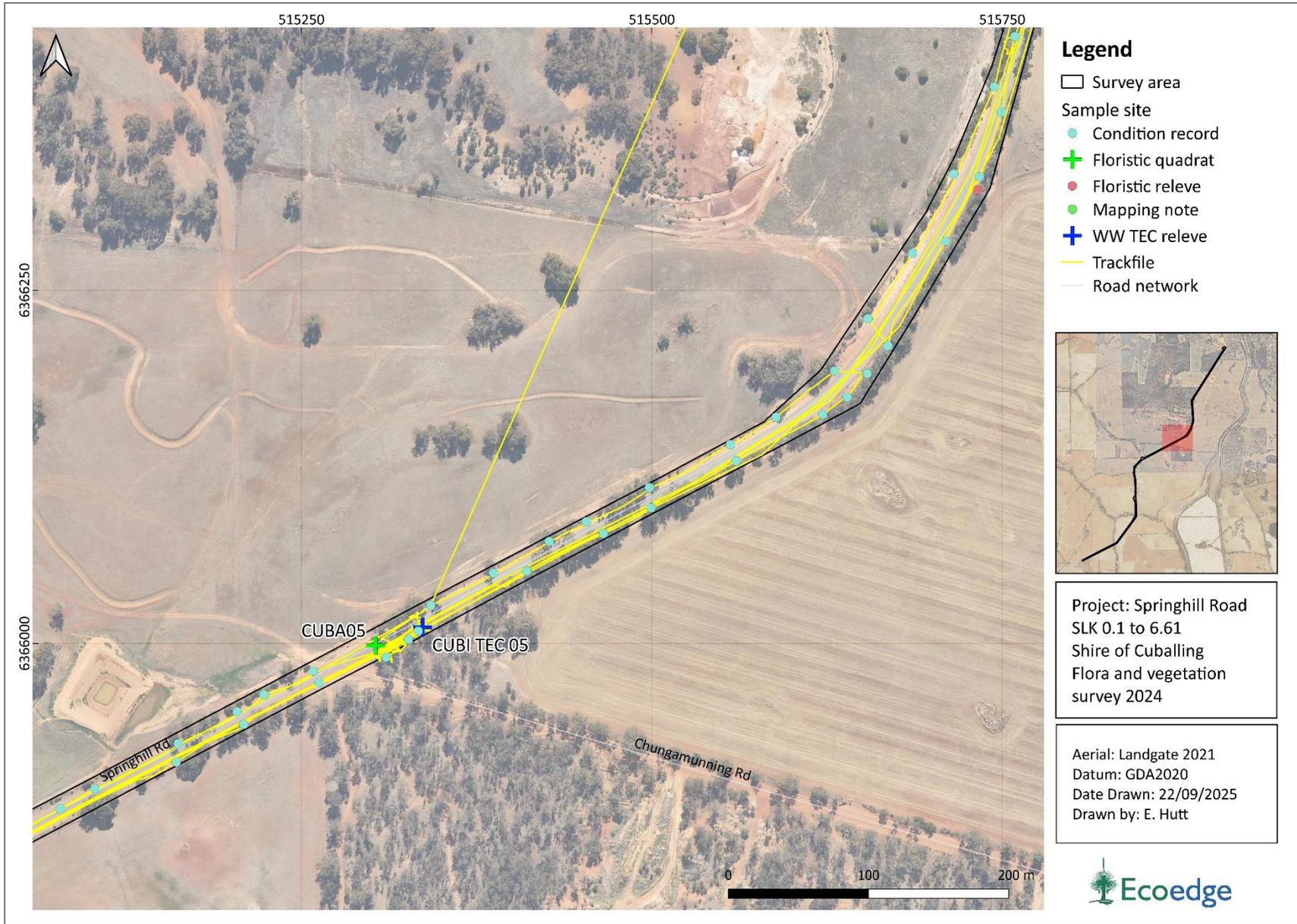


Project: Springhill Road
 SLK 0.1 to 6.61
 Shire of Cuballing
 Flora and vegetation
 survey 2024

Aerial: Landgate 2021
 Datum: GDA2020
 Date Drawn: 22/09/2025
 Drawn by: E. Hutt







Legend

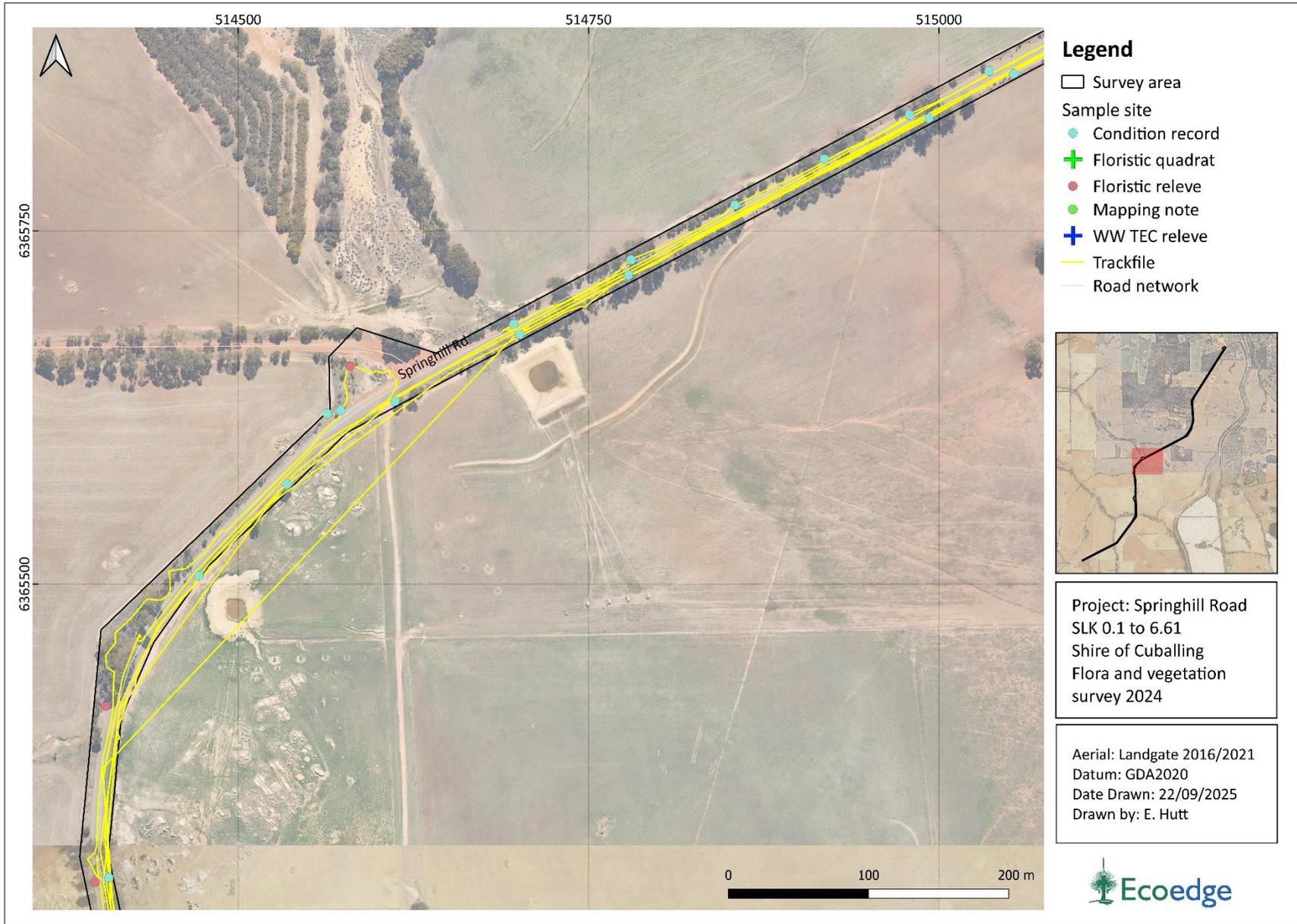
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- Floristic releve
- Mapping note
- ✚ WW TEC releve
- Trackfile
- Road network

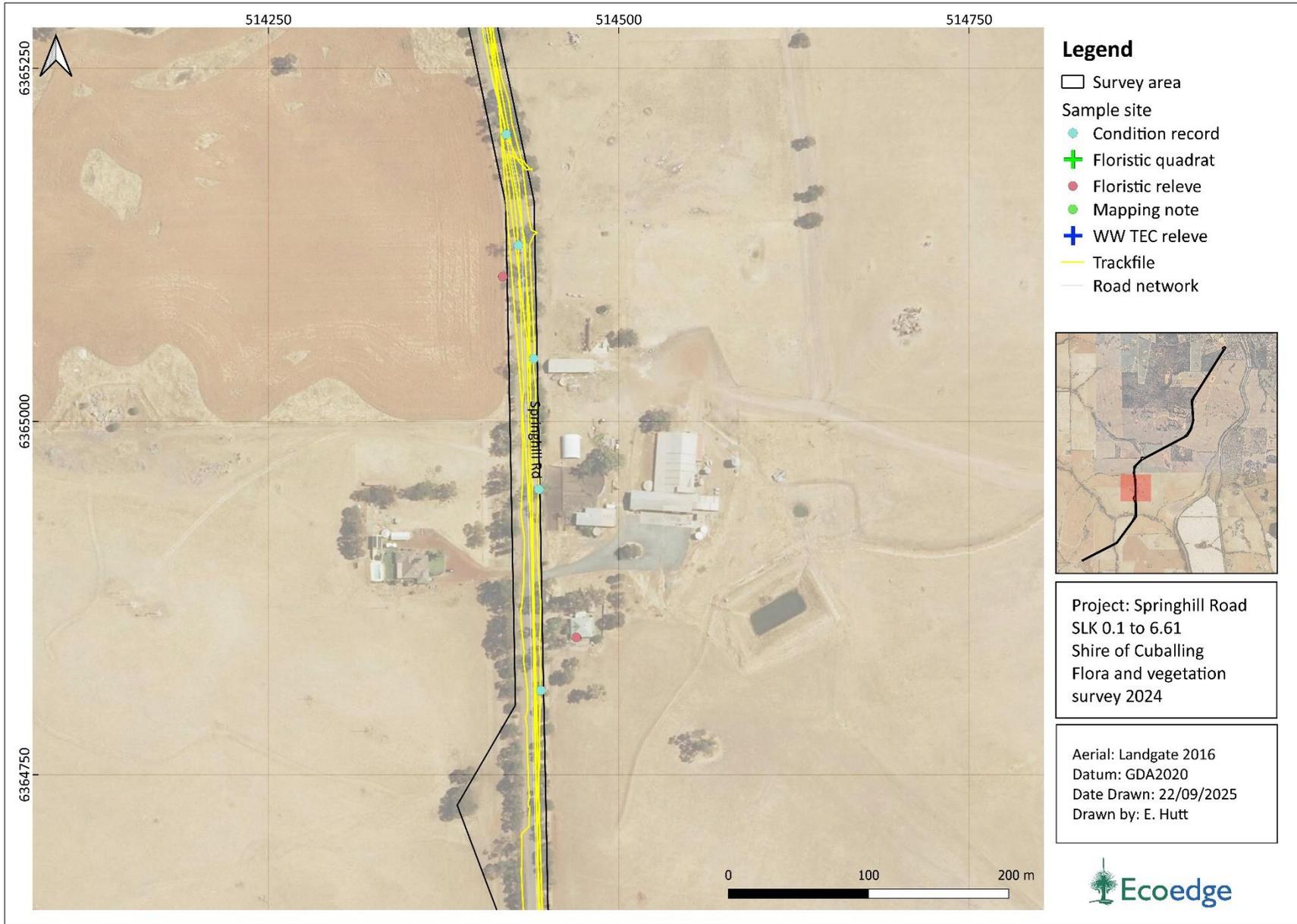


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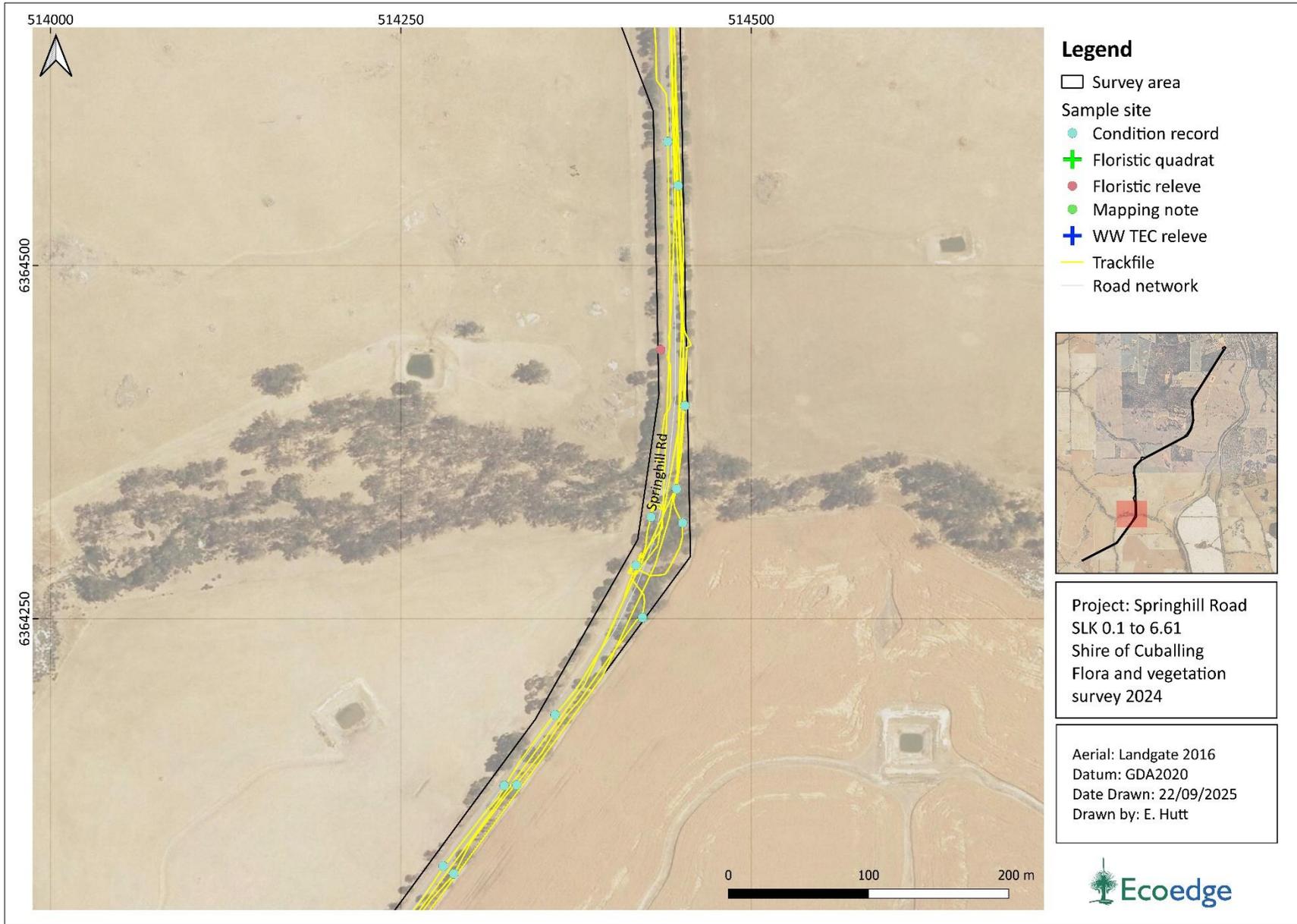
- Survey area
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 - Mapping note
 - ✚ WW TEC releve
- Trackfile
- Road network

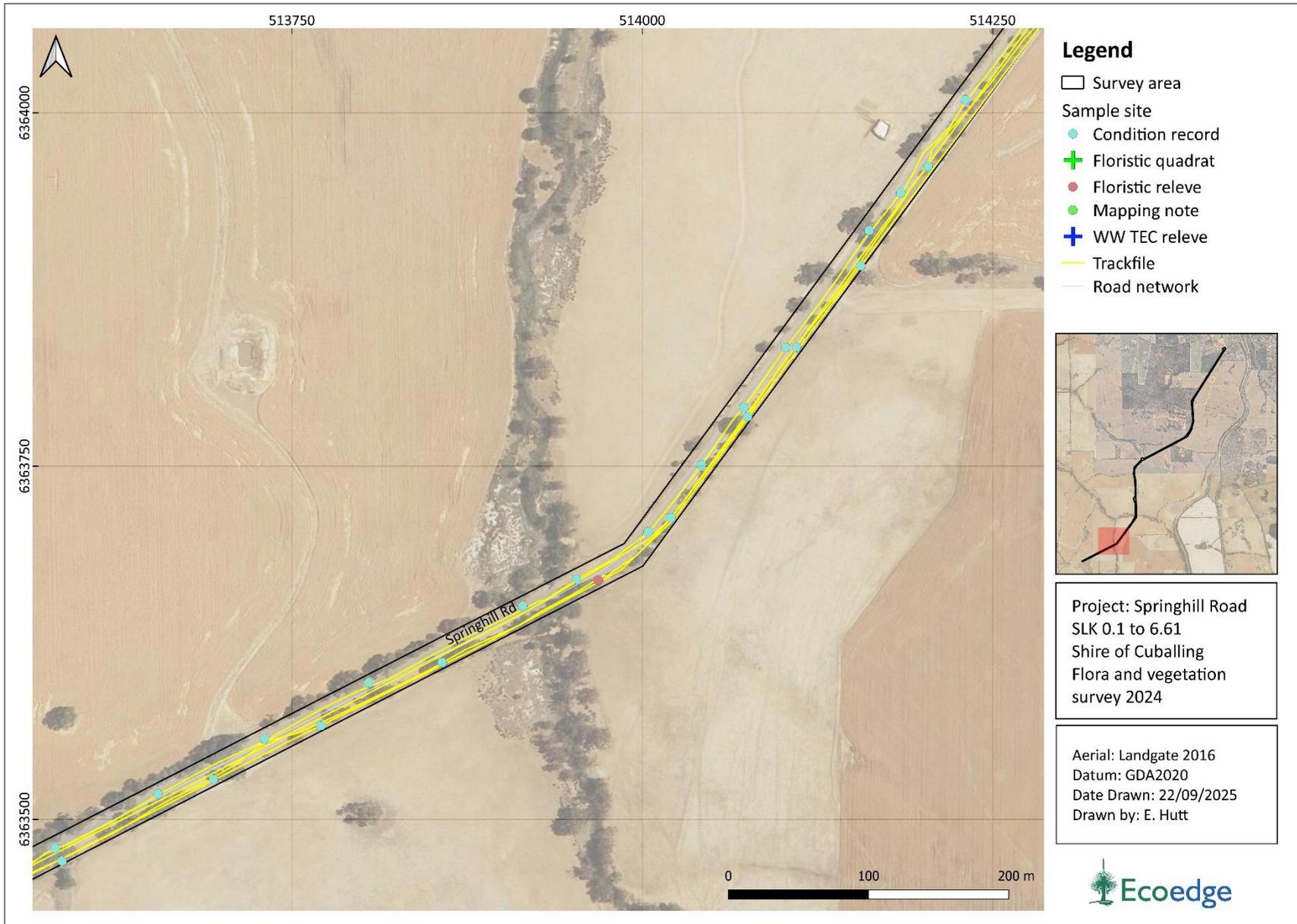


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 Shire of Cuballing
 Flora and vegetation
 survey 2024

Aerial: Landgate 2016
 Datum: GDA2020
 Date Drawn: 22/09/2025
 Drawn by: E. Hutt







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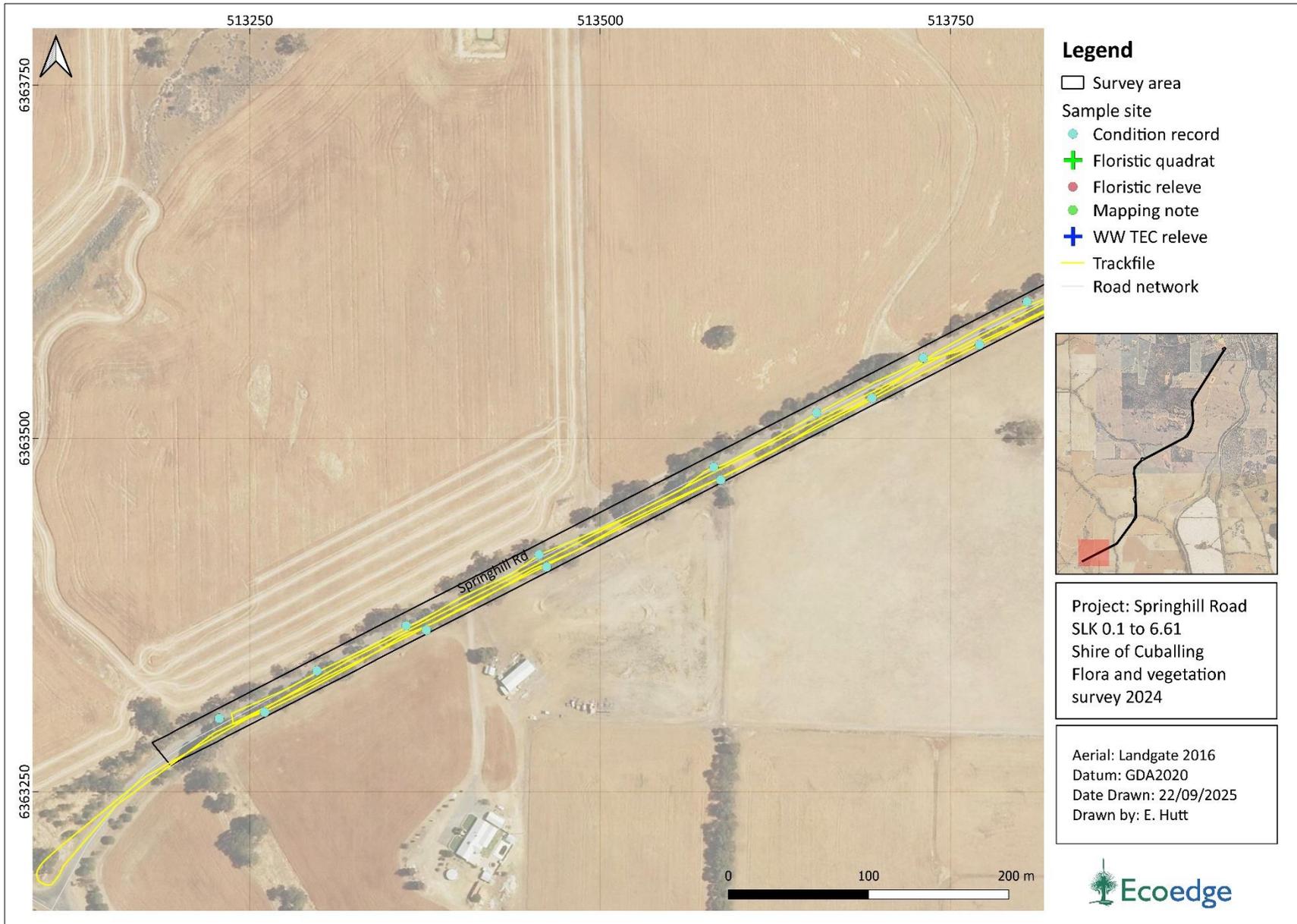
- Survey area
- Sample site
- Condition record
- + Floristic quadrat
- Floristic releve
- Mapping note
- + WW TEC releve
- Trackfile
- Road network



Project: Springhill Road
 SLK 0.1 to 6.61
 Shire of Cuballing
 Flora and vegetation
 survey 2024

Aerial: Landgate 2016
 Datum: GDA2020
 Date Drawn: 22/09/2025
 Drawn by: E. Hutt





Appendix 4. Quadrat data.



Quadrat: CUBA01	Latitude: -32.824	Longitude: 117.176	Condition: Very Good
Soil: Orange-brown sandy clay loam	Position: Dry Flat	Time since fire: > 10 years	Disturbance: Nil
Mid woodland of <i>Eucalyptus wandoo</i> over low open forest of <i>Allocasuarina huegeliana</i> over forbland including * <i>Romulea rosea</i> , <i>Borya sphaerocephala</i> , <i>Sowerbaea laxiflora</i> , <i>Dichopogon preissii</i> and <i>Podolepis gracilis</i> and open grassland of <i>Neurachne alopecuroidea</i> , * <i>Briza maxima</i> , * <i>Ehrharta longifolia</i> and <i>Austrostipa elegantissima</i> on orange-brown sandy clay loam.			

Taxon	Cover	Height (m)
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	10 to 30	>10 m
<i>Allocasuarina huegeliana</i>	30 to 70	<10 m
* <i>Ehrharta longiflora</i>	0 to 5	<1m
* <i>Romulea rosea</i>	70 to 100	<0.5 m
<i>Sowerbaea laxiflora</i>	0 to 5	<0.5 m
<i>Stypandra glauca</i>	0 to 5	<0.5 m
<i>Drosera subhirtella</i>	0 to 5	<0.5 m
<i>Dichopogon preissii</i>	0 to 5	<0.5 m
<i>Caesia micrantha</i>	Approx. 0	<0.5 m
* <i>Ursinia anthemoides</i>	0 to 5	<0.5 m
<i>Podolepis gracilis</i>	0 to 5	<0.5 m
<i>Opercularia vaginata</i>	0 to 5	<0.5 m
<i>Orthrosanthus multiflorus</i>	Approx. 0	<0.5 m
<i>Desmodcladus asper</i>	0 to 5	<0.5 m
<i>Austrostipa elegantissima</i>	0 to 5	<0.5 m
<i>Chamaescilla corymbosa</i>	<10	<0.1 m

<i>*Briza maxima</i>	10 to 30	<0.1 m
<i>Arctotheca calendula</i>	0 to 5	<0.1 m
<i>Borya sphaerocephala</i>	<10	<0.1 m
<i>Lawrencella rosea</i>	0 to 5	<0.1 m
<i>Neurachne alopecuroidea</i>	30 to 70	<0.1 m
<i>Caladenia flava</i> subsp. <i>sylvestris</i>	0 to 5	<0.1 m
<i>Phyllangium paradoxum</i>	Approx. 0	<0.1 m
<i>Parentucellia latifolia</i>	Approx. 0	<0.1 m
<i>Poranthera microphylla</i>	Approx. 0	<0.1 m
<i>Schoenus nanus</i>	Approx. 0	<0.1 m
<i>Centrolepis aristata</i>	Approx. 0	<0.1 m
<i>Levenhookia stipitata</i>	Approx. 0	<0.1 m
<i>Gonocarpus nodulosus</i>	Approx. 0	<0.1 m
<i>*Briza minor</i>	0 to 5	<0.1 m
<i>Trachymene cyanopetala</i>	Approx. 0	<0.1 m
<i>Crassula decumbens</i>	Approx. 0	<0.1 m
<i>Rhodanthe laevis</i>	0 to 5	<0.1 m
<i>*Aira cupaniana</i>	Approx. 0	<0.1 m
<i>*Hypochaeris glabra</i>	0 to 5	<0.1 m
<i>*Vulpia bromoides</i>	0 to 5	<0.1 m
<i>*Poa annua</i>	0 to 5	<0.1 m
<i>Crassula closiana</i>	Approx. 0	<0.1 m
<i>Ptilotus manglesii</i>	0 to 5	<0.1 m
<i>Thysanotus tenellus</i>	Approx. 0	<0.1 m



Quadrat: CUBA02	Latitude: 32.824	Longitude: 117.176	Condition: Very Good
Soil: Orange-brown sandy clay loam	Position: Dry Flat	Time since fire: > 10 years	Disturbance: Nil
Mid woodland of <i>Eucalyptus wandoo</i> over low open forest of <i>Allocasuarina huegeliana</i> over forbland including * <i>Romulea rosea</i> , <i>Desmocladus asper</i> , <i>Sowerbaea laxiflora</i> , <i>Dichopogon preissii</i> , <i>Chamaescilla corymbosa</i> and <i>Podolepis gracilis</i> and open grassland of <i>Neurachne alopecuroidea</i> and * <i>Briza maxima</i> , on orange-brown sandy clay loam.			

Taxon	Cover	Height (m)
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	10 to 30	<10 m
<i>Allocasuarina huegeliana</i>	30 to 70	<10 m
* <i>Romulea rosea</i>	70 to 100	<0.5 m
<i>Sowerbaea laxiflora</i>	0 to 5	<0.5 m
* <i>Briza maxima</i>	10 to 30	<0.5 m
<i>Drosera subhirtella</i>	Approx. 0	<0.5 m
* <i>Ursinia anthemoides</i>	0 to 5	<0.5 m
<i>Dichopogon preissii</i>	0 to 5	<0.5 m
<i>Neurachne alopecuroidea</i>	30 to 70	<0.5 m
<i>Haemodorum simplex</i>	Approx. 0	<0.5 m
<i>Lawrencella rosea</i>	0 to 5	<0.5 m
<i>Prasophyllum cyphochilum</i>	Approx. 0	<0.5 m
<i>Podolepis gracilis</i>	0 to 5	<0.5 m
<i>Chamaescilla corymbosa</i>	0 to 5	<0.5 m
<i>Thysanotus patersonii</i>	Approx. 0	<0.5 m
* <i>Avena fatua</i>	0 to 5	<0.5 m
Cyperaceae sp.	0 to 5	<0.5 m
* <i>Parentucellia latifolia</i>	0 to 5	<0.1 m
<i>Borya sphaerocephala</i>	0 to 5	<0.1 m
<i>Gonocarpus nodulosus</i>	Approx. 0	<0.1 m
<i>Rhodanthe laevis</i>	Approx. 0	<0.1 m

<i>Schoenus nanus</i>	Approx. 0	<0.1 m
* <i>Hypochaeris glabra</i>	0 to 5	<0.1 m
<i>Poranthera microphylla</i>	Approx. 0	<0.1 m
<i>Centrolepis aristata</i>	Approx. 0	<0.1 m
* <i>Aira cupaniana</i>	Approx. 0	<0.1 m
<i>Levenhookia pusilla</i>	Approx. 0	<0.1 m
<i>Blennospora drummondii</i>	Approx. 0	<0.1 m
<i>Trachymene cyanopetala</i>	Approx. 0	<0.1 m
* <i>Arctotheca calendula</i>	0 to 5	<0.1 m
<i>Desmocladus asper</i>	<10	<0.1 m
<i>Rhodanthe manglesii</i>	Approx. 0	<0.1 m
<i>Stylidium petiolare</i>	Approx. 0	<0.1 m
<i>Hydrocotyle</i> sp.	Approx. 0	<0.1 m
<i>Thysanotus tenellus</i>	Approx. 0	<0.1 m



Quadrat: CUBA03	Latitude: -32.823	Longitude: 117.176	Condition: Very Good
Soil: Grey-brown sandy clay loam	Position: Dry Flat	Time since fire: > 10 years	Disturbance:
Mid open woodland of <i>Eucalyptus wandoo</i> over low woodland of <i>Allocasuarina huegeliana</i> and <i>Acacia acuminata</i> over forbland including * <i>Romulea rosea</i> , <i>Borya sphaerocephala</i> , <i>Sowerbaea laxiflora</i> , <i>Dichopogon preissii</i> , <i>Stypandra glauca</i> and <i>Podolepis gracilis</i> , open grassland of <i>Neurachne alopecuroidea</i> , * <i>Briza maxima</i> , * <i>Ehrharta longifolia</i> and <i>Austrostipa elegantissima</i> and isolated sedges of lepidosperma sp. on orange-brown sandy clay loam.			

Taxon	Cover	Height (m)
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	<10	>10 m
<i>Acacia acuminata</i>	<10	<10 m
<i>Allocasuarina huegeliana</i>	10 to 30	<10 m
<i>Dichopogon preissii</i>	0 to 5	<1m
<i>Lepidosperma</i> sp.	<10	<1m
<i>Austrostipa elegantissima</i>	0 to 5	<1m
* <i>Romulea rosea</i>	30 to 70	<0.5 m
<i>Sowerbaea laxiflora</i>	0 to 5	<0.5 m
<i>Borya sphaerocephala</i>	0 to 5	<0.5 m
<i>Briza maxima</i>	0 to 5	<0.5 m
<i>Caesia micrantha</i>	0 to 5	<0.5 m
<i>Neurachne alopecuroidea</i>	0 to 5	<0.5 m
* <i>Ursinia anthemoides</i>	0 to 5	<0.5 m
<i>Orthrosanthus multiflorus</i>	0 to 5	<0.5 m
<i>Dampiera lavandulacea</i>	Approx. 0	<0.5 m
<i>Desmocladius asper</i>	0 to 5	<0.5 m
<i>Stypandra glauca</i>	0 to 5	<0.5 m
<i>Opercularia vaginata</i>	0 to 5	<0.5 m
* <i>Parentucellia latifolia</i>	0 to 5	<0.5 m

<i>Podolepis gracilis</i>	0 to 5	<0.5 m
<i>Thysanotus patersonii</i>	Approx. 0	<0.5 m
<i>Lawrencella rosea</i>	Approx. 0	<0.5 m
<i>Caladenia flava</i> subsp. <i>sylvestris</i>	0 to 5	<0.5 m
<i>Thysanotus tenellus</i>	Approx. 0	<0.5 m
<i>Gonocarpus nodulosus</i>	0 to 5	<0.1 m
<i>Ptilotus manglesii</i>	Approx. 0	<0.1 m
<i>Phyllangium paradoxum</i>	0 to 5	<0.1 m
<i>Poranthera microphylla</i>	Approx. 0	<0.1 m
<i>Hydrocotyle callicarpa</i>	Approx. 0	<0.1 m
<i>Rhodanthe manglesii</i>	Approx. 0	<0.1 m
* <i>Lysimachia arvensis</i>	0 to 5	<0.1 m
<i>Trachymene cyanopetala</i>	Approx. 0	<0.1 m
<i>Kennedia prostrata</i>	Approx. 0	<0.1 m
* <i>Hypochaeris glabra</i>	Approx. 0	<0.1 m
* <i>Briza maxima</i>	Approx. 0	<0.1 m
* <i>Disa bracteata</i>	Approx. 0	<0.1 m
<i>Crassula closiana</i>	Approx. 0	<0.1 m



Quadrat: CUBA04	Latitude: -32.834	Longitude: 117.168	Condition: Very Good
Soil: Orange-brown gravelly clay loam	Position: Dry Flat	Time since fire: > 10 years	Disturbance: Old road
<p>Mid open forest of <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> over low open woodland of <i>Allocasuarina huegeliana</i> and <i>Acacia acuminata</i> over very open low shrubland of <i>Acacia pulchella</i> var. <i>pulchella</i>, <i>Gastrolobium parviflorum</i>, <i>Bossiaea eriocarpa</i>, <i>Hakea lissocarpa</i> and <i>Xanthorrhoea gracilis</i> over forbland including <i>Agrostocrinum scabrum</i>, <i>Lomandra micrantha</i> subsp. <i>micrantha</i>, <i>Rhodanthe manglesii</i>, <i>Glischrocaryon aureum</i>, very open grassland of <i>Austrostipa</i> spp., <i>*Briza maxima</i>, <i>*Avena barbata</i> and very open sedgeland of <i>Lepidosperma</i> spp. on orange-brown gravelly clay loam.</p>			

Taxon	Cover	Height (m)
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	30 to 70	>10 m
<i>Acacia acuminata</i>	0 to 5	<10 m
<i>Allocasuarina huegeliana</i>	0 to 5	<10 m
<i>Gastrolobium parvifolium</i>	0 to 5	1 to 2 m
<i>Lepidosperma</i> sp. "large clump"	0 to 5	<1m
<i>Lepidosperma</i> sp. aff. <i>leptostachyum</i>	0 to 5	<0.5 m
<i>Diuris</i> sp. sterile	Approx. 0	<0.5 m
<i>Lomandra micrantha</i> subsp. <i>micrantha</i>	0 to 5	<0.5 m
<i>Acacia pulchella</i> var. <i>pulchella</i>	0 to 5	<0.5 m
<i>Austrostipa</i> sp. open panicle	0 to 5	<1m
<i>Billardiera variifolia</i>	0 to 5	<1m
<i>Austrostipa elegantissima</i>	0 to 5	<1m
<i>Agrostocrinum scabrum</i>	0 to 5	<1m
<i>Xanthorrhoea gracilis</i>	0 to 5	<1m
<i>Bossiaea eriocarpa</i>	0 to 5	<0.5 m
<i>*Briza maxima</i>	0 to 5	<0.5 m
<i>*Avena barbata</i>	0 to 5	<0.5 m
<i>Rhodanthe manglesii</i>	0 to 5	<0.5 m
<i>Dampiera lavandulacea</i>	0 to 5	<0.5 m

<i>Thysanotus patersonii</i>	Approx. 0	<0.5 m
<i>Opercularia vaginata</i>	0 to 5	<0.5 m
<i>Hakea lissocarpha</i>	0 to 5	<0.5 m
<i>Desmocladus asper</i>	0 to 5	<0.5 m
* <i>Romulea rosea</i>	0 to 5	<0.5 m
<i>Sowerbaea laxiflora</i>	0 to 5	<0.5 m
* <i>Ursinia anthemoides</i>	Approx. 0	<0.5 m
<i>Tricoryne elatior</i>	Approx. 0	<0.5 m
<i>Hemigenia</i> sp.?	0 to 5	<0.5 m
<i>Lechenaultia formosa</i>	0 to 5	<0.5 m
<i>Glischrocaryon aureum</i>	0 to 5	<0.5 m
<i>Acacia saligna</i>	Approx. 0	<0.5 m
<i>Austrostipa trichophylla</i>	0 to 5	<0.5 m
<i>Moraea miniata</i>	0 to 5	<0.5 m
<i>Hovea pungens</i>	0 to 5	<0.5 m
<i>Drosera marchantii</i>	Approx. 0	<0.5 m
<i>Neurachne alopecuroidea</i>	0 to 5	<0.5 m
<i>Banksia dallanneyi</i>	0 to 5	<0.5 m
<i>Aira</i> sp.	Approx. 0	<0.1 m
<i>Millotia tenuifolia</i> var. <i>tenuifolia</i>	Approx. 0	<0.1 m
<i>Ficinia marginata</i>	Approx. 0	<0.1 m
<i>Trachymene cyanopetala</i>	Approx. 0	<0.1 m
<i>Rhodanthe laevis</i>	Approx. 0	<0.1 m
<i>Schoenus nanus</i>	Approx. 0	<0.1 m
<i>Crassula closiana</i>	Approx. 0	<0.1 m
<i>Poranthera microphylla</i>	Approx. 0	<0.1 m
<i>Crassula colorata</i>	Approx. 0	<0.1 m
<i>Gompholobium marginatum</i>	Approx. 0	<0.1 m
<i>Goodenia pulchella</i> ?	0 to 5	<0.1 m
<i>Phyllangium paradoxum</i>	Approx. 0	<0.1 m
<i>Hydrocotyle callicarpa</i>	Approx. 0	<0.1 m
<i>Levenhookia pusilla</i>	Approx. 0	<0.1 m
<i>Centrolepis drummondiana</i>	Approx. 0	<0.1 m
* <i>Hypochaeris glabra</i>	0 to 5	<0.1 m
<i>Hyalosperma demissum</i>	Approx. 0	<0.1 m
<i>Centrolepis pilosa</i>	Approx. 0	<0.1 m
Nodding small herb	Approx. 0	<0.1 m
<i>Drosera glanduligera</i>	Approx. 0	<0.1 m
* <i>Lysimachia arvensis</i>	0 to 5	<0.1 m
<i>Lagenophora huegelii</i>	0 to 5	<0.1 m
<i>Stylidium calcaratum</i>	Approx. 0	<0.1 m
<i>Vulpia bromoides</i>	Approx. 0	<0.1 m



Quadrat: CUBA05	Latitude: -32.843	Longitude: 117.163	Condition: Degraded to Good
Soil: Orange-brown gravelly loam	Position: Upper Slope	Time since fire: > 10 years	Disturbance: Yes, grading
Mid open woodland of <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> over low woodland of <i>Allocasuarina huegeliana</i> over low open shrubland of <i>Bossiaea eriocarpa</i> , <i>Acacia lasiocarpa</i> var. <i>sedifolia</i> , <i>Gastrolobium parvifolium</i> over forbland including <i>Lomandra micrantha</i> subsp. <i>teretifolia</i> , * <i>Arctotheca calendula</i> , * <i>Lysimachia arvensis</i> , <i>Opercularia vaginata</i> and open grassland of * <i>Ehrharta longiflora</i> , * <i>Avena barbata</i> , <i>Neurachne alopecuroidea</i> and <i>Austrostipa elegantissima</i> on orange-brown gravelly loam.			

Taxon	Cover	Height (m)
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	30 to 70	>10 m
<i>Allocasuarina huegeliana</i>	<10	<10 m
<i>Gastrolobium parvifolium</i>	0 to 5	1 to 2 m
* <i>Ehrharta longiflora</i>	10 to 30	<1m
* <i>Avena barbata</i>	<10	<1m
<i>Bossiaea eriocarpa</i>	<10	<1m
* <i>Hordeum vulgare</i>	Approx. 0	<1m
<i>Lomandra micrantha</i> subsp. <i>teretifolia</i>	0 to 5	<1m
<i>Acacia lasiocarpa</i> var. <i>sedifolia</i>	0 to 5	<1m
<i>Opercularia vaginata</i>	0 to 5	<0.5 m
<i>Hibbertia commutata</i>	0 to 5	<0.5 m
<i>Neurachne alopecuroidea</i>	0 to 5	<0.5 m
* <i>Briza maxima</i>	0 to 5	<0.5 m
* <i>Sonchus oleraceus</i>	Approx. 0	<0.5 m
* <i>Arctotheca calendula</i>	0 to 5	<0.5 m
* <i>Lupinus angustifolius</i>	Approx. 0	<0.5 m
<i>Austrostipa elegantissima</i>	0 to 5	<0.5 m
* <i>Asparagus asparagoides</i>	Approx. 0	<0.5 m

<i>Dampiera lavandulacea</i>	0 to 5	<0.5 m
* <i>Romulea rosea</i>	0 to 5	<0.5 m
<i>Dampiera alata</i>	Approx. 0	<0.5 m
* <i>Lysimachia arvensis</i>	0 to 5	<0.1 m
* <i>Vulpia fasciculata</i>	0 to 5	<0.1 m
* <i>Pentameris airoides</i>	Approx. 0	<0.1 m
<i>Crassula closiana</i>	Approx. 0	<0.1 m

Appendix 5. Flora taxa amalgamated in or omitted from the statistical analysis.

Table 1. Taxa amalgamated into groups and complexes for statistical analysis for the Gibson et al. 1994 and Keighery et al. 2012 data sets.

Groups	Components	Comments
Acacia applanata / willdenowiana complex	Acacia applanata and Acacia willdenowiana	Per page 189 Gibson et al. 1994
Acacia lasiocarpa group	All subsp. Not all identified to subsp. level in original data, Acacia lasiocarpa var. bracteolata, Acacia lasiocarpa var. bracteolata long peduncle variant (G.J. Keighery 5026),	
Acacia pulchella group	All subsp. Not all identified to subsp. level in original data	
Aira caryophyllea / cupaniana complex	Aira caryophyllea and Aira cupaniana	Per page 189 Gibson et al. 1994
Austrostipa campylachne / semibarbata complex	Austrostipa campylachne and A. semibarbata	Per page 189 Gibson et al. 1994
Avena barbata / fatua complex	Avena barbata and Avena fatua	Per page 189 Gibson et al. 1994
Banksia dallanneyi group	All subsp. not identified to subsp. level in original data.	
Boronia denticulata / spathulata complex	Boronia denticulata and Boronia spathulata	Per page 189 Gibson et al. 1994
Caladenia flava complex	Caladenia flava subsp. flava and other subsp.	Per page 189 Gibson et al. 1994
Caladenia longicauda group	All subsp. Not all identified to subsp. level in original data	Per page 189 Gibson et al. 1994
Conostylis aculeata group	All subsp. Not all identified to subsp. level in original data	

Conostylis pauciflora complex	Conostylis pauciflora subsp. euryrhipis and Conostylis pauciflora subsp. pauciflora	Per page 189 Gibson et al. 1994
Dianella revoluta complex	Dianella revoluta var. divaricata, other subsp. and Dianella brevicaulis	
Drosera erythrorhiza complex	Drosera erythrorhiza, D. collina?, D. magna, D. squamosa	Per page 189 Gibson et al. 1994
Drosera stolonifera complex	Drosera porrecta and D. stolonifera	Per page 189 Gibson et al. 1994
Epilobium billardioreanum complex	Epilobium billardioreanum and E. billardioreanum subsp. billardioreanum and E. billardioreanum subsp. intermedium	Per page 189 Gibson et al. 1994
Hibbertia huegelii group	Hibbertia huegelii and H. striata	
Lepidosperma squamatum group	L. angustatum, Lepidosperma squamatum, L. calcicola	
Lyginia barbata/imberbis group	Lyginia barbata, L. imberbis	L. imberbis not distinguished during 1994 survey
Microtis media group	All subspecies	Only some identified to subsp. level in original data
Orianthera serpyllifolia complex	Orianthera serpyllifolia, O. serpyllifolia subsp. angustifolia, O. serpyllifolia subsp. serpyllifolia	Per page 189 Gibson et al. 1994
Pericalymma ellipticum complex	Pericalymma ellipticum and Pericalymma ellipticum var. floridum	Per page 189 Gibson et al. 1994
Platysace compressus/filiformis group	Platysace compressus and P. filiformis	Not sufficiently distinguishable in the field
Poa poiformis / porphyroclados complex	Poa poiformis and Poa porphyroclados	Per page 189 Gibson et al. 1994
Pterostylis nana group	Pterostylis aff. nana (Pterostylis sp. Bloated snail orchid (W. Jackson BJ 486)?, Pterostylis aff. nana (limestone form) (Pterostylis sp. limestone (B.J. Keighery & G.J. Keighery 65)) & Pterostylis	Per page 189 Gibson et al. 1994

	brevisepala & all subsp. not identified to subsp and species level in Gibson data.	
Rhagodia baccata complex	Rhagodia baccata subsp. dioica and Rhagodia baccata subsp. baccata	Per page 189 Gibson et al. 1994
Romulea rosea complex	Romulea rosea, Romulea rosea subsp. rosea and Romulea rosea var. australis	Per page 189 Gibson et al. 1994
Schoenus brevisetis / caespititius complex	Schoenus brevisetis, Schoenus caespititius, Schoenus aff. brevisetis and Schoenus aff. laevigatus	Per page 189 Gibson et al. 1994
Stylidium brunonianum group	Stylidium brunonianum, S. araeophyllum, S. neurophyllum, S. purpureum, S. spiciforme, S. tenue subsp. majusculum	
Thysanotus manglesianus/patersonii complex	T. manglesianus, T. patersonii	Per page 189 Gibson et al. 1994
Tricostularia neesii / exsul complex	Tricostularia exsul and Tricostularia neesii	Per page 189 Gibson et al. 1994
Verticordia densiflora group	All subsp. Not all identified to subsp. level in original data	
Verticordia huegelii complex	Verticordia huegelii, V. huegelii var. huegelii and subsp?	Per page 189 Gibson et al. 1994
Watsonia meriana complex	Watsonia meriana and Watsonia meriana var. bulbifera	Per page 189 Gibson et al. 1994

Table 2 shows the taxa that were deleted from the data sets because they were not identified during survey.

Table 2. Deleted taxa

Taxa
Aira sp. indet.
Amphipogon sp. indet.
Aotus sp. indet.
Astroloma sp. indet.
Avena sp. indet.
Borya sp. indet.
Bromus sp. indet.
Caladenia sp. indet.
Calandrinia sp. indet.
Calytrix sp. indet.
Carpobrotus sp. (GJK 11518)
Cassytha sp. indet.
Centrolepis sp. indet.
Clematis sp. indet.
Comesperma sp. indet.
Conostephium sp. indet.
Conostylis sp. indet.
Crassula sp. indet.
Cryptandra sp. indet.
Cyrtostylis sp. indet.
Dampiera sp. indet.
Danthonia sp. indet.
Drosera sp. indet.
Eragrostis sp. indet.
Erodium sp. indet.
Galium sp. indet.
Geranium sp. indet.
Gladiolus sp. indet.
Gnaphalium sp. indet.
Gonocarpus sp. indet.
Haemodorum sp. indet.
Holcus sp. indet.
Hibbertia sp. indet.
Hordeum sp. indet.
Hydrocotyle sp. indet.
Hypoxis sp. indet.
Isolepis sp. indet.
Isotoma sp. indet.
Juncus sp. indet.
Laxmannia sp. indet.
Lepidosperma sp. indet.

Leptocarpus sp. indet.
Lepyrodia sp. indet.
Levenhookia sp. indet.
Lobelia sp. indet.
Leucopogon sp. indet.
Lolium sp. indet.
Lomandra sp. indet.
Lotus sp. indet.
Medicago sp. indet.
Melaleuca sp. indet.
Microtis sp. indet.
Myriophyllum sp. indet.
Olearia sp. indet.
Opercularia sp. indet.
Ornithopus sp. indet.
Oxalis sp. indet.
Patersonia sp. indet.
Pelargonium sp. indet.
Pentaschistis sp. indet.
Pimelea sp. indet.
Pithocarpa sp. indet.
Plantago sp. indet.
Poa sp. indet.
Podolepis sp. indet.
Podotheca sp. indet.
Prasophyllum sp. indet.
Pterostylis sp. indet.
Restio sp. indet.
Scaevola sp. indet.
Schoenus sp. indet.
Senecio sp. indet.
Siloxerus sp. indet.
Solanum sp. indet.
Sparaxis sp. indet.
Spergula sp. indet.
Sphaerolobium sp. indet.
Stipa sp. indet.
Stylidium sp. indet.
Synaphea sp. indet.
Thelymitra sp. indet.
Thysanotus sp. indet.
Tribonanthes sp. indet.
Tricoryne sp. indet.
Trifolium sp. indet.
Triglochin sp. indet.
Veronica sp. indet.
Verticordia sp. indet.
Villarsia sp. indet.
Vulpia sp. indet.

Waitzia sp. indet.
Watsonia sp. indet.
Xanthosia sp. indet.
Acacia sp. indet.
Acacia sp. indet.
Acacia sp. indet.
Acacia sp. indet.
Acacia sp. indet.
Agrostis sp. indet.
Amperea sp. indet.
Baumea sp. indet.
Billardiera sp. indet.
Billardiera sp. indet.
Daviesia sp. indet.
Diuris sp. indet.
Elythranthera sp. indet.
Elythranthera sp. indet.
Elythranthera sp. indet.
Goodenia sp. indet.
Hibbertia sp. indet.
Lepidium sp. indet.

References

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Appendix 6. Categories of Threatened ecological communities under the EPBC Act.

Category	Definition
Critically endangered (CR)	If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).
Endangered (EN)	If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).
Vulnerable (VU)	If, at that time, an ecological, community is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future (indicative timeframe being the next 50 years).

Appendix 7. Categories of threatened and priority ecological communities under the BC Act.

Conservation code	Category
(T) Threatened ecological community pursuant to Sect 27 of the <i>Biodiversity Conservation Act 2016</i> .	
T	<p>(T) CR – Critically endangered</p> <p>An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.</p>
	<p>(T) EN - Endangered</p> <p>An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.</p>
	<p>(T) VU - Vulnerable</p> <p>An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.</p>
(P) Priority species – possible threatened communities.	
p1	<p>Poorly known communities</p> <p>Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤ 5 occurrences or a total area of ≤ 100ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.</p>

Conservation code	Category
P2	<p>Poorly known communities</p> <p>Communities that are known from few occurrences with a restricted distribution (generally ≤ 10 occurrences or a total area of ≤ 200ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.</p>
P3	<p>Poorly known communities</p> <ul style="list-style-type: none"> a) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: b) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or; c) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc. <p>Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.</p>
P4	<p>Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.</p> <ul style="list-style-type: none"> a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent. c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.
P5	<p>Conservation dependent ecological communities</p> <p>Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.</p>

Appendix 8. Definitions of conservation codes for Threatened and Priority flora.

Conservation code	Category
(T) Threatened species pursuant to Sect 19 of the BC Act 2016.	
T	<p>(T) CR – Critically endangered</p> <p>Threatened species considered to be <i>“facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines”</i>.</p>
	<p>(T) EN - Endangered</p> <p>Threatened species considered to be <i>“facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines”</i>.</p>
	<p>(T) VU - Vulnerable</p> <p>Threatened species considered to be <i>“facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines”</i>.</p>
(P) Priority species – possible Threatened species.	
P1	<p>Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.</p>
P2	<p>Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.</p>

Conservation code	Category
P3	<p>Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.</p>
P4	<p>(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

Appendix 9. Categories of Threatened species under the EPBC Act.

Category	Definition
Extinct (Ex)	A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the Wild (ExW)	A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time (a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered (CE)	A native species is eligible to be included in the critically endangered category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
Endangered (EN)	A native species is eligible to be included in the endangered category at a particular time if, at that time (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
Vulnerable (VU)	A native species is eligible to be included in the vulnerable category at a particular time if, at that time (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.
Conservation Dependent (CD)	A native species is eligible to be included in the conservation dependent category at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Appendix 10. Online data search.



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 14-Sep-2025

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar)	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	24
Listed Migratory Species:	6

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	10
Commonwealth Heritage Places:	None
Listed Marine Species:	10
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	13
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	6
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [\[Resource Information \]](#)

Ramsar Site Name	Proximity
Peel-yalgorup system	100 - 150km upstream from Ramsar site

Listed Threatened Ecological Communities [\[Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Eucalypt Woodlands of the Western Australian Wheatbelt	Critically Endangered	Community likely to occur within area

Listed Threatened Species [\[Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Species or species habitat likely to occur within area
Zanda latirostris listed as Calyptorhynchus latirostris Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area
MAMMAL		
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat known to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Translocated population known to occur within area
Myrmecobius fasciatus Numbat [294]	Endangered	Species or species habitat known to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Acacia insolita subsp. recurva Yornaning Wattle [64495]	Endangered	Species or species habitat known to occur within area
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Banksia cuneata Matchstick Banksia, Quairading Banksia [9827]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Boronia capitata subsp. capitata a shrub [29156]	Endangered	Species or species habitat likely to occur within area
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area
Darwinia carnea Mogumber Bell, Narrogin Bell [9736]	Endangered	Species or species habitat known to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat likely to occur within area
Pultenaea pauciflora Narrogin Pea [14013]	Vulnerable	Species or species habitat known to occur within area
Roycea pycnophylloides Saltmat [21161]	Endangered	Species or species habitat likely to occur within area
Verticordia fimbrileps subsp. fimbrileps Shy Featherflower [24631]	Endangered	Species or species habitat known to occur within area

Listed Migratory Species [[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Unknown	
Commonwealth Land - [51610]	WA
Commonwealth Land - [52037]	WA
Commonwealth Land - [51611]	WA
Commonwealth Land - [50995]	WA
Commonwealth Land - [50997]	WA
Commonwealth Land - [50996]	WA
Commonwealth Land - [51609]	WA
Commonwealth Land - [52042]	WA
Commonwealth Land - [52050]	WA
Commonwealth Land - [50993]	WA

Listed Marine Species [\[Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text
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Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Protected Area Name	Reserve Type	State
Bradford	Nature Reserve	WA
Commodine	Nature Reserve	WA
Dryandra	National Park	WA
Fourteen Mile Brook	Nature Reserve	WA
Minniging	Nature Reserve	WA
NTWA Bushland covenant (0020)	Conservation Covenant	WA
Rosedale	Nature Reserve	WA
Unnamed WA15925	Nature Reserve	WA
Unnamed WA20877	Nature Reserve	WA
Unnamed WA20878	Nature Reserve	WA
Unnamed WA50165	Nature Reserve	WA
Unnamed WA53974	Nature Reserve	WA
Yornaning	Nature Reserve	WA

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status
Narrogin Wind Farm	2024/10004		Referral Decision

Controlled action

Widening maintenance zones for 3 roads, Wheatbelt region, WA	2016/7698	Controlled Action	Post-Approval
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Not controlled action

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Narrogin Link Road Stage 3 - North Extension, WA	2016/7664	Not Controlled Action	Completed
Not controlled action (particular manner)			
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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Appendix 11. Pre and post survey likelihood of occurrence table.

Taxon	Status	Flowering period	Description	Pre-Survey Likelihood	Post-Survey Likelihood
<i>Andersonia bifida</i>	P2	Sep	Compact shrub, ca 0.3 m high. Fl. white-cream-yellow, Sep to Dec or Jan. Sandy clay loam, sandy loam. Granite outcrops.	Possible	Unlikely (U2)
<i>Andersonia carinata</i>	P2	Aug-Oct	Erect slender shrub, 0.1-0.45(-0.8) m high. Fl. pink/pink-white/pink-purple. White sand, gravelly lateritic soils. Plains.	Possible	Unlikely (U2)
<i>Andersonia longifolia</i>	P2	Mar-May	Sprawling to upright shrub, 0.1-0.6 m high. Fl. cream-white. Sandy loam over sandstone, laterite gravel. Breakaways, ridges.	Possible	Unlikely (U2)
<i>Asterolasia hyalina</i>	P2	Aug to Sep	Erect or spreading and somewhat straggly shrub or subshrub 0.30 m–0.70 m high. Fl. white or mauve-pink. Sandy loam, red clay loam over granite or laterite on hillslopes or along creeklines.	Unlikely	Unlikely (U1)
<i>Babingtonia maleyae</i>	P2	Jan - Feb	Shrub 0.8–1.3 m high. Fl white, pink outside in bud, sepals deep pink. Sandy loam with lateritic gravel	Possible	Unlikely (U2)
<i>Banksia subpinnatifida</i> var. <i>subpinnatifida</i>	P2	Sep-Oct	Erect or straggling, non-lignotuberous shrub, 0.3-1.5 m high. Fl. yellow. Gravelly loam.	Possible	

Taxon	Status	Flowering period	Description	Pre-Survey Likelihood	Post-Survey Likelihood
<i>Leucopogon darlingensis subsp. rectus</i>	P2	Aug - Sep	Slender shrub, to 1 m high. Fl. cream-yellow, Jan to Apr or Aug to Nov. Shallow loam, laterite. Ridges.	Possible	Unlikely (U2)
<i>Stylidium tylosum</i>	P2	Oct - Nov	Caespitose perennial, herb, 0.06-0.13 m high, Leaves narrowly oblanceolate to oblanceolate, 0.5-1 cm long, 0.8-2 mm wide, apex subacute, margin entire, glandular. Scape mostly glabrous, sparingly glandular on inflorescence axis. Inflorescence racemose. Fl. yellow. Sandy clay. Hillslopes, or adjacent to granite outcrops. Open woodland, shrubland.	Possible	Unlikely (U2)
<i>Acacia deflexa</i>	P3	Aug to Sep	Prostrate to straggling or erect shrub, 0.15-2 m high. Fl. yellow. Yellow & gravelly lateritic sand, gravelly sandy loam. Plains.	Possible	Unlikely (U2)
<i>Acacia lanei</i>	P3	Jul to Sep	Spreading shrub, 1.5-2.3 m high. Fl. yellow. Clay, clay loam, gravelly loam. Along drainage lines & creeks.	Possible	Unlikely (U2)
<i>Anthotium odontophyllum</i>	P3	Nov	Perennial, tufted clonal herb, 0.05-0.08 m high, leaves spatulate, 2-6 mm wide;	Possible	Unlikely (U2)

Taxon	Status	Flowering period	Description	Pre-Survey Likelihood	Post-Survey Likelihood
			flowering stalks 0.9-3 cm long, usually just shorter than leaves. Fl. white-cream, Nov to Dec. Sandy, clay or loamy soils over laterite. Eucalypt woodland over low heath.		
<i>Banksia rufa</i> subsp. <i>obliquiloba</i>	P3	Sep to Oct	Ascending, lignotuberous shrub, to 1 m high. Fl. yellow. Gravelly loam.	Possible	Unlikely (U2)
<i>Boronia capitata</i> subsp. <i>gracilis</i>	P3	Jun-Nov	Slender shrub, 0.3-0.6(-3) m high, branches pilose. Fl. pink. White/grey or black sand. Winter-wet swamps,	Possible	Unlikely (U2)
<i>Synaphea platyphylla</i>	P3	Sep-Oct	Caespitose shrub. Fl. yellow, Sep to Oct. Sandy loam.	Possible	Unlikely (U2)
<i>Thysanotus tenuis</i>	P3	Sep-Oct	Perennial, herb (with tuberous roots), to 0.2 m high. Fl. purple. Clay, sandy clay, sand.	Possible	Unlikely (U2)
<i>Verticordia huegelii</i> var. <i>tridens</i>	P3	Sep - Nov	Shrub, 0.15-0.6 m high. Fl. green-yellow/red. Sandy or gravelly loam. Winter-wet areas, low hills.	Possible	Unlikely (U2)
<i>Banksia cynaroides</i>	P4	Aug or Dec or Jan to Feb	Erect, rigid, lignotuberous shrub, 0.9-1.5 m high. Fl. yellow. Gravelly sand or clay loam over laterite.	Possible	Unlikely (U2)
<i>Darwinia</i> sp. <i>Dryandra</i> (G.J. Keighery 9295)	P4	May or Jul or Nov	Dense shrub, 0.1-0.45 m high. Fl. white. Gravelly clay. Lateritic ridges.	Possible	Unlikely (U2)

Taxon	Status	Flowering period	Description	Pre-Survey Likelihood	Post-Survey Likelihood
<i>Eucalyptus loxophleba x wandoo</i>	P4	Sep to Oct, Dec - Feb	(Mallee) or tree, 4-20 m high, bark rough black-brown on trunk. Sandy clay or loam.	Possible	Unlikely (U2)
<i>Gastrolobium ovalifolium</i>	P4	Aug - Sep	Prostrate, spreading shrub, to 0.1 m high. Fl. orange & purple & yellow & red. Sandy clay. Gravelly hills.	Possible	Unlikely (U2)
<i>Gastrolobium stipulare</i>	P4	Sep	Erect, leafy shrub, to 0.5 m high. Fl. yellow&red&brown. Yellow-grey sand, gravelly clay loam, laterite. Slopes, ridges.	Possible	Unlikely (U2)
<i>Xanthorrhoea brevistyla</i>	P4	Oct-Dec	Perennial tree-like monocot, to 3.5 m high, usually no trunk, scape length 0.8-1.25 m, spike length 0.24-0.96 m. Fl. white. Sand, clay, laterite.	Possible	Unlikely (U2)
<i>Gastrolobium tomentosum</i>	P4	Aug-Nov	Weak, decumbent, often clumped shrub, to 1 m high. Fl. orange, purple, red. Gravelly loam or clay, sometimes over sandier substrates. Hills, roadverges.	Possible	Unlikely (U2)
<i>Acacia insolita</i> subsp. <i>recurva</i>	T (EN)	Sep	Spindly shrub, 0.6-1.2 m high. Fl. yellow-cream. exposed lateritic breakaways and lateritic soils, in shallow sandy clay.	Possible	Unlikely (U2)

Taxon	Status	Flowering period	Description	Pre-Survey Likelihood	Post-Survey Likelihood
<i>Banksia cuneata</i>	T (EN)	Sep-Dec	Non-lignotuberous, small tree or shrub, 2-4 m high. Fl. pink/pink & cream & yellow. Grey, yellow or yellow-brown sand.	Possible	Unlikely (U2)
<i>Caladenia hoffmanii</i>	T (EN)	Aug-Oct	Tuberous, perennial, herb, 0.13-0.3 m high. Fl. green & yellow & red. Clay, loam, laterite, granite. Rocky outcrops and hillsides, ridges, swamps and gullies.	Possible	Unlikely (U2)
<i>Darwinia carnea</i>	T (EN)	Oct to Dec	Spreading shrub, 0.2-0.45 m high. Fl. green & red. Lateritic loam & gravel.	Possible	Unlikely (U2)
<i>Lasiopetalum rotundifolium</i>	T (EN)	Sep-Oct	Erect shrub, to 0.4 m high. Fl. pink. Gravelly clayey sand. Hill.	Possible	Unlikely (U2)
<i>Roycea pycnophylloides</i>	T (EN)	Sep	Perennial, herb, forming densely branched, silvery mats to 1 m wide. Fl. Sandy soils, clay. Saline flats.	Unlikely	Unlikely (U1)
<i>Verticordia fimbrialepis</i> subsp. <i>fimbrialepis</i>	T (EN)	Oct-Dec, Jan	Shrub, 0.3-0.7 m high. Fl. pink-white. Gravelly sandy or clayey soils. Flats, road verges.	Possible	Unlikely (U2)
<i>Acacia brachypoda</i>	T (VU)	May to Jul	Dense, rounded, slightly aromatic shrub, 1-3 m high, 1-4 m wide. Fl. yellow. Sandy clay or loam. Low-lying seasonal swampy areas.	Possible	Unlikely (U2)

Taxon	Status	Flowering period	Description	Pre-Survey Likelihood	Post-Survey Likelihood
<i>Diuris micrantha</i>	T (VU)	Sep-Oct	Tuberous, perennial, herb, 0.3–0.6 m high. Fl. yellow, brown. Brown loamy clay. Winter-wet swamps, in shallow water.	Possible	Unlikely (U2)
<i>Eleocharis keigheryi</i>	T (VU)	Aug-Nov	Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Fl. green. Clay, sandy loam. Emergent in freshwater: creeks, claypans	Possible	Unlikely (U2)
<i>Pultenaea pauciflora</i> (Narrogin Pea)	T (VU)	Oct - Nov	Dense, much-branched shrub, to 0.8 m high. Fl. yellow. Sandy & clay lateritic soils. Undulating country.	Possible	Unlikely (U2)

Appendix 12. List of vascular flora found within the survey area.

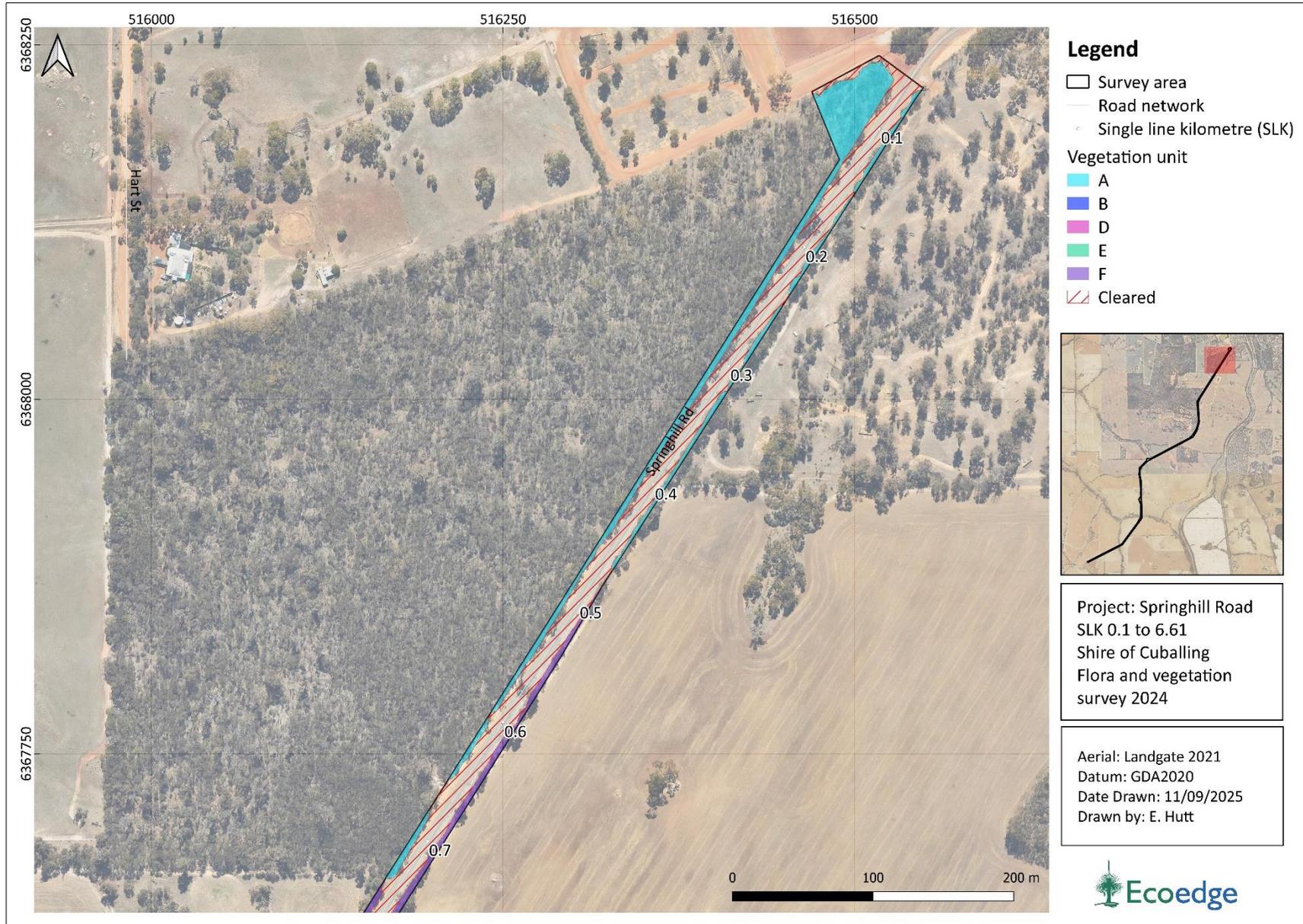
	FAMILY_NAME	SPECIES	NATURALISED
1	Alliaceae	<i>Allium triquetrum</i>	*
2	Amaranthaceae	<i>Ptilotus manglesii</i>	
3	Araliaceae	<i>Hydrocotyle callicarpa</i>	
4	Araliaceae	<i>Trachymene cyanopetala</i>	
5	Araliaceae	<i>Trachymene ornata</i>	
6	Asparagaceae	<i>Asparagus asparagoides</i>	*
7	Asparagaceae	<i>Dichopogon preissii</i>	
8	Asparagaceae	<i>Lomandra effusa</i>	
9	Asparagaceae	<i>Lomandra micrantha</i> subsp. <i>micrantha</i>	
10	Asparagaceae	<i>Lomandra micrantha</i> subsp. <i>teretifolia</i>	
11	Asparagaceae	<i>Lomandra spartea</i>	
12	Asparagaceae	<i>Sowerbaea laxiflora</i>	
13	Asparagaceae	<i>Thysanotus patersonii</i>	
14	Asparagaceae	<i>Thysanotus tenellus</i>	
15	Asteraceae	<i>Arctotheca calendula</i>	*
16	Asteraceae	<i>Blennospora drummondii</i>	
17	Asteraceae	<i>Hyalosperma demissum</i>	
18	Asteraceae	<i>Hypochaeris glabra</i>	*
19	Asteraceae	<i>Lagenophora huegelii</i>	
20	Asteraceae	<i>Pseudognaphalium luteoalbum</i>	
21	Asteraceae	<i>Lawrencella rosea</i>	
22	Asteraceae	<i>Millotia tenuifolia</i> var. <i>tenuifolia</i>	
23	Asteraceae	<i>Podolepis gracilis</i>	
24	Asteraceae	<i>Pterochaeta paniculata</i>	
25	Asteraceae	<i>Rhodanthe laevis</i>	
26	Asteraceae	<i>Rhodanthe manglesii</i>	
27	Asteraceae	<i>Sonchus oleraceus</i>	*
28	Asteraceae	<i>Ursinia anthemoides</i>	*
29	Asteraceae	<i>Vellereophyton dealbatum</i>	*
30	Boryaceae	<i>Borya sphaerocephala</i>	
31	Brassicaceae	<i>Raphanus raphanistrum</i>	*
32	Casuarinaceae	<i>Allocasuarina huegeliana</i>	
33	Celastraceae	<i>Stackhousia pubescens</i>	
34	Centrolepidaceae	<i>Centrolepis aristata</i>	
35	Centrolepidaceae	<i>Centrolepis drummondiana</i>	
36	Centrolepidaceae	<i>Centrolepis pilosa</i>	
37	Centrolepidaceae	<i>Centrolepis polygyna</i>	
38	Crassulaceae	<i>Crassula closiana</i>	
39	Crassulaceae	<i>Crassula colorata</i>	
40	Crassulaceae	<i>Crassula decumbens</i>	
41	Crassulaceae	<i>Crassula natans</i>	*
42	Cyperaceae	<i>Ficinia marginata</i>	*

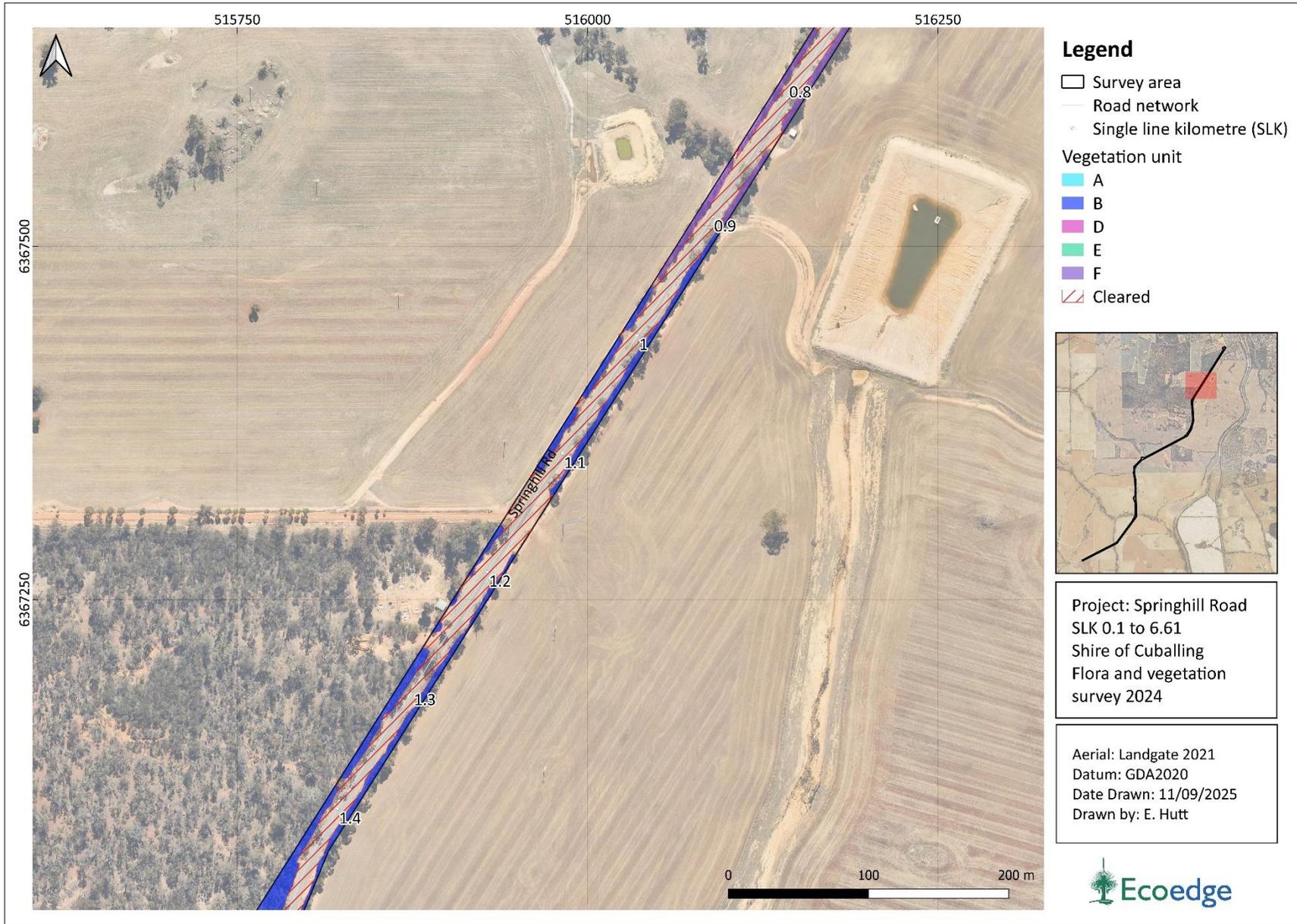
	FAMILY_NAME	SPECIES	NATURALISED
43	Cyperaceae	<i>Isolepis cernua</i> var. <i>setiformis</i>	
44	Cyperaceae	<i>Schoenus nanus</i>	
45	Dilleniaceae	<i>Hibbertia acerosa</i>	
46	Dilleniaceae	<i>Hibbertia commutata</i>	
47	Droseraceae	<i>Drosera glanduligera</i>	
48	Droseraceae	<i>Drosera marchantii</i>	
49	Droseraceae	<i>Drosera pallida</i>	
50	Droseraceae	<i>Drosera subhirtella</i>	
51	Fabaceae	<i>Acacia acuminata</i>	
52	Fabaceae	<i>Acacia baileyana</i>	*
53	Fabaceae	<i>Acacia lasiocarpa</i> var. <i>sedifolia</i>	
54	Fabaceae	<i>Acacia pulchella</i> var. <i>pulchella</i>	
55	Fabaceae	<i>Acacia saligna</i>	
56	Fabaceae	<i>Bossiaea eriocarpa</i>	
57	Fabaceae	<i>Chamaecytisus palmensis</i>	*
58	Fabaceae	<i>Gastrolobium parviflorum</i>	
59	Fabaceae	<i>Gastrolobium spinosum</i>	
60	Fabaceae	<i>Gompholobium marginatum</i>	
61	Fabaceae	<i>Hovea pungens</i>	
62	Fabaceae	<i>Kennedia prostrata</i>	
63	Fabaceae	<i>Lupinus angustifolius</i>	*
64	Fabaceae	<i>Trifolium campestre</i>	*
65	Fabaceae	<i>Vicia sativa</i> subsp. <i>nigra</i>	*
66	Goodeniaceae	<i>Dampiera alata</i>	
67	Goodeniaceae	<i>Dampiera lavandulacea</i>	
68	Goodeniaceae	<i>Lechenaultia biloba</i>	
69	Goodeniaceae	<i>Lechenaultia formosa</i>	
70	Haemodoraceae	<i>Haemodorum simplex</i>	
71	Haloragaceae	<i>Glischrocaryon aureum</i>	
72	Haloragaceae	<i>Gonocarpus nodulosus</i>	
73	Hemerocallidaceae	<i>Agrostocrinum scabrum</i>	
74	Hemerocallidaceae	<i>Caesia micrantha</i>	
75	Hemerocallidaceae	<i>Chamaescilla corymbosa</i>	
76	Hemerocallidaceae	<i>Dianella revoluta</i>	
77	Hemerocallidaceae	<i>Stypandra glauca</i>	
78	Hemerocallidaceae	<i>Tricoryne elatior</i>	
79	Iridaceae	<i>Freesia leichtlinii</i> subsp. <i>alba</i> × <i>leichtlinii</i> subsp. <i>leichtlinii</i>	*
80	Iridaceae	<i>Moraea flaccida</i>	*
81	Iridaceae	<i>Moraea miniata</i>	*
82	Iridaceae	<i>Orthrosanthus multiflorus</i>	
83	Iridaceae	<i>Orthrosanthus laxus</i> var. <i>gramineus</i>	
84	Iridaceae	<i>Romulea rosea</i>	*
85	Juncaceae	<i>Juncus acutus</i>	*
86	Juncaceae	<i>Juncus bufonius</i>	*
87	Lamiaceae	<i>Hemiandra pungens</i>	
88	Loganiaceae	<i>Phyllangium paradoxum</i>	

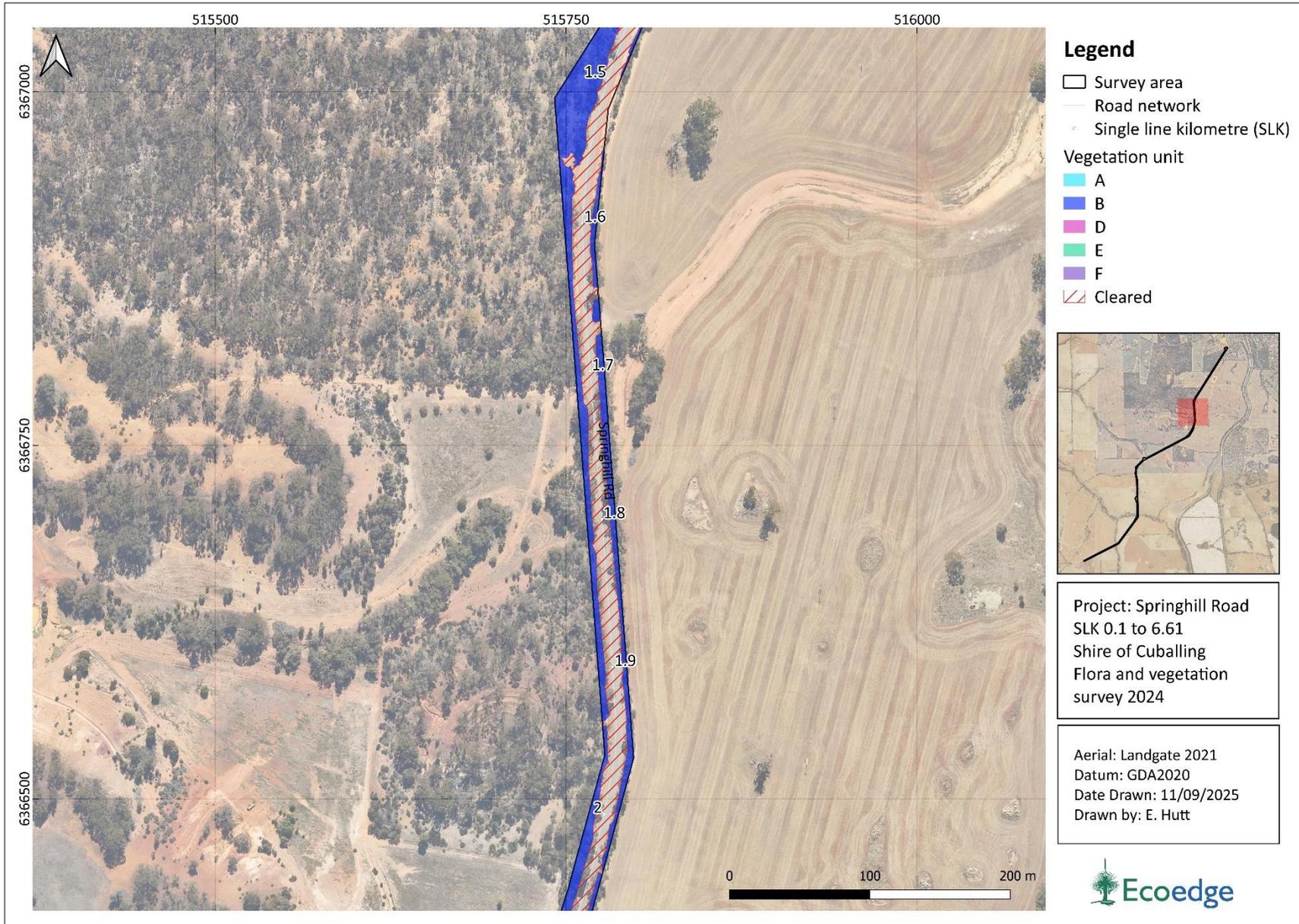
	FAMILY_NAME	SPECIES	NATURALISED
89	Malvaceae	<i>Malva parviflora</i>	*
90	Myrtaceae	<i>Callistemon glaucus</i>	
91	Myrtaceae	<i>Corymbia calophylla</i>	
92	Myrtaceae	<i>Corymbia citriodora</i>	*
93	Myrtaceae	<i>Eucalyptus camaldulensis</i>	
94	Myrtaceae	<i>Eucalyptus loxophleba</i>	
95	Myrtaceae	<i>Eucalyptus rudis</i> subsp. <i>rudis</i>	
96	Myrtaceae	<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	
97	Myrtaceae	<i>Leptospermopsis erubescens</i>	
98	Orchidaceae	<i>Caladenia flava</i> subsp. <i>sylvestris</i>	
99	Orchidaceae	<i>Disa bracteata</i>	*
100	Orchidaceae	<i>Prasophyllum cyphochilum</i>	
101	Orchidaceae	<i>Thelymitra graminea</i>	
102	Orobanchaceae	<i>Parentucellia latifolia</i>	*
103	Oxalidaceae	<i>Oxalis pes-caprae</i>	*
104	Phyllanthaceae	<i>Lysiandra calycina</i>	
105	Phyllanthaceae	<i>Poranthera microphylla</i>	
106	Pittosporaceae	<i>Billardiera variifolia</i>	
107	Poaceae	<i>Aira cupaniana</i>	*
108	Poaceae	<i>Austrostipa elegantissima</i>	
109	Poaceae	<i>Austrostipa hemipogon</i>	
110	Poaceae	<i>Austrostipa trichophylla</i>	
111	Poaceae	<i>Avena barbata</i>	*
112	Poaceae	<i>Avena fatua</i>	*
113	Poaceae	<i>Briza maxima</i>	*
114	Poaceae	<i>Briza minor</i>	*
115	Poaceae	<i>Bromus diandrus</i>	*
116	Poaceae	<i>Cynodon dactylon</i>	*
117	Poaceae	<i>Ehrharta calycina</i>	*
118	Poaceae	<i>Ehrharta longiflora</i>	*
119	Poaceae	<i>Hordeum distichon</i>	*
120	Poaceae	<i>Hordeum marinum</i>	*
121	Poaceae	<i>Hordeum vulgare</i>	*
122	Poaceae	<i>Lolium perenne</i>	*
123	Poaceae	<i>Lolium rigidum</i>	*
124	Poaceae	<i>Neurachne alopecuroidea</i>	
125	Poaceae	<i>Pentameris airoides</i>	*
126	Poaceae	<i>Poa annua</i>	*
127	Poaceae	<i>Vulpia bromoides</i>	*
128	Poaceae	<i>Vulpia fasciculata</i>	*
129	Poaceae	<i>Vulpia myuros</i> forma <i>megalura</i>	*
130	Primulaceae	<i>Lysimachia arvensis</i>	*
131	Proteaceae	<i>Banksia dallanneyi</i>	
132	Proteaceae	<i>Hakea lissocarpha</i>	
133	Restionaceae	<i>Desmocladus asper</i>	
134	Rubiaceae	<i>Opercularia apiciflora</i>	
135	Rubiaceae	<i>Opercularia vaginata</i>	

	FAMILY_NAME	SPECIES	NATURALISED
136	Solanaceae	<i>Solanum nigrum</i>	*
137	Stylidiaceae	<i>Levenhookia pusilla</i>	
138	Stylidiaceae	<i>Levenhookia stipitata</i>	
139	Stylidiaceae	<i>Stylidium calcaratum</i>	
140	Stylidiaceae	<i>Stylidium petiolare</i>	
141	Xanthorrhoeaceae	<i>Xanthorrhoea gracilis</i>	

Appendix 13. Vegetation units within the survey area.







Legend

- Survey area
- Road network
- Single line kilometre (SLK)

Vegetation unit

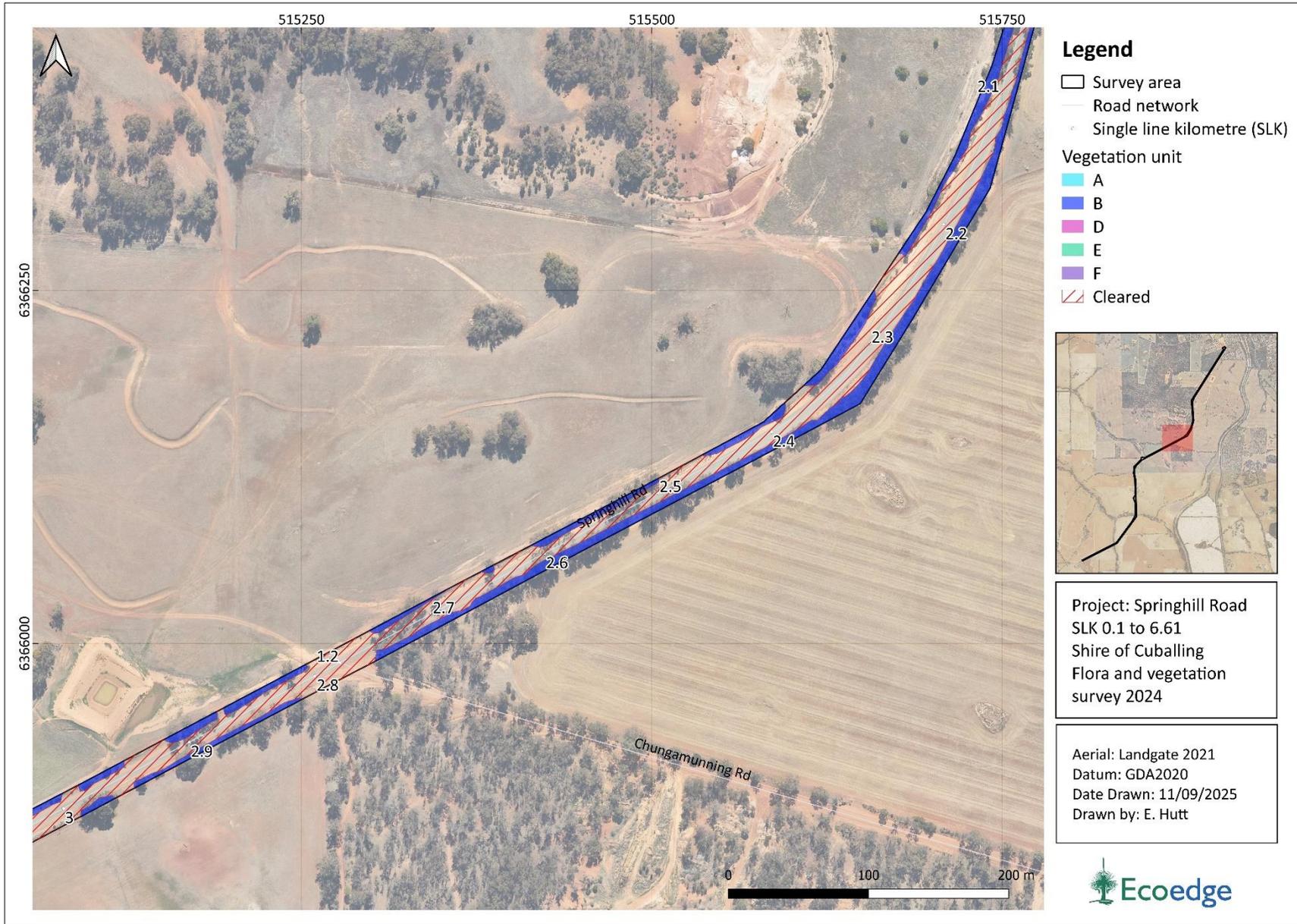
- A
- B
- D
- E
- F
- Cleared



Project: Springhill Road
 SLK 0.1 to 6.61
 Shire of Cuballing
 Flora and vegetation
 survey 2024

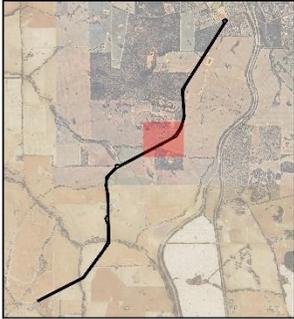
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 Date Drawn: 11/09/2025
 Drawn by: E. Hutt





Legend

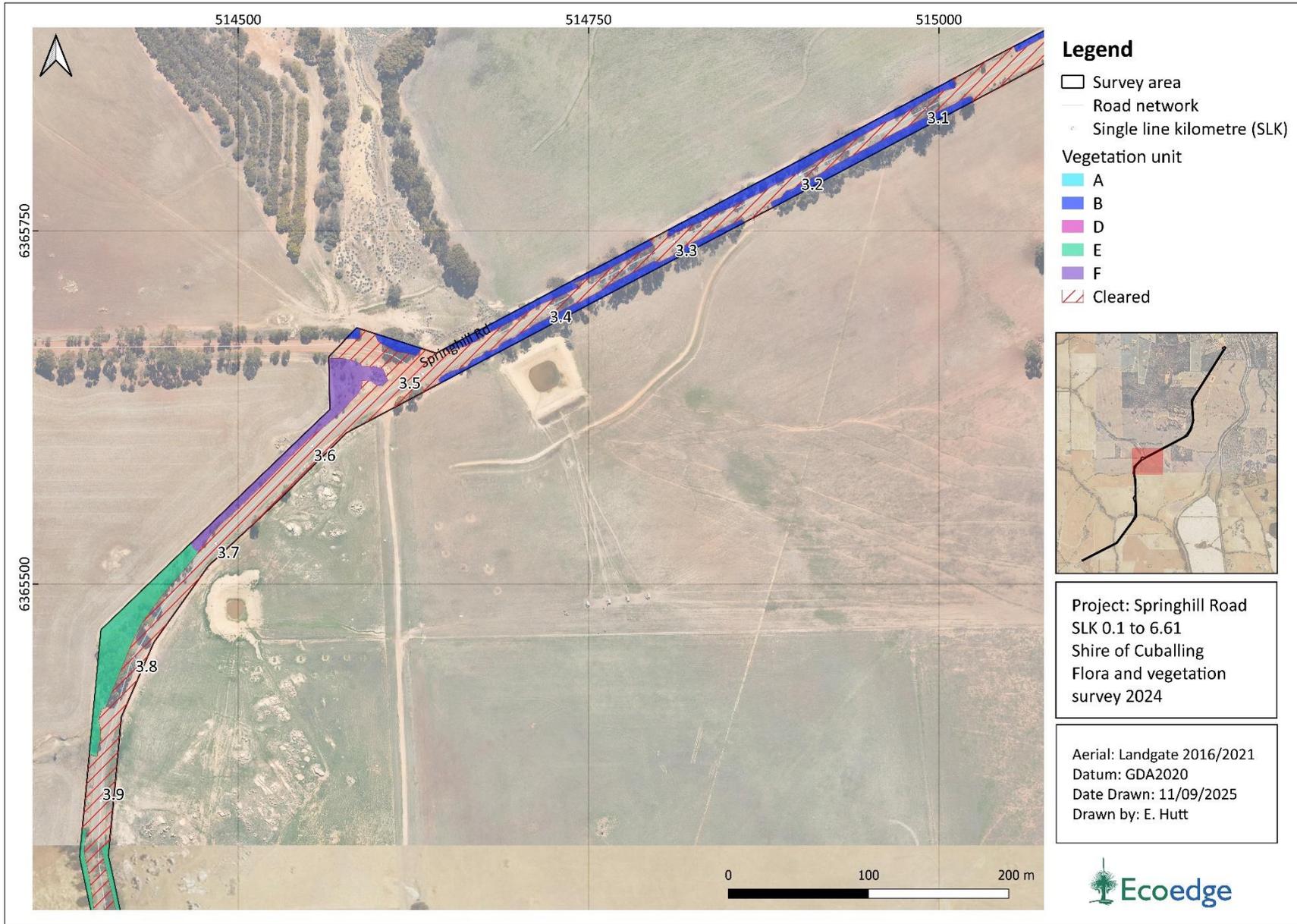
- Survey area
 - Road network
 - Single line kilometre (SLK)
- Vegetation unit
- A
 - B
 - D
 - E
 - F
 - Cleared

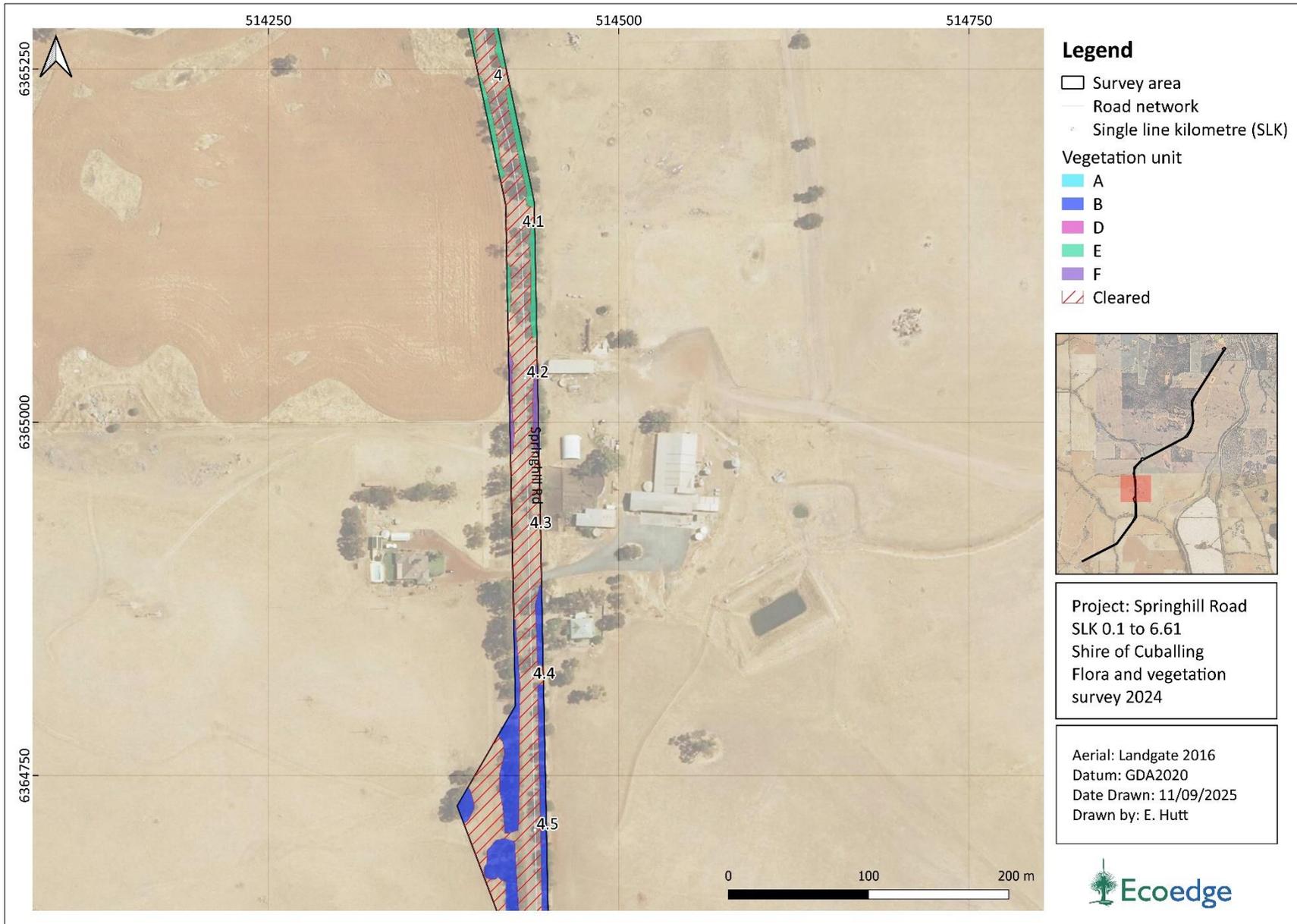


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Aerial: Landgate 2021
 Datum: GDA2020
 Date Drawn: 11/09/2025
 Drawn by: E. Hutt







Legend

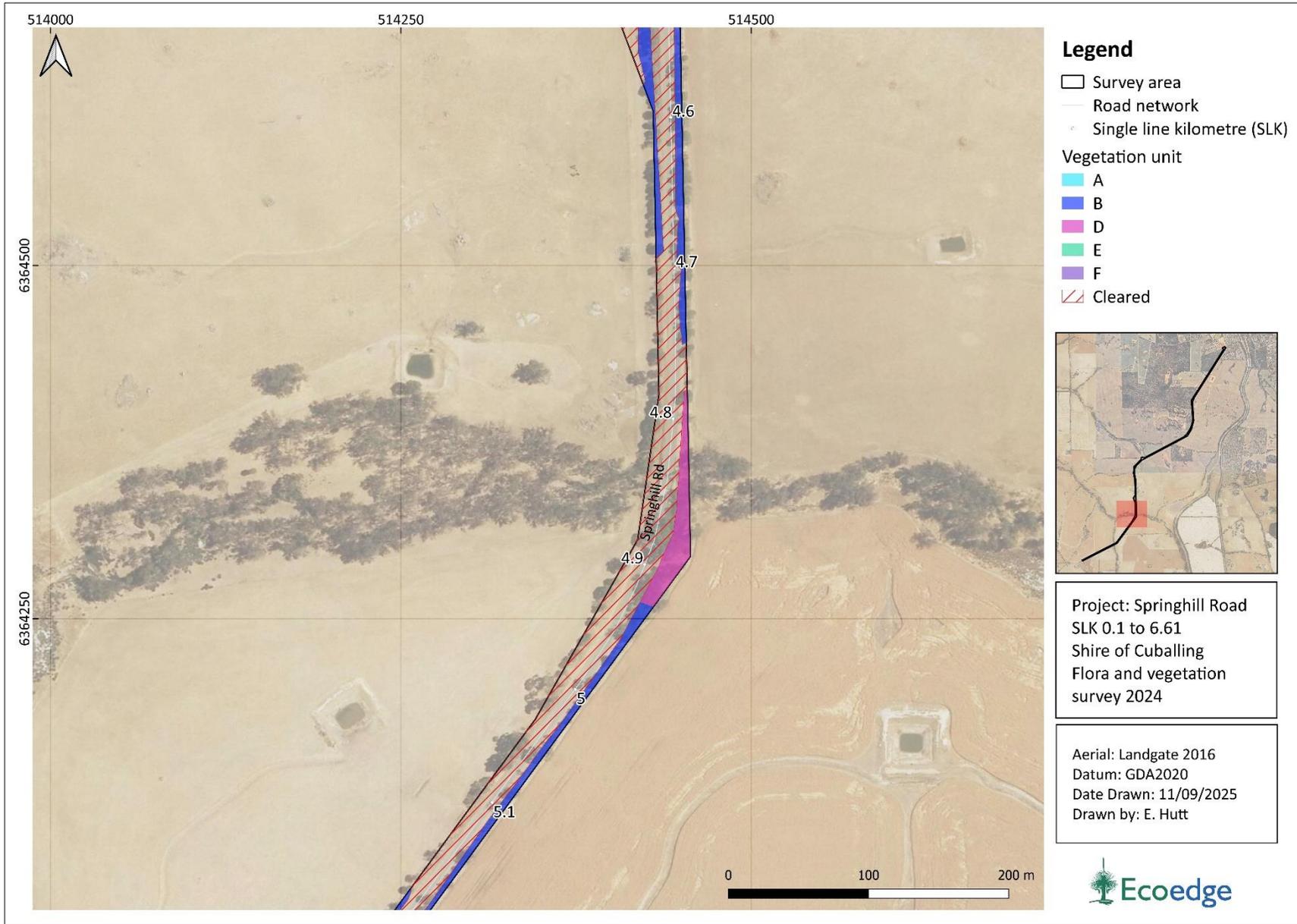
- Survey area
 - Road network
 - Single line kilometre (SLK)
- Vegetation unit
- A
 - B
 - D
 - E
 - F
 - ▨ Cleared

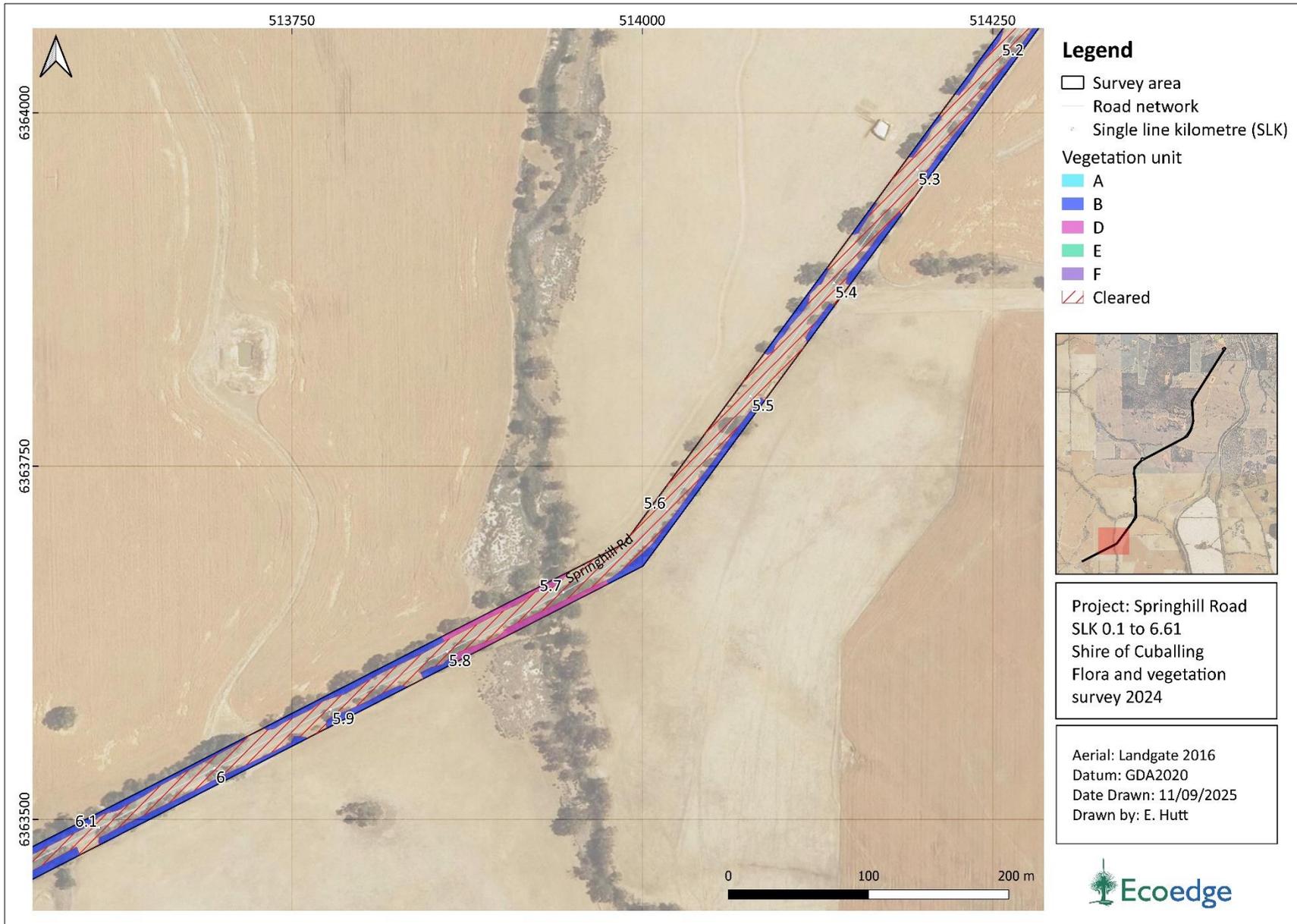


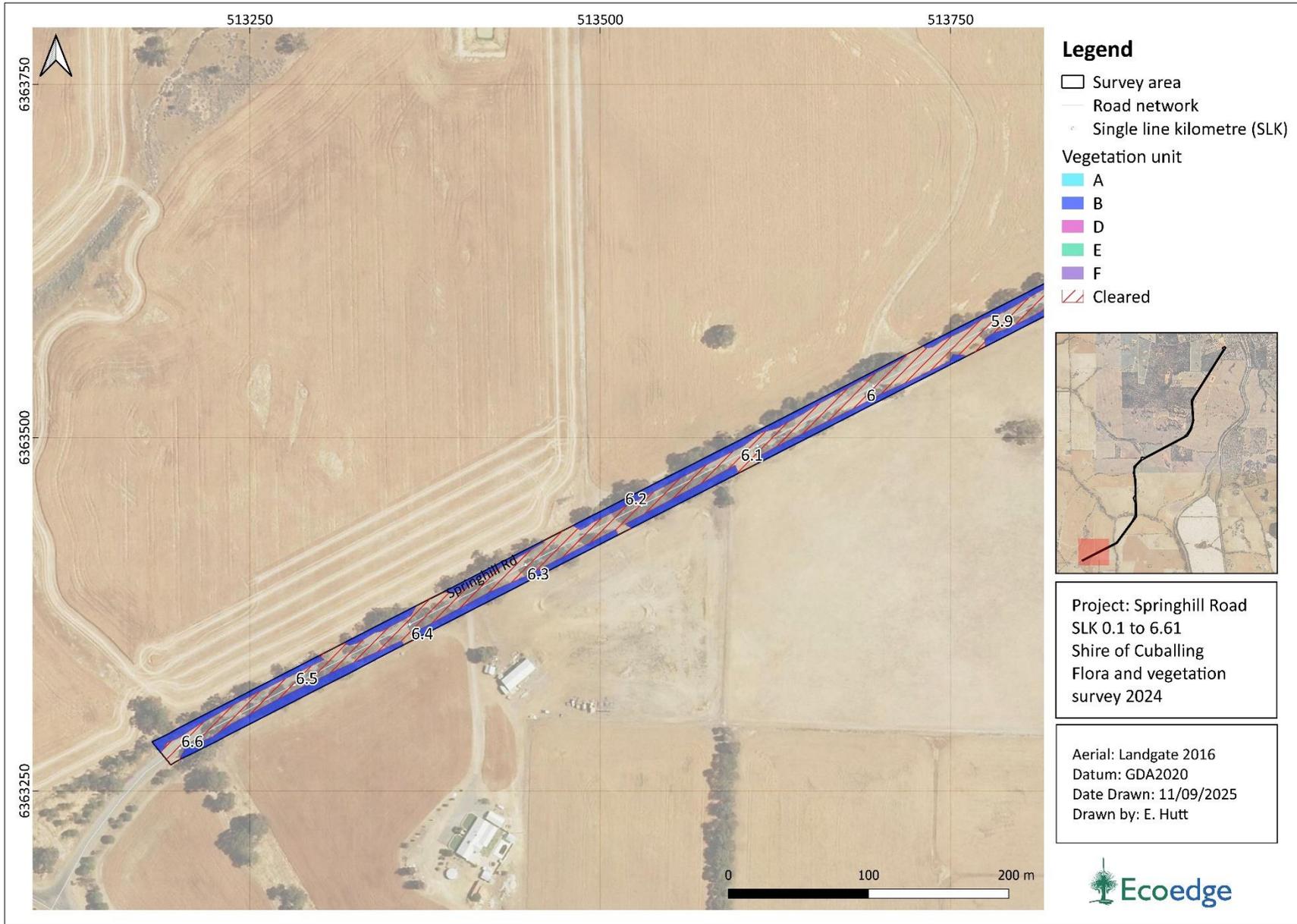
Project: Springhill Road
 SLK 0.1 to 6.61
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Aerial: Landgate 2016
 Datum: GDA2020
 Date Drawn: 11/09/2025
 Drawn by: E. Hutt

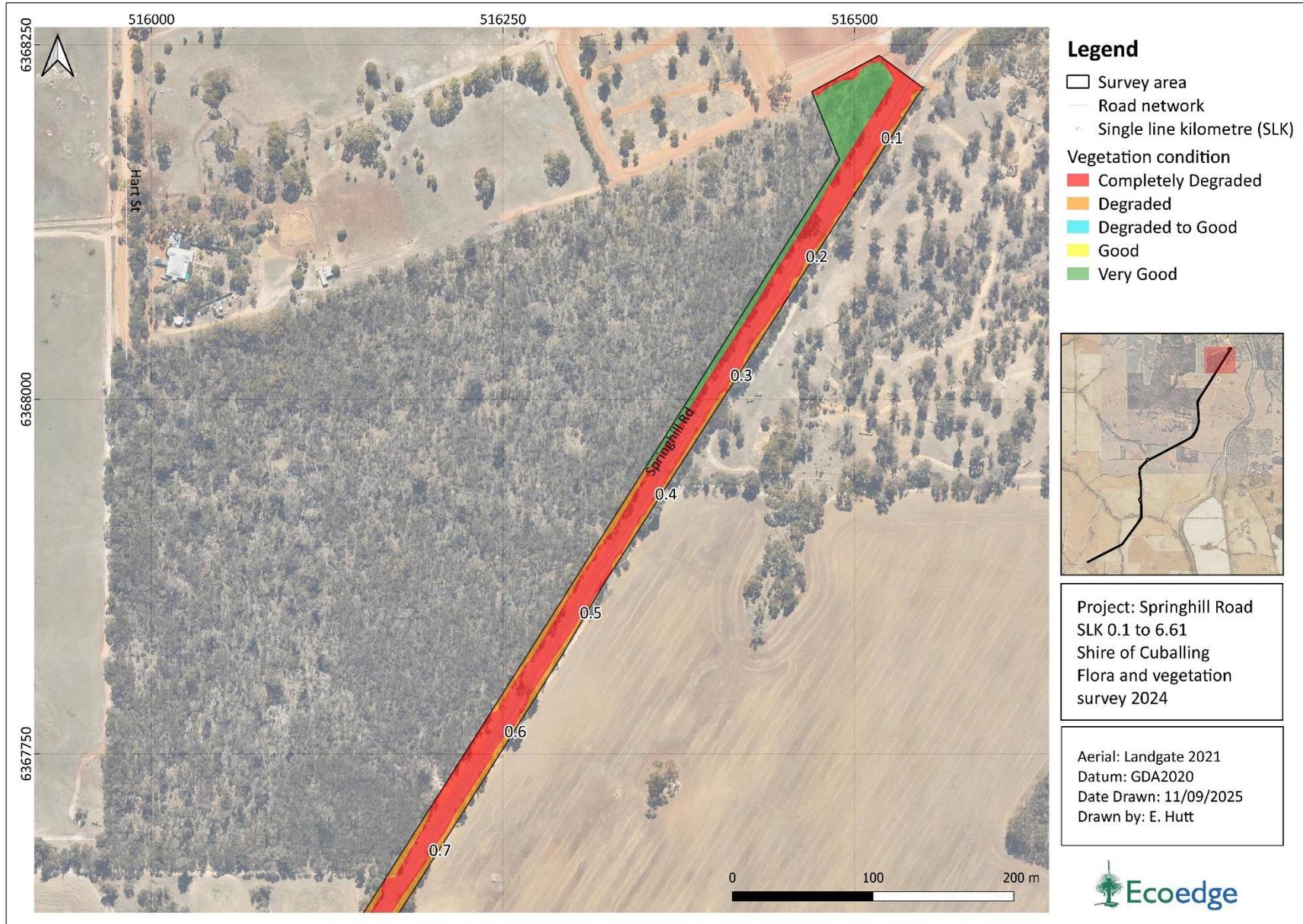


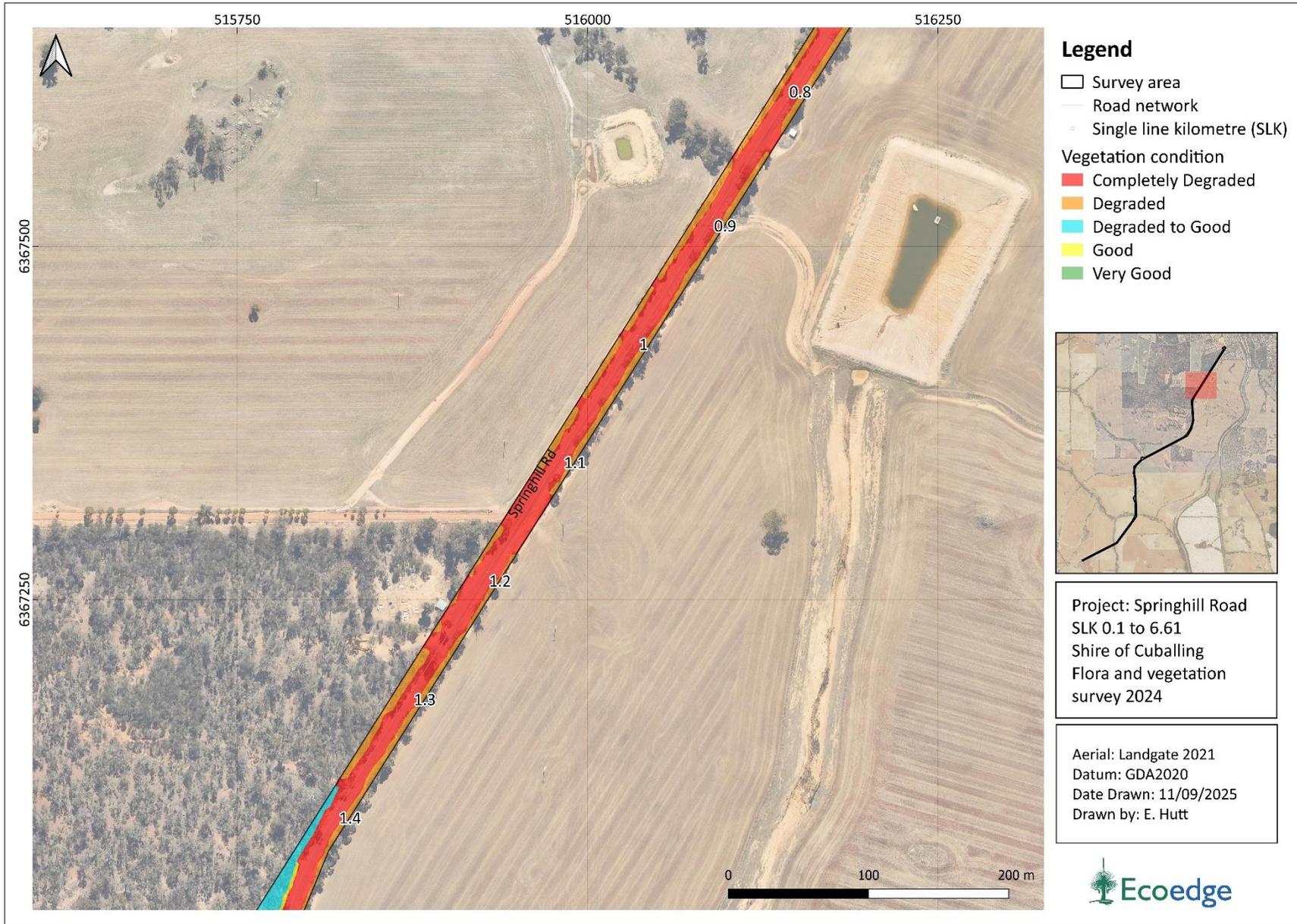






Appendix 14. Vegetation condition within the survey area.





515750

516000

516250

6367500

6367250

0.8

0.9

1

1.1

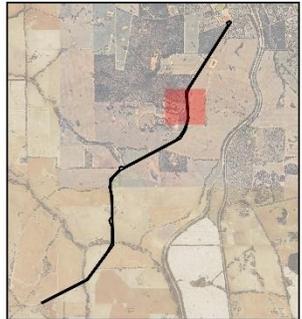
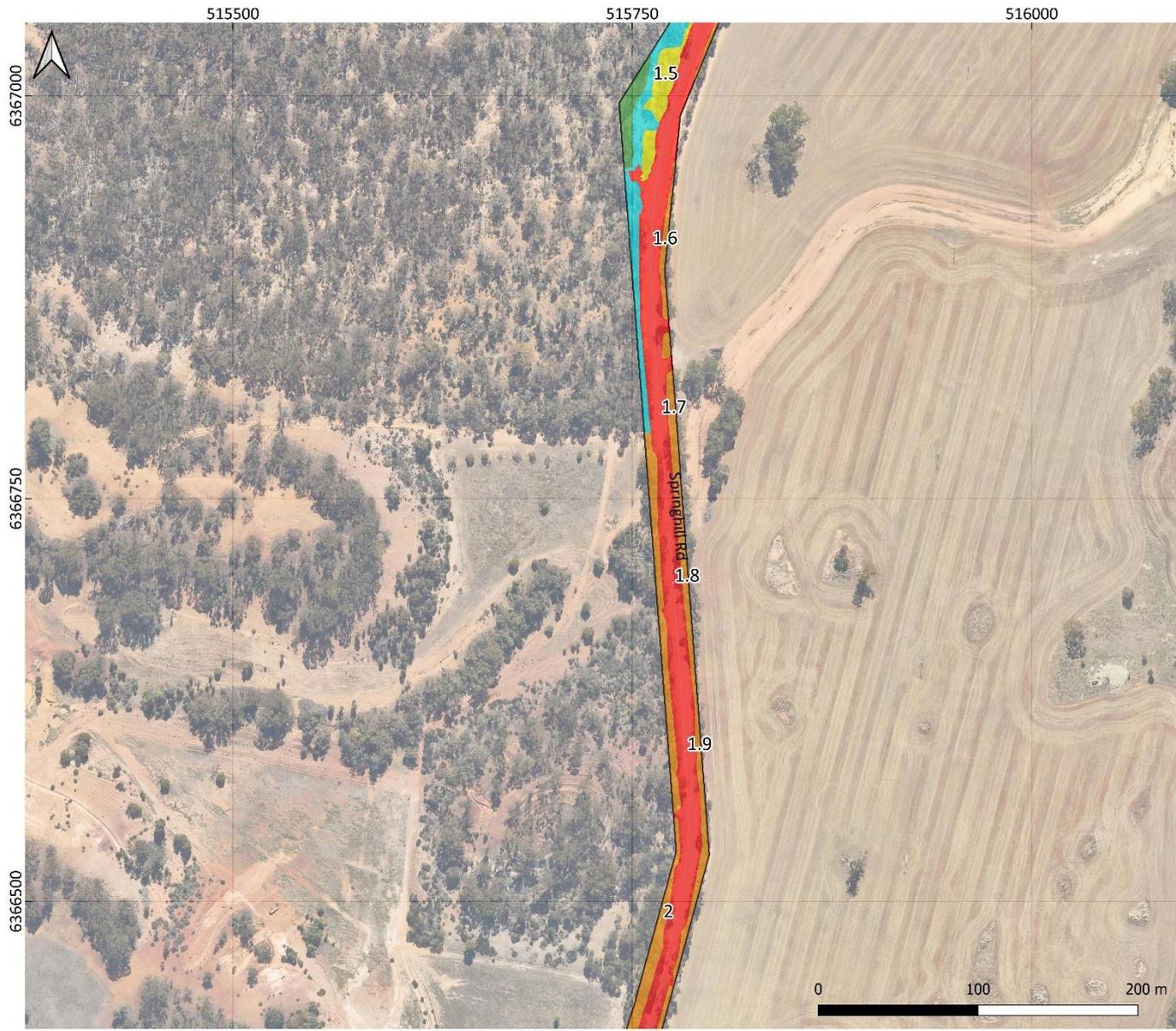
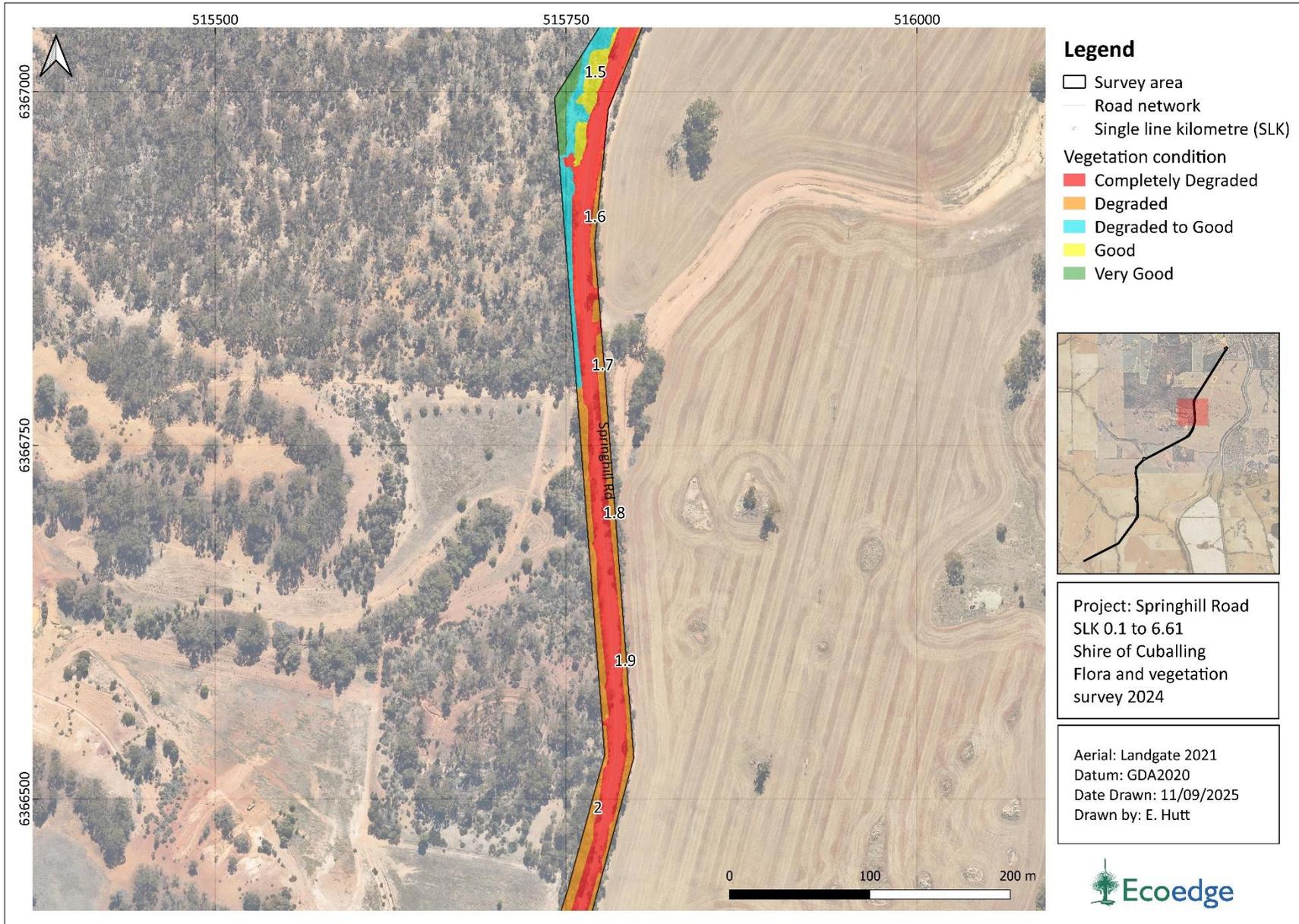
1.2

1.3

1.4

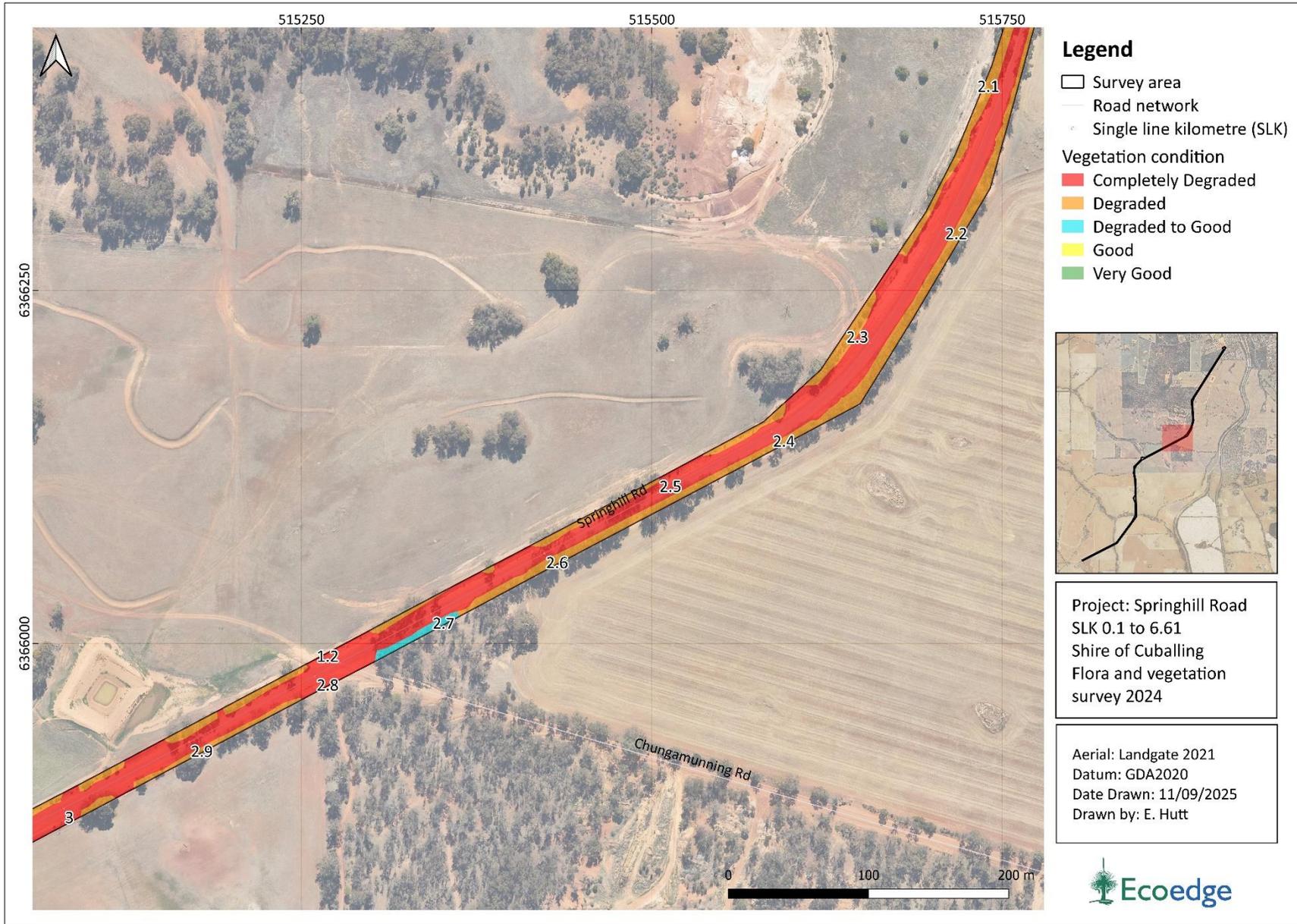
Springhill Rd

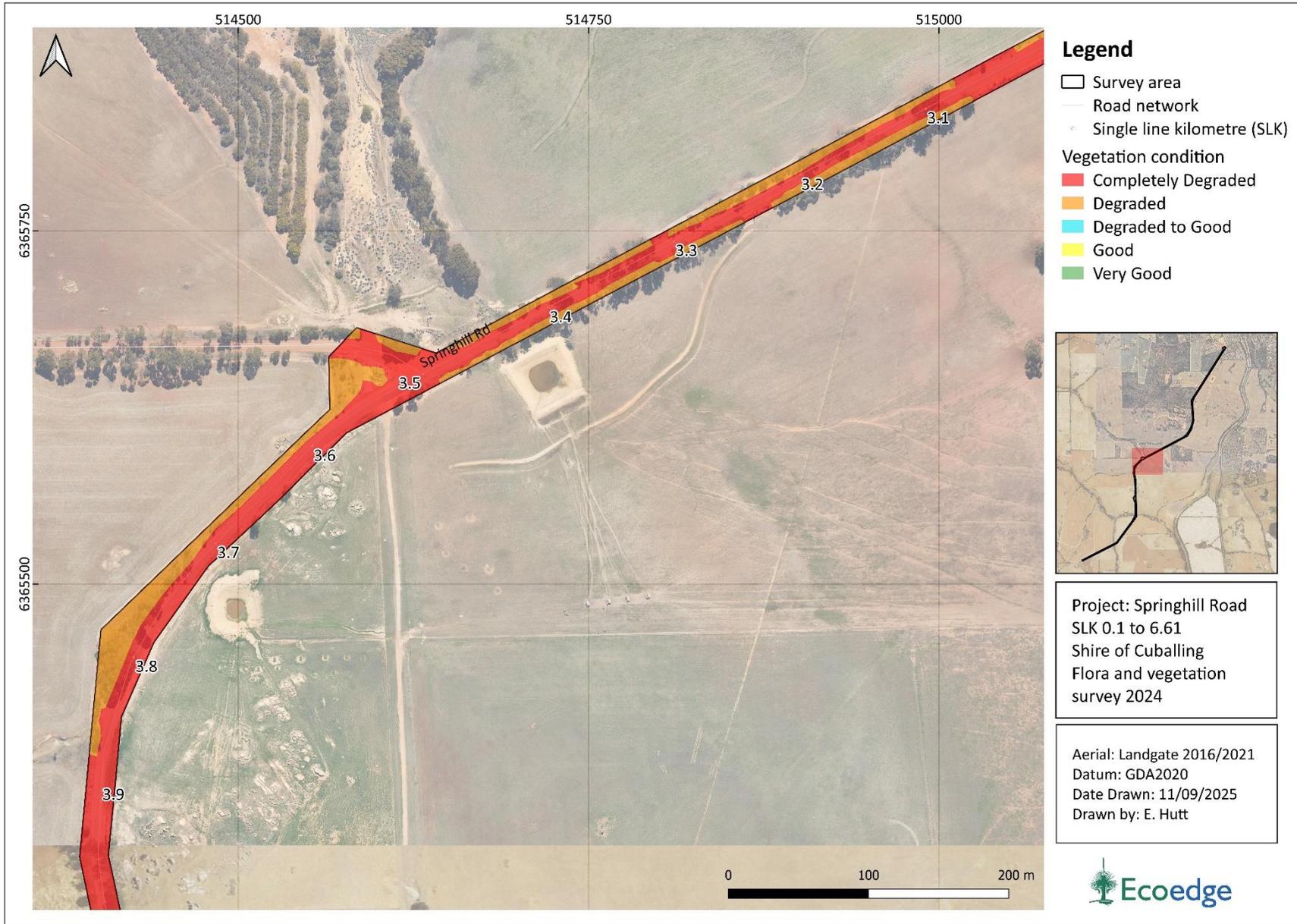




6367000
6366750
6366500

515500 515750 516000





Legend

- Survey area
- Road network
- Single line kilometre (SLK)

Vegetation condition

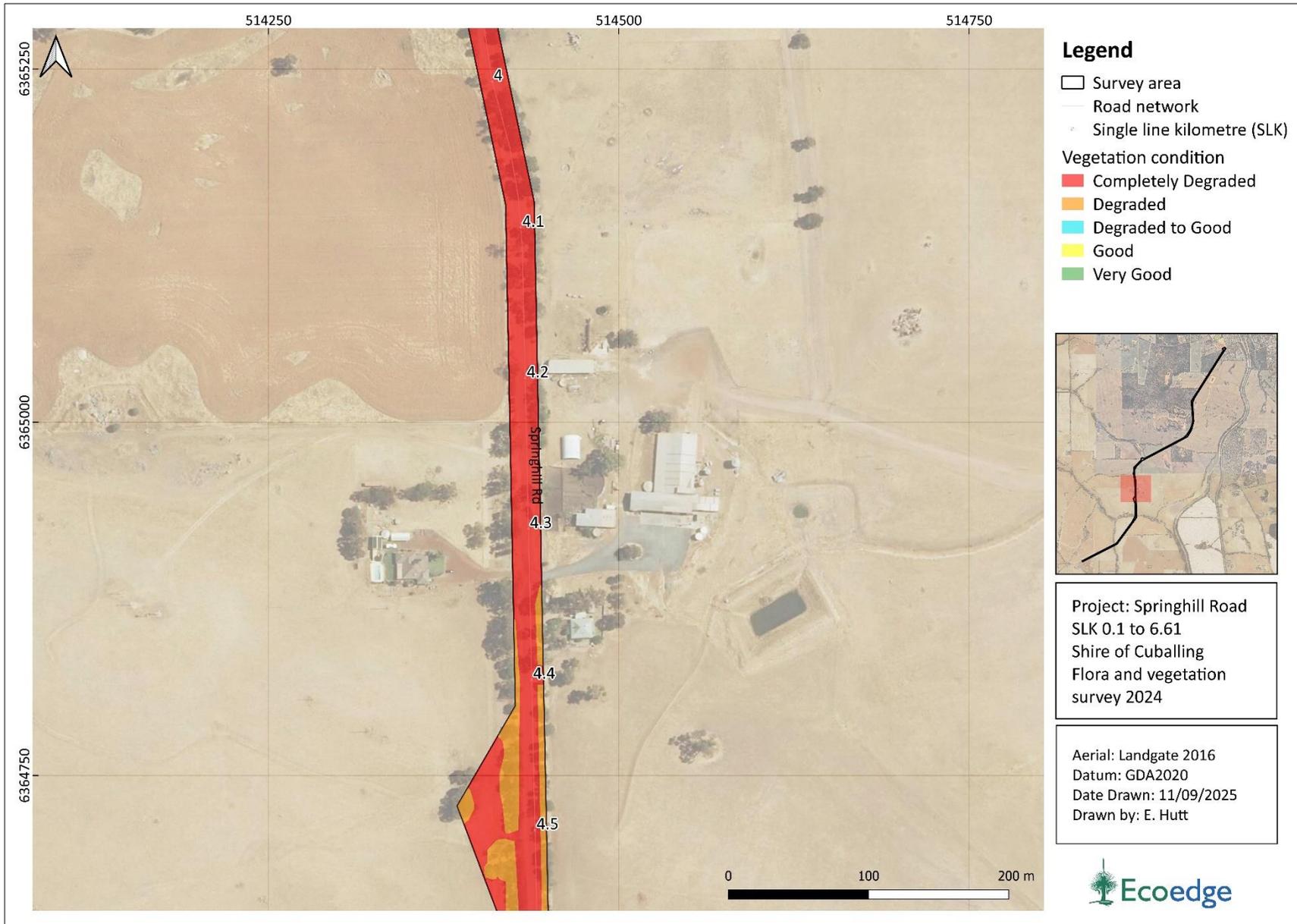
- Completely Degraded
- Degraded
- Degraded to Good
- Good
- Very Good



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 survey 2024

Aerial: Landgate 2016/2021
 Datum: GDA2020
 Date Drawn: 11/09/2025
 Drawn by: E. Hutt





Legend

- Survey area
- Road network
- Single line kilometre (SLK)

Vegetation condition

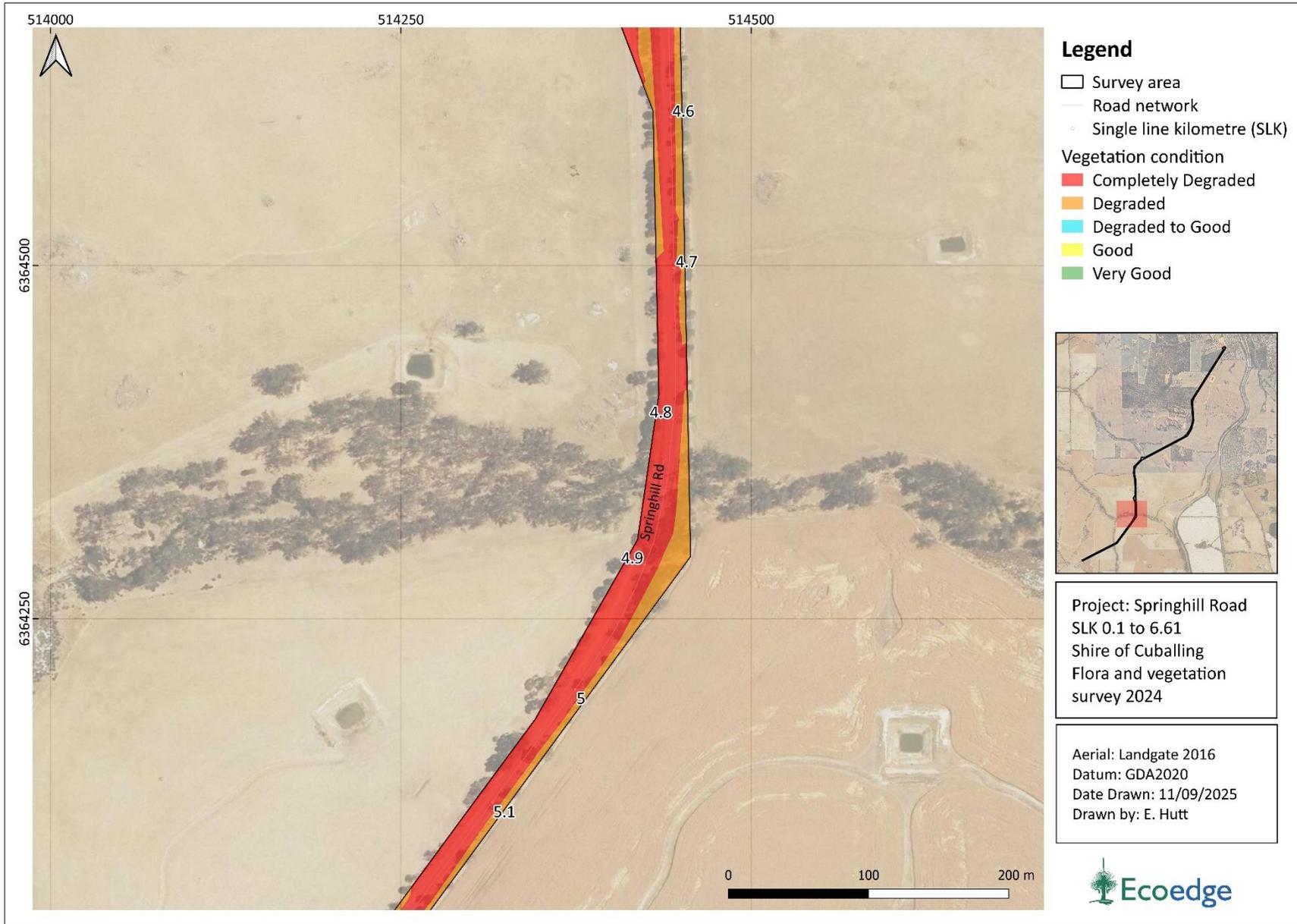
- Completely Degraded
- Degraded
- Degraded to Good
- Good
- Very Good



Project: Springhill Road
 SLK 0.1 to 6.61
 Shire of Cuballing
 Flora and vegetation
 survey 2024

Aerial: Landgate 2016
 Datum: GDA2020
 Date Drawn: 11/09/2025
 Drawn by: E. Hutt





514000

514250

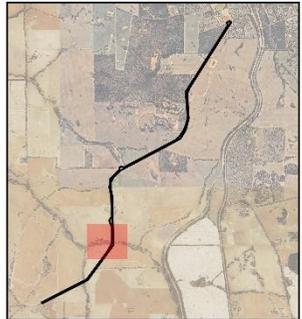
514500

6364500

6364250

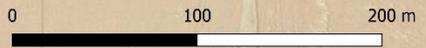
Legend

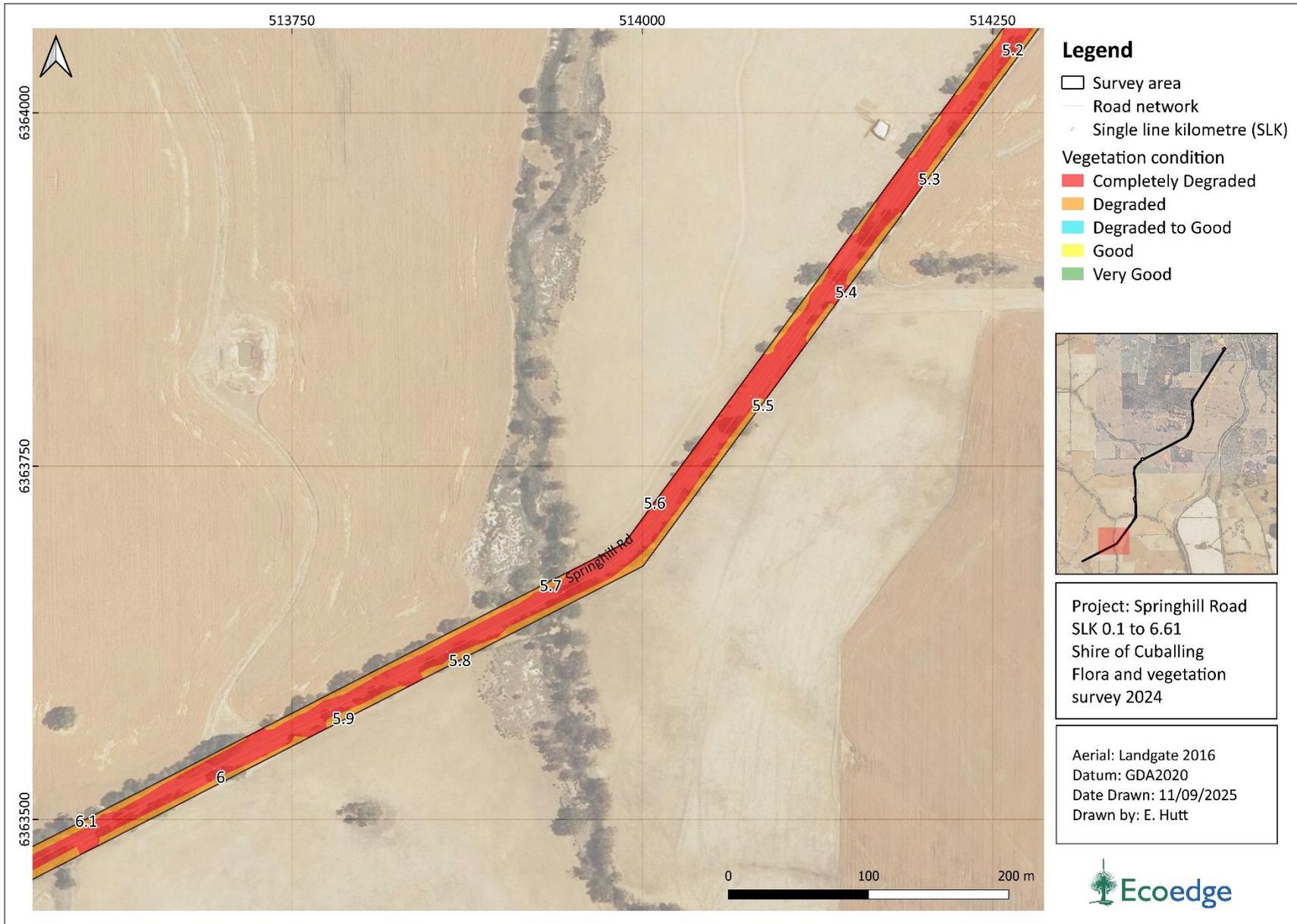
- Survey area
 - Road network
 - ⋄ Single line kilometre (SLK)
- Vegetation condition**
- Completely Degraded
 - Degraded
 - Degraded to Good
 - Good
 - Very Good



Project: Springhill Road
 SLK 0.1 to 6.61
 Shire of Cuballing
 Flora and vegetation
 survey 2024

Aerial: Landgate 2016
 Datum: GDA2020
 Date Drawn: 11/09/2025
 Drawn by: E. Hutt





Legend

- Survey area
- Road network
- Single line kilometre (SLK)

Vegetation condition

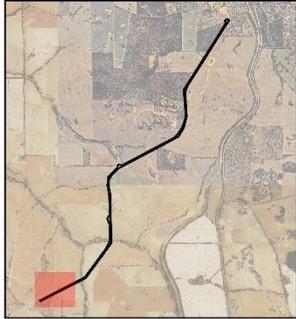
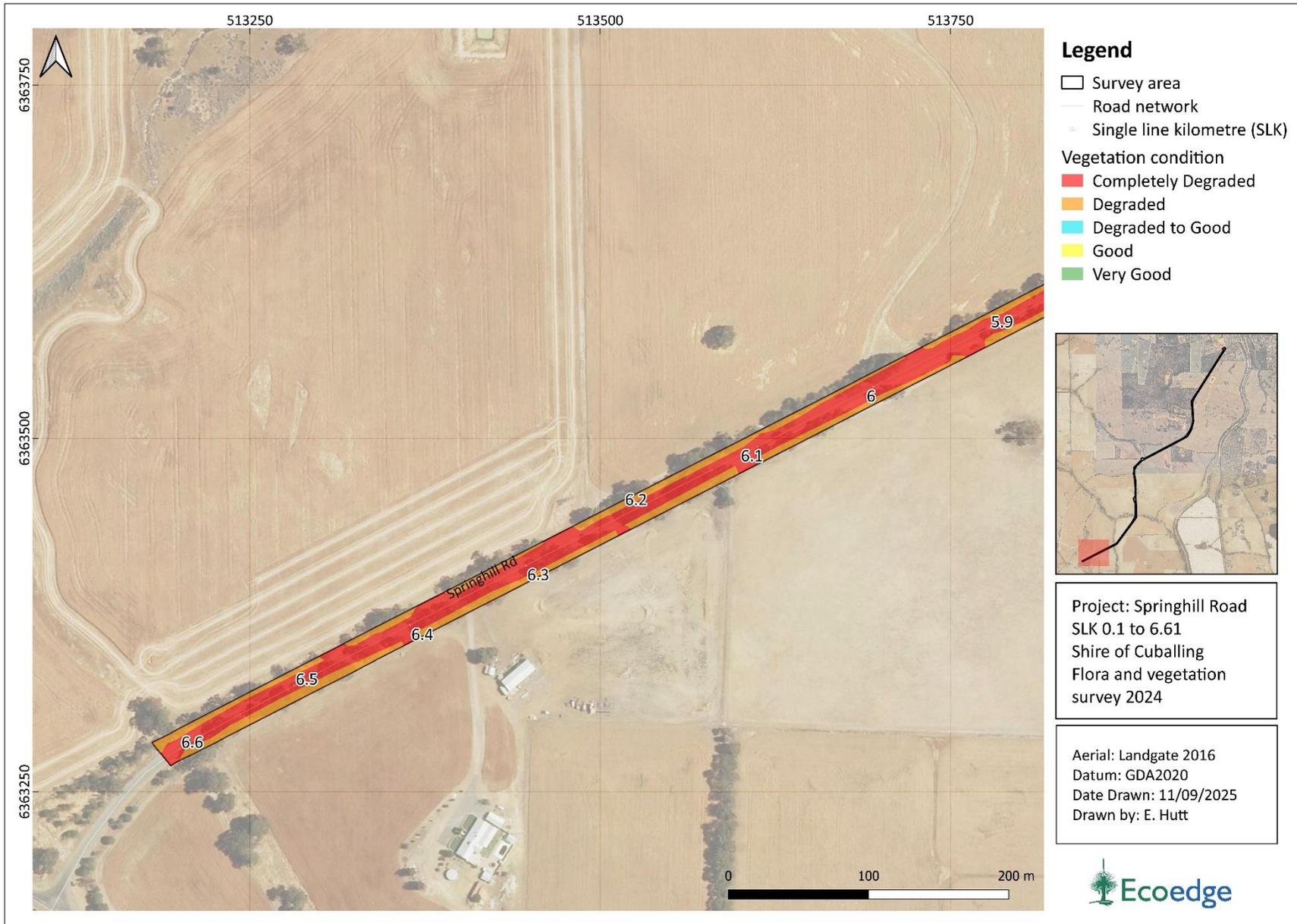
- Completely Degraded
- Degraded
- Degraded to Good
- Good
- Very Good



Project: Springhill Road
 SLK 0.1 to 6.61
 Shire of Cuballing
 Flora and vegetation
 survey 2024

Aerial: Landgate 2016
 Datum: GDA2020
 Date Drawn: 11/09/2025
 Drawn by: E. Hutt





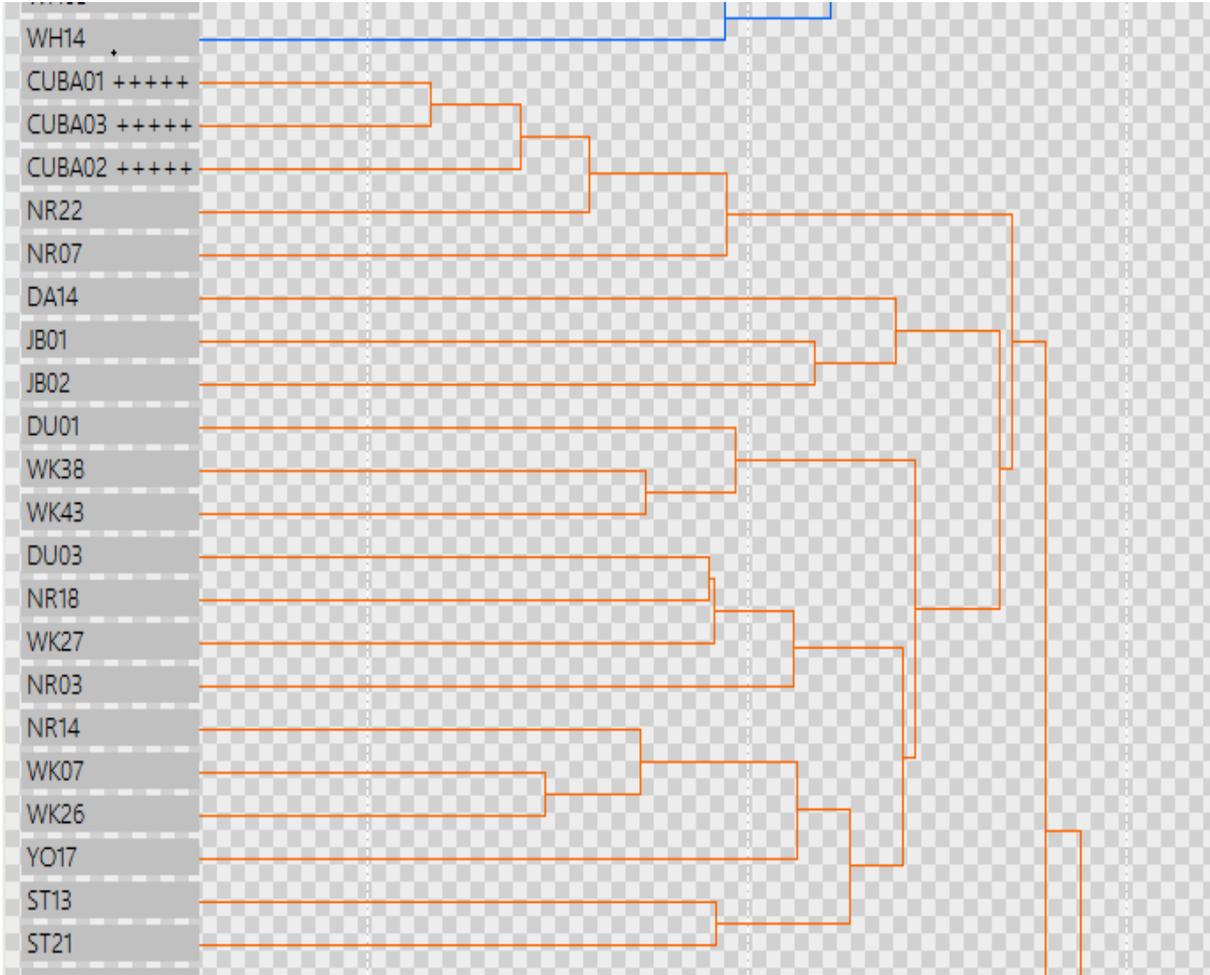
Project: Springhill Road
 SLK 0.1 to 6.61
 Shire of Cuballing
 Flora and vegetation
 survey 2024

Aerial: Landgate 2016
 Datum: GDA2020
 Date Drawn: 11/09/2025
 Drawn by: E. Hutt

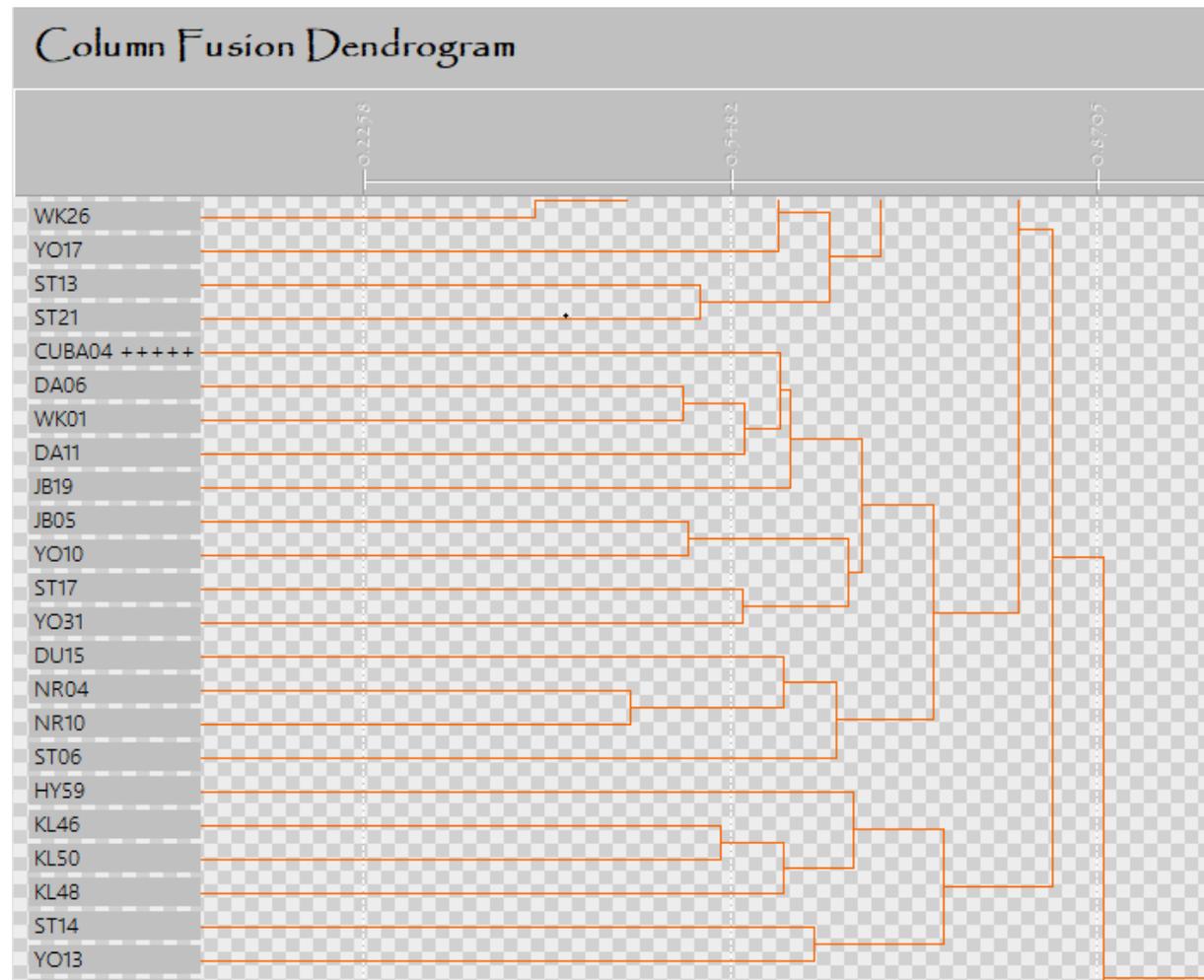


Appendix 15. Dendrogram extracts.

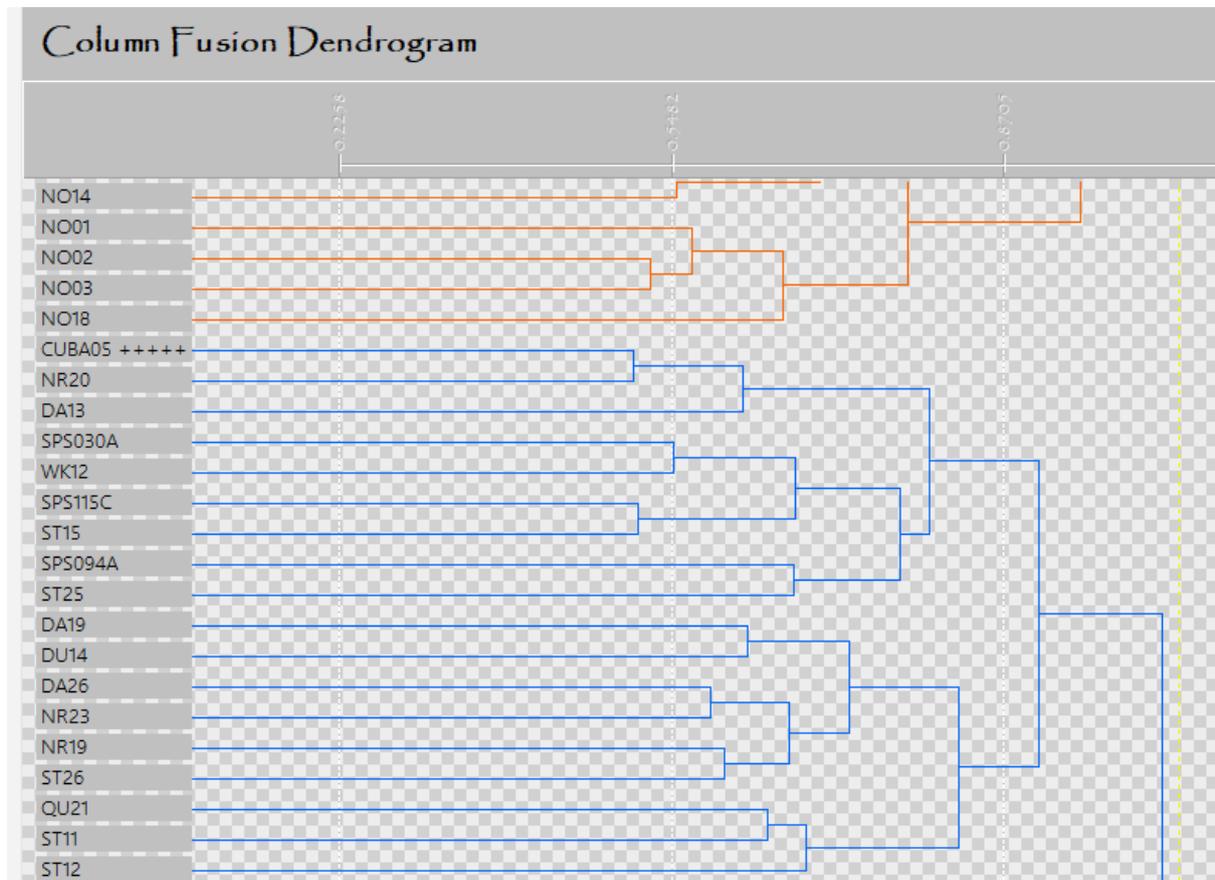
CUBA01, CUBA02 and CUBA03



CUBA4



CUBA05



Appendix 16. DBCA TEC PEC reporting forms.



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

COMMUNITY: <u>Eucalypt woodlands of the WA Wheatbelt</u>		OBSERVATION DATE: <u>04/10/2024</u>	
New occurrence <input checked="" type="checkbox"/> Site ID: _____		CONS STATUS: <u>TEC/PEC</u>	
OBSERVER/S: <u>Russell Smith & Colin Spencer</u>		PHONE: <u>0447809124</u>	
ROLE: <u>botanists</u>		ORGANISATION: <u>Ecoedge</u>	
EMAIL: <u>russell@ecoedge.com.au</u>			

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):	
<u>3.2 km along Springhill Road from Cuballing townsite</u>	
Reserve No: _____	
DISTRICT: _____	LGA: <u>Cuballing</u> Land manager present: <input type="checkbox"/>

DATUM:	COORDINATES: (If UTM coords provided, Zone is also required)	METHOD USED:
GDA94 / MGA94 <input checked="" type="checkbox"/>	DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/>	GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/>
AGD84 / AMG84 <input type="checkbox"/>	Lat / Northing: <u>6366004</u>	No. satellites: _____ Map used: _____
WGS84 <input type="checkbox"/>	Long / Easting: <u>515322</u>	Boundary polygon captured: <input type="checkbox"/> Map used: _____
Unknown <input type="checkbox"/>	Zone: <u>50</u>	

LAND TENURE:					
Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/>	Shire road reserve <input type="checkbox"/>	
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>	Other Crown reserve <input type="checkbox"/>	
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input checked="" type="checkbox"/>	SLK/Pole _____ to _____	Specify other: _____	

AREA ASSESSMENT: <u>Edge survey</u> <input checked="" type="checkbox"/> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u> <input type="checkbox"/>	Area observed (m²): <u>0.03 ha</u>
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____

THREATS - type, and supporting information: <small>e.g. clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents.</small>	Cause/Agent: <small>e.g. weed type, grazing species, recreation type</small>	Area affected	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			

*Rate current and potential threat impact: **N=Nil, L=Low, M=Medium, H=High, E=Extreme**
*Estimate time to potential impact: **S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)**

CONDITION OF OCCURRENCE: (Bush Forever Scale) (estimate % of area in each)					
Pristine <input type="checkbox"/> _____%	Very Good <input checked="" type="checkbox"/> _____%	Degraded <input type="checkbox"/> _____%			
Excellent <input type="checkbox"/> _____%	Good <input checked="" type="checkbox"/> _____%	Completely Degraded <input type="checkbox"/> _____%			

Please return form to:
communities.data@dpaw.wa.gov.au
or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

RECOMMENDED MANAGEMENT ACTIONS: e.g. roadside markers, weed control, etc.

ACTIONS IMPLEMENTED (include date):

HABITAT INFORMATION: (Check more than one box for combinations or where necessary)

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/> Hill <input type="checkbox"/> Ridge <input type="checkbox"/> Outcrop <input type="checkbox"/> Slope <input type="checkbox"/> Flat <input checked="" type="checkbox"/> Open depression <input type="checkbox"/> Drainage line <input type="checkbox"/> Closed depression <input type="checkbox"/> Wetland <input type="checkbox"/>	Granite <input type="checkbox"/> Dolerite <input type="checkbox"/> Laterite <input type="checkbox"/> Ironstone <input type="checkbox"/> Limestone <input type="checkbox"/> Quartz <input type="checkbox"/> Specify other:	(on soil surface; e.g. gravel, quartz fields) 0-10% <input type="checkbox"/> 10-30% <input type="checkbox"/> 30-50% <input type="checkbox"/> 50-100% <input checked="" type="checkbox"/>	Sand <input type="checkbox"/> Sandy loam <input checked="" type="checkbox"/> Loam <input type="checkbox"/> Clay loam <input type="checkbox"/> Light clay <input type="checkbox"/> Peat <input type="checkbox"/> Specify other:	Red <input checked="" type="checkbox"/> Brown <input checked="" type="checkbox"/> Yellow <input type="checkbox"/> White <input type="checkbox"/> Grey <input type="checkbox"/> Black <input type="checkbox"/> Specify other:	Well drained <input checked="" type="checkbox"/> Seasonally inundated <input type="checkbox"/> Permanently inundated <input type="checkbox"/> Tidal <input type="checkbox"/> Specify other:

Specific Landform Element: (Refer to field manual for additional values)

--

CONDITION OF SOIL:

Dry Moist Waterlogged Inundated Cracked Saline Other: _____

VEGETATION CLASSIFICATION:

	1. Woodland (wandoo)
	2. Scattered low shrubs
	3. Forbs
	4. Grasses

FIRE HISTORY:

Last Fire: Season/Month: Year: Fire Intensity: High Medium Low No evidence of fire

Actual Occurrence Landuse:

--

Please return form to:
communities.data@dpaw.wa.gov.au
 or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

Adjacent Landuse: Agriculture, urban

Associated Flora Species:

Mid open woodland of Eucalyptus wandoo subsp. wandoo over low woodland of Allocasuarina huegeliana over low open shrubland of Bossiaea eriocarpa, Acacia lasiocarpa var. sedifolia, Gastrolobium parvifolium over forbland including Lomandra micrantha subsp. teretifolia, *Arctotheca calendula, *Lysimachia arvensis, Opercularia vaginata and open grassland of *Ehrharta longiflora, *Avena barbata, Neurachne alopecuroidea and Austrostipa elegantissima on orange-brown gravelly loam.

Associated Fauna Species:

OTHER COMMENTS:

ATTACHED: Map Mudmap Photo GIS data Field notes

Other: _____

COPY SENT TO: Regional Office District Office Other: _____

Submitter of record: Russell Smith **Role:** botanist

Please return form to:

communities.data@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

Signature:

Date submitted:

26/06/2025

Please return form to:

communities.data@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

COMMUNITY: <u>Eucalypt woodlands of the WA Wheatbelt</u>		OBSERVATION DATE: <u>04/10/2024</u>	
New occurrence <input checked="" type="checkbox"/> Site ID: _____		CONS STATUS: <u>TEC/PEC</u>	
OBSERVER/S: <u>Russell Smith & Colin Spencer</u>		PHONE: _____	
ROLE: <u>botanists</u>		ORGANISATION: <u>Ecoedge</u>	
EMAIL: <u>russell@ecoedge.com.au</u>			

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):	
<u>Springhill Road, near the corner of Darcy Street road verge and unallocated Crown land.</u>	
Reserve No: _____	
DISTRICT: _____	LGA: <u>Cuballing</u> Land manager present: <input type="checkbox"/>

DATUM:	COORDINATES: (If UTM coords provided, Zone is also required)	METHOD USED:
GDA94 / MGA94 <input checked="" type="checkbox"/>	DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/>	GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/>
AGD84 / AMG84 <input type="checkbox"/>	Lat / Northing: <u>6368209</u>	No. satellites: _____ Map used: _____
WGS84 <input type="checkbox"/>	Long / Easting: <u>516497</u>	Boundary polygon captured: <input type="checkbox"/> Map used: _____
Unknown <input type="checkbox"/>	Zone: <u>50</u>	

LAND TENURE:					
Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/>	Shire road reserve <input type="checkbox"/>	
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>	Other Crown reserve <input type="checkbox"/>	
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input checked="" type="checkbox"/>	SLK/Pole _____ to _____	Specify other: _____	

AREA ASSESSMENT: <u>Edge survey</u> <input checked="" type="checkbox"/> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u> <input type="checkbox"/>	Area observed (m²): <u>0.4 ha</u>
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____

THREATS - type, and supporting information: <small>e.g. clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents.</small>	Cause/Agent: <small>e.g. weed type, grazing species, recreation type</small>	Area affected	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			

*Rate current and potential threat impact: **N=Nil, L=Low, M=Medium, H=High, E=Extreme**

*Estimate time to potential impact: **S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)**

CONDITION OF OCCURRENCE: (Bush Forever Scale) (estimate % of area in each)					
Pristine <input type="checkbox"/> _____%	Very Good <input checked="" type="checkbox"/> _____%	Degraded <input type="checkbox"/> _____%			
Excellent <input type="checkbox"/> _____%	Good <input checked="" type="checkbox"/> _____%	Completely Degraded <input type="checkbox"/> _____%			

Please return form to:

communities.data@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

RECOMMENDED MANAGEMENT ACTIONS: e.g. roadside markers, weed control, etc.

ACTIONS IMPLEMENTED (include date):

HABITAT INFORMATION: (Check more than one box for combinations or where necessary)

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/> Hill <input type="checkbox"/> Ridge <input type="checkbox"/> Outcrop <input type="checkbox"/> Slope <input type="checkbox"/> Flat <input checked="" type="checkbox"/> Open depression <input type="checkbox"/> Drainage line <input type="checkbox"/> Closed depression <input type="checkbox"/> Wetland <input type="checkbox"/>	Granite <input type="checkbox"/> Dolerite <input type="checkbox"/> Laterite <input type="checkbox"/> Ironstone <input type="checkbox"/> Limestone <input type="checkbox"/> Quartz <input type="checkbox"/> Specify other:	(on soil surface; e.g. gravel, quartz fields) 0-10% <input checked="" type="checkbox"/> 10-30% <input type="checkbox"/> 30-50% <input type="checkbox"/> 50-100% <input type="checkbox"/>	Sand <input type="checkbox"/> Sandy loam <input checked="" type="checkbox"/> Loam <input type="checkbox"/> Clay loam <input type="checkbox"/> Light clay <input type="checkbox"/> Peat <input type="checkbox"/> Specify other:	Red <input type="checkbox"/> Brown <input checked="" type="checkbox"/> Yellow <input type="checkbox"/> White <input type="checkbox"/> Grey <input checked="" type="checkbox"/> Black <input type="checkbox"/> Specify other:	Well drained <input checked="" type="checkbox"/> Seasonally inundated <input type="checkbox"/> Permanently inundated <input type="checkbox"/> Tidal <input type="checkbox"/> Specify other:

Specific Landform Element: (Refer to field manual for additional values)

--

CONDITION OF SOIL:

Dry Moist Waterlogged Inundated Cracked Saline Other: _____

VEGETATION CLASSIFICATION:

	1. Woodland (wandoo)
	2. Scattered low shrubs
	3. Forbs
	4. Grasses

FIRE HISTORY:

Last Fire: Season/Month: Year: Fire Intensity: High Medium Low No evidence of fire

Actual Occurrence Landuse:

--

Please return form to:

communities.data@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

COMMUNITY: <u>Eucalypt woodlands of the WA Wheatbelt</u>		OBSERVATION DATE: <u>04/10/2024</u>	
New occurrence <input checked="" type="checkbox"/> Site ID: _____		CONS STATUS: <u>TEC/PEC</u>	
OBSERVER/S: <u>Russell Smith & Colin Spencer</u>		PHONE: <u>0447809</u>	
ROLE: <u>botanists</u>		ORGANISATION: <u>Ecoedge</u>	
EMAIL: <u>russell@ecoedge.com.au</u>			

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):
1.9 km along Springhill Road from Cuballing townside, road verge and adjoining nature reserve

Reserve No: _____

DISTRICT: _____		LGA: <u>Cuballing</u>		Land manager present: <input type="checkbox"/>	
DATUM:		COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:	
GDA94 / MGA94 <input checked="" type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/>		GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/>	
AGD84 / AMG84 <input type="checkbox"/>		Lat / Northing: <u>6366999</u>		No. satellites: _____ Map used: _____	
WGS84 <input type="checkbox"/>		Long / Easting: <u>515758</u>		Boundary polygon captured: <input type="checkbox"/> Map used: _____	
Unknown <input type="checkbox"/>		Zone: <u>50</u>			

LAND TENURE:

Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/>	Shire road reserve <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>	Other Crown reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input checked="" type="checkbox"/>	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey Partial survey Full survey Area observed (m²): 0.3 ha

EFFORT: Time spent surveying (minutes): _____ No. of minutes spent / 100 m²: _____

THREATS - type, and supporting information: e.g. clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents.	Cause/Agent: e.g. weed type, grazing species, recreation type	Area affected	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			

*Rate current and potential threat impact: **N=Nil, L=Low, M=Medium, H=High, E=Extreme**

*Estimate time to potential impact: **S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)**

CONDITION OF OCCURRENCE: (Bush Forever Scale) (estimate % of area in each)

Pristine <input type="checkbox"/> _____%	Very Good <input checked="" type="checkbox"/> _____%	Degraded <input type="checkbox"/> _____%
Excellent <input type="checkbox"/> _____%	Good <input checked="" type="checkbox"/> _____%	Completely Degraded <input type="checkbox"/> _____%

Please return form to:

communities.data@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

RECOMMENDED MANAGEMENT ACTIONS: e.g. roadside markers, weed control, etc.

ACTIONS IMPLEMENTED (include date):

HABITAT INFORMATION: (Check more than one box for combinations or where necessary)

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/> Hill <input type="checkbox"/> Ridge <input type="checkbox"/> Outcrop <input type="checkbox"/> Slope <input type="checkbox"/> Flat <input checked="" type="checkbox"/> Open depression <input type="checkbox"/> Drainage line <input type="checkbox"/> Closed depression <input type="checkbox"/> Wetland <input type="checkbox"/>	Granite <input type="checkbox"/> Dolerite <input type="checkbox"/> Laterite <input checked="" type="checkbox"/> Ironstone <input type="checkbox"/> Limestone <input type="checkbox"/> Quartz <input type="checkbox"/> Specify other:	(on soil surface; e.g. gravel, quartz fields) 0-10% <input type="checkbox"/> 10-30% <input checked="" type="checkbox"/> 30-50% <input type="checkbox"/> 50-100% <input type="checkbox"/>	Sand <input type="checkbox"/> Sandy loam <input checked="" type="checkbox"/> Loam <input type="checkbox"/> Clay loam <input type="checkbox"/> Light clay <input type="checkbox"/> Peat <input type="checkbox"/> Specify other:	Red <input checked="" type="checkbox"/> Brown <input checked="" type="checkbox"/> Yellow <input type="checkbox"/> White <input type="checkbox"/> Grey <input type="checkbox"/> Black <input type="checkbox"/> Specify other:	Well drained <input checked="" type="checkbox"/> Seasonally inundated <input type="checkbox"/> Permanently inundated <input type="checkbox"/> Tidal <input type="checkbox"/> Specify other:

Specific Landform Element: (Refer to field manual for additional values)

--

CONDITION OF SOIL:

Dry Moist Waterlogged Inundated Cracked Saline Other: _____

VEGETATION CLASSIFICATION:

	1. Woodland (wandoo)
	2. Low shrubs
	3. Forbs
	4. Grasses

FIRE HISTORY:

Last Fire: Season/Month: Year: Fire Intensity: High Medium Low No evidence of fire

Actual Occurrence Landuse:

--

Please return form to:

communities.data@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

Adjacent Landuse:	Agriculture, urban
--------------------------	--------------------

Associated Flora Species:	<p>Mid open forest of Eucalyptus wandoo subsp. wandoo over low open woodland of Allocasuarina huegeliana and Acacia acuminata over very open low shrubland of Acacia pulchella var. pulchella, Gastrolobium parviflorum, Bossiaea eriocarpa, Hakea lissocarpha and Xanthorrhoea gracilis over forbland including Agrostocrinum scabrum, Lomandra micrantha subsp. micrantha, Rhodanthe manglesii, Glischrocaryon aureum, very open grassland of Austrostipa spp., *Briza maxima, *Avena barbata and very open sedgeland of Lepidosperma spp. on orange-brown gravelly clay loam.</p>

Associated Fauna Species:	

OTHER COMMENTS:	

ATTACHED:	Map <input type="checkbox"/>	Mudmap <input type="checkbox"/>	Photo <input type="checkbox"/>	GIS data <input type="checkbox"/>	Field notes <input type="checkbox"/>
Other:					
COPY SENT TO:	Regional Office <input type="checkbox"/>	District Office <input type="checkbox"/>	Other: <input type="checkbox"/>		

Please return form to:
communities.data@dpaw.wa.gov.au
 or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____



Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

Submitter of record:	<u>Russell Smith</u>	Role:	<u>botanist</u>
Signature:		Date submitted:	<u>26/06/2025</u>

Please return form to:

communities.data@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ Date entered: _____ Database no: _____